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## South Florida Water Management District

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### GOVERNING BOARD MONTHLY MEETING AGENDA

*This meeting is open to the public*

January 9, 2014

9:00 AM

District Headquarters - B-1 Auditorium  
3301 Gun Club Road  
West Palm Beach, FL 33406

FINAL

*Pursuant to Section 373.079(7), Florida Statutes, all or part of this meeting may be conducted by means of communications media technology in order to permit maximum participation of Governing Board members.*

*The Governing Board may take official action at this meeting on any item appearing on this agenda and on any item that is added to this agenda as a result of a change to the agenda approved by the presiding officer of the meeting pursuant to Section 120.525, Florida Statutes. The order of items appearing on the agenda is subject to change during the meeting and is at the discretion of the presiding officer. Public Comment will be taken after each presentation and before any Governing Board action(s) except for Governing Board hearings that involve the issuance of final orders based on recommended Orders received from the Florida Division of Administrative Hearings.*

1. Call to Order - Dan O'Keefe, Chairman, Governing Board
2. Pledge of Allegiance - Dan O'Keefe, Chairman, Governing Board
3. Employee Recognitions - Presented by Blake Guillory, Executive Director
  - January Employee of the Month - Brian Garrett, Scientist 3, Field Operations & Land Operations Division
  - January Team of the Month - Statewide Environmental Resource Permitting Team
  - Employee of the Year - Walter Wilcox, Section Leader, Water Resources Division
  - Team of the Year - Land Assessment Team

- 30-Year Service Recognition - Jenni Hiscock, Project Development Section Leader, Regulation Division
- 4. Agenda Revisions - Reagan Walker, Director, Office of Governing Board & Executive Services
- 5. Abstentions by Board Members from items on the Agenda
- 6. Water Resources Advisory Commission (WRAC) Report - Tim Sargent, Chair

## Consent Agenda

*Members of the public wishing to address the Governing Board are to complete a Public Comment Card and submit the card to the front desk attendant. You will be called by the Board Chair or designee to speak. If you want to request that an item be removed from the Consent Agenda and be discussed by the Governing Board, please advise the Governing Board when you are called upon to speak. Governing Board directives limit comments from the public to 3 minutes unless otherwise determined by the Governing Board Chair. Your comments will be considered by the Governing Board prior to adoption of the Consent Agenda.*

*Unless otherwise determined by the Chair, Board action on pulled Consent Agenda items will occur at or after 9:00 a.m. on Thursday. Regulatory items pulled from the Consent Agenda for discussion will be heard during the Discussion Agenda. **Unless otherwise noted, all Consent Agenda items are recommended for approval.***

7. Public Comment on Consent Agenda
8. Pull Items for Discussion from Consent Agenda
9. Board Comment on Consent Agenda
10. Approval of the Minutes of the Minutes for the December 12, 2013 Regular Business meeting held in West Palm Beach, Florida
11. Waivers for Water Resources Advisory Commission (WRAC) members pursuant to Section 112.313, Florida Statutes
12. Regulatory Consent Items
  - Consent Orders
  - **Town of Windermere; 618 W Second Avenue Drainage Improvements/903 Second Avenue Drainage Improvements (Orange County)** - Settlement of an enforcement action regarding unpermitted dewatering and non-compliance with permit conditions due to unauthorized offsite dewatering into outstanding Florida waters.
  - **Birchwood Acres Limited Partnership, LLLP; Harmony Community Development (Osceola County)** - Settlement of an enforcement action regarding unpermitted dewatering with offsite discharge.
  - Conservation Easements, Amendments and Releases
  - **Okeechobee County Board of County Commissioners, Agri-Civic Center (Okeechobee County)** - Staff recommends the approval of a request for the release of a 0.083 acre (3,632 square feet) portion of the conservation easement over a wetland mitigation area and upland buffer associated with the Okeechobee County Agri-Civic Center project in Okeechobee County (Environmental Resource Permit 47-00582-P, Application No. 020909-5). The Florida Department of Transportation District 1 has recently acquired a small parcel of land immediately adjacent to the south side of SR 70 which was previously part of the northeast quadrant of the Okeechobee Agri-Civic Center property. This small acquisition area is needed for improvements to the SR 70 roadway facility which permitted on November 18, 2013 (Permit No. 47-01151-P, Application 131212-9). The partial release of easement is being processed concurrently with an Individual Major Environmental Resource Permit modification of the State Road 70 Improvements permit.

- Seminole Tribe Work Plan
- Staff recommends concurrence with the Fifth Amendment to the **Twenty Seventh Annual Work Plan for the Seminole Tribe of Florida**. Works in the Brighton Reservation include the construction of a recreation and maintenance facility including a gravel parking area.

13. Right of Way Regulatory Consent Items

- Right of Way Occupancy Permit Request with Waiver of District Criteria
- Staff recommends approval of a request by **Craig Ehrnst on behalf of Peninsula Corporate Center** (Application Number 13-1030-1) for issuance of a Modification to Right of Way Occupancy Permit No. 10934M and waiver of criteria to allow an existing culvert connection to remain within the south right of way of C-15. Location: Palm Beach County, Section 31, Township 46 South, Range 43 East.
- Relaxation of Standards as allowed under District Rule 40E-6.011(9), F.A.C.
- Staff recommends waiving the vertical clearance requirement for pile-supported and con-span bridges located within specific reaches of the Basin canals as follows: Golden Gate Main Canal (10th Street NE to 22nd Street NE, Oil Well Road to 72nd Avenue NE) and Faka Union Canal (Oil Well Road to 77nd Avenue NE) located in Collier County. The proposed relaxation will reduce the District's vertical clearance requirement for bridges within the specified reaches from 4' to 2' as measured from the design water surface to the lowest member of the bridge structure across the entire width of the canal. The factors considered, but not limited to, are canal freeboard, elevation of the residential driveway connections and surrounding topography.

14. **Resolution No. 2014 - 0101** Approving release of canal, road and mineral reservations. (OMC, Kathy Massey, ext. 6835)

**Summary**

The District has jurisdiction over certain reserved rights to construct canal and road right of ways, and mineral rights, together with the right of ingress, egress and exploration. Applications requesting releases of these reservations are routinely received from landowners, attorneys, title companies and lending institutions, who consider the reservations to be title defects. Applications are reviewed by appropriate District staff and applicable local governmental agencies to determine that there is no present or future need for the reservations.

- Release of District canal and road reservations for Lutheran Church of the Holy Cross West Palm Beach, Inc., (File No. 18564) for 6.12 acres in Palm Beach County.
- Release of Trustees canal reservations for Bridgewater Lake Osborne, LLC (File No. 10-13-3) for 9.86 acres in Palm Beach County.
- Release of Board of Education canal reservations for Avenir Holdings, LLC (File No. 10-13-2) for 480 acres in Palm Beach County
- Release of District mineral reservations for Charles Kenneth Deese (File No. 18569) for 1 acre in Palm Beach County.

15. **Resolution No. 2014 - 0102** Authorize entering into an Interagency Agreement between the South Florida Water Management District (SFWMD) and the St. Johns River Water Management District (SJRWMD) for designation of regulatory responsibility for permitting under Part II of Chapter 373, Florida Statutes, for the project known as Eagle Island Farm that crosses the jurisdictional boundaries of both Water Management Districts. (REG, Maria Clemente, ext. 2308)

**Summary**

The SFWMD is reviewing a water use permit application for an agricultural project in Okeechobee County, Florida known as Eagle Island Farm. However, the project crosses water management district boundaries. In order to issue a single permit for the entire project, an interagency agreement is necessary to delegate SJRWMD's Part II, Chapter 373, Fla. Stat., jurisdiction and responsibility to SFWMD.

**Staff Recommendation**

Approve an Interagency Agreement between the SJRWMD and the SFWMD authorizing the SFWMD to issue any Water Use Permits under Part II of Chapter 373, Fla. Stat., for the portion of Eagle Island Farm that lies within the jurisdictional boundaries of SJRWMD.

16. **Resolution No. 2014 - 0103** Approve the ten year update of the Dupuis and Kissimmee River General Management Plans (2014-2024). (OMC, Steve Coughlin, ext. 2603)

**Summary**

Section 373.591, Florida Statutes, and Section 140.25(6)(b), South Florida Water Management District Policies Code, direct the District to develop a General Management Plan that follows a designated format and provides recommended management actions for Land Stewardship Management Areas. The District updates these plans every ten (10) years concurrent with conducting a multi-party land management review of the subject property which is consistent with the timeframe and process followed by State agencies. The management plan describes the historical, physical, and ecological aspects of the property, existing public recreational opportunities, and the various land management functions necessary to properly manage the area. The purpose of the management plan is to provide guidance to District land managers for the implementation of appropriate and consistent land management practices, to identify goals and objectives for the management of the property, and to present the findings of the land management review team.

**Staff Recommendation**

Staff recommends approval of the updated Dupuis and Kissimmee River General Management Plans (2014-2024) in accordance with Section 373.591, Florida Statutes.

17. **Resolution No. 2014 - 0104** Authorize entering into a three-year contract with two (2) one-year renewal options with G4S Secure Solutions USA, Inc., for Security Guard Services in an amount not to exceed \$559,478.52 for which \$199,000 in ad valorem funds are budgeted in FY14 and the remainder is subject to Governing Board approval of the FY15–FY18 budgets; providing an effective date. (Contract Number 4600002990) (AS, Bill Hancsak, ext. 6167)

**Summary**

This request is to enter into a three-year contract with two (2) optional one-year renewals with G4S Secure Solutions USA, Inc. (G4S) for Security Guard Services in an amount not to exceed \$559,478.52. The present security guard contract expires February 4, 2014. G4S will provide professional security guard services to maintain a safe and effective working environment for employees located at HQ. Services include 24-hour monitoring of security systems, daily visitor control, ID badge and access control assistance, crowd control, and site security. Security guard services have been traditionally outsourced by the District. Since it is not a core function staff recommends continuing to outsource the service.

**Staff Recommendation**

Staff recommends approval of the contract renewal with GRS for security services.

18. **Resolution No. 2014 - 0105** Authorizing the Executive Director or designee to submit reimbursement requests to the Florida Department of Environmental Protection for implementation of Comprehensive Everglades Restoration Plan Water Quality Studies using Save our Everglades Trust Funds. (AS, Doug Bergstrom, ext. 6214)

**Summary**

Section 373.472, F.S. created the Save Our Everglades Trust Fund within the Florida Department of Environmental Protection. Funds in the Trust Fund shall be expended to implement the comprehensive plan as defined in s. 373.470(2)(b) F.S. The Governing Board of the South Florida Water Management District approved Resolution Number 2012-302 authorizing the execution of an agreement with the Department for Implementation of CERP Water Quality Studies. The agreement contains Exhibit "A" which prescribes the Disbursement Procedure for CERP Water Quality Studies and requires a formal resolution adopted by the Governing Board of the District. The Governing Board approved Resolution Number 2012-1204 on December 13, 2012 authorizing the District to seek reimbursement for expenditures supporting the CERP Water Quality Studies Annual Work Plan for Fiscal Years 2012 and 2013. This resolution authorizes the District to seek reimbursement for expenditures supporting the CERP Water Quality Studies Annual Work Plan for Fiscal Year 2014 as presented and adopted by the Governing Board on January 9, 2014.

**Staff Recommendation**

Staff recommends approving the authorization of the Executive Director or designee to seek reimbursement for CERP water quality studies from Save Our Everglades Trust Funds.

19. **Resolution No. 2014 - 0106** Authorize entering into a three-year agreement with Florida International University for Ecological Monitoring of Water and Habitat Quality associated with the C-111 Spreader Canal Project in an amount of \$356,323 for which \$86,323 in Florida Bay Special Revenue Funds are budgeted and the remainder is subject to Governing Board approval of the FY15-FY16 budgets. (Contract No. 4600002987) (WR, Christopher J. Madden, ext. 4647)

**Summary**

This contract is designed to monitor the redistribution of freshwater flow by the C-111 Spreader Canal Western Features (C-111 SC WF) Project and assess the resulting salinity and nutrient changes on habitat condition. It will track improvements in hydrology, salinity encroachment and vegetation as well as detect potential changes

in water quality in affected coastal wetlands and in waters of Florida Bay. The project location is in the C-111 Basin in the Everglades Panhandle near US Hwy 1, and lower Taylor Slough. This contract documents the ecological benefits of the C-111 SC WF Project and provides data for permit compliance. The three-year project cost is \$356,323 of which \$86,323 in Florida Bay special revenue funds are budgeted in FY14.

**Staff Recommendation**

Staff recommends approval of this agreement, which will allow the District to collect data and analyze information about the performance of the C-111 Spreader Canal, Western Features Project, monitor water quality changes, provide guidance for the next phase of the C-111 project, and determine its effects on critical habitat areas in southern Taylor Slough, the C-111 Basin, the Model Lands and Florida Bay.

- 20. **Resolution No. 2014 - 0107** Accept the FY2014 Five-Year Water Resource Development Work Program pursuant to Section 373.536(6)(A)4, Florida Statutes. (WR, Mark Elsner, ext. 6156)

**Summary**

The water management districts are required to submit a Five-Year Water Resource Development Work Program to the Florida Department of Environmental Protection (FDEP) following final budget adoption. The work program describes the District's implementation strategy and funding plan for the water resource, water supply and alternative water supply (AWS) development components of each approved regional water supply plan. The work program identifies which projects in the water resource components will provide water, explains how each water resource, water supply and AWS development project will produce additional water available for consumptive uses; estimates the quantity of water to be produced by each project; and provides an assessment of the contribution of the district's regional water supply plans in providing sufficient water needed to timely meet the water supply requirements of existing and future reasonable-beneficial uses for a 1-in-10 year drought event. The Five-Year Water Resource Development Work Program will be published in the FY2014 South Florida Environmental Report, Volume II as Chapter 5A.

**Staff Recommendation**

Staff recommends that the Governing Board enter into this resolution accepting the Five-Year Water Resource Development Work Program pursuant to Section 373.536(6)(a)4 F.S. The FDEP has evaluated the work program document and provided comments. FDEP is required to submit a copy of a final evaluation report to the Governor, the President of the Senate and the Speaker of the House of Representatives.

- 21. Board Vote on Consent Agenda
- 22. General Public Comment
- 23. Board Comment

## **Discussion Agenda**

24. Technical Reports
- A) Water Conditions Report - Tommy Strowd, Assistant Executive Director, Operations, Maintenance & Construction (ext. 6998)
- B) Ecological Conditions Report - Terrie Bates, Division Director, Water Resources (ext. 6952)
25. Everglades Restoration Project Prioritization, Part 2: State Restoration Projects - Temperince Morgan, Division Director, Office of Everglades Policy & Coordination (ext. 6987)

### **Summary**

The Governing Board has requested a review of the various restoration projects that are being implemented or considered for implementation to provide recommendations regarding obligations and priorities. Multiple presentations will be given over the course of the next several months to provide background information relevant to this discussion. This is Part 2 of the presentation and will focus on state funded restoration projects.

### **Staff Recommendation**

This item is for information only. No action is required.

26. Modified Water Deliveries to Everglades National Park and C-111 South Dade Projects Update - Tom Teets, Federal Policy Chief, ext. 6993

### **Summary**

The Modified Water Deliveries to Everglades National Park (Modified Water Deliveries) and C-111 South Dade projects are federal projects designed and constructed to restore more natural hydropatterns to Everglades National Park. Both projects are nearing completion of the construction phase; both efforts are pre-requisites to implementing several key components of the Comprehensive Everglades Restoration Plan (CERP), including current Central Everglades Planning Project (CEPP). An overview will be provided for each project, including Congressional authorization, the terms of the Project Cooperation Agreements with the United States Army Corps of Engineers, as well as a description of the project purposes, features and the status of construction and operations associated with these projects.

### **Staff Recommendation**

This item is for information only. No action is required.

27. Capital Projects Plan Update - Jeff Kivett, Division Director, Operations, Engineering & Construction Division (ext. 2680)

### **Summary**

The Governing Board has requested an update on the status of the Operations & Maintenance Capital Plan. A presentation will be provided on the history of the current capital plan, current inspection program for assessing assets, and the current and future projects and associated funding. The presentation will also provide for discussion suggested future steps to enhance the current program in developing risk

profiles and a long term refurbishment and rehabilitation program.

**Staff Recommendation**

This item is for information only. No action is required.

28. **Resolution No. 2014 - 0108** Approving an agreement with Florida Department of Environmental Protection to provide the District with 319(h) Grant funding in the amount of \$1,506,401 in support of the Water Farming Pilot Projects where the District is required to provide \$1,581,000 of matching funds. (EPC, Beth Lewis, ext 6343)

**Summary**

On August 22, 2013, the South Florida Water Management District's Section 319(h) Grant Proposal entitled "Evaluation of Water Farming as a Means for Providing Water Storage/Retention and Improving Water Quality in the Indian River Lagoon/St. Lucie Watershed" was accepted for funding by the Florida Department of Environmental Protection. The award includes grant funding in the amount of \$1,506,401 with a requirement for \$1,581,000 in matching funds for the implementation of three Water Farming Pilot Projects to test and determine the cost effective feasibility of utilizing fallow citrus lands to retain, store and treat surface water to reduce total regional run-off and nutrient loading to natural systems. The Grant Funding Agreement provides the framework for grant reimbursables and cost match deliverables during the implementation, operations, maintenance and reporting phases of all three Water Farming Pilot Projects in the St. Lucie River Watershed.

**Staff Recommendation**

Staff recommends that the Governing Board of the South Florida Water Management District authorize staff to enter into an agreement with the Florida Department of Environmental Protection for a Section 319(h) Grant entitled "Evaluation of Water Farming as a Means for Providing Water Storage/ Retention and Improving Water Quality in the Indian River Lagoon/ St. Lucie Watershed" in the amount of \$1,506,401 with \$1,581,000 required in matching funds for the implementation of a Water Farming Pilot Program.

29. **Resolution No. 2014 - 0109** Authorize a three-year contract with the University of Florida Board of Trustees for Dispersed Water Management Program Water Farming Watershed Coordination Assistance for the purpose of providing outreach, options assessment and opportunities identification, and recommendations. (EPC, Beth Lewis, ext 6343) (Contract No. 4600002986)

**Summary**

This contract is the result of a 319(h) Grant application and resulting award to the SFWMD for implementing a pilot program, known as the Water Farming Pilot Projects, to test and determine the cost effective feasibility of utilizing fallow citrus lands to retain and store surface water to reduce total regional run-off and nutrient loading to natural systems within the St. Lucie Watershed. The University of Florida Board of Trustees Center for Landscape Conservation Planning (University) will provide watershed coordination assistance associated with the Water Farming Pilot Projects 319(h) Grant. The University will be reimbursed \$156,400 for outreach, options assessment and opportunities identification, and focused follow-up, results and recommendations. The objective of the watershed coordination assistance is to identify opportunities for innovative funding and additional cost-effective strategies

for nutrient load reduction. The term of the contract is three years and the total contract cost is \$156,400.

**Staff Recommendation**

Staff recommends approval for a contract with the University of Florida Board of Trustees in the total amount of \$156,400.

30. **Resolution No. 2014 - 0110** Approving a three-year Water Farming Pilot Project agreement with Evans Properties, Inc. to implement, monitor and evaluate the costs and benefits of "Water Farming." The total District cost is \$1,392,117 for design, permitting, construction, operation & maintenance, and participation payments (970 acres in St. Lucie County). (EPC, Beth Lewis, ext. 6343)

**Summary**

This contract is the result of a solicitation request from the SFWMD for implementing a pilot program to test and determine the cost effective feasibility of utilizing fallow citrus lands to retain and store surface water to reduce total regional run-off and nutrient loading to natural systems. Evans Properties, Inc. will provide for the design, permitting, construction, operation and maintenance of the Water Farming Pilot Project located in the St. Lucie River Watershed in St. Lucie County. The contract term is three years, allowing up to one year for design, permitting and construction, and two years of operation and maintenance. The estimated average annual retention is 3,635 acre-feet per year. Evans Properties, Inc. will be reimbursed up to \$317,780 for facility design, permitting and construction. The contract further provides for a fixed payment of \$537,168.50 on an annual basis for a two-year term for operations and maintenance costs. The total not to exceed contract cost is \$1,392,117.

**Staff Recommendation**

Staff recommends approval for a contract with Evans Properties, Inc. in a total not to exceed amount of \$1,392,117.

31. **Resolution No. 2014 - 0111** Approving a three-year agreement with Spur Land and Cattle, LLC and Bull Hammock Ranch, Ltd. to conduct a pilot project to implement, monitor and evaluate the costs and benefits of "Water Farming." The total District cost is \$245,440 for design, permitting, construction, operation & maintenance, and participation payments (210 acres in Martin County). (EPC, Beth Lewis, ext. 6343)

**Summary**

This contract is the result of a solicitation request from the SFWMD for implementing a pilot program to test and determine the cost effective feasibility of utilizing fallow citrus lands to retain and store surface water to reduce total regional run-off and nutrient loading to natural systems. Spur Land and Cattle, LLC and Bull Hammock Ranch, Ltd. will provide for the design, permitting, construction, operation and maintenance of the Water Farming Pilot Project located in the St. Lucie River Watershed in Martin County. The contract term is three years, allowing up to one year for design, permitting and construction, and two years of operation and maintenance. The estimated average annual retention is 870 acre-feet per year. Spur Land and Cattle, LLC and Bull Hammock Ranch, Ltd. will be reimbursed up to \$136,000 for design, permitting and construction. The contract further provides for an annual fixed payment of \$54,720 for operations and maintenance costs for a two-year term. The total not to exceed contract cost is \$245,440.

### **Staff Recommendation**

Staff recommends approval for a contract with Spur Land and Cattle, LLC and Bull Hammock Ranch, Ltd. in a total not to exceed amount of \$245,440.

32. **Resolution No. 2014 - 0112** Approving the acquisition of fee title land interests containing 4,604.22 acres, more or less, for the STA-1W Expansion Project, in Palm Beach County, along with the receipt of \$450,000, in exchange for the conveyance of fee title land interests in Palm Beach County containing 8,700 acres, more or less, and the option to require the District to convey fee title land interests containing 55 acres, more or less, for no additional consideration, and the payment of cash consideration in the amount of \$5,978,474 and associated costs for which ad valorem funds are budgeted; approve declaring surplus for exchange and conveyance of fee title land interests in Palm Beach County containing 8,755 acres, more or less, all without reservation of interests under Section 270.11, Florida Statutes; approve entering into a lease agreement with respect to the lands containing 4,604.22 acres, more or less, in Palm Beach County; approve lease extensions. (OMC, Richard Bassell, ext. 2510)

### **Summary**

STA-1W is located in Western Palm Beach County. The acquisition of approximately 4,604.22 acres of lands adjacent to STA-1W is critical to the expansion of STA-1W to meet the Water Quality Based Effluent Limit (WQBEL) as prescribed in the Everglades Forever Act (EFA) and National Pollution Discharge Elimination System (NPDES) consent orders and permits. Shortly after the EFA and NPDES permits and consent orders became final in September 2012, the South Florida Water Management District began discussions with the landowners within the STA-1W Expansion Area, namely, Florida Crystals subsidiaries (Crystals) and Gladeview Holdings, LC (Gladeview). Such discussions were tabled for approximately seven months pending resolution of third party legal challenges to extensions of Crystals' leases of Trustees of the Internal Improvement Trust Fund lands within the Everglades Agricultural Area. Discussions resumed in July 2013 after the litigation had been resolved. At its October 10, 2013 meeting, the District's Governing Board approved a non-binding letter of intent that provided the general terms of the proposed acquisition and exchange transaction. The Governing Board presentation and memorandum summarized the cost components of the transaction for all the parties. Crystals, Gladeview, and District staff have since worked out all other terms in a Land Exchange Agreement. The significant terms of the Land Exchange Agreement include:

- The District will acquire a total of approximately 4,604.22 acres of land. The breakdown of the acreage is that the subsidiaries of Crystals will convey approximately 2,003.38 acres (Crystals Parcel) to the District and Gladeview will convey approximately 2,600.84 acres (Gladeview Parcel) to the District.
- The District will convey to Crystals approximately 8,700 acres of land (District Parcel), and Crystals has the option to acquire a remaining additional 55 acres of land (the Option Lands).
- Gladeview will acquire approximately 2,865 acres from Crystals (2,865 Acre Parcel).
- The District will provide cash consideration to Gladeview in the amount of \$5,978,474.
- The District will receive \$450,000 from Crystals as detailed in the "Environmental Analysis."

- The Option Lands consist of four (4) separate parcels that are currently being evaluated by Crystals for point source contamination.
- The District will lease back the 4,604.22 acres to Crystals on an interim basis consistent with the STA-1W Expansion Project, as detailed in the "Leases."
- The District will extend two existing leases with Crystals containing approximately 1,691 acres, as detailed in the "Leases."
- Crystals will acquire the District Parcel from the District subject to the existing U.S. Sugar Corporation lease.
- The Closing of the land exchange is targeted for April or May of 2014.
- Each party will pay for the closing costs (documentary stamp tax and title insurance) in connection with the lands they are acquiring. The District is exempt from paying documentary stamp tax in connection with its acquisition of the Crystals and Gladeview Parcels.
- Each party will be responsible for any environmental remediation disclosed in the parties environmental audit for the lands they are acquiring.

**Staff Recommendation**

Staff recommends approval of the acquisitions, exchanges and other considerations as detailed herein.

33. **Resolution No. 2014 - 0113** Authorize entering into a 790-day contract with Douglas N. Higgins, Inc., the lowest responsive and responsible bidder, for the S-13 Repowering and Automation project, for a total amount of \$6,841,000 for which ad valorem funds of \$1,800,000 are budgeted and the remainder is subject to Governing Board approval of the FY15-FY16 budgets. (Contract Number 4600002993) (OMC, John Mitnik, ext. 2679)

**Summary**

The S-13 Pump Station was built in 1954 by the United States Army Corps of Engineers (USACE). The pump station is a coastal structure located on the C-11 canal in Broward County near the Town of Davie. This station provides area flood protection and acts as a barrier to the inland movement of salt water. Due to age and current condition of the facility, the District initiated the S-13 Pump Station Repowering and Automation Project in February 2011 with the following goals: provide new electronically-controlled low-emissions engines, refurbish right-angle gear reducer and pump, provide new gen-sets, provide new ventilation fans for station, provide new trash rake and conveyor and provide complete station electrical upgrades. Construction is scheduled to start in February of 2014 and continue 790 days through April of 2016. The project is phased for dry season construction. The District contracted in June 2013 for the purchase of three engines to meet the December 31, 2013 engine production deadline and December 31, 2015 installation date to meet Tier 4i engine emission requirements.

**Staff Recommendation**

The project should proceed in a timely manner with a construction notice-to-proceed to meet the requirements of dry season / wet season construction and the Tier 4i statutory requirements. Staff recommends approval to enter into a 790 day contract in the amount of \$6,841,000.00 with Douglas N. Higgins, Inc., the lowest responsive and responsible bidder, for the construction of the S-13 Repowering and Automation.

34. General Public Comment

## **Public Hearing**

35. **Resolution No. 2014 - 0114** Adopting the SFWMD Florida Forever Work Plan, 2014 Annual Update, contained in Chapter 6A, Volume II of the 2014 South Florida Environmental Report. (OMC, Ray Palmer, ext. 2246)

### **Summary**

Work Plan updates include:

- Added the Lake Hicpochee Hydrologic Enhancement and Rio St. Lucie Stormwater Quality - Sediment Nutrients, NEEPP projects.
- Removed the Hybrid Wetland Treatment Technology, NEEPP project that has been transferred to FDACS as the lead agency.
- Removed the inactive Strazzulla Wetlands, CERP project. The land acquired for this project will be exchanged for U.S. Department of Interior land, located on the western side of Loxahatchee National Wildlife Refuge, which will become part of the Restoration Strategies Program.
- The Picayune Strand Restoration, CERP project land acquisition boundary has been revised to identify for acquisition the Fakahatchee Strand and Belle Meade land to be hydrologically impacted by the project, as determined by a revised 2013 Takings Analysis completed by the US Army Corps of Engineers.
- The conceptual land acquisition boundary for the Loxahatchee River Watershed Restoration Project (LRWRP), CERP has been updated, refining the acquisition area for the LRWRP Flow-way 2 Storage feature.

### **Staff Recommendation**

Adopt the SFWMD Florida Forever Work Plan, 2014 Annual Update, contained in Chapter 6A, Volume II of the 2014 South Florida Environmental Report, providing an effective date.

36. Adopt Proposed Rules 40E-40E-1.021, 40E-1.602, 40E-1.603, 40E-1.6065, 40E-1.6107, 40E-1.615, 40E-1.659, 40E-2.011, 40E-2.041, 40E-2.061, 40E-2.071, 40E-2.091, 40E-2.101, 40E-2.301, 40E-2.331 40E-2.381, 40E-3.011, 40E-3.021, 40E-3.040, 40E-3.051, 40E-3.301, 40E-3.451, 40E-5.011, 40E-5.041, 40E-5.301, 40E-8.011, 40E-8.421, 40E-8.431, 40E-10.011, 40E-10.031, 40E-10.051, 40E-20.010, 40E-20.011, 40E-20.061, 40E-20.091, 40E-20.101, 40E-20.301, 40E-20.302, 40E-20.321, 40E-20.331, 40E-20.351, 40E-20.381, 40E-24.011, 40E-24.101, 40E-24.201, F.A.C., and reorganize and rename the Basis of Review For Water Use Permit Applications Within the South Florida Water Management District to improve consistency among the WMDs' consumptive use permitting programs. (REG, Maria Clemente, ext. 2308)

### **Summary**

The Florida Department of Environmental Protection (DEP) is leading a statewide effort (referred to as CUPcon) to improve consistency in the consumptive use permitting programs implemented by the water management districts (WMDs). The CUPcon goals include: 1) making the consumptive use permitting program less confusing for applicants; 2) treating applicants equitably statewide; 3) providing consistent protection of the environment; 4) streamlining the process; and 5) incentivizing behavior that protects water resources. The key changes to the rules include:

- Incorporation of updates to Chapter 62-40, F.A.C.;

- Revision of permit types to include: 1) General Permits by Rule for landscape irrigation, short-term dewatering and closed-loop systems; 2) Noticed General Permits; and 3) Individual Permits for those that do not qualify for a general permit;
- Revision of standard public water supply conservation plan and inclusion of goal based plans;
- Consistent standard permit conditions with the other WMDs and updating existing permit conditions;
- Reorganization of Applicant's Handbook (formerly Basis of Review);
- Inclusion of semi-annual pumpage reporting instead of quarterly reporting; and
- Incorporation of standardized application and compliance forms

**Staff Recommendation**

Adopt Proposed Rules 40E-40E-1.021, 40E-1.602, 40E-1.603, 40E-1.6065, 40E-1.6107, 40E-1.615, 40E-1.659, 40E-2.011, 40E-2.041, 40E-2.061, 40E-2.071, 40E-2.091, 40E-2.101, 40E-2.301, 40E-2.331 40E-2.381, 40E-3.011, 40E-3.021, 40E-3.040, 40E-3.051, 40E-3.301, 40E-3.451, 40E-5.011, 40E-5.041, 40E-5.301, 40E-8.011, 40E-8.421, 40E-8.431, 40E-10.011, 40E-10.031, 40E-10.051, 40E-20.010, 40E-20.011, 40E-20.061, 40E-20.091, 40E-20.101, 40E-20.301, 40E-20.302, 40E-20.321, 40E-20.331, 40E-20.351, 40E-20.381, 40E-24.011, 40E-24.101, 40E-24.201, F.A.C., and reorganize and rename the Basis of Review For Water Use Permit Applications Within the South Florida Water Management District to improve consistency among the WMDs' consumptive use permitting programs. The proposed rules are included in the Governing Board materials for this agenda item.

## **Staff Reports**

37. Monthly Financial Report - Doug Bergstrom, Division Director, Administrative Services Division
38. General Counsel's Report - Carolyn Ansay
39. Executive Director's Report - Blake Guillory  
Report on permits issued by authority delegated to the Executive Director from December 1-31, 2013.
40. Board Comment

## **Attorney Client Sessions**

### 41. Attorney Client Session

Attorney client session pursuant to Section 286.011(8), Florida Statutes (2012), to discuss strategy related to litigation expenditures and/or settlement negotiations in United States of America v. South Florida Water Management District, et al., United States District Court, Southern District of Florida, Case No. 88-1886-CIV-Moreno.

ATTENDEES: Governing Board Members F. Barber, S. Batchelor, M. Hutchcraft, J. Moran, D. O’Keefe, J. Portuondo, K. Powers, T. Sargent, G. Waldman; Executive Director B. Guillory; District attorneys C. Ansay, K. Burns, C. Kowalsky, D. MacLaughlin. (Carolyn S. Ansay, ext. 6976)

### **Action Items (if any) Stemming from Attorney Client Session**

Attorney client session pursuant to Section 286.011(8), Florida Statutes (2013), to discuss strategy related to litigation expenditures and/or settlement negotiations in United States of America v. South Florida Water Management District, et al., United States District Court, Southern District of Florida, Case No. 88-1886-CIV-Moreno. (Carolyn S. Ansay, ext. 6976)

### 42. Attorney Client Session

Attorney client session pursuant to Section 286.011(8), Florida Statutes (2013), to discuss strategy related to litigation expenditures and/or settlement negotiations in South Florida Water Management District v. FEMA, et al., United States District Court, Southern District of Florida, Case No. 13-80533-CIV-Middlebrooks/Brannon and the Administrative Appeal dated November 15, 2012, by the South Florida Water Management District to Major Phillip May, Regional Administrator, Region IV, Federal Emergency Management Agency (FEMA) of the FEMA decision to deobligate funds for the 2004-2005 Hurricanes. (Carolyn S. Ansay, ext. 6976)

ATTENDEES: Governing Board Members F. Barber, S. Batchelor, M. Hutchcraft, J. Moran, D. O’Keefe, J. Portuondo, K. Powers, T. Sargent, G. Waldman; Executive Director B. Guillory; District attorneys C. Ansay, K. Burns, C. Kowalsky, D. MacLaughlin. (Carolyn S. Ansay, ext. 6976)

### **Action Items (if any) Stemming from Attorney Client Session**

Attorney client session pursuant to Section 286.011(8), Florida Statutes (2012), to discuss strategy related to litigation expenditures and/or settlement negotiations in Administrative Appeal dated November 15, 2012, by the South Florida Water Management District to Major Phillip May, Regional Administrator, Region IV, Federal Emergency Management Agency (FEMA) of the FEMA decision to deobligate funds for the 2004-2005 Hurricanes. (Carolyn S. Ansay, ext. 6976)

43. Adjourn

**January Employee of the Month**  
**Brian Garrett – Scientist 3**  
**Operations, Maintenance and Construction Division**

As the District's wildlife coordinator, Brian monitors and assesses wildlife populations – especially those that are threatened or endangered. He works with state and federal wildlife regulators to resolve wildlife issues that have the potential to effect critical District operations.

Brian's knowledge and communication skills yield successful inter-agency coordination. He manages the District's STA Avian Protection Plan for submittal to the U.S. Fish and Wildlife Service. He assists the STA management team in determining appropriate water levels that minimize impacts to black-necked stilts and Everglade snail kites during the nesting season. His wildlife activity reports are critical to STA operational decisions.

On any given day, Brian could be inspecting burrows for the presence of gopher tortoises or burrowing owls or conducting successful release of a manatee from an STA into a more natural environment. He recently removed a tussock on Lake Kissimmee containing juvenile snail kite nests that was floating dangerously close to the S-65 lock. Brian gives employees a close-up look at wildlife management by writing articles and taking photographs for "Freddy's Flash."

Congratulations, Brian and thanks for your dedication to the job.

**January Team of the Month**  
**Statewide Environmental Resource Permitting Team**  
**Interdistrict Team Representing**  
**Regulation, Office of Counsel and Information Technology**

**Hugo Carter**

**Beth Colavecchio**

**Jennifer Krumlauf**

**Susan Martin**

**Mindy Parrot**

**Erica Tyska-Gould**

**Cathy Widness**

This team participated in a year-long effort with the state's water management districts and DEP to revamp the ERP rules to ensure statewide consistency and reduce regulatory burdens on the public. The rule changes required extensive updates to the ePermitting system and regulatory database.

The team wrote rule language and provided feedback to the larger group to ensure that the District's interests along with the regulated public in our area were properly represented. They also conducted internal and external webinars and workshops to ensure that everyone is well informed. The Statewide ERP rule was successfully implemented on October 1, 2013 thanks to the tireless efforts of this team. Congratulations!

**2013 Employee of the Year**  
**Walter Wilcox - Section Leader**  
**Hydrologic and Environmental Modeling Bureau**

Walter conducted a multi-agency team comprised of modeling staff from the Corps of Engineers, Department of the Interior and the District. This team provided the modeling and analyses support for the Central Everglades Planning Project (CEPP). The result was the successful identification of a Tentatively Selected Plan in January 2013.

Walter led the development and implementation of the modeling strategy to ensure that the modeling was sound, high quality, defensible and met the project objectives. A key role was to represent the project and communicate the modeling and technical analyses work to agency leadership, partner agencies, other project teams and stakeholders.

The success of the entire CEPP modeling team is outstanding and worthy of recognition but would not have been possible without the leadership and tenacity exhibited by Walter.

Congratulations, Walter!

**2013 Team of the Year  
Land Assessment Team  
Operations, Maintenance and Construction  
Administrative Services  
Office of the Chief of Staff**

Ray Palmer

David Foote

Sarah Franklin

Andrea Schluter

Kimberley Montero

Susan Bennett

Jane Walters

Jeremy Ashton

This interdisciplinary team worked tirelessly for an entire year on the statewide priority of successfully completing a comprehensive, District-wide land assessment. The team's expertise and close collaboration also achieved the goals of timely completion and maximum transparency set by District leadership. In an organized and well-planned effort, the team produced more than 600 pages of land profile data on more than 734,000 acres.

The team reviewed approximately 1,200 pages of comments from internal and external subject matter experts as well as the general public. They analyzed all comments and synthesized and presented draft recommendations for final vetting by District leadership and presentation to the Governing Board.

To engage the public, the team developed a dedicated web page with a public comment form and relevant links, wrote fact sheets, prepared maps and uploaded more than 2,200 pages of information. By the end of the year, the website had garnered more than 15,000 page views.

To keep the press informed with accurate information, the project's timelines and milestones were announced in 16 news releases and media advisories. And to engage stakeholders and policy makers, the team conducted 12 regional public meetings and made 24 presentations to WRAC and the Governing Board.

The team's unflagging attention to detail, collaborative spirit and commitment to task serve as a model of District professionalism and achievement. They are the primary reason for our success and "smooth sailing" in completing this monumental effort.

## **30-Year Service Recognition**

### **Jenni Hiscock – Project Development Section Leader**

#### **Regulation Division**

Jenni began her career at the District in Surface Water Management in Regulation. She soon moved into the Lower East Coast Planning Division where she assisted in the development of CERP, the Lower East Coast Regional Water Supply Plan and the Florida Forever Work Plan.

She was Project Engineer on Broward County Water Preserve Area Projects such as the C-9 and C-11 Impoundments, 3A/3B Levee Seepage Management as well as the Site 1 Impoundment Project.

Jenni was instrumental in developing a process to improve communications between the RECOVER system-wide perspective and the planning and design of CERP projects. Scientific endeavors included: adaptive management principals; protocols to review performance measures; evaluation of project alternatives; and project monitoring.

In her current role, Jenni's work is crucial to the development and prioritization of the Capital Plan. Her dedication to staff shows in their comments about her managing skills and their work product.

With her vast knowledge of the organization, Jenni's technical expertise is tapped into for special programs as well. She is integral to the levee program to manage deficiencies and repairs noted in USACE inspections.

Congratulations, Jenni, for 30 years of outstanding public service!

## FORM 4A DISCLOSURE OF BUSINESS TRANSACTION, RELATIONSHIP OR INTEREST

LAST NAME - FIRST NAME - MIDDLE INITIAL <b>Turner, Karson</b>			OFFICE / POSITION HELD <b>WRAC Member</b>	
MAILING ADDRESS <b>P.O. Box 1688</b>			AGENCY OR ADVISORY BOARD <b>WRAC</b>	
CITY <b>Clewiston</b>	ZIP <b>33440</b>	COUNTY <b>Hendry</b>	ADDRESS OF AGENCY <b>3301 Gun Club Road, WPB, FL 33406</b>	

### HOW TO COMPLETE AND FILE THIS FORM:

Parts A and B of this form serve two different purposes. Part A is for advisory board members who wish to use an exemption in the ethics laws that is applicable only to advisory board members. Part B is for public officers and employees who wish to use a separate exemption that is applicable when the business entity involved is the sole source of supply within the political subdivision. In order to complete and file this form:

- **Fill out** Part A or Part B, as applicable.
- **Sign** and date the form on the reverse side.
- **File Part A** with the appointing body or person that will be waiving the restrictions of 112.313(3) or (7), Fla. Stat., prior to the waiver.
- **File Part B** with the governing body of the political subdivision in which the reporting person is serving, prior to the transaction.

### PART A - DISCLOSURE OF TRANSACTION OR RELATIONSHIP CONCERNING ADVISORY BOARD MEMBER

#### WHO MUST COMPLETE THIS PART:

Sections 112.313(3) and 112.313(7), Florida Statutes, prohibit certain business relationships on the part of public officers and employees, including persons serving on advisory boards. See Part III, Chapter 112, Florida Statutes, and/or the brochure entitled "A Guide to the Sunshine Amendment and Code of Ethics for Public Officers and Employees" for more details on these prohibitions. However, Section 112.313(12), Florida Statutes, permits the appointing official or body to waive these requirements in a *particular instance* provided: (a) waiver by the appointing body must be upon a two-thirds affirmative vote of that body; or (b) waiver by the appointing person must be effected after a public hearing; and (c) in either case the advisory board member must fully disclose the transaction or relationship which would otherwise be prohibited by Subsections (3) of (7) of Section 112.313, Florida Statutes. This Part of Form 4A has been prescribed by the Commission on Ethics for such disclosure, *if and when applicable* to an advisory board member.

#### PLEASE COMPLETE THE FOLLOWING:

1. The partnership, directorship, proprietorship, ownership of a material interest, position of officer, employment, or contractual relationship which would otherwise violate Subsection (3) or (7) of Section 112.313, Florida Statutes, is held by [please check applicable space(s)]:
  - The reporting person;
  - The spouse of the reporting person, whose name is \_\_\_\_\_; or
  - A child of the reporting person, whose name is \_\_\_\_\_.
2. The particular transaction or relationship for which this waiver is sought involves [check applicable space]:
  - Supplying the following realty, goods, and/or services: Electrical Services; Contract 46000002952
  - Regulation of the business entity by the governmental agency served by the advisory board member.
3. The following business entity is doing business with or regulated by the governmental agency:
 

Quality Electric Contracting, Inc. 1377 Evercane Rd, Clewiston, FL 33440
4. The relationship of the undersigned advisory board member, or spouse or child of the advisory board member, to the business entity transacting this business is [check applicable spaces]:
  - Officer;  Partner;  Associate;  Sole proprietor;  Stockholder;  Director;  Owner of in excess of 5% of the assets of capital stock in such business entity;  Employee;  Contractual relationship with the business entity;
  - Other, please describe:

**PART B - DISCLOSURE OF INTEREST IN SOLE SOURCE OF SUPPLY**

**WHO MUST COMPLETE THIS PART:**

Sections 112.313(3) and 112.313(7), Florida Statutes, prohibit certain employment and business relationships on the part of public officers and employees. See Part III, Chapter 112, Florida Statutes, and/or the brochure entitled "A Guide to the Sunshine Amendment and Code of Ethics for Public Officers and Employees" for more details on these prohibitions. However, Section 112.313(12)(e), Florida Statutes, provides an exemption from the above-mentioned restrictions in the event that the business entity involved is the only source of supply within the political subdivision of the officer or employee. In such cases the officer's or employee's interest in the business entity must be fully disclosed to the governing body of the political subdivision. This Part of Form 4A has been prescribed by the Commission on Ethics for such disclosure, *if and when applicable*.

**PLEASE COMPLETE THE FOLLOWING:**

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  - ( ) The reporting person;
  - ( ) The spouse of the reporting person, whose name is \_\_\_\_\_; or
  - ( ) A child of the reporting person, whose name is \_\_\_\_\_.
  
2. The following are the goods, realty, or services being supplied by a business entity with which the public officer or employee, or spouse or child of such officer or employee, is involved is:
 

\_\_\_\_\_
  
3. The business entity which is the only source of supply of the goods, realty, or services within the political subdivision is:
 

\_\_\_\_\_

(NAME OF ENTITY) (ADDRESS OF ENTITY)
  
4. The relationship of the undersigned public officer or employee, or spouse or child of such officer or employee, to the business entity named in Item 3 above is [check applicable spaces]:
  - ( ) Officer; ( ) Partner; ( ) Associate; ( ) Sole proprietor; ( ) Stockholder; ( ) Director; ( ) Owner of in excess of 5% of the assets or capital stock in such business entity; ( ) Employee; ( ) Contractual relationship with the business entity;
  - ( ) Other, please describe:

**SIGNATURE**

SIGNATURE	DATE SIGNED	DATE FILED
	11/12/2013	

NOTICE: UNDER PROVISIONS OF FLORIDA STATUTES s. 112.317, A FAILURE TO MAKE ANY REQUIRED DISCLOSURE CONSTITUTES GROUNDS FOR AND MAY BE PUNISHED BY ONE OR MORE OF THE FOLLOWING: IMPEACHMENT, REMOVAL OR SUSPENSION FROM OFFICE OR EMPLOYMENT, DEMOTION, REDUCTION IN SALARY REPRIMAND, OR A CIVIL PENALTY NOT TO EXCEED \$10,000.

## FORM 4A DISCLOSURE OF BUSINESS TRANSACTION, RELATIONSHIP OR INTEREST

LAST NAME - FIRST NAME - MIDDLE INITIAL <b>Turner, Karson</b>			OFFICE / POSITION HELD <b>WRAC Member</b>	
MAILING ADDRESS <b>P.O. Box 1688</b>			AGENCY OR ADVISORY BOARD <b>WRAC</b>	
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#### PLEASE COMPLETE THE FOLLOWING:

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  - The reporting person;
  - The spouse of the reporting person, whose name is \_\_\_\_\_; or
  - A child of the reporting person, whose name is \_\_\_\_\_.
2. The particular transaction or relationship for which this waiver is sought involves [check applicable space]:
  - Supplying the following realty, goods, and/or services: Lease on SFWMD Property; Lease #4600002392
  - Regulation of the business entity by the governmental agency served by the advisory board member.
3. The following business entity is doing business with or regulated by the governmental agency:
 

Quality Cattle, LLC, P.O. Box 1688, Clewiston, FL 33440
4. The relationship of the undersigned advisory board member, or spouse or child of the advisory board member, to the business entity transacting this business is [check applicable spaces]:
  - Officer;  Partner;  Associate;  Sole proprietor;  Stockholder;  Director;  Owner of in excess of 5% of the assets of capital stock in such business entity;  Employee;  Contractual relationship with the business entity;
  - Other, please describe:

**PART B - DISCLOSURE OF INTEREST IN SOLE SOURCE OF SUPPLY**

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The reporting person;

The spouse of the reporting person, whose name is \_\_\_\_\_; or

A child of the reporting person, whose name is \_\_\_\_\_.

2. The following are the goods, realty, or services being supplied by a business entity with which the public officer or employee, or spouse or child of such officer or employee, is involved is:

\_\_\_\_\_

3. The business entity which is the only source of supply of the goods, realty, or services within the political subdivision is:

\_\_\_\_\_  
(NAME OF ENTITY)

\_\_\_\_\_  
(ADDRESS OF ENTITY)

4. The relationship of the undersigned public officer or employee, or spouse or child of such officer or employee, to the business entity named in Item 3 above is [check applicable spaces]:

Officer;  Partner;  Associate;  Sole proprietor;  Stockholder;  Director;  Owner of in excess of 5% of the assets or capital stock in such business entity;  Employee;  Contractual relationship with the business entity;  Other, please describe:

**SIGNATURE**

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CONSENT AGENDA TABLE OF CONTENTS  
REGULATORY ITEMS FOR GOVERNING BOARD ACTION  
January 9, 2014

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II CONSERVATION EASEMENT AMENDMENTS AND RELEASES	2
III SEMINOLE TRIBE WORK PLANS	3

## REGULATION AGENDA ITEMS

**PERMIT DENIAL:** Those listed on the consent agenda are routine in nature and non-controversial. Such denials are typically due to failure of applicant to complete the application. Unique or controversial projects or those requiring a policy decision are normally listed as discussion items. Permit types include:

**Environmental Resource (ERP):** Permits that consider such factors as the storage of storm water to prevent flooding of a project (upstream or downstream projects); the treatment of stormwater prior to discharge from the site to remove pollutants; and the protection of wetlands on the project site.

**Surface Water Management:** Permits for drainage systems, which address flood protection, water quality, and environmental protection of wetlands.

**Water Use:** Permits for the use of ground and/or surface water from wells, canals, or lakes.

**Lake Okeechobee Works of the District:** Permits that set concentration limits for total phosphorus in surface discharge from individual parcels in the Lake Okeechobee Basin.

**EAA Works of the District:** Permits to reduce the total phosphorus load from the EAA by 25 percent in water discharged to Works of the District.

**Wetland Resource:** Permits for dredge and fill activities within Waters of the State and their associated wetlands.

**ADMINISTRATIVE HEARING:** A case in litigation conducted pursuant to the Administrative Procedures Act (Chapter 120, Florida Statutes) involving the determination of a suit upon its merits. Administrative hearings provide for a timely and cost effective dispute resolution forum for interested persons objecting to agency action.

**FINAL ORDER:** The Administrative Procedures Act requires the District to timely render a final order for an administrative hearing after the hearing officer submits a recommended order. The final order must be in writing and include findings of fact and conclusions of law.

**CONSENT ORDER:** A voluntary contractual agreement between the District and a party in dispute which legally binds the parties to the terms and conditions contained in the agreement. Normally used as a vehicle to outline the terms and conditions regarding settlement of an enforcement action.

**CONSERVATION EASEMENT:** A perpetual interest to the District in real property that retains land or water areas in their existing, natural, vegetative, hydrologic, scenic, open or wooded condition and retains such areas as suitable habitat for fish, plants, or wildlife in accordance with Section 704.06, F.S.

**TECHNICAL DENIAL:** This action normally takes place when a proposed project design does not meet water management criteria or the applicant does not supply information necessary to complete the technical review of an application.

**EMERGENCY ORDER and AUTHORIZATION:** An immediate final order issued without notice by the Executive Director, with the concurrence and advice of the Governing Board, pursuant to (Section 373.119(2), Florida Statutes, when a situation arises that requires timely action to protect the public health, safety or welfare and other resources enumerated by rule and statute.

**MEMORANDUM OF AGREEMENT/UNDERSTANDING:** A contractual arrangement between the District and a named party or parties. This instrument typically is used to define or explain parameters of a long-term relationship and may establish certain procedures or joint operating decisions.

**PETITION:** An objection in writing to the District, requesting either a formal or an informal administrative hearing, regarding an agency action or a proposed agency action. Usually a petition filed pursuant to Chapter 120, Florida Statutes, challenges agency action, a permit, or a rule. Virtually all agency action is subject to petition by substantially affected persons.

**SEMINOLE TRIBE WORK PLAN:** The District and the Seminole Indians signed a Water Use Compact in 1987. Under the compact, annual work plans are submitted to the District for review and approval. This plan keeps the District informed about the tribe plans for use of their land and the natural resources. Although this is not a permit, the staff has water resource related input to this plan.

**SITE CERTIFICATIONS:** Certain types of projects (power plants, transmission lines, etc.) are permitted by the Governor and Cabinet under special one-stop permitting processes that supercede normal District permits. The Water Management Districts, DEP, DCA, FGFWFC, and other public agencies are mandatory participants. DEP usually coordinates these processes for the Governor and Cabinet.

**VARIANCES FROM, OR WAIVERS OF, PERMIT CRITERIA:** The Florida Administrative Procedures Act provides that persons subject to an agency rule may petition the agency for a variance from, or waiver of, a permitting rule. The Governing Board may grant a petition for variance or waiver when the petitioner demonstrates that 1) the purpose of the underlying statute will be or has been achieved by other means and, 2) when application of the rule would create a substantial hardship or would violate principles of fairness.

CONSENT ORDERS

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1. RESPONDENT: TOWN OF WINDERMERE  
PROJECT: 618 W SECOND AVENUE DRAINAGE IMPROVEMENTS / 903 SECOND AVENUE  
DRAINAGE IMPROVEMENTS

SEC 7 TWP 23S RGE 28E ORANGE COUNTY  
SETTLEMENT OF AN ENFORCEMENT ACTION REGARDING UNPERMITTED DEWATERING AND NON-  
COMPLIANCE WITH PERMIT CONDITIONS DUE TO UNAUTHORIZED OFFSITE DEWATERING INTO  
OUTSTANDING FLORIDA WATERS

---

2. RESPONDENT: BIRCHWOOD ACRES LIMITED PARTNERSHIP  
PROJECT: HARMONY COMMUNITY DEVELOPMENT

SEC 30 TWP 26S RGE 32E OSCEOLA COUNTY  
SETTLEMENT OF AN ENFORCEMENT ACTION REGARDING UNPERMITTED DEWATERING WITH  
OFFSITE DISCHARGE

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- 
1. PERMITTEE: OKEECHOBEE COUNTY BOARD OF COUNTY COMMISSIONERS  
PROJECT: AGRI-CIVIC CENTER

OKEECHOBEE COUNTY

APPROVE RELEASE OF A 0.083 ACRE (3,632 SQUARE FEET) PORTION OF THE CONSERVATION EASEMENT OVER A WETLAND MITIGATION AREA AND UPLAND BUFFER ASSOCIATED WITH THE OKEECHOBEE COUNTY AGRI-CIVIC CENTER PROJECT IN OKEECHOBEE COUNTY (ENVIRONMENTAL RESOURCE PERMIT 47-00582-P, APPLICATION NO. 020909-5).

THE FLORIDA DEPARTMENT OF TRANSPORTATION DISTRICT 1 HAS RECENTLY ACQUIRED A SMALL PARCEL OF LAND IMMEDIATELY ADJACENT TO THE SOUTH SIDE OF SR 70 WHICH WAS PREVIOUSLY PART OF THE NORTHEAST QUADRANT OF THE OKEECHOBEE AGRI-CIVIC CENTER PROPERTY. THIS SMALL ACQUISITION AREA IS NEEDED FOR IMPROVEMENTS TO THE SR 70 ROADWAY FACILITY WHICH WAS PERMITTED ON NOVEMBER 18, 2013 (PERMIT NO. 47-01151-P, APPLICATION NO. 131212-9). THE PARTIAL RELEASE OF EASEMENT IS BEING PROCESSED CONCURRENTLY WITH AN INDIVIDUAL MAJOR ENVIRONMENTAL RESOURCE PERMIT MODIFICATION OF THE STATE ROAD 70 IMPROVEMENTS PERMIT.

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- 
1. CONCUR WITH THE FIFTH AMENDMENT TO THE TWENTY SEVENTH ANNUAL WORK PLAN FOR THE SEMINOLE TRIBE OF FLORIDA. WORKS IN THE BRIGHTON RESERVATION INCLUDE THE CONSTRUCTION OF A RECREATION AND MAINTENANCE FACILITY INCLUDING A GRAVEL PARKING AREA.
-

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**RIGHT OF WAY OCCUPANCY CONSENT AGENDA FOR GOVERNING BOARD APPROVAL  
January 9, 2014**

**PAGES**

**I RIGHT OF WAY OCCUPANCY PERMIT REQUESTS WITH WAIVER OF DISTRICT CRITERIA: 2**  
 Governing Board action is required on petitions received requesting a waiver of District criteria. Section 120.542, F.S. and Rule 28-104.002, F.A.C., requires agencies to grant variances and waivers to their own rules when a person subject to the rules files a petition and demonstrates that he or she can achieve, or has achieved, the purpose of the underlying statute by other means and when application of rule would create a substantial hardship or would violate principles of fairness. A "substantial hardship" is defined as a demonstrated economic, technological, legal or other type of hardship to the person requesting the waiver. "Principles of fairness" are violated when the literal application of a rule affects a particular person in a manner significantly different from the way it affects other similarly situated persons who are subject to the rule. A "waiver" is defined as an agency decision not to apply all or part of a rule to the person subject to the rule.

**II RELAXATION OF STANDARDS AS ALLOWED UNDER DISTRICT RULE 40E-6.011(9) F.A.C.: 3**  
 Governing Board reserves sole authority to make a determination that portions of the District's rights of way are inaccessible for routine maintenance activities due to a variety of physical limitations. While a determination that a certain segment of right of way is presently unusable for routine land-based maintenance activities and relaxation of the restrictions in Zones 2, 3, 4 and 5 may be allowed, such determination shall be at the sole discretion of the District and does not obviate the need for individuals with proposed or existing facilities within these areas to obtain permits from the District. Further the District reserves the right to enter these areas to conduct emergency operations or to require the removal of any encroachments that are inconsistent with these rules at such time as maintenance access is perfected through the area.

Attachment: ca\_om\_reg\_101\_sd (Revised) (1700 : Right of Way Regulatory Consent Agenda)

**RIGHT OF WAY OCCUPANCY PERMIT REQUESTS WITH WAIVER OF DISTRICT CRITERIA**

1. Consideration of a request by **Craig Ehrnst on behalf of Peninsula Corporate Center** (Application Number 13-1030-1) for issuance of a Modification to Right of Way Occupancy Permit No. 10934M and waiver of criteria to allow an existing culvert connection to remain within the south right of way of C-15. Location: Palm Beach County, Section 31, Township 46 South, Range 43 East.

The applicant's request for waiver of the District's criteria, which governs the invert elevation of culvert connections within Works or Lands of the District, is based on substantial hardship. The applicant states it would present a hardship to change the invert elevation of an existing culvert in service to the community. Also, the invert elevation of the previously permitted culvert caused the pipe to become blocked due to an existing littoral shelf and did not provide proper drainage. The Field Operations and Land Management Division has stated that the existing facilities do not interfere with their ability to perform necessary construction, alteration, operation and routine maintenance activities, so the purpose of the underlying statute will be achieved.

The applicant's petition has been reviewed by the Office of Counsel for compliance with the applicable legal requirements. Pursuant to section 120.542(6), F.S., notice of the petition was provided to the Department of State and was published in *Volume 39, Number 219* of the *Florida Administrative Weekly* on November 8, 2013. No public comments were received.

Therefore, staff recommends **approval** of the issuance of a Modification of Right of Way Occupancy Permit Number 10934M and **approval** of the petition for waiver of the District's criteria, which governs the invert elevation of culvert connections within Works or Lands of the District.  
(Fee)

**RELAXATION OF STANDARDS AS ALLOWED UNDER DISTRICT RULE 40E-6.011(9) F.A.C.**

3. It is the recommendation of the staff of Field Operations and Land Management Division that the Governing Board waive, for future Right of Way Occupancy Permit Applications, the District's criteria governing the vertical clearance requirement for pile-supported and con-span bridges located within specific reaches of the Basin canals as follows: Golden Gate Main Canal (10<sup>th</sup> Street NE to 22<sup>nd</sup> Street NE, Oil Well Road to 72<sup>nd</sup> Avenue NE) and Faka Union Canal (Oil Well Road to 77<sup>nd</sup> Avenue NE) located in Collier County.

The proposed relaxation will reduce the District's vertical clearance requirement for bridges within the specified reaches from 4' to 2' as measured from the design water surface to the lowest member of the bridge structure across the entire width of the canal. The factors considered, but not limited to, are canal freeboard, elevation of the residential driveway connections and surrounding topography.

Staff's recommendation is based on the following:

The proposed relaxation would not significantly impact canal maintenance requirements, or restrict any future design capacity requirements deemed necessary to complete the Big Cypress Basin Mission. In addition, this will not significantly impact Operation and Maintenance access which is primarily land-based.

Further, the establishment of the areas covered by Rule 40E-6.011(9), F.A.C. will be applied to all future applicants in the geographic area specified above.  
(Easement)

**MEMORANDUM**

**TO:** Governing Board Members  
**FROM:** Karen Estock, Division Director  
**DATE:** January 09, 2014  
**SUBJECT:** Release of Reservations

**Summary**

The District has jurisdiction over certain reserved rights to construct canal and road right of ways, and mineral rights, together with the right of ingress, egress and exploration. Applications requesting releases of these reservations are routinely received from landowners, attorneys, title companies and lending institutions, who consider the reservations to be title defects. Applications are reviewed by appropriate District staff and applicable local governmental agencies to determine that there is no present or future need for the reservations.

**Staff Recommendation**

A Resolution of the Governing Board of the South Florida Water Management District approving release of canal, road and mineral reservations; providing an effective date.

**Additional Background**

See Memorandum Exhibit "A" and maps attached hereto and made a part hereof, which contains the details and locations of releases to be approved and issued.

**Core Mission and Strategic Priorities**

Pursuant to Section 373.096 of the Florida Statutes, the Governing Board of the District may release any reservation for which it has no present or apparent use under terms and conditions determined by the Board.

**Funding Source**

None; reservations were acquired at no cost to the District.

**Staff Contact and/or Presenter**

Kathy Massey, ext. 6835

**MEMORANDUM - EXHIBIT "A"**

File No.: 18564  
 Applicant: Lutheran Church of the Holy Cross West Palm Beach, Inc., a Florida not for profit corporation  
 Reserving Deed: E-250 (DB 681-119, 2/18/1944)  
 Fee paid: \$250.00  
 Action: Approve release of District canal and road reservations  
 Acres: 6.12 acres, more or less  
 Legal Description: The North 920.00 feet of the E ¼ of the NE ¼ of the SE ¼ of Section 12, Township 44 South, Range 42 East  
 Location: 1591 Kirk Road, West Palm Beach, Palm Beach County  
 Reviewed by: Water Supply Development Section, Right of Way Section, Environmental Resource Permitting Bureau, Survey Section, Office of Everglades Policy and Coordination, FDOT, Palm Beach County, and Lake Worth Drainage District

File No.: 10-13-3  
 Applicant: Bridgewater Lake Osborne, LLC, a Florida limited liability company  
 Reserving Deed: T-18679 (DB 650-519, 1/18/1942)  
 Fee paid: \$250.00  
 Action: Approve release of Trustees canal reservations  
 Acres: 9.86 acres, more or less  
 Legal Description: All of the Plat of Bridgewater at Lake Osborne, A P.U.D., PB 108-5, Section 5, Township 45 South, Range 43 East  
 Location: 2282 Lantana Road, Lake Worth, Palm Beach County  
 Reviewed by: Water Supply Development Section, Right of Way Section, Environmental Resource Permitting Bureau, Survey Section, Office of Everglades Policy and Coordination, and Lake Worth Drainage District

File No.: 10-13-2  
 Applicant: Avenir Holdings, LLC, a Florida limited liability company  
 Reserving Deed: BOE-4390 (DB 948-454, 5/10/1950)  
 Fee paid: \$250.00  
 Action: Approve release of Board of Education canal reservations  
 Acres: 480.00 acres, more or less  
 Legal Description: All of the W ½ and the NE ¼ of Section 16, Township 42 South, Range 41 East  
 Location: 12200 Northlake Boulevard, Palm Beach Gardens, Palm Beach County  
 Reviewed by: Water Supply Development Section, Right of Way Section, Environmental Resource Permitting Bureau, Survey Section, Office of Everglades Policy and Coordination, and Northern Palm Beach County Improvement District

File No.: 18569  
Applicant: Charles Kenneth Deese, as Personal Representative of the Estate of  
Anna Louise Deese, deceased  
Reserving Deed: QCD (DB 910-675, 5/27/1950)  
Fee paid: \$250.00  
Action: Approve release of District mineral reservations  
Acres: 1 acre, more or less  
Legal Description: A portion of Tract 76, Block 29, PALM BEACH FARMS COMPANY'S  
PLAT NO. 3, PB 2-45, Section 28, Township 44 South, Range 42 East  
Location: 67 West Mango Road, Lake Worth, Palm Beach County  
Reviewed by: No routing due to size and use

**SOUTH FLORIDA WATER MANAGEMENT DISTRICT**

**Resolution No. 2014 - 0101**

**A Resolution of the Governing Board of the South Florida Water Management District approving release of canal, road and mineral reservations; providing an effective date.**

**WHEREAS**, certain underlying landowners have requested that the South Florida Water Management District (District) release certain canal, road and mineral reservations;

**WHEREAS**, the District is empowered to grant such releases pursuant to Section 373.096, Florida Statutes;

**NOW THEREFORE, BE IT RESOLVED** by the Governing Board of the South Florida Water Management District:

**Section 1.** The Governing Board of the South Florida Water Management District hereby approves the release of District canal, road and mineral reservations, as described in Resolution Exhibit "A", attached hereto and made a part hereof.

**Section 2.** This Resolution shall take effect immediately upon adoption.

**PASSED and ADOPTED** this 9<sup>th</sup> day of January, 2014.

SOUTH FLORIDA WATER MANAGEMENT DISTRICT, BY ITS GOVERNING BOARD  
By:

\_\_\_\_\_ Chairman

Attest:

Legal form approved:  
By:

\_\_\_\_\_ District Clerk/Secretary

\_\_\_\_\_ Office of Counsel

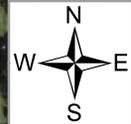
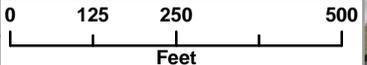
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\_\_\_\_\_

# 18564 Palm Beach County



**Release of  
Reservation**

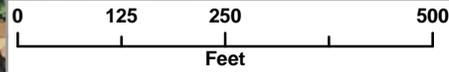


**IMPORTANT DISCLAIMER:**  
 This map is a conceptual or planning tool only. The South Florida Water Management District does not guarantee or make any representation regarding the information contained herein. It is not self-executing or binding, and does not affect the interests of any persons or properties, including any real property.

# 10-13-3 Palm Beach County

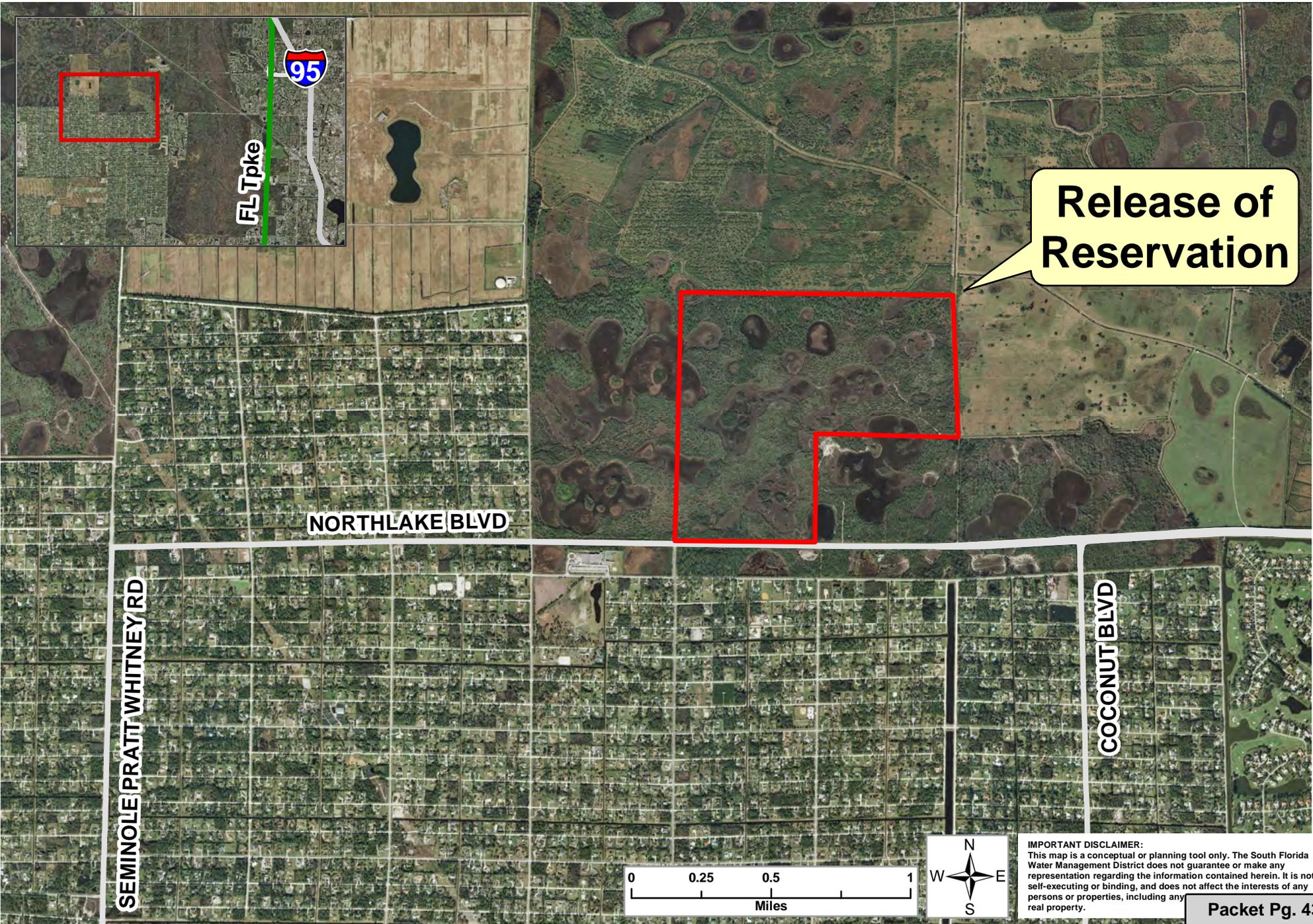


**Release of  
Reservation**



**IMPORTANT DISCLAIMER:**  
 This map is a conceptual or planning tool only. The South Florida Water Management District does not guarantee or make any representation regarding the information contained herein. It is not self-executing or binding, and does not affect the interests of any persons or properties, including any real property.

# 10-13-2 Palm Beach County



**Release of  
Reservation**

Attachment: ca\_om\_200\_Memorandum\_Maps\_ExhibitA (Resolution No. 2014 - 0101 : Release of

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 This map is a conceptual or planning tool only. The South Florida Water Management District does not guarantee or make any representation regarding the information contained herein. It is not self-executing or binding, and does not affect the interests of any persons or properties, including any real property.

For copies of this map (\\Ad.slwmd.gov\dfsroot\data\aa\_gis\arc\_data\maps\ReleaseofReservation\GB\_2013-12-19\_10-13-2.mxd), created on 12/19/2013 by NRK. Contact the Real Estate Section.

# 18569 Palm Beach County



**Release of  
Reservation**

Attachment: ca\_om\_200\_Memorandum\_Maps\_ExhibitA (Resolution No. 2014 - 0101 : Release of

**IMPORTANT DISCLAIMER:**  
 This map is a conceptual or planning tool only. The South Florida Water Management District does not guarantee or make any representation regarding the information contained herein. It is not self-executing or binding, and does not affect the interests of any persons or properties, including any real property.

For copies of this map (\\Ad.sfwmd.gov\dfsroot\data\aa\_gis\arc\_data\maps\ReleaseofReservation\GB\_2013-12-19\_18569.mxd), created on 12/19/2013 by NRK. Contact the Real Estate Section.

**RESOLUTION - EXHIBIT "A"**RELEASE OF DISTRICT CANAL, ROAD AND/OR MINERAL RESERVATIONS:

File No.: 18564  
 Applicant: Lutheran Church of the Holy Cross West Palm Beach, Inc., a Florida not for profit corporation  
 Reserving Deed: E-250 (DB 681-119, 2/18/1944)  
 Acres: 6.12 acres, more or less  
 Legal Description: The North 920.00 feet of the E ¼ of the NE ¼ of the SE ¼ of Section 12, Township 44 South, Range 42 East  
 Location: 1591 Kirk Road, West Palm Beach, Palm Beach County

File No.: 18569  
 Applicant: Charles Kenneth Deese, as Personal Representative of the Estate of Anna Louise Deese, deceased  
 Reserving Deed: QCD (DB 910-675, 5/27/1950)  
 Fee paid: \$250.00  
 Acres: 1 acre, more or less  
 Legal Description: A portion of Tract 76, Block 29, PALM BEACH FARMS COMPANY'S PLAT NO. 3, PB 2-45, Section 28, Township 44 South, Range 42 East  
 Location: 67 West Mango Road, Lake Worth, Palm Beach County

RELEASE OF TIITF CANAL RESERVATIONS:

File No.: 10-13-3  
 Applicant: Bridgewater Lake Osborne, LLC, a Florida limited liability company  
 Reserving Deed: T-18679 (DB 650-519, 1/18/1942)  
 Acres: 9.86 acres, more or less  
 Legal Description: All of the Plat of Bridgewater at Lake Osborne, A P.U.D., PB 108-5, Section 5, Township 45 South, Range 43 East  
 Location: 2282 Lantana Road, Lake Worth, Palm Beach County

File No.: 10-13-2  
 Applicant: Avenir Holdings, LLC, a Florida limited liability company  
 Reserving Deed: BOE-4390 (DB 948-454, 5/10/1950)  
 Action: Approve release of Board of Education canal reservations  
 Acres: 480.00 acres, more or less  
 Legal Description: All of the W ½ and the NE ¼ of Section 16, Township 42 South, Range 41 East  
 Location: 12200 Northlake Boulevard, Palm Beach Gardens, Palm Beach County

## MEMORANDUM

**TO:** Governing Board Members

**FROM:** Sharon M. Trost, PG, AICP, Director, Regulatory Division

**DATE:** January 09, 2014

**SUBJECT:** Approve Interagency Agreement for permitting responsibilities for Eagle Island Farm

### Summary

The SFWMD is reviewing a water use permit application for an agricultural project in Okeechobee County, Florida known as Eagle Island Farm. However, the project crosses water management district boundaries. In order to issue a single permit for the entire project, an interagency agreement is necessary to delegate SJRWMD's Part II, Chapter 373, Fla. Stat., jurisdiction and responsibility to SFWMD.

### Recommendation

Approve an Interagency Agreement between the SJRWMD and the SFWMD authorizing the SFWMD to issue any Water Use Permits under Part II of Chapter 373, Fla. Stat., for the portion of Eagle Island Farm that lies within the jurisdictional boundaries of SJRWMD.

### Background

The Eagle Island Farm is an existing agricultural project located within the jurisdictional boundaries of both the SFWMD and SJRWMD. Joseph S. Hall is requesting authorization to withdraw 2,532.36 million gallons on an annual average basis and 371.67 million gallons on a peak month basis to irrigate potatoes, silage corn, and small vegetables. The SFWMD has previously issued water use permits and oversaw post-permit issuance compliance for Eagle Island Farm.

Section 373.046(6), Fla. Stat., authorizes a water management district to designate, through an interagency agreement, regulatory responsibility to another water management district over a project which crosses the jurisdictional boundaries of both districts. For efficiency and effectiveness, both districts desire to designate SFWMD all regulatory responsibilities under Part II of Chapter 373, Fla. Stat., for the portion of Eagle Island Farm that lies within the jurisdictional boundaries of SJRWMD.

### Core Mission and Strategic Priorities

The Interagency Agreement allows for the protection of existing legal users and the water resources of the area while increasing the efficiency of the permitting process. The Water Use Bureau is responsible for implementing this item.

**Funding Source**

No funding is necessary for the Interagency Agreement.

**Staff Contact**

Maria Clemente, P.E., Bureau Chief, Water Use Bureau, (561) 682- 2308

Jennifer Bokankowitz, Attorney, Office of Counsel, (561) 682- 2258

## SOUTH FLORIDA WATER MANAGEMENT DISTRICT

### Resolution No. 2014 - 0102

**A Resolution of the Governing Board of the South Florida Water Management District to authorize entering into an Interagency Agreement between the South Florida Water Management District (SFWMD) and the St. Johns River Water Management District (SJRWMD) for designation of regulatory responsibility for permitting under Part II of Chapter 373, Florida Statutes, for the project known as Eagle Island Farm that crosses the jurisdictional boundaries of both Water Management Districts; providing an effective date.**

**WHEREAS**, on October 4, 2013, Joseph S. Hall submitted Water Use Permit (WUP) Application No. 131004-4 (Application) to the SFWMD to renew its existing WUP 43-00043-W for the Eagle Island Farm (Property) in Okeechobee County, Florida; and

**WHEREAS**, the Application requests authorization to withdraw 2,532.36 million gallons on an annual average basis and 371.67 million gallons on a peak month basis for agricultural use; and

**WHEREAS**, the Property is located within the jurisdictional boundaries of both the SFWMD and SJRWMD; and

**WHEREAS**, although the predominant portion of the Property lies within the jurisdictional boundaries of the SFWMD, a small portion of the Property lies within the jurisdictional boundaries of the SJRWMD, as depicted on the map attached hereto as Exhibit A; and

**WHEREAS**, SFWMD has previously issued various permits to Joseph S. Hall pursuant to Parts II and IV, Chapter 373, Florida Statutes (F.S.); and

**WHEREAS**, Subsection 373.046(6), F.S., authorizes a water management district to designate, via an interagency agreement, regulatory responsibility to another water management district when the geographic area of a project or local government crosses water management district boundaries; and

**WHEREAS**, the designation of the SFWMD as the water management district with Part II, Chapter 373, F.S., regulatory responsibility for the Application would allow for more efficient processing of permit applications under that part; and

**WHEREAS**, the SFWMD and the SJRWMD desire to designate the SFWMD as the water management district with Part II, Chapter 373, F.S., regulatory responsibility for the Application pursuant to part II, Chapter 373, F.S.

**NOW THEREFORE, BE IT RESOLVED BY THE GOVERNING BOARD OF THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT:**

**Section 1.** The Governing Board of the SFWMD hereby authorizes the execution of

the Interagency Agreement with SJRWMD, which is attached hereto and incorporated herein.

**Section 2.** This resolution shall take effect immediately upon adoption.

**PASSED** and **ADOPTED** this 9th day of January, 2014.

SOUTH FLORIDA WATER MANAGEMENT DISTRICT, BY ITS GOVERNING BOARD

By:

\_\_\_\_\_

Chairman

Attest:

Legal form approved:

By:

\_\_\_\_\_

District Clerk/Secretary

\_\_\_\_\_

Office of Counsel

Print name:

\_\_\_\_\_

**INTERAGENCY AGREEMENT BETWEEN THE SOUTH FLORIDA WATER  
MANAGEMENT DISTRICT AND ST. JOHNS RIVER WATER MANAGEMENT  
DISTRICT FOR THE DESIGNATION OF REGULATORY RESPONSIBILITY  
FOR A WATER USE PERMIT FOR EAGLE ISLAND**

THIS INTERAGENCY AGREEMENT (Agreement) is made and entered into by and between the SOUTH FLORIDA WATER MANAGEMENT DISTRICT (SFWMD) and the ST. JOHNS RIVER WATER MANAGEMENT DISTRICT (SJRWMD).

WITNESSETH:

WHEREAS, on October 4, 2013, Joseph S. Hall submitted Water Use Permit (WUP) Application No. 131004-4 (Application) to the SFWMD to renew its existing WUP for the Eagle Island (Property) in Okeechobee County, Florida; and

WHEREAS, the Application requests authorization to withdraw 2,532 million gallons per year and a maximum monthly allocation of 371.7 million gallons for agricultural use; and

WHEREAS, although the predominant portion of the Property lies within the jurisdictional boundaries of the SFWMD, a small portion of the Property lies within the jurisdictional boundaries of the SJRWMD, as depicted on the map attached hereto as Exhibit A; and

WHEREAS, SFWMD has previously issued various permits to Joseph S. Hall pursuant to Parts II and IV, Chapter 373, Florida Statutes (F.S.); and

WHEREAS, Subsection 373.046(6), F.S., authorizes a water management district to designate, via an interagency agreement, regulatory responsibility to another water management district when the geographic area of a project or local government crosses water management district boundaries; and

WHEREAS, the designation of the SFWMD as the water management district with Part II, Chapter 373, F.S., regulatory responsibility for the Application would allow for more efficient processing of permit applications under that part; and

WHEREAS, the SFWMD and the SJRWMD desire to designate the SFWMD as the water management district with Part II, Chapter 373, F.S., regulatory responsibility for the Application pursuant to Part II, Chapter 373, F.S.;

NOW THEREFORE, the SFWMD and the SJRWMD, under the authority of Subsection 373.406(6), F.S., hereby agree as follows:

1. In order to facilitate a more coordinated and efficient review of the permit application, SJRWMD hereby designates to SFWMD all regulatory responsibilities under Part II of Chapter 373, F.S., for the consumptive use of water for Eagle Island for those portions of the proposed project that lie within the

jurisdictional boundaries of the SJRWMD. Such regulatory responsibilities shall include receiving, processing, and taking final agency action on all water use permit applications, or modifications thereof, and taking any compliance and enforcement action with regard to such permit.

- 2. This Agreement will commence upon execution by all parties and will remain in effect until either party terminates such agreement for its convenience upon ninety (90) days written notice to the other party.
- 3. This Agreement may be executed in counterparts, each of which shall constitute an original, but all of which taken together shall constitute one and the same document. Facsimile signature shall be deemed an equivalent to an original for each and every counterpart.

IN WITNESS WHEREOF, each party, or its lawful representative, has executed this Agreement on the date set forth next to their signature below.

SOUTH FLORIDA WATER  
MANAGEMENT DISTRICT

\_\_\_\_\_  
Daniel O’Keefe, Chairman

ATTEST:

\_\_\_\_\_  
District Clerk/Asst. Secretary

LEGAL FORM APPROVED:

\_\_\_\_\_  
Jennifer Bokankowitz, Esq.

SAINT JOHNS RIVER WATER  
MANAGEMENT DISTRICT

\_\_\_\_\_  
Hans G. Tanzler, III, Executive Director

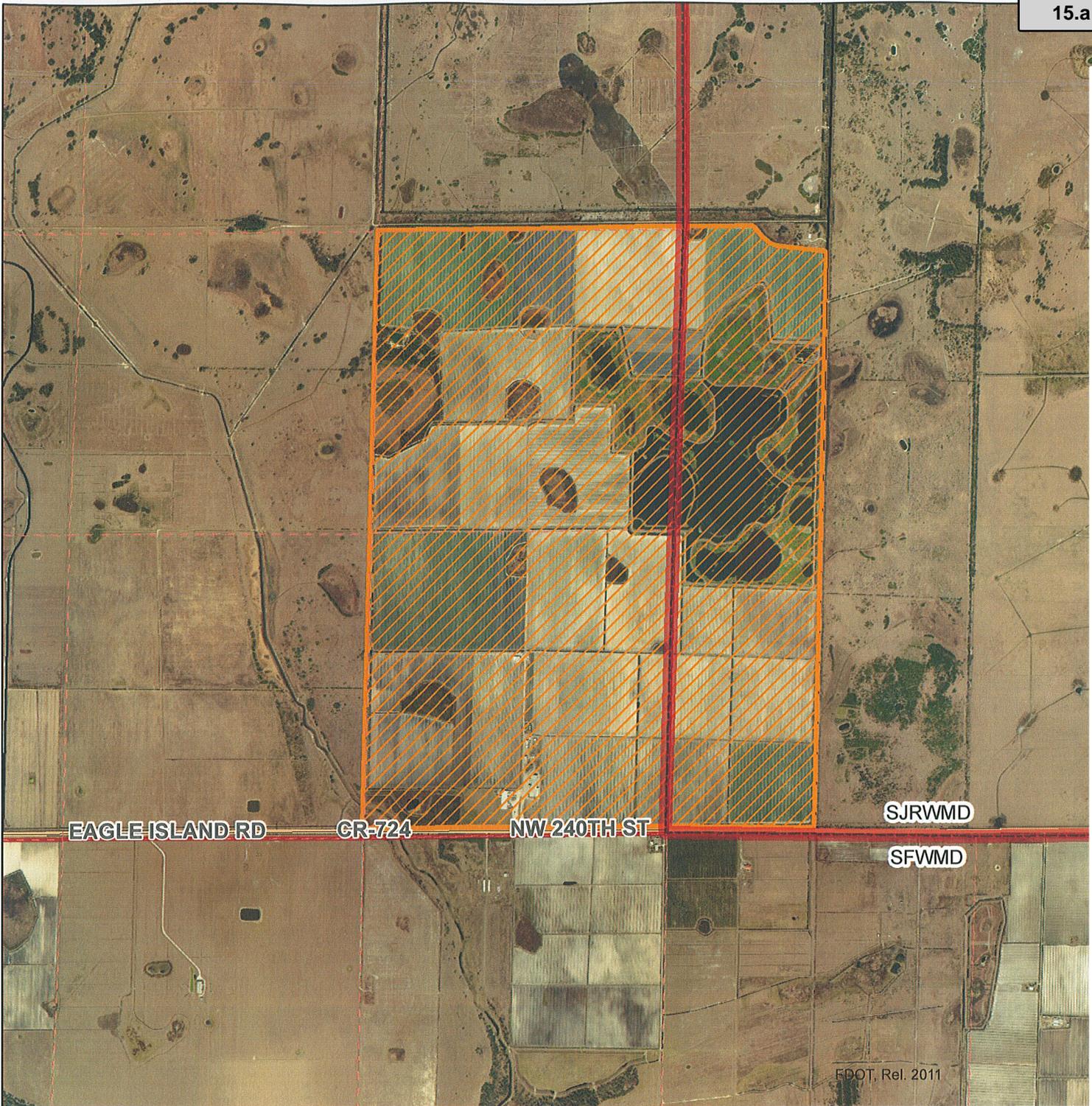
ATTEST:

\_\_\_\_\_  
District Clerk/Asst. Secretary

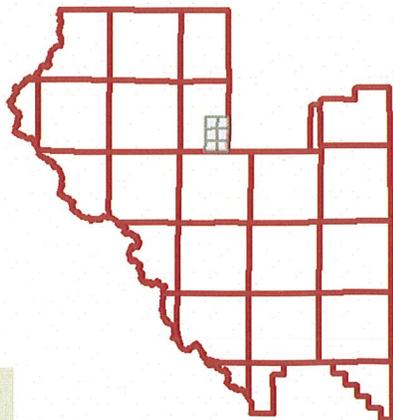
LEGAL FORM APPROVED:

\_\_\_\_\_  
Gail Hankinson, Esq.

Attachment: ca\_reg\_rm\_102\_sd (Resolution No. 2014 - 0102 : Approve Interagency Agreement for permitting responsibilities for Eagle Island



Attachment: ca\_reg\_rm\_102\_sd (Resolution No. 2014 - 0102 : Approve Interagency Agreement for permitting responsibilities for Eagle Island



OKEECHOBEE COUNTY, FLORIDA

Legend

 Application

Application No: 131004-4

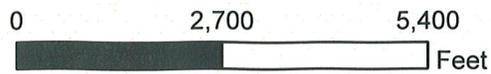
Sec 26,27,34,35 / Twp 34 / Rge 34

Project Name: EAGLE ISLAND FARM



Map Date: 2013-12-16

Permit No: 47-00043-W



## MEMORANDUM

**TO:** Governing Board Members

**FROM:** Karen Estock, Division Director

**DATE:** January 09, 2014

**SUBJECT:** Dupuis and Kissimmee River Ten Year General Management Plan Updates, 2014-2024

### Summary

Section 373.591, Florida Statutes, and Section 140.25(6)(b), South Florida Water Management District Policies Code, direct the District to develop a General Management Plan that follows a designated format and provides recommended management actions for Land Stewardship Management Areas. The District updates these plans every ten (10) years concurrent with conducting a multi-party land management review of the subject property which is consistent with the timeframe and process followed by State agencies. The management plan describes the historical, physical, and ecological aspects of the property, existing public recreational opportunities, and the various land management functions necessary to properly manage the area. The purpose of the management plan is to provide guidance to District land managers for the implementation of appropriate and consistent land management practices, to identify goals and objectives for the management of the property, and to present the findings of the land management review team.

### Staff Recommendation

Staff recommends approval of the updated Dupuis and Kissimmee River General Management Plans (2014-2024) in accordance with Section 373.591, Florida Statutes.

### Core Mission and Strategic Priorities

This Governing Board item supports the District's Natural Systems Strategic Priorities and ensures compliance with Section 373.591, Florida Statutes, which requires Water Management Districts to develop General Management Plans for all District owned conservation, preservation, or recreational lands.

### Funding Source

This item does not require the expenditure of additional District funds. Funding for the implementation of General Management Plans is provided through the District's standard budgetary process.

### Staff Contact and/or Presenter

Steve Coughlin, x2603

**SOUTH FLORIDA WATER MANAGEMENT DISTRICT**

**Resolution No. 2014 - 0103**

**A Resolution of the Governing Board of the South Florida Water Management District to approve the ten year update of the Dupuis and Kissimmee River General Management Plans (2014-2024); providing an effective date.**

**WHEREAS**, the Dupuis and Kissimmee River Management Areas were acquired by the District under the Save Our Rivers and Florida Forever programs; and

**WHEREAS**, Section 373.591, Florida Statutes, and Section 140.25(6)(b), South Florida Water Management District Policies Code, direct the District to develop a General Management Plan for each Land Stewardship Management Area that follows a designated form and provides recommended management for the area; and

**WHEREAS**, the District updates its General Management Plans every ten (10) years, consistent with State agencies; and

**NOW THEREFORE, BE IT RESOLVED BY THE GOVERNING BOARD OF THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT:**

**Section 1.** The Governing Board of the South Florida Water Management District hereby approves the ten year update of the Dupuis and Kissimmee River General Management Plans (2014-2024), copies of which are attached hereto as Exhibit "A".

**Section 2.** This Resolution shall take effect immediately upon adoption.

**PASSED** and **ADOPTED** this 9th day of January, 2014.

SOUTH FLORIDA WATER MANAGEMENT DISTRICT, BY ITS GOVERNING BOARD  
By:

\_\_\_\_\_  
Chairman

Attest:

Legal form approved:  
By:

\_\_\_\_\_  
District Clerk/Secretary

\_\_\_\_\_  
Office of Counsel

Print name:  
\_\_\_\_\_

*Land Stewardship Section*  
3301 Gun Club Road  
West Palm Beach, Florida 33406



DuPuis  
Management Area  
Ten-Year  
General Management Plan  
2014 through 2024



Attachment: DuPuis Mgt Plan 2014 - 2024 (Resolution No. 2014 - 0103 : Dupuis and Kissimmee River Ten Year General Management Plan

# DuPuis Management Area Ten-Year General Management Plan (2014 through 2024)

## January, 2014

Land Stewardship Section  
South Florida Water Management District  
3301 Gun Club Road  
West Palm Beach, Florida 33406

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DuPuis Management Area General Management Plan 2014 through 2024  
 South Florida Water Management District, Land Stewardship Section

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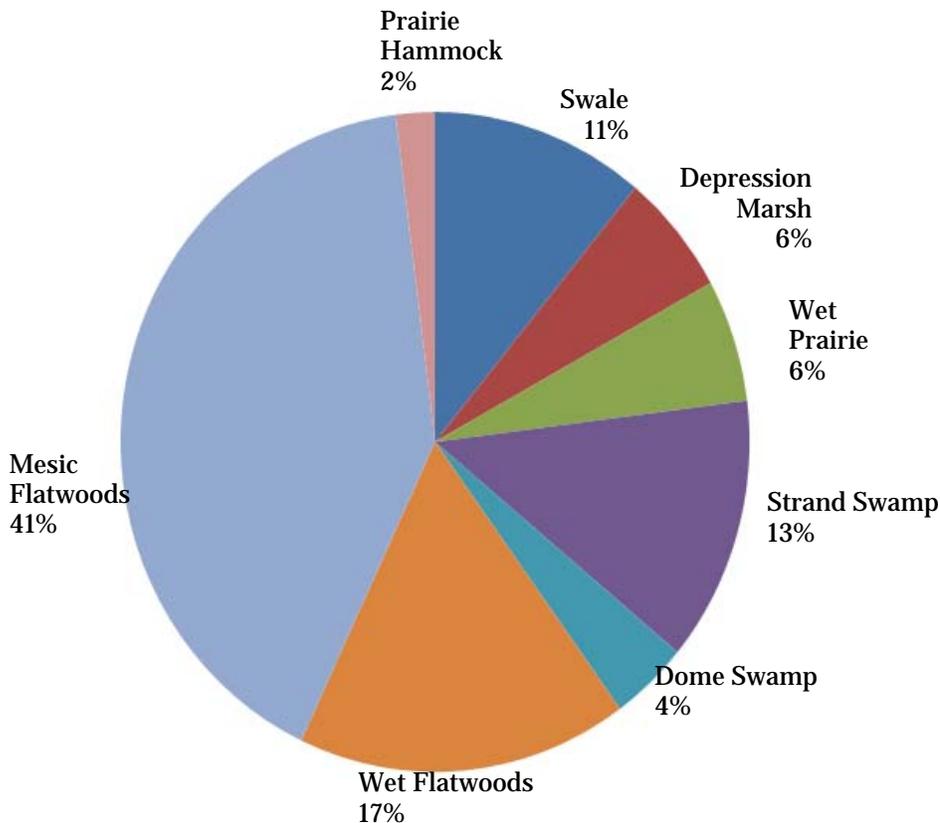
**1. Executive Summary**

The South Florida Water Management District (District) is directed by statute to acquire and manage lands which are vital to the restoration of the Everglades. In the 1980s the District targeted the DuPuis Management Area (Management Area) which contains the northernmost edge of the Everglades marsh as a Save Our Rivers project. This plan addresses management for the 21,858 acres that have been acquired by the District within the project area.

This General Management Plan describes the historical, ecological, and managerial aspects of the area as a means to coordinate effective management programs. The plan serves as a guidance document for the implementation of resource-based land management practices. It also provides information on operational procedures and organizational structures within the District and of management activities and objectives for the management areas.

NATURAL SETTING

The natural character of the management area are defined by 4 distinct soil categories classified by the Natural Soil Landscape Positions soil classification system: flatwood soils, flats soils, sand depression soils, and muck depression soils. These soils support 8 distinct plant communities that are defined by criteria established by the Florida Natural Areas Inventory; and have the following coverage:



### RESOURCE MANAGEMENT

Resource management programs for the management area consist of:

- Prescribed fire to mimic the natural fire frequency in fire-dependent plant communities.
- Forestry and vegetation management such as shredding or mowing overgrown understories, or thinning pine flatwoods for silvicultural purposes.
- Wildlife management, including surveys, habitat management, and hunting programs.
- Exotic vegetation treatment.
- Monitoring the health of the natural communities and the impact of management practices on them.
- Restoring sites that have previously been altered by drainage and/or agriculture.

### RESTORATION PROJECTS

The District has used water management trust funds and mitigation funds to fund the restoration of wetland systems and upland pine forests. This has involved hydrologic restoration, groundcover restoration, exotic species control, vegetation management, and prescribed burning.

### MONITORING

The Florida Fish and Wildlife Conservation Commission monitors wildlife on the site including red-cockaded woodpeckers, turkeys, bald eagles, wading birds, deer, and bobwhite quail.

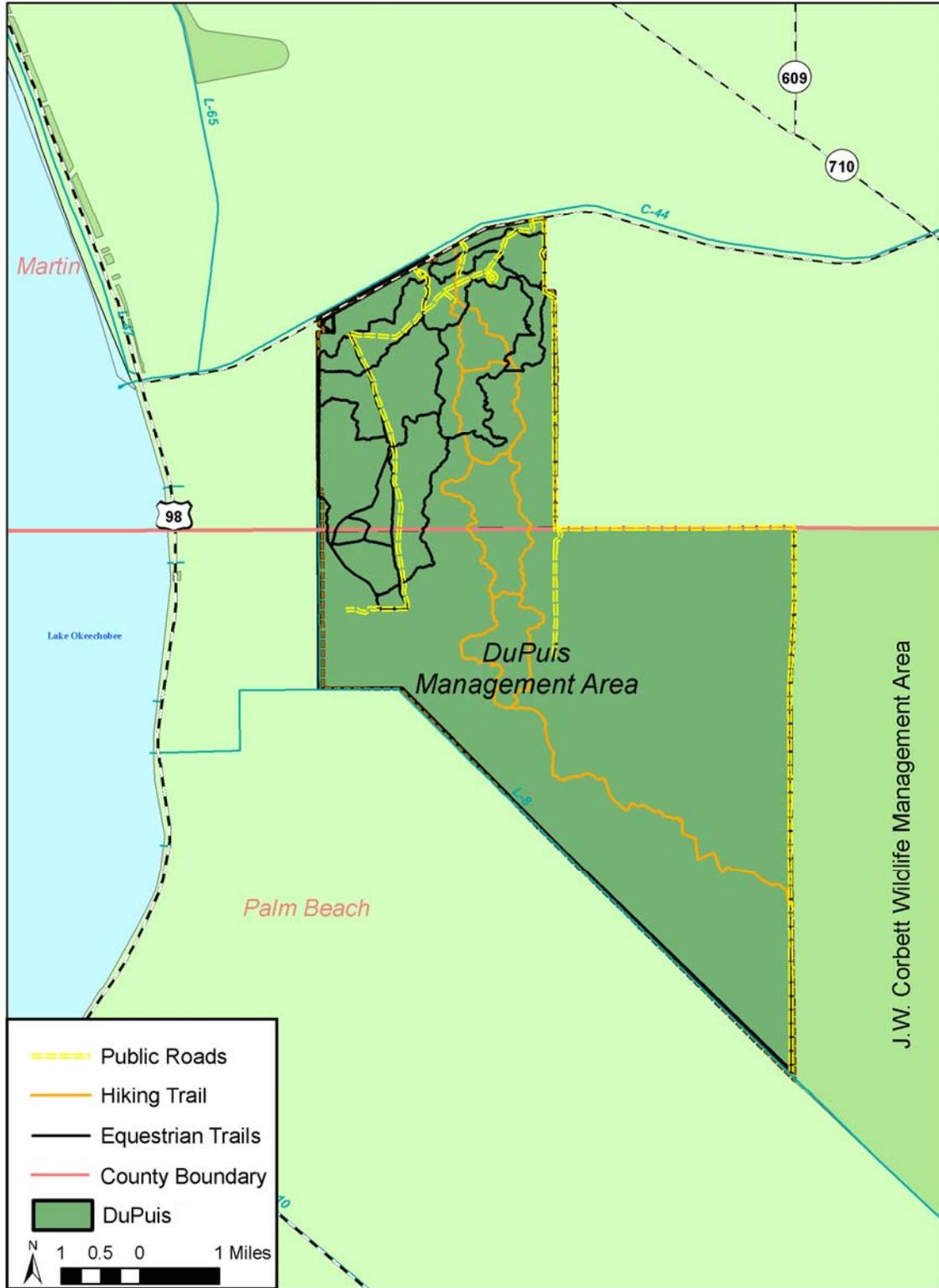
### WILDLIFE MANAGEMENT

Wildlife management, including hunting programs, is conducted by the Florida Fish and Wildlife Conservation Commission through a multi-site cooperative agreement. The hunting program includes a general gun, muzzle loading, and archery season for deer and feral hogs; small game; special hog hunts; dove hunting on an established dove field; and spring turkey hunting.

### PUBLIC USE

A variety recreational activities are provided for and encouraged in the management area including canoeing, bicycling, mountain biking, camping, birding, equestrian use, fishing, hiking, geocaching, and hunting. The Ocean to Lake Trail, which connects to the Florida National Scenic Trail at Lake Okeechobee, winds its way through portions of the management area. The management area also includes equestrian facilities (stables, barn, and campground), a visitor center, a boardwalk, a fishing pier, and several established campsites and picnic areas.

**Map 1. DuPuis Management Area**



## 2. Introduction and Management Plan Purpose

The District purchased the DuPuis Management Area in 1986 through the Save Our Rivers program. The management area comprises 21,858 acres in northwest Palm Beach and southwest Martin counties. The southwestern boundary contains the L8 Marsh, this area was the historic northeastern edge of the Everglades, and is bounded by a sand ridge with a long narrow oak hammock. The southeastern half of the site is dominated by cypress swamps; the area is part of a historic flow-way that extended north along the east side of the Osceola Plain to St. Lucie County where the waters of the everglades would seasonally connect to waters of the St. Johns River system. The northern portion of the site has many public use facilities. The property hosts a large equestrian campground with several barn-stables and paddocks, a family campground for tent camping, a large group campground, a boardwalk, a mountain biking trail, a fishing pier, picnic shelters, a visitor center and butterfly garden, and many miles of equestrian and hiking trails. The Ocean-to-Lake trail runs through the site; this is a regional trail that extends from Lake Okeechobee to the Atlantic Ocean.

This General Management Plan consolidates relevant information about the DuPuis Management Area (**Maps 1-2**) including land management goals and objectives, past and present land uses, resource data, restoration and management needs, public use programs, and administrative duties to guide management actions for the period 2014 through 2024. Management activities described in this plan are based on requirements and directives of Florida Statutes and established District policies. Section 373.591(4), Florida Statutes, requires that management plans be developed for District conservation, preservation, and recreation lands.

State statutes further directs the District to provide natural resource protection and management while allowing compatible multiple uses on designated public lands. This mission statement and requirements set forth in Florida Statutes provide three primary goals for the Land Stewardship Section:

- Conserve and protect water resources
- Protect and/or restore land to its natural state and condition
- Provide appropriate public use

To accomplish these goals, the Land Stewardship Section performs six major functions:

- Strategic, project, and management planning
- Operation and maintenance of land resources
- Development of public use programs
- Development of restoration projects
- Evaluation of management activities

- Administration of land management service contracts

The plan consolidates current site information and general guidelines for management of the area. It also updates and replaces the 2008-2013 General Management Plan for the area. As such, it serves as a collective information source for management staff, partners, and the general public.

## **2.1 DuPuis Management Area Goals and Objectives**

The Land Stewardship Section's primary functions and management priorities for 2014-2024 are contained in the following Goals and Objectives:

**Goal 1:** Manage natural communities and modified habitats to protect and enhance water, floral, and faunal resources.

### Objectives:

- Maintain an appropriate hydroperiod through the installation, operation, and maintenance of water control structures, culverts, and ditch plugs as needed.
- Continue to regularly apply prescribed fire to manage fire dependent plant communities through the use of a well-planned and documented prescribed burning program. Maintain a fire return interval of 2-5 years in pine flatwoods, with the majority of burns to be conducted during the months of April through September if possible.
- Continue to treat exotic vegetation through the use of herbicides and biological control measures and reduce exotic plant infestations to maintenance control levels by 2020.
- Continue appropriate forest management activities to enhance natural communities. Evaluate the need for additional cabbage palm removal using low ground pressure harvest equipment.
- Continue to reforest deteriorated areas within the northern portion of the management area with slash pine.
- Continue to monitor and evaluate vegetation and wildlife responses to on-going restoration and land management activities.
- Coordinate with the Florida Fish and Wildlife Conservation Commission to manage and enhance area wildlife. Continue to improve habitat conditions and fund the reintroduction of the federally endangered red-cockaded woodpecker with the assistance of the Florida Fish and Wildlife Conservation Commission and U.S. Fish and Wildlife Service in order to establish stable and interconnected woodpecker populations on the DuPuis and Corbett Management Areas.
- Provide resource protection through partnerships with the Florida Fish and Wildlife Conservation Commission's Division of Law Enforcement and with local law enforcement agencies for the enforcement of pertinent resource based laws and regulations.

**Goal 2:** Provide resource-based public use opportunities.

Objectives:

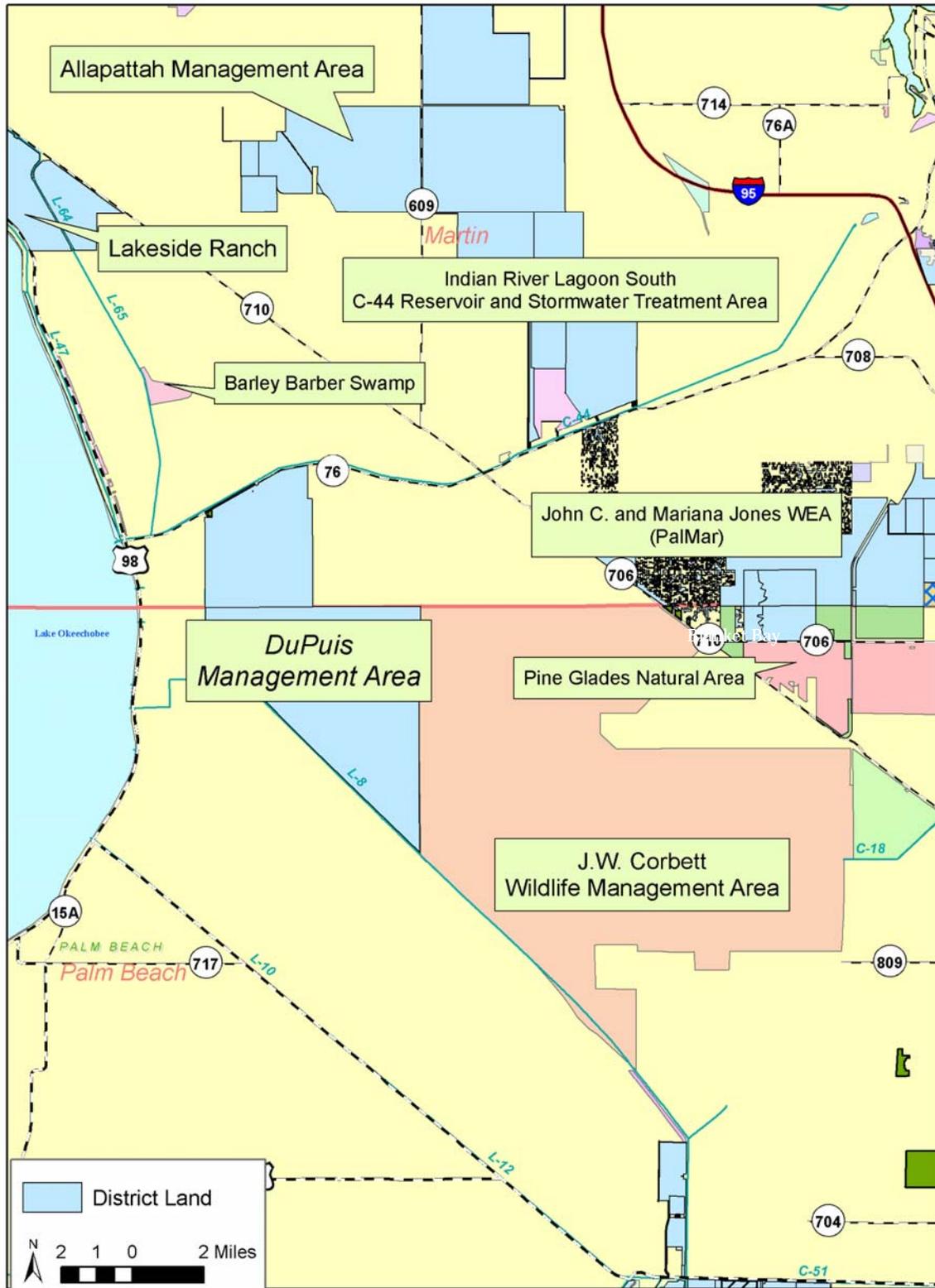
- Maintain environmental education and outreach programs through continued partnership with the Florida Atlantic University's Center for Environmental Studies.
- Maintain recreational improvements such as roads, trails, signs, trail heads, parking areas, campgrounds and public use facilities in an operational condition using District staff, the Department of Corrections inmate crew, contracted services, and volunteers.
- Install a Clivus Mulstum self-composting toilet at the fishing pier parking lot during the plan period.
- Update the Self-Guided Auto Tour along Jim Lake and DuPuis Grades.
- Maintain, and expand if appropriate, existing nature based recreational opportunities including hiking, biking, equestrian use, camping, hunting, birding, and wildlife viewing.
- Coordinate with local cooperating land managers on expanding future recreational opportunities on the Ocean to Lake Trail.
- Utilize quarterly Water Resource Advisory Committee – Recreation Issues Workshop meetings to receive public input on the management and coordination of recreational activities provided on the management area.

**Goal 3:** Maintain public use facilities and area infrastructure.

Objectives:

- Replace the existing equestrian campground bathroom which receives a high level of use by the public and is currently in poor condition and in need of replacement.
- Replace three water control structures necessary to control the retention and release of water from the restored L-8 marsh.
- Remove two dilapidated and hurricane damaged pole barns located within the equipment and shop compound area.
- Add two equipment bays to the existing shop and maintenance building.
- Construct a chemical storage building for storing herbicides and other chemicals in a secured manner.
- Construct a new pole barn for storing tractors, implements, and other pieces of large equipment out of direct sunlight and extreme weather in order to minimize maintenance costs and maximize equipment life.

**Map 2. DuPuis and other public lands**



Attachment: DuPuis Mgt Plan 2014 - 2024 (Resolution No. 2014 - 0103 : Dupuis and Kissimmee River Ten Year General Management Plan

### 3. Site History

The DuPuis Management Area has been inhabited by humans for at least 2000 years. A detailed report of the early history of the site through the mid-1900s is included as **Appendix A** (See also **Maps 3-10**, and **Table 1**, which further illustrate the historic character of the property).

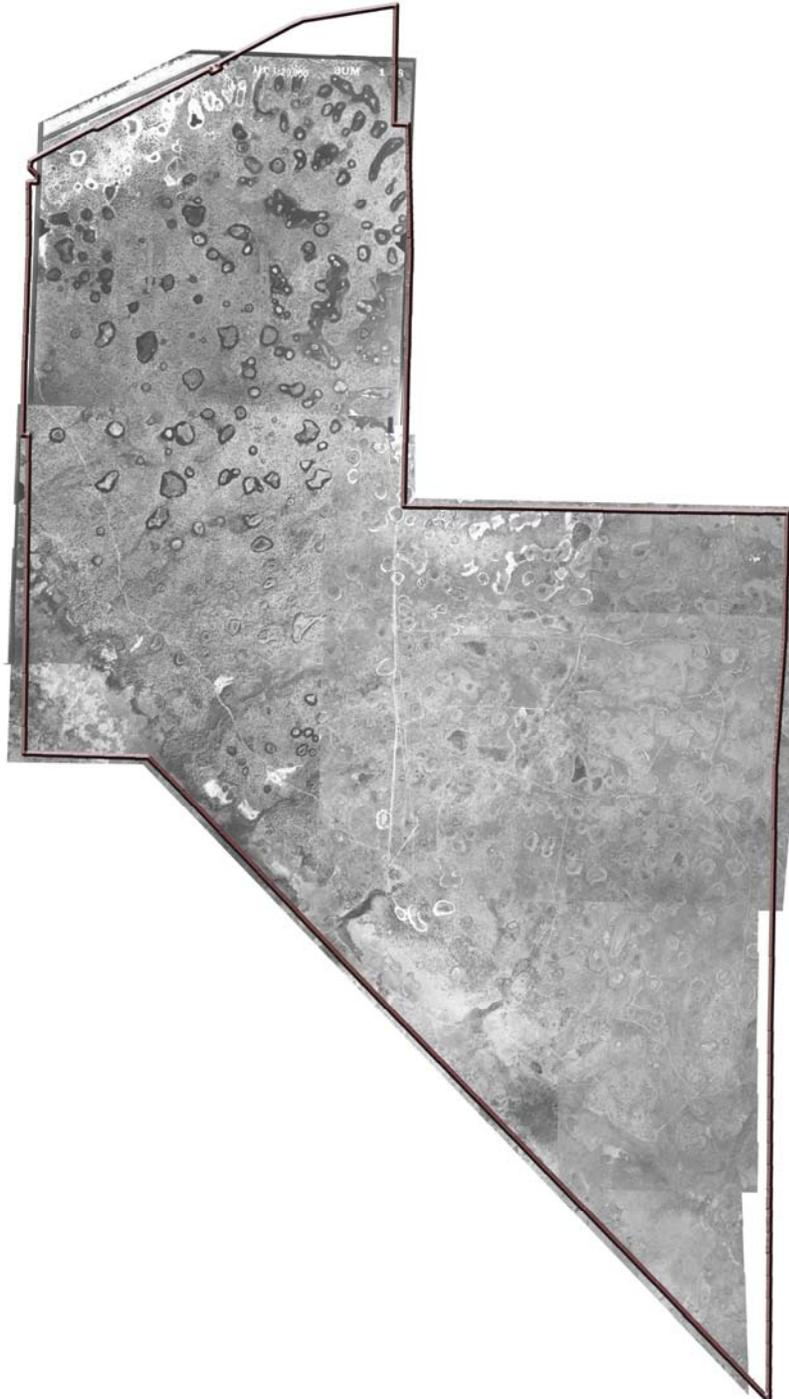
In 1981, the Florida Legislature established the Save Our Rivers program for the five water management districts to acquire environmentally sensitive land. The legislation (Chapter 373.59 F.S.) produced the Water Management Lands Trust Fund and empowered the water management districts to acquire lands needed to manage, protect, and conserve the state's water resources. Once acquired, the lands are to be managed in an environmentally acceptable manner and restored to their natural state. Districts may make certain capital improvements, i.e. fencing, access roads/trails, public use facilities, and are directed to provide appropriate public use compatible with the resource. The legislation also requires the districts develop appropriate public use. In addition, management practices such as control of exotic species and controlled burning are to be conducted to properly manage public lands acquired by the District.

The District purchased the DuPuis Management Area in 1986 through the Save Our Rivers program. The management area comprises 21,858 acres in northwest Palm Beach and southwest Martin counties. Prior to acquisition, the property was managed as the White Belt Ranch for the production of beef cattle, sheep, and goats. Ranch improvements included the construction of an extensive interior network of drainage ditches and the planting of exotic pasture grasses. As part of the initial environmental assessment, the District completed a wetland and hydroperiod restoration plan. Subsequently, a hydrologic restoration program was initiated to seasonally re-flood historic wetland areas. The Land Stewardship Program also developed a burn program to reintroduce regular fire to the property including those portions where fire had been suppressed. The District initiated exotic plant control, forest management, upland restoration, and development of an environmental education center.

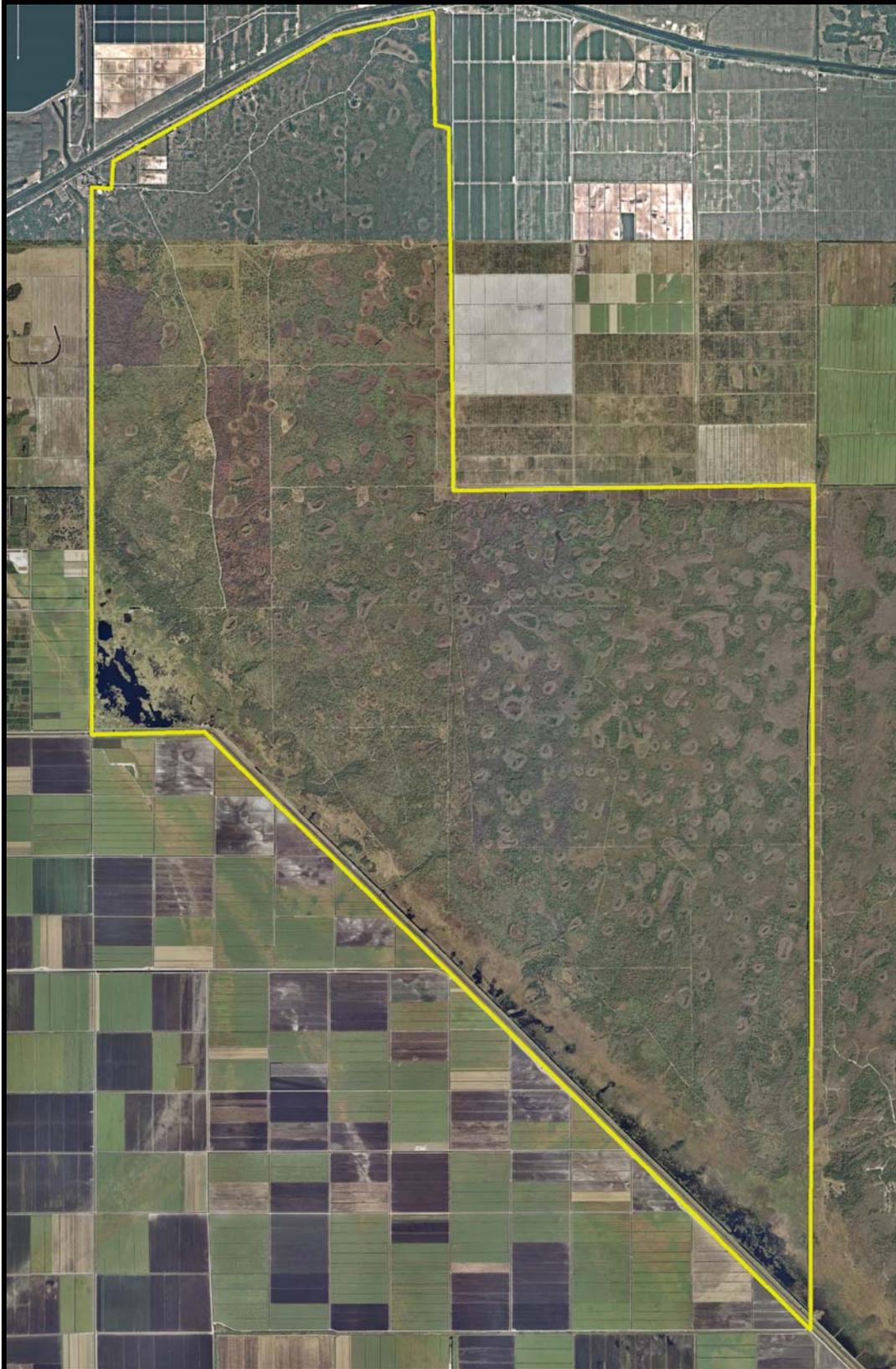
Lead management responsibility for the management area has changed over time. From acquisition until 1990, the District managed the DuPuis area jointly with the Florida Fish and Wildlife Conservation Commission. During this time, initial resource management, restoration activities, and public use programs were started. In 1990, the Florida Division of Forestry began a 5-year contract as lead manager of the area with the Commission and the District as cooperative managers. During this time, the area was operated as the DuPuis State Forest. Continuation of this arrangement was contingent upon the Florida Legislature authorizing the necessary funds for the Division of Forestry (now the Florida Forest Service) to conduct management beyond the contract expiration. As a result of the legislature not appropriating the required funding, the contract with the Division of Forestry was allowed to expire and the District solicited proposals

to manage the property from the public/private sector in 1995. A cooperative management proposal submitted by the District and the Fish and Wildlife Conservation Commission was selected by the review committee; this cooperative agreement was rolled into a Districtwide multi-site cooperative agreement with the Commission in 2007.

**Map 3. DuPuis Management Area with 1938 (west half) and 1949 (east half) aerials**



**Map 4: DuPuis Management Area Aerial Imagery, 2011-2012**



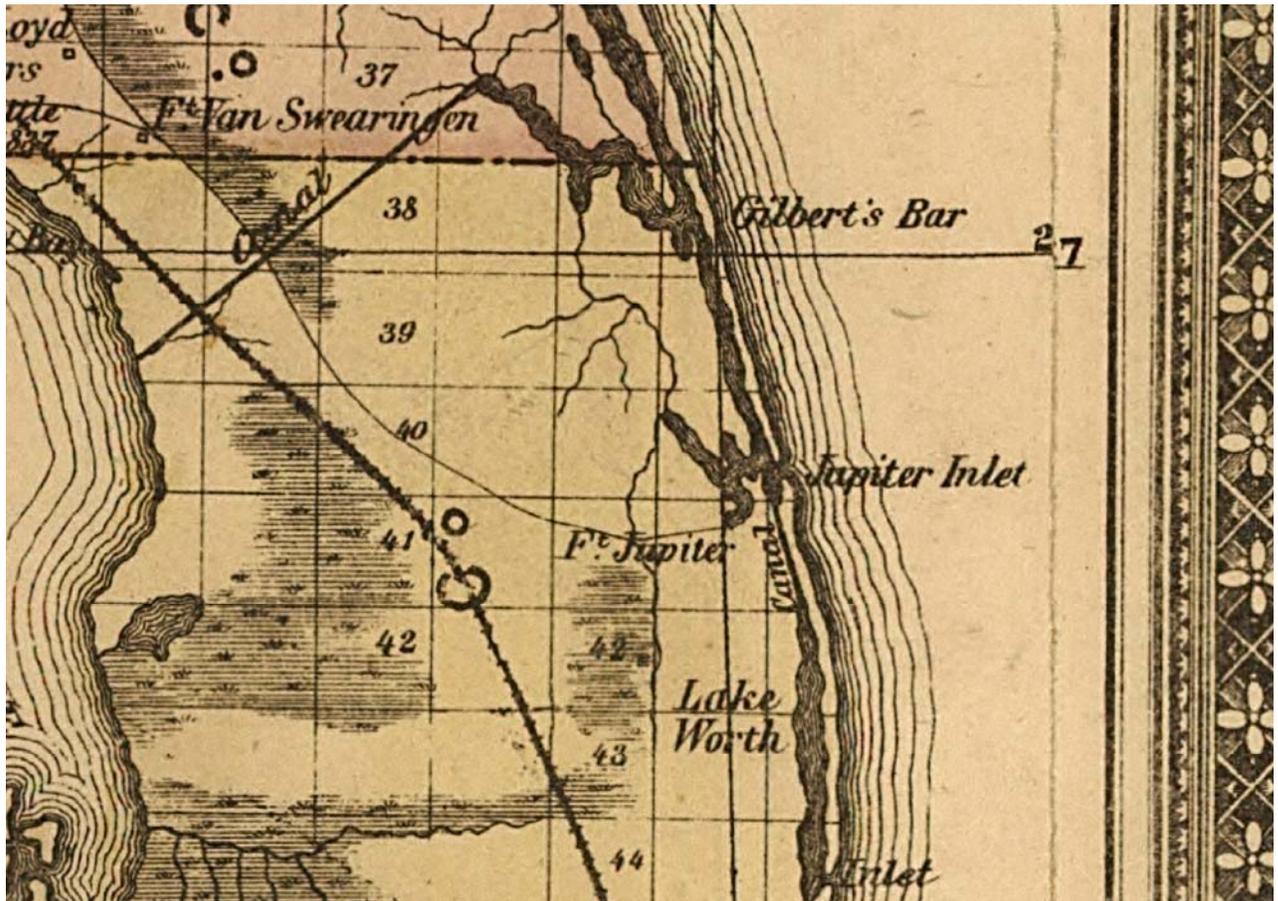
### Map 5. 1895 - J. Bien Military General Topographic Map



The above map is from an 1895 reproduction of Leut. J.C. Ives 1856 "A Military Map of the Peninsula of Florida South of Tampa Bay". The boundary of the DuPuis Management area has been added in green. In Leut. Ives memoir, the route from Ft. McRae to Ft. Jupiter is described as

*"The only continuous route between the eastern shore of Lake Okeechobee and Fort Jupiter, that has been traversed and reported upon, leads nearly east from Fort McRae to General Eustis' Road, and along that road to the Fort. The trail passes over the hammock that borders the beach; here a hundred yards wide. This hammock can be passed on foot, by wading from one cypress root to another, and making use of the dead branches of trees. The marsh beyond is about a mile and a-half wide, having the same character as the Everglades; the sawgrass being six feet in height; the water of variable depth, and the mud so soft that a pole can be thrust down with the hand 'to a depth of from six to ten feet. This marsh can be crossed only at dry seasons, and then with great difficulty, by men on foot, though unincumbered by arms or burdens of any description. East of the marsh, the route, for five miles, passes over a low pine country with occasional ponds and marshes that can be easily turned. It then crosses another difficult marsh, a quarter of a mile wide. From surveys that have been made in the vicinity it appears that this marsh might be avoided by keeping a mile or two to the north. A high pine and palmetto region then commences; continuing as far as the point where the trail from the lake intersects General Eustis' Route. This route traverses a low and somewhat marshy country, but a road practicable for wagons, during a greater portion if not all of the year, could be easily constructed upon it."*

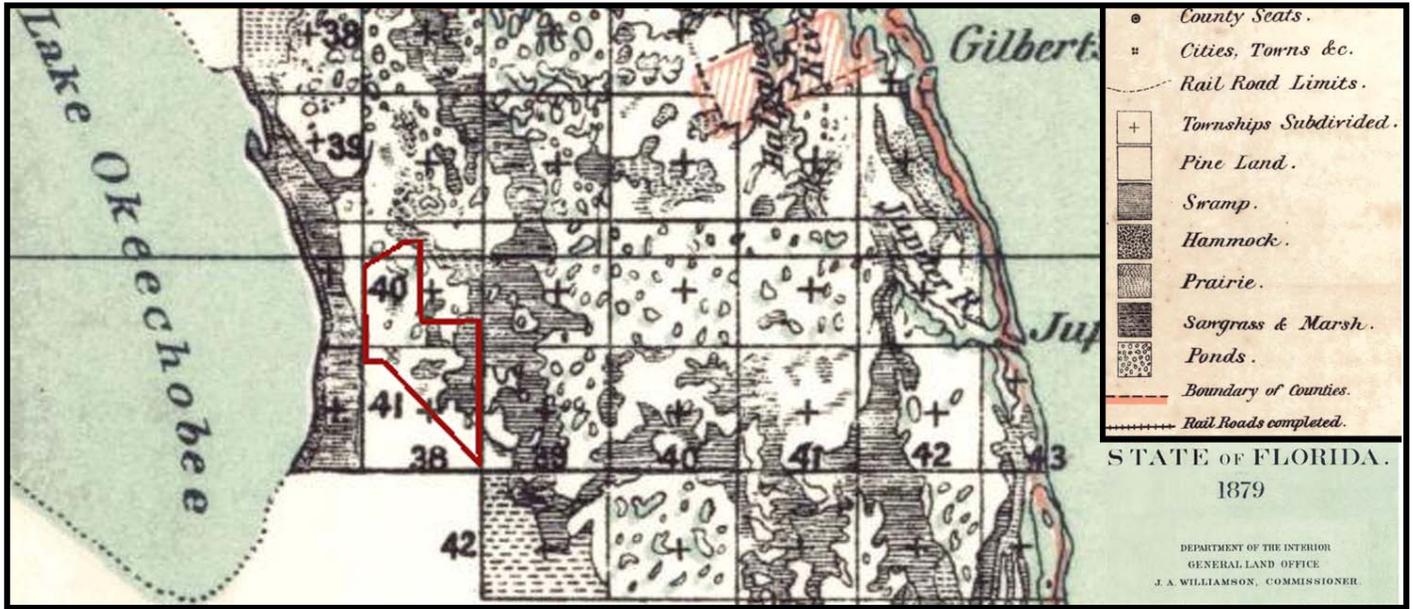
### Map 6: 1874 Map of Florida



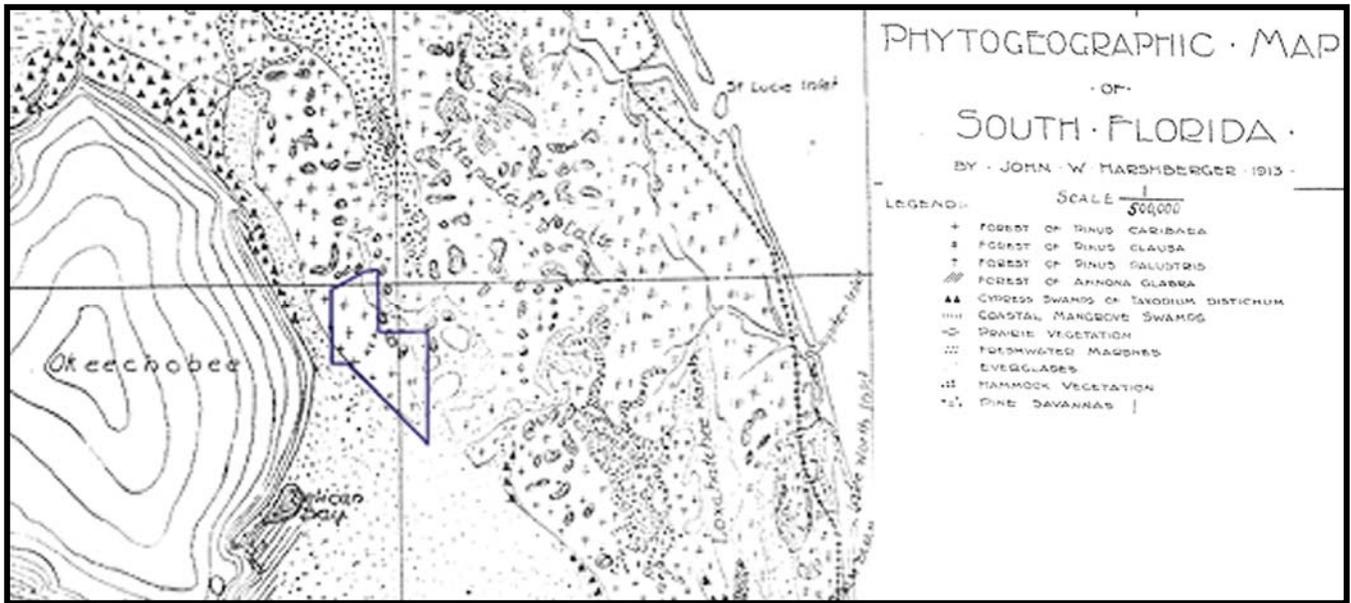
The above map is from the 1874 “Drew’s New Map of the State of Florida.” It shows the proposed St. Lucie canal and the railway that would become the Seaboard East Coast Rail line. The March, 1884 issue of Harper New Monthly had an article titled “The Drainage of the Everglades” that described the planned canal being:

*“... a proposed canal from Cahoney Bay, in Okeechobee, to the St. Lucea, is to be cut one hundred and twenty feet wide and ten feet deep, having a fall of one foot per mile, with a mean velocity of 3.86 lineal feet per second, capable of lowering the estimated 1000 square miles of surface four feet in a season.”*

**Map 7. 1879 - General Land Office Map with land cover classification**



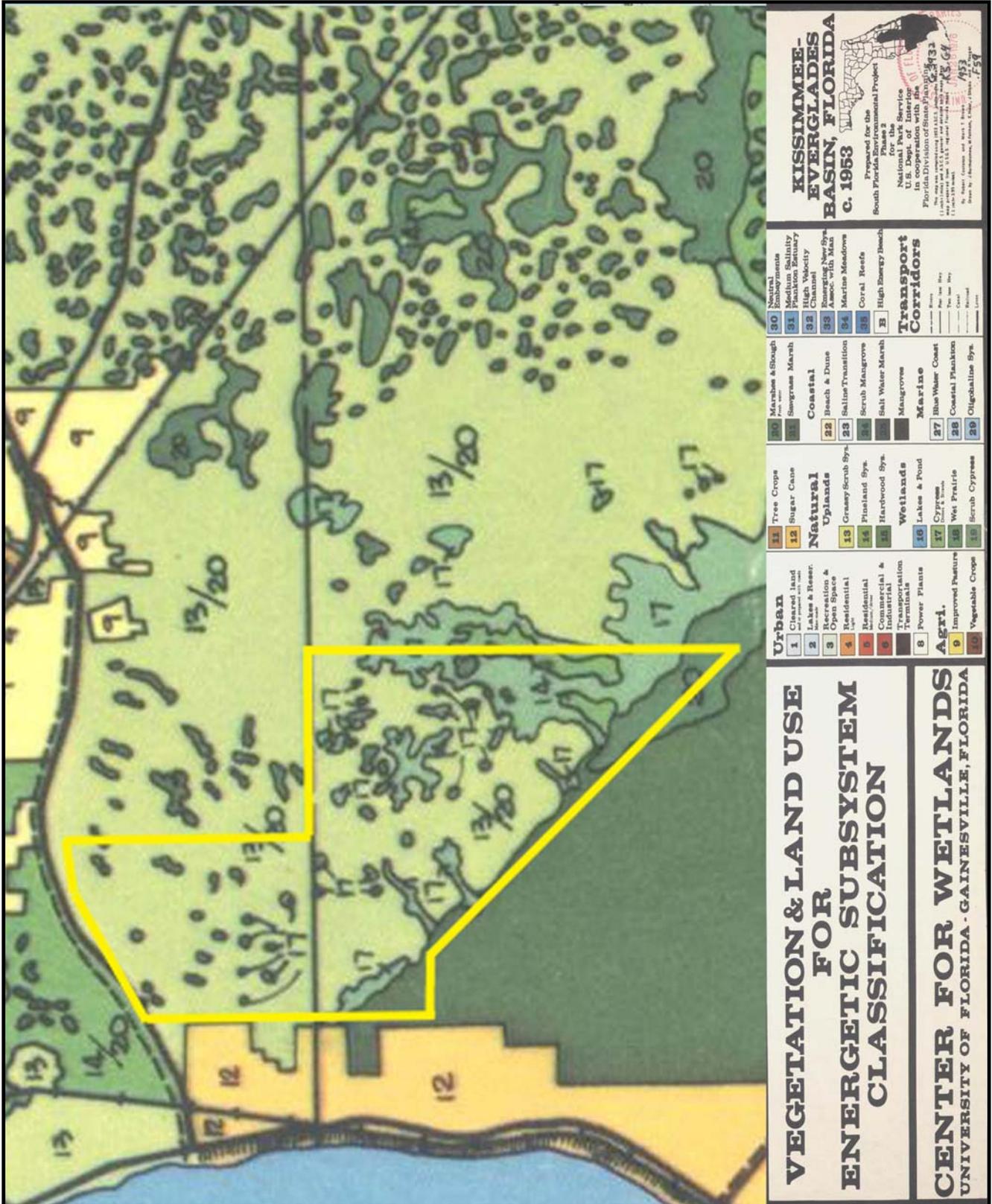
**Map 8. 1913 - Harshberger Phytographic Map**





DuPuis Management Area General Management Plan 2014 through 2024  
South Florida Water Management District, Land Stewardship Section

Map 10. 1953 UF Land Cover Map, Local Vicinity



DuPuis Management Area General Management Plan 2014 through 2024  
South Florida Water Management District, Land Stewardship Section

**Table 1 – DuPuis Management Area History**

	<b>ACTIVITY</b>	<b>EFFECT ON MANAGEMENT AREA</b>
1838	Fort McRae constructed	Trails constructed between forts spaced approximately 20 miles apart, laid the foundation for settlement of the area when the Armed Occupation Act was passed in 1842.
1850	U. S. Congress passed the Swamp and Overflowed Land Act	Allowed the state legislatures to transfer the ownership of swamp and overflowed lands to private entities to reclaim the land through drainage and levee projects.
1881-1884	Hamilton Disston’s Atlantic and Gulf Coast Canal and Okeechobee Land Company completes canals and dredging projects throughout the region creating a navigable water way from Fort Myers to St. Cloud.	The St. Lucie canal was proposed at this time. The original proposal would have placed it a few miles north of its current location. Its final location at the north boundary of the management area significantly drained the northern portion of the site.
1902	Southern States Land and Timber Company acquired the management area and surrounding lands.	The acquisition started the opportunistic logging of the easiest old-growth trees in the management area.
1915-1923	The St. Lucie Canal was constructed, as well as the Stuart-Annie Highway (later called SR 76 and Kanner Hwy), and the Seaboard Rail line.	The canal significantly drained the northern portion of the site. Both the canal, road, and railroad improved access to the management area that made it more accessible to logging.
1944	Robert Chastain acquired the management area from Southern States Land and Timber for use as a cattle ranch	By 1948 most of the infrastructure was constructed such as the cooter creek canal, interior wetland ditches, main buildings, and road grades.
1954	The L-8 Canal was constructed along the southerly border of the management area	The L-8 canal allowed most of the wetlands within the management area to be significantly drained.
1955	The management area was sold to John G. DuPuis Sr.’s White Belt Dairy Farms	The DuPuis family and the White Belt Dairy Farm continued the agricultural operations until acquisition by the District
1986	The management area was acquired by the South Florida Water Management District	A restoration program was implemented that included hydrologic restoration, vegetation management, and exotic species control

#### 4. Resource Inventory

*Policy 140-25(3)(e) Inventories of natural and historic resources shall be performed to provide information for effective land management planning, natural community maintenance and ecological restoration. (District policies are reprinted in **Appendix B**)*

Floral and faunal species are inventoried and natural communities are mapped by Land Stewardship personnel, other governmental entities, volunteers, or private contractors. The data helps District land managers with resource management planning.

Inventory data is on file with the Land Stewardship Section. Land Stewardship shares natural areas and species data with the Florida Natural Areas Inventory through a Memorandum of Understanding.

Floral and faunal inventories in the DuPuis Management Area were included in the environmental assessment initiated shortly after acquisition. Additional surveys have been completed with species' lists being updated regularly by volunteers, contractors, and District and Florida Fish and Wildlife Conservation Commission staff. Archaeological and cultural resource inventories were conducted in coordination with the Department of State, Division of Historical Resources and are described in the State's Master Site File.

##### 4.1 Hydrology

*Policy 140-25(1) The basis for the Land Stewardship Program is the protection and management of natural hydrologic resources.*

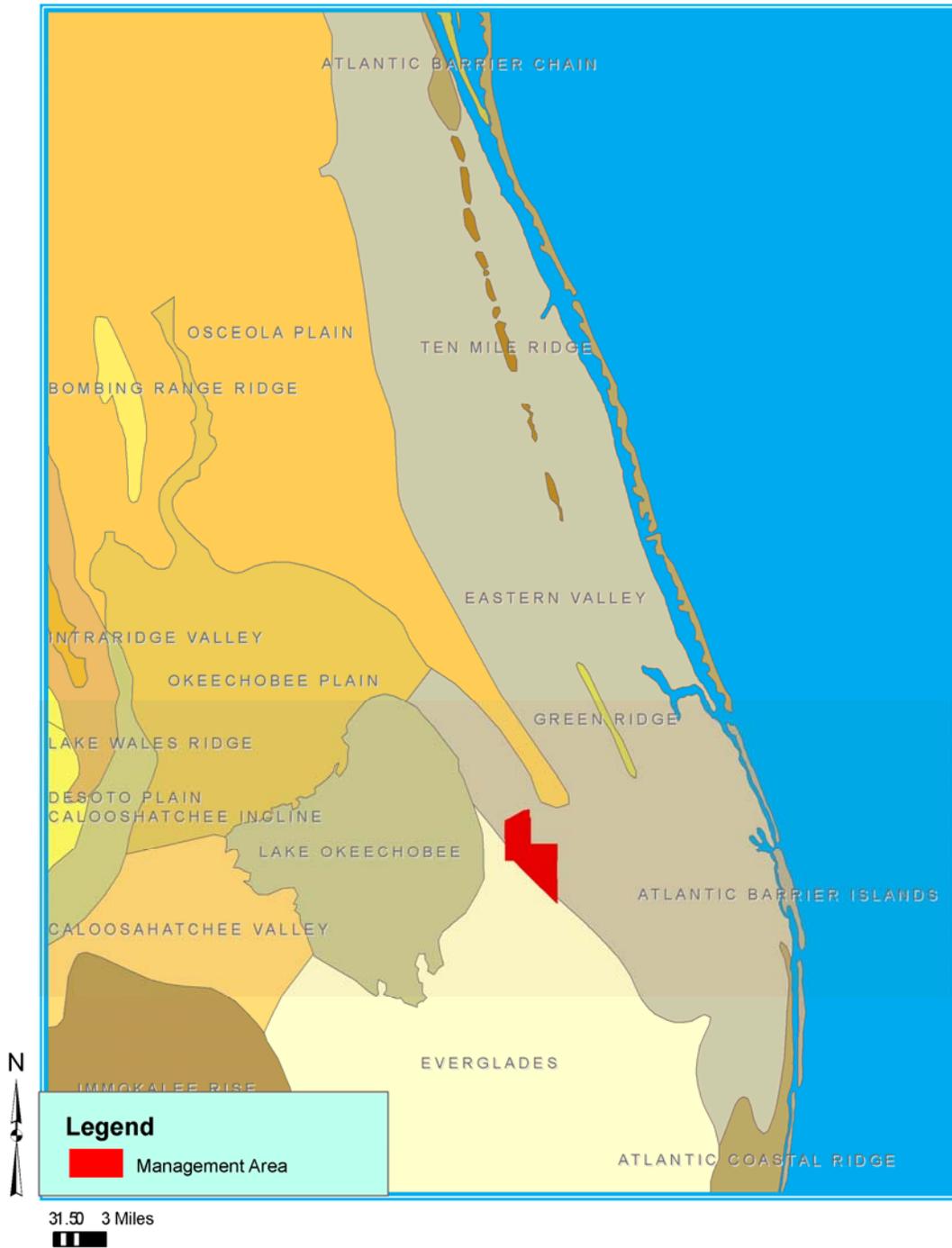
In general, relief on the management area is slight with ground elevations ranging between 23 and 25 feet over most of the property. Elevation gradually declines from northeast to southwest (**Maps 11-13**). Overland sheet flow on the property occurs in a south-southwest direction through a connected series of wet prairie, marsh and cypress wetlands (**Map 14**). Wetlands may be inundated for long periods, beginning with the wet season. The greatest change in elevation occurs in the L-8 marsh along the southerly boundary where elevation declines from 20 ft at the treeline to less than 15 ft at several locations near the canal levee. From the treeline, elevation increases gradually reaching 24 to 25 ft in the north and northeast sections of the property.

Elevations of pine flatwood communities in the Martin County portion of the area exist at elevations of approximately 25 ft with slight declines to 23-24 ft at the west property boundary. Broad leaf marsh and wet prairie depressions occur between the elevations of 20-23 ft, with the cypress dome centers representing the lowest elevations (20-21 ft). In the Palm Beach County portion, pine flatwoods and wet prairie communities fluctuate between 24 and 25 ft with

cypress domes and strands occurring at elevations between 20 and 23 ft. Elevations decline to the southwest towards the L-8 marsh where elevations range from 15 ft to 19 ft.

Over the years, three off-site developments had major impacts on area hydrology. In the 1920s, the St. Lucie Canal (C-44) was dredged parallel to the property's northern boundary completely severing historic inflows from the north while providing a means of increased offsite drainage (see **Map 15**, the northern and southern portions of the property are in two separate basins). Along the southern boundary, the L-8 canal was completed in the early 1950s facilitating additional drainage. In the 1970s a canal and elevated road along the east boundary stopped historic inflows from the Corbett Management Area. During ranch development, an extensive network of interior canals and ditches were constructed that significantly decreased surface water retention and increased drainage offsite. One of the District's primary goals was to complete a hydroperiod restoration plan to reverse overdrainage and re-establish wetland structure and function. (see **Restoration Projects**, section **5.1**).

**Map 11. Regional Major Geomorphic Features**



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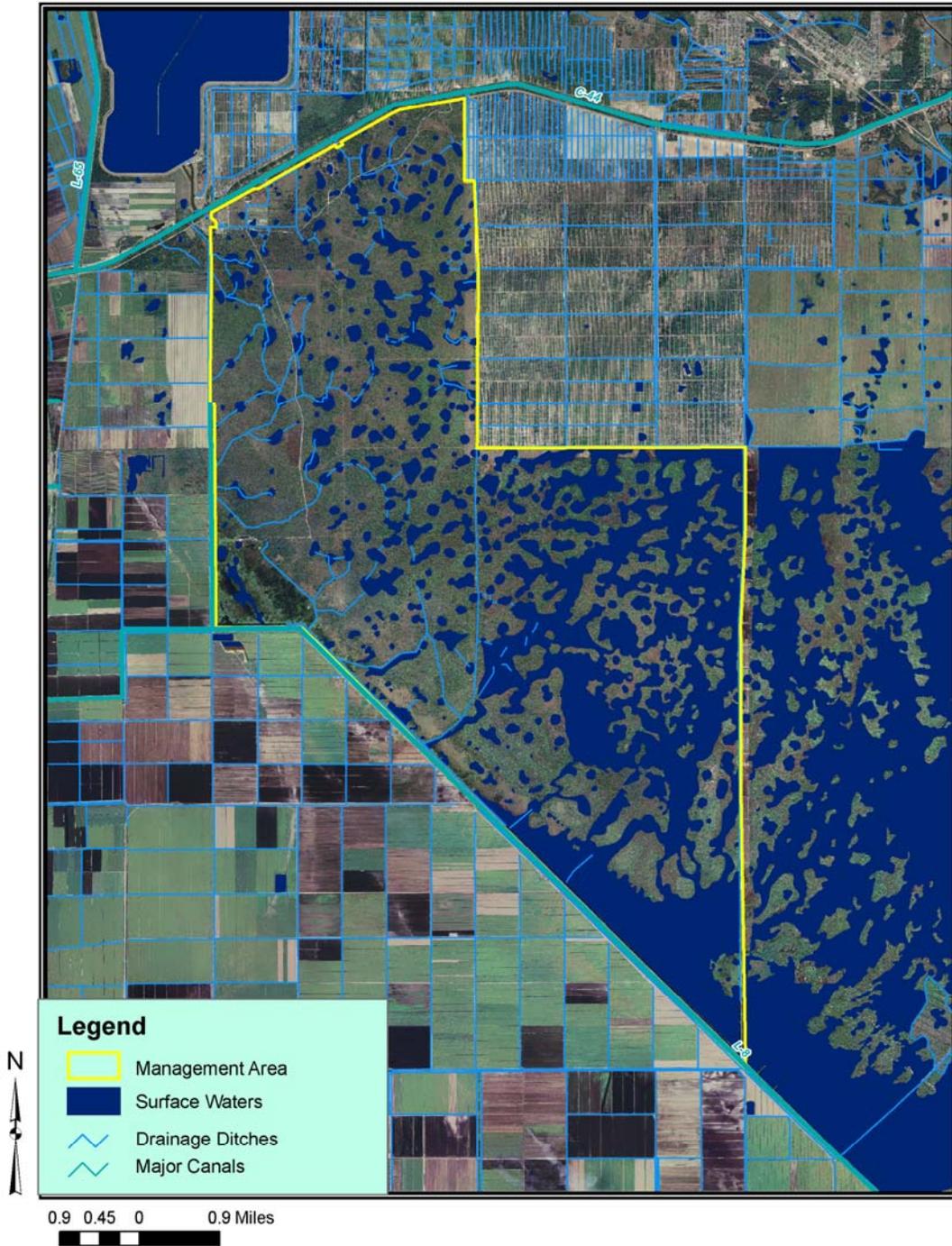
**Map 12. Regional Topographic Setting**



**Map 13. DuPuis Topography**

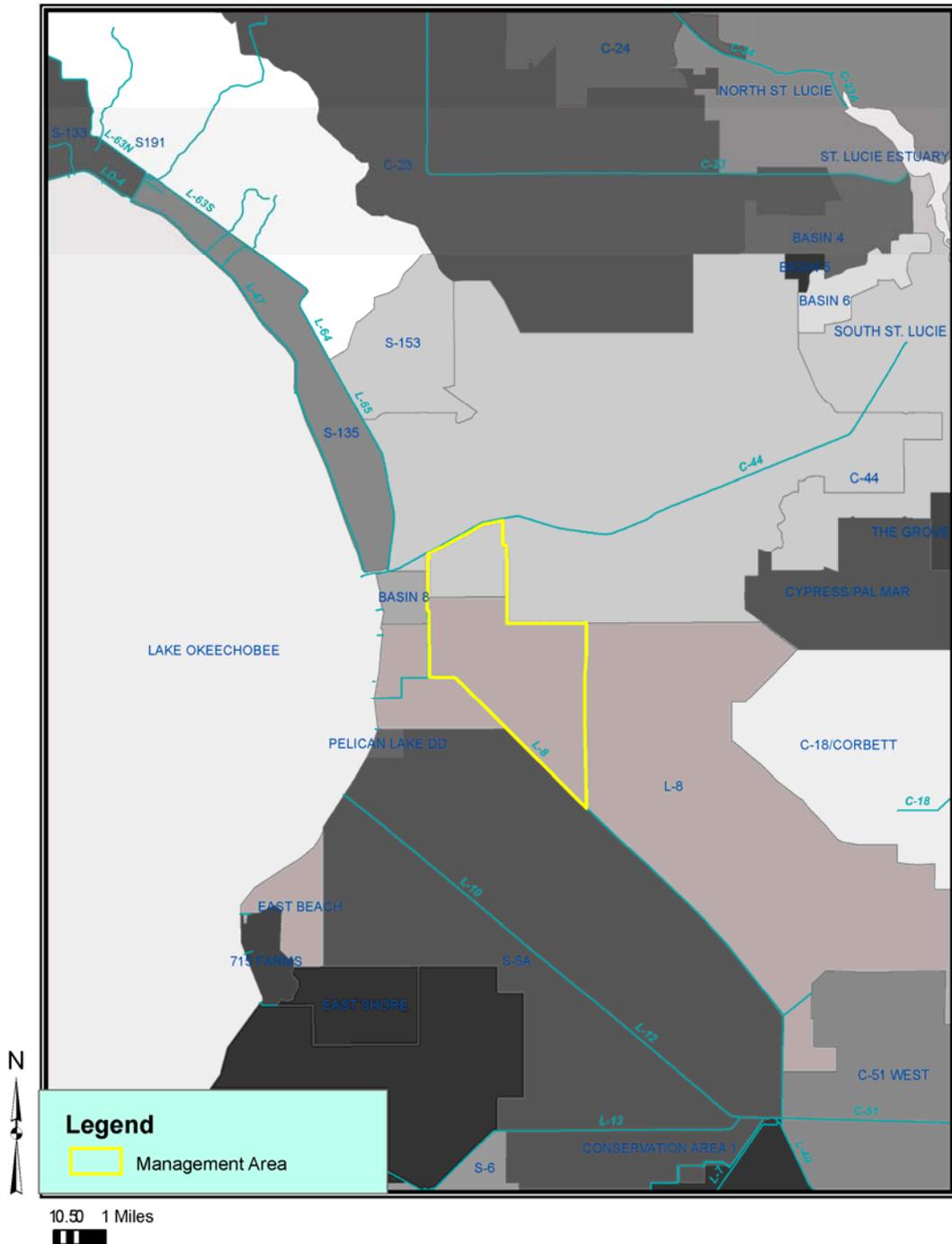


**Map 14. Surface Waters**



DuPuis Management Area General Management Plan 2014 through 2024  
South Florida Water Management District, Land Stewardship Section

Map 15. Hydrologic Basins



Attachment: DuPuis Mgt Plan 2014 - 2024 (Resolution No. 2014 - 0103 : Dupuis and Kissimmee River Ten Year General Management Plan

## 4.2 Soils

There are four distinct soil categories within the DuPuis Management Area as defined by the Natural Soil Landscape Positions soil classification system: flatwoods soils, flat soils, sand depression soils, and muck depression soils (**Map 16**). This classification system groups South Florida soils into 12 categories based on hydrology and soil morphology that reflect the local relative topography, hydrology, and vegetation of the area. Soil classification descriptions are included as **Appendix C**.

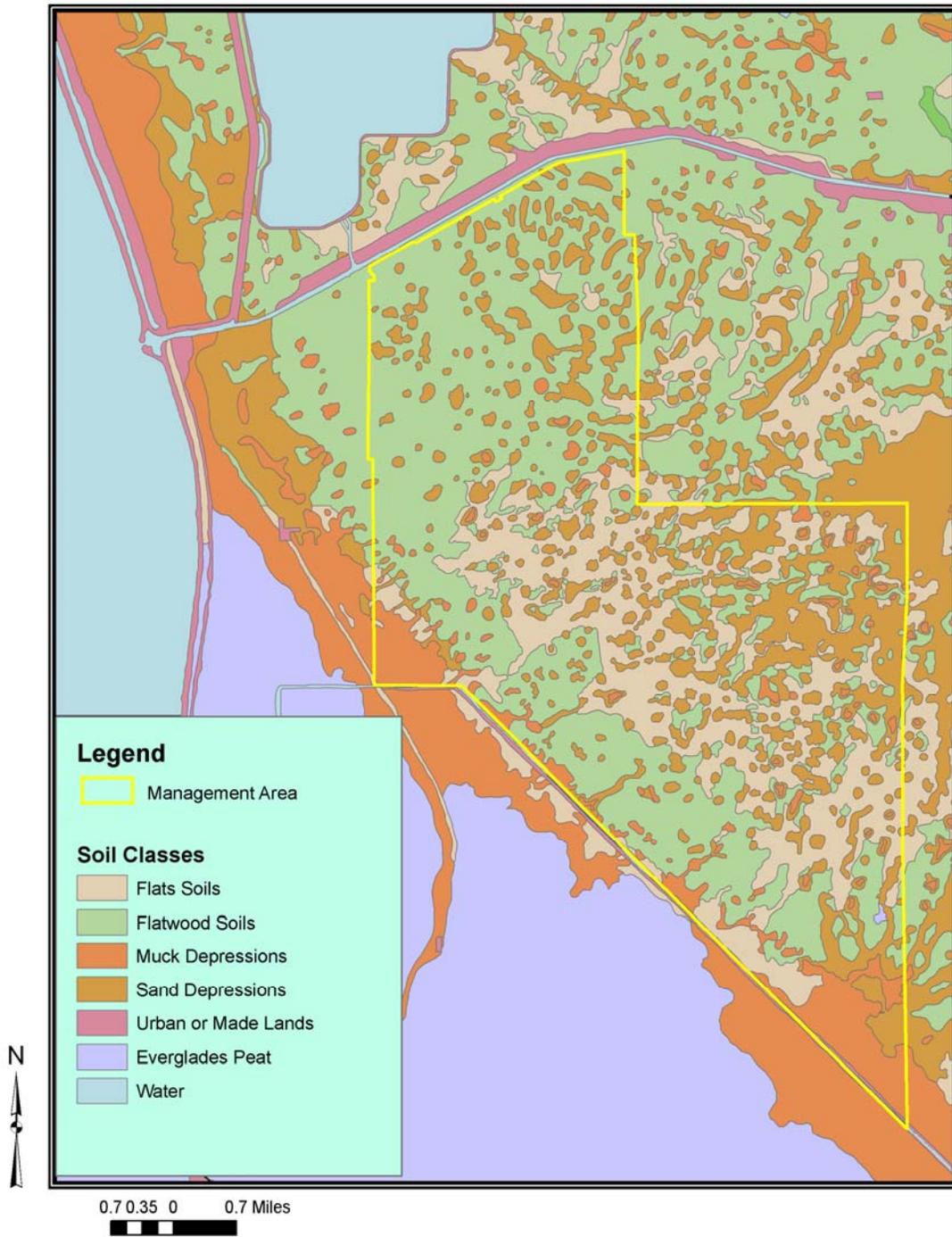
### Soil Contamination and Excavation Sites

A cattle dipping area that was located at the present Gate 3 equestrian area was removed by the District in the late 1980's. This chemical treatment area was one of the 3,200 cattle dipping vats constructed statewide between 1906 and 1961 for a tick fever eradication program that was mandated by state law. At these locations, soils became polluted with insecticides as cattle were either lead through in-ground dipping vats or sprayed in holding pens. Shortly after acquisition, the District began appropriate corrective actions to remediate soil contamination associated with the cattle dipping vat.

Five other soil contamination sites were identified on the property at the time of acquisition. These sites were used for petroleum or chemical storage or equipment maintenance areas. The District had these contaminated sites chemically and physically analyzed as the first phase of a two-part remedial strategy that developed site-specific, risk-based action levels. The second phase of this process determined the appropriate degree of corrective actions. The Florida Department of Environmental Protection Waste Cleanup Section staff assisted in decision-making with regard to the appropriate land use classification and required corrective actions. In the early 1990s, a remediation plan was designed and implemented at the five contaminated sites. In June 2001, a final site rehabilitation order was issued by the Department of Environmental Protection which completed the District's remediation activities.

Four small inactive borrow pits exist that were used to supply fill for road building and repair. The largest pit is about 3 acres in size and located at the south end of the DuPuis Grade. This pit was re-contoured and re-planted with native vegetation in 2001 (See **Restoration Projects**, section 5.1).

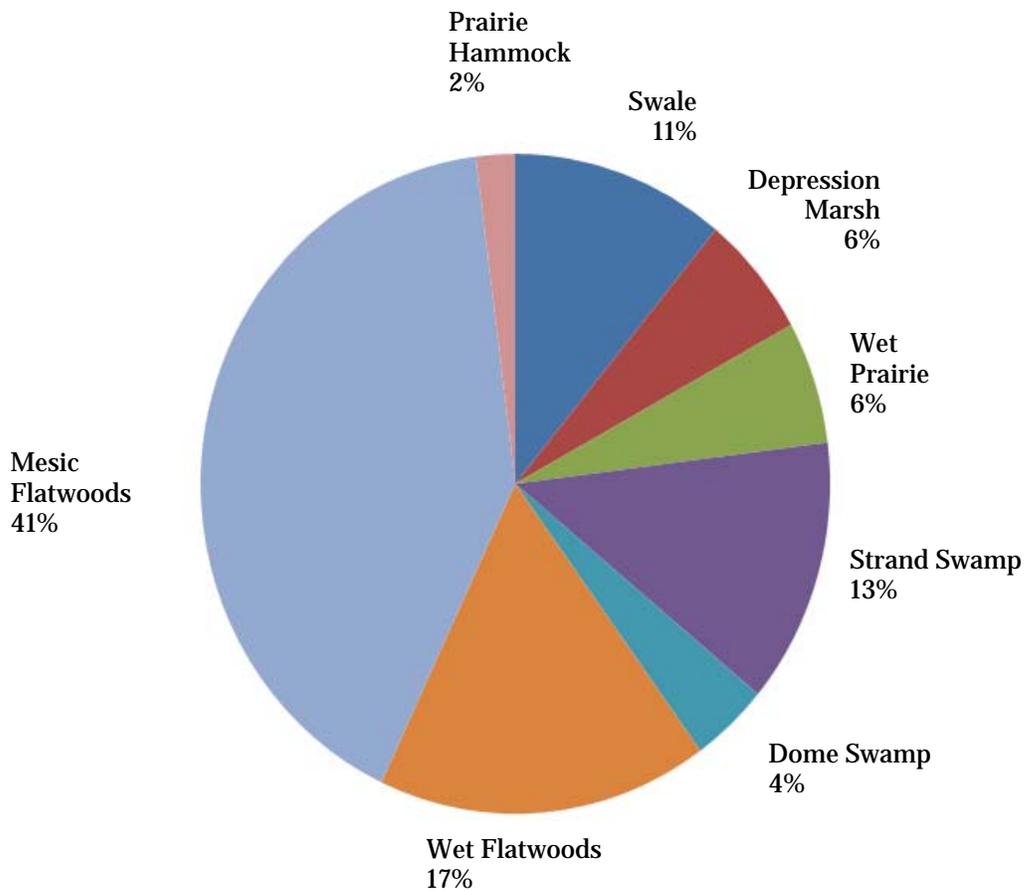
**Map 16. Soils**



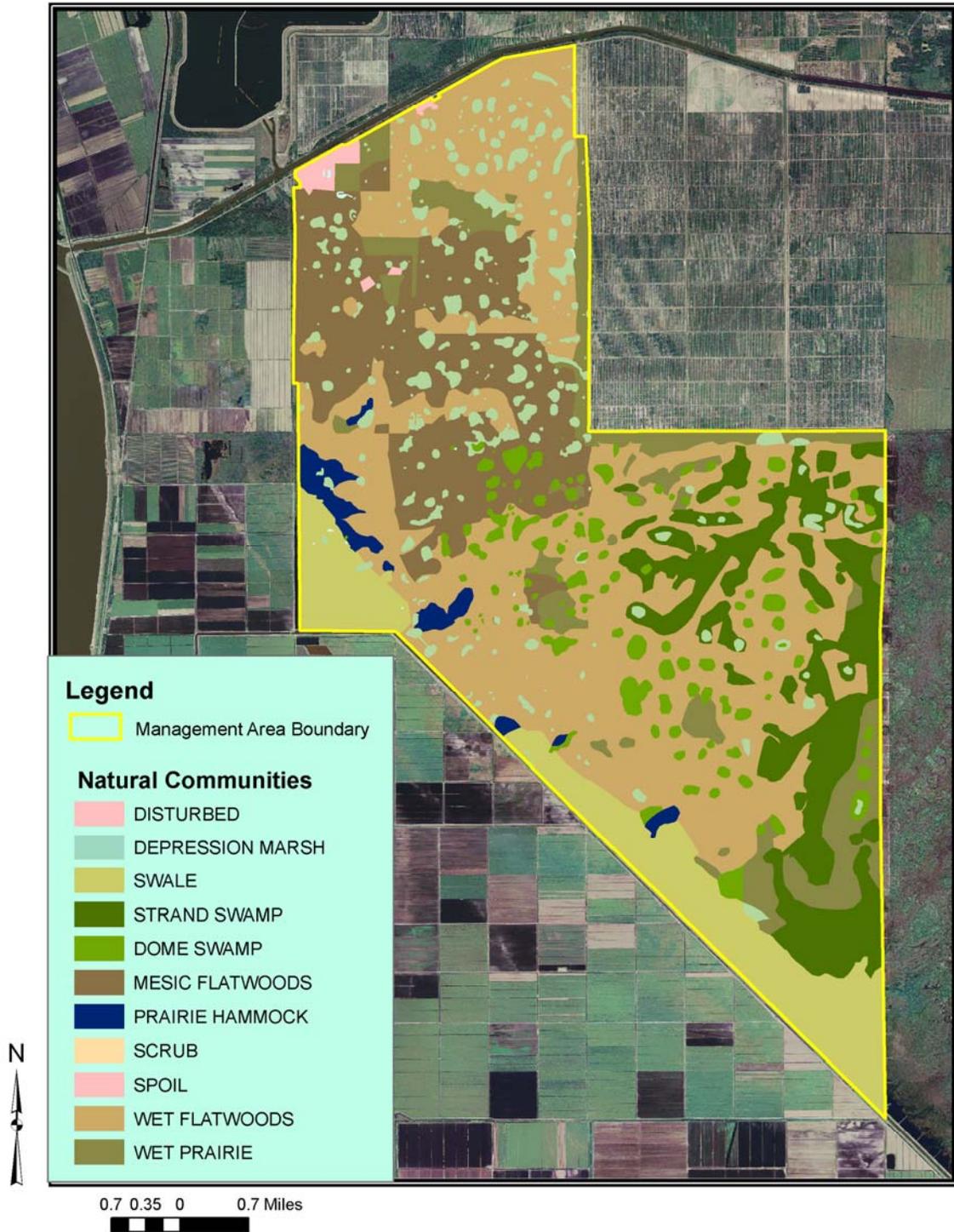
### 4.3 Natural Communities

The District classifies natural community types by the Florida Natural Areas Inventory Classification system. Eight natural community types occur on the DuPuis Management Area (**Figure 1**, and **Map 17**). Community condition varies widely, depending on previous and current land use, hydrologic alteration, exotic infestation, and current management activities. Natural community descriptions and acreage figures are included in **Appendix D**.

**Figure 1 Natural Community Types**



### Map 17. Natural Communities



#### 4.4 Wildlife

The natural communities within the project provide habitat for numerous bird, fish, amphibian, reptile, and mammal species, several of which are listed federally or by the state. Initial wildlife inventories on the management area were conducted from 1987-1989. Regular surveys are ongoing by the Florida Fish and Wildlife Conservation Commission and species lists are updated accordingly. Wildlife species observed utilizing the property include 139 bird, 25 mammal, 19 reptile, and 10 amphibian species (**Appendix E**). At least 15 species considered rare, endangered, threatened, or of special concern have been noted.

#### 4.5 Cultural Resources

*Policy 140-25(3)(j) Archaeological and historic resources are protected by site identification and inter-agency coordination with the Florida Division of Historical Resources. Land Stewardship planning shall include an analysis of archaeological data accompanied by appropriate public education opportunities.*

The District's management goal for cultural resources is historic preservation by identification, evaluation, documentation, protection, and stabilization of known historic or prehistoric sites. The District maintains a database of all known archeological and historical sites on District properties that is periodically updated through the Department of State's Master Site File. Due to its sensitive nature, site-specific data is not made available to the general public.

Four archaeological sites of Native American earthworks are present on the management area and are registered in the Florida Master Site File as sites of archaeological significance. The department of State, Division of Historic resources has visited the sites to conduct mapping and sampling. Research assistance has been provided by the Southeast Florida Archaeological Society and Florida Museum of Natural History. Information was summarized in "Cultural Resource Assessment of Four Archaeological Sites at Dupuis Reserve, Palm Beach County," (Wheeler, 2000) and subsequent reports (Wheeler, 2001; Rich, 2001). Studies concluded that the four DuPuis sites represented important examples of Lake Okeechobee mounded earthwork complex that is well preserved. Management recommendations included keeping the area in public ownership, prohibiting grazing or agricultural activities, prohibiting vehicle traffic at mound sites, and monitoring sites for feral hog rooting and vandalism (Wheeler, 2000). Management activities will continue to promote research on these sites and continue to safeguard site integrity. Management activities planned for these areas are the treatment of invasive exotic vegetation and the periodic application of prescribed burns. Ground disturbing activities will be avoided in these areas. Staff from the Division of Historic Resources may revisit these sites at times to conduct additional investigations.



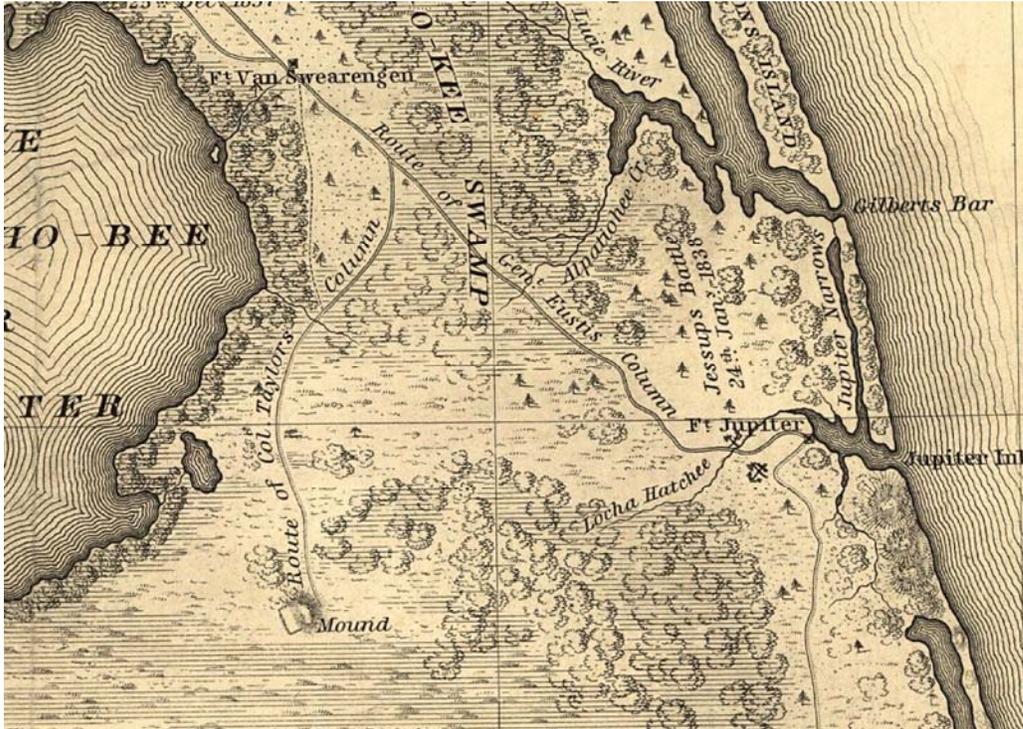
A representation of the mound and earthwork complex at DuPuis

It appears from maps from the Seminole wars that two of the Army patrol routes between the frontier forts passed through DuPuis, including one that was traveled by a column under the command of President Zachary Taylor when he was a colonel in the Army. (**Map 18**).

There are several structures on site that exhibit vernacular architecture typical of older Florida ranches including three horse barns in the equestrian area, the sheep shearer's cabin and the mound house (a hunting cabin). Management of these structures mainly involves security patrols and signage; repairs are made as necessary to the horse barns.

In 2002, District staff contracted local historian, Steve Farnsworth, to research the history of the DuPuis property. A detailed description of the history of the area from pre-European settlement to acquisition by the District is contained in **Appendix A**.

**Map 18. Seminole War Era Military Maps**



Military maps from the Seminole Wars: 1839 (above) and 1856 (below) The boundary of the DuPuis Management area has been added in green.

## 5. Natural Resource Management

*Policy 140-23 The Land Stewardship Program mission is to provide natural resource protection and management while allowing compatible multiple uses on designated public lands.*

Resource management includes all applied programs wherein activities manipulate, modify, and control natural features within the management area. All lands acquired through the Save Our Rivers program are managed and maintained in an environmentally acceptable manner and, to the extent practicable, restored and protected in their natural state and condition. Management responsibilities are defined by statute, and directed by best management practices. Goals and objectives for the management area clarify resource management guidelines necessary to fulfill the District's land stewardship responsibilities. Land Stewardship resource management activities include the implementation of projects to restore a more natural hydrologic regime, the application of vegetation control activities to restore natural forest structure and composition, the continuation of an aggressive exotic plant control program, the application of a prescribed burn program for the maintenance of fire dependent plant communities, and coordination with the Florida Fish and Wildlife Conservation Commission to implement wildlife management programs.

### 5.1 Restoration Projects

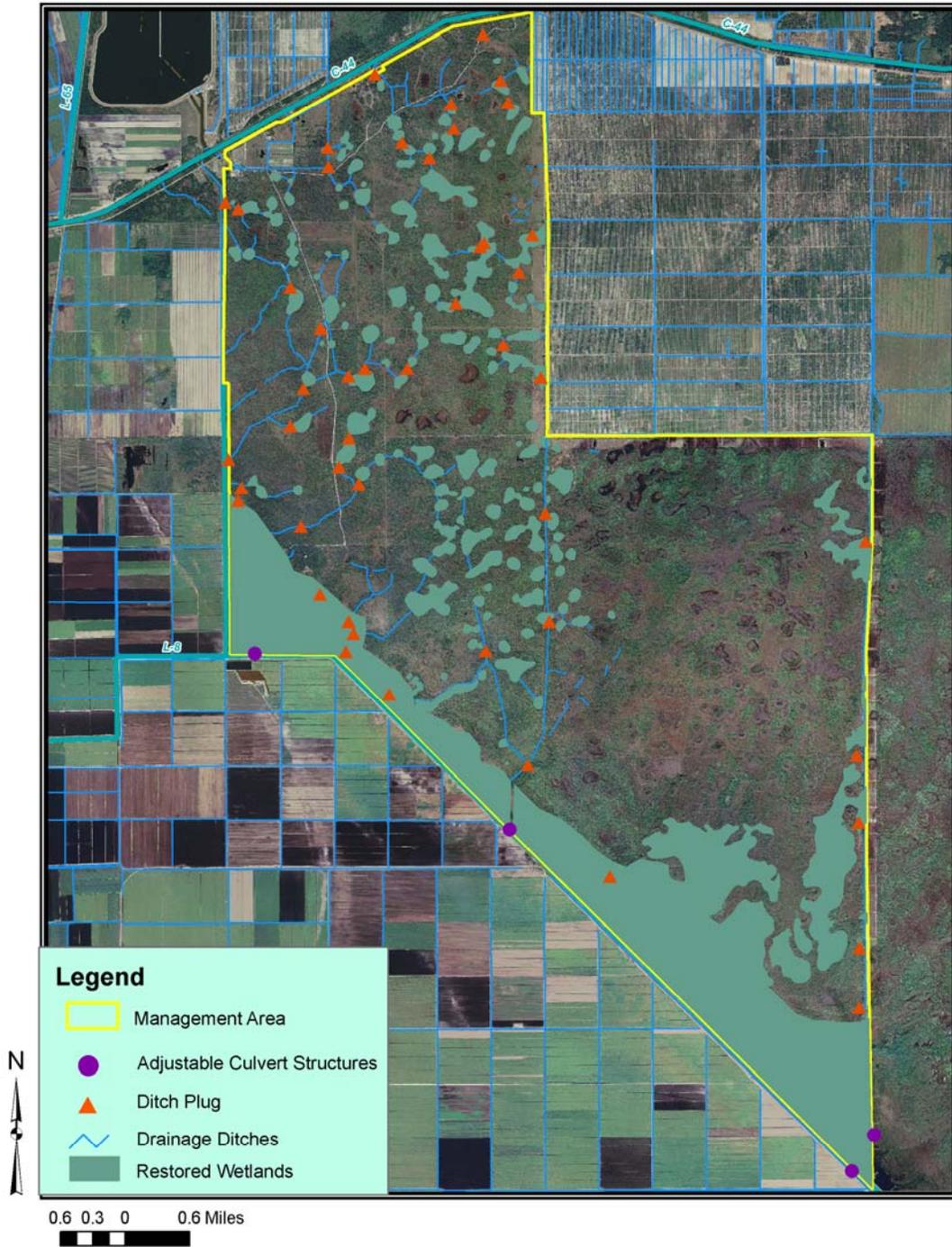
*Policy 140-25(1) The basis for the Land Stewardship Program is the protection and management of natural hydrologic resources.*

*Policy 140-25(1)(c) Where feasible, an attempt shall be made to restore a more natural hydroperiod on tracts where the drainage patterns have been altered.*

#### Wetland Restoration

An environmental assessment completed for the property shortly after acquisition included a wetland and hydroperiod restoration plan as a primary management goal. The plan recognized that severe overdrainage of the property had occurred through the construction of a major network of swales and canals built to facilitate the drainage of water north to the St. Lucie Canal and south to the L-8 canal. The plan outlined a three-phase restoration project targeting restoration of both the interior wetlands and 2,341 acres of historic Everglades referred to as the L-8 marsh. In 1990 and 1991, 41 earthen ditchplugs were installed at strategic interior ditches to re-hydrate isolated wetlands and reestablish sheetflow across the property interior (**Map 19**). Approximately 4,000 acres of wetlands were restored through the use of ditch plugs. Monitoring has demonstrated that re-hydrating the wetlands resulted in native wetland plant species replacing upland species. However, exotic wetland plants such as torpedo grass have also invaded some re-hydrated wetlands requiring additional exotic plant control efforts.

### Map 19. Wetland Restoration



The second phase of the restoration project entailed the construction of an eight-mile levee separating the management area from the L-8 canal and the Everglades Agricultural Area. This project included installation of three water control structures that became operational in December 1996. The District utilizes mitigation funds to pay for this portion of the restoration project.

The final restoration phase consisted of re-establishing the hydrologic connection between the L-8 marsh and similar habitat on the adjacent Corbett Area. In 1992, two sections in the roadway separating the DuPuis Management Area and Corbett Wildlife Management Area were degraded and stabilized with geo-web swales to reconnect historic water pathways. In 2001, installation of six culverts with adjustable control gates was completed to increase flow to DuPuis and help provide drainage from the adjacent Corbett Area.

### Upland Restoration

In the mid 1990's, managers began additional work to restore DuPuis' upland areas. Prescribed burning was initiated shortly after property acquisition to reintroduce the beneficial effects of fire to the area, however, fire alone could not effectively reduce the overgrown structure of some upland areas. This overgrown condition negatively affected the diversity of native vegetation and wildlife, and was a probable contributor to the extirpation of the indigenous red-cockaded woodpecker from the area. Due to the heavy shrub layer and lack of herbaceous fuel, managers began using mechanical means to remove overgrown shrubby understory followed by prescribed burning. Vegetation throughout most of the site is now able to be maintained in a cost-effective manner using primarily prescribed fire.

Beginning in 2005, approximately 17 acres of Bahia grass was targeted with multiple herbicide treatments to encourage the recruitment of native species in a pilot project for groundcover restoration. This pilot project used chemical treatment and prescribed fire over successive years to break-up the solid Bahia cover and encourage the recruitment of native groundcover species. Many areas of DuPuis have seen a reduction in Bahia grass cover due to frequent inundation following hydrologic restoration. The pilot project has demonstrated that the chemical and prescribed fire treatment approach may be successfully employed in areas where hydrologic restoration alone is insufficient in restoring pasture areas.

The District has also utilized timber thinning revenue contracts to relieve the overcrowding of pines and cabbage palms. This thinning helps prevent the spread of pine bark beetles and revitalizes the understory by exposing more surface area to sunlight and increasing primary productivity. The dense pine stands were likely a combined result of a lower water table due to past drainage efforts, and the suppression of fire. To date, most upland restoration has been conducted on the more overgrown west portion of DuPuis, however, future work will include additional areas. The combined restoration effort has restored conditions suitable for red-cockaded woodpeckers and has led to a reintroduction program for this species (see **Rare, Threatened, and Endangered Animal Species** section 5.4.3).

### Visitor Center Restoration

The District initiated an effort to restore native plant communities representative of the management area on a three-acre site immediately east of the main administration office that will become part of the visitor's center. The previous landowner had planted the area with imported exotic trees and the area subsequently became infested with invasive shrubs. A small concrete pond on the site had also become choked with invasive aquatic plants. In 1999, the District cleared the exotic trees and shrubs from the site, cleaned out the concrete pond, and re-shaped the contours around the pond to simulate a cypress dome. The District planted 35 nursery grown mature cypress trees, and over 100 slash pines and live oaks that were relocated from other sites on the property. In 2001, a new pump system was installed in the pond to control water levels. The pond was filled with a gravel base and topped with soil. The District planted over 20 native aquatic plant species to re-create various wetland plant communities that occur on the property. The site is used for environmental education purposes documenting the various plant communities found on DuPuis.

### Borrow Pit Restoration

Work has continued on restoration of a 3 acre borrow pit located at the end of DuPuis Grade that was enlarged in the early 1990's to provide shell material for construction of a portion of the area's public roads. After the pit was closed in 1995, the shoreline and adjacent disturbed areas became heavily infested with cattails and exotics. Work began in 2001 to remove undesirable plants, re-contour a portion of the pond, and plant a variety of native vegetation to create a more natural landscape. A large berm of overburden material along one side of the pond was lowered and contoured to create areas where cypress, native shoreline plants, and marsh vegetation were planted. The top of the re-contoured berm was planted with cabbage palms, oaks, and native ground vegetation to create a small hammock. Cabbage palms were also planted in spots around the pond perimeter. A hydrological connection to the surrounding marsh was established by lowering another berm to permit seasonal inundation and water exchange. A similar project occurred in 2013 at the borrow pit pond within the family campground, where fill was brought in to create a littoral shelf that was planted with native wetland species.

#### **5.1.1 Monitoring**

*Policy 140-25(3)(f)(2) Monitoring shall be conducted to identify landscape changes resulting from management activities.*

Tracking environmental response to management and restoration activities provides valuable information on progress toward restoration objectives. Information obtained by monitoring specific sites assists land managers in making sound ecological choices for each unique parcel.

Monitoring has focused on documenting vegetative changes from restoration of the area's hydroperiod. In May 1988, the District established a monitoring program to determine the progress of hydrologic restoration in the L-8 marsh and in re-flooded interior marshes. Digital recorders were installed at four locations to record changes in water levels. Vegetation monitoring consisted of repeated counts along transects at varying elevations both before and after completion of the restoration project. In addition, photomonitoring was conducted at marked plots in the marsh. Results of the restoration/monitoring program were included in unpublished annual monitoring reports completed in 1997-2001. Reports indicated a positive vegetative shift occurred in the direction of more obligate wetland species as a result of increased inundation. Periodic monitoring will continue in the L-8 marsh to evaluate the influence of increased hydroperiod and also evaluate the effects of the additional water flows through the connection with the Corbett area marsh constructed in 2001.

Additionally, twenty-six 360 degree photomonitoring points have been installed throughout the management area with additional points being added as needed. Twenty of the photopoints have been installed within the 17-acre Bahia grass groundcover restoration area and were accompanied by groundcover vegetation survey plots. These photo points were utilized between 2007 and 2010 to observe and document the vegetative character of the property at that time. The photopoints have been established with permanent monuments that can be located with GPS coordinates and a metal detector, and are available for use in the future to compare site conditions with the 2007-2010 baseline condition.

## 5.2 Vegetation Management

*Policy 140-25(2)(d) Where practicable, an attempt shall be made to restore and maintain desirable vegetation to promote habitat diversity in areas where invasive exotic vegetation, grazing practices, or improved land uses have substantially altered the historic landscape.*

*Policy 140-25(3)(l) Mechanical equipment may be used in conjunction with prescribed burning and other management tools to control vegetation and restore habitat structure.*

Vegetation management is a program component where the composition and/or structure of a vegetative community is physically altered to meet a management objective. The techniques used in vegetation management include mowing, disking, shredding, roller-chopping, timber thinning, and planting. These techniques are applied to one or more management objectives that may include:

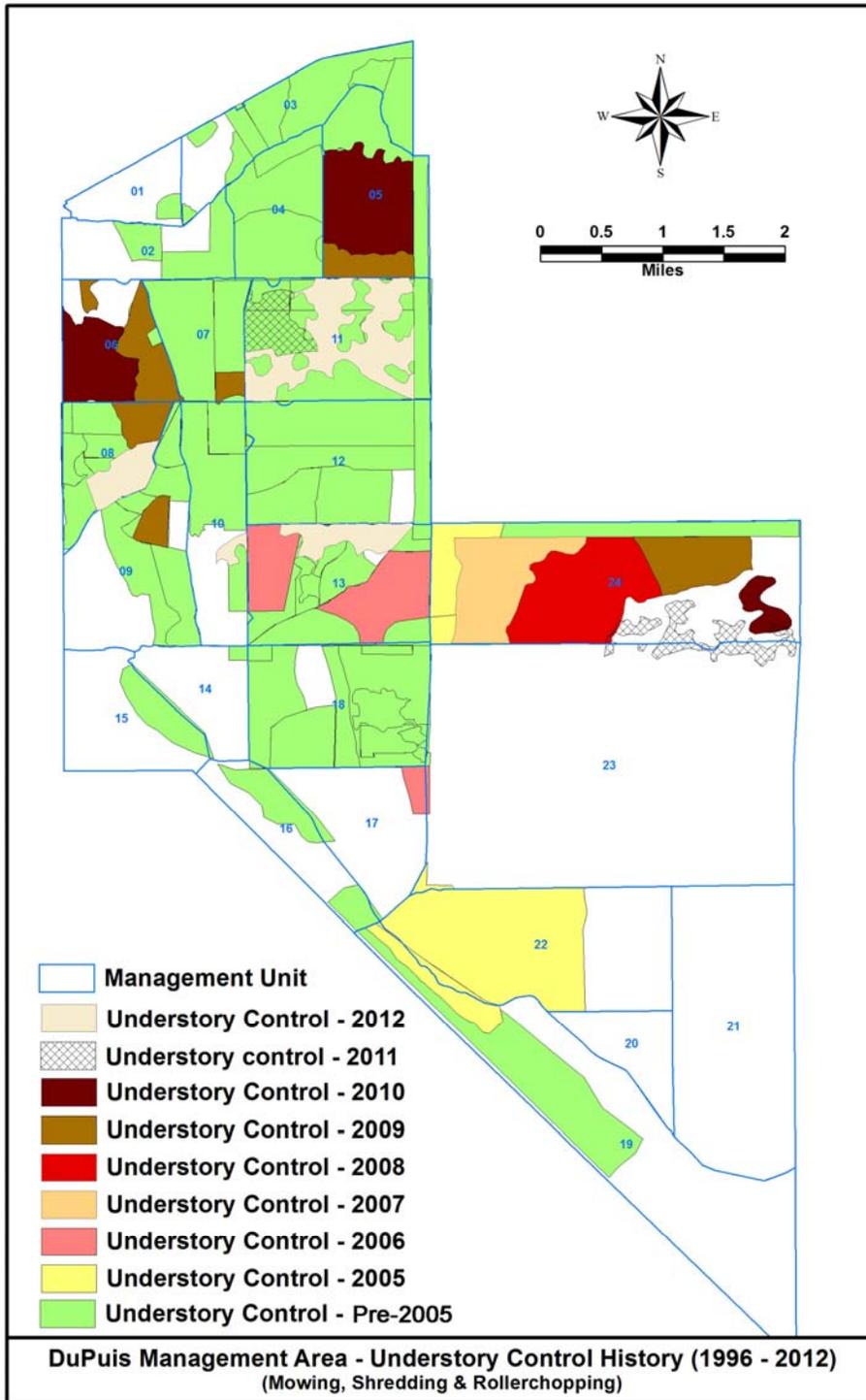
- Restoring a degraded vegetative community
- Improving an area's suitability as wildlife habitat
- Exotic species control or weed management

- Fuel management in relation to prescribed burning or minimizing wildfires
- Clearing for maintenance or project management purposes

Vegetation maintenance needs are identified annually by the regional land manager. Vegetation control and maintenance is executed by District or Florida Fish and Wildlife Conservation Commission field personnel or through contracts (**Map 20**). To date, several thousand acres of the DuPuis Management Area's understory have been mechanically treated using roller choppers or by shredding. Mechanical vegetation control will continue to be used in select areas where necessary to control understory brush species with the goal of maintaining these areas in a more cost-effective manner through the use of prescribed fire.

Past fire suppression and hydrologic alterations has resulted in the growth of dense stands of slash pine. This unnatural density reduces stand health and increases the stand's susceptibility to attacks from bark beetles and disease. Dense areas of slash pine have been thinned through selective harvests to attain more natural stand density. These projects were planned and conducted with sensitivity to surrounding environmental conditions and in coordination with public use schedules. These stands may also have locally heavy concentrations of cabbage palms in the midstory. Cabbage palms are thinned or eliminated through cutting or harvesting in select areas such as those being managed for red-cockaded woodpeckers. Through upland management, the extensive pine flatwoods are being restored to a more open natural condition that can be maintained through restored seasonal flooding and recurring prescribed fire.

**Map 20. Mechanical Vegetation Treatments, 1996 – 2013 \***



\*no treatments conducted in FY 2013, budgeted funds were directed to other areas of higher priority within the management region.

### 5.2.1 Exotic/Invasive Plants

*Policy 140-25(2)(c) Management practices will strive to identify existing infestations and implement appropriate control or eradication measures.*

*Policy 140-25(3)(b) Exotic plant control in all management areas shall strive to attain a level of success where periodic maintenance eliminates the infestation or reduces the coverage of exotic plants.*

South Florida's subtropical climate provides an excellent growth environment for the rapid spread of exotic plants that can cause extensive alterations to natural ecosystems. Environmental changes caused by extensive hydroperiod alterations have been an important factor in the spread of exotic vegetation. Exotic plant infestations can result in partial or total displacement of native plants, loss of wildlife habitat, and the degradation of public use areas.

Land Stewardship targets Category I and II non-native plant species as identified on the Exotic Pest Plant Council's biennially updated list of *Florida's Most Invasive Species* (<http://www.fleppc.org/>). Category I species include non-native plants that invade and disrupt Florida native plant communities. Category II plants have the potential to invade and disrupt natural successional processes. Both Category I and II exotics are considered invasive and a threat to the function and ecological stability of Florida's natural communities.

Invasive and exotic plant control measures can include a combination of herbicide application, biological control, prescribed fire, roller chopping, mowing, and physical removal. Selection of control measures is dependent upon species type, environmental factors, and natural communities impacted. Private contractors conduct exotic plant control activities in cooperation with the District's Vegetation Management Section. In addition the U.S. Department of agriculture has released the lygodium moth and melaueca weevils within the management area; these are biological control agents that have assisted in the control of melaueca and to a lesser extent, lygodium.

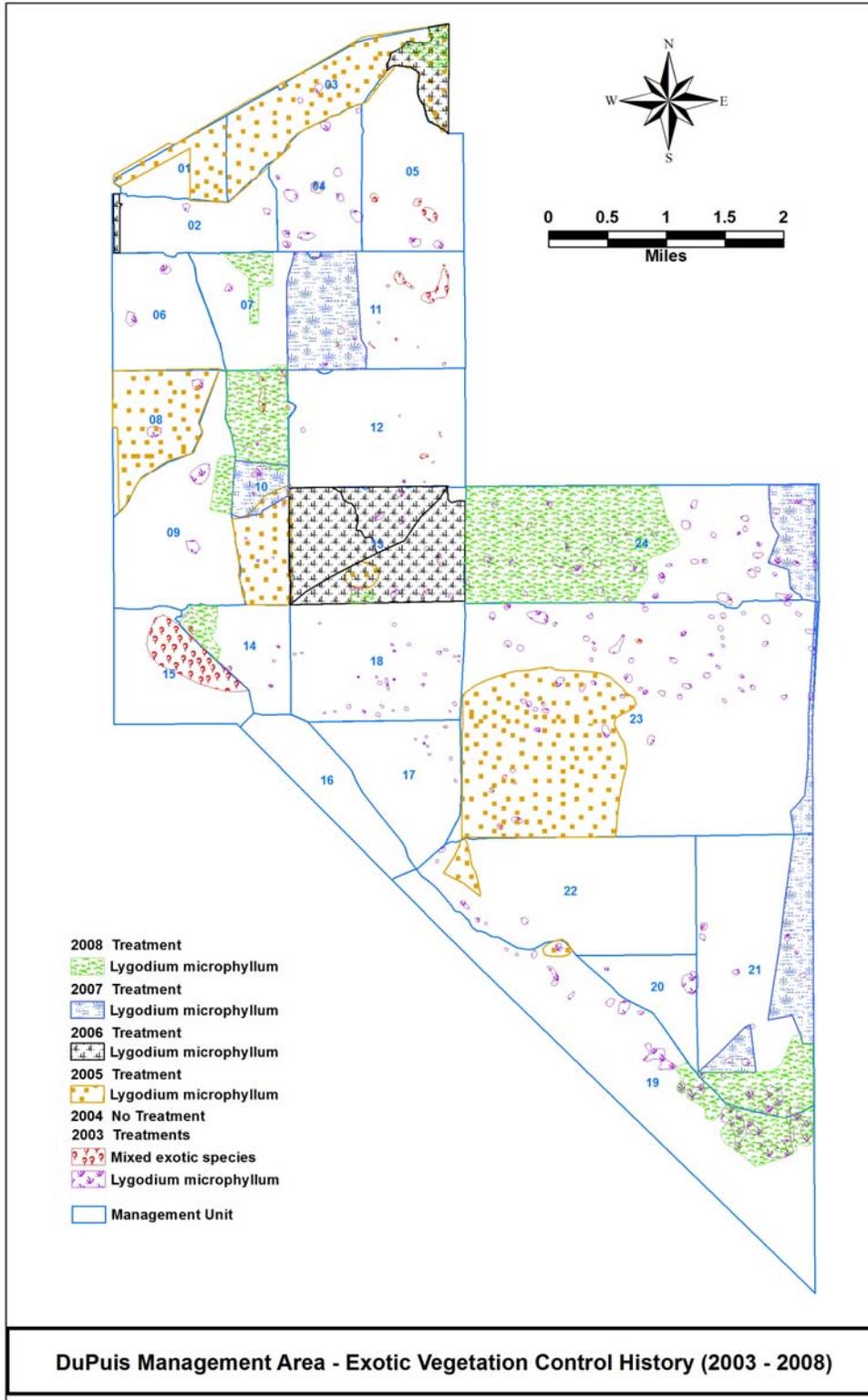
Melaleuca (*Melaleuca quinquenervia*) and Brazilian pepper (*Schinus terebinthifolius*) have received most control efforts since the acquisition of the management area. At present, all large infestations of Melaleuca have been eliminated and scattered young infestations are searched for and treated. Brazilian pepper remains prevalent and continues to require vigilance and control. Over the last decade, Old World climbing fern (*Lygodium microphyllum*) began spreading throughout the area and is now found in all habitat types, though heavy infestations are infrequent due to previous control efforts. This species poses the most significant threat to native plant communities on the property and recent additional funding has allowed aggressive and concentrated control efforts. Presently, Lygodium is sporadically scattered throughout the area and control efforts have significantly decreased

infestations. Because of this, per acre treatment costs are continuing to decrease. However, continued treatment is needed and will be applied to lower the prevalence of this aggressive exotic species into maintenance level.

Other terrestrial species such as cogon grass (*Imperata cylindrica*) and napier grass (*Pennisetum purpureum*) are controlled by regular herbicide applications. Water-hyacinth (*Eichhornia crassipes*) and waterlettuce (*Pistia stratiotes*) are present in canals located near the DuPuis marsh and require regular treatment. Smaller localized infestations of West Indian marsh grass (*Hymenachne amplexicaulis*), shoebutton ardisia (*Ardisia elliptica*), Indian laurel fig (*Ficus microcarpa*), bladder pod (*Sesbania sp.*), Primrose willow (*Ludwigia peruviana*) and Ceasar weed (*Urena lobata*) are increasing but are not currently being targeted due to budgetary constraints, but will continue to be monitored.

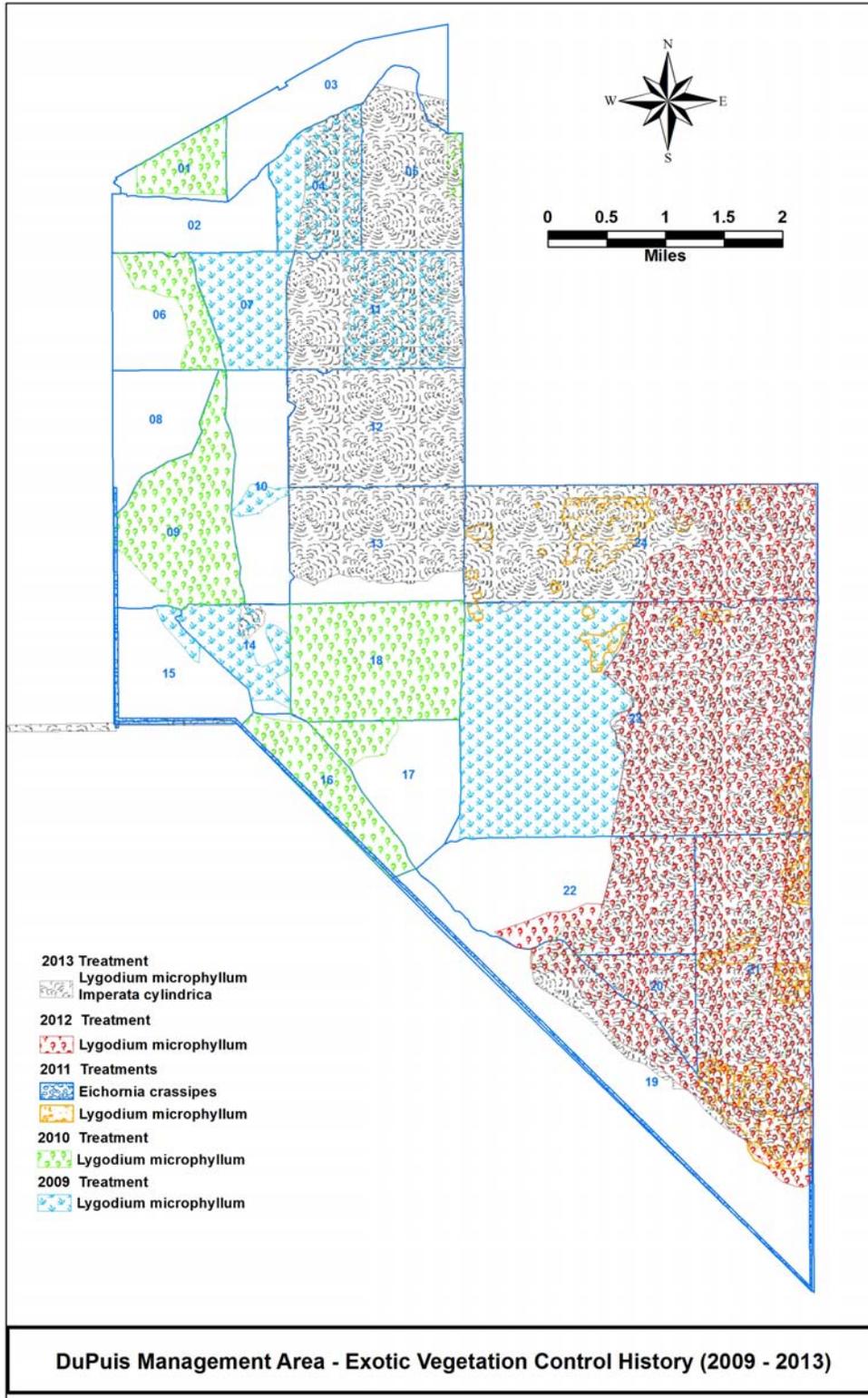
Exotic plant control is conducted primarily by a contracted crew of applicators, supervised by Land Stewardship staff. District field technicians also provide supplemental support especially on small or sporadically distributed infestations. Generally, treatments are scheduled so that each unit is covered bi-annually, however schedules are adjusted based on current conditions. The District treats and surveys the climbing fern-infested areas several times a year to control established infestations and locate new ones. Areas of treatment are scheduled based on groundwater conditions, time since last treatment, virulence of infestation, public use, and in accordance with other management operations. All treatments follow herbicide Best Management Practices and use the best available science. Treatment dates, locations, and herbicide are noted and recorded in a GIS database. **(Maps 21a-21b)**

**Map 21a. Exotic Plant Control, 2003 – 2008**



Attachment: DuPuis Mgt Plan 2014 - 2024 (Resolution No. 2014 - 0103 : Dupuis and Kissimmee River Ten Year General Management Plan

**Map 21b. Exotic Plant Control, 2009 – 2013**



Attachment: DuPuis Mgt Plan 2014 - 2024 (Resolution No. 2014 - 0103 : Dupuis and Kissimmee River Ten Year General Management Plan

### 5.2.2 Rare, Threatened and Endangered Plant Species

*Policy 140-25(2)(b) Particular emphasis shall be placed on the identification, protection and management of rare, threatened and endangered species.*

Listed species are those plants and animals considered rare within a specific geographic area by the U.S. Fish and Wildlife Service, the Florida Fish and Wildlife Conservation Commission, Florida Natural Areas Inventory, or the Florida Department of Agriculture and Consumer Services. The plant list of the management area (**Appendix E**) contain several listed species (**Table 2**).

**Table 2. Plants Occuring in the DuPuis Management Area that are listed by the Florida Department of Agriculture and Consumer Services as Threatened (T), Endangered (E), or Commercially Exploited (C).**

Common Name	Scientific Name	Status
Giant Leather Fern	<i>Acrostichum danaeifolium</i>	C
Pinepink	<i>Bletia purpurea</i>	T
Manyflowered Grasspink	<i>Calopogon multiflorus</i>	E
Satinleaf	<i>Chrysophyllum oliviforme</i>	E
Florida Butterfly Orchid	<i>Encyclia tampensis</i>	C
Threadroot Orchid	<i>Harrisella filiformis</i>	T
Drysand Pinweed	<i>Lechea divaricata</i>	E
Catesby's Lily	<i>Lilium catesbaei</i>	T
Nodding Club-Moss	<i>Lycopodiella cernua</i>	C
Celestial-lily	<i>Nemastylus floridana</i>	E
Giant Sword Fern	<i>Nephrolepis biserrata</i>	T
Cinnamon Fern	<i>Osmunda cinnamomea</i>	C
Royal Fern	<i>Osmunda regalis</i>	C
Blue Butterwort	<i>Pinguicula caerulea</i>	T
Yellow Butterwort	<i>Pinguicula lutea</i>	T
Snowy Orchid	<i>Platanthera nivea</i>	T
Rose Pogonia	<i>Pogonia ophioglossoides</i>	T
Longlip Lady's-tresses	<i>Spiranthes longilabris</i>	T
Southern Lady's-tresses	<i>Spiranthes torta</i>	E
Reflexed Wild-pine	<i>Tillandsia balbisiana</i>	T
Cardinal Wild-pine	<i>Tillandsia fasciculata</i>	E
Twisted Wild-pine	<i>Tillandsia flexuosa</i>	T
Giant Wild-pine	<i>Tillandsia utriculata</i>	E
Simpson's Rainlily	<i>Zephyranthes simpsonii</i>	T

Land Stewardship establishes appropriate fire and hydrologic regimes, and controls invasive exotics in natural communities to benefit plant species. District Public Use Rules aid in the protection of native habitat and specifically prohibit destroying, defacing, or removing any natural feature or native plant on District

lands. In this manner, listed plants are given lawful protection and environmental conditions suitable for their growth and continued existence.

In 1999, a population of state-designated endangered celestial lily, *Nemastylis floridana*, was found in numbers not previously reported in Florida. This population was observed following a prescribed burn in this unit the previous summer. Management efforts to protect this species include prescribed burning every 2-4 years, control of exotic vegetation, and limited public access (foot travel only). Periodic surveys will be conducted to evaluate the species status and determine the effects of management efforts.

### 5.2.3 Forest Resources

*Policy 140-25(3)(h) Sustainable use of forest resources shall be conducted where these activities adhere to a series of environmental criteria (see 1999 Forest Management Plan) that meet Land Stewardship Program goals. Timber contractors will be required to meet silvicultural Best Management Practices (BMP) developed for Florida forests.*

*Policy 140-25(5)(b)(3) Timber sales will be conducted to improve forest health or to support specific forest management goals.*

District policy designates its properties as multiple-use resources, which include timber harvesting. However, such activity must be compatible with Land Stewardship goals and objectives and meet strict environmental criteria:

- Sites considered for high-density pine plantings are currently in an “improved” or disturbed state (i.e. bahia pasture, existing pine plantation)
- Sites to be harvested are scheduled for hydrologic restoration and existing timber will likely be lost as a result of flooding
- The area does not contain any significant resources (e.g. endangered species) that may be harmed by changes in land use
- Forest operations would not require major road construction or improvement for accessing and processing timber, particularly within or across wetlands or other sensitive plant communities
- The area contains timber that requires salvage following fire and/or insect or disease damage, and could be subject to a sanitation harvest with minimal environmental impact
- The area has special needs for endangered species (e.g., red-cockaded woodpecker) management that requires timber stand improvement
- Harvest or planting would not negatively impact public use
- Timber harvests would return forests to a more natural structure and improved forest health

Several sites on the management area met the criteria for selective thinning, which last occurred in 2007. The thinning of dense stands adjacent to past beetle infestations improves stand health and lessened the chances of additional beetle expansion. All forest management activities were conducted in a manner consistent with good forest management practices and red-cockaded woodpecker recovery plans. There are currently no plans for additional thinning operations during this plan period.

Cabbage palms are also included in forest management planning. Occasionally palms become an unnaturally dense mid-story layer that shades out native vegetation and allows fires to reach pine canopies, often with catastrophic results. Revenue contracts have been utilized to selectively remove cabbage palms from areas where cabbage palms are growing too densely. Palms were individually spaded and the resulting holes were back-filled to required specifications. There are currently no plans for further thinning during this plan period, but land managers will continue to monitor areas where palms are likely to become too dense in the future.

To date timber and palm thinning has occurred in the following areas:

- In 1999, approximately 1200 acres of timber were harvested to salvage bark beetle-killed trees and thin overly-dense stands. This timber harvest also helped to promote and protect potential red-cockaded woodpecker nesting areas.
- In 2002, 180 acres of beetle-impacted former forest and areas of open pasture were planted with slash pine seedlings germinated from DuPuis seed stock. Future plans may include planting portions of the 60-acre citrus grove that had been previously cleared.
- In 2005, approximately 250 acres of over-dense stands of cabbage palms and 500 acres of pine trees were thinned to improve habitat quality.
- In 2006, 745 acres of pine timber were thinned to minimize the impact of a pine-beetle infestation. Additionally, 250 acres of palms were thinned to improve wildlife habitat at DuPuis through revenue generating contracts.
- In 2007, 350 acres of pine timber and 590 acres of cabbage palms were thinned through the use of two revenue generating contracts (continued from 2006).

#### **5.2.4 Agricultural and Range Resources**

*Policy 140-25(3)i Range management and grazing will be considered on improved or native ranges when the introduction of cattle will not conflict with other natural resource management and public use goals.*

Prior to District acquisition, the management area was managed as the White Belt Ranch where livestock grazing was the primary land use. The ranch supported 2500 head of cattle and 2000 sheep and goats at the time of acquisition. There are no plans to reintroduce livestock at this time.

When the District purchased the management area it contained a 60-acre citrus grove maintained by the previous owner for personal use. The District contracted the maintenance and operation of the grove from 1990 to 1998. In 2005 most of the remaining citrus trees were removed when canker was discovered on the north side of the St. Lucie Canal. Several mango, avocado, and lychee trees remain in the grove area.

#### **5.3 Fire**

*Policy 140-25(5)(c)(3) Prescribed fire will be a primary management tool on District lands and will be applied within fire-maintained communities at appropriate intervals.*

The majority of natural communities on District lands rely on frequent fire to maintain their vegetative characteristics and biodiversity. Wildfires no longer occur with historical frequency or extent, and this has altered natural community structure and function. Prescribed fire attempts to mimic the benefits of natural wildfires that historically reduced fuel loads, recycled soil nutrients, and maintained natural communities by inhibiting hardwood encroachment and stimulating fire-adapted plant growth and reproduction. The District recognizes the benefits of fire and has integrated prescribed fire planning and application into its land management strategy.

##### **5.3.1 Fire History**

Only limited fire history is available for the management area prior to District acquisition in 1986. Burn history before the mid 1950s is unknown. However, grazing practices for this region indicate native range areas were probably burned regularly to improve forage. From 1955 (date of acquisition by previous owner) until 1980, winter burning was conducted annually throughout the pinelands until pasture improvement began on the western portion in the late 1950s and was completed by about 1970. Burning was not allowed on the improved western portion of DuPuis or on the improved pasture in what is now the L-8 marsh area. From 1980 until 1986, most of the east portion of the management area (east of Cooter Creek Grade) was burned annually each winter after hunting season.

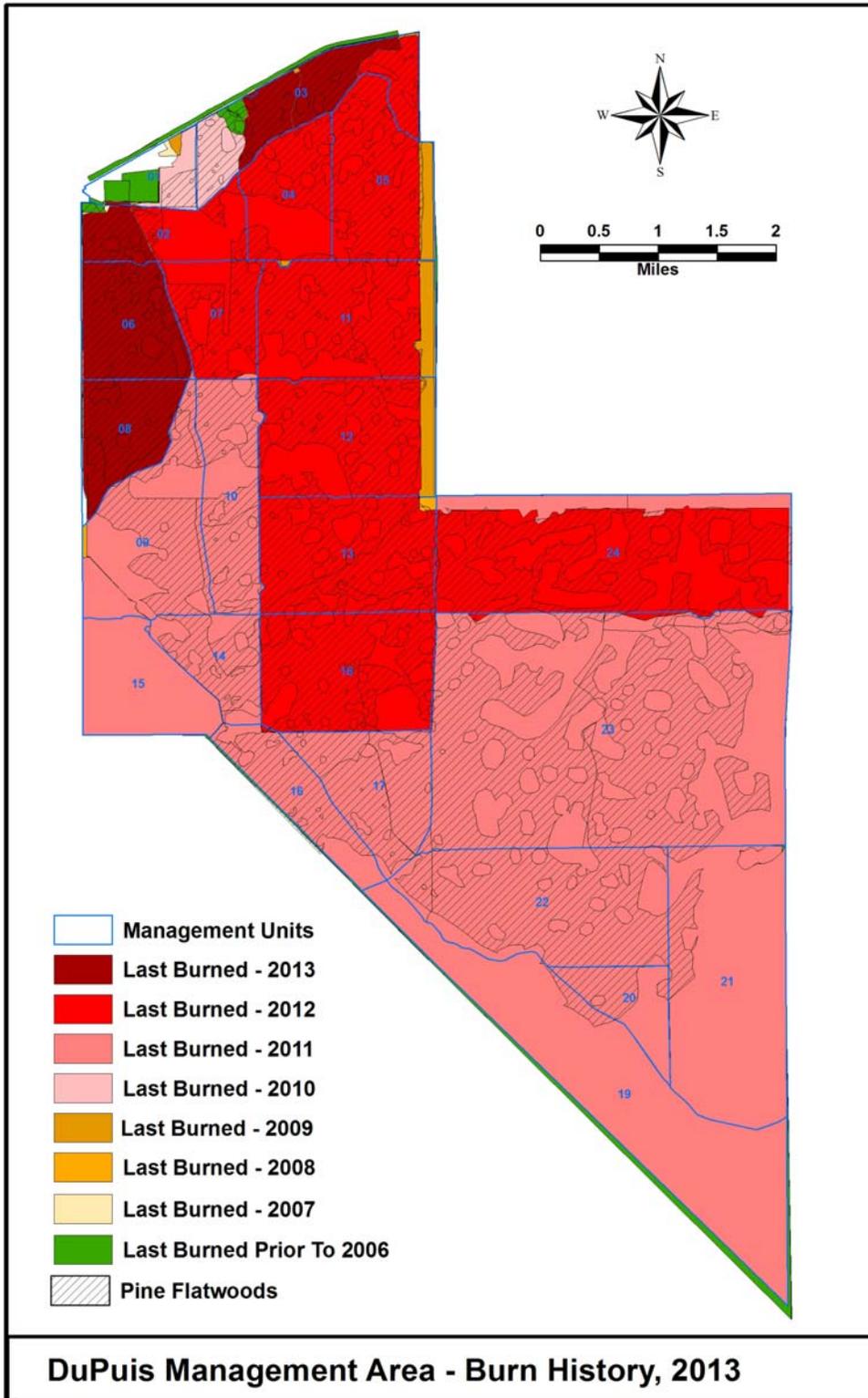
DuPuis Management Area General Management Plan 2014 through 2024  
South Florida Water Management District, Land Stewardship Section

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After securing the appropriate side of a grazing unit with a blackline, ranch hands would ride the interior jeep trails setting spot fires or dragging a burning torch. Fires were low intensity, slow moving, and mainly grass fires (personal communication with former ranch manager).

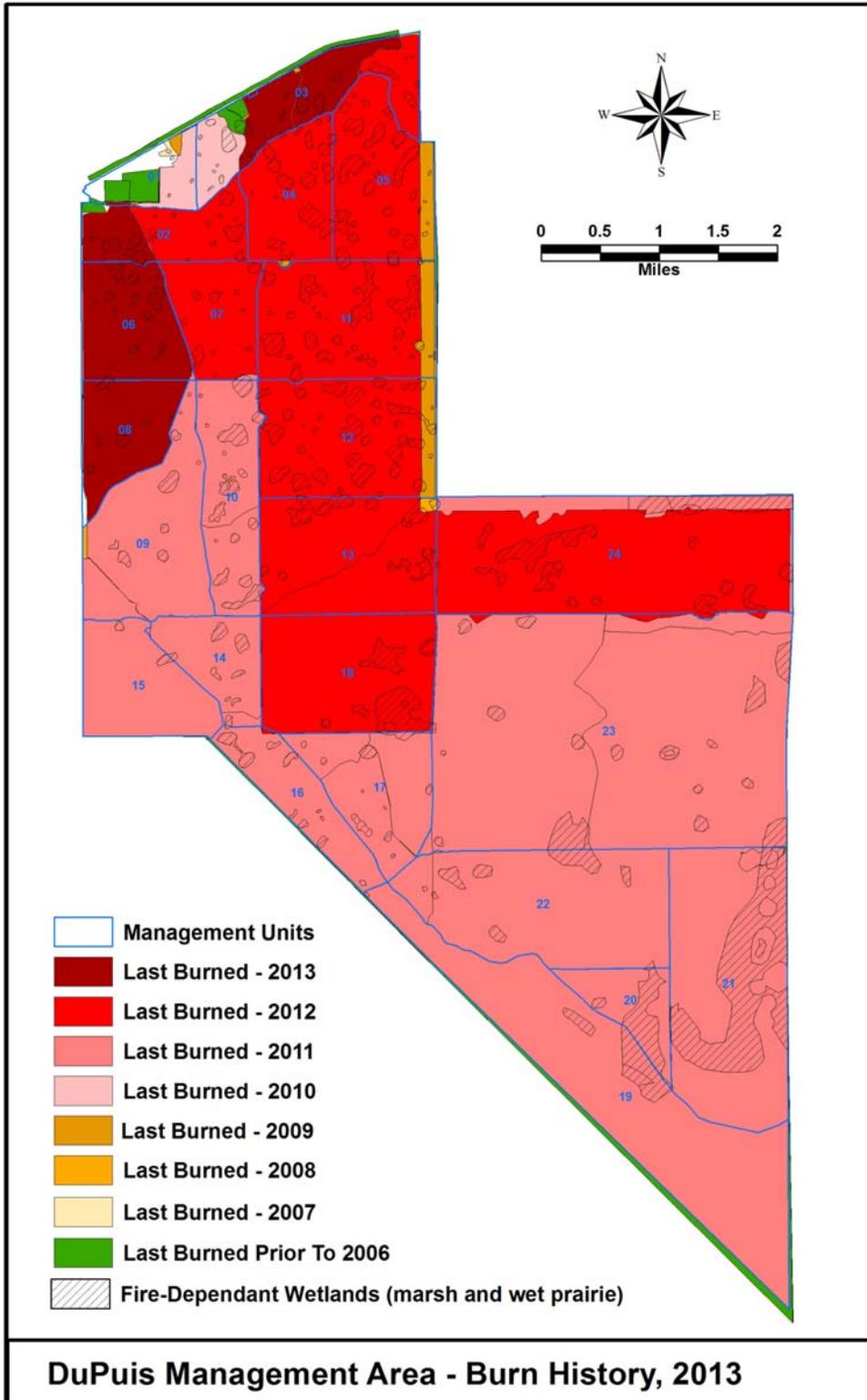
The District's prescribed fire program was initiated in the management area in 1989. Fire data (prescribed and wild) is maintained in GIS to produce historic burn maps of the property and is used for prescribed burn planning purposes (**Maps 22-23**).

**Map 22. Fire History Map for DuPuis Upland Fire-Dependent Communities**



Attachment: DuPuis Mgt Plan 2014 - 2024 (Resolution No. 2014 - 0103 : Dupuis and Kissimmee River Ten Year General Management Plan

**Map 23. Fire History Map for DuPuis Wetland Fire-Dependent Communities**



Attachment: DuPuis Mgt Plan 2014 - 2024 (Resolution No. 2014 - 0103 : Dupuis and Kissimmee River Ten Year General Management Plan

### 5.3.2 Prescribed Fire Planning

Burn units have been established in DuPuis, and seasonal planning considers potential burn areas based on their location, natural community types, fire history, and fire management objectives and constraints. The Land Stewardship Section bases fire management plans on ecological research and professional experience. Fire frequency schedules for each natural community consider recommendations provided in *The Natural Communities of Florida* (Florida Natural Areas Inventory, 1990). To mimic historic fire conditions, Land Stewardship emphasizes growing season burns (April-September) where practical. Natural firebreaks are utilized where possible to promote historic fire patterns, avoid soil disturbance, and reduce hydrologic flow disruption created by fire lines. Listed species life requirements are elements of prescribed fire planning. Application of fire, with appropriately timed herbicide treatments, is used as a tool for the control of exotic and invasive plants.

Burns are executed using methods as defined by the Prescribed Burning Act of 1990, Chapter 590.026, Florida Statutes. This legislation and associated administrative rules outline accepted forestry burn practices and are administered through the Florida Forest Service. Prescribed burns on DuPuis are conducted with a five person prescribed fire crew (Land Stewardship field crew) with assistance provided by other cooperating agency staff— especially the Florida Forest Service and the Florida Fish and Wildlife Conservation Commission. All Land Stewardship staff have completed the state certified burn course to ensure safety and proper technique.

Prescribed fire is applied within the management area at appropriate fire intervals for each natural community. The District concentrates on applying fire to each area of the property in order to reduce accumulated fuel loads, improve habitat, and provide a safer basis for future burns of increased frequency and lower intensity. Planning emphasizes prescriptions targeting control of woody vegetation using low intensity fires to achieve burn objectives. Adjustments to prescriptions are made based on effects of previous burns, with the goal to attain a 2-5 year rotation for flatwoods and 5-10 year rotation for marsh communities.

Large aerial burns have been used since 2004 to reduce the amount of burn preparation (and number of disked firelines), needed manpower, and the overall cost as compared to conducting a larger number of small burns. At DuPuis, aerial ignition can burn, in a single day, an area that would take several days of burning using ground crews alone.

### Prescribed Fire and Carbon Sequestration

The District currently stores carbon on the lands it manages in vegetation and organic soils. Each year, the amount of carbon increases as young forests grow and marshes steadily fix carbon into peat. This is also known as carbon

sequestration. It is important to manage the District's land resources in a manner to maximize the amount of carbon that is sequestered, while minimizing carbon dioxide and other greenhouse gas emissions. Prescribed fire is a tool that when used under the right conditions and with the right frequency can increase the rate at which a fire-dependent natural community can grow and store carbon. Following a burn, there is a subsequent spike in primary productivity caused by a release of nutrients and exposure of more surface area to sunlight, as well as post-burn increases of both above and below ground carbon stores.

Prescribed fire guidelines for maximizing carbon storage that the District considers when conducting prescribed burns include:

- Burning at 3 to 5 year intervals
- Conducting late winter burns
- Implementing a proper mop-up phase of the prescribed fire to extinguish smoldering stumps is important to reduce unnecessary carbon and nitrous oxide releases, flaming combustion releases much less carbon than smoldering combustion
- Avoiding muck fires and conditions that lead to muck fires as they release large quantities of carbon and nitrous oxide
- Keeping fuel density low to avoid the possibility of massive carbon releases in wildfire

### 5.3.3 WILDFIRE SUPPRESSION

*Policy 140-25(3)(d) The Florida Forest Service will be notified of all wildfires on District lands. Land Stewardship will provide initial suppression when commensurate personnel and equipment are available.*

Lightning-caused wildfires are a common occurrence throughout Florida, including the DuPuis Management Area. It is District policy, and state law, that the Florida Forest Service is notified when a wildfire occurs on Land Stewardship-managed properties. Land Stewardship staff assigned to the area respond to and, if appropriate, begin suppression of area wildfires when detected. The Florida Forest Service is called immediately and a fire assessment is made.

If District manpower is available and other conditions are favorable, a permit will be requested from the Florida Forest Service to incorporate the wildfire into a prescribed burn. Although infrequent, allowing these wildfires to burn helps achieve burn objectives and prevents counterproductive and unnecessary suppression efforts. It is recognized that the best wildfire mitigation for the management area is to maintain the area with frequent prescribed fires which promote a healthy open forest with light fuel loads.

## 5.4 WILDLIFE MANAGEMENT

A primary land management priority on DuPuis is to maintain healthy fish and wildlife populations. Land Stewardship accomplishes this in several ways:

- Performing land management activities that maintain and/or improve native wildlife habitat
- Conducting specific management practices to benefit protected species
- Conducting wildlife inventories through a partnership with the Florida Fish and Wildlife Conservation Commission and prohibiting activities that have the potential to negatively impact listed species
- Following management guidelines for listed species protection as determined by the *Multi-species Recovery Plan for the Threatened and Endangered Species of South Florida, Volume 1*, (U.S. Fish and Wildlife Service. 1998)
- Reducing non-native pest species populations where appropriate
- Maintaining a master file of confirmed and potential wildlife species
- Cooperating with the Florida Fish and Wildlife Conservation Commission on wildlife management issues, including wildlife inventories and evaluating management actions.

Wildlife management in the management area is directed toward maintaining native species diversity consistent with the biological community types present. The Florida Fish and Wildlife Conservation Commission plays a lead role in wildlife management in the management areas by:

- Managing public hunts in a manner that provides sustainable game populations
- Releasing and monitoring wading bird, bobwhite quail, deer, and eagle populations
- Relocating and monitoring the red cockaded woodpeckers that have been translocated into DuPuis from donor sites
- Assisting the District with prescribed burns (recommendations, manpower, equipment, etc.)
- Posting of informational and regulatory signage
- Enforcing environmental and public use regulations

### 5.4.1 Game Management

*Policy 140-25(4)(b)(4) Florida Fish and Wildlife Conservation Commission regulations shall govern hunting in areas opened for such use.*

The DuPuis Management Area has been established as a Wildlife and Environmental Area by the Florida Fish and Wildlife Conservation Commission. The Commission administers several hunting seasons for deer, turkey, feral hogs, small game, doves, and migrating game birds. Management activities directed towards game management include establishing bag limits for game species, regulating hunting pressure, mowing openings for wildlife, assisting in vegetation

management activities, and providing hunting related law enforcement support. The Commission also maintains a small planted dove field on a previously disturbed portion of the area.

#### **5.4.2 Exotic/Invasive Animal Species**

Wildlife pest species are those non-native species that are harmful to native wildlife, that negatively impact native vegetation and wildlife or interfere with management objectives. The Land Stewardship's goal for wildlife pest management is to reduce populations to attain an acceptable level of impact to natural plant and animal communities. The District's Land Manager uses monitoring, visual observation, and and consultation with the Commission to define an acceptable level of impact. When population control measures are warranted, land managers consult with the Commission to determine effective and appropriate control techniques. The effects of pest population control efforts are monitored by periodic site evaluations.

The feral hog is a pest species that occurs within the management area. Disturbance caused by this species negatively impacts natural communities and interferes with land management operations. Although valued by some members of the public as a game animal, the feral hogs' high fecundity, adaptability, rooting behavior, omnivorous diet, and ability to quickly colonize areas raises environmental concerns. Their disruption of soil and vegetation alter natural communities and can be especially damaging in sensitive habitats that are slow to recover. Hog disturbance has occurred within most of the management area including wetland communities. Land management objectives are affected when rooting disturbance disrupts prescribed burns by preventing the spread of fire. Areas of disturbed soil are also more susceptible to exotic plant invasion. Rooting can also damage hiking trails, have a detrimental impact on small animal populations, and ground-nesting birds, and can damage infrastructure.

Feral hogs are harvested through recreational hunting on the management area in accordance with rules and regulations established by the Florida Fish and Wildlife Conservation Commission. Public quota hunts conducted in the fall and non-quota hunts during the small game and hog hunt seasons are the primary method of hog population control at this time. The number of permitted hog hunters has been increased over the years by adding additional hog hunts and removing quotas that limited the number of hunt participants. The increase in hunting pressure has helped to further control hog numbers and provide additional hunting opportunities. Public hog hunting will continue to be an important use of the area and will be looked upon as the preferred hog population control method. Presently, rooting disturbance occurs in the area but is considered to be at an acceptable level. Any additional control methods will be determined in cooperation with the Commission.

Other exotic fish and wildlife have been identified on the management area including the armadillo, brown anole, two-spotted cichlid, Cuban tree frog, coyote, iguana, Eurasian collared doves, Norway rats, and house mice. No control programs have been implemented for these species, as such actions have been determined to not be necessary.

### 5.4.3 Rare, Threatened and Endangered Animal Species

*Policy 140-25(2)(b) Particular emphasis shall be placed on the identification, protection and management of rare, threatened and endangered species.*

Several listed wildlife species are present or have been observed historically on the management area. Potential impacts to these species from planned land management and recreational activities are of special concern. Activities that might jeopardize the well being of these species are evaluated carefully and may be altered or cancelled if necessary. District land management activities including prescribed burning, hydrologic restoration, exotic vegetation eradication, understory control, and selective forest thinning improve natural environmental characteristics that benefit listed species as well as a variety of other indigenous wildlife. Special management attention is given to the area's bald eagle population and the reintroduction of the red-cockaded woodpecker.

The recommended buffer zones have recently been reduced from a 1500' radius to a 660' radius around the nest site (USFWS, 1987; USFWS, 2007; FWC, 2010), however because of the size of the DuPuis property, the District is able to keep disruptive land management activities the original 1500' distance away from active eagle's nests. This includes keeping nearby prescribed burns and smoke away from nest trees. Recreation activities are also modified to minimize disturbances in nesting season. When non-breeding season burns are conducted, nest trees are protected by cutting vegetation around the tree base to limit fire intensity. The Bald Eagle was de-listed from both the Federal and State imperiled species lists in 2007 and 2008 respectively, but this iconic species continues to be protected under other laws such as the Bald and Golden Eagle Protection Act and the state of Florida's Eagle Rules.

Several old red-cockaded woodpecker tree cavities scattered throughout the management area indicate there was probably a sizeable resident population at one time. The last active cavity was destroyed by wildfire in 1989 at which time birds were no longer observed on the area. A program is currently underway to reintroduce this species. In preparation, several land management activities were conducted to restore suitable habitat and protect remaining old growth slash pine trees. Heavy-duty mowing of overgrown understory, and selective thinning of pines and cabbage palms restored the open forest structure preferred by these birds. Frequent prescribed burning and the control of invasive exotic vegetation have maintained the open forest. Reintroduction sites were identified and artificial cavities were inserted into specific trees capable of supporting artificial

nest cavities. The translocated birds are being monitored by a Florida Fish and Wildlife Conservation Commission biologist to document movements, survival, and nesting success. At the time of publication, 71 birds have been introduced since the fall of 2006. These birds have fledged a total of 31 chicks. The management activities for red cockaded woodpeckers include:

- Annual inspection, maintenance, and installation of artificial cavities
- Monitor nesting activity and band young each spring
- Surveys at various times throughout the year to locate and identify individuals
- Surveys to find locations for new cavities
- Translocation of birds onto DuPuis from donor sites

**Table 3. Listed Animal Species: (T) Threatened, (E) Endangered, (SSC) Species of Special Concern**

Scientific Name	Common Name	Status	
		Fed	State
<i>Aramus guarauna</i>	Limpkin		SSC
<i>Caracara cheriway</i>	Crested caracara	T	
<i>Drymarchon corais couperi</i>	Eastern indigo snake	T	
<i>Egretta caerulea</i>	Little blue heron		SSC
<i>Egretta thula</i>	Snowy egret		SSC
<i>Egretta tricolor</i>	Tri-colored heron		SSC
<i>Eudocimus albus</i>	White ibis		SSC
<i>Falco sparverius paulus</i>	Southeastern American kestrel		T
<i>Gopherus polyphemus</i>	Gopher tortoise		T
<i>Grus canadensis pratensis</i>	Florida sandhill crane		T
<i>Picoides borealis</i>	Red-Cockaded Woodpecker	E	
<i>Mycteria americana</i>	Wood stork	E	
<i>Pituophis melanoleucus mugitus</i>	Florida pine snake		SSC
<i>Sciurus niger shermani</i>	Sherman's fox squirrel		SSC

## 6. Public Use

*Policy 140-23 The Land Stewardship Program mission is to provide natural resource protection and management while allowing compatible multiple uses on designated public lands.*

Section 373.1391 (1)(a) Florida statute states that wherever practical, lands acquired by the District shall be open to the general public for recreational uses. The District encourages public use of management areas for appropriate natural resource-based activities. All District lands are available for public use, except in

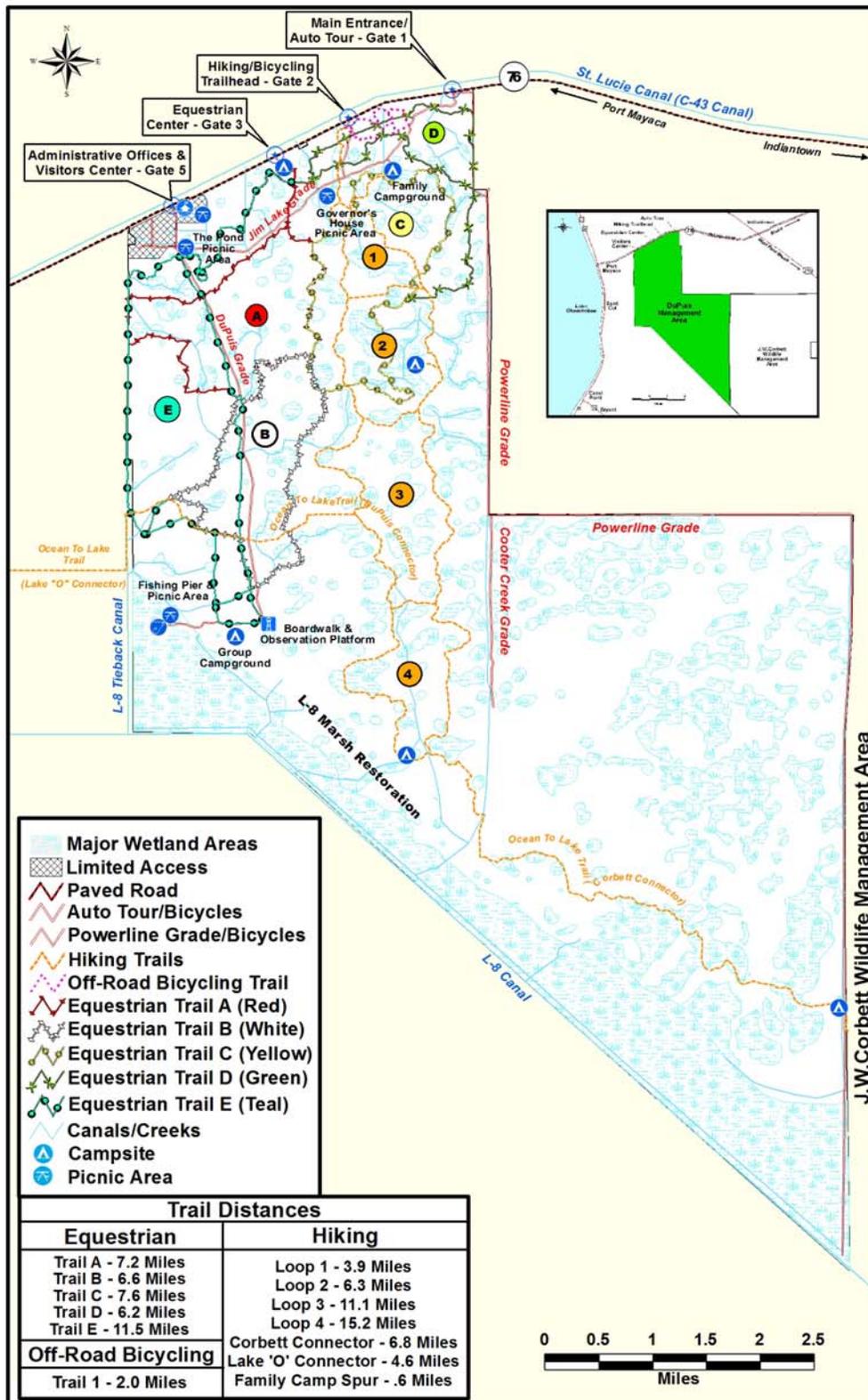
rare instances where there is no legal public access or where lease restrictions or construction activities prohibit public entry. Public input into the management of the area is solicited at quarterly Water Resource Advisory Committee Recreational Issues Workshops. Adjustments to public use opportunities are made on an ongoing-basis through the Recreational Issues Workshops and through amendments to the 40E-7, F.A.C., public use rule. This plan addresses public use matters only to describe the scope of public use opportunities available or planned as of the date of the plan, it is not intended to set public use policies through the plan period.

The determination of compatible public uses is based on the following criteria:

- Consistency with the reason the lands were acquired
- Restrictions and/or prohibitions imposed by easements, leases, reservations, purchase agreements, and other legal mandates
- Infrastructure and support facility requirements, such as fences, gates, signage, entry design, stabilized off-road parking, trails, campsites, maintenance, and other operational and budgetary impacts
- Opportunities for persons with disabilities
- Limitations on use resulting from endangered species, other sensitive natural resources, archeological resources, or land management practices
- Public health, safety and welfare
- Protection of resources

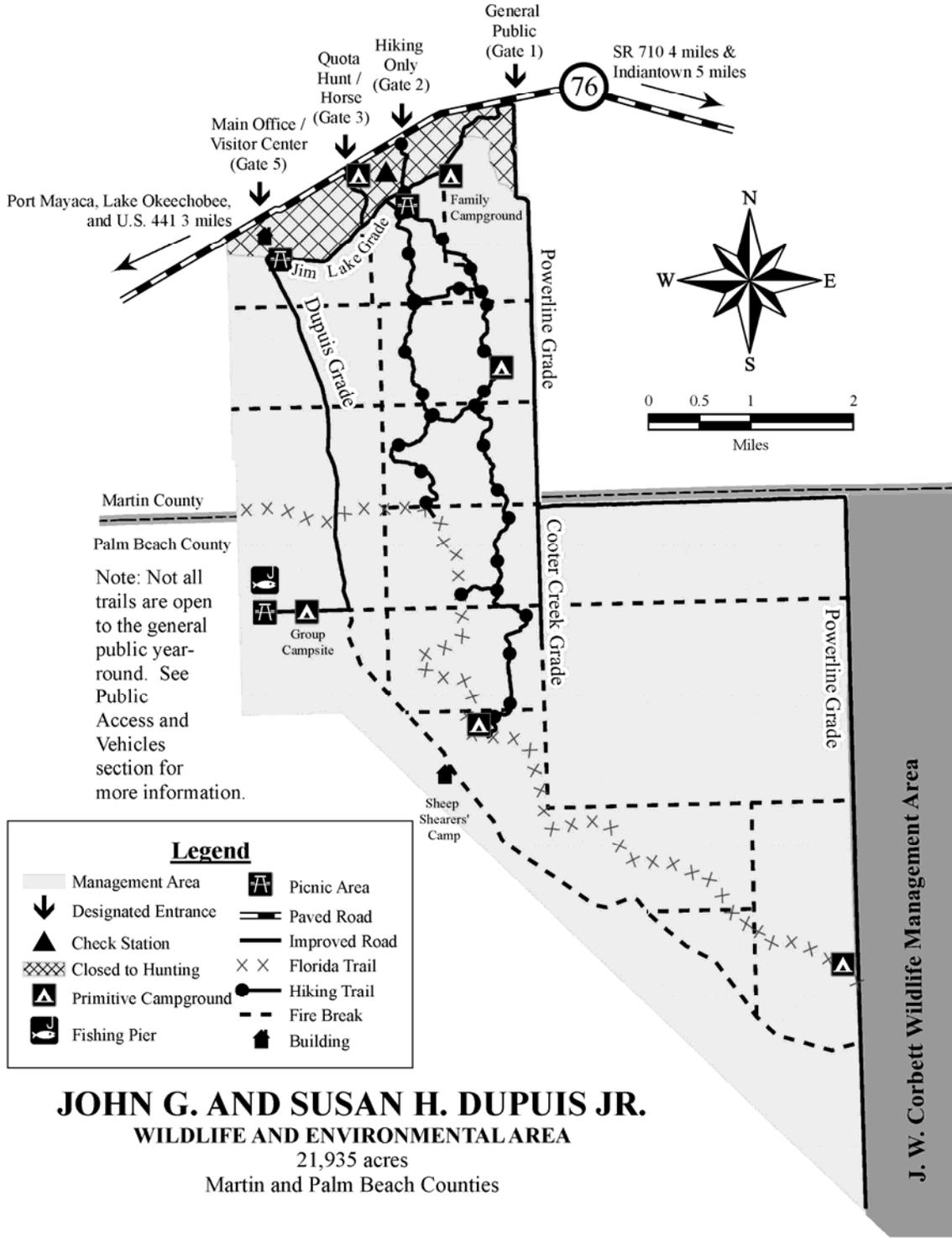
A wide variety of recreation activities are appropriate and encouraged in the management area including bicycling, mountain biking, canoeing, camping, equestrian use, fishing, hiking, amateur astronomy, geocaching, and hunting. Approximately 20 miles of interior roadway, 22 miles of hiking trails, and over 40 miles of equestrian trails provide access for public use. A self-guided auto tour along Jim Lake and DuPuis Grades highlight points of interest and management activities. A short trail with a boardwalk has been constructed off the DuPuis Grade, providing access through a nearby cypress dome community which enhances public use of this area. Campsites available include a family campground, an equestrian campground, a group campsite, and three backcountry sites. A public visitor's center at the DuPuis office and a fishing pier site off DuPuis Grade are handicapped accessible. Most of these sites have been significantly upgraded with new picnic shelters, landscaping, self-composting toilets, and other amenities. There are four access points to the management area for public use (**Maps 24 – 25**). User information concerning recreational activities is located at the DuPuis Management Area and West Palm Beach offices, and at each entrance to the management area. Information is also available on the District's recreation website and printed Recreation Guide.

**Map 24. DuPuis Recreation Opportunities**



DuPuis Management Area General Management Plan 2014 through 2024  
South Florida Water Management District, Land Stewardship Section

Map 25. DuPuis Wildlife and Environmental Area



Attachment: DuPuis Mgt Plan 2014 - 2024 (Resolution No. 2014 - 0103 : Dupuis and Kissimmee River Ten Year General Management Plan

## 6.1 Resource Protection

*Policy 140-25(1)(d) Public use shall not result in detrimental impacts to water resources. When a public use activity produces detrimental effects on water resources, it shall be discontinued until an evaluation determines that such use is compatible.*

*Policy 140-25(3)(g) Resource protection shall be provided by professional law enforcement services through funded and unfunded contractual agreements to safeguard the public and protect natural and cultural resources on District-managed natural areas.*

*Policy 140-25(4)(b)(1) Public use regulations are set forth in 40E-7.511, Florida Administrative Code, to implement Section 373.1391(1)(b), Florida Statutes. Accordingly, the District shall publish and make available to the public a "Recreational Guide" for designated land management areas.*

Regulations that govern activities within the management area are in the District's 40E-7 rule and the Commission's DuPuis Wildlife and Environmental Area regulations. The 40E-7 rules are available at agency headquarters in West Palm Beach and on the District's website. Allowed activities include hiking, fishing, boating, canoeing, camping, hunting, geocaching, equestrian use, biking, and nature study. The Florida Fish and Wildlife Conservation Commission is responsible for enforcing laws, rules, and regulations applicable to the management area, along with the local county sheriffs' offices.

Management of public activities on District lands requires a commitment to resource protection while simultaneously promoting all appropriate public uses. The District emphasizes the enforcement of pertinent rules and regulations to protect natural resources and enhance recreation opportunities. The resource protection program integrates law enforcement to protect the natural resources and District assets. As part of the establishment of the area as a Wildlife and Environmental Area by the Commission, law enforcement officers conduct regular patrols throughout the year, increasing their presence during hunting seasons and at other times when public use is high. Law enforcement surveillance protects natural and cultural resources, deters illegal activity, and safeguards the public. Patrols are conducted with 4-wheel drive vehicles, all terrain vehicles, aircraft, and on foot. The Land Stewardship Section's law enforcement coordinator reviews biweekly reports and meets with officers to structure patrols based on resource needs.

Resource protection is also greatly enhanced by the establishment and maintenance of posted fence lines that delineate property boundaries. The management area perimeter is fenced and posted in its entirety, and is maintained and repaired as necessary.

## 6.2 Environmental Education

Educational programs are developed and implemented on select management areas by cooperators interested in promoting increased visitor awareness and appreciation of area natural and cultural resources. A central theme to these programs is the vital role of water management in maintaining our natural resources.

A section of the main office building and part of the surrounding grounds have been developed into a visitor's center and environmental education area. Additional parking areas were constructed to accommodate school buses for larger visitor groups. The District is working through a contractual agreement with Florida Atlantic University's Center for Environmental Studies to provide educational programs. An indoor exhibit room and lobby contain interpretive information as well as diorama-like displays of native communities and animals. Outdoor areas contain interpretive signage along a short trail through planted natural communities representative of those found on the management area. The visitor's center is open on weekdays to area users and also accommodates specialized programs for larger school groups.

## 7. Administration

Administration of District land management is directed through the Land Stewardship Section. Policy decisions, planning and budgeting, procurement of personnel and equipment, contract administration, and issues of program development are administrative tasks coordinated through the Section. Input is provided from the public and regional land managers located at District Service Centers, Field Offices, or Field Stations over the 16-county area. Regional land managers handle regular administrative duties from their field locations to assure quick response to local concerns and management issues. Administrative activities for the management area are handled through the DuPuis field office.

### 7.1 Planning and Budgeting

Planning is a major function of the Land Stewardship mission and is critical to maintain proper program focus, direction, and coordination with other agencies. Planning is accomplished by section planning staff in coordination with land management staff. Section-level planning produces the Land Stewardship Activity Report for the Florida Forever Workplan, and coordinates land acquisition planning with other District and outside agency personnel.

*Policy 140-25(6)(b) General Management Plan: Provides a description of recommended management and is required for each Land Stewardship Management Area. The GMP follows a designated format and is updated every ten years.*

General Management Plans are developed that detail strategies to guide management activities on individual project areas. These plans define goals and objectives, identify major management issues, and describe management activities. Each plan is subject to a draft revision period where public comment and professional review is requested prior to plan approval. Each plan is revised on a ten-year cycle by planning team and land management staff.

*Policy 140-25(5) The District will secure dedicated funding sources, personnel and other resources to support program goals and objectives. Project funding needs and sources for cooperative management agreements with government and non-government entities will be identified during acquisition. A cooperative management agreement will designate a lead manager and identify whether District funding is required.*

The principal sources of funding for land management operations include revenue from commercial and agricultural leases, revenue generated from mitigation banks and interest earned on offsite mitigation funds, and ad valorem tax revenue. Historically, the Water Management Lands Trust Fund, administered by the Florida Department of Environmental Protection, had been the primary source of land management funding. Additional funding and support has been obtained from grants, the harvest of renewable resources, in-kind services from cooperating management partners, and no-cost services from user groups and volunteers.

Budget planning begins in November during the work planning process for the following fiscal year (October-September). Overall funding availability generally determines management activities. Site-specific priorities are generated and submitted by the regional land managers. Budget distribution among the District's five land management regions is based on a programmatic prioritization of management needs.

The continued operation and maintenance of the DuPuis Management Area includes costs to cover staffing, ongoing operational and land management expenses, and capital refurbishment/replacement of aging infrastructure and equipment. Capital infrastructure needs are determined by infrastructure condition and anticipated continued serviceability over the next fiscal year. Priorities for capital refurbishment/replacement are made on a District-wide basis. It is anticipated that several infrastructure features will require refurbishment/replacement during this plan period, these features include: the bathroom building and barn roofs at the equestrian campground, replacement of equipment sheds and pole barns in the shop compound, and other minor features such as septic systems and air-conditioning units.

The operational and land management expenses for FY 2014 are included in **Table 4**, below. Contracted Land Management Services include contracts with the Florida Fish and Wildlife Conservation Commission, the Department of

Corrections (inmate labor for needs such as trailhead maintenance and fence repairs), and the Florida Center for Environmental Studies. Operational Expenses include supplies, janitorial services, septic service, business travel, and safety equipment. Public use costs are generally the maintenance costs associated with public use facilities. Site Security represents costs associated with contracted law enforcement services which currently are not budgeted for on DuPuis. It is anticipated that budget needs for the management area will increase during this planning period due to increased contracting costs and the need for infrastructure replacement as identified in Section 2.1 of this plan.

**Table 4. Operational and Land Management Expenses for Fiscal Year 2014.**

DuPuis	FY2014 Budget
Contracted Land Mgt. Svcs	\$209,000
Utilities and Operational Expenses	\$83,071
Equipment and Infrastructure Maintenance	\$31,000
Exotic Species Control	\$160,000
Vegetation Management	\$81,350
Public Use	\$29,000
Site Security	\$0
<b>Total</b>	<b>\$593,420</b>

## 7.2 Infrastructure

*Policy 140-25(3)(k) Infrastructure support shall be developed and maintained to provide safe access for responsible management and public use on District lands. Such infrastructure may include access points, roads, trails, signs, utilities, and minimal public facilities.*

Current infrastructure which requires regular maintenance includes recreation access points and trailheads, perimeter posting and fencing, firelines, hiking trails and roads, parking areas, kiosks, camp sites and rest rooms, the field office and visitor center, the equestrian center, and other structures.

## 7.3 Personnel and Equipment

The District is separated into five geographic regions, each staffed with professional land managers and technicians who are supervised by a Section Leader. The Land Stewardship Section administrator, recreation staff, and planning staff are headquartered at the main West Palm Beach office.

Stewardship of the management area is the primary responsibility of the District's East Coast senior land manager, who supervises an administrative assistant, a crew chief, and three land management technicians. The DuPuis staff manages an additional 34,389 acres of land throughout the East Coast land management region including Allapatta, Mecca, the Loxahatchee River, Cypress Creek, and portions of PalMar and the Atlantic Ridge. Additional management input and support comes from District planning and Field Station personnel, as well as the Vegetation Management Section. Staff has access to tools, supplies, four-wheel drive vehicles, fire suppression trucks, all terrain vehicles, swamp buggies, bull dozers, tractors, and other heavy equipment.

#### **7.4 Volunteers and Alternative Work Force**

*Policy 140-25(5)(d)(1) Volunteers, interns and alternative work forces will be used when possible to supplement existing staff and services.*

Section 373.1391(3) F.S. encourages the District to use volunteers for land stewardship and other services. The District recognizes the merits of volunteerism and welcomes participation in activities appropriate for public involvement. In Fiscal Year 2013, District lands benefited from 10,000 volunteer hours, or \$217,900 worth of volunteer services (using a \$21.79/hour national average for the value of volunteer service). Volunteer activities help accomplish management objectives, promote citizen involvement, and allow area staff to focus on other tasks. At DuPuis, the Loxahatchee chapter of the Florida Trail Association regularly provides volunteer services to maintain the Ocean to Lake Trail and the four other hiking trail loops onsite. The Florida Center for Environmental Studies coordinates a substantial amount of volunteer services including student service learning opportunities, and activities through the Friends of DuPuis. The DuPuis Horsemen's Association provides volunteer assistance in the maintenance of the equestrian facilities and trails. Land Stewardship also utilizes a volunteer campground host at both the equestrian and family campgrounds. Other volunteer services have been provided by the Eagle Scouts, and several other individual volunteers.

#### **7.5 Contractual Management**

*Policy 140-25(5)(a). The private sector may be solicited to furnish certain management-related facilities and services through the execution of leases and agreements. These leases/agreements will assure mutual benefits to both the District and private parties and be consistent with the program management objectives.*

Effective operation and management of District properties requires the services and cooperation of private organizations, other governmental agencies, and volunteers. Contractual relationships are formalized through management

agreements signed by both the District and contracting entity with the document defining the responsibilities of each party.

The District has established and maintains several contractual management agreements to assist with the cost and management of DuPuis which, at the time of this publication include:

Agreement #1  
4600000961

This is a contractual multi-site agreement that authorizes the Florida Fish and Wildlife Conservation Commission to perform land management and public recreation services on District-owned properties, including the DuPuis Wildlife and Environmental Area.

Agreement #2  
C89-0065

A Memorandum of Understanding with the Florida Trail Association to maintain the segment of the Ocean to Lake Trail that passes through the management area.

Agreement #3  
3600000804

The District entered into a cooperative agreement (originally contract number C-12559) in April, 2000 with Florida Atlantic University's Center for Environmental Studies to develop a public use and education program at the management area visitor center. The agreement includes interpretive trail and sign development, supervision of volunteers, conducting service learning projects, and site maintenance.

Agreement #4  
OT051110

A Memorandum of Understanding with the DuPuis Horsemen's Association to help maintain the equestrian trail system and equestrian campground at gate 3.

Agreement #5  
4600002826

An agreement with the Florida Department of Corrections to provide inmate labor for land management and infrastructure maintenance. The agreement covers DuPuis and other lands within the East coast Land Management Region.

## 7.6 Management Review

Policy 140-22(j) Section 373.591, Florida Statutes, mandates the District to solicit input on current management programs through professional peer reviews.

A land management review team is identified for each project area with a General Management Plan. These ad hoc teams are comprised of state, county, and private entities that periodically review management activities to assure they are consistent with acquisition intent and program objectives. Management assessments are conducted in light of the goals and objectives defined in the area's general management plan and are scored on a scale of 1 to 5 with a '1' meaning the management is insufficient and a '5' meaning the management is extremely effective. If the review team determines that management is insufficient in any area, attaining an average score of less than 3.0, then the District is to provide a written explanation to the review team along with proposed corrective actions.

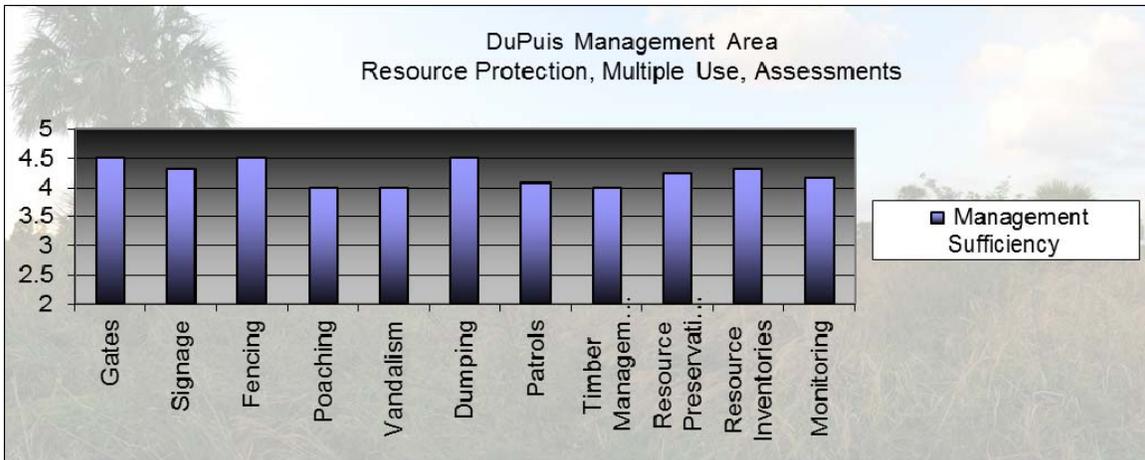
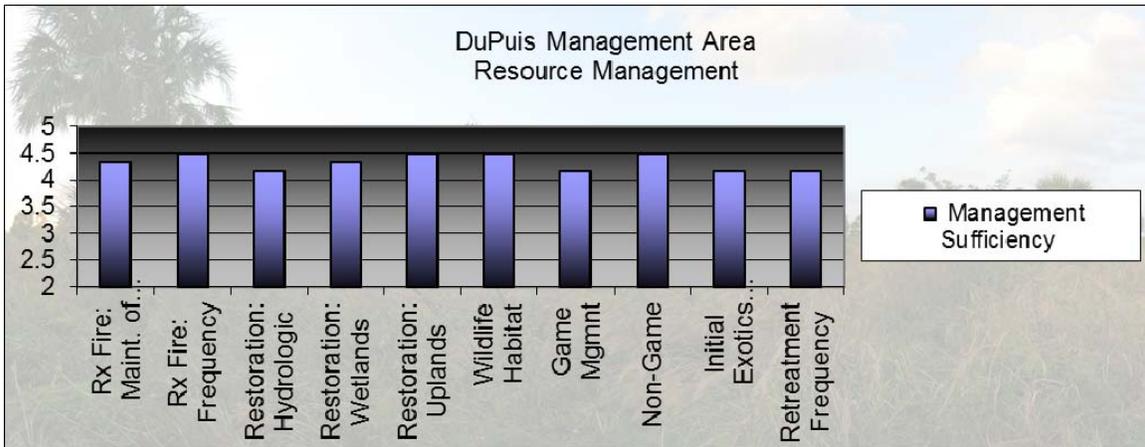
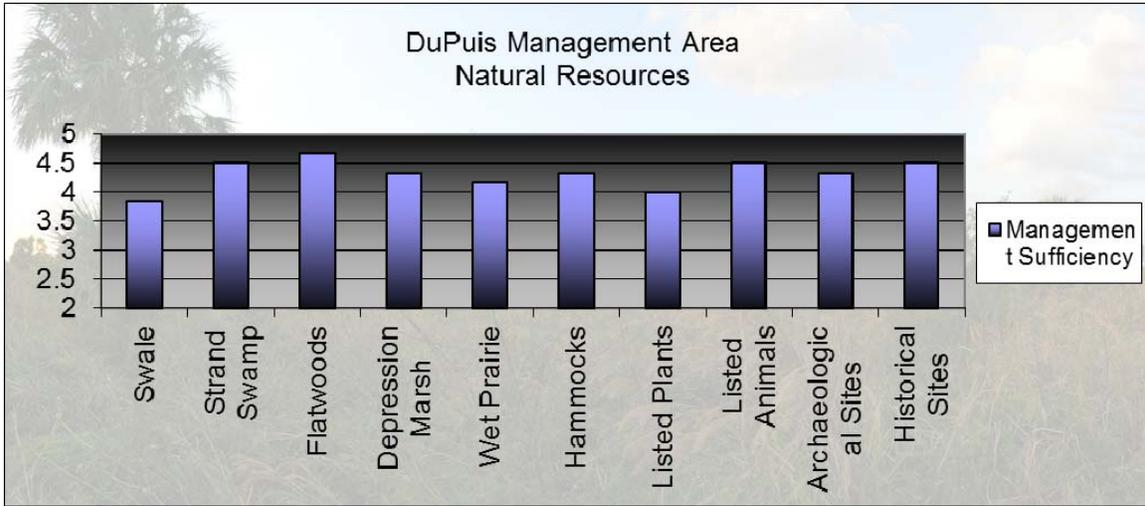
A management review of DuPuis was conducted in November, 2013. The review team provided comments on the condition of the land and scored the District's management of the site.

Positive comments were received on the prescribed fire program including that most of the sites have been burned on schedule for many years with good seasonal variability. Positive comments were also provided on the availability of diverse public use opportunities provided free-of-charge.

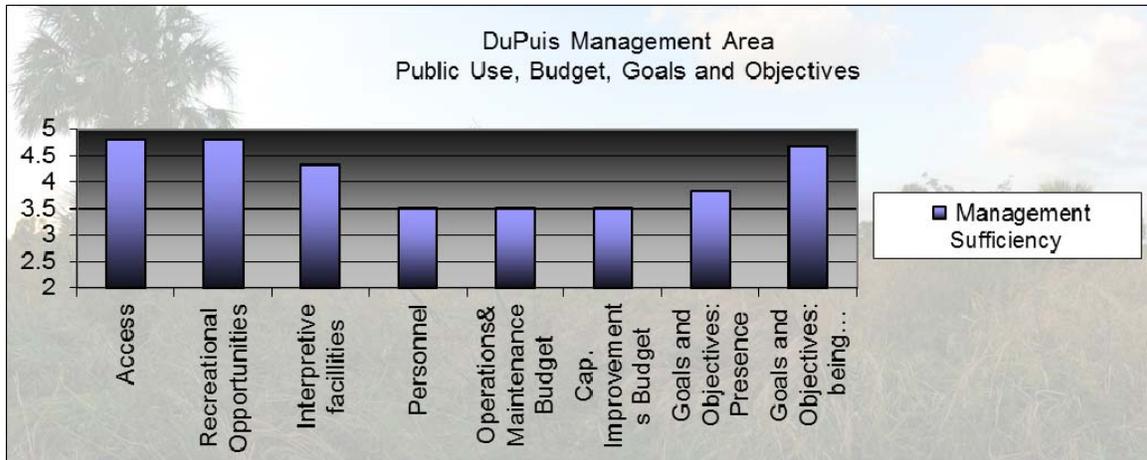
Several team members expressed a desire to see further work on hydrologic and understory restoration. One member of the management review team commented that the plan could better address poaching and vandalism issues. One member stated that the environmental education goals should be explicitly stated in the plan.

The team rated the overall management of the land on criteria such as: the natural resources, resource management activities, public use, budget, goals and objectives, resource protection, multiple use, and biological assessments and monitoring. The average scores by category are indicated on the graphs below:  
Adherence

DuPuis Management Area General Management Plan 2014 through 2024  
 South Florida Water Management District, Land Stewardship Section



DuPuis Management Area General Management Plan 2014 through 2024  
 South Florida Water Management District, Land Stewardship Section



The average score for the 2013 for the condition of the Natural Resources was 4.3; Resource Management was 4.3; Resource Protection, Multiple Use, and Assessments was 4.2; and Public Use, Budget and Goals and Objectives was 4.1. The relatively low scores received in the categories of Personnel, Operations & Maintenance Budget, and Capital Improvements Budget reflect the review team’s recognition of the District’s current budgetary challenges.

## Appendix A

**History of the DuPuis property.** Steve Farnsworth. Unpublished report to the SFWMD. 2003.

The DuPuis Reserve has a long history of human usage. The southern border of the reserve is part of a physiographical feature known as the Loxahatchee Scarp. Within a half mile distance, the sandy soils of the pine flatwoods at 20 to 25 feet in elevation drop down to the mucky soils of the Everglades sawgrass marshes at elevations below 15 feet (USGS 1971). Shallow wet prairies occupy the transitional areas. Upland areas in close proximity to large water bodies were attractive sites for early Americans, who would establish seasonal camps and permanent settlements in hammocks accessible by water. There are four known archeological sites, all located along the southern edge of the site (Wheeler 2000). Most of the sites are located in close proximity to sloughs that flow into the Everglades. These sites are associated with the Belle Glade culture and have the pottery, circular and linear earthworks, and the reliance on freshwater resources that characterize this culture. The presence of shark teeth, shell tools, sea turtle remains, and chert artifacts indicate that the inhabitants of these sites had trade networks with coastal areas and central Florida.

Site 1 contains a circular ditch feature nearly 900 feet in diameter. It is believed to have been constructed between 1000 B.C. and A.D. 200. Human habitation in the hammocks associated with the ditch appears to have continued until A.D.1100. Site 2 was a small crescent-shaped earthwork with a pair of linear earthworks extending southwards from the crescent. The earthworks have been obliterated by grazing sheep and cattle. Human habitation in the nearby hammock at this site was believed to be short-lived. Site 3 is in a large hammock and is believed to be a village or hamlet midden with a long period of occupation. There are no earthworks associated with this site and human habitation is believed to have ceased around A.D. 1100. Site 4 is a conical sand mound with outlying crescent-shaped earthworks. It is believed to be a burial mound and was in use into the Spanish contact period (Wheeler 2000).

The only historical account of the native Americans that lived near the reserve comes from Hernando d'Escalante Fonteneda, a Spanish shipwreck survivor taken captive as a young boy by the Calusa tribe in 1545 and rescued by Jean Ribault seventeen years later. He later wrote a account of his captivity, which was translated by True (1944). Fonteneda mentions a tribe called the Mayaimi which occupied the area north and east of the Lake of Mayaimi (present-day Lake Okeechobee). The Mayaimi had a major town called Guacata, which was located somewhere near present-day Pahokee, and numerous small settlements around the lake. The Mayaimi were probably the last users of the DuPuis Reserve burial mound.

The population of the Mayaimi declined rapidly in the early 1700s, as they were decimated by European diseases, slave raids, and warfare with other tribes. In the 1740s, a Spanish mission was established near present-day Miami. Documents related to this mission indicate that the “Maymies, Santaluzos (St. Lucie), and Mayacas “ had united and were living four days journey from the mission in the interior (Hann 1991). The Mayacas were originally from the upper St. John’s River area in Volusia County, but may have been forced to move south because of raids from tribes to the north in the English colonies. The Mayaca tribe is believed to be the origin of the name of Port Mayaca.

The native American inhabitants of southern Florida are believed to have mostly disappeared by 1760s. The few survivors are believed to have traveled to Cuba with their Spanish allies in 1763 when Florida became a British colony, or have been absorbed into the Seminoles. In the early 1700s, native Americans from the Creek and Cherokee tribes in Georgia and Alabama began to move south into north Florida. This movement accelerated in the early 1800s. These native Americans were being pushed out by white settlers or were on the losing side of a civil war among the Creek tribes. They welcomed runaway black slaves, who joined them as freed allies, or became subject to the native Americans in a less onerous form of slavery. This agglomeration of tribes became known as the Seminoles which was derived from a word meaning “wild“ in their language. Conflicts between white settlers in and the Seminoles and their black allies would lead to three periods of open warfare known as the Seminole Indian Wars after Florida became a U.S. Territory.

In the First Seminole Indian War in 1817-18, the Seminoles were forced out of North Florida. A disputed treaty confined them to a reservation in the interior of central and south Florida. After a drought and famine in 1825, the Seminoles and their black allies began to return to their old lands in central Florida and came into conflict with white settlers. In 1830, the U.S. Congress passed the Indian Removal Act, which gave the government the authority to forcibly remove native Americans in Florida and other states to the Indian Territory, which is present-day Oklahoma. Some of the Seminoles reluctantly moved, but were unhappy with the poor quality of the land and having to share a reservation with their old enemies in the Creek tribes. Others refused to leave and tensions mounted between the U.S. Army, white settlers and the Seminoles (Robison and Andrews 1995).

In late 1835, the Second Seminole Indian War began. The Seminoles ambushed and wiped out a column of U.S. Army soldiers under Major Dade, and attacked and burned sugar plantations along the east coast of Florida. The army retaliated by attacking and burning Seminole villages in central Florida, and building a series of forts. The Seminoles rarely attacked forts and large groups of soldiers, but engaged in guerrilla warfare with hit and run tactics, picking off a few soldiers here and there. The Army, with an enemy that would rarely stand and fight, concentrated on destroying Seminole villages and crops, and capturing

women and children to send to Oklahoma and runaway slaves to return to their owners (Robison and Andrews 1995).

At first, the Seminoles and their allies outnumbered the troops sent to fight them, and the war went badly for the U.S. Nearly half of the small U.S. Army was sent to Florida, along with often unreliable state militia units, and the tide of the war began to turn. By late 1837, virtually all of the remaining Seminoles had retreated to south Florida. The U.S. Army's commanding officer, General Thomas Jesup, divided his forces into four columns that moved southward from central Florida. A column under the command of future president Zachary Taylor encountered a large group of Seminoles at the north end of Lake Okeechobee and fought them in the Battle of Okeechobee on December 25, 1837. Colonel Taylor's men forced the Seminoles to retreat, but took far greater casualties (Hutchinson and Paige 1998).

General Joseph Hernandez's column came down the east coast of Florida, with a small naval force operating on the Indian River lagoon. The army column established Fort Pierce as a base of operations, while the naval forces explored the rivers and waterways. General Jesup's troops went to Fort Pierce for resupply, then moved west to join General Eustis' forces at Fort Lloyd. The combined columns moved southeast into northwestern Martin County, where they joined Col. Taylor's troops and constructed Fort Van Swearingen. General Eustis and Jesup continued southeast, and would fight the Battle of the Loxahatchee on January 24, 1838 (Hutchinson and Paige 1998). Col. Taylor's men moved south along the east shore of Lake Okeechobee and built Fort McRae on the north side of the mouth of the present-day St. Lucie Canal. It is believed that a small river entered the lake at that location, as such a river is present in an 1838 map (USDW 1838). Rifles dating to the Seminole Wars period were reportedly dredged up during the construction of the St. Lucie Canal, further supporting the location of Fort McRae. Fort McRae was little more than a rough cabbage palm trunk stockade designed to store supplies and house a small garrison to defend the supplies. It was used for only a short time, and was then abandoned.

After the Battles of Okeechobee and the Loxahatchee River, many of Seminoles displaced by these battles retreated to the area of the DuPuis Reserve, where they tried to live off the land. They quickly depleted the local game animal population, and there was no time to plant crops and little in the way of natural plant foods to gather. The area encompassing DuPuis and the adjacent J. W. Corbett Wildlife Management Area became known as the "Hungryland". The starving Seminoles were induced to camp near Ft. Jupiter under a flag of truce when General Jesup told them that he would try to obtain permission for them to stay in Florida on a reservation. They established a camp to about a mile from the fort under the flag of truce. In April, a letter arrived from Washington denying the request for a reservation. General Jesup ordered his men to quietly surround the Seminoles and take them captive. His reputation was already

damaged from capturing the Seminole leader Osceola under a flag of truce, so he may not be concerned about additional damage. He feared that there would be many more deaths of soldiers and Seminoles if he honored the flag of truce and allowed the Seminoles to leave. Over five hundred Seminoles were shipped out from Jupiter to Oklahoma (DuBois 1981).

In 1842, the Army declared the Second Seminole Indian War to be over and an uneasy truce was maintained between the white settlers, the Army and the Seminoles. In 1855, the Army began harassing the Seminoles again, and two more years of fighting ensued. A new Fort McRae was built as a base for patrols (Hutchinson and Paige 1998). In 1858, Billy Bowlegs, the Seminoles' main chief at that time, was induced to move to Oklahoma with his followers. Just before the Civil War started, the Army gave up on trying to capture the remaining 300 or so Seminoles (Robison and Andrews 1995). The network of wooden forts, including Fort McRae, was abandoned, and quickly disappeared under the twin attacks of termites and wildfire. The Seminole Indian Wars would be one of the longest and most costly native American conflicts in U.S. history.

After the Third Seminole Indian War ended, the Seminoles slowly emerged from their hideouts deep in the Everglades. A settlement was established near present-day Indiantown, and in 1898, Joe Bowers established a trading post where he would trade store goods for animal skins. He would later plant citrus and establish the Bowers Groves. That same year, Francis and Annie Platt established a cattle ranch near present-day Indiantown. Mr. Platt named the settlement "Annie" after his wife and it was granted a post office with him as postmaster in 1902. In 1902-3, Mr. Platt and his sons cut a wagon road from Annie to Stuart, which they called the Stuart-Annie Road. This road would eventually become today's State Road 76 or Kanner Highway. Annie became Indiantown in 1917 when the post office was renamed (Hutchinson and Paige 1998).

In 1902, a group of New Orleans investors, the Southern States Land and Timber Company, purchased approximately two million acres of land around Lake Okeechobee from the State of Florida for fifty cents an acre. The purchase included large areas of western present-day Palm Beach and Martin Counties, and virtually all of the DuPuis Reserve except for the low-lying areas along the present-day L-8 Canal. Southern States was primarily a real estate investment company. It did start cutting the old growth pine trees on its purchase, although in the absence of railroads, the sawmills had to be initially located on Lake Okeechobee, where water could be used to transport the logs (Hutchinson and Paige 1998).

The railroads, however, were apparently interested in serving the area. By 1911, the Indiantown area had enough white children (they were the only ones receiving public education at that time) to warrant a public school. Of the three families sending children to the school, two were listed as railroad engineers

(Hutchinson and Paige 1998). It is not clear what the engineers were doing, but the railroads would not come to the area until the 1920s.

In 1914, the U.S. Army Corps of Engineers proposed a canal to link the St. Lucie River on the east coast of Florida with the Caloosahatchee River on the west coast, and connecting to Lake Okeechobee in the middle. There was heavy local lobbying in favor of the canal. This canal has been called various official names, such as the Cross-State Waterway, and the Okeechobee Waterway, but for purposes of this history it will be referred to by its local name, the St. Lucie Canal. The dredging contract for the canal was signed on February 19, 1915, and the work began on May 28th (Hutchinson and Paige 1998), starting at the lake. It is believed that the western end of the canal at Lake Okeechobee was located in a natural small river that flowed into the lake. Some Seminole War-era military maps show a small river entering the lake in the vicinity of the canal (USDW 1838). Small tributaries that emptied into the lake were common and Will (1984) noted eight “dead rivers” between Clewiston and Belle Glade. 1940 aerial photographs of the reserve and vicinity (USDA 1940) show what clearly appears to be a creek leaving the canal and circling south of the Port Mayaca cemetery before petering out in the extreme northwest corner of the preserve. Another small creek is visible just east of the western reserve property line.

Spoil deposition patterns also support the river hypothesis. The spoil was deposited on the northern bank of the canal and the 1940 photographs shows very little spoil present until the western border of the reserve is reached. It is possible, however, that the spoil near the lake was removed for road or railroad building purposes. The path of the canal also supports a river route. The western end of the canal north of the reserve has a very convoluted route, as does the eastern end where it joins the South Fork of the St. Lucie River. The middle of the canal, where there were no streams to follow is very straight and linear. In any case, if the canal followed the route of some former “Mayaca” River, that river is now gone.

A small “dipper” dredge made the initial cut for the canal, creating a channel wide enough for a larger suction dredge to follow. The suction dredge “Northwood” was still digging the canal in 1916 (Hutchinson and Paige 1998), and a dam burst on the canal in November 1916, indicating that work was still ongoing. An event summary by the Stuart News (Hutchinson and Paige 1998) indicate that the first water flowed from Lake Okeechobee through the canal on June 13, 1923, and the authors state the canal was widened in 1923, although no other sources support this claim. The St. Lucie Canal was definitely widened in the mid-1930s, and was completed on March 22, 1937, with new lock construction in 1940 eliminating the island in the canal near the lake. The 1940 aerial photographs show fresh spoil has been deposited on the north side of the canal, but the island is still present. The great hurricane of 1928 drowned several thousand persons around Lake Okeechobee when the lake overtopped a low levee. The federal government’s response to this was to build a huge dike

around the lake, and widen the St. Lucie Canal and the Caloosahatchee River to dump water from the lake. The Stuart News reported that a contract to widen the canal again for \$1,276,000 was let on June 11, 1948 (Hutchinson and Paige 1998). The final design specifications for the canal are believed to be 200 feet wide at the top, 160 feet wide at the bottom, and a minimum depth of twelve feet, although some maps show the depth as eight feet (USGS 1953).

World War II would prove to be the heyday of the St. Lucie Canal. Barges and small ships used the canal to avoid being exposed to German U-boat attacks if they rounded the southern tip of Florida in the open ocean. After the war, commercial use declined, with recreational and fishing boats becoming the main users of the canal. The construction of the canal had major impacts to the hydrology of the northern portions of the reserve. The canal would have been controlled at or below the water level in the lake, which averages around 15 feet. According the topographic maps (USGS 1971, 1953), the historic wetland (and groundwater) elevation in the northern part of the reserve was 25 feet. Since the canal lowered the ground water elevation by at least 10 feet at the canal, and by decreasing amounts with distance from the canal, it is not surprising that the 1940 photographs show the wetlands within 3/4 of a mile of the canal as being partially dried up and suffering from a decreased hydroperiod. The groundwater drawdown continues today.

The construction of one form of transportation often stimulates the construction of another form, and that certainly happened near the DuPuis Reserve. According to Hutchinson and Paige (1998), a \$120,000 bond issue was approved on August 12, 1919 for county roads between Stuart and Lake Okeechobee. A 1921 Palm Beach County road map (Carr and McFadden 1921) shows a dashed line paralleling the south side of the St Lucie Canal from Jupiter-Indiantown Road to the lake, but the map legend is not clear whether this is just a proposed road, instead of a real road. A 1923 road map (H.C. Fugate 1923) shows the road present as a graded dirt road. A 1926 Martin County road map (Associated Map Co. 1926) shows the road present as an improved road, which means it had been surfaced with shellrock. The 1926 map still shows the road as Stuart-Annie Highway, although it would be later renamed as Gaines Highway in honor of the Palm Beach County Commissioner Henry Gaines, who worked for its improvement.

The original 1920s road was built just south of the St. Lucie Canal, and may have been rendered unsafe by the 1930s canal widening. The State of Florida took over responsibility from maintaining the road in 1931, designating it State Road 76. The State built a new road farther south of the canal in the late 1930s (the present-day road) as a result of lobbying by A..O. Kanner, a Martin County legislator and judge. The road was renamed Kanner Highway after his death in 1976 (Hutchinson and Paige 1998). The 1940 aerial photograph shows both the old and new roads present. The older side roads connect to both roads, while the newer side roads only extend to the new road.

During this time, the Southern States Land and Timber Company had not been idle with its lands. It would sell land to anyone who met their price, and sold a large tract to the St. Lucie Land Company as early as 1904. (Hutchinson and Paige 1998). The secretary of the company, George Bensel, established an office in West Palm Beach and ran its south Florida operations for 48 years. The company is credited with laying the groundwork to drain the Everglades and pioneering the planting of sugar cane, cutting roads and trails on its lands, opening the area to ranchers, and introducing the first pure-bred cattle in Martin County. The Southern States Ranch was established by 1920 on the north side of the St. Lucie Canal in Section 13 west of the reserve. The ranch was located in the transitional area between the Everglades and the pine flatwoods, and shows up on the 1921 road map (Carr and McFadden 1921). A road ran northeastward from the ranch for approximately five miles until it joined the old Indiantown to Okeechobee graded road. The 1940 aerial photograph shows several buildings where the ranch should be located, and a cleared pasture area to the west. The road leading to Indiantown appears to be falling into disuse, as there is another road leading south to the north bank of the St. Lucie Canal, and then westwards to Conners Highway.

A number of trails appeared on the Southern States lands in the early 1920s, but it is not clear who constructed them. One trail, known as the Hungryland Trail, traversed the DuPuis Reserve from its northwest corner, at first running south and then turning southeasterly and running through the pine flatwoods just north of the edge of the Everglades. It exited the reserve at the southeast corner near Big Mound. At Big Mound, the trail was renamed the Big Mound Trail and continued southeasterly until it terminated at the intersection of present-day Okeechobee Road and "A" Road in Loxahatchee Groves. These trails appear to be little more than wagon roads. There is no evidence of actual road construction, such as the digging of shoulder ditches and the piling of fill in the middle to create an elevated roadway. It appears that the trails sought to traverse the highest open ground, and trees and palmettos were cut and removed only as necessary. The Hungryland Trail is first present on the 1921 road map (Carr and McFadden 1921), and is also present on the 1923 H. C. Fugate map and the 1926 Associated Map Company Map.

This trail appears on aerial photographs and topographic maps from 1940 to the present, and is still present on the reserve. The portions west of the DuPuis Grade are little-used and have become overgrown, but the portions east of the grade are still passable by four-wheel drive vehicles. The old trail is variously used as a management road, equestrian trail, or as part of the Florida Trail hiking trail in different portions of the reserve, although few persons are aware of its name or origin. The 1920s-era maps also show another trail crossing through the reserve. This unnamed trail departed from the Hungryland Trail about two miles west of Big Mound, and then arced northwestward through Sections 14, 10, 3, 4, and 33. It curved back northeastward towards Indiantown

in Section 33 and then through the present-day citrus groves north of the reserve. Traces of this trail are visible in the 1940, 1957 (USDA 1957) and 1965 (PBCPA 1965) aerial photographs and the 1971 topographical map (USGS 1971), with the most consistent trace in the eastern portion of Section 33, where the trail may be used today as a management road. Since construction of the Cooter Creek ditch in the 1940s would have severed the trail, the other portions of the trail may have fallen into disuse early and become overgrown.

It is not clear who made these trails or when they were cleared. The Hungryland Trail continued north of the reserve to connect to the old Indiantown to Okeechobee graded road. This seems to indicate that it predates the St. Lucie Canal which was dug in 1915, as there is no indication of a ferry or ford to cross the canal. This northern section appears to have fallen into disuse after the canal was constructed, although the construction of present-day Kanner and Connors Highways may be responsible for this. However, the Big Mound Trail connects to the roads in Loxahatchee Groves, which were not built until 1917. It does seem likely that the trails were created sometime in the 1910s. They do not show up on maps until the 1920s, but none of the 1910s maps showed any trails, including those known to be present prior to 1910.

Although the trails were largely on Southern States' land, it is not believed that the company cleared them. The Hungryland Trail passes almost one mile east of the Southern States Ranch. If the company had built the trails, they would have presumably connected to the Southern States' facilities. The 1920s maps all show an agricultural settlement at Big Mound, where the land was divided into 40-acre tracts. It seems more likely that the trails were built by the residents of Big Mound for access to other population centers, possibly with the blessings of Southern States. They gradually fell into disuse when better roads were constructed nearby.

In 1923, William "Fingy" Connors bought large amounts of land around Lake Okeechobee, and began building a toll road to provide access to the land. Beginning at Twenty Mile Bend, the road followed the West Palm Beach Canal northwestward to Canal Point, and then northwards around the Lake to Okeechobee City. The road was hailed as an engineering marvel and was completed in 1925 at a cost of \$1.8 million dollars. This road is located two miles west of the reserve along the lake shore, and is the present-day U.S. Highway 441/98. It is still known as Connors' Highway. Although the toll was 3 cents a mile, the road averaged \$2,000 per day in tolls. The 1926 road map shows a toll station just south of the St. Lucie Canal (Associated Map Co. 1926). After Connors' death in 1929, Palm Beach County acquired the road, abolished the toll, and turned it over to the State Road Department.

Also in 1925, the Florida East Coast Railroad was constructed 1.5 miles west of the reserve. This railroad had reached Okeechobee City in 1915 and was extended to Canal Point in 1925 and Belle Glade in 1928. The primary purpose of

this railroad extension appears to be to haul produce from the Everglades Farming regions to northern markets. An examination of the 1940 aerial photographs shows no sidings or structures that appear to be sawmills, and it is not believed that this railroad played any role in the logging of the reserve.

A competing railroad was nearing Indiantown about the same time. Although sources vary on whether the Seaboard Airline Railroad reached Indiantown in 1924 or 1925, the railroad and associated companies were active in the area in 1924 (Hutchinson and Paige 1998). The Seaboard railroad was run by S. Davies Warfield, a Baltimore banker. In 1924, the Land Company of Florida, which was controlled by Warfield, bought 100,000 acres in the Indiantown area from Southern States, as well as the Platt cattle ranch. Warfield had grand plans for Indiantown. He planned to make it the southern headquarter for his railroad, with an elaborate passenger station and a roundhouse for turning around the engines. The railroad laid out the first streets, built houses and a school, built the Seminole Inn as a social center for the new town, and converted a proposed sawmill building into railroad offices and apartments.

The Seaboard railroad abandoned Warfield's plans after his death in 1927. The Land Company of Florida ran into financial difficulties when the Florida land boom collapsed and announced that it was abandoning its \$4 million dollar investment in Martin County in 1930 (Hutchinson and Paige 1998). It sold its remaining land to the Indiantown Development Company in 1937. Sometime in the late 1920s, Warfield Highway was constructed along the north side of the Seaboard tracks from just east of Okeechobee City to Indiantown. The State took over responsibility for the road in 1931 and designated it State Road 710 (Hutchinson and Paige 1998). The old Indiantown to Okeechobee graded road that ran south of the railroad tracks fell into disuse, and portions were eliminated by orange groves and the Martin Power Plant reservoir. Only a three mile segment west of Indiantown is present today and it used for access to the orange groves on the north side of the St. Lucie Canal.

Although Indiantown did not become the grand city envisioned by Warfield, it did become the focus of the logging activities in the area. Cut pine trees were brought to the sawmills at Indiantown where they were cut up and loaded on the train. Since the reserve was at least six miles from Indiantown, it was a lower priority for logging. Indications are that the reserve was not logged in a systematic or organized pattern, but on a kind of hit or miss fashion, with the easiest trees harvested. It is believed that the reserve was logged in the 1930s, although logging may have continued into the 1940s. The cut trees would have been hauled out by trucks via present-day Kanner Highway. Slash pines can be identified on the 1940 aerial photographs (USDA 1940), and the photographs do not show the virtual absence of trees seen in other areas of Palm Beach County that were logged in the 1930s.

In 1925, the Phipps family purchased 6,500 acres of with five miles of lake frontage from “Fingy” Conners. This land included the four-mile western border of the reserve, which is currently occupied by sugarcane fields, citrus groves and vacant land. The Phipps had big plans for a grandiose city at Port Mayaca, but the bank financing disappeared and the plans were dropped. Prior to 1925, Port Mayaca was just a wide place in the road where the St. Lucie Canal entered Lake Okeechobee. In 1927, the Phipps formed Bessemer Properties to develop their holdings, primarily as an agricultural enterprise. The land was divided into 20-acre blocks and windbreaks of Australian pines planted. Citrus was the main crop, and Bessemer was among the first to use pumps to control water levels with the groves (Hutchinson and Paige 1998). The operation was a financial success.

The headquarters for the agricultural operation was on present-day Kanner Highway, just west of the Florida East Coast railroad tracks. The 1940 aerial photograph shows several large buildings near the railroad track, a water tower, and numerous workers’ houses lined up in neat rows. The rusting water tower is still present with Port Mayaca still readable on its side. The workers’ housing is long gone. This agricultural complex formed the majority of Port Mayaca, with the rest being scattered houses, a lodge, and a general store on the lakeshore ridge south of the St. Lucie Canal. Bessemer platted the Osceola Groves subdivision on the land west of Section 31 in the reserve in the mid 1940s. Perimeter dirt roads were built and the land divided into acre-plus lots. The subdivision was not successful, with most of the lots remaining unsold and no houses built. The perimeter roads for the subdivision are visible in the 1948 aerial photograph (USDA 1948).

The Port Mayaca cemetery on the northwestern corner of the reserve was reportedly established in the early 1920s. Approximately 1,600 victims of the 1928 hurricane are buried there in a mass grave (Hutchinson and Paige 1998). The City of Pahokee handles the administration of the cemetery, and it is the major burial site for residents of the Glades area, being the closest stable (non-muck) soil area. Some initial tree plantings and access roads are visible in the 1940 aerial photograph (USDA 1940) and increase in subsequent photographs.

Martin County was formed in 1925 out of the northern 17 miles of Palm Beach County and a small piece of coastal St. Lucie County. Stuart area voters were incensed when Palm Beach County announced a \$6 million dollar road bond issue in early 1925, but planned to spend less than \$250,000 of it in the Stuart area. They felt that they were continually getting less than their fair share of County benefits, and were tired of it. At first the legislation authorizing the new county was going nowhere, primarily because of opposition from West Palm Beach interests. The Stuart interests tried a new plan - proposing to name the new county after Governor John Martin. The plan worked, as the governor threw his support behind the legislation. Both Martin County and Indian River counties were created on May 19, 1925 (Hutchinson and Paige 1998). The

northern four miles of the reserve were part of the new county. Stuart was named the interim county seat. The Seaboard railroad interests pushed to have Indiantown named the permanent county seat, but gave up on this after Mr. Warfield's death in 1927.

Very little happened in the vicinity of the DuPuis Reserve in the 1930s other than the widening of the St. Lucie Canal and the construction of a new State Road 76. A 1937 Dolph's land atlas shows the land ownership in the reserve in Palm Beach County. Chase National Bank owned almost all of the northern two miles of the reserve. The Glades Land Corporation owned the land all along the southern edge of the reserve, while Southern States only owned six sections in the east central portion. The State Board of Education owned Section 15. The section of land containing Big Mound is shown as being divided into 40-acre sections. Although Southern States had sold most of its ownership in the reserve at that time, it bought back many of its properties for delinquent taxes during the Depression (Hutchinson and Paige 1998), and regained ownership at a later date.

The 1940 aerial photographs give the first comprehensive look at the reserve and its vicinity. To the west, the Bessemer groves and buildings are well-developed, and what appears to be a landing strip is present just west of Section 30. The Hungryland Trail is clearly visible and heavily used, with a few side trails branching off from it. Several large agricultural clearings are visible along the trail in the southern portions of the reserve, primarily west of Big Mound. Smaller clearings found in the central portion of the reserve appear to be associated with the unnamed trail to Indiantown, which is hard to distinguish on the photographs. The clearings appear to be associated with shallow wet prairie systems, and are probably a form of farming practiced at the time called "pothole" farming. Shallow wetlands would be planted with crops like tomatoes at the beginning of the dry season. These wetlands would be close enough to the water table to stay moist and keep the crops growing without irrigation, and were free from soil-borne diseases. By the time the wet season returned and water levels rose, the crops would have already been harvested. Pothole farming at the reserve seemed to stop shortly thereafter, possibly because World War II dried up the labor available.

Furrows, berms, and ditches are clearly visible in the 1940 aerial photographs, and remain visible on subsequent photographs and topographic maps into the 1970s. The farmed areas today appear to be densely vegetated with slash pine or pond cypress, who find the altered wet prairies favorable for colonization. This response is consistent with that seen on similarly-farmed areas in Palm Beach County. Along the northern edge of the reserve, the understory vegetation has been cleared in the area that would become the farmed fields around the reserve office building, and the wetlands appear partially dried up. Short trails radiate south and east from the cleared areas. A short entrance road extends southeast from SR 76, with a building present at the southern end. Another structure is

visible nearer SR 76, by it is not clear whether this is a corral or some other building. This entrance road would become the main entrance to the reserve and the building was expanded into the first ranchhouse.

In November 1944, Southern States Land and Timber sold 20,439 acres of land to Robert Chastain of Canal Point. This land includes most of the northern and central portions of the reserve, and included the land that would become citrus groves east of the reserve. It did not include the southern portions of the reserve, or the northern two miles. In 1946, Chastain purchased the 610 acres containing the current reserve office and farmed fields from Malcolm and Beatrice Chace. This gave him access to SR 76 from the western portion of his property. Also in 1946, Chastain purchased Section 15 from the State Board of Education for \$50 an acre. In 1942, U.S. Sugar Corporation purchased a large amount of land from Glades Land Corporation, including the southern portion of the reserve. In 1949, U.S. Sugar sold this land to Robert Chastain along with some other inholdings owned by U.S. Sugar in the land he had already purchased. As part of this purchase, Chastain acquired most of the four sections in the northeast corner of the reserve, almost all of the southern border, and five sections of muck land below the present-day L-8 Canal. After this last purchase, Chastain owned all of the reserve except the three sections in the southern tip.

By the end of 1948, Chastain had constructed most of the basic infrastructure on the reserve. The infrastructure is visible on aerial photographs from December 1948 (USDA 1948) and March 1949 (USDA 1949). The aerial photographs show that the ranchhouse building has been expanded, and a small building and tree plantings are present in the area of the present office building. Both the Jim Lake and DuPuis grades have been constructed, along with an extension of the DuPuis Grade that runs southeast along the edge of the Everglades south of the Hungryland Trail. At that time, the Jim Lake Grade ran past the eastern boundary of the reserve and then turned north and connected to SR 76 next to two houses (USGS 1953). Another road forks off the DuPuis Grade and runs south to the Mound House area. There is extensive understory clearing in the vicinity of Mound House, with windrows of debris visible in some areas. The Mound House road would fall into disuse in subsequent aerial photographs. The Hungryland Trail and its side trails are still visible and in active use at this time.

The current ditch and farm field system around the reserve office had been constructed by 1948, with spur ditches extending south and east into adjacent wetlands. This ditch system, which will be called the "Office" ditch system, empties into a small creek that flowed to the St. Lucie Canal in the northwest corner of the reserve. Another outfall for this system is visible under SR 76 approximately 1/4 mile east of the reserve office. Another ditch system is present in the northeastern portion of the reserve. This ditch system, which will be called the "Chastain" ditch system, linked wetlands for three miles south and 1.5 miles west of its main outfall just east of the reserve. Three additional smaller outfalls are present along SR 76 west of the main outfall. South of the

Chastain ditch system, the Cooter Creek ditch ran south for four miles to a slough emptying into the Everglades. Wetlands near this ditch were also connected to it. On the west side of the reserve, a canal had been constructed southwards from the Osceola Groves subdivision to the West Palm Beach Canal. This canal is known today as the L-8 stub canal, or North Tieback canal. A ditch system, which will be called the "Osceola" ditch system, ran through the western portion of the reserve, connecting the stub canal and cutting across the Hungryland Trail.

The Chastain Ranch was apparently not a big proponent of digging cattle watering holes in wetlands. Only eight are visible in the 1948/49 aerial photographs and are scattered along southern edge of the reserve. The ranch apparently thought that mowing shallow wetlands improved the cattle forage quality. The 1949 aerial photograph shows that the shallow areas of wetlands in the northeastern portion of the reserve appear to have been mowed. The deeper areas were not mowed, probably either because of high water levels or soft muck soils. Whatever the reason for this practice, it apparently was not repeated and little effects from it can be seen in the 1957 aerial photographs (USDA 1957). According to Hutchinson and Paige (1998), the Sam Chastain Ranch raised registered quarterhorses and Brahma bulls in the early 1950s. It is not known who Sam Chastain was and what his relationship to Robert Chastain was.

A small spur road led south from the DuPuis Grade extension along the edge of the Everglades to a small hammock, and is visible in the 1949 photograph (USDA 1949). At the edge of the hammock near the water is a small set of parallel brick foundations. Wheeler (2000) dated these as being pre-1955. The foundations were too small and too narrow to be any sort of dwelling place. Given that they are located near what may have been the easiest point on the ranch to get boat or airboat access to the Everglades, it is believed that they served some boating purpose, such as tie down or storage. Although the L-8 Canal was not present in 1949, a survey line for its construction is visible in the aerial photograph.

The western two miles of the L-8 Canal was constructed through the Bessemer lands in 1953, and the stretch bordering the reserve was dug in 1954. The L-8 Canal was generally controlled at 15 feet, which was lower than virtually all the land in the reserve, except for the extreme southwest corner. This canal created new opportunities for drainage systems along the southern border of the site, as drainage culverts were placed through the northern berm at intervals of a mile or so. Some new short drainage ditches along the L-8 are present in 1957 aerial photographs (USDA 1957). By 1953, the first citrus groves were being developed and planted on the north side of the St. Lucie Canal, just north of the northeast portion of the reserve (USGS 1953). In the 1950s, the Bessemer orange groves were sold to Ben Hill Griffin, Inc.

In August 1955, Robert Chastain sold almost all of the western three miles of the reserve to White Belt Dairy Farms, Inc., which was controlled by John G. DuPuis, Sr. The 1,586 acres in the northwestern portion of the reserve was sold directly to Mr. DuPuis. The White Belt purchase also included six sections of land below the L-8 Canal, including two that stretched to Lake Okeechobee. The 1957 aerial photographs of the reserve (USDA 1957) does not show that many changes, possibly because Mr. DuPuis, Sr. died in 1957. Most of the firebreaks that follow section lines were created at this time and are visible in the photographs, along with two new cattle watering holes.

The photographs show that additional understory clearing is visible extending eastward from Mound House and east of the farm field area in along SR 76. The western pond at Mound House has been dug, but it cannot be determined whether the house is present under the trees. A road with a causeway near the end has been extended to L-8 Canal in the southwestern portion of the reserve. A bridge crosses the canal at the end of the causeway - presumably to provide access to the White Belt lands south of the canal. Another bridge over the canal is present at the southwest corner of the reserve. A long linear clearing that may be a landing strip lies west of the causeway, although because of its connection to a L-8 Canal culvert, it could also be a clearing for a drainage ditch that was not constructed. In the southwest corner, there is evidence of some sort of agricultural activity, such as the mowing of rectangular blocks. Along the western border of the reserve, a new perimeter canal has been extended northward from the Bessemer lands through the Port Mayaca cemetery to the St. Lucie Canal. This new canal eliminated the old connection of the Hungryland Trail to SR 76, but by this time, the trail was only being used as an internal ranch road.

Control of the White Belt Dairy and the separate DuPuis tract passed to John G. DuPuis, Jr. in late 1957. Mr. DuPuis, Jr. was apparently a owner who wanted to experiment with a great many things. A series of aerial photographs was taken in early 1958 (USDA 1958). These photographs show that the first fruit trees have been planted in the trapezoidal field west of the ranchhouse and around the office building. Southern States sold the land bordering the southeastern edge of the reserve to the State in 1957 for the J.W. Corbett Wildlife Management Area. The Big Mound area was not part of this purchase and was not acquired by the State until the 1980s.

Another series of aerial photographs of the Palm Beach County and adjacent Martin County sections of the Reserve was made in 1965 (PBCPA 1965). These photographs indicate that not much was happening on the DuPuis-controlled lands except for the southwest corner. A new drainage system is present, which will be called the "Bamboo" ditch system after the bamboo plantings along the east side of the L-8 stub canal, which are visible for the first time in 1965. The Bamboo ditch system ran through the transitional area between the pine flatwoods and the Everglades muck soils in the southwest corner. This ditch

system was not present in 1957 (USDA 1957), although its route appears to have been cleared. The ditches seemed to be designed to intercept surface and groundwater flows that were keeping the muck soils too wet for their intended use as pasture.

The southern leg of the Bamboo ditch appears to have been constructed first. It started near Mound House and ran southeastward, linking up with several short ditches created prior to 1957, and then emptied into the L-8 Canal. The northern leg appears to be newly constructed in 1965. It started at a pre-1957 short ditch, and then ran northwestward to empty into the L-8 Stub canal. Spur ditches from both legs were extended northwards for a mile or two to drain additional wetlands. The Hungryland Trail was severed without a crossing by a north Bamboo spur ditch, which led to a further decline in the usage of the western portions of this trail. The Cooter Creek canal was extended southward to link to a L-8 Canal culvert. Elsewhere along the L-8 Canal in the reserve, culverts that are not connected to ditches show erosional channels radiating outwards from them. These channels may have been present in 1957, but could not be seen because of the small scale of the photographs. They do indicate that large amounts of water are flowing from the reserve into the L-8 Canal through the culverts. Only one new cattle watering hole is visible on the 1965 photograph on the White Belt lands.

In January 1964, Robert Chastain sold nine sections of land running north to south on the eastern edge of his land holdings to George Caulkins. The southernmost four sections of this sale form part of the present southeastern border of the reserve. Chastain passed away later in 1964, and his estate sold to Caulkins the remaining nine-plus sections of land between the White Belt dairy and the previous Caulkins purchase in March 1965. The 1965 aerial photographs show that Chastain had done little with the Palm Beach County portions of the reserve that he owned. Only one new cattle watering hole is visible, and the trails within his ownership appear to be falling into disuse.

Caulkins, on the other hand, was converting his land into citrus groves. By early 1965, he had already begun ditching and draining the land on the first five sections extending south from SR 76, preparing it for tree planting. He never developed groves more than five miles south of the St. Lucie Canal, even though he owned the land further south. It is possible that he could not get adequate drainage at that distance from the canal, or could pump irrigation water that far. The 1965 photograph does show a small agricultural clearing in a shallow wet prairie in the middle of Section 36 on the northern border of the reserve. It is believed to be caused by some freelance pothole farming, possibly by one of Caulkins' employees. The southern three sections of the reserve were still owned at this time by U.S. Sugar. The 1965 aerial photographs show numerous vehicle tracks through the marshlands along the L-8 Canal in these sections. It is

believed that these tracks were caused by hunting vehicles. Just east of the U.S. Sugar lands, agricultural clearing in the Big Mound Area is still visible.

White Belt Dairy Farms signed a stumpage agreement with Heyden Newport Chemical Corp. to remove lighter pine stumps in 1961. Since it takes at least 20 years for slash pine stumps to rot enough that the resin-soaked cores can be easily removed, this dates the logging on the western portion of the reserve as prior to 1940. When White Belt and Mr. Caulkins exchanged quit claim deeds in 1967 to resolve a property line dispute, the stumpage agreement had to be released from the lands going to Caulkins. Since there was no stumpage agreement on the Caulkins lands, it raises the possibility that the eastern portions of the reserve were never logged.

The period 1965 to 1970 appears to be a period of very active development on the White Belt lands. The soil survey for Palm Beach County (USDA 1978) has 1970 aerial photographs, while the survey for Martin County (USDA 1981) has 1972 aerial photographs. These photographs allow the dating of the new development on the White Belt lands. In the Palm Beach County portion of the White Belt lands, numerous new cattle watering holes are present. The bridge crossing the L-8 canal from the causeway is not longer present. The eastern pond at Mound House has been recently dug, and it is believed that the house itself was constructed at this time. Although the aerial photographs are inconclusive, it is believed that the sheep shearers buildings were built at the same time because of similarities in construction. A new ditch system, which will be called the "South Fork" ditch system is present. It starts in Section 4, heading south, and then forks. The eastern fork continues southeast and joins the Cooter Creek canal, while the western fork heads southwest and then west and empties in the L-8 Canal. A peculiar kind of scarification is visible in 1972 on the shallow edges of wetlands in the northern half of Section 34 south of the citrus grove. This scarification appears to shallow ridges and furrows. The scarification is not present in 1970, but can still be seen in 1990 aerial photographs.

On the Martin County White Belt lands, numerous cattle watering holes and ditches have been constructed in wetlands. Spur ditches have been extended westward from the Cooter Creek canal to drain additional wetlands. The T-shaped landing strip has been constructed and there is extensive clearing in the east half of Section 20 east of the landing strip. Most of the buildings in the reserve maintenance compound appear to have been recently built, and a road extends from the compound to SR 76. The residences on the eastern and western borders of the office farm field area appear to be present. The reserve office building has been expanded, and new buildings are visible south of the ranchhouse. The entrance drive to the office and ranchhouse buildings, which previously had been to the east of the buildings, was now shifted to its present location west of the buildings.

The orange grove area south of the reserve office has been recently cleared, and the wetland there has been partially filed in. The wetland just south of the farm field area east of DuPuis Grade has been excavated to form parallel berms. The barn may be present at the equestrian area, but the aerial photograph is inconclusive. The planted hammock north of Governor's House is present, and the house itself appears to be visible. A comparison with the 1971 topographic map (USGS 1971) shows that the landing strip and the ditched wetland east of DuPuis Grade were present prior to 1971. East of the reserve, George Caulkins had almost finished development of this citrus groves, with only a few sections left unplanted. South of the groves, he was doing little with the land forming the eastern portion of the reserve. Five new cattle watering holes are visible in 1970, but otherwise there are no changes.

In January 1972, a complex series of land transactions resulted in White Belt Dairy Farms acquiring the eastern three miles of the reserve. In two separate transactions, George Caulkins sold most of the land that he owned south of the developed citrus groves to U.S. Sugar. U.S. Sugar then sold this land to White Belt Dairy Farms. U. S. Sugar also sold the southernmost three sections of land in the reserve to John G. DuPuis, Jr. It is believed that White Belt transferred its muck lands south of the L-8 Canal to U.S. Sugar at the same time, but it is not known whether this was a sale or a land swap. Finally, George Caulkins sold the last 2 1/2 sections of land south of the citrus groves to White Belt. This series of transactions brought the reserve into its final configuration with 100% ownership by the DuPuis family. This eastern section was much wetter than the rest of the reserve, and portions have been labeled on some old maps as a continuation of the Allapattah Flats (H.C. Fugate 1923).

White Belt moved quickly to develop the new lands in the eastern portion of the reserve. A parallel ditch was dug for three miles just north of the L-8 Canal and was extended northward seven miles along the eastern reserve boundary to the citrus groves. A new raised road with shoulder ditches was constructed through Section 25 to connect the canal berm road along the eastern border. As on the western portion of the site, the muck and transitional lands along the L-8 Canal appear to be the most valuable agricultural area. Spur ditches were extended from the ditch along the L-8 Canal to drain this area. In the northwest corner of Section 14, a square nursery area was created in a shallow wetland area to grow Limpopo grass. This grass was then planted in other wet areas to provide what was hoped to be improved cattle forage. Many of the management roads that follow section lines were also created at this time.

Three new cattle watering holes were created at this time in the eastern section near the L-8 Canal grazing areas. Elsewhere on the reserve, only two new watering holes were created and many of the older holes appear to be not maintained and falling into disuse. The South Fork ditch system was extended a half-mile farther north. Because of the gap between the aerial photographs of the early 1970s and those in the mid-1980s, it is difficult to date when the

changes in the eastern section of the reserve occurred. Since the appearance of the changes in the 1980s photographs is that of something that happened many years earlier, it appears that the mid-1970s was the last period of major changes at the reserve. The buildings in the equestrian complex appear to have been built about this time, while a number of tree plantings along the DuPuis Grade that were probably made in the 1970s became visible in the 1980s.

A high-voltage power line that forms the main north-south backbone of the Florida electrical grid was constructed along the eastern border of the reserve in the late 1970s or early 1980s. It consists of three groups of electrical lines on towers lined up three abreast. The line runs just over the eastern reserve border in the Corbett WMA for the first seven miles, then turns west and runs on the northern edge of the reserve just below the citrus groves. It then turns northward and runs just inside the reserve for the next three miles, before crossing into the citrus grove for the last mile before it reaches the St. Lucie Canal. All woody vegetation was removed underneath the power lines, and is being prevented from reestablishing itself by cutting and herbicides. The towers were placed on raised beds placed approximately every 0.25 miles. There are a few pits underneath the power line that apparently were dug to provide fill for the raised beds. Another high-voltage power line was constructed just over the western edge of the reserve in the early 1990s. It consisted of only a single set of towers and connected to the new Martin Power Plant that had been built to the north of the reserve.

Very little appeared to happen at the reserve in the early 1980s, possibly because Mr. DuPuis was in declining health. John G. DuPuis, Jr. died in 1984 and control of the reserve passed to his widow Susan DuPuis. Mrs. DuPuis sold the reserve to the South Florida Water Management District (SFWMD) in December 1986. Very little change in the reserve can be noted between 1984 and 1986 except that the office building was expanded to its present configuration. After acquiring the reserve, SFWMD sought partners in managing the reserve. Florida Game and Fresh Water Fish Commission, which is now the Florida Fish and Wildlife Conservation Commission, has managed the hunting on the reserve since the beginning.

In 1990, the State Division of Forestry (DOF) took over management of the reserve and it was known as DuPuis State Forest until 1996. During their time managing DuPuis, DOF rebuilt the DuPuis and Jim Lake Grades with shellrock excavated from a borrow pit in the southwest corner of the reserve. A new entrance road that connected to the Jim Lake Grade was established in the northeast corner of the reserve. A boardwalk has been recently constructed at the borrow pit. DOF may have also been responsible for the small borrow pits in the family camping area in the northeastern portion of the reserve. DOF also started prescribed burning at the reserve in 1990. Some of the initial burns were fairly hot because of excessive fuel buildups. The hot burns and sub-normal rainfall stressed the slash pines and left them vulnerable to pine bark beetle

infestation. Selective logging was done in 1992 to try to control the infestation, but it continued to spread and led to the logging of almost 900 acres in 1995 and 1996. DOF was unable to secure permanent funding for the state forest and turned the management back over to SFWMD in 1996.

SFWMD went through a bidding process for the management of the reserve and decided that SFWMD staff had the best proposal. The District has been managing the non-hunting functions at the reserve since 1986. The ranchhouse south of the reserve office was demolished in the 1990s. This was the oldest building on the reserve, dating back to 1940. The foundation of this building was recently removed for construction of a new shellrock parking area. The fruit orchards around the reserve office are not being maintained and are slowly dying out. The citrus grove was recently removed to help contain the spread of citrus canker.

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## Appendix B.

### Goals and Policies

#### ARTICLE II. LAND STEWARDSHIP

##### **Sec. 140-21. Scope.**

This policy shall apply to all lands managed by the Land Stewardship Program, including property acquired with Save Our Rivers, Preservation 2000 or mitigation funding. Nothing in this policy shall negate any statute, administrative rule, or other policy requirement. This policy may be reviewed and approved by the District Governing Board at five-year intervals or earlier and updated as required. Public comment may be solicited as part of the review process.

(R.M. No. 139)

##### **Sec. 140-22. Purpose.**

(a) This policy establishes a commitment to the responsible management of District lands in a manner consistent with legislative directives and the District's mission.

(b) In 1981, the Florida Legislature established the "Save Our Rivers" program (SOR) for the five water management Districts to acquire water resource lands. This legislation (Section 373.59, Florida Statutes) produced the Water Management Lands Trust Fund, empowering the water management Districts to acquire lands needed to protect, manage, and conserve the state's water resources. Preservation 2000 (P2000), enacted by the Legislature in 1990, also added land acquisition funds to the Save Our Rivers program. The 1999 Florida Forever Act consolidated the legislative directives of SOR/P2000 and expanded the funding to take over when P2000 terminates. The 1999 legislation authorized funds to be appropriated for acquisition, management, maintenance and capital improvements, including perimeter fencing, signs, control of invasive exotic species, controlled burning, habitat inventory and restoration, law enforcement, access roads and trails, and minimum public accommodations.

(c) Land acquired by the District's Save Our Rivers program and managed by the Land Stewardship program must satisfy several requirements set forth in Sections 373.139 and 373.1391, Florida Statutes. Section 373.139, Florida Statutes, declares it necessary for the public health and welfare that water and water-related resources be conserved and protected. The acquisition of real property for this objective shall constitute a public purpose for which public funds may be budgeted.

(d) Section 373.1391(1)(a), Florida Statutes, states that lands titled to the water management districts shall be managed and maintained to the extent practicable to ensure a balance between public access, general public recreational purposes, and restoration and protection of their natural state and condition.

(e) Section 373.1391(1)(b), Florida Statutes, states, in part, that "Whenever practicable, such lands shall be open to the general public for recreational uses. General public recreational uses shall include, but not be limited to, fishing,

hunting, horseback riding, swimming, camping, hiking, canoeing, boating, diving, birding, sailing, jogging, and other related outdoor activities to the maximum extent possible considering the environmental sensitivity and suitability of those lands."

(f) Section 373.1391(1)(d), Florida Statutes, states that the District shall first consider using soil and water conservation Districts to administer agricultural leases.

(g) Section 373.1391(3), Florida Statutes, encourages each District to use volunteers to provide land management and other services.

(h) Section 373.1391(4), Florida Statutes, encourages each District to enter into cooperative land management agreements with state agencies or local governments to provide the coordinated and cost-effective management of lands.

(i) Section 373.1391(5), Florida Statutes, authorizes water resource and supply projects, stormwater management projects, linear facilities, and sustainable agriculture and forestry where it is compatible with the natural resource values and the public interest and is consistent with the project management plan, the proposed use is appropriately located on the property and other lands have been considered, and the titleholder of the property has been properly compensated.

(j) Section 373.591, Florida Statutes, mandates the District to solicit input on current management programs through professional peer reviews.

(R.M. No. 139)

### **Sec. 140-23. Statements of Policy.**

The Land Stewardship Program mission is to provide natural resource protection and management while allowing compatible multiple uses on designated public lands. The mission statement, together with requirements set forth in the Florida Statutes, provide three primary goals for the District Land Stewardship Program, each of which is linked to sections in this Land Stewardship Policy document:

- (1) Conservation and protection of water resources (section 140-25(1)).
- (2) Protection and/or restoration of land to its natural state and condition:
  - a. Restoration and Protection of Natural Communities (section 140-25(2)); and
  - b. Resource Operations and Maintenance (section 140-25(3)).
- (3) Provide public use (section 140-25(4)).

(R.M. No. 139)

### **Sec. 140-24. Definitions.**

For the purpose of this article, the following words and terms shall have the meanings respectively ascribed:

*Archaeological/Historic Resources* means any prehistoric or historic district site, building, object, or property of historic, architectural, or archaeological value relating to the history, government, and culture of a historic or pre-historic people.

*Best Management Practice (BMP)* means the best available technology or process that is practical and achieves the desired goal or objective.

*Capital Improvement* means activities relating to the restoration, public access, recreational uses and necessary services for land and water areas, including the

initial removal of invasive plants, and the construction, improvement, enlargement or extension of facilities' signs, fire lines, access roads, and trails. Such activities shall be identified prior to the acquisition of a parcel or the approval of a project.

*Cooperating Agencies* means two or more agencies working together to operate a specific management area.

*Cooperative Management Agreement* means an agreement between two or more agencies outlining the respective duties and responsibilities of each agency in the management of a specific tract of land.

*Critical Habitat* means areas designated for the survival and recovery of state/federally listed rare, threatened, endangered or other sensitive species.

*Desirable Vegetation* means native plant species that are appropriate for a specific community type and provide benefits to wildlife in the form of food, cover and nesting.

*Habitat Diversity* means richness and variety of native plant communities within a particular area of the landscape.

*Hydroperiod* means flooding duration, depth, and timing that influences species composition, ecosystem structure and function.

*Interim Land Management* means management of non-natural areas that provides revenue without impacting long-term water-development projects.

*Invasive/Exotic Vegetation* means certain plants that displace native species and adversely affect wildlife habitat, water quality, recreation, and biological diversity.

*Lead Manager* means the prime managing entity designated for a given tract of land; generally provides the on-site staff.

*Management Area* means a single tract or combination of tracts under one management program.

*Mitigation* means, for purposes of this policy, the actual acquisition, restoration, creation, or enhancement of wetlands to compensate for permitted wetland impacts.

*Mitigation Banking* means wetland acquisition, restoration, creation or enhancement undertaken expressly to provide compensation in advance of wetland losses from development activities.

*Multiple-Use* means the management of renewable resources for a variety of purposes such as recreation, range, timber, wildlife habitat, and water resource development.

*Prescribed Fire* means burning of vegetative fuels using controlled application of fire within specified environmental conditions.

*Primary Resource Lands* means lands having high water resource, fish, wildlife, and recreational values requiring acquisition or protection.

*Regional Mitigation Area* means, for purposes of this policy, permitted wetland impacts offset through payment for the acquisition, restoration and perpetual management of a Save Our Rivers identified and duly noticed project.

*Responsible Management* means level of management described in the General Management Plan.

*Sustainable Use* means to provide continued use of a natural resource without degradation or loss of that resource.

*Water Resource Buffer* means that portion of a Preservation 2000 or Save Our Rivers project necessary to protect the aquatic environment.

*Wildlife Corridor* means a connection between natural areas that allows the safe movement of wildlife.

(R.M. No. 139)

**Cross references:** Definitions and rules of construction, § 100-2.

### **Sec. 140-25. Responsibilities.**

The Land Stewardship Program is responsible for:

**(1) Water Resource Protection.** The basis for the Land Stewardship Program is the protection and management of natural hydrologic resources. The following policies guide implementation of this objective:

a. Acquired lands shall be managed to provide water resource-related benefits.

b. Land uses or activities that significantly or permanently alter or degrade the quality, quantity and/or natural movement of ground or surface water are not allowed unless they are a part of a regional water management system.

c. Where feasible, an attempt shall be made to restore a more natural hydroperiod on tracts where the drainage patterns have been altered.

d. Public use shall not result in detrimental impacts to water resources. When a public use activity produces detrimental effects on water resources, it shall be discontinued until an evaluation determines that such use is compatible.

e. Water resource lands designated as necessary to implement the Central and Southern Florida "Restudy" Project shall, upon acquisition, become the responsibility of the (Interim) Land Management Program, and follow the guidelines set forth under Section 373.1391(5), Florida Statutes.

**(2) Restoration and Protection of Natural Communities:**

a. The Land Stewardship Program will encourage the acquisition of large or regionally significant areas that protect important natural resources and provide wildlife corridors.

b. Particular emphasis shall be placed on the identification, protection and management of rare, threatened and endangered species.

c. The planting of invasive exotic plant species shall be prohibited in all management areas. Management practices will strive to identify existing infestations and implement appropriate control or eradication measures.

d. Where practicable, an attempt shall be made to restore and maintain desirable vegetation to promote habitat diversity in areas where invasive exotic vegetation, grazing practices, or improved land uses have substantially altered the historic landscape.

**(3) Resource Operations and Maintenance:**

a. Lands acquired for natural and/or hydrologic resource benefits shall be managed to conserve and protect those resources.

b. Exotic plant control in all management areas shall strive to attain a level of success where periodic maintenance eliminates the infestation or reduces the coverage of exotic plants.

c. Prescribed fire will be a primary management tool on District lands and will be applied within fire-maintained communities at appropriate intervals.

d. The Division of Forestry will be notified of all wildfires on District lands. Land Stewardship will provide initial suppression when commensurate personnel and equipment are available.

e. Inventories of natural and historic resources shall be performed to provide information for effective land management planning, natural community maintenance and ecological restoration.

f. Evaluation and monitoring of management activities shall be conducted to improve program effectiveness and efficiency.

1. Research shall evaluate the environmental response of certain management activities to assist staff in making appropriate management decisions.

2. Monitoring shall be conducted to identify landscape changes resulting from management activities.

3. Legislative-mandated management reviews will provide input from professional peers.

g. Resource protection shall be provided by professional law enforcement services through funded and unfunded contractual agreements to safeguard the public and protect natural and cultural resources on District-managed natural areas.

h. Sustainable use of forest resources shall be conducted where these activities adhere to a series of environmental criteria (see 1999 Forest Management Plan) that meet Land Stewardship Program goals. Timber contractors will be required to meet silvicultural Best Management Practices (BMP) developed for Florida forests.

i. Range management (grazing) will be considered on improved or native ranges when the introduction of cattle will not conflict with other natural resource management and public use goals.

j. Archaeological and historic resources are protected by site identification and inter-agency coordination with the Florida Division of Historical Resources. Land stewardship planning shall include an analysis of archeological data accompanied by appropriate public education opportunities.

k. Infrastructure support shall be developed and maintained to provide safe access for responsible management and public use on District lands. Such infrastructure may include access points, roads, trails, signs, utilities, and minimal public facilities.

l. Mechanical equipment may be used in conjunction with prescribed burning and other management tools to control vegetation and restore habitat structure.

m. Agricultural developments previously existing on acquired natural areas may be maintained if management of these developments is consistent with other land stewardship goals.

**(4) Public Use and Environmental Education:**

a. Public use of management areas that is consistent with other management goals shall be encouraged. Public use that may have detrimental impacts on sensitive environmental resources shall be restricted until an evaluation determines such use is compatible. A public use compatibility assessment will be included in the General Management Plan completed for each management area and will be based on the following criteria:

1. Consistency with the reason the lands were acquired.
2. Restrictions and/or prohibitions imposed by easements, leases, reservations, adjacent land ownership, conditions of the purchase agreement, and any other agreements concerning the property.
3. Infrastructure and support facility requirements, such as fences, gates, signage, entry design, stabilized off-road parking, trails, campsites, maintenance, and other operational and budgetary impacts.
4. Opportunities for persons with disabilities.
5. Limitations resulting from endangered species, other sensitive natural resources, archaeological resources, or land management practices.
6. Public health, safety and welfare.
7. Environmental education program opportunities.

b. Public Use Regulation:

1. Public use regulations are set forth in 40E-7.511, Florida Administrative Code, to implement Section 373.1391(1)(b), Florida Statutes. Accordingly, the District shall publish and make available to the public a "Public Use Guide" for designated land management areas. The Public Use Guide will be adopted by the Governing Board at a public meeting advertised in accordance with Chapter 120, Florida Statutes.

2. Rules and regulations governing the public use of each management area shall be enforced by agencies with appropriate law enforcement jurisdiction.

3. Pursuant to Section 373.609, Florida Statutes, the District shall seek the cooperation of every state and county attorney, sheriff, police officer, and appropriate city and county official in the enforcement of the provisions set forth according to 40E-7.511, Florida Administrative Code.

4. Florida Fish and Wildlife Conservation Commission regulations shall govern hunting in areas opened for such use.

**(5) Implementation Strategies.** The District will secure dedicated funding sources, personnel and other resources to support program goals and objectives. Project funding needs and sources for cooperative management agreements with government and non-government entities will be identified during acquisition. A cooperative management agreement will designate a lead Manager and identify whether District funding is required.

a. The private sector may be solicited to furnish certain management-related facilities and services through the execution of leases and agreements. These leases/agreements will assure mutual benefits to both the District and private parties and be consistent with the program management objectives.

- b. Mitigation:
1. Mitigation Banking: Mitigation banking provides an opportunity to accomplish large-scale restoration that may otherwise go unfunded. Pursuant to Section 373.4135, Florida Statutes, the District is encouraged to develop mitigation banks. Land managers will evaluate opportunities in their regions to implement mitigation banks that are consistent with the guidelines established in the Joint State and Federal Mitigation Bank Review Team Process for Florida.
  2. Regional Mitigation Areas: The acquisition, restoration and management of District lands as mitigation shall be consistent with Chapter 2000-133, amending Sections 373.414 and 373.4135, Florida Statutes. This includes the establishment of Memorandums of Agreement (MOA) that include restoration plans, success criteria, and monitoring requirements. The MOAs will be used to implement mitigation using full-cost accounting, public noticing, and approval by the Governing Board for use as a mitigation area. The mitigation shall meet restoration objectives as provided in the General Management Plan.
- c. Revenue Generation:
1. Private concessions and/or agreements with non-profit organizations will be considered to implement needed services through concession contracts.
  2. Entrance and user fees, permits, licenses and/or advance reservations may be required where considered necessary by the managing agency.
  3. Timber sales will be conducted to improve forest health or to support specific forest management goals.
  4. Grazing leases will be encouraged on selected rangeland to generate revenue or to provide services that offset program management costs.
- d. Volunteers and Interns:
1. Volunteers, interns and alternative work forces will be used when possible to supplement existing staff and services.
  2. Any volunteer services must meet the standards and procedures prescribed by the District (Risk Management Manual, Volume 1).
- (6) Program Components:**
- a. Management Assessment: A brief summary of the management issues completed when the site is identified for acquisition.
  - b. General Management Plan (GMP): Provides a description of recommended management and is required for each Land Stewardship Management Area. The GMP follows a designated format and is updated every five years.
  - c. Activity Plan (AP): Provides a detailed implementation strategy for specific activities such as prescribed burning, exotic removal and restoration. The plan shall be developed by the lead Manager in consultation with the cooperating agencies for each major tract of land (or group of tracts) to be operated as a single

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management unit. The AP may be included in the GMP and is updated when necessary.

d. **Annual Work Plan (AWP):** Summarizes activities corresponding with annual budget development and is prepared by the Operations Section of the Land Stewardship Program.

e. **Reporting:** Summaries of management activities for each management area will be reported quarterly within the District and annually as part of the Florida Forever Work Plan.

(R.M. No. 139)

Secs. 140-26--140-40. Reserved.

## **Appendix C. Soil Descriptions**

### Flatwood Soils

Flatwood soils are poorly drained non-hydric, upland soils with sandy marine sediments throughout the profile. The seasonal high water table can range from six to 18 inches below the soil surface for three to six months annually. This soil type is dominant in the uplands in the western portion of the site.

### Flats Soils

Flats (previously referred to as slough) soils are poorly drained hydric soils with sandy marine sediments throughout the profile. Flats are located between the flatwoods and topographic depressions and are generally regarded as transition areas, e.g. a wet prairie or a slough. Generally, the seasonal high water table begins in June and ends from September or thereafter with inundation periods dependent upon seasonal rainfall or large storm events. Within the Management Area the wet flatwoods and wet prairies in the eastern portion of the site are representative of this classification.

### Sand Depression Soils

Sand depression soils are very poorly drained hydric soils that typically have sandy marine sediments throughout the profile. Often, these areas are depressions adjacent to flatwoods. The seasonal high water table can range from one foot below to two feet above the soil surface for seven to 10 months annually. Wetland communities dominate this landscape position. Within the Management Area, most of the depression marshes represent this soil class.

### Muck Depression Soils

Muck depression soils are very poorly drained hydric soils that have an organic surface layer underlain by sandy marine sediments. These areas are often depressions adjacent to Flatwood soil-types. The seasonal high water table can range from six inches below to two feet above the soil surface for seven to eleven months annually. Wetland communities dominate this soil type. Examples within the Management Area include the soil under the L-8 marsh.

### Urban or Made Lands

Urban or made land areas have soils that have been altered, excavated, or disturbed and no longer possess their natural morphological features. These soils do not function as they did in their original state, and little information on this subject is available. The seasonal high water table varies by site and is usually controlled to inhibit flooding of developed areas. No ecological communities are representative of this landscape position. The L-8 levee falls into this classification.

## Appendix D. FNAI Natural Communities

### Mesic Flatwoods 9,138 acres

This is the dominant plant community on the DuPuis Management Area and is distinguished by the south Florida slash pine overstory and an open or dense understory, depending on degree of drainage and fire frequency. Where drainage and fire suppression has been most severe, the understory consists of dense saw palmetto and to a lesser extent live oak. Use of mechanical shrub control in conjunction with increased prescribed fire has been instrumental in enhancing native plant communities that include saw palmetto, gallberry (*Ilex glabra*), St. Johns-wort (*Hypericum myrtifolium*), shiny blueberry (*Vaccinium myrsinites*), beautyberry (*Callicarpa americana*), bog buttons (*Lachnocaulon anceps*), yellow-eyed grass (*Xyris* spp.), wire grass (*Aristida berychiana*), and numerous other native wildflowers.

This community occurs on similar soils as dry prairies and wet flatwoods, with minor changes in topography determining plant species composition. Acidic sandy soil overlays hardpan that reduces water exchange between the soil surface and subsurface. Native plants of this community have adapted to long intervals of inundation and desiccation combined with periodic fire.

An important physical factor in mesic flatwoods is fire, which probably occurred every one to eight years in pre-Columbian times. Nearly all plants and animals inhabiting this community are adapted to periodic fires; several species depend on fire for their continued existence. Without relatively frequent fires, mesic flatwoods succeed into hardwood-dominated forests whose closed canopy can essentially eliminate the herbaceous ground cover.

### Wet Flatwoods 3,644 acres

Wet flatwoods are characterized as relatively open-canopy forests of scattered pine trees or cabbage palms with either a thick shrubby under-story and very sparse ground cover, or a sparse under-story and a dense ground cover of hydrophytic herbs and shrubs, with variations between these extremes (Florida Natural Areas Inventory, 1990). Other plants associated with this habitat type in the MA include wax myrtle, saw palmetto, beakrush (*Rhynchospora* sp.), St. John's-wort (*Hypericum* sp.), and blue maidencane (*Amphicarpum muhlenburgianum*).

Wet flatwoods develop on poorly drained acidic, low nutrient sands underlain by hardpan. Surface water appears a minimum of one month per year. Natural fire frequency is considered to be three to 10 years. Frequent fire postpones hardwood succession and thins canopy trees, while promoting under-story growth and fire-adapted species.

State ranking is "S4", apparently secure in the state, although it may be rare in some parts of its state range. Global ranking requires further research. Most wet

flatwoods are extremely vulnerable to hydrologic manipulation and exotic invasion.

#### Strand Swamp 2,740 acres

Strand swamps are shallow, forested, usually elongated depressions or channels dominated by bald cypress. They are generally situated in troughs in a flat limestone plain. Other typical plants include red maple, laurel oak (*Quercus laurifolia*), cabbage palm (*Sabal palmetto*), pond apple (*Annona glabra*), sweet bay (*Magnolia virginiana*), coastal plain willow, wax myrtle, myrsine (*Myrsine guianensis*), buttonbush (*Cephalanthus occidentalis*), poison ivy (*Toxicodendron radicans*), leather fern (*Acrostichum danaeifolium*), swamp fern (*Blechnum serrulatum*), sawgrass, swamp primrose (*Ludwigia palustris*), smartweed (*Polygonum* sp.). Strand swamp soils are peat and sand over limestone with normal hydroperiods of 200 to 300 days per year. Periodic water flow is an integral component of strand swamps. Natural fire is infrequent in strand swamps, occurring on a cycle of 30 to 200 years. Fire, however, is essential for reduction of hardwood encroachment and reduction of peat accumulation that would convert this community to a bottomland forest. Strand swamps are extremely vulnerable to local and regional hydrologic modifications.

#### Swale 2,341 acres

Swales are marshes situated in broad shallow channels and characterized by emergent grasses, sedges and herbs up to 10 feet in height. The dominant species are sawgrass, pickerelweed, and maidencane.

Swale soils are peat or sands and are generally located over linear depressions in the underlying limestone. Swales typically have long hydroperiods and are valuable ecologically because they serve as water storage and recharge areas, water transportation corridors, nutrient filters, and saltwater intrusion barriers. Threats to this natural community are disruption of natural hydrologic flow and fire cycles, conversion to agriculture and invasion of exotics in disturbed areas.

Light ground fires occur every one to five years in swales, and may occur any time of the year, as sawgrass can carry fire over the water's surface. Fire during dry seasons may result in peat fire that lowers the ground surface, converting the swale into a slough. Lack of fire results in dominance of coastal plain willow and buttonbush thickets.

#### Wet Prairie 1,261 acres

Wet prairie is characterized as a treeless plain with a sparse to dense ground cover of grasses, sedges, rushes, and herbs; including wiregrass, toothache grass (*Ctenium aromaticum*), maidencane (*Panicum hemotomon*), spikerush (*Eleocharis* sp.), and beakrush (*Rhynchospora* sp.). Other typical plants include hatpins (*Lachnocaulon* sp.), marsh pinks (*Rhexia* sp.), crownbeard (*Verbesina chapmanii*), sundews (*Drosera* sp.), tickseed (*Bidens* sp.), wax myrtle, St. John's-wort (*Hypericum* sp.), and Panicums (Florida Natural Areas Inventory, 1990).

Wet prairies occur on low, flat, poorly drained terrain and are inundated from 50 to 100 days per year. Wet prairie species have adapted to long periods of drought conditions due to rainfall seasonality. Soils typically are sands with a major organic component. Fire plays an integral role in wet prairie ecology, and with sufficient fuel build-up, burns every two to four years. If deprived of fire, these grass-dominated flatlands succumb to shrub encroachment, and are especially vulnerable to wax myrtle infestations.

Wet prairie has a state ranking of “S4”, apparently secure in the state, although it may be rare in some parts of its state range. Global ranking requires further research.

#### Depression Marsh 1,234 acres

Depression marsh, also known as a flatwoods pond, is characterized as a shallow, usually rounded depression in sand substrate with herbaceous vegetation often occurring in concentric bands (Florida Natural Areas Inventory, 1990). Typical plants include St. John’s-wort, spikerush (*Eleocharis sp.*), yellow-eyed grass, chain fern, primrose willow (*Ludwigia peruviana*), maidencane (*Panicum hemitomon*), wax myrtle, buttonbush, pickerelweed, arrowhead, and bladderwort.

Where marshes occur, one of three geological conditions is present: surficial deposits are impermeable, the water table emerges through the permeable substrate, or the marsh is hydrologically connected to a river (Kushlan, 1991). Depression marshes are typically small in size and hydrologically isolated from other surface water bodies. Water is received by runoff, seepage or direct rainfall. Hydroperiods range widely from as few as 50 days or less to more than 200 days per year (Florida Natural Areas Inventory, 1990). Bottom soils are generally acidic peat, resulting from accumulation of decayed plant material. This community frequently grades into wet or mesic flatwoods.

Natural fire occurs in depression marshes every one to five years, depending on a combination of weather conditions and fuel build-up. Fire preserves the open canopy by limiting invasion of woody vegetation, promoting herbaceous growth, and slowing succession by deepening the marsh with an occasional peat fire. The Land Stewardship Program coordinates fire schedules to insure depression marshes burn at natural frequencies and during periods of adequate ground moisture.

Depression marshes provide critical breeding and foraging habitat for a wide assemblage of amphibians and reptiles not found in larger, more permanent systems. Cyclic surface water availability promotes foraging by numerous listed wading bird species such as the wood stork, white ibis, snowy egret, and sandhill crane.

Depression marsh is ranked statewide as “S”, either very rare throughout its range; or found locally, even abundantly at some of its locations in a restricted range; or because of other factors making it vulnerable to extinction throughout its range. Global ranking indicates it is apparently secure, though it may be quite rare in parts of its range, especially at the periphery. Further research is required for a definitive global classification.

#### Prairie Hammock 359 acres

Prairie hammock is characterized as a clump of tall cabbage palms and live oaks in the midst of prairie or marsh communities (Florida Natural Areas Inventory, 1990). Prairie hammocks establish on elevated soils surrounded by lower topography. These islands are generally flooded only for a short duration during the highest water levels. Naturally occurring fires are rare in these hammocks, due mainly to a lack of under-story fuel.

Canopy species are live oak and cabbage palm, with occasional laurel oak in lower elevations. An abundance of epiphytes, including listed species, are found in mature canopy trees. As in most prairie hammocks, those found here have a sparse under-story due to over-story shading, but cover is also reduced by cattle grazing and trampling of shrub and ground layer vegetation. Many species common to undisturbed hammocks are sparse or lacking, replaced by disturbance species such as broomweed (*Sida sp.*), tropical soda apple (*Solanum viarum*), and caesarweed (*Urena lobata*). Typical under-story plants of pristine prairie hammocks include wax myrtle, water oak, stoppers (*Eugenia sp.*), marlberry (*Ardisia escallonioides*), beautyberry (*Callicarpa americana*), and saw palmetto.

Florida Natural Areas Inventory ranks prairie hammocks as “G4” and “S4” both statewide and globally secure, although it may be quite rare in parts of its range, especially at the periphery. Land Stewardship management strives to minimize soil disturbance, restrict fire where appropriate and eradicate non-native invasive species within hammock areas.

## Appendix E. Species List

### Plant Species

(This list of DuPuis plants was compiled by D. Black (SFWMD) from lists by P. David, R. Woodbury, and The Institute for Regional Conservation.)

#### Trees, Shrubs, and Vines

Earleaf Acacia	<i>Acacia auriculiformis</i>
Red Maple	<i>Acer rubrum</i>
Woman's Tongue	<i>Albizia lebbek</i>
Golden Trumpet	<i>Allamanda cathartica</i>
Pepper Vine	<i>Ampelopsis arborea</i>
Bastard Indigobush	<i>Amorpha fruticosa</i>
Pond Apple	<i>Annona glabra</i>
Coralvine	<i>Antigonon leptopus</i>
Groundnut	<i>Apios americana</i>
Northfolk Island Pine	<i>Araucaria excelsa</i>
Shoebuttton Ardisia	<i>Ardisia elliptica</i>
Sprenger's Asparagus	<i>Asparagus aethiopicus</i>
Common Asparagus-fern	<i>Asparagus setaceus</i>
Pawpaw	<i>Asimina reticulata</i>
Saltbush	<i>Baccharis halmifolia</i>
Silverling	<i>Baccharis glomeruliflora</i>
Bamboo	<i>Bambusa vulgaris</i>
Orchid Tree	<i>Bauhinia variegata</i>
Tarflower	<i>Befaria racemosa</i>
Gumbo-limbo	<i>Bursera simaruba</i>
Beauty Berry	<i>Callicarpa americana</i>
Hedge False Bindweed	<i>Calystegia sepium limnophila</i>
Love Vine	<i>Cassytha filiformis</i>
Gray Sheoak	<i>Casuarina glauca</i>
Sugarberry	<i>Celtis laevigata</i>
Buttonbush	<i>Cephalanthus occidentalis</i>
Cocoplum	<i>Chrysobalanus icaco</i>
Satinleaf	<i>Chrysophyllum oliviforme</i>
Orange	<i>Citrus aurantium</i>
Lemon	<i>Citrus limon</i>
Citron	<i>Citrus medica</i>
Tangerine	<i>Citrus reticulata</i>
Sweet Orange	<i>Citrus sinensis</i>
Grapefruit	<i>Citrus Xparadisi</i>
Cockspur Hawthorn	<i>Crataegus crus-galli</i>
Colombian Waxweed	<i>Cuphea carthagenensis</i>
Indian Rosewood	<i>Dalbergia sissoo</i>
Common Persimmon	<i>Diaspyros virginiana</i>
Air-potato	<i>Dioscorea bulbifera</i>
Eucalyptus	<i>Eucalyptus sp.</i>
Surinam Cherry	<i>Eugenia uniflora</i>
Florida Strangler Fig	<i>Ficus aurea</i>

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Indian Laurel	<i>Ficus microcarpa</i>
Pop Ash	<i>Fraxinus caroliniana</i>
Dwarf Huckleberry	<i>Gaylussacia dumosa</i>
Firebush	<i>Hamelia patens</i>
Lindenleaf Rosemallow	<i>Hibiscus furcellatus</i>
Swamp Rosemallow	<i>Hibiscus grandiflorus</i>
Sandweed	<i>Hypericum fasciculatum</i>
St. Johnswort	<i>Hypericum cistifolium</i>
St. Andrew's-cross	<i>Hypericum hypericoides</i>
Dwarf St. John's-wort	<i>Hypericum mutilum</i>
Four petal St. John's-wort	<i>Hypericum tetrapetalum</i>
Atlantic St. John'- wort	<i>Hypericum reductum</i>
Dahoon	<i>Ilex cassine</i>
Gallberry	<i>Ilex glabra</i>
Hairy Indigo	<i>Indigofera hirsuta</i>
Moonflower	<i>Ipomoea alba</i>
Morning-glory	<i>Ipomoea indica var. acuminata</i>
Arrowleaf morning-glory	<i>Ipomoea sagittata</i>
Virginia Willow	<i>Itea virginica</i>
Southern Red Cedar	<i>Juniperus silicicola</i>
Lantana	<i>Lantana camara</i>
White Leadtree	<i>Leucaena leucocephala</i>
Gopher Apple	<i>Licania michauxii</i>
Rusty Lyonia	<i>Lyonia fruticosa</i>
Fetterbush	<i>Lyonia lucida</i>
Winged Loosestrife	<i>Lythrum alatum</i>
Florida Loosestrife	<i>Lythrum flagellare</i>
Sweetbay	<i>Magnolia virginiana</i>
Mango	<i>Mangifera indica</i>
Cajeput Tree	<i>Melaleuca quinquenervia</i>
Chinaberry Tree	<i>Melia azedarach</i>
Creeping Cucumber	<i>Melothria pendula</i>
Florida Keys Hempvine	<i>Mikania cordifolia</i>
Climbing Hempweed	<i>Mikania scandens</i>
Balsam-pear	<i>Momordica charantia</i>
Red Mulberry	<i>Morus rubra</i>
Wax Myrtle	<i>Myrica cerifera</i>
Mexican Palo Verde	<i>Parkinsonia aculeata</i>
Corkystem Passionflower	<i>Passiflora suberosa</i>
Virginia Creeper	<i>Parthenocissus quinquefolia</i>
Avocado	<i>Persea americana</i>
Red Bay	<i>Persea borbonia</i>
Swamp Bay	<i>Persea palustris</i>
Date Palm	<i>Phoenix reclinata</i>
Slash Pine	<i>Pinus elliotti</i>
Strawberry Guava	<i>Psidium cattleianum</i>
Common Guava	<i>Psidium guajava</i>
Wild Coffee	<i>Psychotria sulzneri</i>
Flamevine	<i>Pyrostegia venusta</i>

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Laurel Oak	<i>Quercus laurifolia</i>
Dwarf Live Oak	<i>Quercus minima</i>
Myrtle Oak	<i>Quercus myrtifolia</i>
Live Oak	<i>Quercus virginiana</i>
Myrsine	<i>Rapanea punctata</i>
White Indigoberry	<i>Randia aculeata</i>
Rose Myrtle	<i>Rhodomirtus tomentosa</i>
Winged Sumac	<i>Rhus copallinum</i>
Southern Dewberry	<i>Rubus trivialis</i>
Cabbage Palm	<i>Sabal palmetto</i>
Coastal Plain Willow	<i>Salix caroliniana</i>
Southern Elderberry	<i>Sambucus canadensis</i>
White-Vine	<i>Sarcostemma clausum</i>
Brazilian Pepper	<i>Schinus terebinthifolius</i>
Graytwig	<i>Schoepfia chrysophylloides</i>
Privet Wild Sensitive Plant	<i>Senna ligustrina</i>
Coffeeweed	<i>Senna obtusifolia</i>
Septicweed	<i>Senna occidentalis</i>
Saw Palmetto	<i>Serenoa repens</i>
Common Wireweed	<i>Sida acuta</i>
Lima	<i>Sida cordifolia</i>
Cuban Jute	<i>Sida rhombifolia</i>
Florida Bully	<i>Sideroxylon reclinatum</i>
Earleaf Greenbrier	<i>Smilax auriculata</i>
Saw Greenbrier	<i>Smilax bona-nox</i>
Catbrier	<i>Smilax laurifolia</i>
Shrubby False Buttonweed	<i>Spermacoce verticillata</i>
Blue Porterweed	<i>Stachytarpheta jamaicensis</i>
Corkwood	<i>Stillingia aquatica</i>
Queen's Delight	<i>Stillingia sylvatica</i>
Java-Plum	<i>Syzygium cumini</i>
Rose-Apple	<i>Syzygium jambos</i>
Pond Cypress	<i>Taxodium ascendens</i>
Bald Cypress	<i>Taxodium distichum</i>
Yellow Elder	<i>Tecoma stans</i>
West Indian Almond	<i>Terminalia catappa</i>
Blackeyed Susan Vine	<i>Thunbergia alata</i>
Poison Oak	<i>Toxicodendron radicans</i>
Nettletree	<i>Trema micranthum</i>
Virginia Marsh St. John's-wort	<i>Triadenum virginicum</i>
Forked Bluecurls	<i>Trichostema dichotomum</i>
Sacramento Burrbark	<i>Triumfetta semitriloba</i>
Shiney Blueberry	<i>Vaccinium myrsinites</i>
Black Haw	<i>Viburnum obovatum</i>
Fourleaf Vetch	<i>Vicia acutifolia</i>
Hairy-pod Cowpea	<i>Vigna luteola</i>
Simpleleaf Chaste Tree	<i>Vitex trifolia</i>
Summer Grape	<i>Vitis aestivalis</i>
Muscadine	<i>Vitis rotundifolia</i>

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Calloose Grape  
Creeping Oxeye  
Arrowleaf Elephantear  
Tallow Wood  
Hercules' Club

*Vitis shuttleworthii*  
*Wedelia trilobata*  
*Xanthosoma sagittifolium*  
*Ximenia americana*  
*Zanthoxylum clava-herculis*

**Herbaceous**

Slender Threeseed Mercury  
Shyleaf  
Flaxleaf False Foxglove  
Saltmarsh False Foxglove  
Purple False Foxglove  
Sisal Hemp  
Hammock Snakeroot  
Tropical Whiteweed  
Colic root  
Alligatorweed  
Sessile Joyweed  
White Moneywort  
Ragweed  
Pink Redstem  
Nodding Nixie  
Mexican poppy  
Jack-in-the-pulpit  
Ovateleaf Indian Plantain  
Scarlet Milkweed  
Swamp Milkweed  
Lanceolate Milkweed  
Longleaf Milkweed  
Savannah Milkweed  
Whorled Milkweed  
Green Antelopehorn  
Butterfly-weed  
Scale-leaf Aster  
Climbing Aster  
Rice Button Aster  
Annual Marsh Aster  
Lemon Bacopa  
Tropical Waterhyssop  
Bacopa  
Honeycomb Head  
White Screwstem  
Beggarticks  
Smooth Beggarticks  
Smallfruit Beggarticks  
Pineland Rayless Goldenrod  
Browne's Blechum  
Pinepink  
False Nettle

*Acalypha gracilens*  
*Aeschynomene americana*  
*Agalinis linifolia*  
*Agalinis maritima*  
*Agalinis purpurea*  
*Agave sisalana*  
*Ageratina jucunda*  
*Ageratum conyzoides*  
*Aletris lutea*  
*Alternanthera philoxeroides*  
*Altenanthera sessilis*  
*Alysicarpus vaginalis*  
*Ambrosia artemisiifolia*  
*Ammannia latifolia*  
*Apteria aphylla*  
*Argemone mexicana*  
*Arisaema triphyllum*  
*Arnoglossum ovatum*  
*Asclepias curassavica*  
*Asclepias incarnata*  
*Asclepias lanceolata*  
*Asclepias longifolia*  
*Asclepias pedicellata*  
*Asclepias verticillata*  
*Asclepias viridis*  
*Asclepias tuberosa*  
*Aster adnatus*  
*Aster carolinianus*  
*Aster dumosus*  
*Aster subulatus*  
*Bacopa caroliniana*  
*Bacopa innominata*  
*Bacopa monnieri*  
*Balduina angustifolia*  
*Bartonia verna*  
*Bidens alba var. radiata*  
*Bidens laevis*  
*Bidens mitis*  
*Bigelowia nudata subsp. australis*  
*Blechum pyramidatum*  
*Bletia purpurea*  
*Boehmeria cylindrica*

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Wineflower	<i>Boerhavia diffusa</i>
Leaf Mustard	<i>Brassica juncea</i>
American Bluehearts	<i>Buchnera americana</i>
Bluethread	<i>Burmannia biflora</i>
Southern Bluethread	<i>Burmannia capitata</i>
Bearded Grasspink	<i>Calopogon barbatus</i>
Manyflowered Grasspink	<i>Calopogon multiflorus</i>
Tuberous Grasspink	<i>Calopogon tuberosus</i>
Bandana-of-the-Everglades	<i>Canna flaccida</i>
Pineland Chaffhead	<i>Carphephorus carnosus</i>
Florida Paintbrush	<i>Carphephorus corymbosus</i>
Vanillaleaf	<i>Carphephorus odoratissimus</i>
Hairy Chaffhead	<i>Carphephorus paniculatus</i>
Periwinkle	<i>Catharanthus roseus</i>
Coinwort	<i>Centella asiatica</i>
Butterfly Pea	<i>Centrosema virginianum</i>
Coontail	<i>Ceratophyllum demersum</i>
Partridge Pea	<i>Chamaecrista fasciculata</i>
Sensitive Pea	<i>Chamaecrista nictitans var. aspera</i>
Pillpod Sandmat	<i>Chamaesyce hirta</i>
Graceful Sandmat	<i>Chamaesyce hypericifolia</i>
Spotted Sandmat	<i>Chamaesyce maculata</i>
Prostrate Sandmat	<i>Chamaesyce prostrata</i>
Pineland Daisy	<i>Chaptalia tomentosa</i>
Pigweed	<i>Chenopodium ambrosioides</i>
Jack-in-the-bush	<i>Chromolaena odorata</i>
Coastalplain Goldenaster	<i>Chrysopsis scabrella</i>
Spotted Water Hemlock	<i>Cicuta maculata</i>
Thistle	<i>Cirsium horridulum</i>
Nuttall's Thistle	<i>Cirsium nuttallii</i>
Seasonvine	<i>Cissus verticillata</i>
Pine Hyacinth	<i>Clematis baldwinii</i>
Finger-Rot	<i>Cnidioscolus stimulosus</i>
Wild Taro	<i>Colocasia esculenta</i>
Common Dayflower	<i>Commelina diffusa</i>
Whitemouth Dayflower	<i>Commelina erecta</i>
Blue Mistflower	<i>Conoclinium coelestinum</i>
Canadian Horseweed	<i>Conyza canadensis</i>
Florid Tickseed	<i>Coreopsis floridana</i>
Tickseed	<i>Coreopsis gladiata</i>
Leavenworth's Tickseed	<i>Coreopsis leavenworthii</i>
Swamp Lily	<i>Crinum americanum</i>
Shakeshake	<i>Crotalaria incana</i>
Lanceleaf Rattlebox	<i>Crotalaria lanceolata</i>
Low Rattlebox	<i>Crotalaria pumila</i>
Rattleweed	<i>Crotalaria retusa</i>
Rabbitbells	<i>Crotalaria rotundifolia</i>
Showy Rattlebox	<i>Crotalaria spectabilis</i>
Vente Connigo	<i>Croton glandulosus</i>

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Pineland Croton	<i>Croton linearis</i>
Florida Scrub Roseling	<i>Cuthbertia ornata</i>
Ticktrefoil	<i>Desmodium incanum</i>
Threeflower Ticktrefoil	<i>Desmodium triflorum</i>
Carolina Ponysfoot	<i>Dichondra carolinensis</i>
Poor Joe	<i>Diodia teres</i>
Virginia Buttonweed	<i>Diodia virginiana</i>
Dwarf Sundew	<i>Drosera brevifolia</i>
Pink Sundew	<i>Drosera capillaris</i>
Drymary	<i>Drymaria cordata</i>
Pineland Twinflower	<i>Dyschoriste angusta</i>
Water Hyacinth	<i>Eichhornia crassipes</i>
Tall Elephants Foot	<i>Elephantopus elatus</i>
Florida Tasselflower	<i>Emilia fosbergii</i>
Lilac Tasselflower	<i>Emilia sonchifolia</i>
Florida Butterfly Orchid	<i>Encyclia tampensis</i>
Fireweed	<i>Erechtites hieracifolia</i>
Oakleaf Fleabane	<i>Erigeron quercifolius</i>
Early Whitetop Fleabane	<i>Erigeron vernus</i>
Flattened Pipewort	<i>Eriocaulon compressum</i>
Hatpins	<i>Eriocaulon decangulare</i>
Rarenel's Pipewort	<i>Eriocaulon ravenelii</i>
Michaux's Cupgrass	<i>Eriochloa michauxii</i>
Dogtongue Wild Buckwheat	<i>Eriogonum tomentosum</i>
Button Snakeroot	<i>Eryngium aquaticum</i>
Baldwin's Eryngo	<i>Eryngium baldwinii</i>
Button Rattlesnakemaster	<i>Eryngium yuccifolium</i>
Wild Coco	<i>Eulophia alta</i>
Dog-fennel	<i>Eupatorium capillifolium</i>
False Fennel	<i>Eupatorium leptophyllum</i>
Semaphore Thoroughwort	<i>Eupatorium mikanioides</i>
Mohr's Thoroughwort	<i>Eupatorium mohrii</i>
Lesser Florida Spurge	<i>Euphorbia polyphylla</i>
Flat-topped Goldenrod	<i>Euthamia grominifolia</i>
Narrowleaf Yellowtops	<i>Flaveria linearis</i>
Cottonweed	<i>Froelichia floridana</i>
Elliott's Milkpea	<i>Galactia elliotii</i>
Eastern Milkpea	<i>Galactia regularis</i>
Downy Milkpea	<i>Galactia volubilis</i>
Bluntleaf Bedstraw	<i>Galium hispidulum</i>
Bedstraw	<i>Galium obtusum</i>
Stiff Marsh Bedstraw	<i>Galium tinctorium</i>
Oneflower Bedstraw	<i>Galium uniflorum</i>
Southern Beeblossom	<i>Gaura angustifolia</i>
Narrowleaf Purple Everlasting	<i>Gnaphalium falcatum</i>
Rabbit Tobacco	<i>Gnaphalium obtusifolium</i>
Pennsylvania Everlasting	<i>Gnaphalium pensylvanicum</i>
Spoonleaf Purple Everlasting	<i>Gnaphalium purpureum</i>
Arrasa Con Todo	<i>Gomphrena serrata</i>

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Rough Hedgehyssop	<i>Gratiola hispida</i>
Hedge Hyssop	<i>Gratiola pilosa</i>
Branched Hedgehyssop	<i>Gratiola ramosa</i>
Longhorn False Reinorchid	<i>Habenaria quinqueseta</i>
Waterspider False Reinorchid	<i>Habenaria repens</i>
Threadroot Orchid	<i>Harrisella filiformis</i>
Flatop Mille Graines	<i>Hedyotis corymbosa</i>
Clustered Mille Graines	<i>Hedyotis uniflora</i>
Southeastern Sneezeweed	<i>Helenium pinnatifidum</i>
Pinebarren Frostweed	<i>Helianthemum corymbosum</i>
Florida Scrub Frostweed	<i>Helianthemum nashii</i>
Scorpion's Tail	<i>Heliotropium angiospermum</i>
Pineland Heliotrope	<i>Heliotropium polyphyllum</i>
Camphorweed	<i>Heterotheca subaxillaris</i>
Queen-devil	<i>Hieracium gronovii</i>
Coastalplain Hawkweed	<i>Hieracium megacephalon</i>
Waterthyme	<i>Hydrilla verticillata</i>
Manyflower Marshpennywort	<i>Hydrocotyle umbellata</i>
Whorled Pennywort	<i>Hydrocotyle verticillata</i>
Skyflower	<i>Hydrolea corymbosa</i>
Alligator Lily	<i>Hymenocallis palmeri</i>
Fringed Yellow Stargrass	<i>Hypoxis juncea</i>
Bristleseed Yellow Stargrass	<i>Hypoxis wrightii</i>
Musky Mint	<i>Hyptis alata</i>
John Charles	<i>Hyptis verticillata</i>
Juba's Bush	<i>Iresine diffusa</i>
Southern Blue Flag	<i>Iris hexagona var. savannarum</i>
Piedmont Marshelder	<i>Iva microcephala</i>
Water Willow	<i>Justica crassifolia</i>
Cathedral Bells	<i>Kalanchoe pinnata</i>
Marsh Mallow	<i>Kosteletzkya virginica</i>
Red Root	<i>Lachnanthes caroliniana</i>
Engler's Bogbutton	<i>Lachnocaulon engleri</i>
Small's Bogbutton	<i>Lachnocaulon minus</i>
Grassleaf Lettuce	<i>Lactuca graminifolia</i>
Drysand Pinweed	<i>Lechea divaricata</i>
Piedmont Pinweed	<i>Lechea torreyi</i>
Valdivia Duckweed	<i>Lemna valdiviana</i>
Virginia Pepperweed	<i>Lepidium virginicum</i>
Chapman's Gayfeather	<i>Liatris chapmanii</i>
Garber's Gayfeather	<i>Liatris garberi</i>
Slender Gayfeather	<i>Liatris gracilis</i>
Dense Gayfeather	<i>Liatris spicata</i>
Shortleaf Gayfeather	<i>Liatris tenuifolia</i>
Catesby's Lily	<i>Lilium catesbaei</i>
Frog's Bit	<i>Limnobium spongia</i>
Asian Marshweed	<i>Limnophila sessiliflora</i>
Canada Toad Flax	<i>Linaria canadensis</i>
Apalachicola Toad Flax	<i>Linaria floridana</i>

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Yellowseed False Pimpernel	<i>Lindernia anagallidea</i>
Malaysian False Pimpernel	<i>Lindernia crustacea</i>
Savannah False Pimpernel	<i>Lindernia grandiflora</i>
Stiff Yellow Flax	<i>Linum medium var. texanum</i>
Bay Lobelia	<i>Lobelia feayana</i>
Glade Lobelia	<i>Lobelia glandulosa</i>
White Lobelia	<i>Lobelia paludosa</i>
Seedbox	<i>Ludwigia alternifolia</i>
Piedmont Primrosewillow	<i>Ludwigia arcuata</i>
Curtiss' Primrosewillow	<i>Ludwigia curtissii</i>
Yerba De Jicotea	<i>Ludwigia erecta</i>
Lanceleaf Primrosewillow	<i>Ludwigia lanceolata</i>
Anglestem Primrosewillow	<i>Ludwigia leptocarpa</i>
Southeastern Primrosewillow	<i>Ludwigia linifolia</i>
Seaside Primrosewillow	<i>Ludwigia maritima</i>
Mexican Primrosewillow	<i>Ludwigia octovalvis</i>
Marsh Seedbox	<i>Ludwigia palustris</i>
Peruvian Primrosewillow	<i>Ludwigia peruviana</i>
Hairy Primrosewillow	<i>Ludwigia pilosa</i>
Creeping Primrosewillow	<i>Ludwigia repens</i>
Shrubby Primrosewillow	<i>Ludwigia suffruticosa</i>
Savannah Primrosewillow	<i>Ludwigia virgata</i>
Sky Blue Lupine	<i>Lupinus diffusus</i>
Garden Tomato	<i>Lycopersicon esculentum</i>
Taperleaf Waterhorehound	<i>Lycopus rubellus</i>
Rose-Rush	<i>Lygodesmia aphylla</i>
Wild Bushbean	<i>Macroptilium lathyroides</i>
Grassleaf Barbara's Buttons	<i>Marshallia tenuifolia</i>
Axilflower	<i>Mecardonia acuminata</i>
Snow Squarestem	<i>Melanthera nivea</i>
White Sweetclover	<i>Melilotus albus</i>
Indian Sweetclover	<i>Melilotus indicus</i>
Manatee Mudflower	<i>Micranthemum glomeratum</i>
Lax Hornpod	<i>Mitreola petiolata</i>
Swamp Hornpod	<i>Mitreola sessilifolia</i>
Indian Chickweed	<i>Mollugo verticillata</i>
Nakedstem Dewflower	<i>Murdannia nudiflora</i>
Celestial-lily	<i>Nemastylus floridana</i>
American White Waterlily	<i>Nymphaea odorata</i>
Big Floatingheart	<i>Nymphoides aquatica</i>
Cut-leaf Evening-primrose	<i>Oenothera laciniata</i>
Exotic Prickly-pear	<i>Opuntia ficus-indica</i>
Prickley-pear	<i>Opuntia humifusa</i>
Lady's sorrel	<i>Oxalis corniculata</i>
Violet Wood-sorrel	<i>Oxalis debilis var. corymbosa</i>
Water Dropwort	<i>Oxypolis filiformis</i>
Florida Pellitory	<i>Parietaria floridana</i>
Santa Maria	<i>Parthenium hysterophorus</i>
Spreading Cinchweed	<i>Pectis prostrata</i>

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Greed Arum	<i>Peltandra virginica</i>
Frog-fruit	<i>Phyla nodiflora</i>
Drummond's Leaf-flower	<i>Phyllanthus abnormis</i>
Carry-me-seed	<i>Phyllanthus amarus</i>
Mascarene Island Leaf-flower	<i>Phyllanthus tenellus</i>
Cutleaf Groundcherry	<i>Physalis angulata</i>
Cypresshead Groundcherry	<i>Physalis arenicola</i>
Husk Tomato	<i>Physalis pubescens</i>
Pokeberry	<i>Phytolacca americana</i>
Pennyroyal	<i>Piloblephis rigida</i>
Artillery Plant	<i>Pilea microphylla</i>
Blue Butterwort	<i>Pinguicula caerulea</i>
Yellow Butterwort	<i>Pinguicula lutea</i>
Small Butterwort	<i>Pinguicula pumila</i>
Pitted Stripeseed	<i>Piriqueta caroliniana</i>
Water-lettuce	<i>Pistia stratiotes</i>
Narrowleaf Silkgrass	<i>Pityopsis graminifolia</i>
Lance-leaf Plantain	<i>Plantago lanceolata</i>
Large Plantain	<i>Plantago major</i>
Virginia Plantain	<i>Plantago virginica</i>
Snowy Orchid	<i>Platanthera nivea</i>
Stinking Camphorweed	<i>Pluchea foetida</i>
Sweetscent	<i>Pluchea odorata</i>
Rosy Camphorweed	<i>Pluchea rosea</i>
Paintedleaf	<i>Poinsettia cyathophora</i>
Fiddler's Spurge	<i>Poinsettia heterophylla</i>
Rose Pogonia	<i>Pogonia ophioglossoides</i>
Slenderleaf Chlammyweed	<i>Polanisia tenuifolia</i>
White Bachelor Button	<i>Polygala baldwinii</i>
Drumheads	<i>Polygala cruciata</i>
Tall Pinebarren Milkwort	<i>Polygala cymosa</i>
Candyweed	<i>Polygala grandiflora</i>
Procession Flower	<i>Polygala incarnata</i>
Yellow Milkwort	<i>Polygala lutea</i>
Candyroot	<i>Polygala nana</i>
Milkwort	<i>Polygala ramosa</i>
Bachelor Button	<i>Polygala rugellii</i>
Coastalplain Milkwort	<i>Polygala setacea</i>
Denseflower Knotweed	<i>Polygonum densiflorum</i>
Mild Waterpepper	<i>Polygonum hydropiperoides</i>
Dotted Smartweed	<i>Polygonum punctatum</i>
Rustweed	<i>Polyprum procumbens</i>
Pickerelweed	<i>Pontederia cordata</i>
Purslane	<i>Portulaca oleracea</i>
Pink Purslane	<i>Portulaca pilosa</i>
Marsh Mermaidweed	<i>Proserpinaca palustris</i>
Combleaf Mermaidweed	<i>Proserpinaca pectinata</i>
Blackroot	<i>Pterocaulon pycnostachyum</i>
Giant Orchid	<i>Pteroglossaspis ecristata</i>

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Mock Bishop Weed	<i>Ptilimnium capillaceum</i>
West Indian Meadowbeauty	<i>Rhexia cubensis</i>
Pale Meadowbeauty	<i>Rhexia mariana</i>
Meadowbeauty	<i>Rhexia nashii</i>
Nuttall's Meadowbeauty	<i>Rhexia nuttallii</i>
Least Snoutbean	<i>Rhynchosia minima</i>
Tropical Mexican-clover	<i>Richardia brasiliensis</i>
Large Flower Mexican-clover	<i>Richardia grandiflora</i>
Rough Mexican-clover	<i>Richardia scabra</i>
Castor Bean	<i>Ricinus communis</i>
Rougeplant	<i>Rivina humilis</i>
Toothcup	<i>Rotala ramosior</i>
Black-eyed Susan	<i>Rudbeckia hirta</i>
Ruellia	<i>Ruellia caroliniensis</i>
Swamp Dock	<i>Rumex verticillatus</i>
Marsh-pink	<i>Sabatia bartramii</i>
Slender Marsh-pink	<i>Sabatia calycina</i>
Large-flower Rose-gentian	<i>Sabatia grandiflora</i>
Rose-of-Plymouth	<i>Sabatia stellaris</i>
Lizard's tail	<i>Saururus cernuus</i>
Arrowhead	<i>Sagittaria lancifolia</i>
River Sage	<i>Salvia riparia</i>
Water Spangles	<i>Salvinia minima</i>
Limewater Brookweed	<i>Samolus ebracteatus</i>
	<i>Samolus valerandi subsp.</i>
	<i>parviflorus</i>
Pineland Pimpernel	<i>Schoenocaulon dubium</i>
Florida Feathershank	<i>Schoenolirion albiflorum</i>
Sunnybells	<i>Schoenus nigricans</i>
Black Bogrush	<i>Scoparia dulcis</i>
Sweetbroom	<i>Scutellaria integrifolia</i>
Rough Skullcap	<i>Senecio glabellus</i>
Golden Ragwort	<i>Sesbania herbacea</i>
Danglepod	<i>Sesbania vesicaria</i>
Bladderpod	<i>Sisyrinchium atlanticum</i>
Blue-eyed-grass	<i>Solanum americanum</i>
Common Nightshade	<i>Solanum diphyllum</i>
Twoleaf Nightshade	<i>Solanum erianthum</i>
Potato-tree	<i>Solanum seafortianum</i>
Climbing Nightshade	<i>Solanum torvum</i>
Turkeyberry	<i>Solanum viarum</i>
Tropical Soda Apple	<i>Solidago fistulosa</i>
Pinebarren Goldenrod	<i>Solidago odora var. chapmanii</i>
Chapman's Goldenrod	<i>Solidago stricta</i>
Narrow-leaved Goldenrod	<i>Sonchus asper</i>
Spiney Sowthistle	<i>Sonchus oleraceus</i>
Common Sowthistle	<i>Spermaceoce assurgens</i>
Woodland False Buttonweed	<i>Spiranthes longilabris</i>
Longlip Lady's-tresses	<i>Spiranthes odorata</i>
Fragrant Lady's-tresses	

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Greenvein Lady's-tresses	<i>Spiranthes praecox</i>
Southern Lady's-tresses	<i>Spiranthes torta</i>
Spring Lady's-tresses	<i>Spiranthes vernalis</i>
Florida Hedgenettle	<i>Stachys floridana</i>
Pineland Scaleypink	<i>Stipulicida setacea</i>
Yellow Hatpins	<i>Syngonanthus flavidulus</i>
Wood Sage	<i>Teucrium canadense</i>
Fire Flag	<i>Thalia geniculata</i>
Reflexed Wild-pine	<i>Tillandsia balbisiana</i>
Potbellied Wild-pine	<i>Tillandsia paucifolia</i>
Cardinal Wild-pine	<i>Tillandsia fasciculata</i>
Ball-moss	<i>Tillandsia recurvata</i>
Thin-leaved Wild-pine	<i>Tillandsia setacea</i>
Spanish Moss	<i>Tillandsia usneoides</i>
Giant Wild-pine	<i>Tillandsia utriculata</i>
Oysterplant	<i>Tradescantia spathacea</i>
Inchplant	<i>Tradescantia zebrina</i>
Brittleweed	<i>Tridax procumbens</i>
White Clover	<i>Trifolium repens</i>
Southern Cattail	<i>Typha domingensis</i>
Common Cattail	<i>Typha latifolia</i>
Caesar-weed	<i>Urena lobata</i>
Horned Bladderwort	<i>Utricularia cornuta</i>
Leafy Bladderwort	<i>Utricularia foliosa</i>
Humped Bladderwort	<i>Utricularia inflata</i>
Southern Bladderwort	<i>Utricularia juncea</i>
Eastern Purple Bladderwort	<i>Utricularia purpurea</i>
Small Purple Bladderwort	<i>Utricularia resupinata</i>
Fringed Bladderwort	<i>Utricularia simulans</i>
Zig-zag Bladderwort	<i>Utricularia subulata</i>
Harsh Verbena	<i>Verbena scabra</i>
Frostweed	<i>Verbesina virginica</i>
Florida Ironweed	
Little Ironweed	<i>Vernonia cinerea</i>
Long-leaf Violet	<i>Viola lanceolata</i>
Sleepy Morning	<i>Waltheria indica</i>
Rocketweed	<i>Youngia japonica</i>
Simpson's Rainlily	<i>Zephyranthes simpsonii</i>
<b><u>Ferns</u></b>	
Lawn Orchid	<i>Zeuxine strateumatica</i>
Carolina Mosquito Fern	<i>Azolla caroliniana</i>
Giant Leather Fern	<i>Acrostichum danaeifolium</i>
Swamp Fern	<i>Blechnum serrulatum</i>
Strap Fern	<i>Campyloneurum phyllitidis</i>
Watersprite	<i>Ceratopteris thalictroides</i>
Southern Club-Moss	<i>Lycopodiella appressa</i>
Nodding Club-Moss	<i>Lycopodiella cernua</i>
Japanese Climbing Fern	<i>Lygodium microphyllum</i>

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Tuberous Sword Fern	<i>Nephrolepis cordifolia</i>
Boston Fern	<i>Nephrolepis exaltata</i>
Asian Sword Fern	<i>Nephrolepis multiflora</i>
Cinnamom Fern	<i>Osmunda cinnamomea</i>
Royal Fern	<i>Osmunda regalis</i>
Royal Fern	<i>Osmunda regalis var. spectabilis</i>
Golden Polybody	<i>Phlebodium aureum</i>
Resurrection Fern	<i>Polypodium polypodioides var. michauxiam</i>
Whisk-fern	<i>Psilotum nudum</i>
Bracken Fern	<i>Pteridium aquilinum var. caudatum</i>
Giant Brake	<i>Pteris tripartita</i>
Chinese Ladder Brake	<i>Pteris vittata</i>
Downy Maiden Fern	<i>Thelypteris dentata</i>
Hottentot Fern	<i>Thelypteris interrupta</i>
Widespread Maiden Fern	<i>Thelypteris kunthii</i>
Marsh Fern	<i>Thelypteris palustris var. pubescens</i>
Shoestring Fern	<i>Vittaria lineata</i>
Netted Chain Fern	<i>Woodwardia areolata</i>
Virginia Chain Fern	<i>Woodwardia virginica</i>
<b><u>Graminoids</u></b>	
Flatspike Sedge	<i>Abildgaardia ovata</i>
Blue Maidencane	<i>Amphicarpum muhlenbergianum</i>
Bushybeard Bluestem	<i>Andropogon glomeratus</i>
	<i>Andropogon glomeratus var. glaucopsis</i>
Purple Bluestem	<i>Andropogon gyrans</i>
Elliott's Bluestem	<i>Andropogon longiberbis</i>
Hairy Bluestem	<i>Andropogon ternarius</i>
Splitbeard Bluestem	<i>Andropogon virginicus</i>
Broomsedge Bluestem	<i>Andropogon virginicus var. glaucus</i>
Chalky Bluestem	<i>Aristida stricta var. beyrichiana</i>
Wiregrass	<i>Aristida palustris</i>
Longleaf Threeawn	<i>Aristida patula</i>
Tall Threeawn	<i>Aristida rhizomophora</i>
Florida Threeawn	<i>Aristida spiciformis</i>
Bottlebrush Threeawn	<i>Axonopus fissifolius</i>
Common Carpetgrass	<i>Axonopus furcatus</i>
Big Carpetgrass	<i>Axonopus compressus</i>
Tropical Carpetgrass	<i>Bulbostylis barbata</i>
Bearded Hairsedge	<i>Bulbostylis ciliatifolia</i>
Capillary Hairsedge	<i>Bulbostylis stenophylla</i>
Sandy Field Hairsedge	<i>Carex glaucescens</i>
Clustered Sedge	<i>Carex longii</i>
Long's Sedge	<i>Carex lupulina</i>
Hop Sedge	<i>Carex vexans</i>
Florida Hammock Sedge	<i>Carica papaya</i>
Papaya	<i>Cenchrus incertus</i>
Coastal Sandbur	

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Souther Sandbur	<i>Cenchrus echinatus</i>
Sawgrass	<i>Cladium jamaicense</i>
Wrinkled Jointtailgrass	<i>Coelorachis rugosa</i>
Toothache Grass	<i>Ctenium aromaticum</i>
Bermuda Grass	<i>Cynodon dactylon</i>
Jointed Flatsedge	<i>Cyperus articulatus</i>
Poorland Flatsedge	<i>Cyperus compressus</i>
Baldwin's Flatsedge	<i>Cyperus croceus</i>
Variable Flatsedge	<i>Cyperus difformis</i>
Swamp Flatsedge	<i>Cyperus distinctus</i>
Chufa Flatsedge	<i>Cyperus esculentus</i>
Yellow Flatsedge	<i>Cyperus flavescens</i>
Haspan Flatsedge	<i>Cyperus haspan</i>
Epiphytic Flatsedge	<i>Cyperus lanceolatus</i>
Leconte's Flatsedge	<i>Cyperus lecontei</i>
Swamp Flatsedge	<i>Cyperus ligularis</i>
Fragrant Flatsedge	<i>Cyperus odoratus</i>
Many-spiked Flatsedge	<i>Cyperus polystachyos</i>
Low Flatsedge	<i>Cyperus pumilus</i>
Pinebarren Flatsedge	<i>Cyperus retrorsus</i>
Tropical Flatsedge	<i>Cyperus surinamensis</i>
Durban Crowfootgrass	<i>Dactyloctenium aegyptium</i>
Summer Farewell	<i>Dalea pinnata</i>
Needleleaf Witchgrass	<i>Dichanthelium aciculare</i>
Variable Witchgrass	<i>Dichanthelium commutatum</i>
Cypress Witchgrass	<i>Dichanthelium dichotomum</i>
Dwarf Cypress Witchgrass	<i>Dichanthelium ensifolium</i>
Erectleaf Witchgrass	<i>Dichanthelium erectifolium</i>
Openflower Witchgrass	<i>Dichanthelium laxiflorum</i>
Wooly Witchgrass	<i>Dichantheliumscabriusculum</i>
	<i>Dichanthelium</i>
	<i>strigosum</i> var. <i>glabrescens</i>
Roughhair Witchgrass	<i>Digitaria ciliaris</i>
Southern Crabgrass	<i>Digitaria pentzii</i>
Pangola Grass	<i>Digitaria floridana</i>
Florida Crabgrass	<i>Digitaria horizontalis</i>
Jamaican Crabgrass	<i>Digitaria longiflora</i>
Indian Crabgrass	<i>Digitaria villosa</i>
Slender Crabgrass	<i>Echinochloa colona</i>
Jungle Rice	<i>Echinochloa crusgalli</i>
Barnyard Grass	<i>Echinochloa walteri</i>
Coast Cockspur	<i>Eleocharis atropurpurea</i>
Purple Spikerush	<i>Eleocharis baldwinii</i>
Baldwin's Spikerush	<i>Eleocharis geniculata</i>
Canada Spikerush	<i>Eleocharis interstincta</i>
Knotted Spikerush	<i>Eleocharis nigrescens</i>
Black Spikerush	<i>Eleocharis vivipara</i>
Spikerush	<i>Eleusine indica</i>
Goose Grass	<i>Eragrostis atrovirens</i>
Thalia Lovegrass	

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Gophertail Lovegrass	<i>Eragrostis ciliaris</i>
Elliott's Lovegrass	<i>Eragrostis elliotti</i>
Teal Lovegrass	<i>Eragrostis hypnoides</i>
Tufted Lovegrass	<i>Eragrostis pectinacea</i>
Purple Lovegrass	<i>Eragrostis spectabilis</i>
Coastal Lovegrass	<i>Eragrostis virginica</i>
Centipede Grass	<i>Eremochloa ophiuroides</i>
Saltmarsh Fingergrass	<i>Eustachys glauca</i>
Pinewoods Fingergrass	<i>Eustachys petraea</i>
Slender Fimbry	<i>Fimbristylis autumnalis</i>
Forked Fimbry	<i>Fimbristylis dichotoma</i>
Hairy Fimbry	<i>Fimbristylis puberula</i>
Ditch Fimbry	<i>Fimbristylis schoenoides</i>
Saltmarsh Umbrellasedge	<i>Fuirena breviseta</i>
Dwarf Umbrellasedge	<i>Fuirena pumila</i>
Southern Umbrellasedge	<i>Fuirena scirpoidea</i>
Hairy Umbrellasedge	<i>Fuirena squarrosa</i>
Section 1.02 Cogan Grass	<i>Imperata brasiliensis</i>
Soft Rush	<i>Juncus effusus subsp. sodutus</i>
Shore Rush	<i>Juncus marginatus</i>
Bighead Rush	<i>Juncus megacephalus</i>
Many-headed Rush	<i>Juncus polycephalus</i>
Lesser Creeping Rush	<i>Juncus repens</i>
Needlepod Rush	<i>Juncus scirpoides</i>
Shortleaf Spikesedge	<i>Kyllinga brevifolia</i>
Southern Cutgrass	<i>Leersia hexandra</i>
Molasses Grass	<i>Melinis minutiflora</i>
Hair-awn Muhly	<i>Muhlenbergia capillaris</i>
Woods Grass	<i>Oplismenus hirtellus</i>
Beaked Panicum	<i>Panicum anceps</i>
Fall Panicgrass	<i>Panicum dichotomiflorum</i>
	<i>Panicum dichotomiflorum var. bartowense</i>
Hairy Fall Panicgrass	<i>Panicum hemitomon</i>
Maidencane	<i>Panicum hians</i>
Gaping Panicum	<i>Panicum longifolium</i>
Long-leaf Panicum	<i>Panicum maximum</i>
Section 1.03 Guinea Grass	<i>Panicum repens</i>
Torpedo grass	<i>Panicum rigidulum</i>
Red-top Panicum	<i>Panicum tenerum</i>
Bluejoint Panicum	<i>Panicum verrucosum</i>
Warty Panicum	<i>Panicum virgatum</i>
Switch Grass	<i>Paspalidium geminatum</i>
Egyptian Paspalidium	<i>Paspalum blodgettii</i>
Coral Paspalum	<i>Paspalum boscianum</i>
Bull Crowngrass	<i>Paspalum caespitosum</i>
Blue Crowngrass	<i>Paspalum conjugatum</i>
Sour Paspalum	<i>Paspalum dilatatum</i>
Dallis Grass	<i>Paspalum dissectum</i>
Mudbank Paspalum	

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Florida Paspalum	<i>Paspalum floridanum</i>
Field Paspalum	<i>Paspalum laeve</i>
Gulfdume Paspalum	<i>Paspalum monostachyum</i>
Bahia Grass	<i>Paspalum notatum</i>
Brownseed Paspalum	<i>Paspalum plicatulum</i>
Early Paspalum	<i>Paspalum praecox</i>
Water Paspalum	<i>Paspalum repens</i>
Thin Paspalum	<i>Paspalum setaceum</i>
Vasey Grass	<i>Paspalum urvillei</i>
Seashore Paspalum	<i>Paspalum vaginatum</i>
Napier Grass	<i>Pennisetum purpureum</i>
Common Reed	<i>Phragmites australis</i>
Short-beaked Baldrush	<i>Psilocarya nitens</i>
Natal Grass	<i>Rhynchelytrum repens</i>
Shortbristle Beaksedge	<i>Rhynchospora breviseta</i>
Anglestem Beaksedge	<i>Rhynchospora caduca</i>
Bunched Beaksedge	<i>Rhynchospora cephalantha</i>
Chapman's Beaksedge	<i>Rhynchospora chapmanii</i>
Fringed Beaksedge	<i>Rhynchospora ciliaris</i>
White-tops	<i>Rhynchospora colorata</i>
Short-bristle Horned Beaksedge	<i>Rhynchospora corniculata</i>
Spreading Beaksedge	<i>Rhynchospora divergens</i>
Fascicled Beaksedge	<i>Rhynchospora fascicularis</i>
Threadleaf Beaksedge	<i>Rhynchospora filifolia</i>
Grass-like beaked-rush	<i>Rhynchospora globularis</i>
Pinebarren Beaksedge	<i>Rhynchospora intermedia</i>
Beaked-rush	<i>Rhynchospora inundata</i>
Giant White-tops	<i>Rhynchospora latifolia</i>
Millet Beaksedge	<i>Rhynchospora miliacea</i>
Littleseed Beaked-rush	<i>Rhynchospora microcarpa</i>
Fragrant Beaksedge	<i>Rhynchospora odorata</i>
Plumed Beaksedge	<i>Rhynchospora plumosa</i>
Fewflower Beaksedge	<i>Rhynchospora rariflora</i>
Narrow-leaf Beaksedge	<i>Rhynchospora stenophylla</i>
Tracy's Beaked-rush	<i>Rhynchospora tracyi</i>
Sugarcane Plumegrass	<i>Saccharum giganteum</i>
Indian Cupscale	<i>Sacciolepis indica</i>
American Cupscale	<i>Sacciolepis striata</i>
South Florida Bluestem	<i>Schizachyrium rhizomatum</i>
Creeping Bluestem (UR4)	<i>Schizachyrium stoloniferum</i>
Three-square Bulrush	<i>Scirpus pungens</i>
Balwin's Nutrush	<i>Scleria baldwinii</i>
Slenderfruit Nutrush	<i>Scleria georgiana</i>
Netted Nutrush	<i>Scleria reticularis</i>
Whip Nutrush	<i>Scleria triglomerata</i>
Low Nutrush	<i>Scleria verticillata</i>
Knot root Bristlegrass	<i>Setaria geniculata</i>
Lopsided Indiangrass	<i>Sorghastrum secundum</i>
Sand Cordgrass	<i>Spartina bakeri</i>

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Coral Dropseed  
Smutgrass  
Pineywoods Dropseed  
St. Augustine's Grass  
Eastern Gamagrass  
Paragrass  
Signalgrass

*Sporobolus domingensis*  
*Sporobolus indicus*  
*Sporobolus junceus*  
*Stenotaphrum secundatum*  
*Tripsacum dactyloides*  
*Urochloa mutica*  
*Urochloa subquadriflora*

### **Birds**

American white pelican  
Brown pelican  
Pied-billed grebe  
Double-crested cormorant  
American anhinga  
Black-bellied whistling duck  
Fulvous whistling duck  
Mottled duck  
American widgeon  
Green-winged teal  
Wood duck  
Ring-necked duck  
American coot  
Purple gallinule  
Great blue heron  
Great white heron  
Little blue heron  
Tricolor heron  
Snowy egret  
Great egret  
Cattle egret  
Black-crowned night heron  
Yellow-crowned night heron  
Green heron  
American bittern  
Least bittern  
Woodstork  
Sandhill crane  
Limpkin  
Glossy ibis  
White ibis  
Roseate spoonbill  
Common moorhen  
Black-necked stilt  
American avocet  
Killdeer

*Pelecanus erythrorhynchos*  
*Pelecanus occidentalis*  
*Podilymbus podiceps*  
*Phalacrocorax auritus*  
*Anhinga anhinga*  
*Dendrocygna autumnalis*  
*Dendrocygna bicolor*  
*Anas fulvigula*  
*Anas americana*  
*Anas crecca*  
*Aix sponsa*  
*Aythya collaris*  
*Fulica americana*  
*Porphyrio martinica*  
*Ardea herodias*  
*Ardea herodias*  
*Egretta caerulea (SSCs)*  
*Egretta tricolor (SSCs)*  
*Egretta thula (SSCs)*  
*Casmerodius albus*  
*Bubulcus ibis*  
*Nycticorax nycticorax*  
*Nyctanassa violacea*  
*Butorides virescens*  
*Botaurus lentiginosus*  
*Ixobrychus exilis*  
*Mycteria americana (Ef)*  
*Grus canadensis pratensis(Ts)*  
*Aramus guarauna (SSCs)*  
*Plegadis falcinellus*  
*Eudocimus albus (SSCs)*  
*Platalea ajaja*  
*Gallinula chloropus*  
*Hemantopus mexicanus*  
*Recurvirostra americana*  
*Charadrius vociferus*

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Common snipe	<i>Gallinago delicata</i>
Short-billed dowitcher	<i>Limnodromus griseus</i>
Greater yellowlegs	<i>Tringa melanoleuca</i>
Lesser yellowlegs	<i>Tringa flavipes</i>
Solitary sandpiper	<i>Tringa solitaria</i>
Pectoral sandpiper	<i>Calidris melanotos</i>
Western sandpiper	<i>Calidris mauri</i>
Least sandpiper	<i>Calidris minutilla</i>
Wild turkey	<i>Meleagris gallopavo</i>
Northern bobwhite	<i>Colinus virginianus</i>
Everglades snail kite	<i>Rostrhamus sociabilis(E.f)</i>
Swallow-tailed kite	<i>Elanoides forficatus</i>
Cooper's hawk	<i>Accipiter cooperii</i>
Northern harrier	<i>Circus cyaneus</i>
Red-shouldered hawk	<i>Buteo lineatus</i>
Red-tailed hawk	<i>Buteo jamaicensis</i>
Sharp-shinned hawk	<i>Accipiter striatus</i>
Osprey	<i>Pandion haliaetus</i>
Bald eagle	<i>Haliaeetus leucocephalus(Ts)</i>
Black vulture	<i>Coragyps atratus</i>
Turkey vulture	<i>Cathartes aura</i>
Crested caracara	<i>Caracara cheriway( Tf)</i>
American kestrel	<i>Falco sparverius</i>
Merlin	<i>Falco columbarius</i>
Screech owl	<i>Otus asio</i>
Barred owl	<i>Strix varia</i>
Barn owl	<i>Tyto alba</i>
Great horned owl	<i>Bubo virginianus</i>
White-winged dove	<i>Zenaida asiatica</i>
Mourning dove	<i>Zenaida macroura</i>
Ground dove	<i>Columbina passerina</i>
Eurasian-collared dove	<i>Streptopelia decaocto</i>
Yellow-billed cuckoo	<i>Coccyzus americanus</i>
Smooth-billed ani	<i>Crotophaga ani</i>
Common nighthawk	<i>Chordeiles minor</i>
Chuck-wills-widow	<i>Caprimulgus carolinensis</i>
Ruby-throated hummingbird	<i>Archilochus colubris</i>
Belted kingfisher	<i>Ceryle alcyon</i>
Red-headed woodpecker	<i>Melanerpes erythrocephalus</i>
Northern flicker	<i>Colaptes auratus</i>
Red-bellied woodpecker	<i>Melanerpes carolinus</i>
Red-cockaded woodpecker	<i>Picoides borealis (Ef)</i>
Downy woodpecker	<i>Picoides pubescens</i>
Hairy woodpecker	<i>Picoides villosus</i>
Pileated woodpecker	<i>Dryocopus pileatus</i>
Yellow-bellied sapsucker	<i>Sphyrapicus varius</i>
Eastern kingbird	<i>Tyrannus tyrannus</i>
Great crested flycatcher	<i>Myiarchus crinitus</i>
Eastern Wood-Pee wee	<i>Contopus virens</i>

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Eastern phoebe	<i>Sayornis phoebe</i>
Chimney swift	<i>Chaetura pelagica</i>
Purple martin	<i>Progne subis</i>
Northern rough-winged swallow	<i>Stelgidopteryx serripennis</i>
Barn swallow	<i>Hirundo rustica</i>
Tree swallow	<i>Tachycineta bicolor</i>
American Crow	<i>Corvus brachyrhynchos</i>
Fish crow	<i>Corvus ossifragus</i>
Blue jay	<i>Cyanocitta cristata</i>
Ruby-crowned kinglet	<i>Regulus calendula</i>
Blue-gray gnatcatcher	<i>Polioptila melanura</i>
House wren	<i>Troglodytes aedon</i>
Carolina wren	<i>Thryothorus ludovicianus</i>
Brown thrasher	<i>Toxostoma rufum</i>
Gray catbird	<i>Dumetella carolinensis</i>
Northern Mockingbird	<i>Mimus polyglottos</i>
Eastern bluebird	<i>Sialia sialis</i>
Robin	<i>Turdus migratorius</i>
Wood thrush	<i>Hylocichla mustelina</i>
Loggerhead shrike	<i>Lanius ludovicianus</i>
White-eyed vireo	<i>Vireo griseus</i>
Blue-headed vireo	<i>Vireo solitarius</i>
Prothonotary warbler	<i>Protonotaria citrea</i>
Cape may warbler	<i>Dendroica tigrina</i>
Pine warbler	<i>Dendroica pinus</i>
Palm warbler	<i>Dendroica palmarum</i>
Prairie warbler	<i>Dendroica discolor</i>
Yellow-rumped warbler	<i>Dendroica conoata</i>
Yellow-throated warbler	<i>Dendroica dominica</i>
Black-throated green warbler	<i>Dendroica virens</i>
Black-throated blue warbler	<i>Dendroica caerulescens</i>
American redstart	<i>Setophaga ruticilla</i>
Black and white warbler	<i>Mniotilta varia</i>
Connecticut warbler	<i>Oporornis ogilis</i>
Northern parula warbler	<i>Parula americana</i>
Common yellowthroat	<i>Geothlypis trichas</i>
Ovenbird	<i>Seiurus aurocapilla</i>
Louisiana waterthrush	<i>Seiurus motacilla</i>
Red-winged blackbird	<i>Agelaius phoeniceus</i>
Boat-tailed grackle	<i>Quiscalus major</i>
Common grackle	<i>Quiscalus quisqualis</i>
Eastern meadowlark	<i>Sturnella magna</i>
Brown-headed cowbird	<i>Molothrus ater</i>
Northern cardinal	<i>Cardinalis cardinalis</i>
Rufous-sided towhee	<i>Pipilo erythrophthalmus</i>
Chipping sparrow	<i>Spizella passerina</i>
Bachman's sparrow	<i>Aimophila aestivalis</i>
Song sparrow	<i>Melospiza melodia</i>
Blue grosbeak	<i>Passerina caerulea</i>

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Painted bunting  
Indigo bunting  
European starling  
Cedar waxwing  
American goldfinch

*Passerina ciris*  
*Passerina cyanea*  
*Sturnus vulgaris*  
*Bombycilla cedrorum*  
*Carduelis tristis*

### **Mammals**

Florida panther\*  
Bobcat  
White-tailed deer  
Feral pig  
Gray fox  
Coyote  
Raccoon  
Opossum  
River otter  
Striped skunk  
Nine-banded armadillo  
Eastern cottontail  
Marsh rabbit  
Southern flying squirrel  
Eastern gray squirrel  
Sherman's fox squirrel  
Oldfield mouse  
Hispid cotton rat  
Rice rat  
Round-tailed muskrat  
Black rat  
Least shrew  
Short-tailed shrew  
Evening bat  
Yellow bat

*Felis concolor (Ef)*  
*Lynx rufus*  
*Odocoileus virginiana*  
*Sus scrofa*  
*Urocyon cinereoargenteus*  
*Canis latrans*  
*Procyon lotor*  
*Didelphis virginiana*  
*Lutra canadensis*  
*Mephitis mephitis*  
*Dasyurus novemcinctus*  
*Sylvilagus floridanus*  
*Sylvilagus palustris*  
*Glaucomys volans*  
*Sciurus carolinensis*  
*Sciurus niger (SSCs)*  
*Peromyscus polionotus*  
*Sigmodon hispidus*  
*Oryzomys palustris*  
*Neofiber alleni*  
*Rattus rattus*  
*Cryptotis parva*  
*Blarina brevicauda*  
*Nycticeius humerdis*  
*Lasiurus intermedius*

\* = Last documented sighting on Dupuis was in the 1980's.

### **Reptiles and Amphibians**

#### **Reptiles**

American alligator  
Florida red-bellied turtle  
Peninsula cooter  
Florida softshell  
Green anole  
Brown anole  
Ground skink  
Southeastern five-lined skink  
Island glass lizard  
Southern black racer  
Southern ringneck snake

*Alligator mississippiensis*  
*Pseudemys nelsoni*  
*Pseudemys floridana*  
*Trionyx ferox*  
*Anolis carolinensis*  
*Anolis sagrei*  
*Scincella laterale*  
*Eumeces inexpectatus*  
*Ophisaurus compressus*  
*Coluber constrictor*  
*Diadophis punctatus*

DuPuis Management Area General Management Plan 2014 through 2024  
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Florida kingsnake  
Eastern garter snake  
Peninsula ribbon snake  
Florida brown snake  
Rough green snake  
Eastern indigo snake  
Eastern diamondback rattlesnake  
Gopher Tortoise

*Lampropeltis getul\us*  
*Thamnophis sirtalis*  
*Thamnophis sauritus*  
*Storeria dekayi*  
*Opheodrys aestivus*  
*Drymarchon corais* (Tf)  
*Crotalus adamanteus*  
*Gopherus polyphemus* (Ts)

**Amphibians**

Greater siren  
Oak toad  
Southern toad  
Green treefrog  
Squirrel treefrog  
Greenhouse frog  
Pig frog  
Southern leopard frog  
Cuban treefrog  
Southern cricket frog

*Siren lacertina*  
*Bufo quercicus*  
*Bufo terrestris*  
*Hyla cinerea*  
*Hyla squirella*  
*Eleutherodactylus planirostris*  
*Rana grylio*  
*Rana utricularia*  
*Osteopilus septentrionalis*  
*Acris gryllus*

**Fish**

Everglades pygmy sunfish  
Bluespotted sunfish  
Redear sunfish  
Warmouth  
Bluegill  
Brown bullhead  
Channel catfish  
Brook silverside  
Bluefin killifish  
Mosquitofish  
Flagfish  
Golden topminnow  
Two-spotted cichlid  
Florida gar  
Sailfin molly  
Largemouth bass

*Elassoma evergladei*  
*Enneacanthus gloriosus*  
*Lepomis microlophus*  
*Lepomis gulosus*  
*Lepomis machrochirus*  
*Ictalurus nebulosus*  
*Ictalurus punctatus*  
*Labidesthes sicculus*  
*Lucania goodei*  
*Gambusia affinis*  
*Jordanella floridae*  
*Fundulus chrysotus*  
*Cichlasoma bimaculatum*  
*Lepisosteus platyrrhincus*  
*Poecilia latipinna*  
*Micropterus salmoides*

SSC = Species of Special Concern  
E = Endangered  
T = Threatened  
f = federally designated  
s = state designated

*Land Stewardship Section*  
3301 Gun Club Road  
West Palm Beach, Florida 33406



Kissimmee River  
Management Areas  
Ten-Year  
General Management Plan  
2014 through 2024



Attachment: Kissimmee River Mgt Plan 2014 - 2024 (Resolution No. 2014 - 0103 : Dupuis and Kissimmee River Ten Year General Management

# Kissimmee River Management Areas Ten-Year General Management Plan (2014 through 2024)

## January, 2014

Land Stewardship Section  
South Florida Water Management District  
3301 Gun Club Road  
West Palm Beach, Florida 33406

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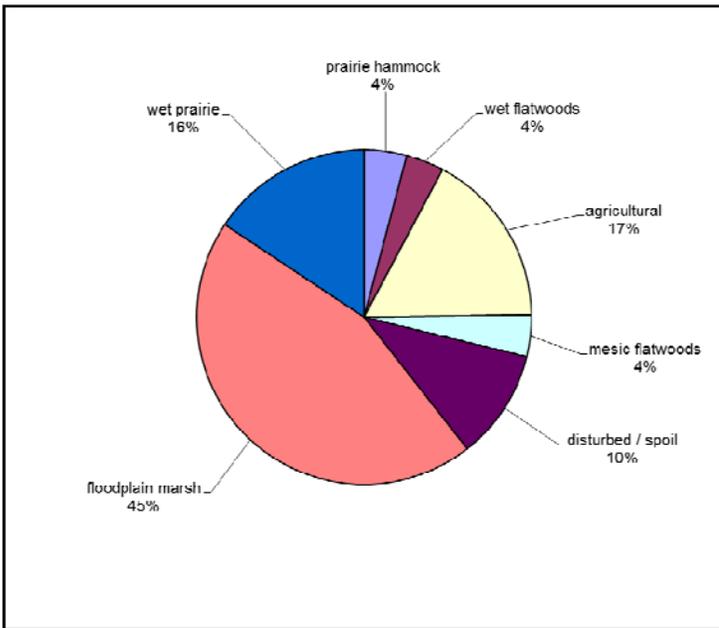
**1. Executive Summary**

The South Florida Water Management District (District) is directed to acquire and manage lands which are vital to the restoration of the Everglades, the Kissimmee River, the Kissimmee Chain of Lakes and its headwaters. In the 1980s the District targeted the floodplain of the Kissimmee River as a Save Our Rivers project. This plan addresses management for the 50,810 acres that have been acquired in fee-simple by the District within the Kissimmee River project area.

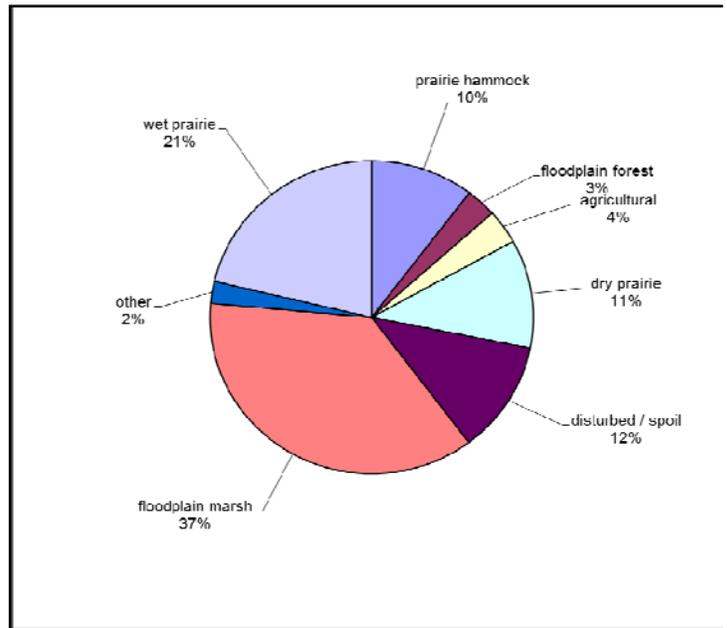
This General Management Plan describes the historical, ecological, and managerial aspects of the area as a means to coordinate effective management programs. The plan serves as a guidance document for the implementation of resource-based land management practices. It also provides information on operational procedures and organizational structures within the District and of management activities and objectives for the management areas.

NATURAL SETTING

The natural character of the management areas is defined by 6 distinct soil categories classified by the Natural Soil Landscape Positions soil classification system: flatwood soils, flats soils, knolls, sand depression soils, muck depression soils, and urban or man-made lands. These soils support distinct plant communities that are defined by criteria established by the Florida Natural Areas Inventory; the most common of which have the following coverage:



Upper River (Pool A) Natural Communities



Lower River (Pools C-D) Natural Communities

### RESOURCE MANAGEMENT

Resource management programs for the management areas consist of:

- Prescribed fire to mimic the natural fire frequency in fire-dependent natural communities.
- Forestry and vegetation management such as shredding or mowing overgrown understories, or thinning pine communities where they are too dense.
- Wildlife management, including surveys, habitat management, and hunting programs.
- Exotic vegetation treatment.
- Monitoring the health of the natural communities and the impact of management practices on them.
- Restoring sites that have previously been altered by drainage and/or agriculture.

### RESTORATION PROJECTS

In addition to the restoration of the middle pools of the Kissimmee River (formerly Pools B-D), the District is using in-house funds for the restoration of two former dry prairie areas in Starvation Slough and and one area of scrub at River Runt in Pool C. The scrub restoration involves filling old drainage ditches, while the dry prairie restoration involves disking sod fields, herbicide applications, and groundcover restoration.

### MONITORING

The District performs vegetative community monitoring and faunal monitoring associated with the Kissimmee River Restoration Project. The Florida Fish and Wildlife Conservation Commission monitors bat houses and a swallow-tailed kite nesting colony, and the Archbold Biological Station monitors red-cockaded woodpeckers and scrub jays.

### WILDLIFE MANAGEMENT

Wildlife management, including hunting programs, is conducted by the Florida Fish and Wildlife Conservation Commission through a multi-site cooperative agreement. The hunting program includes a general gun, muzzle loading, and archery season in the fall, small game hunts in late winter, and turkey hunting in early spring. In addition to hog hunts, the District manages feral swine through a managed hog removal program. This program uses no-cost hog control agents that use a variety of methods to remove feral swine including shooting, trapping and dogs.

### PUBLIC USE

Infrastructure for several recreational activities is provided in the management areas including boating, airboating, canoeing, bicycling, camping, equestrian, fishing, hiking, and hunting. The Florida National Scenic Trail and Florida Cracker Trail wind their way through portions of the Management Areas.

## 2. Introduction and Management Plan Purpose

The Kissimmee River Restoration Act was passed in 1976 and authorized the initial studies and planning for the restoration of the river. A recommended restoration plan was developed and the Kissimmee River Restoration Project was authorized by Congress in the 1992 Water Resources Development Act as a joint partnership between the District and the US Army Corps of Engineers. The project was designed to restore over 40 square miles of river/floodplain ecosystem including 43 miles of meandering river channel and 27,000 acres of wetlands. To complete the restoration it was necessary to acquire land and flowage easements within the 100-year floodplain.

The Save Our Rivers program was created in 1981 and received dedicated funds derived from real estate documentary stamp taxes beginning in 1985 and Preservation 2000 funds beginning in 1990. Between 1985 and 2000, the District through the Save Our Rivers program acquired 49,000 acres of property fee title or in flowage easements to support the Kissimmee River Restoration Projects. This acreage was in addition to floodplain land that had been previously acquired during the river channelization works of the 1950s and 1960s. In total, the District has fee-simple ownership of 50,810 acres within the Kissimmee River corridor.

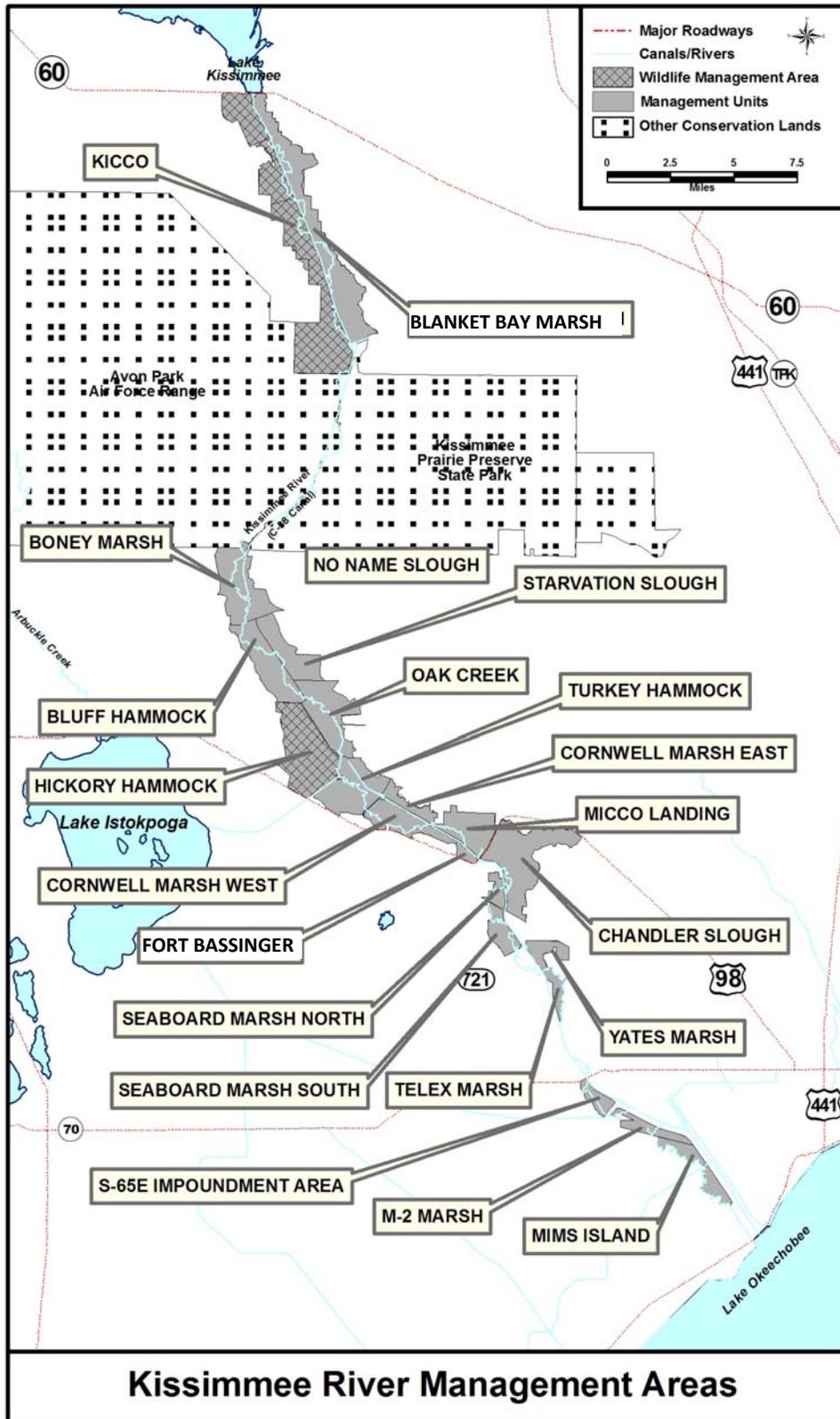
There Kissimmee River properties are divided into 21 management areas (**Table 1** and **Maps 1 - 2**). Most of the management areas have trailheads or other public use facilities accessible by road, while others are only accessible by river (see **Section 6 - Public Use**). The Avon Park Airforce Range, and the Kissimmee Prairie Preserve State Park manage the floodplain within the former Pool B of the middle river area. The 100 year floodplain, the point on either side of the river to which the District sought to acquire the rights necessary to implement the river restoration, is generally two miles wide and includes the river channel, oxbow lakes, marshes, and wet prairies surrounded by pockets of cypress and a large fringing oak hammock. Landward of the hammock may be small areas of oak scrub, dry prairie, or pine flatwoods.

This General Management Plan consolidates relevant information about the Kissimmee River Management Areas including land management goals and objectives, past and present land uses, resource data, restoration and management needs, public use programs, and administrative duties to guide management actions for the period 2014 through 2024. Management activities described in this plan are based on requirements and directives of Florida Statutes and established District policies. Section 373.591(4), Florida Statutes, requires that management plans be developed for District conservation, preservation, and recreation lands.

**Table 1. Management Areas of the Kissimmee River**

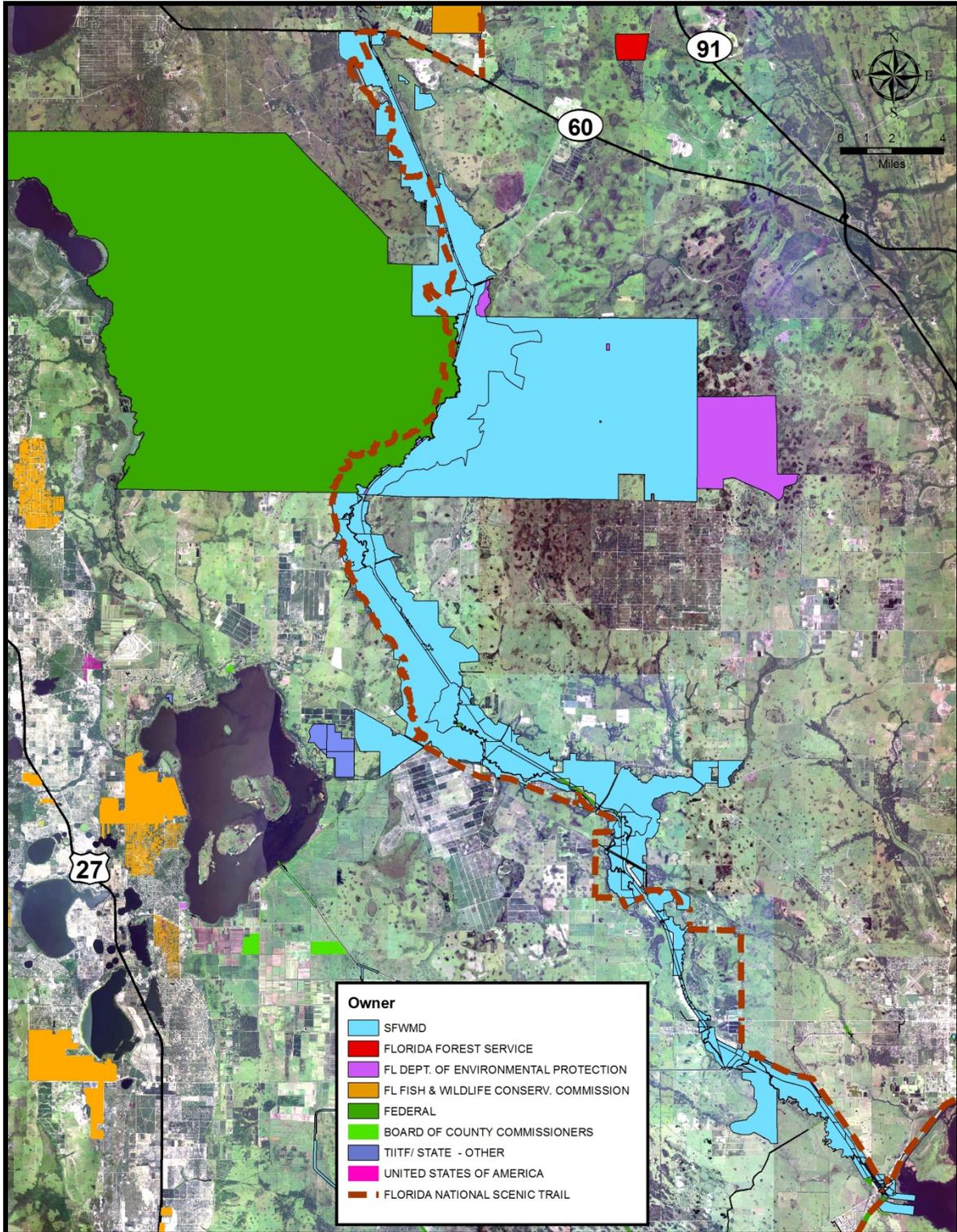
	West Side of Channel	East Side of Channel
Upper River (Pool A)	KICCO	Blanket Bay
Middle River (Pools B-D)	Boney Marsh Bluff Hammock Hickory Hammock  Cornwell Marsh West Fort Bassinger	No Name Slough Starvation Slough Oak Creek Turkey Hammock Cornwell Marsh East Micco Landing  Chandler Slough
Lower River (Pool E and Paradise Run)	Seaboard Marsh North Seaboard Marsh South  S-65E Impoundment M-2 Marsh Mims Island	Yates Marsh Telex Marsh

**Map 1. The Kissimmee River Management Areas**



Attachment: Kissimmee River Mgt Plan 2014 - 2024 (Resolution No. 2014 - 0103 : Dupuis and Kissimmee River Ten Year General Management

**Map 2. Regional Public Land Ownership**



State statutes further directs the District to provide natural resource protection and management while allowing compatible multiple uses on public lands. This mission statement and requirements set forth in Florida Statutes provide three primary goals for the Land Stewardship Section:

- Conserve and protect water resources
- Protect and/or restore land to its natural state and condition
- Provide appropriate public use

To accomplish these goals, the Land Stewardship Section performs six major functions:

- Strategic, project, and management planning
- Operation and maintenance of land resources
- Development of public use programs
- Development of restoration projects
- Evaluation of management activities
- Administration of land management service contracts

The plan consolidates current site information and general guidelines for management of the area. It also updates and replaces the Conceptual Management Plan developed by the Florida Fish and Wildlife Conservation Commission in 1994 for the KICCO Wildlife Management Area, and the 2008 – 2013 General Management Plan for the Kissimmee River Pools C&D developed by the District. As such, it serves as a collective information source for management staff, partners, and the general public.

## **2.1 Kissimmee River Management Area Goals and Objectives**

The Land Stewardship Section's primary functions and management priorities for 2014-2024 are contained in the following Goals and Objectives:

**Goal 1:** Manage natural communities and modified habitats to protect and enhance water, floral, and faunal resources.

### **Objectives:**

- Mechanically treat vegetation to reduce overgrown saw palmettos, wax myrtles, and hardwoods, as needed.
- Continue the regular application of fire through a well-planned and documented prescribed burning program.
- Continue an aggressive, integrated exotic plant management program to eliminate and control infestations of all invasive exotic plant species, with a special emphasis on lygodium. Treatments will be documented and coordinated with other management activities.
- Continue to use prescribed grazing as a resource management tool.

- Continue to provide selective herbicide applications at the River Runt restoration site to encourage the recruitment of native species.
- Continue to provide selective herbicide applications at the dry prairie restoration sites at Starvation Slough, and other groundcover restoration sites along Hwy 98 and Fort Bassinger, to encourage the recruitment of native species.

**Goal 2:** Provide resource-based public use opportunities.

**Objectives:**

- Maintain, and expand if appropriate, existing nature based recreational opportunities including hiking, biking, equestrian use, camping, hunting, birding, and wildlife viewing.
- Continue to coordinate with the Florida Trail Association, and local chapters, on the maintenance and use of the areas' trails, including the Florida National Scenic Trail.
- Continue to participate in the Water Resources Advisory Committee's Recreation Issues Workshop which facilitates public use planning with stakeholders and user groups.

**Goal 3:** Maintain public use facilities and area infrastructure.

**Objectives:**

- Maintain present public-use improvements (roads, parking/trailheads, signs, structures) using a combination of District resources, contracts, and volunteer involvement.
- Maintain boat ramps at the Istokpoga Canal and the S-65D water control structure.
- Install an equipment storage area at Istokpoga Canal public use area.
- Refurbish the pole barn at the Hickory Hammock campground.
- Replacement of the Boney Marsh boardwalk.
- Resurface the asphalt at the Istokpoga Canal public use area.
- Expand camping facilities at the Istokpoga Canal public use area.

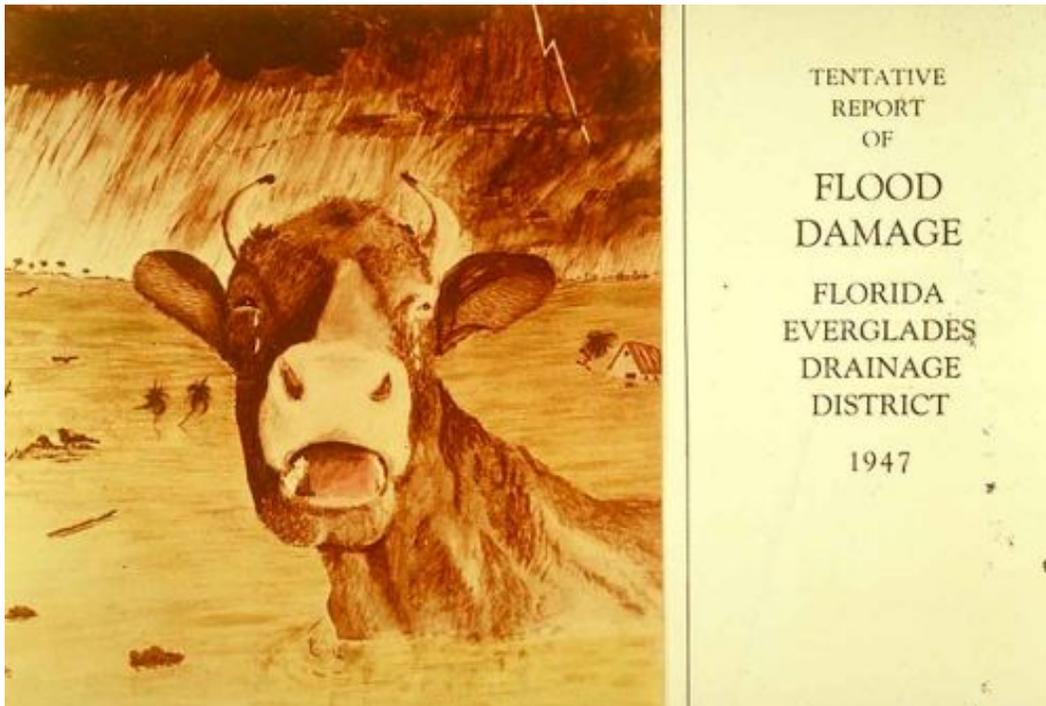
### 3. Site History

Historically, the Kissimmee River meandered over 103 miles within a one to two mile wide floodplain. The floodplain, approximately 56 miles long, sloped gradually to the south from an elevation of about 51 feet at Lake Kissimmee to about 15 feet at Lake Okeechobee; falling an average of about 4 inches in elevation over each mile of the river. Under historic conditions, river flows generally exceeded 250 cubic feet per second (cfs) 95 percent of the time, while overbank flooding occurred 35-50% of the time during the historic period of hydrologic record (1934-1960). The river moved very slowly, with normal river velocities averaging less than two feet per second.

The historic floodplain was covered by approximately 35,000 acres of wetlands. The distribution and maintenance of plant communities within the floodplain wetlands depended on prolonged inundation and seasonally fluctuating water levels. A fluctuating hydroperiod, along with the undulating topography of the floodplain, a meandering river channel, oxbows, and natural discontinuous sand banks, enhanced and maintained habitat diversity, including the mosaic of intermixed vegetation types.

Prior to 1940, human habitation was sparse within the Kissimmee Basin. Land use within the basin consisted primarily of farming and cattle ranching. However, rapid growth and development following World War II set the stage for extensive property damage when a severe hurricane occurred within the basin in 1947. The mass flooding during this period intensified public pressure for measures to reduce the threat of flood damage within the Kissimmee Basin. The State of Florida responded with a request to the federal government to design a flood-control plan for central and southern Florida.

In 1948, Congress authorized the U.S. Army Corps of Engineers to initiate construction of the Central & Southern Florida Project for Flood Control and Protection. In 1954, Congress specifically authorized the Kissimmee River portion of the project, which was planned and designed from 1954 to 1960. Between 1962 and 1971, the meandering river was transformed into a 56 mile-long, 30 foot deep, 300 foot-wide canal. Excavation of the canal and deposition of the resulting spoil eliminated approximately 35 miles of river channel and 6,200 acres of floodplain wetland habitat. The floodplain was transformed into a series of impounded reservoirs (Pools A-E). Inflow from the upper basin was regulated by six water control structures (S-65s). Water control structures and canals were built in the upper lakes region which allowed regulation of water flow within and between the lakes of the upper basin.



**The “Crying Cow” report that demanded better flood protection**

Transformation of the river-floodplain ecosystem into a series of deep impoundments drained much of the floodplain, eliminated historical water-level fluctuations, and greatly modified flow characteristics. Approximately 26,000-31,000 acres of pre-channelized floodplain wetlands were drained, covered with spoil, or converted canal. The floodplain at the lower end of each pool remained inundated, but pre-channelization water level fluctuations were eliminated and the upper pools dried out. The physical effects of channelization, including alteration of the system's hydrologic characteristics, largely eliminated river and floodplain wetlands and degraded fish and wildlife habitat of the Kissimmee River ecosystem.

In 1981, the Florida Legislature established the Save Our Rivers program for the five water management districts to acquire environmentally sensitive land. The legislation (Chapter 373.59 F.S.) produced the Water Management Lands Trust Fund and empowered the water management districts to acquire lands needed to manage, protect, and conserve the state's water resources. Once acquired, the lands were to be managed in an environmentally acceptable manner and restored to their natural state. Districts were authorized to make certain capital improvements, i.e. fencing, access roads/trails, and provide basic public facilities. The legislation also requires the districts to develop and provide appropriate public use opportunities. In addition, habitat management such as control of exotic species and controlled burning was to be conducted.



**The Kissimmee River, prior to channelization**

**Massive flooding in the 1940s that prompted Congress to authorize the Central & Southern Florida Project for flood control and protection**



**The river during channelization in the 1950s and 60s (left), boating in the straightened and channelized river (right)**

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**The planning of the restoration project was aided by the construction of a large scale-model of the river in a huge tank in a lab at Univ. of California, Berkley.**

The Kissimmee River Restoration Project was authorized by Congress in the 1992 Water Resources Development Act as a joint partnership between the District and the US Army Corps of Engineers. The project was designed to restore over 40 square miles of river/floodplain ecosystem including 43 miles of meandering river channel and 27,000 acres of wetlands. The restoration plan calls for the reestablishment of inflows from Lake Kissimmee to provide flow velocities and volumes similar to the ones that existed prior to channelization.

Approximately 11,312 acres were purchased in the 1960s as part of the channelization of the Kissimmee River, of which 7,637 acres are managed today as part of the Kissimmee River Management Areas. Land continued to be acquired from the 1980s until present; first as Save Our Rivers projects and later through the Kissimmee River Restoration Project. Today the District owns fee-title interest in 50,810 acres along the river, of which 8,081 acres is managed by the Department of Environmental Protection as the Kissimmee Prairie Preserve State Park. The District also has less-than-fee interest in 14,520 acres of conservation and flowage easements. **Table 2** identifies the site history and dates of historical significance for the Kissimmee River. **Maps 3-5** provides historical information on plant communities along the river corridor. **Map 6** shows the channelized river as it existed from the 1960s until the 1990s, divided into five controlled impoundment areas or Pools.

Kissimmee River Management Areas General Management Plan 2014 through 2024  
South Florida Water Management District, Land Stewardship Section

**Table 2 – Site History**

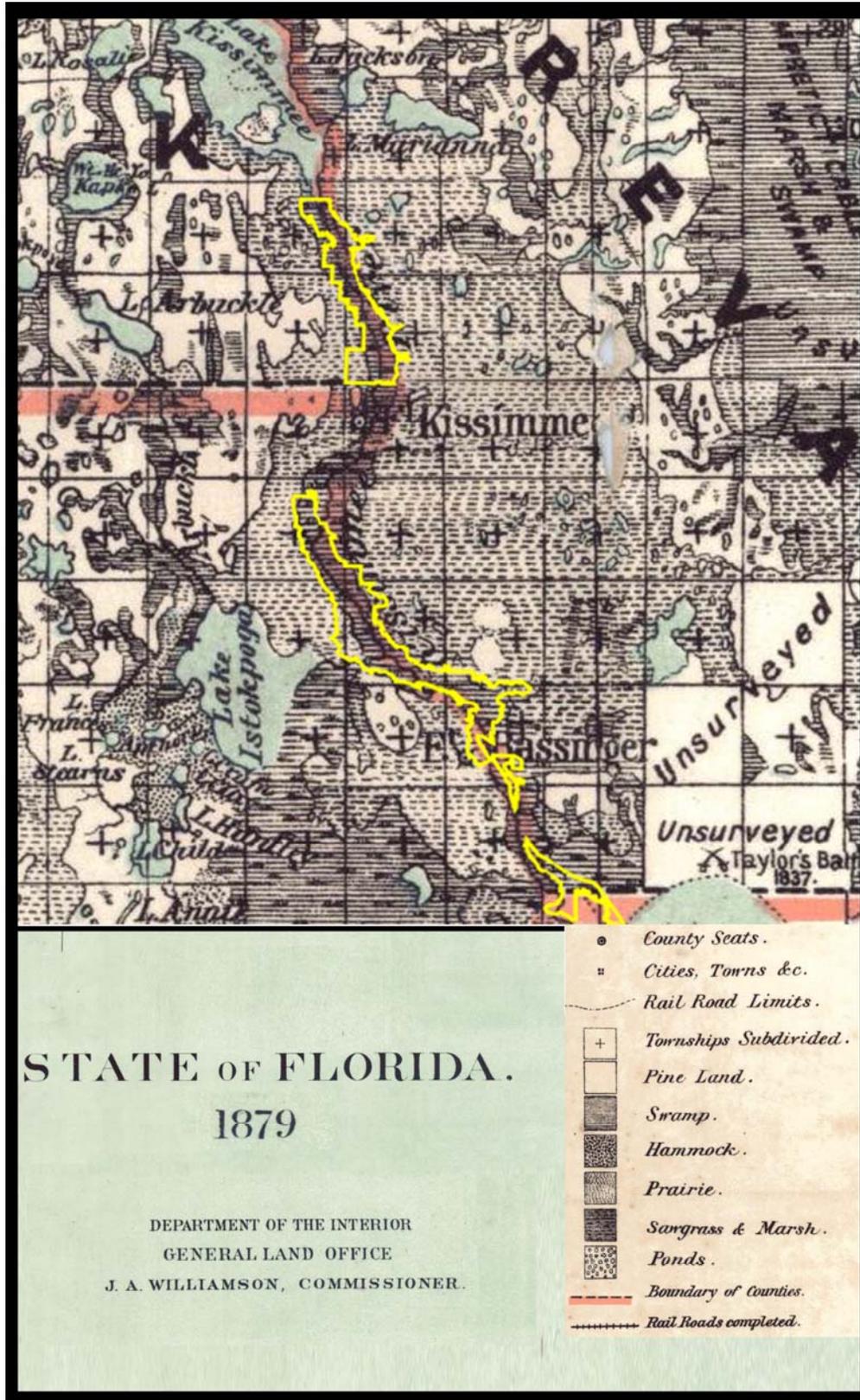
	<b>ACTIVITY</b>	<b>EFFECT ON FLOODPLAIN</b>
1837	Fort Basinger constructed	Trails constructed between forts spaced approximately 20 miles apart, allowed settlement of the area when the Armed Occupation Act was passed in 1842.
1850	U. S. Congress passed the Swamp and Overflowed Land Act	Allowed the state legislatures to transfer the ownership of swamp and overflowed lands to private entities to reclaim the land through drainage and levee projects.
1858	Third Seminole War ended	Pushed the Seminoles south of Lake Okeechobee and opened the Kissimmee Basin to settlement
1881-1884	Hamilton Disston's Atlantic and Gulf Coast Canal and Okeechobee Land Company completes canals and dredging projects throughout the region creating a navigable water way from Fort Myers to St. Cloud.	Water levels in the Kissimmee Upper Basin dropped and the area was opened to steamboat traffic. Clearing and snagging operations began on the Kissimmee River to keep it navigable.
1890's	Kissimmee Island Cattle Company (KICCO) acquired land south and west of Lake Kissimmee and used the native range for cattle ranching	While this would have been an intensification, cattle had been grazing the area since the land belonged to Spain.
1915	Small ditches were carved through the land west of the river for the establishment of KICCO's company town.	Drained wetlands and created an untenable situation of having a settlement and large operation in the 100-year floodplain.
Late 1947	Major hurricane strikes with a 100 – year flood event in the Kissimmee River Valley. Subsequent “Crying Cow” report demanded better flood protection for agricultural lands in the Kissimmee River Valley.	The flood event revitalized the flood plain and surrounding wetlands.
1948	Congress authorizes the Central and Southern Florida Project for Flood Control and Protection	Set the stage for massive drainage and flood control projects.
1954	The Kissimmee River channelization is authorized by Congress	
1954-1960	Planning and design completed for the Kissimmee River flood control project	
1962-1971	Channelization of the Kissimmee River	Transformation of the river-floodplain ecosystem into a series of impoundments, it drained much of the floodplain
1971-1974	Environmental impacts from the channelization are recognized by the Central and South Florida Flood Control District and planning efforts to restore the River begin.	It was clear that any attempt to restore the River would require nearly all of its floodplain to be in public ownership so that the river could flood naturally
1974	The State purchased 1718 acres within Blanket Bay, and granted a flowage easement to the District	State acquisition kept Blanket Bay from being developed.
1983-1985	KICCO in Pool A acquired by the South Florida Water Management District	An existing development and incompatible use was removed.
1992	Kissimmee River Restoration Project authorized by Congress	Set the stage for the restoration of much of the River's former floodplain

Kissimmee River Management Areas General Management Plan 2014 through 2024  
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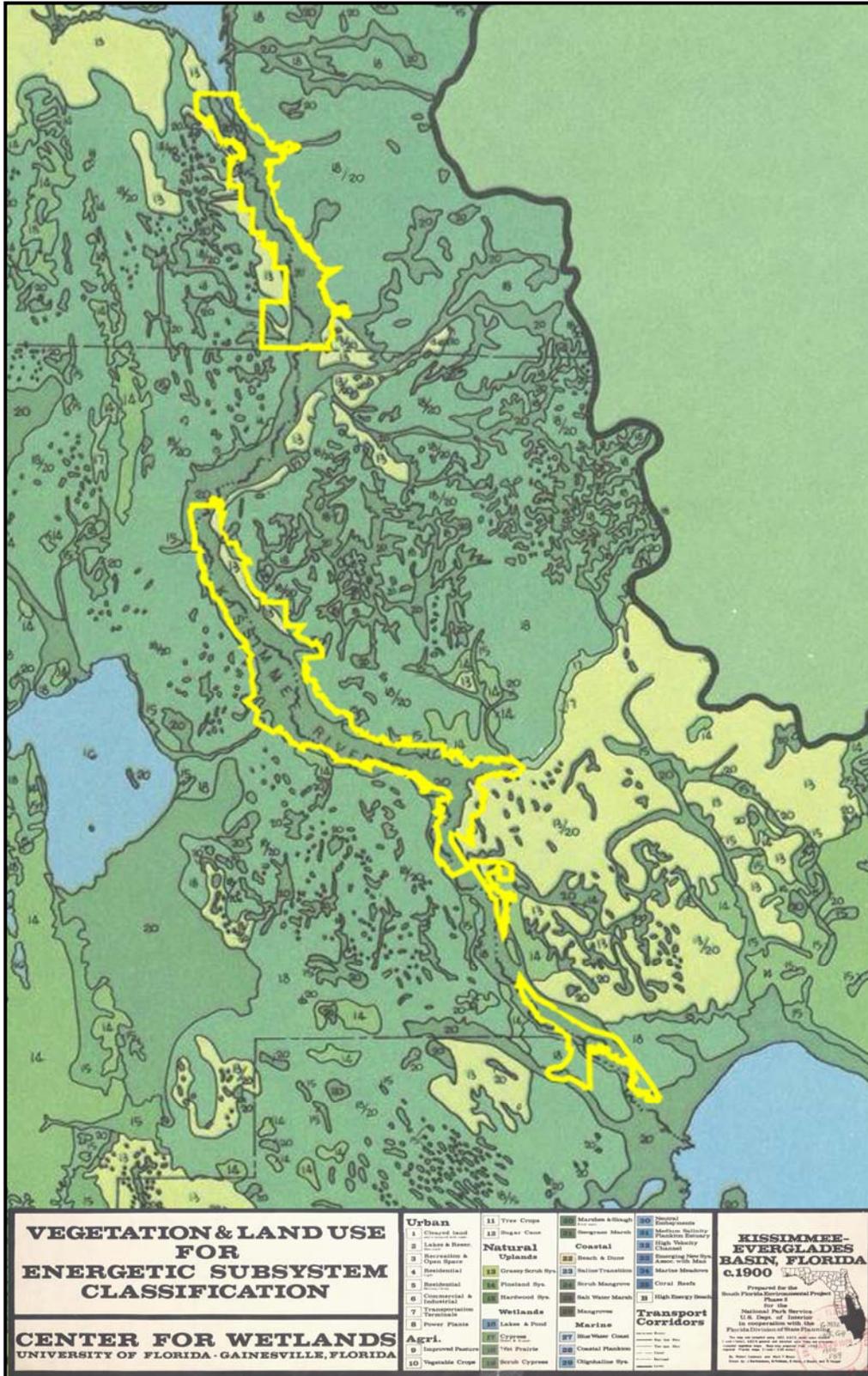
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1994	Ground breaking for the construction of the Kissimmee River Restoration Project	The first 1000 feet of backfilling was completed in Pool B
1997	Construction begins on Pool A restoration projects	Projects included increasing the amount of water that could be brought into the Kissimmee River, removing spoil mounds on the south side of Blanket Bay, and constructing tie-back levees at S-65A that allow Pool A wetlands to retain more water.
1999-2001	Phase I of the restoration project, removal of the S-65B structure and backfilling of the C-38 in Pool C	Emergent and shoreline vegetation has reappeared and is thriving. Waterfowl are returning. Water quality is improving. Wildlife populations are increasing.
2003	A drainage canal was filled at the south end of KICCO.	Improved hydrology of Tick Island Slough
2006	Phase IV backfilling in Pool B begins	Ecological improvements similar to Phase I are anticipated.
2007 - 2013	Backfilling continues into Pool D, land acquisition for restoration purposes nears completion.	Ecological improvements similar to Phase I are anticipated.

**Map 3. 1879 General Land Office Map with land cover classification**



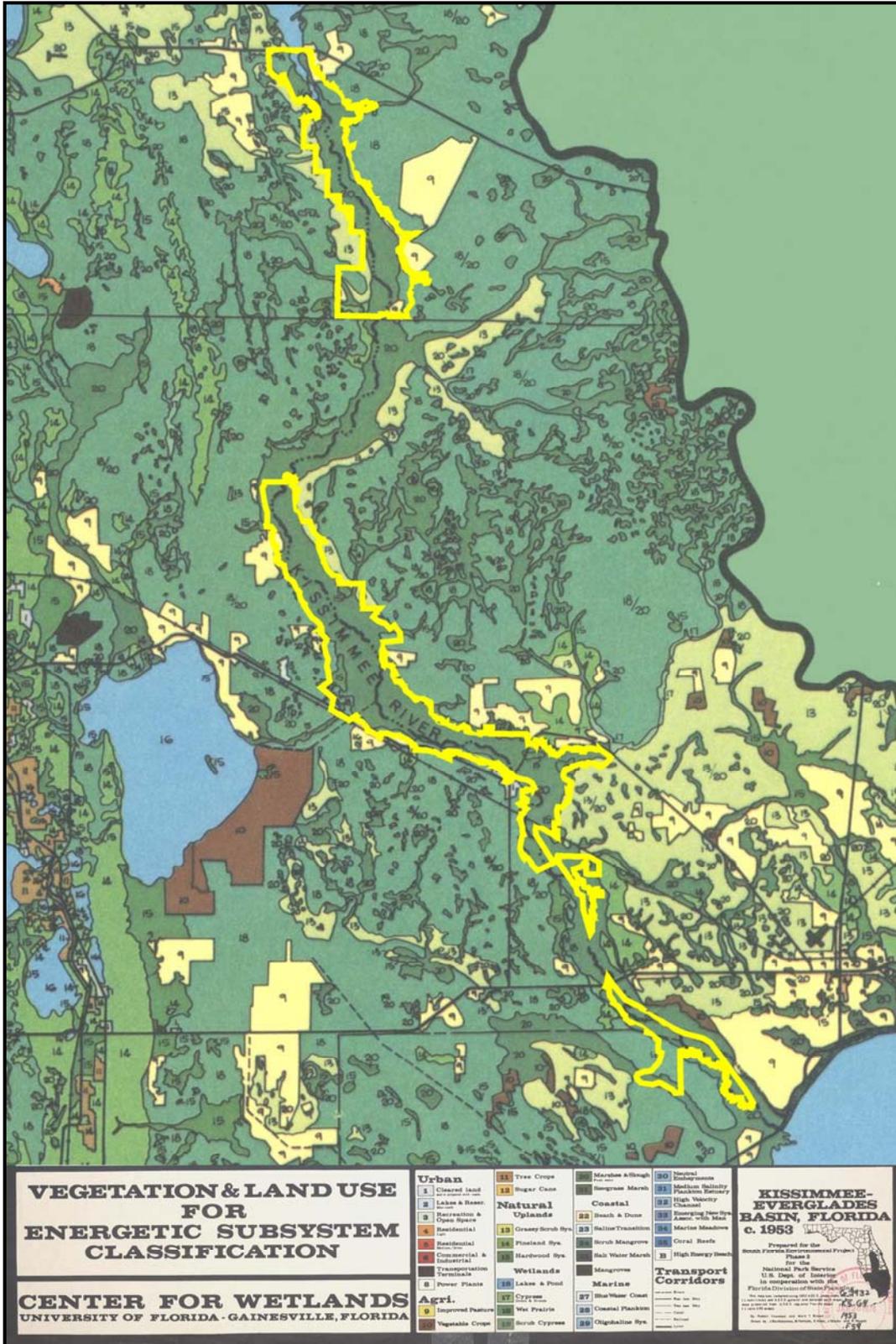
Map 4. University of Florida land cover map - 1900



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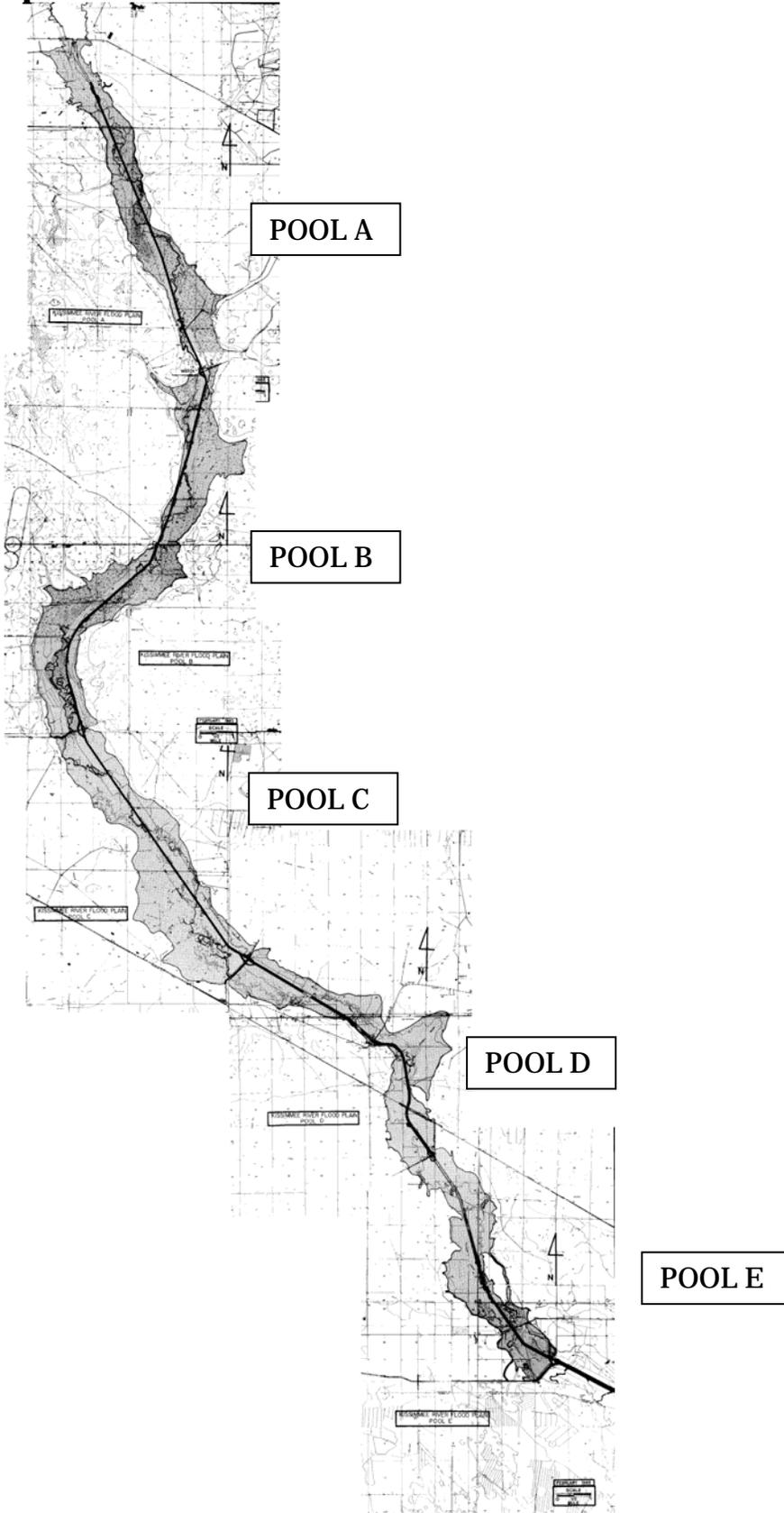
Kissimmee River Management Areas General Management Plan 2014 through 2024  
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Map 5. UF land cover map - 1953



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**Map 6. Pools A-E of the Channelized River**



#### 4. Resource Inventory

*Policy 140-25(3)(e)* Inventories of natural and historic resources shall be performed to provide information for effective land management planning, natural community maintenance and ecological restoration. (District policies are reprinted in **Appendix A**)

Floral and faunal species are inventoried and natural communities are mapped by Land Stewardship personnel, volunteers, or private contractors. The data helps District land managers with resource management planning and monitoring efforts.

Inventory data is on file with the Land Stewardship Section. Land Stewardship shares natural areas and species data with the Florida Natural Areas Inventory through a Memorandum of Understanding.

Floral and faunal inventories of the Management Areas in the northern management areas (Pool A) were included in the environmental assessment initiated shortly after acquisition. The southern management units had a floral and faunal survey included as part of the 2002-2007 Kissimmee River Pools C and D General Management Plan. These served to determine the presence of listed species and to serve as ecological baselines. Additional surveys have been completed with species' lists being updated regularly by volunteers, contractors, and District & Florida Fish and Wildlife Conservation Commission staff. Archaeological and cultural resource inventories were conducted in coordination with the Department of State, Division of Historical Resources and are described in the State's Master Site File.

##### 4.1 Hydrology

*Policy 140-25(1)* The basis for the Land Stewardship Program is the protection and management of natural hydrologic resources.

The major geomorphic features which affect area hydrology are the Osceola Plain and Bombing Range Ridge, the Okeechobee Plain, small portions of the Caloosahatchee Incline, and the Lake Wales Ridge (**Map 7**). The Osceola Plain is a generally broad terrace bounded by the Lake Wales Ridge to the west and the Eastern Valley to the east, both of which are marine scarps. The Osceola Plain has little relief locally, and generally has an elevation of 60 to 70 feet above the National Geodetic Vertical Datum. The prominent feature of the Osceola Plain is known as the Bombing Range Ridge. The Kissimmee River passes through the length of the Osceola Plain slightly west of the center line roughly parallel with the axis of the peninsula. For the southernmost 25 miles of this route it occupies a valley 1.5 miles wide, which is cut rather sharply into the surface of the plain. The Okeechobee Plain gradually slopes to the south and is one of the flattest parts of the United States. At its northern boundary at the toe of the Osceola Plain, the

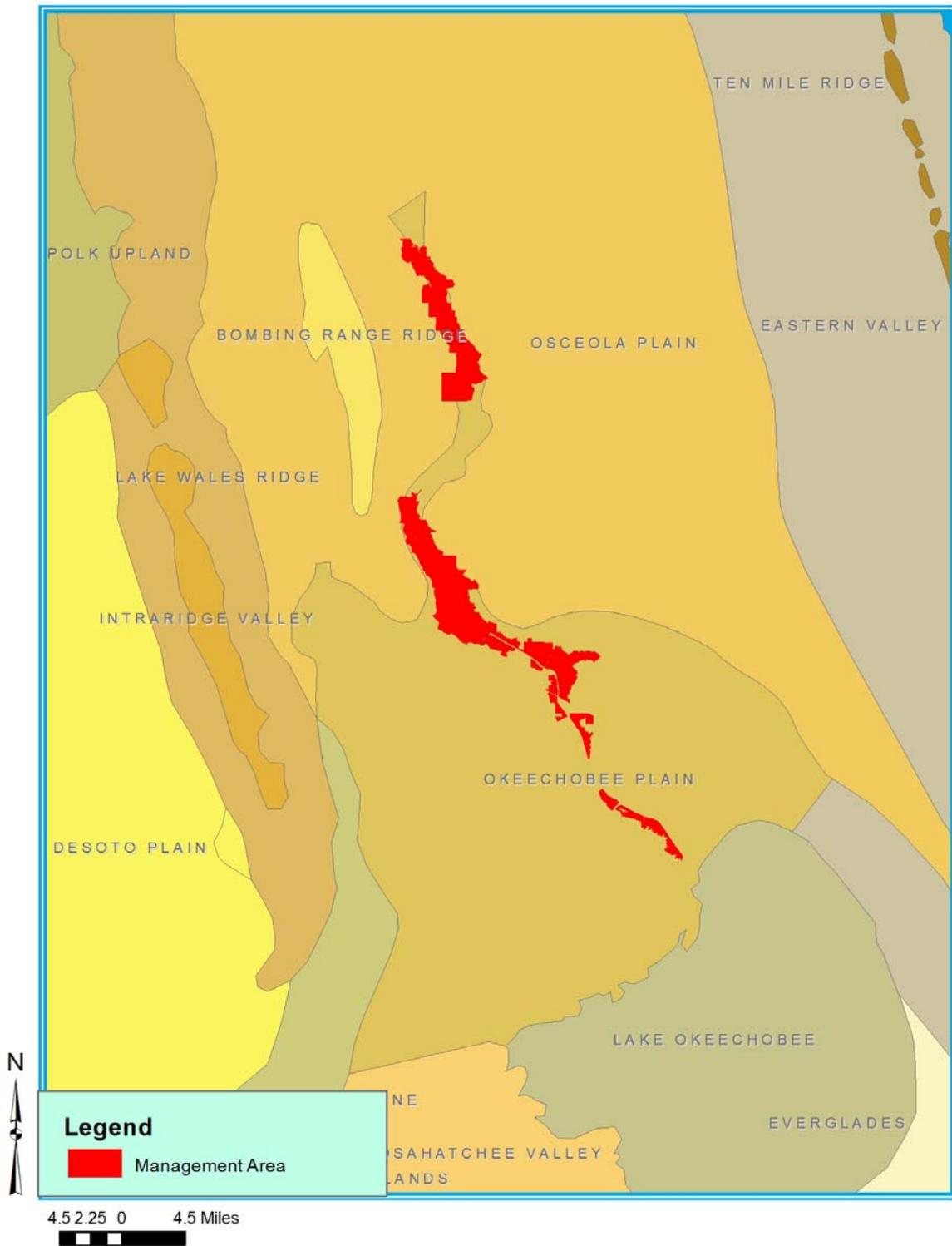
elevation is 30 to 40 feet above the National Geodetic Vertical Datum and slopes southward to an elevation of 20 feet at the north shore of Lake Okeechobee. The narrow northern portion of this plain consists of the Kissimmee River Valley. The Lake Wales Ridge, which forms the most prominent topographic feature of the Florida peninsula, rises above the Okeechobee Plain to an elevation of over 150 feet (**Map 8**).

Prior to channelization, surface water flow was dependent on rainfall-driven seasonal cycles that supplied water to the river system. (**Maps 9-10**) Most of the floodplain remained inundated for a major portion of the year. As much as 77% of the floodplain had mean annual hydroperiods of at least 265 days, with depths commonly exceeding one meter on the inner portions of the floodplain. Gently sloping elevations and seasonally fluctuating inflow produced slow drainage and periodic overflow onto the river floodplain. Water flow was delayed by dense wetland vegetation, a widely meandering channel, and organically rich river substrates. Packingham Slough, Buttermilk Slough, Tick Island Slough, Oak Creek, Istokpoga Creek, Turkey Hammock, Near Dinner Bay, Underhill Sawgrass, and Chandler Slough are tributaries that added to the basin's water retention capacity and flowage. Many small agricultural drainage ditches fed into the sloughs increasing the efficiency through which the depression marshes in those lands drain. During significant rainfall events, water was delivered to the main channel by overland sheetflow. Higher elevations were influenced by fluctuating water levels during the summer months. Water drawdown from elevated areas was a slow process. Pre-channelized stages typically receded at rates of less than one foot per month.

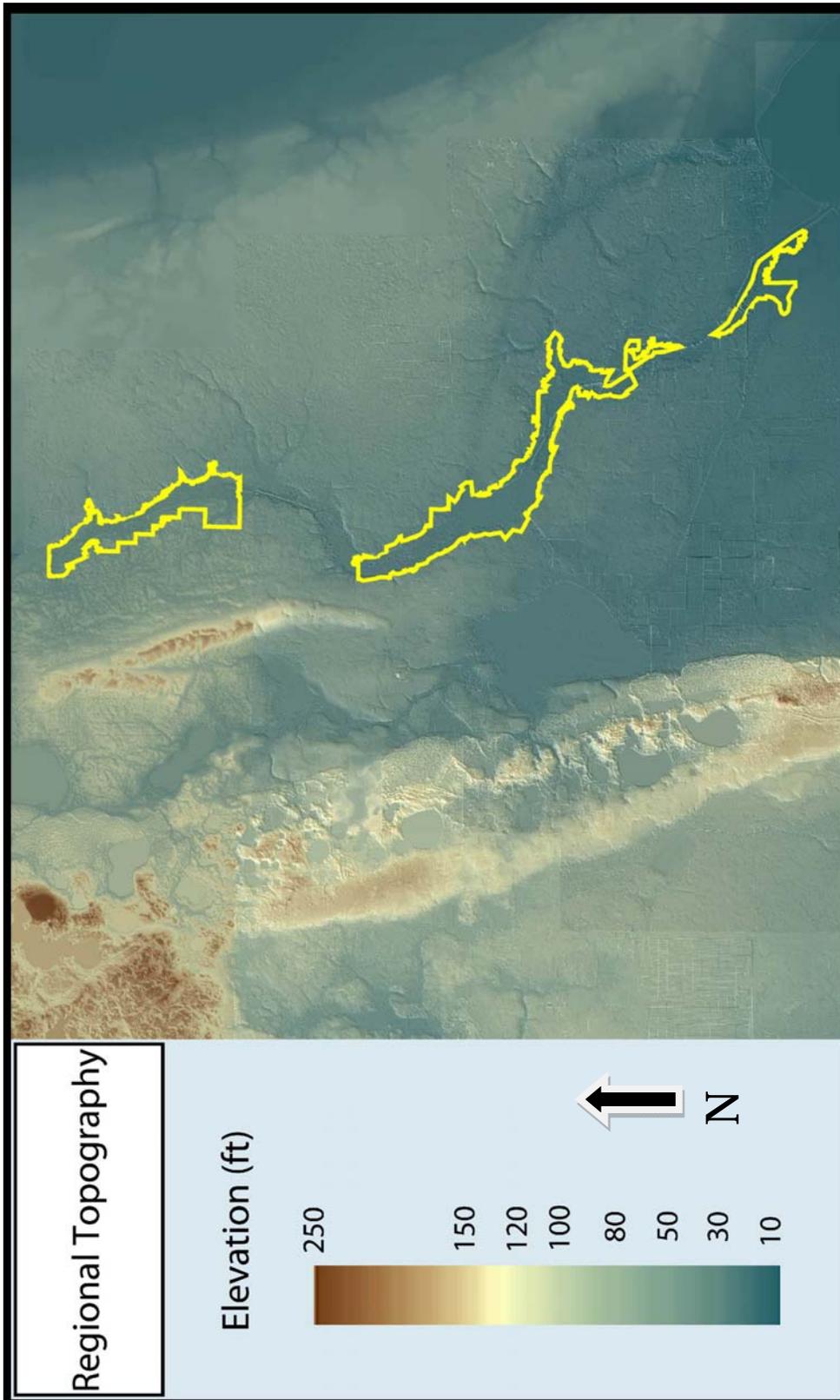
In the late 1960s, the lower portion of the river system was straightened and deepened, creating a linear 56 mile long canal (C-38) that bisects the Kissimmee River floodplain. The canal was divided into six elevational steps, or pools, by water control structures. Average depth of the canal is 30 feet and surface width ranges from 210 to 345 feet. The channelization changed the somewhat uniform, natural river gradient into a series of terraced impoundments, declining in elevation in six foot increments. Controlled water releases from the Upper Chain-of-Lakes Basin, through Lake Kissimmee, have eliminated wide seasonal fluctuations within the floodplain and hastened surface drainage. Istokpoga Creek is now a canal draining into Pool C. Chandler Slough remains the main tributary to Pool D.

Alterations within the region have combined to make a system that is unlike the historical system (**Maps 11-13**). To moderate the dynamic hydrology and create a more natural hydrologic pattern, the District has implemented several restoration projects, the largest of which is the Kissimmee River Restoration Project (see **Section 5.1 - Restoration Projects**).

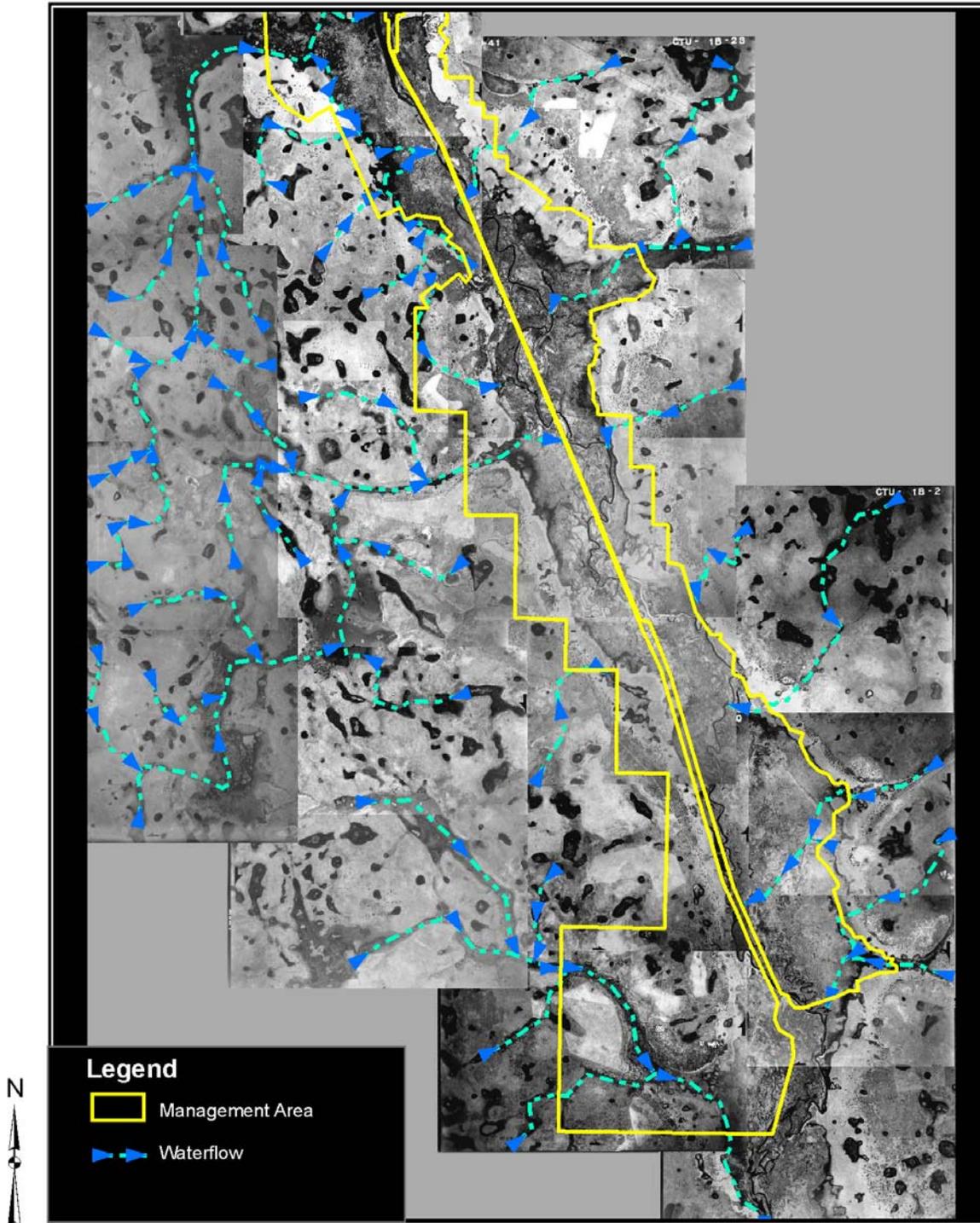
**Map 7. Regional Major Geomorphic Features**



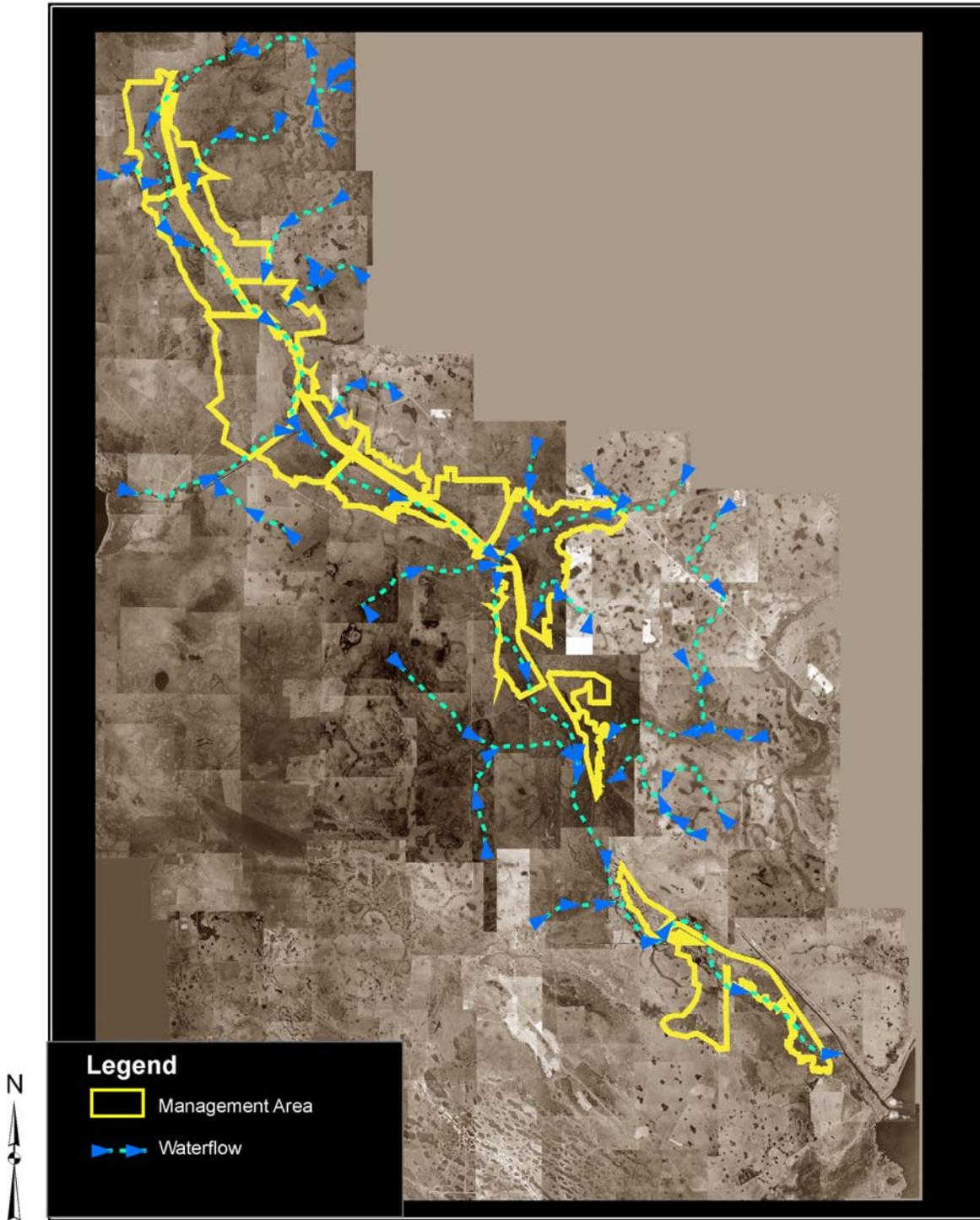
**Map 8. Kissimmee River Valley Topographic Relief**



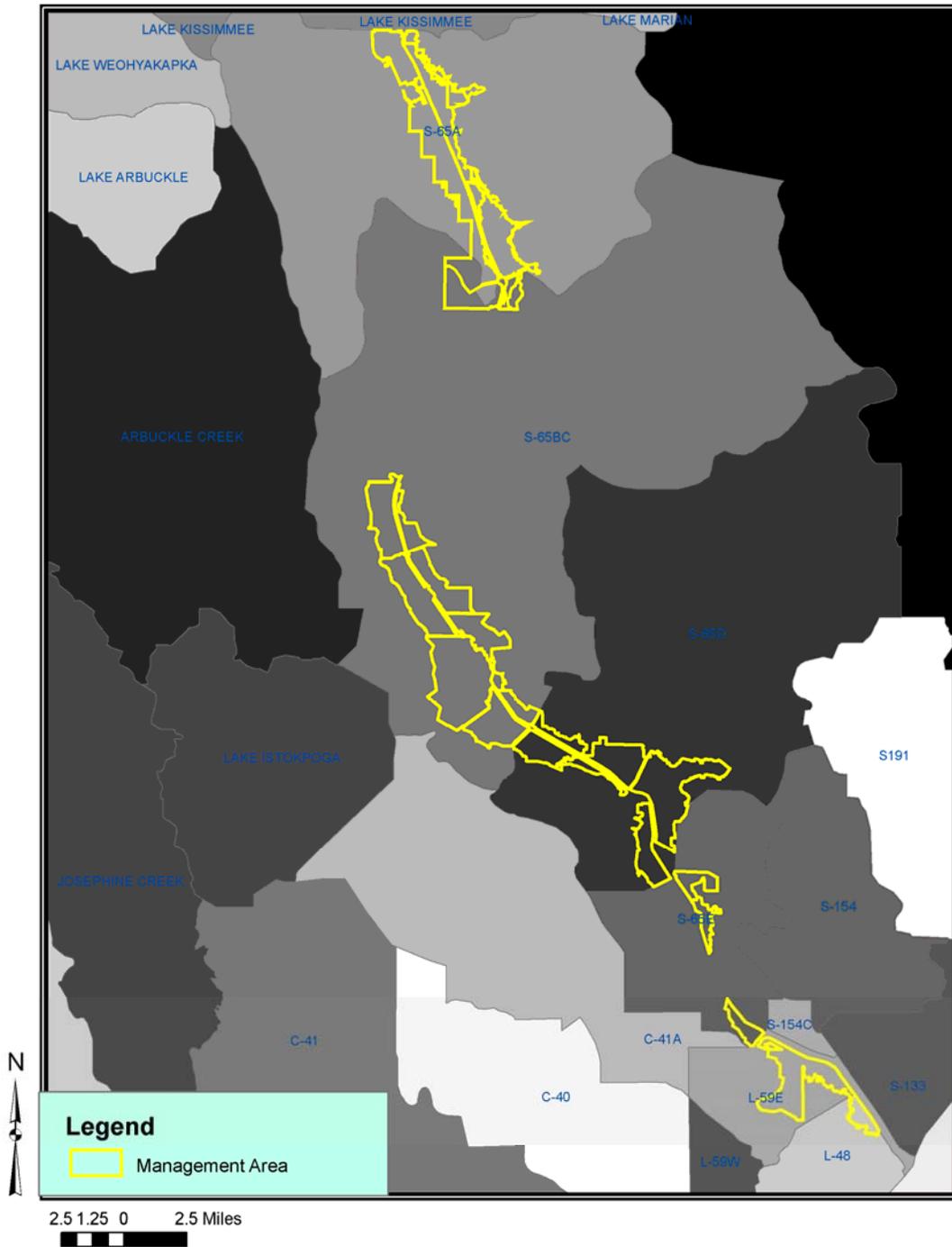
**Map 9. Upper River Historic Hydrology (1941 aerial composite).**



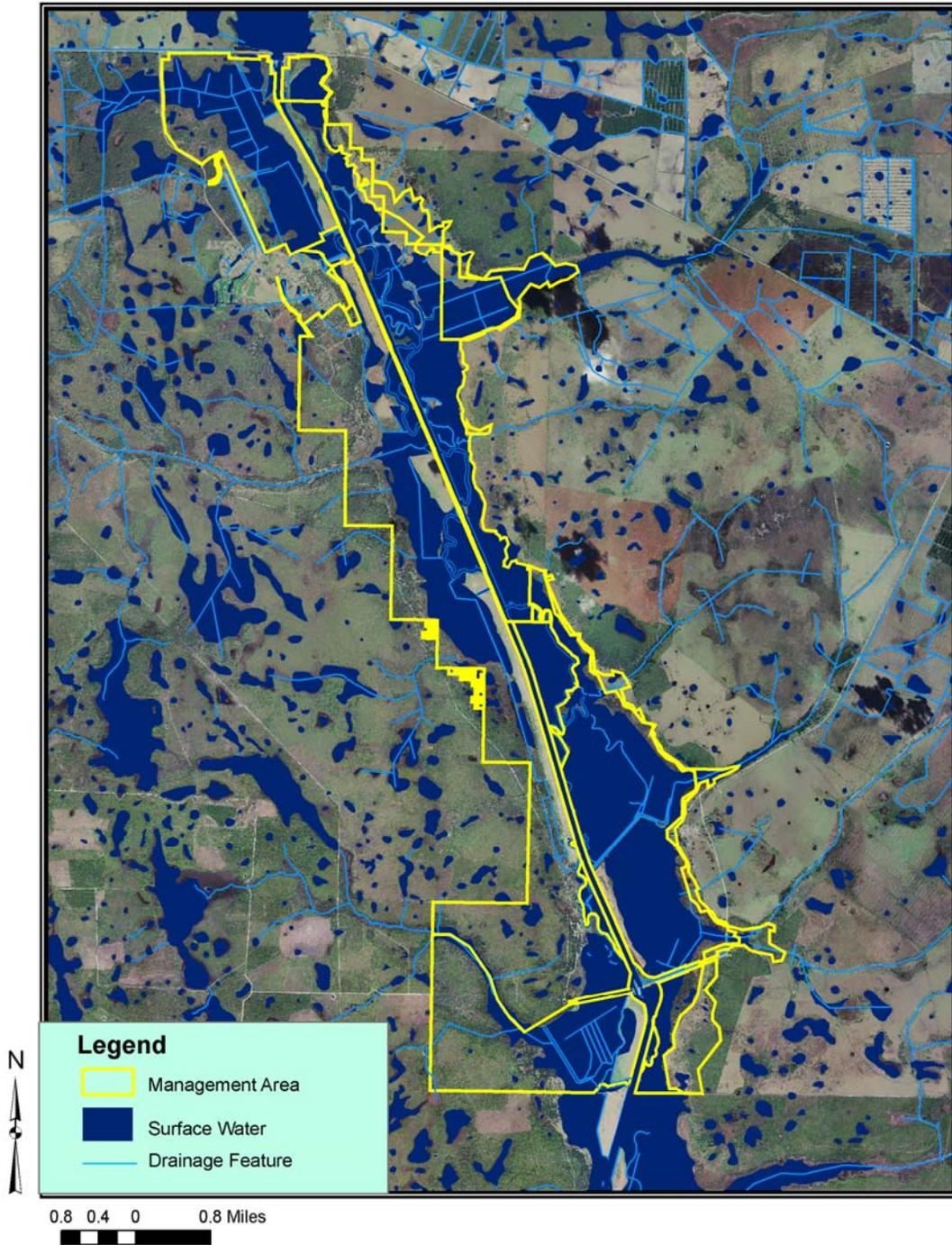
**Map 10. Lower River Historic Hydrology (1938-47 aerial composite).**



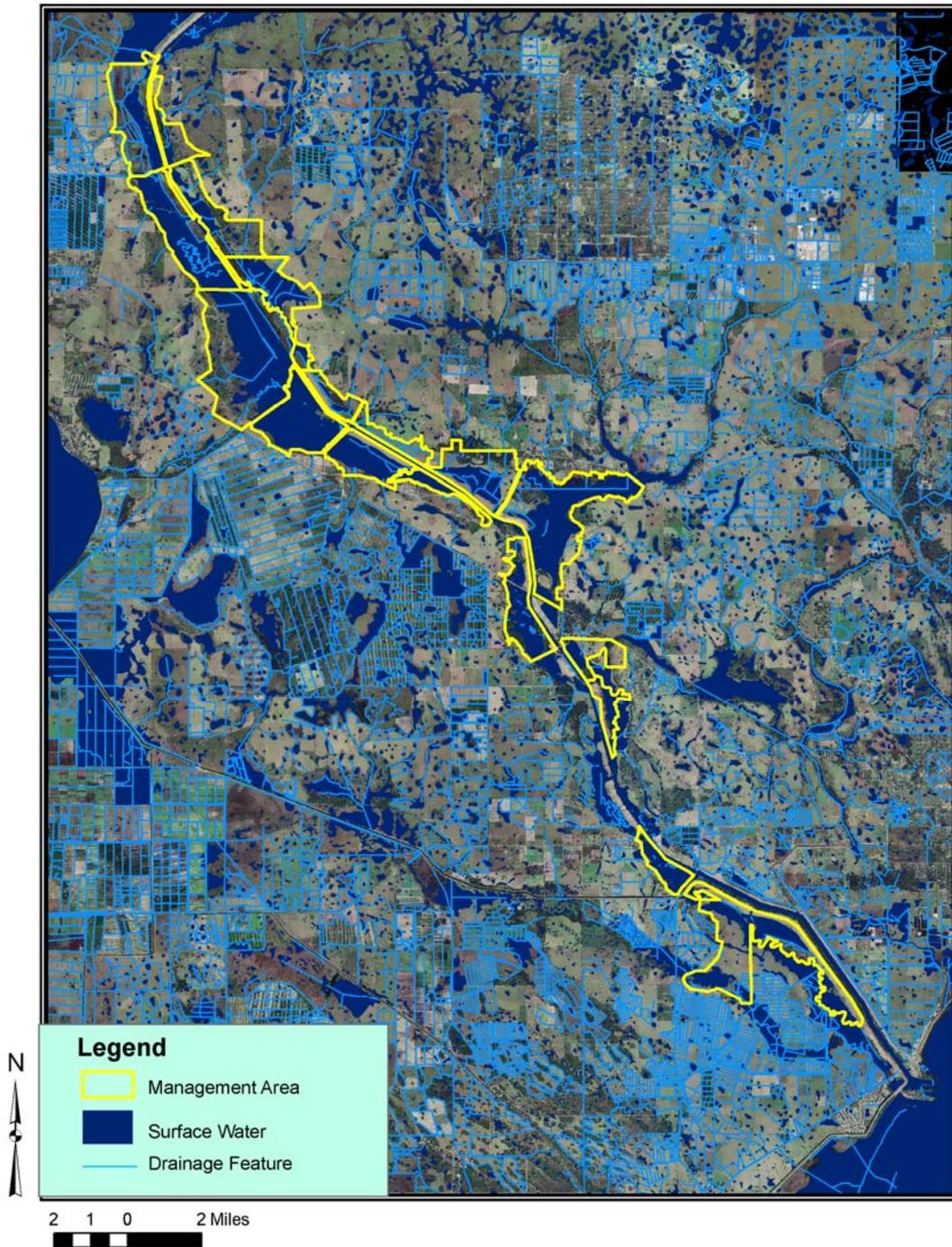
**Map 11. Hydrologic Basins**



**Map 12. Surface Waters Upper Kissimmee River (Pool A)**



**Map 13. Surface Waters Lower Kissimmee River (Pools C-E)**



## 4.2 Soils

There are six distinct soil categories within the Kissimmee River management areas as defined by the Natural Soil Landscape Positions soil classification system: flatwood soils, flats soils, knolls, sand depression soils, muck depression soils, and urban or made lands (**Maps 14a-b**). This classification system groups South Florida soils into 12 categories based on hydrology and soil morphology that reflect the local relative topography, hydrology, and vegetation of the area. Soil classification descriptions are included as **Appendix B**.

### Soil Contamination and Excavation Sites

Several sites within the Kissimmee River Management Areas were identified as containing contaminated soils which in some cases required remediation. These sites included:

#### Pool A: KICCO

Three cattle dipping vats with associated arsenic contamination were remediated along with a recommendation that no water wells be installed near the site of the vats.

#### Pool C:

This site contained a cattle vise with a cattle spray pen. Testing for soil contaminants involved installation of two temporary test wells, one permanent test well, and collection of soil boring samples. Based on initial site investigations and characterization, concentrations of soil contaminants typically associated with cattle dipping vats did not exceed the human risk-based criteria for a Restricted I site or assumed ecological risk-based criteria (Dames and Moore 1997). Therefore this site required no corrective action or restriction on use.

#### Pool C:

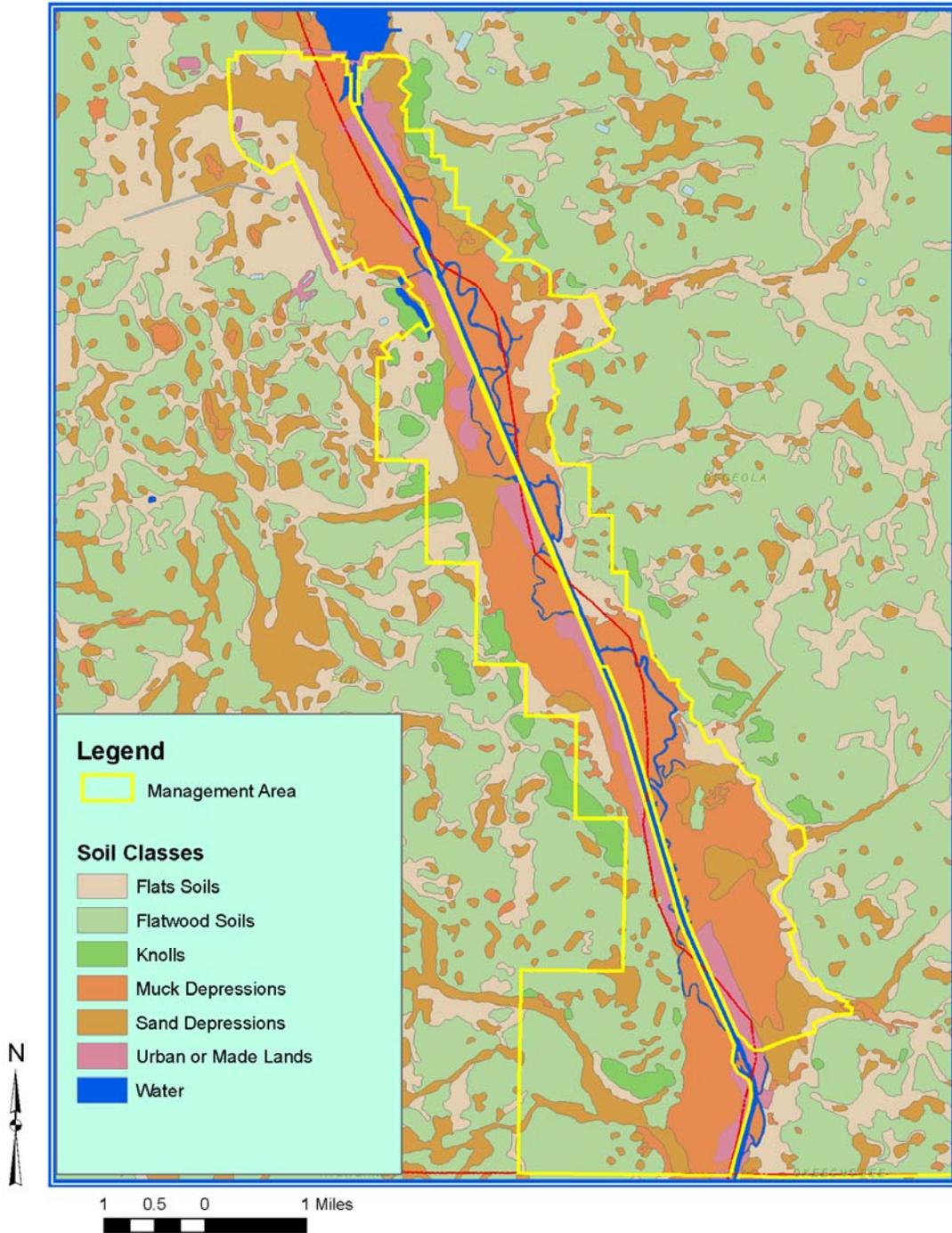
Soil and water samples were gathered using 27 soil borings, two piezometers (equipment that measures groundwater flow and duration) and four groundwater monitoring wells. Soil sample results indicated concentrations of DDT and other associated pollutants that exceeded the exposure scenario of a residential site. Corrective actions were completed.

#### Pool D:

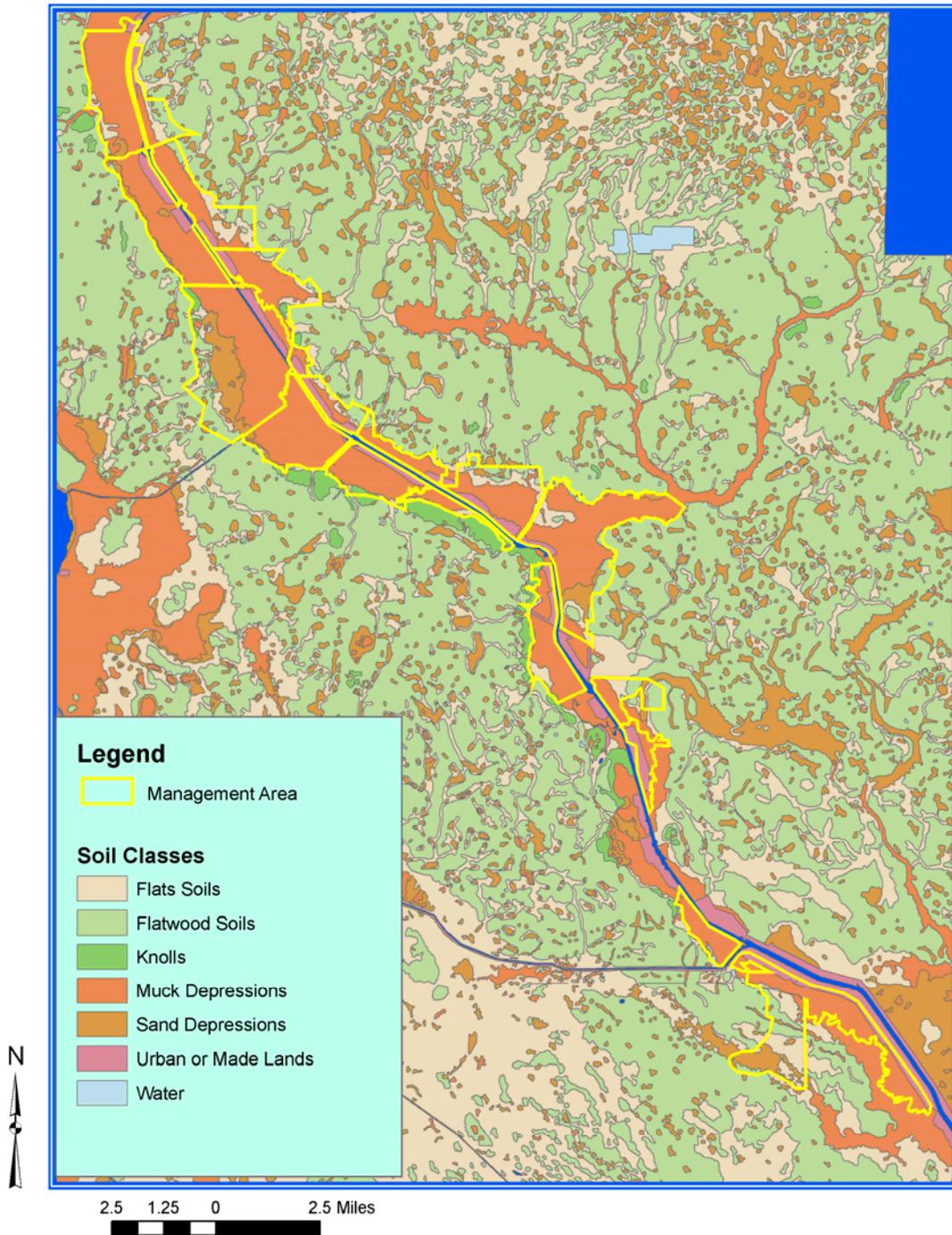
Similar to Pool A, this site also contained a cattle-dipping vat. Site analysis included soil borings, installation of three piezometers and four monitoring wells, collection of soil and groundwater samples, and site characterization. Analytical results indicated groundwater contaminants of potential concern did not exceed acceptable levels defined by the Florida Groundwater Guidance Concentrations (Dames and Moore 1997) There were, however, sample results indicating an area of arsenic-impacted soil. Remediation activities were implemented for a Restricted I scenario that allows extensive, but less than full-time contact with

the site. This designation allows for park or recreational areas that receive heavy use (soccer and baseball fields, parks and picnic areas close to residential areas) and agricultural sites where farming practices result in moderate site contact (approximately 100 days per year). To achieve this use-level category, sixty tons of arsenic-impacted soil immediately adjacent to the vat was excavated for off-site removal and the area was back-filled with clean soil. The concrete vat was decontaminated and disposed off-site. The Florida Department of Environmental Protection determined no further action was required.

**Map 14a. Soils, Upper River (Pool A)**



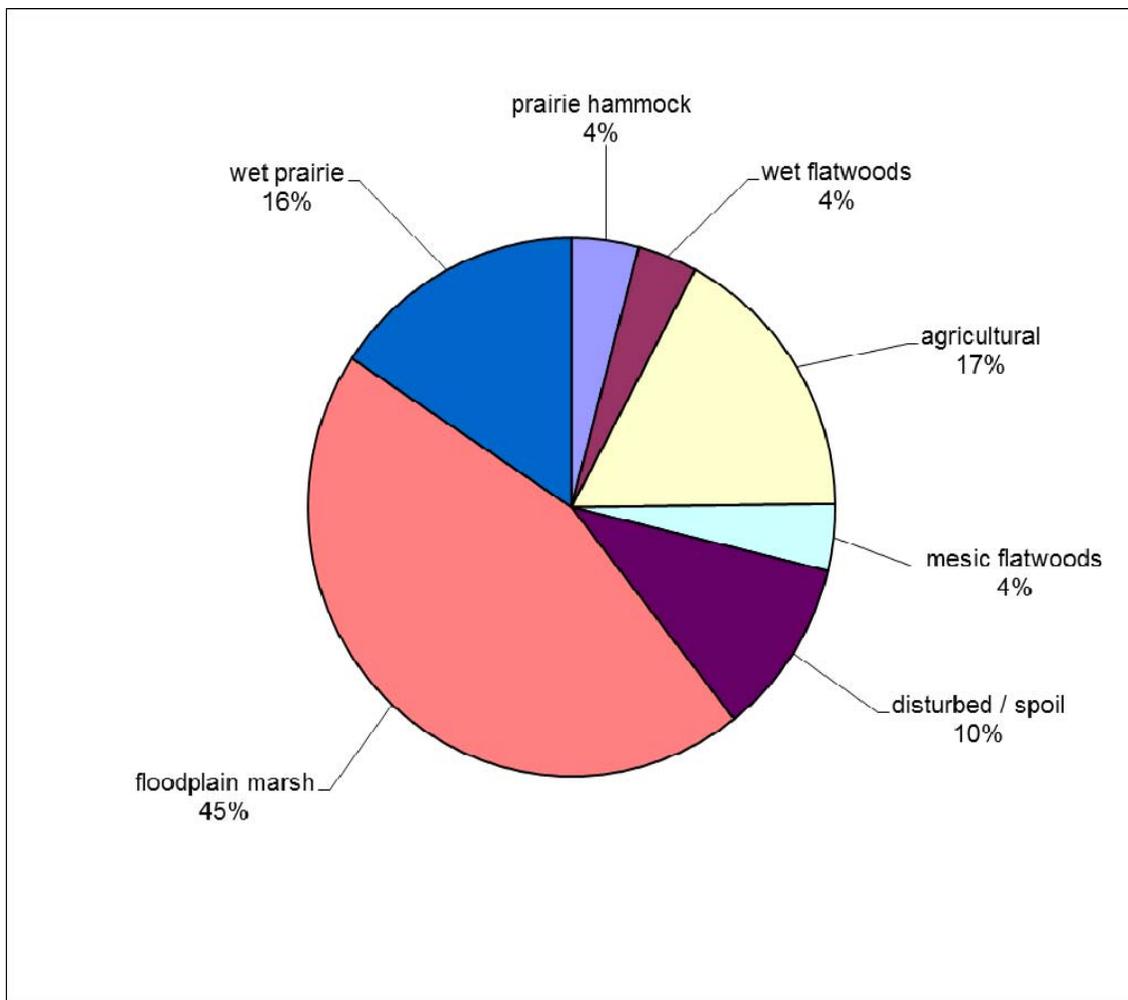
**Map 14b. Soils, Lower River (Pools C-E)**



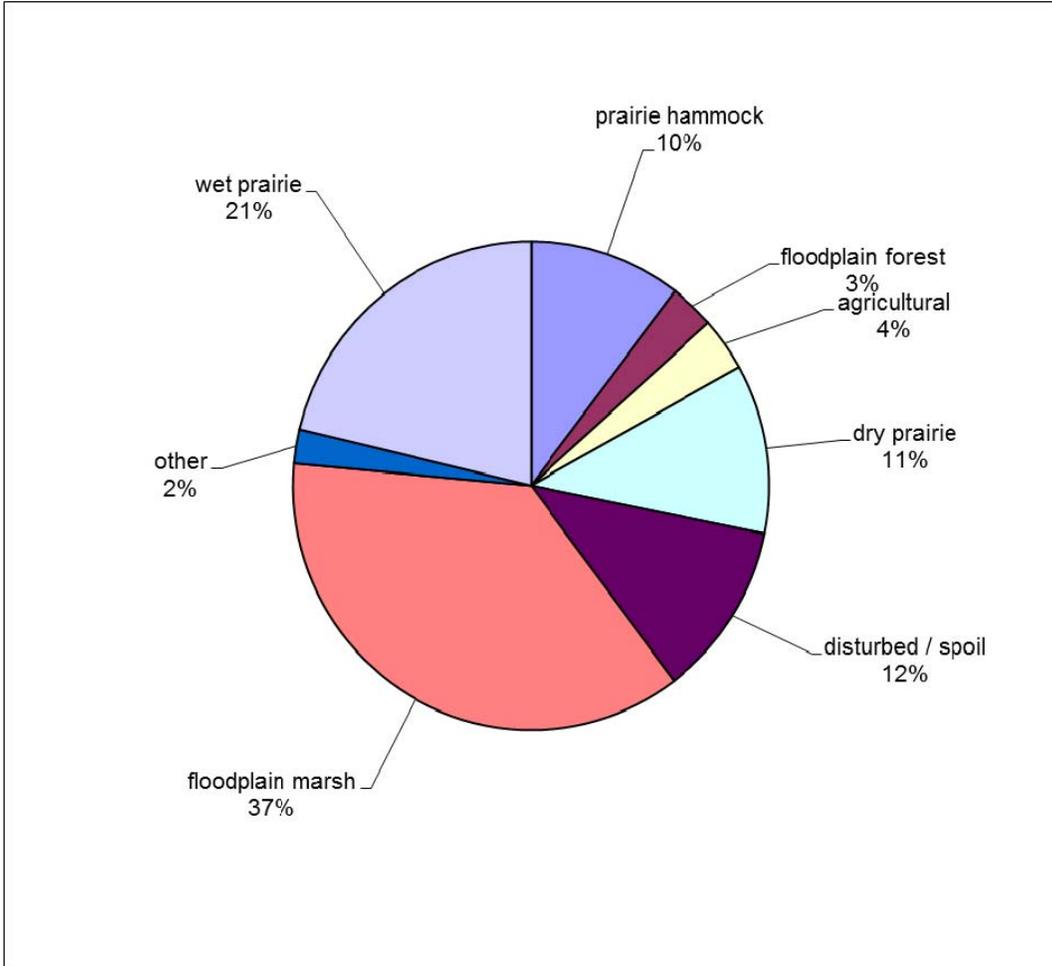
**4.3 Natural Communities**

The Land Stewardship Program classifies natural community types by the Florida Natural Areas Inventory Classification system. Thirteen natural community types occur on the Management Areas (see **Figures 1a, 1b, and Maps 15-17**). Community condition varies widely, depending on previous and current land use, hydrologic alteration, exotic infestation, and the return frequency of fire. Descriptions are included as **Appendix C**.

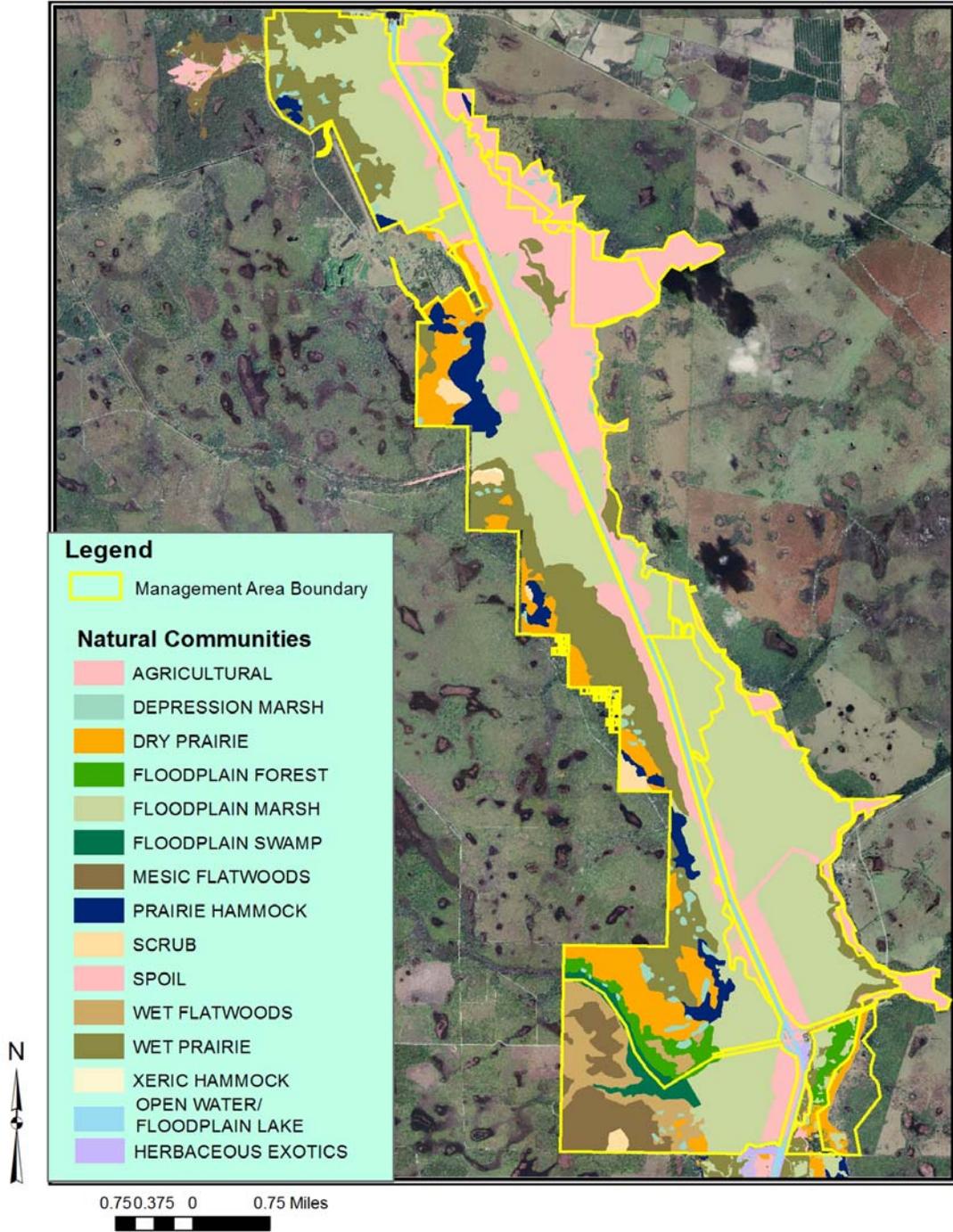
**Figure 1a. Pool A (northern) Dominant Community Types**



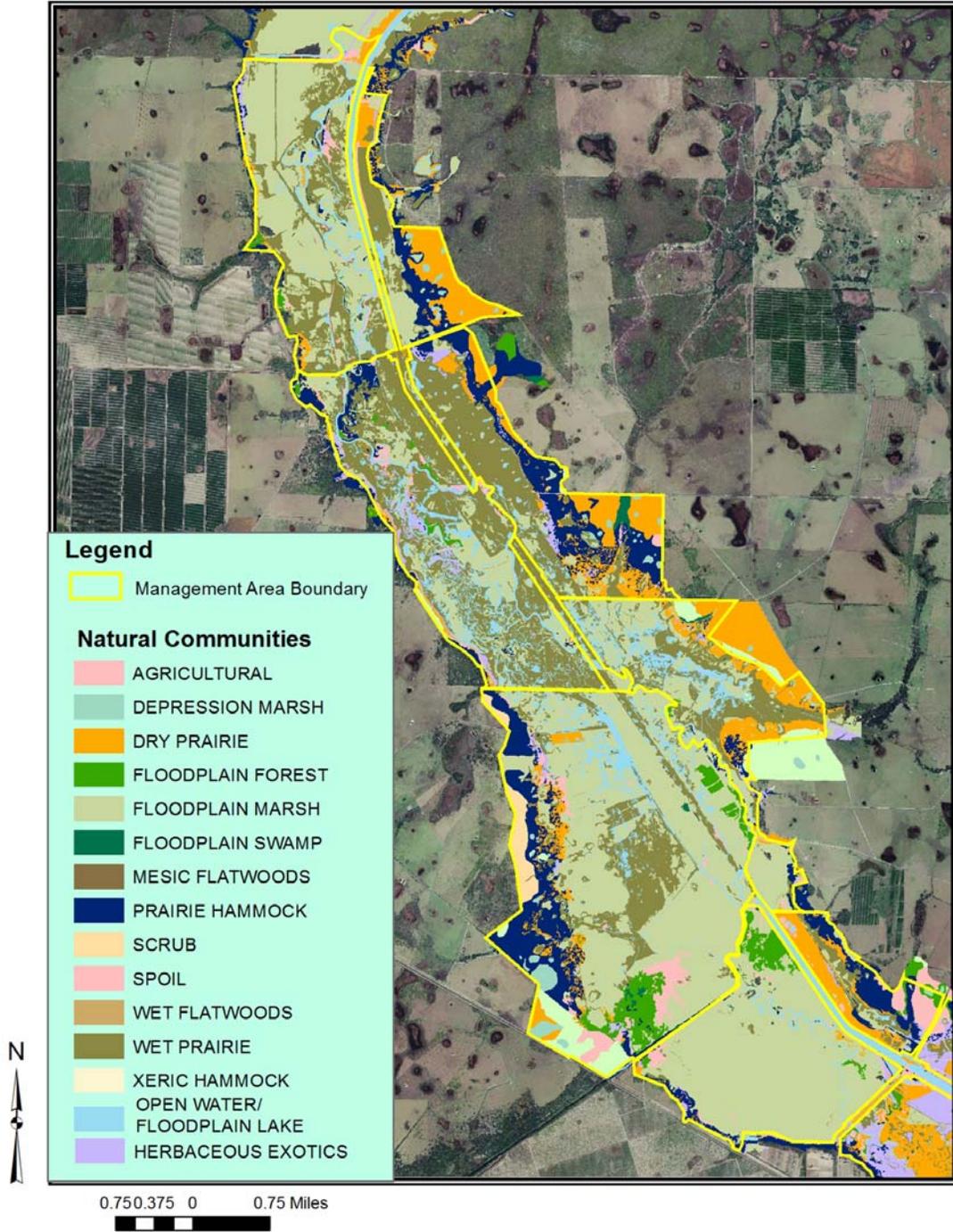
**Figure 1b. Pool C and D (southern) Dominant Community Types**



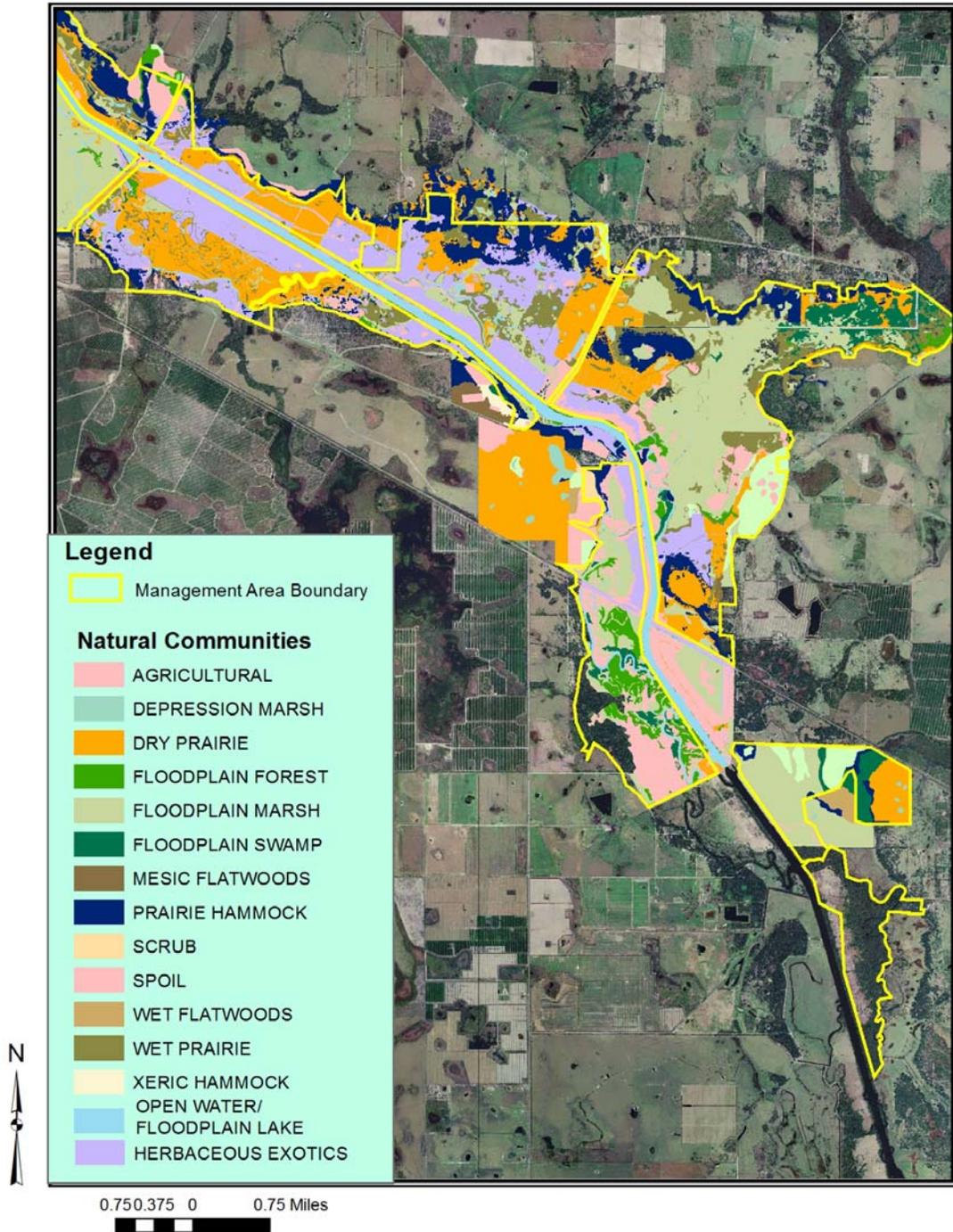
**Map 15. Pool A Natural Communities.**



**Map 16. Pool C Natural Communities.**



**Map 17. Pool D Natural Communities.**



#### 4.4 Wildlife

The plant communities within the project provide habitat for numerous bird, fish, amphibian, reptile, and mammal species, several of which are listed federally or by the state (**Appendix D**). At least 22 species considered rare, endangered, threatened, or of special concern have been noted. Confirmed listed wildlife include the woodstork, American bald eagle, crested caracara, American alligator, burrowing owl, gopher tortoise, eastern indigo snake, red rat snake, gopher frog, scrub jay, grasshopper sparrow, Sherman's Fox squirrel, swallow-tailed kite, woodstork, sandhill crane, peregrine falcon, and osprey.

The river corridor historically served as wintering and breeding grounds for waterfowl; important habitat for indigenous mammals, amphibians and reptiles; and a key stronghold for protected species. Many of the bird species considered imperiled statewide depend on shallow wetlands to feed and nest. Wading bird populations have steadily declined within the basin since the 1800's. Prior to 1910, declines were attributed to commercial plume hunting. Following the channelization of the Kissimmee River, nesting failures were due to inadequate food production, marsh destruction, alteration of hydrological patterns, and competition from the non-native cattle egret. By the early 1970s, floodplain utilization by wintering waterfowl had declined by 92%.

The Sherman's fox squirrel is the only regularly observed documented listed mammal, however there is potential for the southern Florida mink, Sherman's short-tailed shrew, big cypress fox squirrel, Florida mastiff bat, and Florida mouse to occur in the area. The Florida black bear and Florida panther have been documented, as has the Florida bonneted bat (the northernmost extent of its range). Large game mammals include feral hog and whitetail deer. Feral hogs are considered exotic mammals. Coyotes have expanded their range to south Florida, and their presence in the Kissimmee River Basin has been documented as well.

Favorable climate and hydrologic conditions provide habitat for numerous species of reptiles and amphibians in the Management Areas, seven of which are listed species. There are also at least two non-native species: the brown anole and Cuban tree frog. The Kissimmee River Restoration Program uses amphibian and reptile community structure as an indication of river restoration success.

## 4.5 Cultural Resources

*Policy 140-25(3)(j) Archaeological and historic resources are protected by site identification and inter-agency coordination with the Florida Division of Historical Resources. Land Stewardship planning shall include an analysis of archaeological data accompanied by appropriate public education opportunities.*

### Pool A: KICCO

The primary known cultural feature of the KICCO Management Area in Pool A is the site of the small KICCO company town (**Maps 18a-d**). Built at the location of a former riverboat landing, the town served KICCO employees from about 1915 until the late 1920s with at least some occupation continuing until the flood event of 1947 destroyed many of the structures. The Bureau of Archaeological Research within the Department of State's Division of Historic Resources surveyed the few remnant structures in the 1980s after the District acquired the property. Subsequently the buildings were demolished after no other agency or groups were willing or able to accept a relocation of the structures.



A 3D computer rendering of the KICCO town (looking south)



The houses (left) and school building (right) at KICCO

**Maps 18a-d. Company town of KICCO, Aerial Photography**



18a. KICCO townsite 1941



18b. KICCO 1953, most of the structures gone



18 c. KICCO townsite 1968, trees removed



18d. KICCO townsite 2004, with a denser tree canopy, and former marsh dominated by shrubby vegetation

## Pool C and D

There are numerous archeological sites within Pool C and D. Site types include shell middens, burial middens, and ceremonial structures and mounds. Sites of more recent historical significance include the Ft. Bassinger and the Pearce-Lockett Estate and cemetery grounds.

Ft. Bassinger was built by the U.S. Army in 1837 in the Second Seminole War as part of an effort to keep the Seminole Indians south of Lake Okeechobee by placing small frontier forts throughout the remainder of the Florida peninsula. The forts were spaced about every 20 miles and connected by a system of semi-improved trails (**Map 19**). These allowed frequent mounted patrols between the forts as a deterrent to the Seminoles.

In 1993 the District acquired the Pearce-Lockett Estate through a donation as part of the Kissimmee River Restoration Project. Since this time the District has provided maintenance to sustain the property in its current condition. There have been several attempts to find a management partner for the site including discussions with the State, Highlands County, the Florida Heartland Rural Economic Initiative, and the Center for Environmental Studies. The District and the Highlands County Parks Department cooperatively managed the site from 1997 until 2001. The County received grant funding from the State for recreational amenities. The Florida Park Service evaluated the property in 2002 and concluded that the site met or exceeded the qualifications for a State Park, but budget constraints prevented them from accepting title from the District. The District is currently seeking a long term partner to manage and provide continued public access to the property.

The Pearce-Lockett Estate is historically significant. The majority of the site is a State registered archaeological site; it was once the permanent home to a community in the Belle Glade II period around 1800 years ago. A homestead was established in 1875 by Capt. John Mizell Pearce, a veteran of the Civil War and the Third Seminole War. He married into the family of the famous Southern poet Sydney Lanier; he and his wife had 10 children. John Pearce operated a steam boat along the Kissimmee River and later a ferry. He was also a deputy sheriff and a cattleman. John Pearce, his wife, and several other family members were laid to rest on site in a family cemetery that remains in good condition. His son, William, was instrumental in establishing the Ft. Bassinger School (moved to the estate in 2004). Edna Pearce-Lockett taught at the Ft. Bassinger School, she would later take over the homestead and cattle operation and be the third woman elected to the Florida House of Representatives.

The District supports requests to conduct research on the archaeological and historic sites within the Management Areas and safeguards the integrity of the sites, primarily by prohibiting ground disturbing activities. Management activities planned for these areas are exotic plant control, vegetation

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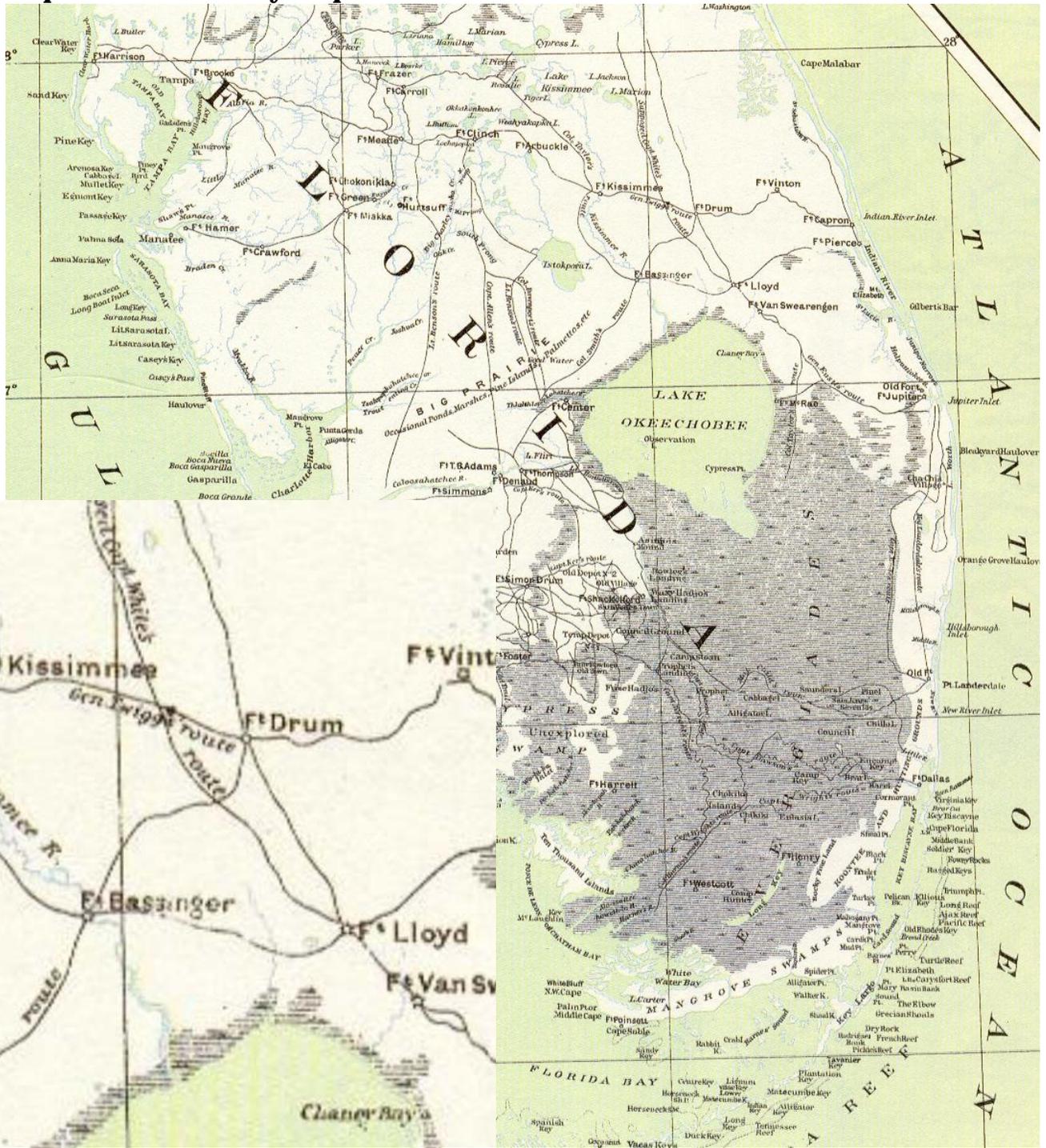
management, and prescribed burning. Staff from the Florida Division of Historic Resources may conduct additional investigations on those sites in the future.



A sketch of Fort Bassinger along the west side of the Kissimmee River from Capt. Backus's Diary, 1838.

Kissimmee River Management Areas General Management Plan 2014 through 2024  
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Map 19: 1856 Military Map of the Interior of Florida



This reproduction of the 1856 Military Map of the Interior of Florida, showing the array of frontier forts and trails that were established in the Seminole Wars. Col. Taylor's route, as depicted on the map, that passes through Ft. Bassinger was where a large contingent of troops under the future President, Zachary Taylor, made their way to the shore of Lake Okechobee for one of the largest battles in the 2<sup>nd</sup> Seminole War

Attachment: Kissimmee River Mgt Plan 2014 - 2024 (Resolution No. 2014 - 0103 : Dupuis and Kissimmee River Ten Year General Management

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A sketch of buildings within Ft. Bassinger from the 1840s (above), and a drawing of a typical Florida frontier fort (below)



## 5. Natural Resource Management

*Policy 140-23 The Land Stewardship Program mission is to provide natural resource protection and management while allowing compatible multiple uses on designated public lands.*

Resource management includes all activities that manipulate, modify, and control natural features within the Management Areas. Conservation lands that were acquired by the District are managed and maintained in an environmentally acceptable manner and, to the extent practicable, restored and protected in their natural state and condition. Management responsibilities are defined by statute and are directed by best management practices. Goals and objectives for the Management Areas clarify resource management guidelines necessary to fulfill the District's land stewardship responsibilities. Land Stewardship resource management activities include cattle grazing, hydrologic restoration projects, mechanical vegetation management, prescribed burning, and exotic plant and animal control.

### 5.1 Restoration Projects

*Policy 140-25(1) The basis for the Land Stewardship Program is the protection and management of natural hydrologic resources.*

*Policy 140-25(1)(c) Where feasible, an attempt shall be made to restore a more natural hydroperiod on tracts where the drainage patterns have been altered.*

#### Kissimmee River Restoration Project

The Federal 1992 Water Resources Development Act authorized the Kissimmee River Restoration project including the headwaters revitalization component of the restoration project, tied the headwaters benefit to the Kissimmee River Restoration project, and authorized a 50/50 cost sharing between the state and federal government for the total cost of the project. The ground breaking for construction of the restoration project was April of 1994 with the backfilling of 1000 feet of the C-38 canal in Pool B.

The restoration project is being implemented by the District's Kissimmee River Section in partnership with the U.S. Army corps of Engineers. The restoration project reestablishes historic inflows from Lake Kissimmee that will provide flow velocities and volumes similar to those that existed prior to channelization. It specifies continuous backfilling of 22 miles of the C-38 canal in Pools B, C, and D; removal of 2 water control structures and locks (S-65B and S-65C); recarving of approximately 9 miles of river channel; and acquisition of 85,000 acres of land. It also includes backfilling of local farm ditches and degrading of local farm levees. The remaining water control structures will be operated to provide more natural hydrologic conditions. Pool A is being left unmodified to allow continued

flood relief for the Kissimmee Chain-of-Lakes, and to serve as a control to gauge the benefits in comparison to the extensive restoration in Pools B-D.

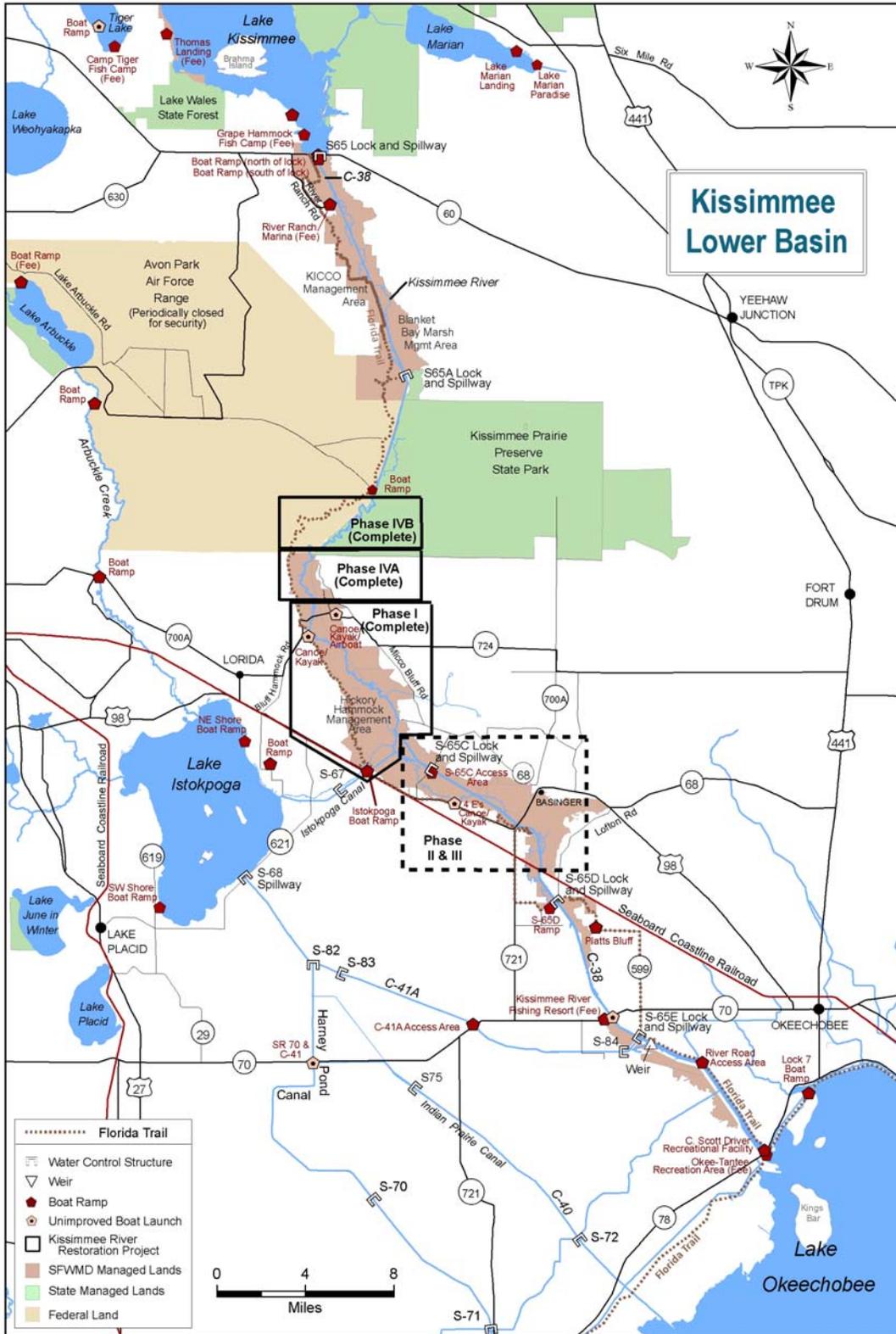
Construction of the Kissimmee River Restoration Plan was divided into four major phases, the first of which was initiated in 1999 (**Map 20**). The phases have been completed out-of-sequence. Phase I included removal of the S-65B structure, and backfilling of a small portion of lower Pool B and most of Pool C. Phase II/III has begun and will remove S-65C, and will backfill the remainder of Pool C and most of Pool D. Phase IV backfilled a section of Pool B north of the Phase I area. It is anticipated that the construction of the project will be completed within this plan period.

The first major phase of canal backfilling began in June 1999 and was completed in February 2001. In June 2000 the structure S-65B spillway, lock, and control houses were demolished. During this phase approximately 7 miles of the C-38 canal were back-filled using the spoil material (12 million cubic yards) originally dredged during the construction of the canal. The associated spoil piles were degraded to natural ground level. One and one-quarter miles of new river channel were dredged and 15 continuous miles of river were re-created. Already, environmental improvements have been observed. Sandbars and sandy bottom are signs of improvement in the river's hydrology. In formerly isolated sections of the river, oxbows are flowing again. Emergent and shoreline vegetation has reappeared and is thriving. Waterfowl and other wildlife are returning. Water quality is improving. The project is reestablishing the physical form of the river with its historical water levels and flows, while ensuring existing flood protection is maintained.

The three construction phases completed so far have backfilled 14 mi of canal, recarved 6 mi of river channel. These efforts reestablished flow to 24 mi of continuous river channel and allowed intermittent inundation of 7,710 ac of floodplain. The restoration plan will culminate with modification of the Kissimmee Basin water control structure operations including the implementation of a new stage regulation schedule for the Kissimmee Chain of Lakes.

Kissimmee River Management Areas General Management Plan 2014 through 2024  
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Map 20. The Kissimmee River Restoration Project



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**Kissimmee River Restoration, Photos**

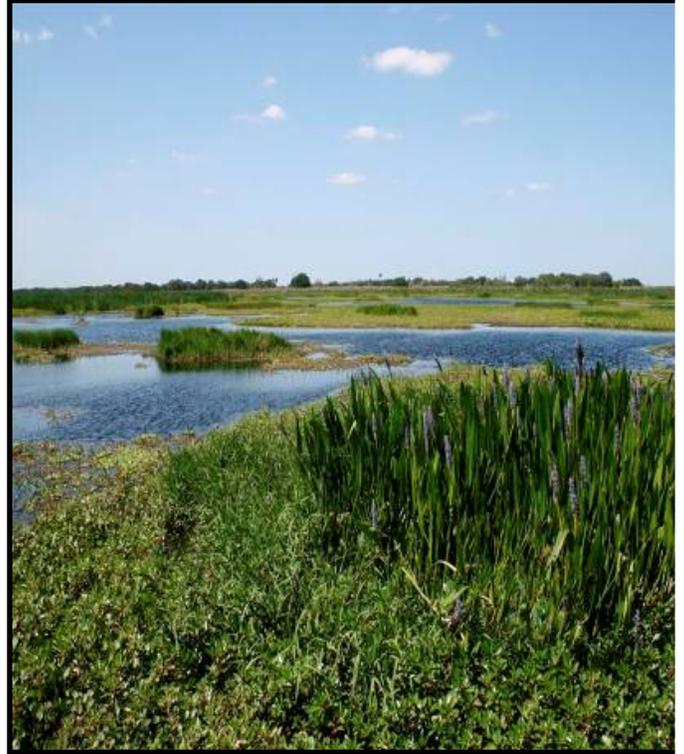


**The major construction work for the restoration is being completed by contractors for the U.S. Army corps of engineers, it involves re-establishing the historic river channels, removing water control structures, and backfilling the C-38 canal that has diverted the waters of the floodplain since the 1960s.**



**Demolition of a major control structure that had been used to regulate water levels in the artificial Pools (left); and the former location of the structure following floodplain restoration (right).**

**Kissimmee River Restoration, Photos**



**The drained floodplain, pre-restoration (left); and the post-restoration floodplain (right)**



**The natural floodplain, pre-channelization in 1955 (left); and the post-restoration floodplain (right)**

Attachment: Kissimmee River Mgt Plan 2014 - 2024 (Resolution No. 2014 - 0103 : Dupuis and Kissimmee River Ten Year General Management

### Starvation Slough

There are two dry prairie restoration sites at Starvation Slough. Both are on historically dry prairies that have been converted to cattle pasture. The northern site is approximately 60 acres. The restoration effort has included removing the sod with a commercial sod harvester, and then disking the site twice and applying herbicide to kill any remaining pasture grasses. Native seed was harvested elsewhere in Starvation Slough where the dry prairie was still intact, and seeded at the disked restoration site. To date there has been substantial recruitment of native species. Selective herbicide applications and mowing are employed to keep invasive exotic species from becoming established on the site.

The southern site has been a more passive restoration effort that included flattening a levee road, removing the sod by disking and herbicide, and allowing native species to recruit naturally. As with the northern unit, selective herbicide applications and mowing are employed to keep invasive exotic species from establishing. A wide variety of native plants associated with dry prairie communities have become established on this site as well.

#### **5.1.1 Monitoring**

*Policy 140-25(3)(f)(2) Monitoring shall be conducted to identify landscape changes resulting from management activities.*

Tracking environmental response to management and restoration activities provides valuable information on progress toward restoration objectives. Information obtained by monitoring specific sites assists land managers in making sound ecological choices for each unique parcel.

Using geographic information systems and global positioning technology, the District tracks the location of exotic plants throughout the Management Areas. This helps Land Stewardship monitor the effectiveness of the exotics control program and track the extent and severity of infestations.

The District has installed thirty five 360 degree photomonitoring points within the management areas. These photo points were utilized between 2007 and 2010 to observe and document the vegetative character of the property at that time. The photopoints have been established with permanent monuments that can be located with GPS coordinates and a metal detector, and are available for use in the future to compare site conditions with the 2007-2010 baseline condition.

The Kissimmee River Section has developed a monitoring program that is integrated with river restoration research objectives. The Kissimmee River Restoration evaluation program's database is designed to collect, manage, evaluate and disseminate information related to activities, observations, and measurements associated with restoration of the Kissimmee River and its

floodplain ecosystem. Program components are designed to track initial and long-term responses to the reconstruction of the ecosystem by evaluating a suite of indicators representing physical, chemical, biological, and functional components of the system. Components being evaluated include birds, fish, reptiles and amphibians, hydrogeomorphology, hydrology, invertebrates, vegetation, water quality and endangered species.

### **Kissimmee River Section Monitoring**

#### **Birds**

- Evaluate avian populations in floodplain wetlands
- Evaluate avian use of remnant river channel habitats
- Determine habitat requirements and population size of nesting Florida mottled ducks
- Quantify use of floodplain wetlands by king rails, Virginia rails, sora, yellow rails, black rails and pied-billed grebes

#### **Fish**

- Determine species composition, density, biomass, and relative abundance of fish prior to river restoration.
- Determine species composition and relative abundance of fish subsequent to river restoration.
- Determine species composition and relative abundance of fish migrating between the river channel and floodplain habitats.
- Assess the importance of floodplain habitats to riverine fish.
- Evaluate the reproductive success of fish under channelized conditions.
- Establish baseline food web structure and major energy pathways within the channelized system.

#### **Herptefauna**

- Evaluate wetland amphibian and reptile community structure.
- Evaluate upland amphibian and reptile structure.
- Evaluate river channel turtle community structure.
- Evaluate reproductive phenology of amphibians.

#### **Hydrogeomorphology**

- Evaluate effects of reestablished flow on the geomorphology and substrate characteristics of the restored channel.

#### **Hydrology**

- Evaluate historic river channel geometry, velocities and discharges.

#### **Invertebrates**

- Evaluate habitat-specific community structure and functional attributes of river channel and floodplain aquatic invertebrate communities within the channelized river.
- Evaluate habitat-specific and system-wide production of river channel and floodplain aquatic invertebrate communities.
- Evaluate aquatic invertebrate drift within remnant river channels of the channelized river.

#### Vegetation

- Evaluate how aquatic vegetation is distributed within the remnant river channels.

#### Water Quality

- Evaluate dissolved oxygen concentrations in river channel.
- Evaluate turbidity and suspended solid concentrations in river channel.
- Evaluate phosphorous loads in river channel.

#### Endangered Species

- Evaluate use of the channelized floodplain by foraging wood storks.
- Evaluate wood stork reproductive success and nesting within the channelized system.
- Identify all active crested caracara territories, describe habitat characteristics, and evaluate reproductive success within the channelized river floodplain.
- Quantify use of the river by snail kites.

## **5.2 Vegetation Management**

*Policy 140-25(2)(d) Where practicable, an attempt shall be made to restore and maintain desirable vegetation to promote habitat diversity in areas where invasive exotic vegetation, grazing practices, or improved land uses have substantially altered the historic landscape.*

*Policy 140-25(3)(l) Mechanical equipment may be used in conjunction with prescribed burning and other management tools to control vegetation and restore habitat structure.*

Vegetation management is a program component where the composition and/or structure of a vegetative community is physically altered by mechanical means to meet a management objective. The techniques used in vegetation management include mowing, disking, shredding, roller-chopping, timber thinning, and planting. These techniques are applied to one or more management objectives that may include:

- A step towards restoring a degraded vegetative community

- Improving an area's suitability as wildlife habitat
- Exotic species control or weed management
- Fuel management for prescribed burning purposes
- Clearing of vegetation for maintenance or project management purposes

Vegetation maintenance needs are identified annually by the regional land manager. Vegetation control and maintenance is executed by District field personnel or through contracts. Shredding of woody vegetation occurs as needed in pine and prairie communities to reduce fuel loads and open the understory which increases plant diversity and improves wildlife habitat. These areas are subsequently maintained with fire which is a more cost-effective and beneficial technique for managing vegetation in those types of plant communities.

### 5.2.1 Exotic/Invasive Plants

*Policy 140-25(2)(c) Management practices will strive to identify existing infestations and implement appropriate control or eradication measures.*

*Policy 140-25(3)(b) Exotic plant control in all management areas shall strive to attain a level of success where periodic maintenance eliminates the infestation or reduces the coverage of exotic plants.*

South Florida's subtropical climate provides an excellent growth environment for the rapid spread of exotic plants that can cause extensive alterations to natural ecosystems. Environmental changes caused by extensive hydroperiod alterations have contributed to the expansion of exotic plant species in natural areas. Exotic plant infestations can result in partial or total displacement of native plants, loss of wildlife habitat, and the degradation of public use areas depending on the severity of the infestation.

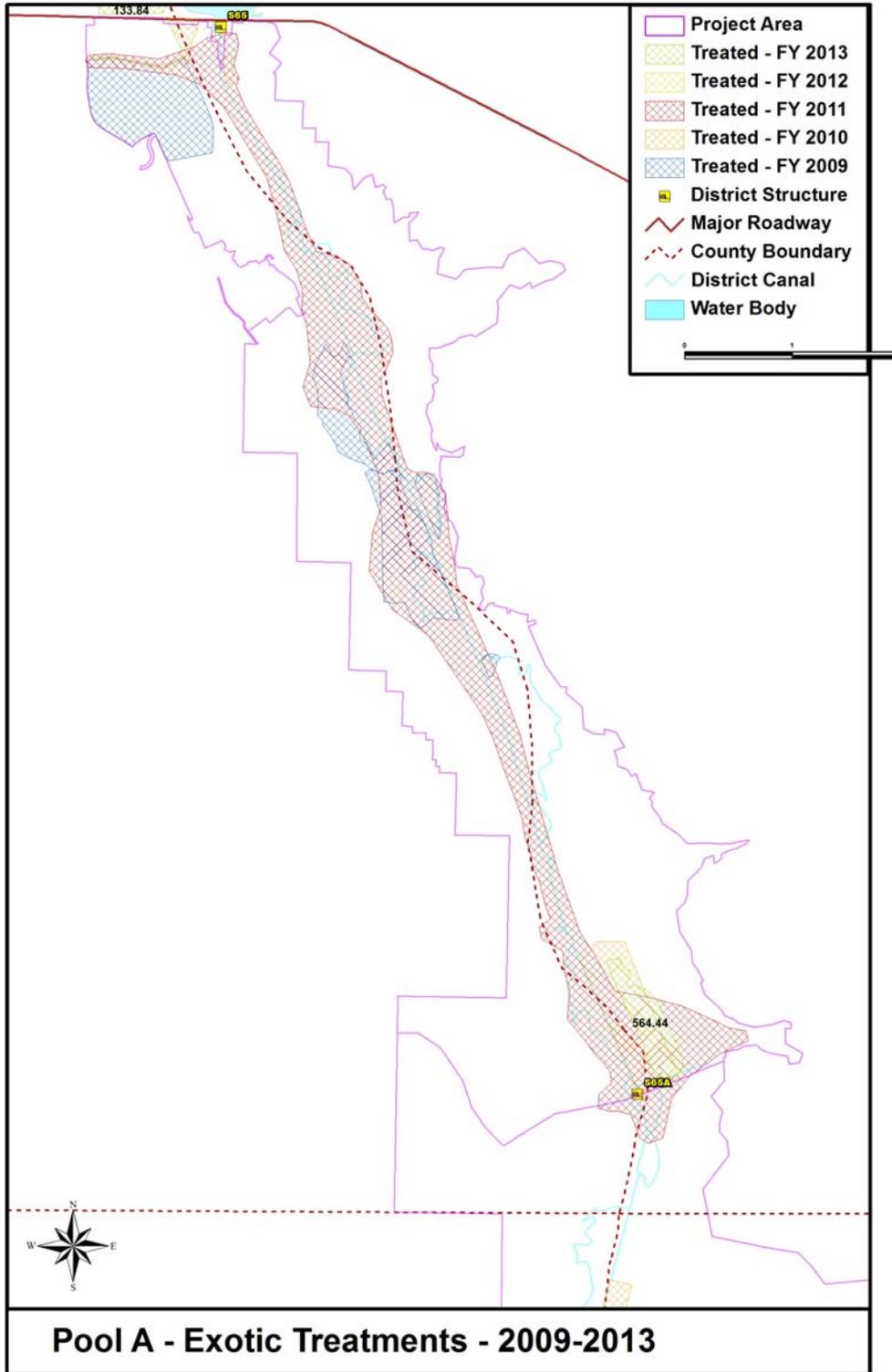
Land Stewardship targets Category I and II non-native plant species as identified on the Exotic Pest Plant Council's biennially updated list of *Florida's Most Invasive Species* (<http://www.fleppc.org/>). Category I species include non-native plants that invade and disrupt Florida native plant communities. Category II plants have the potential to invade and disrupt natural successional processes. Both Category I and II exotics are considered invasive and a threat to the function and ecological stability of Florida's natural communities.

The District has treated the following Category I plants within the Management Areas: Japanese climbing fern (*Lygodium japonicum*), Old World climbing fern (*Lygodium microphyllum*), cogon grass (*Imperata cylindrica*), Brazilian pepper (*Schinus terebinthifolius*), and tropical soda apple (*Solanum viarum*). Of particular concern is climbing fern. The District treats and surveys the climbing fern-infested areas several times a year to control established infestations and locate new ones.

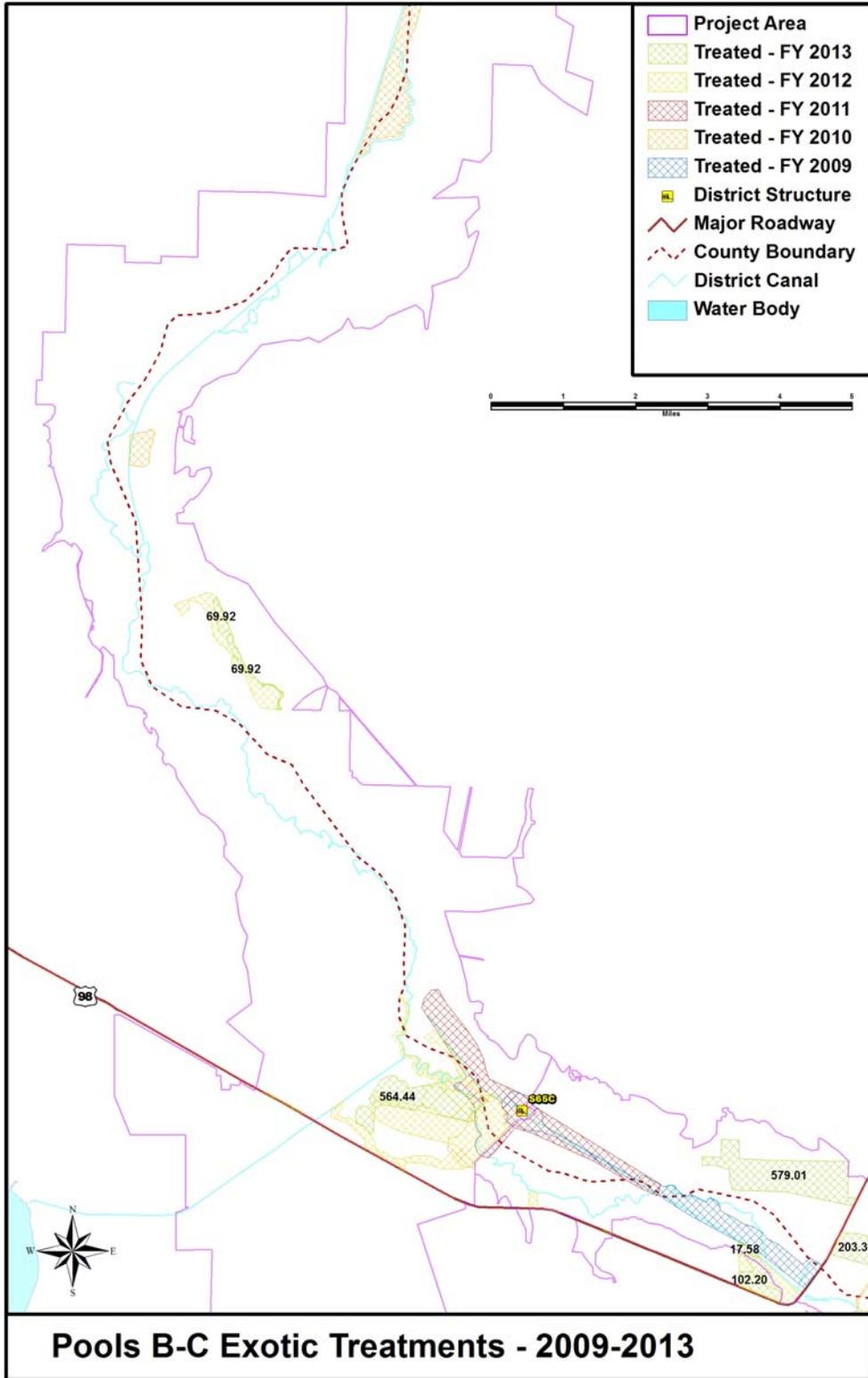
Invasive exotic plant control measures include a combination of herbicide application (aerial and ground), biological control, prescribed fire, mowing, and physical removal. When restoration projects are complete the District will also be able to use inundation as a means of exotic control. Selection of control measures is dependent upon species type, environmental factors, and natural communities impacted. Private vendors are contracted to conduct exotic plant control activities within the management areas. Application methods for chemical control include both aerial and ground application depending on site location and infestation level. In addition District staff and volunteers have released the tropical soda apple leaf beetle, a biological control agent that has brought significant improvements in the control of tropical soda apple.

District field technicians also provide supplemental support on small or sporadic infestations. Generally, treatments in the Management Areas are scheduled so that each unit is covered annually or bi-annually depending on available funding. Areas of treatment are scheduled based on surface water conditions, time since last treatment, severity of infestation, and consistency with other management operations and priorities. (**Maps 21 – 23**).

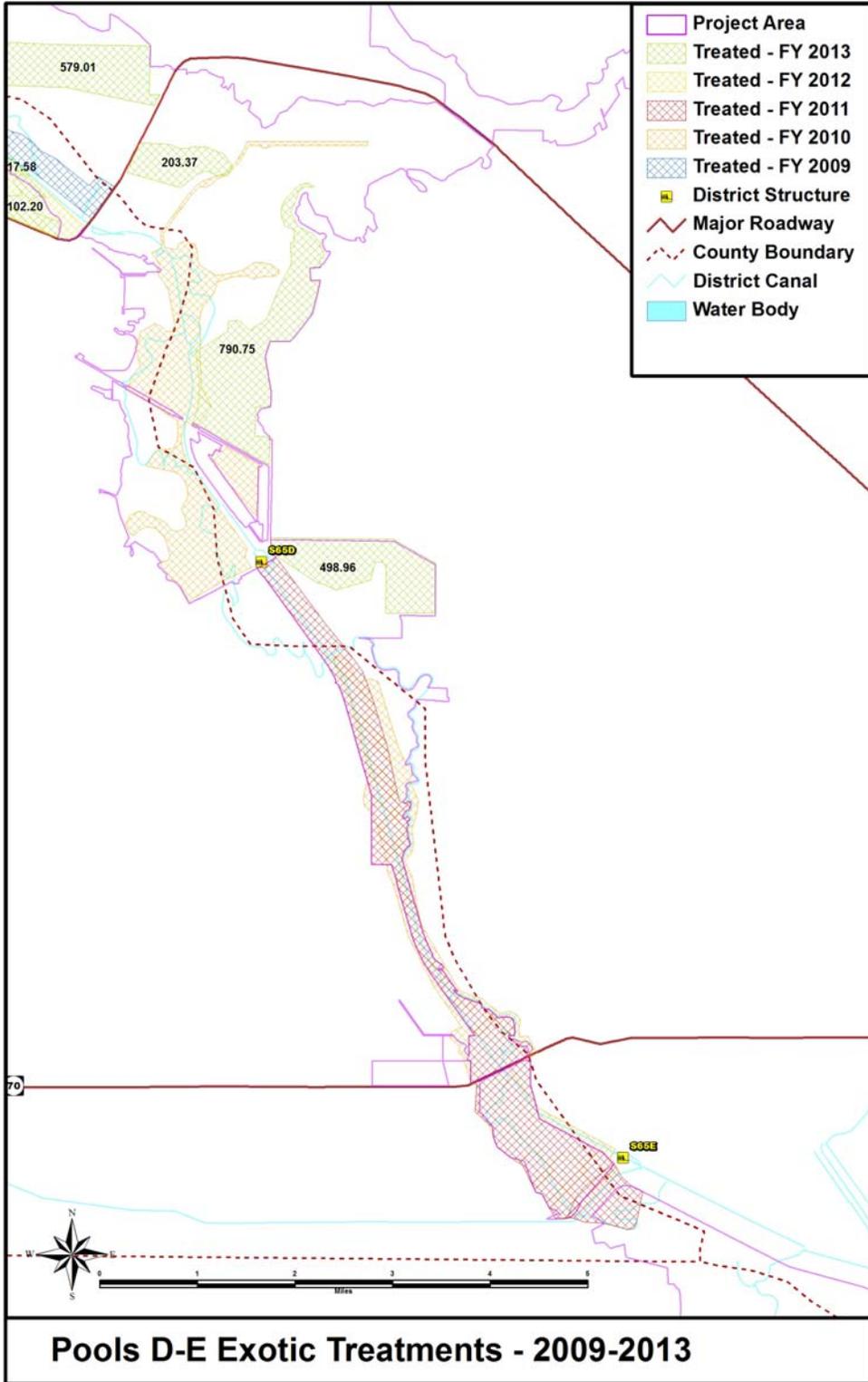
**Map 21. Pool A Exotic Treatments 2009 - 2013**



**Map 22. Pools B - C Exotic Treatments 2009 - 2013**



**Map 23. Pools D - E Exotic Treatments 2009 - 2012**



### 5.2.2 Rare, Threatened and Endangered Plant Species

*Policy 140-25(2)(b) Particular emphasis shall be placed on the identification, protection and management of rare, threatened and endangered species.*

Listed species are those plants and animals considered rare within a specific geographic area by the U.S. Fish and Wildlife Service, the Florida Fish and Wildlife Conservation Commission, Florida Natural Areas Inventory, or the Florida Department of Agriculture and Consumer Services. The plant list of the Management Areas (Appendix D) contain several listed species (**Table 3**).

**Table 3. Plants Occuring on the Kissimmee River Management Areas that are listed by the Florida Department of Agriculture and Consumer Services as Threatened (T), Endangered (E), or Commercially Exploited (C).**

Common Name	Scientific Name	Status
Catesby's Lily	<i>Lilium catesbaei</i>	T
Florida Jointweed	<i>Polygonella basiramia</i>	E
Giant Orchid	<i>Pteroglossaspis ecristata</i>	T
Cardinal Wild-pine	<i>Tillandsia fasciculata</i>	E
Giant Wild-pine	<i>Tillandsia utriculata</i>	E

Land Stewardship establishes appropriate fire and hydrologic regimes, and controls invasive exotics in natural communities with the intent of perpetuating listed plant species. District Public Use Rules aid in the protection of native habitat and specifically prohibit destroying, defacing, or removing any natural feature or native plant on District lands. In this manner, listed plants are given lawful protection and environmental conditions suitable for their growth and reproduction. Information on listed wildlife species is continued in Section 5.4.3.

### 5.2.3 Forest Resources

*Policy 140-25(3)(h) Sustainable use of forest resources shall be conducted where these activities adhere to a series of environmental criteria (see 1999 Forest Management Plan) that meet Land Stewardship Program goals. Timber contractors will be required to meet silvicultural Best Management Practices (BMP) developed for Florida forests.*

*Policy 140-25(5)(b)(3) Timber sales will be conducted to improve forest health or to support specific forest management goals.*

District policy designates its properties as multiple-use resources, which include timber harvesting. However, such activity must be compatible with Land Stewardship goals and objectives and meet strict environmental criteria:

- Sites considered for high-density pine plantings are currently in an “improved” or disturbed state (i.e. bahia pasture, existing pine plantation)
- Sites to be harvested are scheduled for hydrologic restoration and existing timber will likely be lost as a result of flooding
- The area does not contain any significant resources (e.g. endangered species) that may be harmed by changes in land use
- Forest operations would not require major road construction or improvement for accessing and processing timber, particularly within or across wetlands or other sensitive plant communities
- The area contains timber that requires salvage following fire and/or insect or disease damage, and could be subject to a sanitation harvest with minimal environmental impact
- The area has special needs for endangered species (e.g., red-cockaded woodpecker) management that requires timber stand improvement
- Harvest or planting would not negatively impact public use
- Timber harvests would return forests to a more natural structure and improved forest health

A timber thinning project is being evaluated for the southernmost pine stand at KICCO for red-cockaded woodpecker habitat improvement.

Pine plantings have occurred on 66 acres at Hickory Hammock, the 9 acres at the 4Es portion of Cornwell Marsh, and 53 acres at Ft. Basinger. These pine areas will be thinned to a natural density of about 30-35 ft<sup>2</sup> basal area/acre. The Hickory Hammock pines will be thinned to a basal area of less than 30-35 ft<sup>2</sup>/acre to be compatible with the wet and dry prairie understory.

#### 5.2.4 Range Resources

*Policy 140-25(3)i Range management and grazing will be considered on improved or native ranges when the introduction of cattle will not conflict with other natural resource management and public use goals.*

Livestock grazing has occurred over the last century within south and central Florida and continues to be an important land use today. The Kissimmee River Valley has been grazed for over four centuries since the early Spaniards stocked the Florida Peninsula with cattle. Cattle grazing is employed by the District and other land management agencies as a management tool, particularly for the reduction of fire fuel loads and maintenance of open habitat for the benefit of

native wildlife. The revenue producing lease program provides many benefits, such as:

- On-site management and security for District-owned lands at no cost to the District
- Minimizing District expenses by generating revenue from non-governmental sources to off-set District management, maintenance and resource protection costs
- Minimizing impacts to the local agricultural economy by keeping viable agricultural lands in active production for as long as possible
- Minimizing fiscal impacts of public land ownership to the local government by keeping lands on the tax roll

### Grazing Lease Parameters

The District often exercises the option to lease grazing rights to the public when a property is acquired. Lease terms include a maximum stocking rate based on forage availability and the assignment of certain management responsibilities that may include, but are not limited to infrastructure maintenance and/or fence construction and repair. The District restricts activities that could be detrimental to the environmental integrity of the area and requires all lessees to implement best management practices as provided by the Florida Department of Agriculture and Consumer Services. Leased lands remain on the county property tax rolls with the tax payments paid by the lessee.

There are currently seven active grazing leases within the Kissimmee River Management Areas, reduced from twelve in the last plan update due to the continued progress of the Kissimmee River Restoration. The remaining leases lie outside of existing or planned restoration areas.

### **5.3 Fire**

*Policy 140-25(5)(c)(3) Prescribed fire will be a primary management tool on District lands and will be applied within fire-maintained communities at appropriate intervals.*

The majority of natural communities on District lands require frequent fire to maintain their vegetative characteristics and biodiversity. Wildfires no longer occur with historical frequency or extent, and this has altered natural community structure and function. Prescribed fire attempts to mimic the benefits of natural wildfires that historically reduced fuel loads, recycled soil nutrients, and maintained natural communities by inhibiting hardwood encroachment and stimulating fire-adapted plant growth and reproduction. The District recognizes the benefits of fire and has integrated prescribed fire planning and application into its land management strategy.

### 5.3.1 Fire History

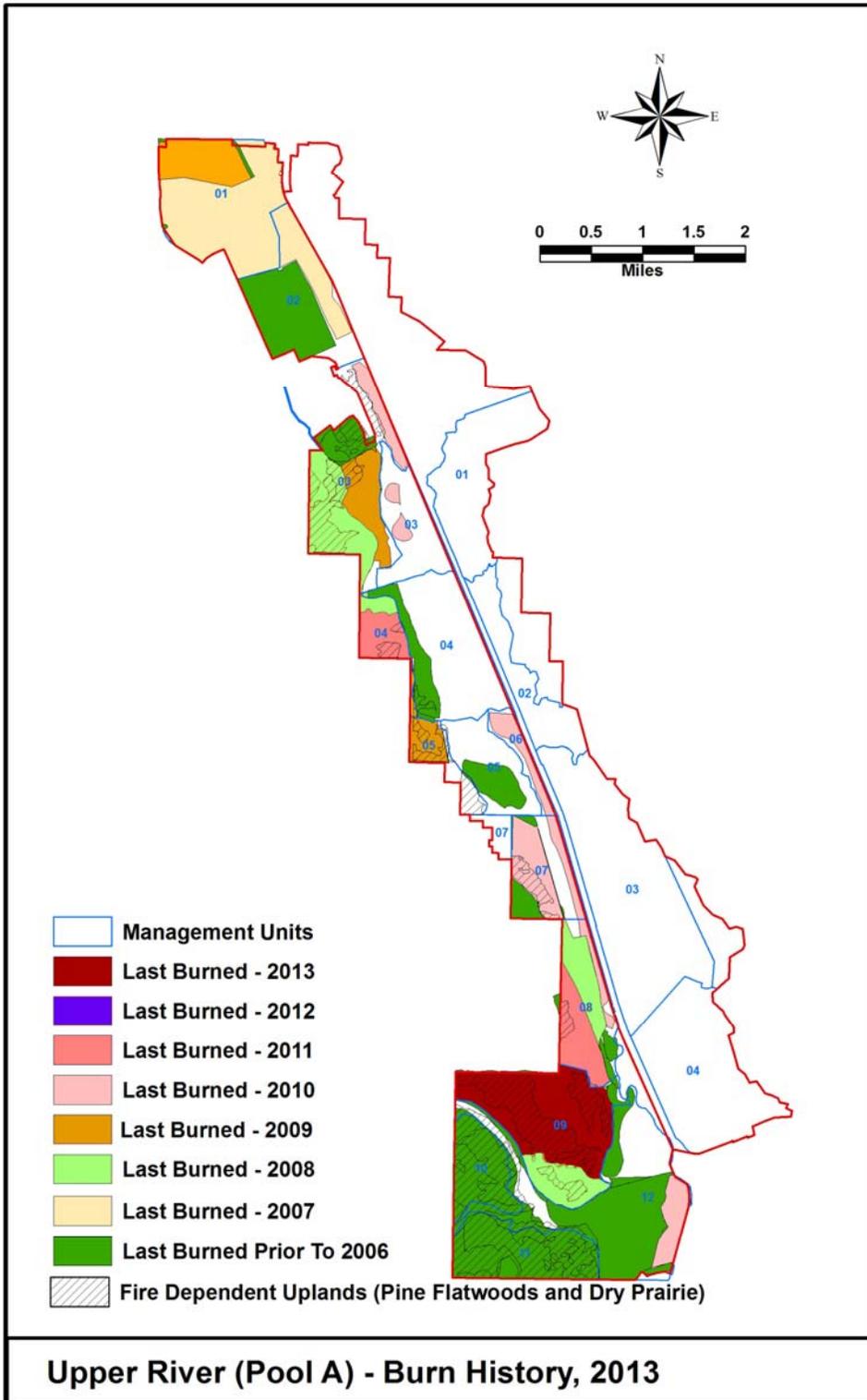
#### Pool A (Maps 24 a-b)

The District began its prescribed fire planning for the Management Areas in the early 1990s and, since then, has conducted prescribed fires regularly in the marshes, prairies, and flatwoods. The small areas of scrub are burned less frequently. The previous owner of KICCO burned the property at a frequency of about every other year. The District has continued prescribed burning on a rotation based on the need of the plant communities and the response of those communities to the last burn conducted. Since most of Blanket Bay marsh is improved pasture and serves as a control for the Kissimmee River Restoration Program, it has not been burned. There is an overgrown marsh in the south end of Blanket Bay where the District is planning on utilizing fire and shredding as a means to control the woody vegetation that has invaded the community. Fire data (prescribed and wild) is maintained in a Geographic Information System to produce cumulative burn maps of the property.

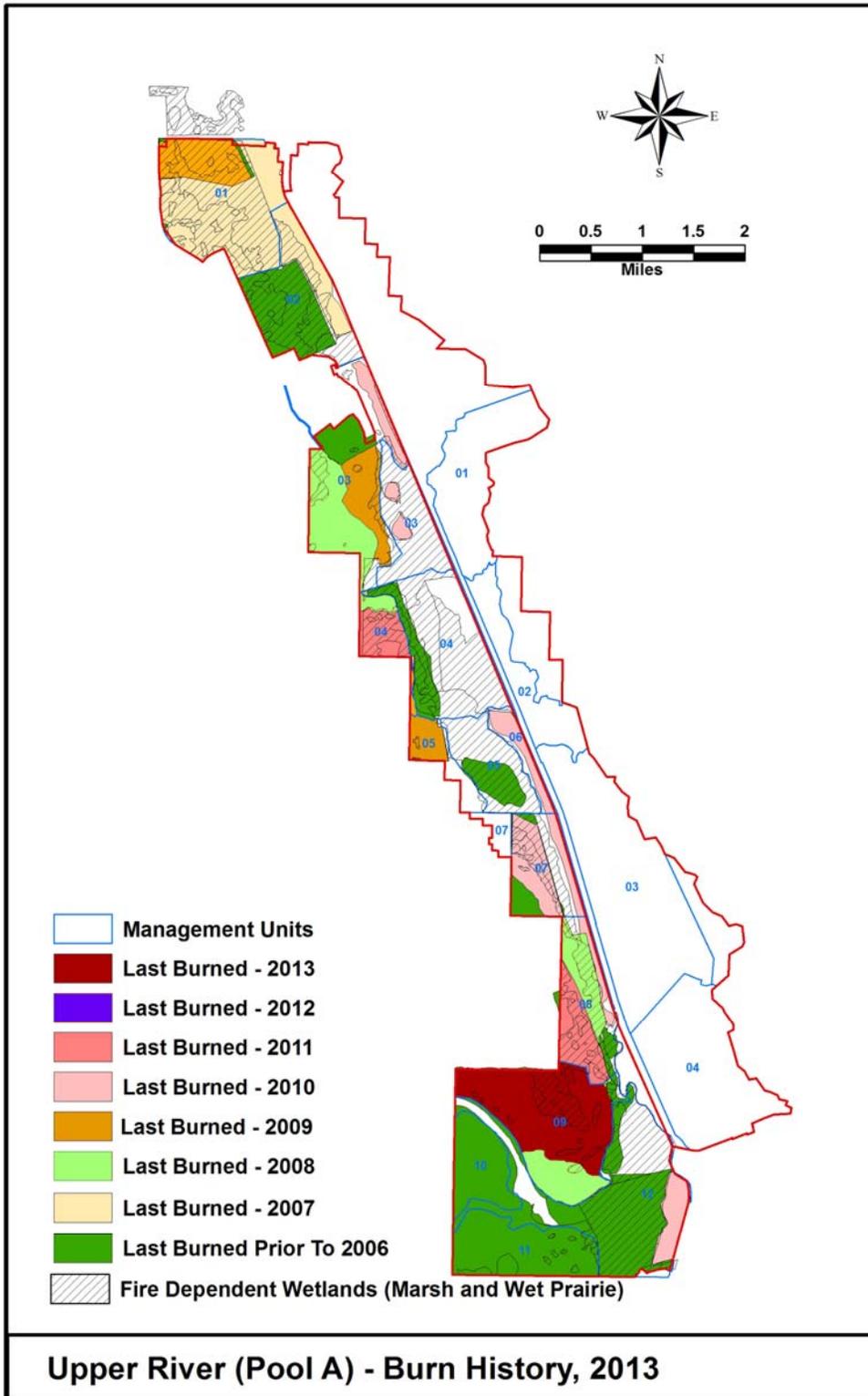
#### Pool C/D (Maps 24 c-f)

Documented fire history is not available for the southern Management Areas prior to District acquisition. However, pasture management practices in this region indicate native range areas were probably burned regularly to improve forage. Other areas on the properties may have experienced fire exclusion because of buildings, roads, ditches, or man-induced conditions. Many of the natural community types found on these parcels require varying frequencies of prescribed fire. District prescribed burning was first initiated in 1990 on Hickory Hammock. Oak Creek and Starvation Slough have experienced burn treatments periodically since 1995.

**Map 24a. Fire History Map for Kissimmee River Pool A, Uplands**

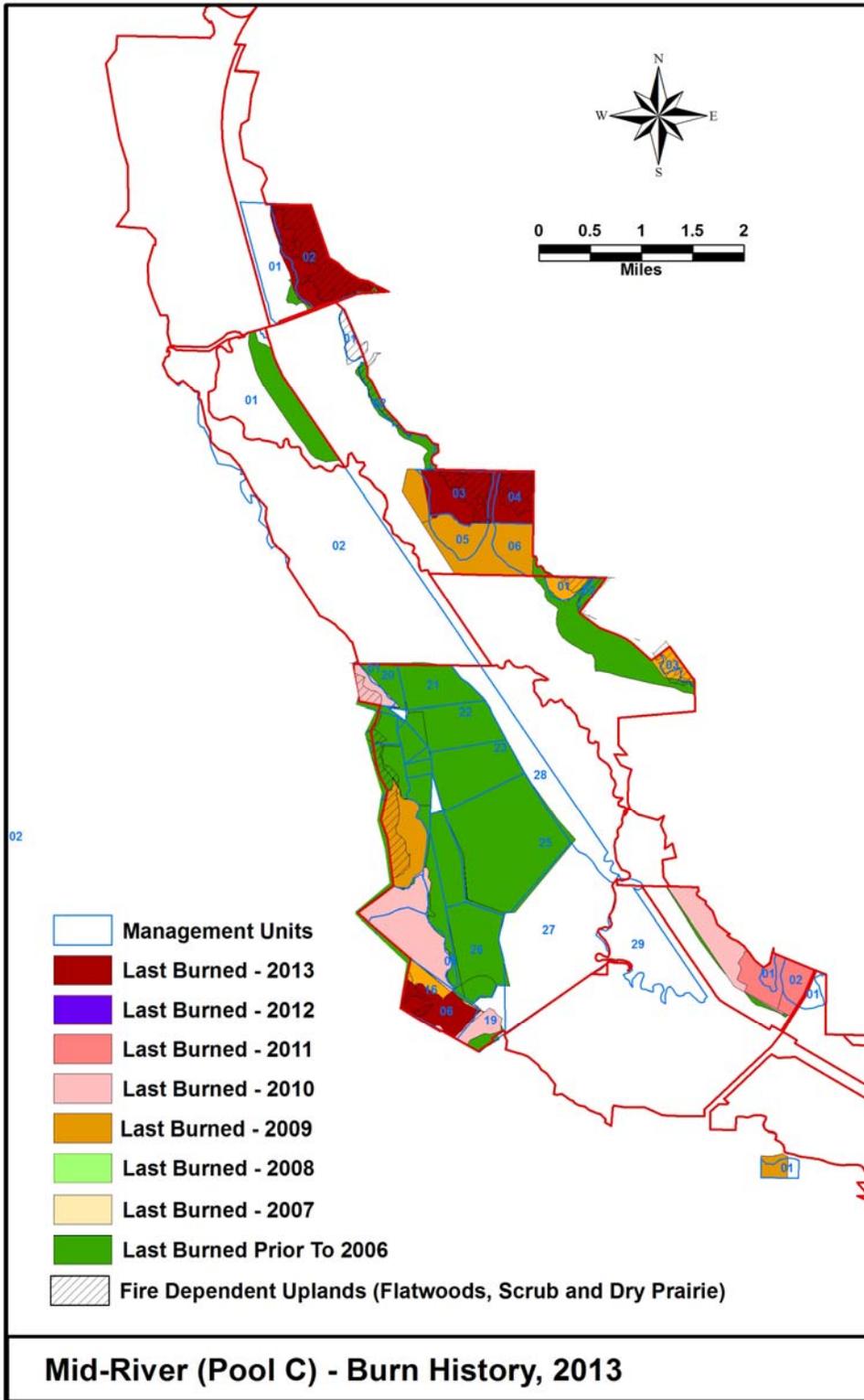


**Map 24b. Fire History Map for Kissimmee River Pool A, Wetlands**



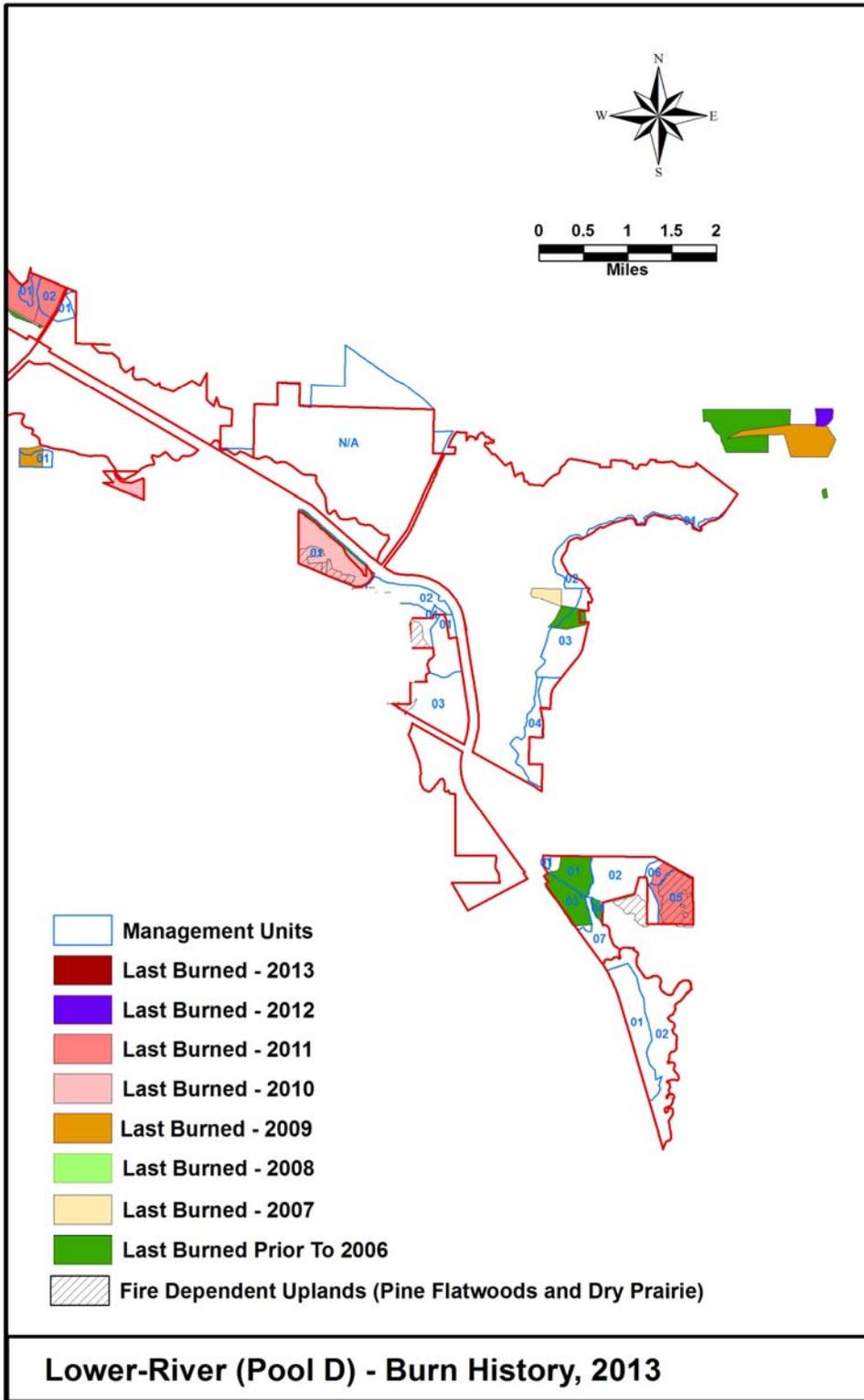
Attachment: Kissimmee River Mgt Plan 2014 - 2024 (Resolution No. 2014 - 0103 : Dupuis and Kissimmee River Ten Year General Management

**Map 24c. Fire History Map for Kissimmee River Pool C, Uplands**

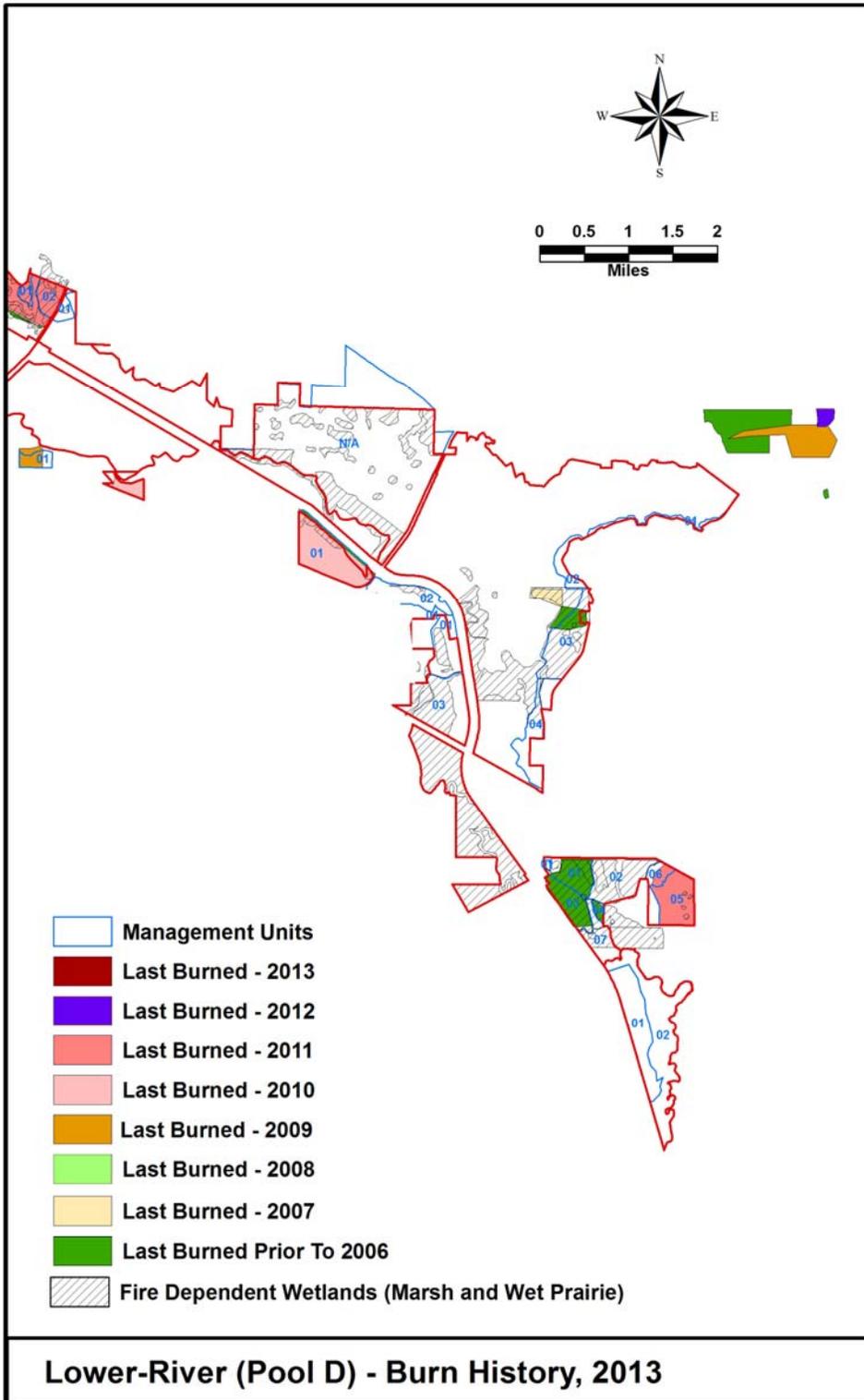




**Map 24e. Fire History Map for Kissimmee River Pool D, Uplands**



**Map 24f. Fire History Map for Kissimmee River Pool D, Wetlands**



### 5.3.2 Prescribed Fire Planning

Burn units have been established within the Management Areas. Seasonal planning considers potential burn areas based on their location, natural community types, fire history, and fire management objectives and constraints. The Land Stewardship Section bases fire management plans on ecological research and professional experience. Fire frequency schedules for each natural community consider recommendations provided in *The Natural Communities of Florida* (Florida Natural Areas Inventory, 1990). To mimic historic fire conditions, Land Stewardship emphasizes growing season burns (April-September) where practical. Natural firebreaks are utilized where possible to promote historic fire patterns, avoid soil disturbance, and reduce hydrologic flow disruption created by fire lines. Listed species life requirements are elements of prescribed fire planning. Application of fire, with appropriately timed herbicide treatments, is used as a tool for the control of exotic and invasive plants.

Burns are executed using proven methods as defined by the Prescribed Burning Act of 1990, Chapter 590.026 Florida Statutes. This legislation and associated administrative rules outline accepted forestry burn practices and are administered through the Florida Forest Service. Land Stewardship has a three-person prescribed fire crew in the Okeechobee Service Center and utilizes other District staff and cooperating agency staff— Florida Forest Service, the Florida Park Service, and the Florida Fish and Wildlife Conservation Commission to conduct burns. All Land Stewardship staff have completed the state certified burn course to ensure safety and proper technique.

Prescribed fire is applied within the Management Areas at appropriate fire intervals for each natural community. The District concentrates on applying fire to each area of the property, in order to reduce accumulated fuel loads, improve habitat, and provide a safer basis for future burns of increased frequency and lower intensity. Planning will emphasize yearly burn acreage to attain a 3-5 year rotation for flatwoods and prairie communities.

#### Prescribed Fire and Carbon Sequestration

The District currently stores carbon on the lands it manages in vegetation and organic soils. Each year, the amount of carbon increases as young forests grow and marshes steadily fix carbon into peat. This is also known as carbon sequestration. It is important to manage the District's land resources in a manner to maximize the amount of carbon that is sequestered, while minimizing carbon dioxide and other greenhouse gas emissions. Prescribed fire is a tool that when used under the right conditions and with the right frequency can increase the rate at which a fire-dependent natural community can grow and store carbon. Following a burn, there is a subsequent spike in primary productivity caused by a release of nutrients and exposure of more surface area to sunlight, as well as post-burn increases of both above and below ground carbon stores.

Prescribed fire guidelines for maximizing carbon storage that the District considers when conducting prescribed burns include:

- Burning at 3 to 5 year intervals
- Conducting late winter burns
- Implementing a proper mop-up phase of the prescribed fire to extinguish smoldering stumps is important to reduce unnecessary carbon and nitrous oxide releases, flaming combustion releases much less carbon than smoldering combustion
- Avoiding muck fires and conditions that lead to muck fires as they release large quantities of carbon and nitrous oxide
- Keeping fuel density low to avoid the possibility of massive carbon releases in wildfire

### 5.3.3 Wildfire Suppression

*Policy 140-25(3)(d) The Florida Forest Service will be notified of all wildfires on District lands. Land Stewardship will provide initial suppression when commensurate personnel and equipment are available.*

Lightning-caused wildfires are a common occurrence throughout Florida, including the Kissimmee River Management Areas. It is District policy, and state law, that the Florida Forest Service is notified when a wildfire occurs on Land Stewardship-managed properties. Land Stewardship staff assigned to the area respond to and, if appropriate, begin suppression of area wildfires when detected. The Florida Forest Service is called immediately and a fire assessment is made.

## 5.4 WILDLIFE MANAGEMENT

A primary objective in the stewardship of the Management Areas is to maintain healthy fish and wildlife populations. Land Stewardship accomplishes this in several ways:

- Performing land management activities that maintain and/or improve native wildlife habitat
- Conducting specific management practices to benefit protected species
- Conducting wildlife inventories through a partnership with the Florida Fish and Wildlife Conservation Commission and prohibiting activities that have the potential to negatively impact listed species
- Following management guidelines for listed species protection as determined by the *Multi-species Recovery Plan for the Threatened and Endangered Species of South Florida, Volume 1*, (U.S. Fish and Wildlife Service, 1998)
- Reducing non-native pest species populations where appropriate
- Maintaining a master file of confirmed and potential wildlife species

- Cooperating with the Florida Fish and Wildlife Conservation Commission on wildlife management issues, including wildlife inventories and evaluating management actions.

Wildlife management in the Management Areas is directed toward production of natural species diversity consistent with the biological community types present. The Florida Fish and Wildlife Conservation Commission maintains a lead role in wildlife management in the Management Areas by managing public hunting activities.

#### **5.4.1 Game Management**

*Policy 140-25(4)(b)(4) Florida Fish and Wildlife Conservation Commission regulations shall govern hunting in areas opened for such use.*

The Kissimmee River Management Areas contain two Wildlife Management Areas and a Public Use Area established by the Florida Fish and Wildlife Conservation Commission (**Maps 25-27**). The Commission administers several hunting seasons in the fall, small game and hog hunts in late winter, and spring turkey hunts. Management activities directed towards game management include establishing bag limits for game species and regulating hunting pressure.

#### **5.4.2 Exotic/Invasive Animal Species**

Wildlife pest species are those non-native species that are harmful to native wildlife, that negatively impact native vegetation and wildlife or interfere with management objectives. The Land Stewardship's goal for wildlife pest management is to reduce populations to attain an acceptable level of impact to natural plant and animal communities. The District's land manager uses monitoring, visual observation, and consultation with the Florida Fish and Wildlife Conservation Commission to define an acceptable level of impact. When population control measures are warranted, land managers consult with the Commission to determine effective and appropriate control techniques. The effects of pest population control efforts are monitored by periodic site evaluations.

The feral hog is a pest species that occurs within the Management Areas. Disturbance caused by this species negatively impacts natural communities and interferes with land management operations. Although valued by some members of the public as a game animal, the feral hogs' high fecundity, adaptability, rooting behavior, omnivorous diet, and ability to quickly colonize areas raises environmental concerns. Their disruption of soil and vegetation alter natural communities and can be especially damaging in sensitive habitats that are slow to recover. Hog disturbance has occurred within most of the management area including wetland communities. Land management objectives are affected when rooting disturbance disrupts prescribed burns by preventing the spread of fire.

Areas of disturbed soil are also more susceptible to exotic plant invasion. Rooting can also damage hiking trails, have a detrimental impact on small animal populations, and ground-nesting birds, and can damage infrastructure.

Currently, feral hog populations have been declining in KICCO due to the installation of a 12 mile long hog fence on its western border. Control methods are decided in consultation with the Florida Fish and Wildlife Conservation Commission and include providing public hog hunts and utilizing no-cost hog control agents where necessary. Contracted hog-control agents are currently used on all management units on the river and other satellite properties.

### 5.4.3 Rare, Threatened and Endangered Animal Species

*Policy 140-25(2)(b) Particular emphasis shall be placed on the identification, protection and management of rare, threatened and endangered species.*

Several species listed as endangered, threatened, or of special concern by state and federal agencies occur within the Management Areas, including gopher tortoise (*Gopherus polyphemus*), wood stork (*Mycteria americana*), Sherman's fox squirrel (*Sciurus niger shermani*), Florida bonneted bat (*Eumops floridanus*), and Indigo snakes (*Drymarchon corais couperi*) (**Table 4**). Additionally, the Commission has classified most of the Management Areas as a Regional Biodiversity Hotspot. Hotspots represent areas which have high overlap for declining species of wildlife plus known occurrences of rare flora, fauna, and natural communities.

District land management activities including prescribed burning, hydrologic restoration, exotic vegetation eradication, understory control, and selective forest thinning improve natural environmental characteristics that benefit listed species as well as a variety of other indigenous wildlife. Staff from the Archbold Biological Station have a monitoring program in place for red cockaded woodpeckers and scrub jays at KICCO.

**Table 4. Listed Animal Species: (T) Threatened, (E) Endangered, (SSC) Species of Special Concern**

Scientific Name	Common Name	Status	
		Fed	State
<i>Aramus guarauna</i>	Limpkin		SSC
<i>Athene curicularia</i>	Burrowing Owl		SSC
<i>Caracara cheriway</i>	Crested caracara	T	
<i>Drymarchon corais couperi</i>	Eastern indigo snake	T	
<i>Egretta caerulea</i>	Little blue heron		SSC
<i>Egretta thula</i>	Snowy egret		SSC
<i>Egretta tricolor</i>	Tri-colored heron		SSC
<i>Eudocimus albus</i>	White ibis		SSC

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<i>Eumops floridanus</i>	Florida Bonneted Bat	E	
<i>Falco sparverius paulus</i>	Southeastern American kestrel		T
<i>Felis concolor coryi</i>	Florida Panther	E	
<i>Gopherus polyphemus</i>	Gopher tortoise		T
<i>Grus canadensis pratensis</i>	Florida sandhill crane		T
<i>Mycteria americana</i>	Wood stork	E	
<i>Pituophis melanoleucus mugitus</i>	Florida pine snake		SSC
<i>Sciurus niger shermani</i>	Sherman's fox squirrel		SSC
<i>Trichechidae manatus</i>	Florida Manatee	E	

## 6. Public Use

*Policy 140-23 The Land Stewardship Program mission is to provide natural resource protection and management while allowing compatible multiple uses on designated public lands.*

Section 373.1391 (1)(a) Florida statute states that wherever practical, lands acquired by the District shall be open to the general public for recreational uses. The District encourages public use of management areas for appropriate natural resource-based activities. All District lands are available for public use, except in rare instances where there is no legal public access or where reservation/lease restrictions or construction activities prohibit public entry.

Public input into the management of the area is solicited at the quarterly Water Resource Advisory Committee Recreational Issues Workshops. Adjustments to public use opportunities are made on an ongoing basis through the Recreational Issues Workshops and through rulemaking through the 40E-7, F.A.C. public use rule. This plan addresses public use matters only to describe the scope of public use opportunities available or planned as of the date of the plan, it is not intended to set public use policies through the plan period.

The determination of compatible public uses is based on the following criteria:

- Consistency with the reason the lands were acquired
- Restrictions and/or prohibitions imposed by easements, leases, reservations, purchase agreements, and other legal mandates
- Infrastructure and support facility requirements, such as fences, gates, signage, entry design, stabilized off-road parking, trails, campsites, maintenance, and other operational and budgetary impacts
- Opportunities for persons with disabilities
- Limitations on use resulting from endangered species, other sensitive natural resources, archeological resources, or land management practices
- Public health, safety and welfare
- Protection of resources

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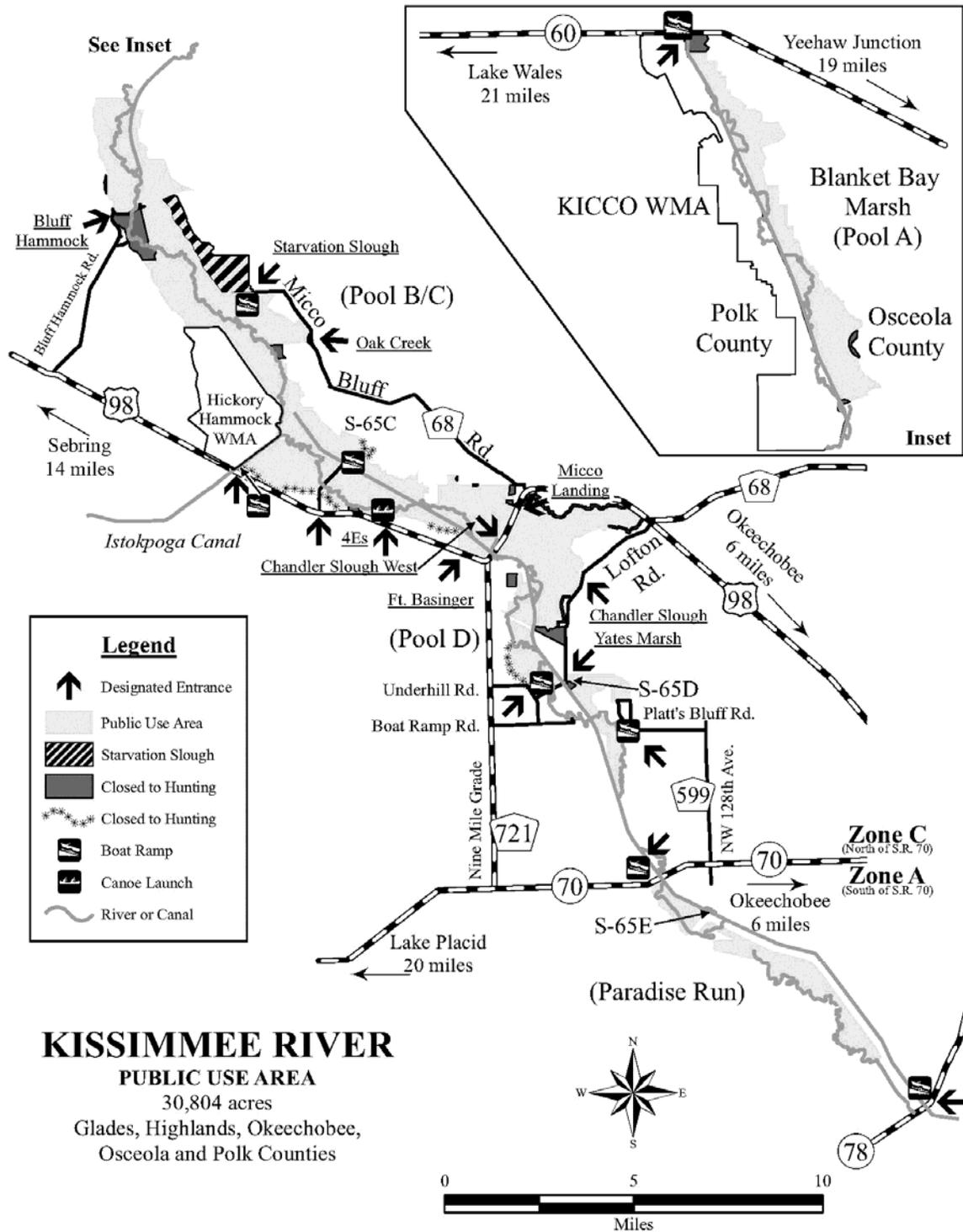
A wide variety of recreational activities are appropriate and encouraged in the Management Areas including boating, bicycling, canoeing, camping, equestrian use, fishing, hiking, and hunting (**Table 5**). In addition, new boat ramps have been constructed at the Istokpoga canal along Hwy 98, and at the S-65 D locks to provide access to the restored river. Campsites, accessible from the river, have been established throughout the management areas. The Florida National Scenic Trail winds its way through the management areas, and is currently being relocated from the west side to the east side of the river. Sections of general hiking trails on the west side will continue to be maintained by volunteers from local hiking clubs.

**Table5. Recreational Opportunities**

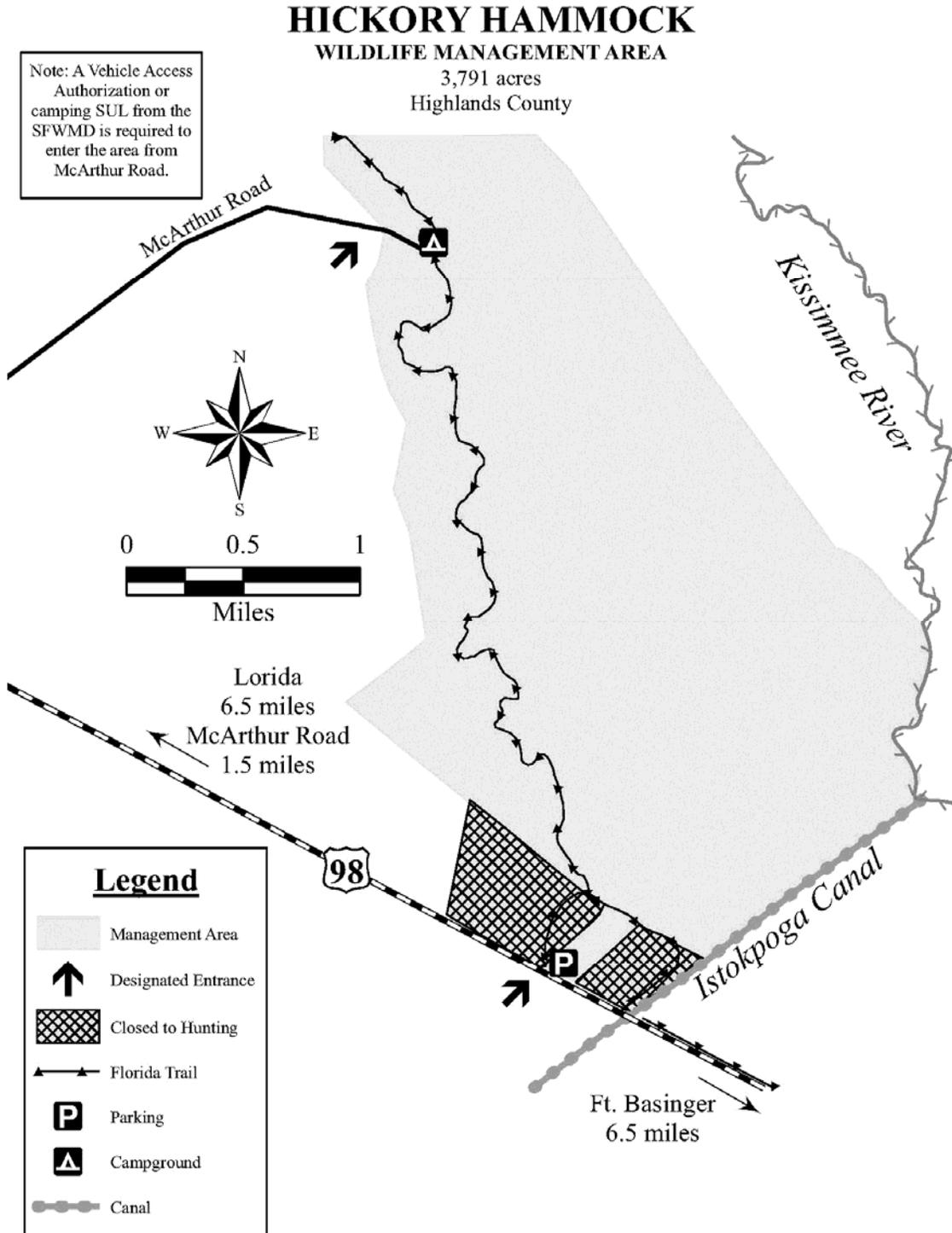
Unit	Airboating	Bicycling	Canoeing	Camping	Education / Visitor Center	Equestrian	Fishing	Hiking / Nature Appreciation	Hunting	Picnic Tables
Kissimmee Management Region										
KICCO Wildlife Management Area		☐	☐	☐		☐	☐	☐	☐	☐
Blanket Bay Marsh	☐		☐	☐			☐		☐	☐
Kissimmee Prairie Preserve State Park		☐		☐	☐	☐	☐	☐		☐
Boney Marsh	☐		☐	☐			☐	☐	☐	
Bluff Hammock	☐		☐			☐	☐	☐	☐	☐
Hickory Hammock Wildlife Management Area	☐	☐	☐	☐		☐	☐	☐	☐	☐
No Name Slough	☐	☐	☐			☐	☐	☐	☐	
Starvation Slough	☐	☐	☐	☐		☐	☐	☐	☐	☐
Oak Creek	☐		☐	☐			☐	☐	☐	☐
Turkey Hammock West	☐		☐	☐			☐		☐	
Turkey Hammock East							☐		☐	
Cornwell Marsh West				☐			☐	☐	☐	
Cornwell Marsh East							☐	☐	☐	
Micco Landing	☐	☐	☐	☐		☐	☐	☐	☐	
Seaboard Marsh North	☐		☐				☐		☐	
Seaboard Marsh South	☐		☐				☐		☐	
Yates Marsh		☐		☐			☐	☐	☐	☐
Telex Marsh			☐				☐	☐	☐	
Paradise Run		☐					☐		☐	



**Map 26. Kissimmee River Public Use Area**



**Map 27. Hickory Hammock Wildlife Management Area**



## 6.1 Resource Protection

*Policy 140-25(1)(d) Public use shall not result in detrimental impacts to water resources. When a public use activity produces detrimental effects on water resources, it shall be discontinued until an evaluation determines that such use is compatible.*

*Policy 140-25(3)(g) Resource protection shall be provided by professional law enforcement services through funded and unfunded contractual agreements to safeguard the public and protect natural and cultural resources on District-managed natural areas.*

*Policy 140-25(4)(b)(1) Public use regulations are set forth in 40E-7.511, Florida Administrative Code, to implement Section 373.1391(1)(b), Florida Statutes. Accordingly, the District shall publish and make available to the public a "Recreational Guide" for designated land management areas.*

Regulations that govern activities within the Management Areas are in the District's 40E-7, F.A.C. Public Use Rules, which are available at all Service Center and at agency headquarters in West Palm Beach. Allowed activities include hiking, fishing, boating, canoeing, camping, hunting, geocaching, equestrian use, biking, and nature study. The Florida Fish and Wildlife Conservation Commission is responsible for enforcing laws, rules, and regulations applicable to the Management Areas, along with the local county sheriffs' offices. The Commission has an officer housed at KICCO who helps patrol Pool A, an officer housed at Hickory Hammock in Pool C, and two officers at Chandler Slough in Pool D. The officers reside in District-owned facilities through a contractual agreement with the District and provide a law enforcement presence on District lands at no cost to the agency.

Management of public activities on District lands requires a strong commitment to resource protection while simultaneously promoting public recreational uses. The District emphasizes the enforcement of pertinent rules and regulations to protect natural resources and enhance recreation opportunities. Law enforcement officers conduct regular patrols throughout the year, increasing their presence during hunting seasons and at other times when public use is high. Law enforcement surveillance protects natural and cultural resources, deters illegal activity, and safeguards the public. Patrols are conducted with 4-wheel drive vehicles, boats, all terrain vehicles, aircraft, and on foot. The Land Stewardship Section's law enforcement coordinator reviews biweekly reports and meets with officers to structure patrols based on resource needs.

Resource protection is also greatly enhanced by the establishment and maintenance of posted fence lines that delineate property boundaries. New fence construction and maintenance needs are addressed as necessary.

## 6.2 Environmental Education

Educational programs are developed and implemented on select management areas by organizations interested in promoting increased visitor knowledge and appreciation of natural areas and cultural resources. A central theme to these programs is the vital role of water management in maintaining resource viability and productivity. There are several interpretive kiosks throughout the Management Areas including four at KICCO, and one at the boat ramp near the S-65 water control structure. There are fifteen kiosks (9 District and 6 Commission) in Pools C and D. The District encourages educational partnerships through memorandums of understanding, leases, and contract agreements.

## 7. Administration

Administration of District land management is directed through the Land Stewardship Section. Policy decisions, planning and budgeting, procurement of personnel and equipment, contract administration, and issues of program development are administrative tasks coordinated through the Section. Input is provided from the public and regional land managers located at District Service Centers, Field Offices, or Field Stations over the 16-county area. Regional land managers handle regular administrative duties from their field locations to assure quick response to local concerns and management issues. Administrative activities for the Management Area are handled through the DuPuis field office.

### 7.1 Planning and Budgeting

Planning is a major function of the Land Stewardship mission and is critical to maintain proper program focus, direction, and coordination with other agencies. Planning is accomplished by section planning staff in coordination with land management staff. Section-level planning produces the Land Stewardship Activity Report for the Florida Forever Workplan, and coordinates land acquisition planning with other District and outside agency personnel.

*Policy 140-25(6)(b) General Management Plan: Provides a description of recommended management and is required for each Land Stewardship Management Area. The GMP follows a designated format and is updated every ten years.*

General Management Plans are developed that detail strategies to guide management activities on individual project areas. These plans define goals and objectives, identify major management issues, and describe management activities. Each plan is subject to a draft revision period where public comment and professional review is requested prior to plan approval. Each plan is revised on a ten-year cycle by planning team and land management staff.

*Policy 140-25(5) The District will secure dedicated funding sources, personnel and other resources to support program goals and objectives. Project funding needs and sources for cooperative management agreements with government and non-government entities will be identified during acquisition. A cooperative management agreement will designate a lead manager and identify whether District funding is required.*

The principal sources of funding for land management operations include revenue from commercial and agricultural leases, revenue generated from mitigation banks and interest earned on offsite mitigation funds, and ad valorem tax revenue. Historically, the Water Management Lands Trust Fund, administered by the Florida Department of Environmental Protection, had been the primary source of land management funding. Additional funding and support has been obtained from grants, the harvest of renewable resources, in-kind services from cooperating management partners, and no-cost services from user groups and volunteers.

Budget planning begins in November during the work planning process for the following fiscal year (October-September). Overall funding availability generally determines management activities. Site-specific priorities are generated and submitted by the regional land managers. Budget distribution among the District's five land management regions is based on a programmatic prioritization of management needs.

The continued operation and maintenance of the Kissimmee River Management Areas includes costs to cover staffing, ongoing operational and land management expenses, and capital refurbishment/replacement of aging infrastructure. Capital infrastructure needs are determined by its condition and the anticipated continued serviceability over the next fiscal year. Priorities for capital refurbishment/replacement are made on a District-wide basis. It is anticipated that several infrastructure features will require refurbishment/replacement during this plan period, these features include: the boardwalk and bridge at Boney Marsh, resurfacing asphalt at the Istokpoga Canal Recreation Area, the refurbishment of several trailheads, and other minor features such as septic systems and large culverts.

The operational and land management expenses for FY 2014 are included in **Table 6**, below. Contracted Land Management Services include a contract with the Department of Corrections (inmate labor for needs such as trailhead maintenance, mowing of recreation areas, and fence repairs). Operational Expenses include supplies, septic service, business travel, and safety equipment. Public Use costs are generally the maintenance costs of public use facilities. Site Security represents costs associated with contracted law enforcement services which currently are not budgeted for on the Kissimmee River Management Areas.

**Table 6. Operational and Land Management Expenses for Fiscal Year 2014.**

Kissimmee River		FY2014 Budget
Contracted Land Mgt. Svcs		\$58,000
Utilities and Operational Expenses		\$38,424
Equipment and Infrastructure Maintenance		\$55,500
Exotic Species Control		\$130,000
Vegetation Management		\$53,600
Public Use		\$45,000
Site Security		\$0
<b>Total</b>		<b>\$380,524</b>

## 7.2 Infrastructure

*Policy 140-25(3)(k) Infrastructure support shall be developed and maintained to provide safe access for responsible management and public use on District lands. Such infrastructure may include access points, roads, trails, signs, utilities, and minimal public facilities.*

Current infrastructure which requires regular maintenance includes recreation access points and trailheads, perimeter posting and fencing, firelines, hiking trails and roads, kiosks, camp sites, campground host sites, law enforcement officer's housing, boat ramps, and other structures.

## 7.3 Personnel and Equipment

The District is separated into five geographic regions, each staffed with professional land managers and technicians who are supervised by a Section Leader. The Land Stewardship Section Administrator, recreation staff, and planning staff are headquartered at the main West Palm Beach office.

Stewardship of the management areas is the primary responsibility of the District's Kissimmee River/Okeechobee regional land management staff. Dedicated staffing for the Kissimmee River Management Areas consist of one Senior Land Manager, one Scientist 3, and one planner/scheduler that performs field functions. Additional management input and support comes from District planning and Field Station personnel, as well as the Kissimmee River Section. Staff has access to tools, supplies, four-wheel drive vehicles, fire suppression trucks, all terrain vehicles, swamp buggies, bull dozers, tractors, and other heavy equipment.

## 7.4 Volunteers and Alternative Work Force

*Policy 140-25(5)(d)(1) Volunteers, interns and alternative work forces will be used when possible to supplement existing staff and services.*

Section 373.1391(3) F.S. encourages the District to use volunteers for land stewardship and other services. The District recognizes the merits of volunteerism and welcomes participation in activities appropriate for public involvement. In Fiscal Year 2013, District lands benefited from 10,000 volunteer hours, or \$217,900 worth of volunteer services (using a \$21.79/hour national average for the value of volunteer service). The Florida Trail Association regularly provides volunteer service to maintain the portion of the Florida National Scenic Trail that passes through the Management Areas. Land Stewardship also utilizes volunteer campground hosts at the S-65C campground, the Istokpoga Canal Boat Ramp Area, the Hickory Hammock equestrian campground, and at KICCO. Other volunteer services have been provided by the Interagency Prescribed Fire Training Council, Boy Scouts, the Florida Sportsmens' Conservation Association, and several other individual volunteers. All volunteer activities help accomplish management objectives, promote citizen involvement, and allow area staff to focus on other tasks.

## 7.5 Contractual Management

*Policy 140-25(5)(a). The private sector may be solicited to furnish certain management-related facilities and services through the execution of leases and agreements. These leases/agreements will assure mutual benefits to both the District and private parties and be consistent with the program management objectives.*

Effective operation and management of District properties requires the services and cooperation of private organizations, other governmental agencies, and volunteers. Contractual relationships are formalized through management agreements signed by both the District and contracting entity with the document defining the responsibilities of each party.

The District has established and maintains three contractual management agreements to assist with management:

Agreement #1  
 4600000961

This is a contractual multi-site agreement that authorizes the Florida Fish and Wildlife Conservation Commission to perform land management and public recreation services on District-owned properties.

Agreement #5

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4600002826

An agreement with the Florida Department of Corrections to provide inmate labor for land management and infrastructure maintenance.

Agreement #1  
 C89-0065

A Memorandum of Understanding with the Florida Trail Association in which they agree to maintain the segment of the Florida National Scenic Trail that passes through the Kissimmee River Valley.

Agreement #2  
 C-8318

A lease (1998-2045) for the Florida Park Service to manage District property in pool B as the Kissimmee Prairie Preserve State Park.

## 7.6 Management Review

Policy 140-22(j) Section 373.591, Florida Statutes, mandates the District to solicit input on current management programs through professional peer reviews.

A land management review team is identified for each project area with a General Management Plan. These ad hoc teams are comprised of state, county, and private entities that periodically review management activities to assure they are consistent with acquisition intent and program objectives. Management assessments are conducted in light of the goals and objectives defined in the area's general management plan and are scored on a scale of 1 to 5 with a 1 meaning the management is insufficient and a 5 meaning the management is extremely effective. If the review team determines that management is insufficient in any area, attaining an average score of less than 3.0, then the District is to provide a written explanation to the review team along with proposed corrective actions.

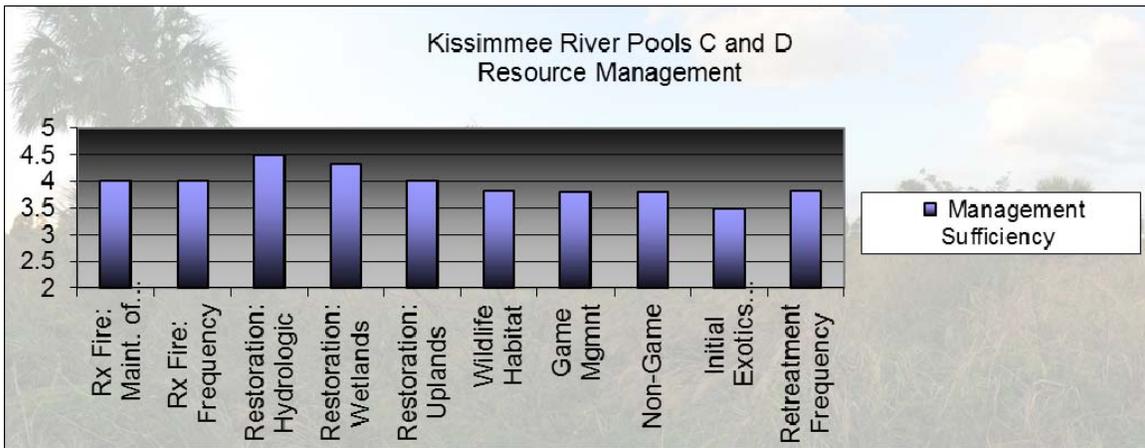
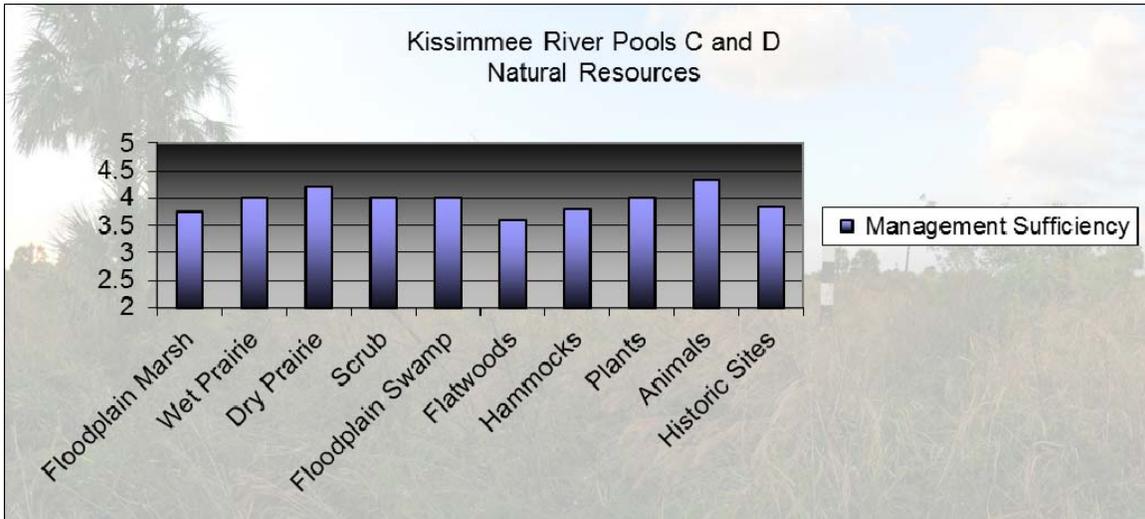
A management review of the Kissimmee River Management Areas was conducted in November, 2013. The review team provided comments on the condition of the land and the management of the site.

Positive comments were received on the quality and quantity of land management and restoration work being accomplished by a small land management team. Positive comments were also directed at the availability of the many public use opportunities that are provided free-of-charge, and at the improvement in the signage promoting these types of uses.

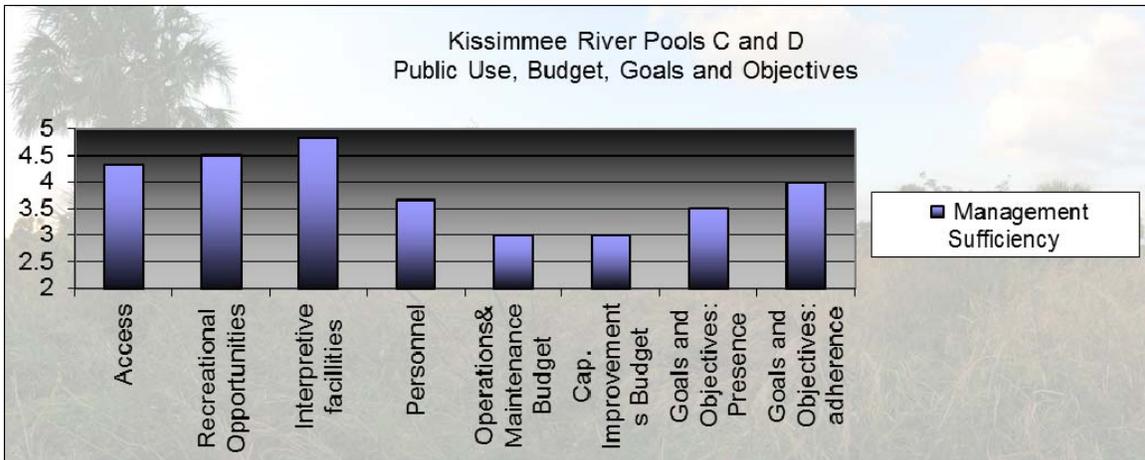
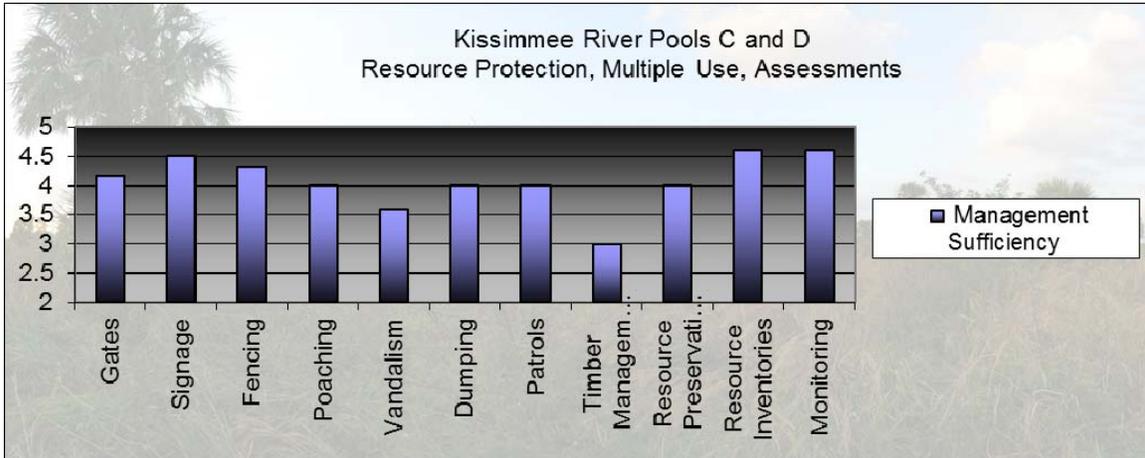
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The review team expressed concern over the extent of invasive exotic species such as paragrass and caesarweed. The team understood that a targeting of these species should not come at the expense of keeping old world climbing fern (*lygodium*) at bay, but were concerned about the presence and the impact that these species were having in the hammocks (caesarweed) and floodplain marshes (paragrass).

The team also rated the management sufficiency of the land on a scale from 1 to 5 on criteria such as: the natural resources, resource management activities, public use, budget, goals and objectives, resource protection, multiple use, and biological assessments and monitoring. The average scores by category are identified on the graphs below and indicate the review team felt the Kissimmee River Management Areas were being properly managed:



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The average score for the 2013 for the condition of the Natural Resources was 4.0; Resource Management was 4.0; Resource Protection, Multiple Use, and Assesments was 4.1; and Public Use, Budget and Goals and Objectives was 3.8. The relatively low scores received in the categories of Personnel, Operations & Maintenance Budget, and Capital Improvements Budget reflect the review team’s recognition of the District’s current budgetary challenges. There was no explanation provided by the review team members as to why timber management received a relatively lower score.

## **Appendix A**

### Land Stewardship Goals and Policies

#### ARTICLE II. LAND STEWARDSHIP

##### **Sec. 140-21. Scope.**

This policy shall apply to all lands managed by the Land Stewardship Program, including property acquired with Save Our Rivers, Preservation 2000 or mitigation funding. Nothing in this policy shall negate any statute, administrative rule, or other policy requirement. This policy may be reviewed and approved by the District Governing Board at five-year intervals or earlier and updated as required. Public comment may be solicited as part of the review process.

(R.M. No. 139)

##### **Sec. 140-22. Purpose.**

(a) This policy establishes a commitment to the responsible management of District lands in a manner consistent with legislative directives and the District's mission.

(b) In 1981, the Florida Legislature established the "Save Our Rivers" program (SOR) for the five water management Districts to acquire water resource lands. This legislation (Section 373.59, Florida Statutes) produced the Water Management Lands Trust Fund, empowering the water management Districts to acquire lands needed to protect, manage, and conserve the state's water resources. Preservation 2000 (P2000), enacted by the Legislature in 1990, also added land acquisition funds to the Save Our Rivers program. The 1999 Florida Forever Act consolidated the legislative directives of SOR/P2000 and expanded the funding to take over when P2000 terminates. The 1999 legislation authorized funds to be appropriated for acquisition, management, maintenance and capital improvements, including perimeter fencing, signs, control of invasive exotic species, controlled burning, habitat inventory and restoration, law enforcement, access roads and trails, and minimum public accommodations.

(c) Land acquired by the District's Save Our Rivers program and managed by the Land Stewardship program must satisfy several requirements set forth in Sections 373.139 and 373.1391, Florida Statutes. Section 373.139, Florida Statutes, declares it necessary for the public health and welfare that water and water-related resources be conserved and protected. The acquisition of real property for this objective shall constitute a public purpose for which public funds may be budgeted.

(d) Section 373.1391(1)(a), Florida Statutes, states that lands titled to the water management districts shall be managed and maintained to the extent practicable to ensure a balance between public access, general public recreational purposes, and restoration and protection of their natural state and condition.

(e) Section 373.1391(1)(b), Florida Statutes, states, in part, that "Whenever practicable, such lands shall be open to the general public for recreational uses. General public recreational uses shall include, but not be limited to, fishing,

hunting, horseback riding, swimming, camping, hiking, canoeing, boating, diving, birding, sailing, jogging, and other related outdoor activities to the maximum extent possible considering the environmental sensitivity and suitability of those lands."

(f) Section 373.1391(1)(d), Florida Statutes, states that the District shall first consider using soil and water conservation Districts to administer agricultural leases.

(g) Section 373.1391(3), Florida Statutes, encourages each District to use volunteers to provide land management and other services.

(h) Section 373.1391(4), Florida Statutes, encourages each District to enter into cooperative land management agreements with state agencies or local governments to provide the coordinated and cost-effective management of lands.

(i) Section 373.1391(5), Florida Statutes, authorizes water resource and supply projects, stormwater management projects, linear facilities, and sustainable agriculture and forestry where it is compatible with the natural resource values and the public interest and is consistent with the project management plan, the proposed use is appropriately located on the property and other lands have been considered, and the titleholder of the property has been properly compensated.

(j) Section 373.591, Florida Statutes, mandates the District to solicit input on current management programs through professional peer reviews.

(R.M. No. 139)

### **Sec. 140-23. Statements of Policy.**

The Land Stewardship Program mission is to provide natural resource protection and management while allowing compatible multiple uses on designated public lands. The mission statement, together with requirements set forth in the Florida Statutes, provide three primary goals for the District Land Stewardship Program, each of which is linked to sections in this Land Stewardship Policy document:

- (1) Conservation and protection of water resources (section 140-25(1)).
- (2) Protection and/or restoration of land to its natural state and condition:
  - a. Restoration and Protection of Natural Communities (section 140-25(2)); and
  - b. Resource Operations and Maintenance (section 140-25(3)).
- (3) Provide public use (section 140-25(4)).

(R.M. No. 139)

### **Sec. 140-24. Definitions.**

For the purpose of this article, the following words and terms shall have the meanings respectively ascribed:

*Archaeological/Historic Resources* means any prehistoric or historic district site, building, object, or property of historic, architectural, or archaeological value relating to the history, government, and culture of a historic or pre-historic people.

*Best Management Practice (BMP)* means the best available technology or process that is practical and achieves the desired goal or objective.

*Capital Improvement* means activities relating to the restoration, public access, recreational uses and necessary services for land and water areas, including the

initial removal of invasive plants, and the construction, improvement, enlargement or extension of facilities' signs, fire lines, access roads, and trails. Such activities shall be identified prior to the acquisition of a parcel or the approval of a project.

*Cooperating Agencies* means two or more agencies working together to operate a specific management area.

*Cooperative Management Agreement* means an agreement between two or more agencies outlining the respective duties and responsibilities of each agency in the management of a specific tract of land.

*Critical Habitat* means areas designated for the survival and recovery of state/federally listed rare, threatened, endangered or other sensitive species.

*Desirable Vegetation* means native plant species that are appropriate for a specific community type and provide benefits to wildlife in the form of food, cover and nesting.

*Habitat Diversity* means richness and variety of native plant communities within a particular area of the landscape.

*Hydroperiod* means flooding duration, depth, and timing that influences species composition, ecosystem structure and function.

*Interim Land Management* means management of non-natural areas that provides revenue without impacting long-term water-development projects.

*Invasive/Exotic Vegetation* means certain plants that displace native species and adversely affect wildlife habitat, water quality, recreation, and biological diversity.

*Lead Manager* means the prime managing entity designated for a given tract of land; generally provides the on-site staff.

*Management Area* means a single tract or combination of tracts under one management program.

*Mitigation* means, for purposes of this policy, the actual acquisition, restoration, creation, or enhancement of wetlands to compensate for permitted wetland impacts.

*Mitigation Banking* means wetland acquisition, restoration, creation or enhancement undertaken expressly to provide compensation in advance of wetland losses from development activities.

*Multiple-Use* means the management of renewable resources for a variety of purposes such as recreation, range, timber, wildlife habitat, and water resource development.

*Prescribed Fire* means burning of vegetative fuels using controlled application of fire within specified environmental conditions.

*Primary Resource Lands* means lands having high water resource, fish, wildlife, and recreational values requiring acquisition or protection.

*Regional Mitigation Area* means, for purposes of this policy, permitted wetland impacts offset through payment for the acquisition, restoration and perpetual management of a Save Our Rivers identified and duly noticed project.

*Responsible Management* means level of management described in the General Management Plan.

*Sustainable Use* means to provide continued use of a natural resource without degradation or loss of that resource.

*Water Resource Buffer* means that portion of a Preservation 2000 or Save Our Rivers project necessary to protect the aquatic environment.

*Wildlife Corridor* means a connection between natural areas that allows the safe movement of wildlife.

(R.M. No. 139)

**Cross references:** Definitions and rules of construction, § 100-2.

### **Sec. 140-25. Responsibilities.**

The Land Stewardship Program is responsible for:

**(1) Water Resource Protection.** The basis for the Land Stewardship Program is the protection and management of natural hydrologic resources. The following policies guide implementation of this objective:

a. Acquired lands shall be managed to provide water resource-related benefits.

b. Land uses or activities that significantly or permanently alter or degrade the quality, quantity and/or natural movement of ground or surface water are not allowed unless they are a part of a regional water management system.

c. Where feasible, an attempt shall be made to restore a more natural hydroperiod on tracts where the drainage patterns have been altered.

d. Public use shall not result in detrimental impacts to water resources. When a public use activity produces detrimental effects on water resources, it shall be discontinued until an evaluation determines that such use is compatible.

e. Water resource lands designated as necessary to implement the Central and Southern Florida "Restudy" Project shall, upon acquisition, become the responsibility of the (Interim) Land Management Program, and follow the guidelines set forth under Section 373.1391(5), Florida Statutes.

**(2) Restoration and Protection of Natural Communities:**

a. The Land Stewardship Program will encourage the acquisition of large or regionally significant areas that protect important natural resources and provide wildlife corridors.

b. Particular emphasis shall be placed on the identification, protection and management of rare, threatened and endangered species.

c. The planting of invasive exotic plant species shall be prohibited in all management areas. Management practices will strive to identify existing infestations and implement appropriate control or eradication measures.

d. Where practicable, an attempt shall be made to restore and maintain desirable vegetation to promote habitat diversity in areas where invasive exotic vegetation, grazing practices, or improved land uses have substantially altered the historic landscape.

**(3) Resource Operations and Maintenance:**

a. Lands acquired for natural and/or hydrologic resource benefits shall be managed to conserve and protect those resources.

b. Exotic plant control in all management areas shall strive to attain a level of success where periodic maintenance eliminates the infestation or reduces the coverage of exotic plants.

c. Prescribed fire will be a primary management tool on District lands and will be applied within fire-maintained communities at appropriate intervals.

d. The Division of Forestry will be notified of all wildfires on District lands. Land Stewardship will provide initial suppression when commensurate personnel and equipment are available.

e. Inventories of natural and historic resources shall be performed to provide information for effective land management planning, natural community maintenance and ecological restoration.

f. Evaluation and monitoring of management activities shall be conducted to improve program effectiveness and efficiency.

1. Research shall evaluate the environmental response of certain management activities to assist staff in making appropriate management decisions.

2. Monitoring shall be conducted to identify landscape changes resulting from management activities.

3. Legislative-mandated management reviews will provide input from professional peers.

g. Resource protection shall be provided by professional law enforcement services through funded and unfunded contractual agreements to safeguard the public and protect natural and cultural resources on District-managed natural areas.

h. Sustainable use of forest resources shall be conducted where these activities adhere to a series of environmental criteria (see 1999 Forest Management Plan) that meet Land Stewardship Program goals. Timber contractors will be required to meet silvicultural Best Management Practices (BMP) developed for Florida forests.

i. Range management (grazing) will be considered on improved or native ranges when the introduction of cattle will not conflict with other natural resource management and public use goals.

j. Archaeological and historic resources are protected by site identification and inter-agency coordination with the Florida Division of Historical Resources. Land stewardship planning shall include an analysis of archeological data accompanied by appropriate public education opportunities.

k. Infrastructure support shall be developed and maintained to provide safe access for responsible management and public use on District lands. Such infrastructure may include access points, roads, trails, signs, utilities, and minimal public facilities.

l. Mechanical equipment may be used in conjunction with prescribed burning and other management tools to control vegetation and restore habitat structure.

m. Agricultural developments previously existing on acquired natural areas may be maintained if management of these developments is consistent with other land stewardship goals.

**(4) Public Use and Environmental Education:**

a. Public use of management areas that is consistent with other management goals shall be encouraged. Public use that may have detrimental impacts on sensitive environmental resources shall be restricted until an evaluation determines such use is compatible. A public use compatibility assessment will be included in the General Management Plan completed for each management area and will be based on the following criteria:

1. Consistency with the reason the lands were acquired.
2. Restrictions and/or prohibitions imposed by easements, leases, reservations, adjacent land ownership, conditions of the purchase agreement, and any other agreements concerning the property.
3. Infrastructure and support facility requirements, such as fences, gates, signage, entry design, stabilized off-road parking, trails, campsites, maintenance, and other operational and budgetary impacts.
4. Opportunities for persons with disabilities.
5. Limitations resulting from endangered species, other sensitive natural resources, archaeological resources, or land management practices.
6. Public health, safety and welfare.
7. Environmental education program opportunities.

b. Public Use Regulation:

1. Public use regulations are set forth in 40E-7.511, Florida Administrative Code, to implement Section 373.1391(1)(b), Florida Statutes. Accordingly, the District shall publish and make available to the public a "Public Use Guide" for designated land management areas. The Public Use Guide will be adopted by the Governing Board at a public meeting advertised in accordance with Chapter 120, Florida Statutes.
2. Rules and regulations governing the public use of each management area shall be enforced by agencies with appropriate law enforcement jurisdiction.
3. Pursuant to Section 373.609, Florida Statutes, the District shall seek the cooperation of every state and county attorney, sheriff, police officer, and appropriate city and county official in the enforcement of the provisions set forth according to 40E-7.511, Florida Administrative Code.
4. Florida Fish and Wildlife Conservation Commission regulations shall govern hunting in areas opened for such use.

**(5) Implementation Strategies.** The District will secure dedicated funding sources, personnel and other resources to support program goals and objectives. Project funding needs and sources for cooperative management agreements with government and non-government entities will be identified during acquisition. A cooperative management agreement will designate a lead Manager and identify whether District funding is required.

a. The private sector may be solicited to furnish certain management-related facilities and services through the execution of leases and agreements. These leases/agreements will assure mutual benefits to both the District and private parties and be consistent with the program management objectives.

- b. Mitigation:
1. Mitigation Banking: Mitigation banking provides an opportunity to accomplish large-scale restoration that may otherwise go unfunded. Pursuant to Section 373.4135, Florida Statutes, the District is encouraged to develop mitigation banks. Land managers will evaluate opportunities in their regions to implement mitigation banks that are consistent with the guidelines established in the Joint State and Federal Mitigation Bank Review Team Process for Florida.
  2. Regional Mitigation Areas: The acquisition, restoration and management of District lands as mitigation shall be consistent with Chapter 2000-133, amending Sections 373.414 and 373.4135, Florida Statutes. This includes the establishment of Memorandums of Agreement (MOA) that include restoration plans, success criteria, and monitoring requirements. The MOAs will be used to implement mitigation using full-cost accounting, public noticing, and approval by the Governing Board for use as a mitigation area. The mitigation shall meet restoration objectives as provided in the General Management Plan.
- c. Revenue Generation:
1. Private concessions and/or agreements with non-profit organizations will be considered to implement needed services through concession contracts.
  2. Entrance and user fees, permits, licenses and/or advance reservations may be required where considered necessary by the managing agency.
  3. Timber sales will be conducted to improve forest health or to support specific forest management goals.
  4. Grazing leases will be encouraged on selected rangeland to generate revenue or to provide services that offset program management costs.
- d. Volunteers and Interns:
1. Volunteers, interns and alternative work forces will be used when possible to supplement existing staff and services.
  2. Any volunteer services must meet the standards and procedures prescribed by the District (Risk Management Manual, Volume 1).
- (6) Program Components:**
- a. Management Assessment: A brief summary of the management issues completed when the site is identified for acquisition.
  - b. General Management Plan (GMP): Provides a description of recommended management and is required for each Land Stewardship Management Area. The GMP follows a designated format and is updated every five years.
  - c. Activity Plan (AP): Provides a detailed implementation strategy for specific activities such as prescribed burning, exotic removal and restoration. The plan shall be developed by the lead Manager in consultation with the cooperating agencies for each major tract of land (or group of tracts) to be operated as a single

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management unit. The AP may be included in the GMP and is updated when necessary.

d. **Annual Work Plan (AWP):** Summarizes activities corresponding with annual budget development and is prepared by the Operations Section of the Land Stewardship Program.

e. **Reporting:** Summaries of management activities for each management area will be reported quarterly within the District and annually as part of the Florida Forever Work Plan.

(R.M. No. 139)

Secs. 140-26--140-40. Reserved.

## **Appendix B. Soil Descriptions**

### Flatwood Soils

Flatwood soils are poorly drained non-hydric, upland soils with sandy marine sediments throughout the profile. The seasonal high water table can range from six to 18 inches below the soil surface for three to six months annually. This soil type is dominant on the Management Areas uplands and uplands throughout the basin.

### Flat Soils

Flat (previously referred to as slough) soils are poorly drained hydric soils with sandy marine sediments throughout the profile. Flats are located between the flatwoods and topographic depressions and are generally regarded as transition areas, e.g. a wet prairie or a slough. Generally, the seasonal high water table begins in June and ends from September or thereafter with inundation periods dependent upon seasonal rainfall or large storm events. Within the Management Areas the tributary sloughs and many of the depression marsh communities are buffered by soils of this this classification.

### Knolls

Knoll soils are non-hydric, upland soils with sandy marine sediments throughout the profile. These soils typically have no unique diagnostic horizons within the soil profile and are well to somewhat poorly drained. The seasonal high water table can range from one and a half to six feet below the soil surface for four to seven months annually. One ecological community that is typical to the knolls landscape is sand pine scrub. Natural vegetation may typically be even-aged sand pine trees with a dense under-story of oaks, saw palmetto, and other shrubs. Ground cover under the trees and shrubs is scattered. Large areas of light colored sand are often noticeable.

### Sand Depression Soils

Sand depression soils are very poorly drained hydric soils that typically have sandy marine sediments throughout the profile. Often, these areas are depressions adjacent to flatwoods. The seasonal high water table can range from one foot below to two feet above the soil surface for seven to 10 months annually. Wetland communities dominate this landscape position. Within the Management Areas, most of the outer floodplain represent this soil class.

### Muck Depression Soils

Muck depression soils are very poorly drained hydric soils that have an organic surface layer underlain by sandy marine sediments. These areas are often depressions adjacent to Flatwood soil-types. The seasonal high water table can range from six inches below to two feet above the soil surface for seven to eleven months annually. Wetland communities dominate this soil type. Examples within the Management Areas include the inner river floodplain .

### Urban or Made Lands

Urban or made land areas have soils that have been altered, excavated, or disturbed and no longer possess their natural morphological features. These soils do not function as they did in their original state, and little information on this subject is available. The seasonal high water table varies by site and is usually controlled to inhibit flooding of developed areas. No ecological communities are representative of this landscape position. The spoil berms fall into this classification.

### Water Areas

This classification represents areas that are permanently inundated, with depths usually two feet or more. No soil series or ecological community is associated with this classification. In the Management Areas, the channelized Kissimmee River and the oxbows and main channel of the old river best represent this category.

## Appendix C. FNAI Natural Communities

### Xeric Hammock

Xeric hammock is characterized as either a scrubby, dense, low canopy forest with little understory other than palmetto, or a multi-storied forest of tall trees with an open or closed canopy (Florida Natural Areas Inventory, 1990). Soils are deep, sandy and well drained, conditions expected of topography created by old dune systems. Typical canopy species in the Kissimmee River basin are live oak (*Quercus virginiana*), sand live oak (*Quercus geminata*), myrtle oak (*Quercus myrtifolia*) and Chapman oak (*Quercus chapmanii*). The understory is generally sparse due to dry soil conditions and overstory shading. Understory species include saw palmetto (*Serenoa repens*), bracken fern (*Pteridium aquilinum*), myrsine (*Rapanea punctata*), silk bay (*Persea borbonia* var. *humilis*), highbush blueberry (*Vaccinium corymbosum*) and Carolina jessamine (*Gelsemium sempervirens*). Wild pine (*Tillandsia balbisina*), and laurel greenbriar (*Smilax* sp.) are common arboreal species.

Xeric hammock is the climax successional stage of scrub or sandhill. Isolated remnant hammocks are the result of maturing scrub, protected from fire. Once established, xeric hammock resists burning by a lack of contiguous understory fuel and a duff layer of relatively incombustible oak leaves. When fire does occur within this community, it removes canopy, understory and ground cover biomass, reverting the area back to scrub. In the Land Stewardship Program management units, xeric hammock is commonly associated with scrub and prairie hammock, with similar species composition.

Xeric hammock is scarce, however, there is one classic example of this rare community located in the KICCO Management Area. Special care will be taken to avoid soil disturbance and protect this area from fire during prescribed fire applications to surrounding natural communities. Xeric hammock has a Florida Natural Areas Inventory state ranking of “S3”, rare or uncommon in state. Due to its rarity, areas of xeric hammock will be identified and managed to ensure perpetuation of existing locations.

### Scrub

Scrub occurs in many forms, but is often characterized as a closed to open canopy forest of sand pines with dense clumps or vast thickets of scrub oaks and other shrubs dominating the under-story (Florida Natural Areas Inventory, 1990). The later is the structural form for much of the scrub within the Management Areas. Typical plants include sand live oak, myrtle oak, Chapman’s oak, scrub oak, saw palmetto, rosemary (*Ceratiola ericoides*), rusty lyonia (*Lyonia ferruginea*), stagger bush (*Lyonia lucida*), runner oak (*Quercus pumila*), and wiregrass.

Highest elevations in the basin support this community. All scrub locations have sandy, well-drained, loose and non-organic soils. In the Kissimmee River

Management Areas, scrub is often associated with scrubby flatwoods, dry prairie, and in a few locations, xeric hammock.

Scrub is a fire dependent community. Fuel buildup is a lengthy process, as vegetation grows relatively slowly due to severe environmental conditions. With sufficient fuel, fire will burn with speed and intensity, returning nutrients to the soil and opening the canopy for light to reach ground layer species. Burns naturally occur once every 20 to 80 years. In an effort to maintain scrub sites, management practices include prescribed fire applied on a natural cycle for shrubby, oak-dominated scrub.

Scrub is being lost at an astounding rate throughout the state, as high elevations and fast drainage make this community highly desirable for development. This association occurs almost exclusively in Florida. State ranking of scrub is “S2”, imperiled in the state because of its rarity and vulnerability (Florida Natural Areas Inventory, 1990).

#### Prairie Hammock

Prairie hammock is characterized as a clump of tall cabbage palms and live oaks in the midst of prairie or marsh communities (Florida Natural Areas Inventory, 1990). Prairie hammocks establish on elevated soils surrounded by lower topography. These islands are generally flooded only for a short duration during the highest water levels. Naturally occurring fires are rare in these hammocks, due mainly to a lack of under-story fuel.

Canopy species in the floodplain are live oak and cabbage palm, with occasional laurel oak in lower elevations. An abundance of epiphytes, including listed species, are found in mature canopy trees. As in most prairie hammocks, those found here have a sparse under-story due to over-story shading, but cover is also reduced by cattle grazing and trampling of shrub and ground layer vegetation. Many species common to undisturbed hammocks are sparse or lacking, replaced by disturbance species such as broomweed (*Sida sp.*), tropical soda apple (*Solanum viarum*), and caesarweed (*Urena lobata*). Typical under-story plants of pristine prairie hammocks include wax myrtle, water oak, stoppers (*Eugenia sp.*), marlberry (*Ardisia escallonioides*), beautyberry (*Callicarpa americana*), and saw palmetto.

Florida Natural Areas Inventory ranks prairie hammocks as “G4” and “S4” both statewide and globally secure, although it may be quite rare in parts of its range, especially at the periphery. Land Stewardship management strives to minimize soil disturbance, restrict fire where appropriate and eradicate non-native invasive species within hammock areas.

#### Mesic Flatwoods

Mesic flatwoods are characterized as an open canopy forest of sparse pine trees with little or no under-story but a dense ground cover of herbs and shrubs. Two

common vegetation associations are longleaf pine/wiregrass/runner oak and slash pine/gallberry/saw palmetto. In the MA, slash pine dominates the over-story and gallberry (*Ilex glabra*), saw palmetto and fetterbush occur in the understory. Other typical plants include St. Johns-wort (*Hypericum sp.*), dwarf huckleberry (*Gaylussacia dumosa*), staggerbush, blueberry (*Vaccinium sp.*), gopher apple (*Lycania michauxi*), tar flower, bog buttons (*Lachnocalon sp.*), blackroot (*Pterocaulon pycnostachyum*), and yellow-eyed grass (*Xyris sp.*).

This community occurs on similar soils as dry prairies and wet flatwoods, with minor changes in topography determining community type. Acidic sands overlay hardpan that reduces water exchange between the soil surface and subsurface. Thus rainy seasons produces surface flooding, and dry seasons extreme drought, influencing vegetation species composition. Plants of this community have adapted to long intervals of inundation and desiccation, and acclimated to periodic fire.

Natural fires occur every one to eight years. Frequency of fire determines community type between dry prairie and mesic flatwoods, with longer fire intervals favoring mesic flatwoods.

#### Wet Flatwoods

Wet flatwoods are characterized as relatively open-canopy forests of scattered pine trees or cabbage palms with either a thick shrubby under-story and very sparse ground cover, or a sparse under-story and a dense ground cover of hydrophytic herbs and shrubs, with variations between these extremes (Florida Natural Areas Inventory, 1990). Other plants associated with this habitat type in the MA include wax myrtle, saw palmetto, beakrush (*Rhynchospora sp.*), St. John's-wort (*Hypericum sp.*), and blue maidencane (*Amphicarpum muhlenburgianum*).

Wet flatwoods develop on poorly drained acidic, low nutrient sands underlain by hardpan. Surface water appears a minimum of one month per year. Natural fire frequency is considered to be three to 10 years. Frequent fire postpones hardwood succession and thins canopy trees, while promoting under-story growth and fire-adapted species.

State ranking is "S4", apparently secure in the state, although it may be rare in some parts of its state range. Global ranking requires further research. Most wet flatwoods are extremely vulnerable to hydrologic manipulation and exotic invasion.

#### Wet Prairie

Wet prairie is characterized as a treeless plain with a sparse to dense ground cover of grasses, sedges, rushes, and herbs; including wiregrass, toothache grass (*Ctenium aromaticum*), maidencane (*Panicum hemotomon*), spikerush (*Eleocharis sp.*), and beakrush (*Rhynchospora sp.*). Other typical plants include

hatpins (*Lachnocaulon sp.*), marsh pinks (*Rhexia sp.*), crownbeard (*Verbesina chapmanii*), sundews (*Drosera sp.*), tickseed (*Bidens sp.*), wax myrtle, St. John's-wort (*Hypericum sp.*), and Panicums (Florida Natural Areas Inventory, 1990).

Wet prairies occur on low, flat, poorly drained terrain and are inundated from 50 to 100 days per year. Wet prairie species have adapted to long periods of drought conditions due to rainfall seasonality. Soils typically are sands with a major organic component. Fire plays an integral role in wet prairie ecology, and with sufficient fuel build-up, burns every two to four years. If deprived of fire, these grass-dominated flatlands succumb to shrub encroachment, and are especially vulnerable to wax myrtle infestations.

Wet prairie has a state ranking of "S4", apparently secure in the state, although it may be rare in some parts of its state range. Global ranking requires further research.

#### Floodplain Swamp

Floodplain swamp occurs on flooded soils along river channels and in low spots and oxbows within river floodplains. Dominant trees are usually buttressed hydrophytic species such as cypress and tupelo. Floodplain swamps in the MA grade into baygalls, and often contain many of the same species, with only species dominance varying. Soils and hydroperiods determine species composition and community structure. Baygalls are generally characterized as densely forested, peat-filled seepage depressions, frequently located at the edges of the floodplain where high water tables maintain soil moisture. The MA swamps are dominated by a mixture of swamp bay (*Persea palustris*) and loblolly bay (*Gordonia lasianthus*), with scattered red maple (*Acer rubrum*), cypress (*Taxodium distichum*), laurel oak, and cabbage palm. Typical under-story species include lizard's tail (*Saururus cernuus*), gallberry, wax myrtle laurel greenbrier (*Smilax laurifolia*), poison ivy (*Toxicodendron radicans*), chain fern (*Woodwardia virginiana*) and wild grape (*Vitis sp.*).

River swamps are characterized by surface flow early in the growing season and have both a short hydroperiod and a perceptible flow rate for at least part of each year. (Myers and Ewel, 1990). Naturally occurring fires are infrequent in floodplain swamps, due to the lack of dense understory fuels and slow peat accumulation. During periods of drought, fuel may dry out sufficiently to carry fire in backwater areas. Severe fire can destroy the peat layer and transform the baygall swamp into another community such as wet flatwoods or cypress swamp, depending on the depth of peat removal. To prevent peat fires in floodplain swamps, prescribed fire is applied to surrounding communities when soils within the floodplain are saturated.

Floodplain swamps are ranked statewide as "G4", apparently secure statewide, though it may be quite rare in parts of its range, especially at the periphery. Global ranking requires further research.

### Floodplain Marsh

Floodplain marsh are wetlands of herbaceous vegetation and low shrubs that occur in river floodplains (*Florida Natural Areas Inventory, 1990*). Typical emergent vegetation includes maidencane, buttonbush, sand cordgrass (*Spartina bakeri*), dotted smartweed (*Polygonum punctatum*), arrowheads (*Sagittaria sp.*), pickerelweed (*Pontedaria cordata*), spikerush, bulrush (*Scirpus sp.*), tickseed (*Coreopsis sp.*), and water primrose (*Ludwigia sp.*).

Floodplain marshes depend on periodic fire to reduce shrub dominance, and maintain species diversity and herbaceous openings. Natural fires have historically occurred every one to five years, depending on the density of fuel available (*Florida Natural Areas Inventory, 1990*). Summer lightning-initiated burns consumed above-water vegetation but preserved the floodplain's thick peat accumulation. Long-term fire exclusion favors floodplain marsh succession to a bog.

Floodplain marsh has a state ranking of "S2", imperiled because of rarity, or little remaining area, or because of some factors making it very vulnerable to extinction throughout its range. Further research is required to determine global ranking. The principle cause of ecological degradation of Florida's marshes has been dewatering (Myers and Ewel, 1990).

### Floodplain Forest

Floodplain forests are hardwood forests that occur on drier soils at slightly higher elevations within floodplains, such as on levees, ridges and terraces, and are usually flooded for a portion of the growing season. The dominant trees in south Florida include oaks and cypress. The floodplain forests include red maple, laurel oak, bald cypress, cabbage palm, red maple, strangler fig (*Ficus aurea*), red, sweet bay (*Magnolia virginiana*), wax myrtle, myrsine (*Rapanea punctata*), buttonbush, poison ivy, leather fern (*Acrostichum danaeifolium*), sawgrass, royal fern (*Osmunda regalis*) and lizard's tail (*Saururus cernuus*).

Hydroperiod is the most important factor influencing floodplain forests, which are inundated by floodwaters nearly every year up to 60% of the growing season. The organic material accumulating on the forest floor is redistributed in the floodplain during floods. Floodplain forests usually do not have standing water in the dry season. Floodplain forests are often associated with, and grade into, floodplain swamp or baygall. Species composition is frequently similar to that of hydric hammock communities.

Natural fires are infrequent in floodplain forests due to the lack of dense understory fuels and slow peat accumulation. During periods of drought, floodplain fuels may dry sufficiently to carry fire. Normally, light surface fires burn into the younger fringe from neighboring communities, but seldom reach

the largest trees in the deepest portion of the forest. The Land Stewardship Program regulates fire schedules to insure floodplain forests burn at natural frequencies and during periods of adequate ground moisture.

Maintenance of natural hydrologic regimes is critical to floodplain forest health. Species composition and the functional relationships throughout a river system are negatively impacted by hydrological alterations such as artificial impoundments, river diversion projects, pesticide use, forest clear cutting or intensive agriculture (Florida Natural Areas Inventory, 1990).

Floodplain forests have a state ranking of “S3”, rare or uncommon in the state. Further research is required for a definitive global classification.

#### Depression Marsh

Depression marsh, also known as a flatwoods pond, is characterized as a shallow, usually rounded depression in sand substrate with herbaceous vegetation often occurring in concentric bands (Florida Natural Areas Inventory, 1990). Typical plants include St. John’s-wort, spikerush (*Eleocharis sp.*), yellow-eyed grass, chain fern, primrose willow (*Ludwigia peruviana*), maidencane (*Panicum hemitomon*), wax myrtle, buttonbush, pickerelweed, arrowhead, and bladderwort.

Where marshes occur, one of three geological conditions is present: surficial deposits are impermeable, the water table emerges through the permeable substrate, or the marsh is hydrologically connected to a river (Kushlan, 1991). Depression marshes are typically small in size and hydrologically isolated from other surface water bodies. Water is received by runoff, seepage or direct rainfall. Hydroperiods range widely from as few as 50 days or less to more than 200 days per year ((Florida Natural Areas Inventory, 1990). Bottom soils are generally acidic peat, resulting from accumulation of decayed plant material. This community frequently grades into wet or mesic flatwoods.

Natural fire occurs in depression marshes every one to five years, depending on a combination of weather conditions and fuel build-up. Fire preserves the open canopy by limiting invasion of woody vegetation, promoting herbaceous growth, and slowing succession by deepening the marsh with an occasional peat fire. The Land Stewardship Program coordinates fire schedules to insure depression marshes burn at natural frequencies and during periods of adequate ground moisture.

Depression marshes provide critical breeding and foraging habitat for a wide assemblage of amphibians and reptiles not found in larger, more permanent systems. Cyclic surface water availability promotes foraging by numerous listed wading bird species such as the wood stork, white ibis, snowy egret, and sandhill crane.

Depression marsh is ranked statewide as “S”, either very rare throughout its range; or found locally, even abundantly at some of its locations in a restricted range; or because of other factors making it vulnerable to extinction throughout its range. Global ranking indicates it is apparently secure, though it may be quite rare in parts of its range, especially at the periphery. Further research is required for a definitive global classification.

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## Appendix D. Species List

### Plant Species

Species	Common Name	Type
<i>Acalypha gracilens</i>	slender 3-seed mercury	Native
<i>Acer rubrum</i>	red maple	Native
<i>Acrostichum sp.</i>	leather fern	N/A
<i>Alternanthera philoxeroides</i>	alligatorweed	Non-Native
<i>Amaranthus australis</i>	southern amaranth	Native
<i>Amaranthus sp.</i>	amaranth	Native
<i>Amaranthus spinosus</i>	spiny amaranth	Non-Native
<i>Ambrosia artemisiifolia</i>	ragweed; common ragweed	Native
<i>Ambrosia trifida</i>	giant ragweed	Native
<i>Ampelopsis arborea</i>	pepper-vine	Native
<i>Amphicarpum muhlenbergianum</i>	blue maidencane	Native
<i>Andropogon glomeratus</i>	bushy broom grass; busy bluestem	Native
<i>Andropogon gyrans</i>		N/A
<i>Andropogon virginicus</i>	chalky bluestem; broomsedge bluestem	Native
<i>Aristida beyrichiana</i>	wiregrass	N/A
<i>Aristida patula</i>	tall threeawn	N/A
<i>Annona glabra</i>	pond apple	N/A
<i>Asclepias incarnata</i>	swamp milkweed	Native
<i>Asclepias lanceolata</i>	lanceolata milkweed	N/A
<i>Aster carolinianus</i>	climbing aster	Native
<i>Aster dumosus</i>	See Symphyotrichum dumosum	N/A
<i>Aster elliotti (synonym)</i>	Elliott's aster	Native
<b>ASTERACEAE</b>	sunflowers	N/A
<i>Axonopus affinis (SYN)</i>	southern carpet grass	Native
<i>Axonopus compressus</i>	broadleaf carpetgrass, flat joint carpetgrass; broadleaf carpetgrass	Native
<i>Axonopus fissifolius</i>	common carpetgrass	Native

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<i>Axonopus furcatus</i>	big carpet grass	Native
<i>Axonopus sp.</i>	carpet grass	Native
<i>Azolla caroliniana</i>	Carolina mosquito fern	Native
<i>Baccharis halimifolia</i>	salt bush, groundsel tree; sea myrtle	Native
<i>Bacopa caroliniana</i>	lemon bacopa; blue waterhyssop	Native
<i>Bacopa monnieri</i>	smooth water hyssop; herb-of-grace	Native
<i>Bacopa sp.</i>	water hyssop	Native
<i>Bidens alba</i>	beggarticks	Native
<i>Bidens bipinnata</i>	Spanish needles	N/A
<i>Bidens mitis</i>	marsh beggartick; smallfruit beggarticks	Native
<i>Blechnum serrulatum</i>	swamp fern; toothed midsorus fern	Native
<i>Boehmeria cylindrica</i>	smallspike false nettle; bog hemp	Native
<i>Boltonia diffusa</i>	smallhead boltonia; doll's daisy	Native
<i>Callicarpa americana</i>	American beautyberry	Native
<i>Calystegia sepium</i>	hedge false bindweed	Native
<i>Canna flaccida</i>	golden canna; bandanna- of-the-Everglades	Native
<i>Cardiospermum microcarpum</i>	heartseed	Native
<i>Carex alata</i>	broadwing sedge	Native
<i>Carex glaucescens</i>	clustered sedge	Native
<i>Carex longii</i>	Long's sedge	Native
<i>Carex sp.</i>	sedges	Native
<i>Carex verrucosa</i>	warty sedge	Native
<i>Carex vexans</i>	Florida hammock sedge	Native
<i>Carya aquatica.</i>	water hickory	Native
<i>Cassia nictans</i>	cassia	Native
<i>Cassia obtusifolia</i>	sicklepod	N/A
<i>Cenchrus echinatus</i>	southern sandspur	N/A
<i>Cenchrus incertus</i>	field sandbur	Native
<i>Cenchrus spinifex</i>	field sandbur	Native

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<i>Centella asiatica</i>	Asian coinleaf, spadeleaf	Native
<i>Cephalanthus occidentalis</i>	buttonbush	Native
<i>Ceratophyllum demersum</i>	coontail	Native
<i>Ceratophyllum demersum</i>	coontail	Native
<i>Ceratopteris thalictroides</i>	watersprite	Native
<i>Chamaecrista nictitans</i>	sensitive pea	Native
<i>Chara sp.</i>	chara; muskgrass	Native
<i>Chenopodium ambrosioides</i>	Mexican tea	Non-Native
<i>Chloris neglecta</i>	fingergrass	Non-Native
<i>Cirsium horridulum</i>	yellow thistle; purple thistle	Native
<i>Cirsium sp.</i>	thistle	N/A
<i>Citrus sp.</i>	citrus	Non-Native
<i>Cladium jamaicense</i>	sawgrass; Jamaica swamp sawgrass	Native
<i>Coelorachis rugosa</i>	wrinkled jointtailgrass	Native
<i>Colocasia esculanta</i>	wild taro	Non-Native
<i>Commelina diffusa</i>	spreading or common dayflower	Native
<i>Commelina diffusa</i>	common dayflower	Native
<i>Commelina gigas</i>	climbing dayflower	Native/Endemic
<i>Conoclinium coelestinum</i>	mist flower	Native
<i>Coreopsis leavenworthii</i>	Leavenworth's tickseed	Native/Endemic
<i>Cornus foemina</i>	swamp dogwood; stiff dogwood	Native
<i>Crotalaria pallida</i>	smooth rattlebox	N/A
<i>Ctenium aromaticum</i>	toothache grass	N/A
<i>Cuphea carthagenensis</i>	Columbian waxweed	Non-Native; ornamental restricted in some areas
<i>Cynodon dactylon</i>	Bermudagrass	Non-Native
<i>Cyperaceae sp.</i>	sedges	N/A
<i>Cyperus articulatus</i>	jointed flatsedge	Native
<i>Cyperus compressus</i>	poorland flat sedge	Native
<i>Cyperus croceus</i>	Baldwin's flatsedge	Native
<i>Cyperus distinctus</i>	marshland flatsedge; swamp flatsedge	Native
<i>Cyperus esculentus</i>	yellow netgrass	Non-Native

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<i>Cyperus erythrorhizos</i>	redroot flatsedge	Native
<i>Cyperus flavescens</i>	yellow flatsedge	N/A
<i>Cyperus haspan</i>	sharp edge sedge; haspan flatsedge	Native
<i>Cyperus lanceolatus</i>	epiphytic flatsedge	Non-Native
<i>Cyperus odoratus</i>	fragrant flatsedge	Native
<i>Cyperus polystachyos</i>	manyspike flatsedge	Native
<i>Cyperus retrorsus</i>	retorse flat sedge; pinebarren flatsedge	Native
<i>Cyperus sp.</i>	flat sedges	N/A
<i>Cyperus strigosus</i>	strawcolored flatsedge	Native
<i>Cyperus surinamensis</i>	tropical flatsedge	Native
<i>Cyperus virens</i>	green flatsedge	Native
<i>Decodon verticillatus</i>	willow herb; swamp loosestrife	Native
<i>Desmodium incanum</i>	zarzabacoa comun	Native
<i>Desmodium sp.</i>	tick trefoil	N/A
<i>Desmodium triflorum</i>	threeflower ticktrefoil	Non-Native
<i>Dichantherium erectifolium</i>	erectleaf witchgrass	Native
<i>Dichondra caroliniensis</i>	Carolina ponysfoot	Native
<i>Dichromena colorata</i>	white-tops	Native
<i>Dichromena latifolia</i>	white-bracted sedge	Native
<i>Digitaria ciliaris</i>	southern crabgrass	Native
<i>Digitaria longiflora</i>	Indian crabgrass	Non-Native
<i>Digitaria pentzii</i>	pangolagrass	Non-Native
<i>Digitaria serotina</i>	dwarf crabgrass; blanket crabgrass	Native
<i>Digitaria sp.</i>	crabgrass	N/A
<i>Diodia virginiana</i>	Virginia buttonweed	Native
<i>Diospyros virginiana</i>	persimmon; common persimmon	Native
<i>Drosera Sp.</i>	sundew	Native
<i>Drymaria cordata</i>	drymary	Non-Native
<i>Echinochloa crusgalli</i>	barnyard grass	Non-Native
<i>Echinochloa walteri</i>	Walter's millet; coast cockspur	Native

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<i>Eclipta prostrata</i>	Yerba de Tajo, eclipta; false daisy	N/A
<i>Eichhornia crassipes</i>	water hyacinth; common water-hyacinth	Non-Native
<i>Eleocharis cellulosa</i>	<i>club-rush; gulf coast spikerush</i>	Native
<i>Eleocharis flavescens</i>	<i>pale spikerush; yellow spikerush</i>	Native
<i>Eleocharis interstincta</i>	<i>jointed spikerush; knotted spikerush</i>	Native
<i>Eleocharis olivacea</i>	<i>brightgreen spikerush</i>	Native
<i>Eleocharis sp.</i>	<i>spikerush</i>	Native
<i>Eleocharis vivipara</i>	sprouting spikerush; viviparous spikerush	Native
<i>Eleocharis vivipara</i>	sprouting spikerush; viviparous spikerush	Native
<i>Elephantopus elatus</i>	tall elephant's foot	Native
<i>Eleusine indica</i>	Indian goosegrass	Non-Native
<i>Eragrostis atrovirens</i>	thalia lovegrass	Non-Native
<i>Eragrostis bahiensis</i>	bahia lovegrass	Non-Native
<i>Eragrostis elliotti</i>	Elliot's lovegrass	Native
<i>Eragrostis lugens</i>	morning lovegrass	Non-Native
<i>Eragrostis spectabilis</i>	purple lovegrass	Native
<i>Erechtites hieraciifolia</i>	American burn	Native
<i>Eremochloa ophiuroides</i>	centipedegrass	Non-Native
<i>Erigeron quercifolius</i>	oakleaf fleabane	Native
<i>Eryngium baldwinii</i>	Baldwin's eryngo	N/A
<i>Eucalyptus grandis</i>	grand eucalyptus	Non-Native
<i>Eupatorium capillifolium</i>	small dogfennel; dogfennel	Native
<i>Eupatorium coelestinum</i>	thoroughwort	Native
<i>Eupatorium serotinum</i>	lateflowering thoroughwort	Native
<i>Euthamia caroliniana</i>	fragrant goldenrod; slender goldenrod	Native
<i>Ficus arena</i>	strangler fig	Native
<i>Fimbristylis autumnalis</i>	slender fimbry	Native
<i>Fimbristylis caroliniana</i>	Carolina fimbry	Native
<i>Fimbristylis dichotoma</i>	tall fimbry; forked fimbry	Native
<i>Fimbristylis schoenoides</i>	ditch fimbry	Native

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<i>Fraxinus caroliniana</i>	pop ash; Carolina ash; water ash	Native
<i>Fuirena pumila</i>	dwarf umbrella-grass; dwarf umbrellasedge	Native
<i>Fuirena scirpoidea</i>	southern umbrellasedge	Native
<i>Galium tinctorium</i>	stiff marsh bedstraw	Native
<i>Galium uniflorum</i>	one-flower bedstraw	N/A
<i>Gelsemium sempervirens</i>	carolina jessimine	Native
<i>Geranium carolinianum</i>	carolina cranesbill	Native
<i>Habenaria repens</i>	water-spider orchid; false reinorchid	Native
<i>Hedyotis uniflora</i>	clustered bluet	Native
<i>Hedyotis uniflor</i>	clustered mille graine	Native
<i>Helianthus agrestis</i>	southeastern sunflower	Native
<i>Hemarthria altissima</i>	limpoglass	Non-Native
<i>Hibiscus grandiflorus</i>	swamp rosemallow	Native
<i>Hydrilla verticillata</i>	hydrilla; waterhyme	Non-Native
<i>Hydrilla verticillata</i>	hydrilla; waterhyme	Non-Native
<i>Hydrochloa caroliniensis</i> ( <i>Luziola fluitans</i> )	common watergrass	N/A.
<i>Hydrocotyle ranunculoides</i>	floating penny wort; floating marsh pennywort	Native
<i>Hydrocotyle umbellata</i>	manyflower marsh pennywort	Native
<i>Hymenachne amplexicaulis</i>	West Indian marsh grass; trompetilla	Non-Native
<i>Hypericum cistifolium</i>	roundpod St. Johns wort	Native
<i>Hypericum fasciculatum</i>	sandweed; peelbark St. John's-Wort	Native
<i>Hypericum hypercoides</i>	St. andrew's cross	Native
<i>Hypericum mutilum</i>	slender St. John's-Wort	Native
<i>Hypericum sp.</i>	St. John's-Wort	N/A
<i>Hypericum tetrapetalum</i>	fourpetal St. John's-Wort	Native

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<i>Hyptis alata</i>	clustered bushmint; musky mint	Native
<i>Ilex cassine</i>	dahoon holly; dahoon	Native
<i>Ilex glabra</i>	inkberry; inkberry	N/A
<i>Imperata cylindrica</i>	cogongrass	Non-Native
<i>Ipomea alba</i>	white morning glory	Native
<i>Ipomea sagittata</i>	saltmarsh morning glory	Native
<i>Ipomea sp.</i>	morning glory	Native
<i>Iris virginica</i>	blue flag; Virginia iris	Native
<i>Iva microcephala</i>	Piedmont marshelder	Native
<b>JUNCACEAE</b>	rush	N/A
<i>Juncus effusus</i>	soft rush	Native
<i>Juncus marginatus</i>	shore rush	Native
<i>Juncus megacephalus</i>	Bighead 'rush	N/A
<i>Justicia angusta</i>	pineland waterwillow	N/A
<i>Kosteletzkya virginica</i>	virginia seashore mallow; virginia saltmarsh mallow	Native
<i>Kyllinga brevifolia</i>	short leaf flatsedge	Non-Native
<i>Kyllinga odorata</i>	fragrant flatsedge	Native
<i>Kyllinga pumila</i>	low spikesedge	Native
<i>Lachnanthes caroliniana</i>	redroot	Native
<i>Lachnocalon anceps</i>	whitehead bogbutton	Native
<i>Lachnocalon beyrichianum</i>	Southern bogbutton	Native
<i>Lantana camara</i>	lantana; shrub verbena	Non-Native
<i>Leersia hexandra</i>	southern cutgrass	Native
<i>Lemna sp.</i>	duckweed	Native
<i>Lepidium virginicum</i>	poor man's peppergrass; virginia pepperweed	Native
<i>Liatris sp.</i>	blazing star	Native
<i>Limnobium spongia</i>	frog's-bit; American spongeplant	Native
<i>Lindernia anagallidea</i>	.	N/A

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<i>Lindernia grandiflora</i>	savanna false pimpernel	Native
<i>Liquidambar styraciflua</i>	sweet gum, red gum	N/A
<i>Ludwigia decurrens</i>	primrosewillow; wingleaf primrosewillow	Native
<i>Ludwigia leptocarpa</i>	anglestem primrosewillow	Native
<i>Ludwigia maritima</i>	seaside primrosewillow	Native
<i>Ludwigia octovalis</i>	Mexican primrosewillow	Native
<i>Ludwigia peruviana</i>	Peruvian primrosewillow	Non-Native
<i>Ludwigia repens</i>	red ludwigia; creeping primrosewillow	Native
<i>Ludwigia sp.</i>	water primrose; seedbox	Native
<i>Ludwigia suffruticosa</i>	shrubby seedbox	Native
<i>Luziola fluitans</i>	watergrass; southern watergrass	Native
<i>Lygodium japonicum</i>	Japanese climbing-fern	Non-Native
<i>Lyonia ferruginea</i>	rusty lyonia	N/A
<i>Lyonia fruticosa</i>	staggerbush	N/A
<i>Lyonia lucida</i>	stagger bush	N/A
<i>Lygodium microphyllum</i>	Old World climbing fern; small-leaf climbing fern	Non-Native
<i>Lythrum alatum</i>	winged loosestrife	Native
<i>Macroptilium lathyroides</i>	wild bushbean	Non-Native
<i>Magnolia virginiana</i>	sweetbay; sweetbay magnolia	Native
<i>Melothria pendula</i>	creeping cucumber	Native
<i>Micranthemum umbrosum</i>	baby tears; shade mudflower	Native
<i>Mikania scandens</i>	climbing hempweed; climbing hempvine	Native
<i>Mitreola petiolata</i>	stalked miterwort; lax hornpod	Native

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<i>Momordica charantia</i>	wild balsam apple; balsampear	Non-Native
<i>Myrica cerifera</i>	wax myrtle; southern bayberry	Native
<i>Myriophyllum aquaticum</i>	parrot feather; watermilfoil	Non-Native
<i>Myriophyllum aquaticum</i>	parrot feather watermilfoil	Non-Native
<i>Najas guadalupensis</i>	southern naiad; southern water nymph	Native
<i>Najas guadalupensis</i>	southern water nymph	Native
<i>Nuphar advenum</i>	spatterdock	Native
<i>Nuphar lutea</i>	spatterdock	Native
<i>Nymphaea mexicana</i>	yellow waterlily	Native
<i>Nymphaea odorata</i>	white waterlily	Native
<i>Nyssa sylvatica var. biflora</i>	swamp tupela	Native
<i>Osmunda cinnamomea</i>	cinnamon fern	Native
<i>Osmunda regalis</i>	royal fern	Native
<i>Osmunda sp.</i>	.	Native
<i>Oxalis corniculata</i>	creeping woodsorrel; common yellow woodsorrel	Native
<i>Oxalis florida</i>	wood sorrel	Native
<i>Panicum anceps</i>	beaked panic grass	Native
<i>Panicum angustifolium</i>	needleleaf witchgrass	Native
<i>Panicum dichotomum</i>	cypress witchgrass	Native
<i>Panicum erectifolium</i>	witchgrass	Native
<i>Panicum hemitomon</i>	maidencane	Native
<i>Panicum hians</i>	gaping panic grass	Native
<i>Panicum paludivagum</i>	Egyptian paspalidum	Non-Native
<i>Panicum repens</i>	torpedograss	Non-Native
<i>Panicum rigidulum</i>	redtop panicum	Native
<i>Panicum sp.</i>	panic grass	N/A
<i>Panicum sphaerocarpon</i>	roundseed witchgrass	N/A
<i>Panicum verrucosum</i>	warty panic grass	Native
<i>Parthenocissus quinquefolia</i>	Virginia creeper; woodbine	Native
<i>Paspalidium geminatum</i>	Egyptian paspalidium; Kissimmee grass	Native
<i>Paspalum acuminatum</i>	brook crowngrass	Non-Native

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<i>Paspalum conjugatum</i>	sour paspalum; hilograss	Native
<i>Paspalum dilatatum</i>	dallisgrass	Non-Native
<i>Paspalum dissectum</i>	mudbank paspalum; mudbank crowgrass	Native
<i>Paspalum distichum</i>	joint paspalum; knotgrass	Native
<i>Paspalum floridanum</i>	Florida paspalum	Native
<i>Paspalum laeve</i>	field paspalum	Native
<i>Paspalum notatum</i>	bahiagrass	Native
<i>Paspalum publiflorum</i>	hairy paspalum	Native
<i>Paspalum repens</i>	water paspalum	Native
<i>Paspalum setaceum</i>	thin paspalum	Native
<i>Paspalum sp.</i>	.	Native
<i>Paspalum urvillei</i>	Vasey grass	Non-Native
<i>Passiflora sp.</i>	passionflower	Native
<i>Peltandra sagittifolia</i>	spoonflower; white arrow arum	Native
<i>Peltandra virginica</i>	green arrow arum	Native
<i>Periphyton</i>	periphyton	N/A
<i>Persea borbonia</i>	red bay	Native
<i>Perea borbonia humilis</i>	silk bay	N/A
<i>Persea palustris</i>	swamp bay	Native
<i>Phragmites australis</i>	common reed	Native
<i>Phyla nodiflora</i>	common frog fruit; capweed; turkey tangle fogfruit	Native
<i>Physalis pubescens</i>	husk tomato	Native
<i>Phytolacca americana</i>	common pokeweed; American pokeweed	Native
<i>Pinus elliotti</i>	slash pine	Native
<i>Pistia stratiotes</i>	water lettuce	Non-Native?
<i>Pluchea foetida</i>	stinking camphorweed	Native
<i>Pluchea odorata</i>	sweetscent	Native
<i>Pluchea rosea</i>	stinkweed; rosy camphorweed	Native
<i>Pluchea sp.</i>	camphorweed	N/A
<b>POACEAE</b>	Grasses	N/A
<i>Polygonum densiflorum</i>	denseflower smartweed; denseflower knotweed	Native

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<i>Polygonum hirsutum</i>	hairy smartweed	Native
<i>Polygonum hydropiperoides</i>	swamp smartweed; mild waterpepper	Native
<i>Polygonum punctatum</i>	dotted smartweed	Native
<i>Polygonum sp.</i>	knotweed, smartweed	Native
<i>Polypodium polypidiodes</i>	resurrection fern	Native
<i>Polypremum procumbens</i>	juniperleaf; rustweed	Native
<i>Pontederia cordata</i>	pickerelweed	Native
<i>Pontederia lanceolata</i>	pickerelweed	N/A
<i>Proserpinaca palustris</i>	marsh mermaidweed	Native
<i>Proserpinaca palustris</i>	marsh mermaidweed	Native
<i>Psidium guajava</i>	common guava	Non-Native
<i>Psilocarya nitens</i>	short-beak baldrush	N/A.
<i>Ptilimnium capillaceum</i>	mock bishopsweed; herbwilliam	Native
<i>Quercus chapmanii</i>	chapman oak	Native
<i>Quercus germinata</i>	sand live oak	Native
<i>Quercus laurifolia</i>	laurel oak; diamond oak	Native
<i>Quercus myrtifolia</i>	myrtle oak	Native
<i>Quercus nigra</i>	water oak	Native
<i>Quercus sp.</i>	oak	N/A
<i>Quercus virginiana</i>	live oak	Native
<i>Rapanea punctata</i>	myrsine	Native
<i>Rhexia mariana</i>	pale meadowbeauty; Maryland meadowbeauty	Native
<i>Rhexia nashii</i>	maid marian	Native
<i>Rhus copallinum</i>	winged sumac	Native
<i>Rhynchelytrum repens</i>	natalgrass; rose natalgrass	N/A
<i>Rhynchospora cephalantha</i>	clustered beakrush; bunched beaksedge	Native
<i>Rhynchospora chalarocephala</i>	loose head beakrush	Native
<i>Rhynchospora colorata</i>	star-rush	Native
<i>Rhynchospora decurrens</i>	swampforest beaksedge	Native
<i>Rhynchospora divergens</i>	spreading beaksedge	Native

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<i>Rhynchospora fascicularis</i>	fasciculate beak ush	Native
<i>Rhynchospora eximia</i>	Florida breaksedge	Native
<i>Rhynchospora globularis</i>	Globe beakrush	Native
<i>Rhynchospora grayi</i>	Gray's beakrush	Native
<i>Rhynchospora inundata</i>	inundated beakrush; narrowfruit horned beaksedge	Native
<i>Rhynchospora microcarpa</i>	southern beakrush; souther beaksedge	Native
<i>Rhynchospora microcephala</i>	capitate beakrush; bunched beaksedge	Native
<i>Rhynchospora nitens</i>	baldrush; shortbeak beaksedge	Native
<i>Rhynchospora odorata</i>	fragrant beakrush; fragrant beaksedge	N/A
<i>Rhynchospora scirpoides</i>	longbeak beaksedge	Native
<i>Rhynchospora tracyi</i>	Tracy's beakrush	Native
<i>Ricciocarpus natans</i>	liverwort; Purple-fringed riccia	N/A
<i>Richardia scabra</i>	rough Mexican clover	Non-Native
<i>Rubus cuneifolius</i>	sand blackberry	Native
<i>Ruella sp.</i>	ruella	Native
<i>Sabal palmetto</i>	cabbage palm	Native
<i>Sabatia bartramii</i>	Bartram's rosegentian	Native
<i>Saccharum giganteum</i>	sugarcane plumegrass	N/A
<i>Sacciolepis indica</i>	glenwood grass; Indian cupscale	Non-Native
<i>Sacciolepis striata</i>	American cupscale	Native
<i>Sagittaria lancifolia</i>	duck potato; bulltongue arrowhead	Native
<i>Sagittaria latifolia</i>	broadleaf arrowhead; common arrowhead; duck potato	Native

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<i>Salix caroliniana</i>	coastalplain willow; Carolina willow	Native
<i>Salvinia minima</i>	water fern; water spangles	Non-Native
<i>Sambucus canadensis</i>	elderberry	Native
<i>Sambucus simpsonii</i>	.	N/A
<i>Sarcostemma clausum</i>	white twinevine	Native
<i>Saururus cernuus</i>	lizard's-tail	Native
<i>Schinus terebinthifolius</i>	Brazilian pepper	Non-Native
<i>Scirpus californicus</i>	southern bulrush; giant bulrush; California bulrush	Native
<i>Scirpus cubensis</i>	Cuban bulrush; burhead sedge	Non-Native
<i>Scirpus tabernaemontani</i>	softstem bulrush	Native
<i>Scleria reticularis</i>	netted nutrush	Native
<i>Scoparia dulcis</i>	licoriceweed; sweetbroom	Native
<i>Senecio vulgaris</i>	common groundsel	N/A
<i>Senna obtusifolia</i>	coffeeweed, sicklepod	Native
<i>Senna occidentalis</i>	septicweed; coffee senna	Non-Native
<i>Senna sp.</i>	.	N/A
<i>Serenoa repens</i>	saw palmetto	Native
<i>Sesbania exaltata</i>	.	N/A
<i>Sesbania herbacea</i>	danglepod	Native
<i>Sesbania punicea</i>	Spanish gold; rattlebox	Non-Native
<i>Sesbania sp.</i>	.	N/A
<i>Sesbania vesicaria</i>	bagpod rattle bush; bladderpod	Native
<i>Setaria magna</i>	giant foxtail; giant bristlegrass	Native
<i>Setaria parviflora</i>	yellow bristlegrass; knotroot foxtail	Native
<i>Setaria geniculata</i>	bristlegrass	Native
<i>Sida acuta</i>	sida; common wireweed; common fanpetals	Native
<i>Sida cordifolia</i>	lima	Non-Native

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<i>Sida rhombifolia</i>	arrow leaf sida; Cuban jute; Indian hemp	Native
<i>Sida sp.</i>	fanpetals	N/A
<i>Sida elliottii</i>	Elliott's fanpetals	Native
<i>Sisyrinchium angustifolium</i>	blue-eyed grass; narrowleaf blue-eyed grass	Native
<i>Smilax auriculata</i>	wild bamboo	Native
<i>Smilax bona-nox</i>	saw greenbrier	N/A
<i>Smilax laurifolia</i>	laurel greenbrier; bamboo vine	Native
<i>Smilax rotundifolia</i>	common greenbrier; bullbrier; roundleaf greenbrier	Native
<i>Smilax sp.</i>	greenbrier	N/A
<i>Solanum americanum</i>	American black nightshade	Native
<i>Solanum capsicoides</i>	soda apple, cockroach-berry	N/A
<i>Solanum sp.</i>	soda apple	N/A
<i>Solanum viarum</i>	tropical soda apple	Non-Native
<i>Solidago fistulosa</i>	pinebarren goldenrod	Native
<i>Solidago tortifolia</i>	twistedleaf goldenrod	Native
<i>Sorghastrum secundum</i>	lopsided indiagrass	Native
<i>Spartina bakeri</i>	Baker's cord grass; sand cordgrass	Native
<i>Spartina sp.</i>	cord grasses	Native
<i>Sphagnum sp.</i>	sphagnum moss	N/A
<i>Sphenoclea zeylanica</i>	chickenspike	Non-Native
<i>Sphenoclea zeylanica</i>	chickenspike	Non-Native
<i>Sporobolus indicus</i>	smut grass	Non-Native
<i>Stillingia aquatica</i>	corkwood	Native
<i>Suriana maritima</i>	bay cedar	Native
<i>Symphotrichum dumosum</i>	Rice-button aster	Native
<i>Taxodium distichum</i>	bald-cypress	Native
<i>Teucrium canadense</i>	American germander; woodsage; Canadian germander	Native

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<i>Thalia geniculata</i>	fireflag; alligatorflag	Native
<i>Thelypteris dentata</i>	downy maiden fern; downy shield fern	Native
<i>Thelypteris interrupta</i>	willdenows maiden fern; Willdenow's fern; downy maiden fern	Native
<i>Thelypteris kunthii</i>	widespread maiden fern; souther maiden fern	Native
<i>Thelypteris palustris</i>	marsh fern	Native
<i>Thelypteris sp.</i>	maidenferns	N/A
<i>Tillandsia sp.</i>	airplant	N/A
<i>Toxicodendron radicans</i>	poison ivy	Native
<i>Triadenum virginicum</i>	marsh St. John's wort	Native
<i>Trifolium repens</i>	white clover	Non-Native
<i>Typha domingensis</i>	southern cattail	Native
<i>Typha latifolia</i>	broad leaf cattail	Native
<i>Urena lobata</i>	Caesarweed	Non-Native
<i>Urochloa mutica</i>	paragrass	Non-Native
<i>Urochloa subquadriflora</i>	tropical signalgrass	Non-Native
<i>Urtica chamaedryoides</i>	heartleaf nettle	Native
<i>Utricularia sp.</i>	bladderwort	Native
<i>Utricularia sp.</i>	bladderwort	Native
<i>Vaccinium corybossum</i>	highbrush blueberry	Native
<i>Vaccinium myrsinites</i>	shiny blueberry	Native
<i>Vallisneria americana</i>	tapegrass	Native
<i>Verbena scabra</i>	sandpaper vervain; harsh vervain	Native
<i>Vicia acutifolia</i>	fourleaf vetch	Native
<i>Vigna luteola</i>	cowpea; hairy pod cowpea	Native
<i>Vigna speciosa</i>	wandering cowpea	Non-Native
<i>Viola lanceolata</i>	bog white violet	Native
<i>Vitis rotundifolia</i>	muscadine grape	Native
<i>Vitis munsoniana</i>	wild grape	Native
<i>Wolffiella gladiata</i>	sword bogmat; Florida mudmidget	Native
<i>Woodwardia areolata</i>	netted chain fern	Native
<i>Woodwardia sp.</i>	chainfern	Native

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<i>Woodwardia virginica</i>	Virginia chainfern	Native
<i>Xyris ellioti</i>	Elliott's yellow-eyed grass	Native
<i>Xyris fimbriata</i>	fringed yellow-eyed grass	Native
<i>Xyris jupicae</i>	Richard's yellow-eyed grasses	Native

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**Bird Species**

		PRESENC E	STATUS		
		E=Endangered T=Threatened S=Species of Special Concern N=Non-native		Federal	State
		◆ = Potential ☉ = Confirmed			
Common Name	Scientific Name				
Acadian Flycatcher	Empidonax virescens	◆			
American Bittern	Botaurus lentiginosus	☉			
American Crow	Corvus brachyrhynchos	☉			
American Goldfinch	Carduelis tristis	◆			
American Kestrel	Falco sparverius	☉			
American Redstart	Setophaga ruticilla	☉			
American Robin	Turdus migratorius	☉			
American Wigeon	Anas Americana	◆			
American Woodcock	Scolopax minor	☉			
Anhinga	Anhinga Anhinga	☉			
Bachman's Sparrow	Aimophila aestivalis	◆			
Bald Eagle	Haliaeetus leucocephalus	☉			
Bank Swallow	Riparia riparia	◆			
Barn Owl	Tyto alba	☉			
Barn Swallow	Hirundo rustica	☉			
Barred Owl	Strix varia	☉			
Belted Kingfisher	Ceryle alcyon	☉			
Black-and-white Warbler	Mniotilta varia	◆			
Black-billed Cuckoo	Coccyzus erythrophthalmus	◆			
Brown Pelican	Pelecanus occidentalis	◆			
Black-whiskered Vireo	Vireo altiloquus	◆			
Black Duck	Anas rubripes	◆			
Black Rail	Laterallus jamaicensis	◆			
Black Vulture	Coragyps atratus	☉			
Blackpoll Warbler	Dendroica striata	◆			
Blk-crowned Night-heron	Nycticorax nycticorax	☉			
Blk-throated Blue Warbler	Dendroica caerulescens	☉			
Blk-throated Green Warbler	Dendroica virens	◆			
Blue Jay	Cyanocitta cristata	☉			
Blue-gray Gnatcatcher	Poliptila caerulea	☉			

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American Anhinga	Anhinga anhinga	☉		
Blue Grosbeak	Guiraca caerulea	◆		
Boat-tailed Grackle	Quiscalus major	☉		
Bobolink	Dolichonyx oryzivorus	☉		
Bobwhite Quail	Colinus virginianus	☉		
Brewer's Blackbird	Euphagus cyanocephalus	☉		
Brown-headed Cowbird	Molothrus ater	☉	N	N
Brown Pelican	Pelecanus occidentalis	◆		
Brown Thrasher	Toxostoma rufum	☉		
Burrowing Owl	Athene curicularia	☉		S
Canvasback	Aythya valisineria	◆		
Carolina Wren	Thryothorus ludovicianus	☉		
Cattle Egret	Bubulcus ibis	☉	N	N
Cliff Swallow	Petrochelidon pyrrhonota	◆		
Common Flicker	Colaptes auratus	◆		
Common Grackle	Quiscalus quiscula	☉		
Common Ground Dove	Columbina passerina	☉		
Common Loon	Gavia immer	◆		
Common Snipe	Gallinago gallinago	☉		
Common Yellowthroat	Geothlypis trichas	☉		
Common Tern	Sterna hirundo	◆		
Connecticut Warbler	Oporonis agilis	◆		
Cooper's Hawk	Accipiter cooperii	◆		
Crested caracara	Caracara cheriway	☉		
Downy Woodpecker	Picoides pubescens	☉		
Eastern Screech-owl	Megascops asio	☉		
Eastern Wood-pewee	Contopus virens	☉		
European Starling	Sturnus vulgaris	☉	N	N
Everglades Snail Kite	Rostrhamus sociabilis	◆	E	
Fish Crow	Corvus ossifragus	◆		
Glossy Ibis	Plegadis falcinellus	◆		
Grasshopper Sparrow, FL	Ammodramus savannarum floridanus	◆	E	
Gray Catbird	Dumetella carolinensis	☉		
Great Egret	Ardea alba	☉		
Great Horned Owl	Bubo virginianus	☉		
Great White Heron	Ardrea herodias	◆		
Greater Yellowlegs	Tringa melamoleuca	◆		
Green-winged Teal	Anas crecca	☉		
Green Backed Heron	Butorides virescens	☉		
Hairy Woodpecker	Picoides villosus	◆		
Henslow's Sparrow	Ammodramus henslowii	◆		
Hooded Warbler	Wilsonia citrina	◆		
House Sparrow	Passer domesticus	☉	N	N
House Wren	Troglodytes aedon	◆		

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Indigo Bunting	Passerina cyanea	9		
Kentucky Warbler	Oporonis formosus	◆		
Killdeer	Charadrius vociferus	9		
King Rail	Rallus elegans	◆		
Le Conte's Sparrow	Ammodramus leconteii	◆		
Least Bittern	Ixobrychus exilis	9		
Loggerhead Shrike	Lanius judovicianus	9		
Marsh Wren	Cistothorus palustris	9		
Merlin	Falco columbarius	9		
Mottled Duck	<i>Pelecanus occidentalis</i>	9		
Mourning Dove	Zenaida macroura	9		
N. Rough-winged Swallow	Stelgidopteryx serripennis	◆		
Northern Bobwhite Quail	Colinus virginianus	9		
Northern Cardinal	Cardinalis cardinalis	9		
Northern Harrier	Circus cyaneus	◆		
Northern Mockingbird	Mimus polyglottos	9		
Northern Oriole	Icterus galbula	◆		
Northern Parula Warbler	Parula americana	◆		
Northern Pintail	Anas acuta	◆		
Painted Bunting	Passerina ciris	9		
Palm Warbler	Dendroica plamarum	9		
Peregrine Falcon	Falco peregrinus	9		
Red-breasted Merganser	Mergus serrator	◆		
Pileated Woodpecker	Dryocopus pileatus	9		
Pine Warbler	Dendroica pinus	9		
Prairie Warbler	Dendroica discolor	9		
Prothonotary Warbler	Protonotaria citrea	◆		
Purple Martin	Progne subis	◆		
Redwing Blackbird	Agelaius phoeniceus	9		
Ruby-throated Hummingbird	Archilochus colubris	◆		
Rufous-sided Towhee	Pipilo erythrophthalmus	◆		
Sandhill Crane	Grus canadensis	9		S
Scissor-tailed Flycatcher	Tyrannus forficatus	◆		
Scrub Jay	Aphelocoma coerulescens	◆	T	
S.E American Kestrel	Falco sparverius paulus	9		T
Sedge Wren	Cistothorus platensis	◆		
White-tailed Kite	Elanus caeruleus	9		
Sharp-tailed Sparrow	Ammodramus caudacutus	◆		
Short-eared Owl	Asio flammeus	◆		
Short-tailed Hawk	Buteo brachyurus	9		
Smooth-billed Ani	Crotophaga ani	◆		
Swallow-tailed Kite	Elanoides forficatus	9		
Snowy Egret	Egretta thula	9		S

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Solitary Sandpiper	Tringa solitaria	◆		
Solitary Vireo	Vireo solitarius	◆		
Song Sparrow	Melospiza melodia	◆		
Tree Swallow	Tachycineta bicolor	☉		
Tricolored Heron	Egretta tricolor	☉		S
Turkey Vulture	Cathartes aura	☉		
Virginia Rail	Rallus limicola	◆		
Water Pipit	Anthus spinoletta	◆		
White-eyed Vireo	Vireo griseus	☉		
White-throated Sparrow	Zonotrichia albicollis	◆		
White-winged Dove	Zenaida asiatica	◆		
White Ibis	Eodcimus albus	☉		S
White Pelican	Accipiter striatus	◆		
Whip-poor-will	Caprimulgus vociferus	☉		
Woodstork	Mycteria americana	☉	E	
Yel-crowned Night-heron	Nyctanassa violacea	☉		
Yellow-bellied Sapsucker	Sphyrapicus varius	◆		
Yellow-billed Cuckoo	Coccyzus americanus	☉		
Yellow-rumped Warbler	Dendroica coronata	☉		
Yellow-throated Vireo	Vireo flavifrons	◆		
Yellow-throated Warbler	Dendroica dominica	☉		

**Mammal Species**

Data Source: Commission and Land Stewardship Resource Evaluation Program

		PRESENCE	STATUS	
E=Endangered T=Threatened S=Species of Special concern N=Non-native  ◆ = Potential ☉ = Confirmed			<b>Federal</b>	<b>State</b>
Common Name	Scientific			
Armadillo	Dasyus novemcinctus	☉	N	N
Big Brown Bat	Eptesicus fuscus fuscus	☉		
Big Cypress Fox Squirrel	Sciurus niger avicennia	◆		T
Bobcat	Lynx rufus	☉		
Brazilian Free-tailed Bat	Tadarida b. cynocephala	◆		
Cotton Mouse	Peromyscus gossypinus	☉		
Coyote	Canis latrans	◆		
Eastern Cottontail	Sylvilagus floridanus	☉		
Eastern Gray Squirrel	Sciurus carolinensis	☉		

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Eastern Mole	Scalopus aquaticus	☉		
Eastern Pipistrel	Pipistrellus subflavus	◆		
Eastern Woodrat	Neotoma floridana	☉		
Evening Bat	Nycticeius humeralis	◆		
Feral Hog	Sus scrofa	☉	N	N
Florida Black Bear	Ursus americanus floridanus	◆		
Florida Bonneted bat	Eumops floridanus	☉	E	
Florida Manatee	Trichechidae manatus	☉	E	
Florida Mastiff Bat	Eumops glaucinus floridanus	◆		T
Florida Mouse	Podomys floridanus	◆		S
Florida Panther	Felis concolor caryi	☉	E	
Florida Water Rat	Neofiber alleni	☉		
Florida Weasel	Mustela frenata peninsulae	◆		
Gray Fox	Urocyon cinereoargenteus	☉		
Hispid Cotton Rat	Sigmodon hisipus	☉		
Hoary Bat	Lasiurus cinereus	◆		
Leaset Shrew	Cryptotis parva	☉		
Long-tailed Weasel	Mustela frenata	◆		
Marsh Rabbit	Sylvilagus palustris	☉		
Northern Yellow Bat	Lasiurus i. floridanus	◆		
Opposum	Didelphis marsupialis	☉		
Raccoon	Procyon lotor	☉		
Red Fox	Vulpes fulva	◆		
Rice Rat	Oryzomys palustris	☉		
River Otter	Lutra canadensis	☉		
Seminole Bat	Lasiurus seminolus	◆		
Sherman's Fox Squirrel	Sciurus niger shermani	☉		S
Shermans Shorttailed Shrew	Blarina carolinensis shermani	◆		S
Short-tailed Shrew	Blarina c. carolinensis	☉		
Southeastern Big-eared Bat	Plecotus rafinesquii	◆		
Southeastern Brown Bat	Myotis austroriparius	◆		
Southeastern Pocket Gopher	Geomys pinetis	◆		
Southern Florida Mink	Mustela vison evergladensis	◆		T
Southern Flying Squirrel	Glaucomys volans	◆		
Spotted Skunk	Spilogale putorius	☉		
Striped Skunk	Mephitis mephitis	☉		
Whitetail Deer	Odocoileus virginianus	☉		

**Reptile and Amphibian Species**

	PRESENCE	STATUS
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		E=Endangered T=Threatened S=Species of Special concern N=Non-native		
		◆ = Potential ☉ = Confirmed		
Common Name	Scientific Name	Federal	State	
<b>SNAKES</b>				
Brown Watersnake	<i>Nerodia taxipilota</i>	◆		
Common Kingsnake	<i>Lampropeltis getulus</i>	☉		
Corn/Red Rat	<i>Elaphe guttata guttata</i>	☉		
Dusty Pygmy	<i>Sistrurus miliarius barbouri</i>	◆		
Eastern Coachwhip	<i>Masticophis flagellum flagellum</i>	◆		
Eastern Coral	<i>Micrurus fulvius fulvius</i>	◆		
Eastern Diamondback	<i>Crotalus adamanteus</i>	☉		
Eastern Hognose	<i>Heterodon platyrhinos</i>	◆		
Eastern Indigo	<i>Drymarchon corais couperi</i>	☉	T	
Eastern Mud	<i>Farancia abacura abacura</i>	◆		
Everglades Racer	<i>Coluber constrictor paluticola</i>	◆		
Everglades Rat	<i>Elaphe obsoleta rossalleni</i>	◆		
Fl. Green Watersnake	<i>Nerodia cyclopion floridana</i>	◆		
Florida Brown Snake	<i>Storeria dekayi victa</i>	◆		
Florida Cottonmouth	<i>Agkistrodon piscivorus conanti</i>	☉		
Florida Pine Snake	<i>Pituophis melanoleucus mugitus</i>	☉		S
Florida Scarlet	<i>Cemophora coccinea coccinea</i>	◆		
Florida Watersnake	<i>Nerodia fasciata pictiventris</i>	◆		
Glossy Crayfish	<i>Regina rigida rigida</i>	◆		
Mole Kingsnake	<i>Lampropeltis calligaster rhombomaculata</i>	◆		
Peninsula Ribbon	<i>Thamnophis sauritus sackeni</i>	☉		
Peninsula Crowned Snake	<i>Tantilla relicta relicta</i>	◆		
Pinewoods	<i>Rhadinaea flavilata</i>	◆		
Rough Green	<i>Opheodrys aestivus</i>	◆		
Scarlet Kingsnake	<i>Lampropeltis triangulum elapsoides</i>	◆		
Short-tailed Snake	<i>Stilosoma extenuatum</i>	◆		
So Florida Rainbow	<i>Farancia erythrogramma seminola</i>	◆		
Southern Black Racer	<i>Coluber constrictor priapus</i>	☉		
Yellow Rat/Chicken	<i>Elaphe obsoleta quadrivittata</i>	☉		
<b>AMPHIBIANS</b>				
Barking Treefrog	<i>Hyla gratiosa</i>	◆		
Bluetailed Mole Skink	<i>Eumeces egregius lividus</i>	◆	T	
Broadheaded Skink	<i>Eumeces laticeps</i>	◆		
Brown Anole	<i>Anolis sagrei sagrei</i>	☉	N	N
Bullfrog	<i>Rana catesbeiana</i>	◆		
Central Newt	<i>Notophthalmas viridescens louisianensis</i>	◆		

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Cuban Treefrog	<i>Osteopilus septentrionalis</i>	☉	N	N
Dwarf Salamander	<i>Eurycea quadridigitata</i>	◆		
Eastern Glass Lizard	<i>Ophisaurus ventralis</i>	◆		
Eastern Lesser Siren	<i>Siren intermedia intermedia</i>	◆		
Eastern Narrowmouthed Toad	<i>Gastrophryne carolinensis carolinensis</i>	☉		
Eastern Spadefoot	<i>Scaphiopus holbrooki</i>	◆		
Everglades Dwarf Siren	<i>Pseudobranchius striatus belli</i>	◆		
Florida Chorus Frog	<i>Pseudacris nigrita verrucosa</i>	☉		
Florida Cricket Frog	<i>Acris gryllus dorsalis</i>	☉		
Florida Gopher Frog	<i>Rana areolata aesopus</i>	◆		S
Green Anole	<i>Anolis carolinensis</i>	◆		
Green Treefrog	<i>Hyla cinerea</i>	☉		
Ground Skink	<i>Scincella lateralis</i>	◆		
Little Grass Frog	<i>Limaoedus ocularis</i>	◆		
Narrow-striped Dwarf Siren	<i>Pseudobranchius striatus axanthus</i>	◆		
Oak Toad	<i>Bufo quercicus</i>	☉		
Southeastern Five-lined Skink	<i>Eumeces inexpectatus</i>	☉		
Southern Fence Lizard	<i>Sceloporus undulatus undulatus</i>	◆		
Southern Leopard Frog	<i>Rana sphenoccephala</i>	☉		
Southern Toad	<i>Bufo terrestris</i>	◆		
Squirrel Treefrog	<i>Hyla squirella</i>	◆		
Striped Newt	<i>Notophthalmas perstriatus</i>	◆		
Two-toed Amphiuma Congo Eel	<i>Amphiuma means</i>	◆		
<b>TURTLES</b>				
Common Musk	<i>Sternotherus odoratus</i>	◆		
Florida Box	<i>Terrapene carolina bauri</i>	☉		
Florida Chicken	<i>Deirochelys reticularia chrysea</i>	◆		
Florida Mud	<i>Kinosternon subrubrum steindachneri</i>	◆		
Florida Redbelly	<i>Pseudemys nelsoni</i>	☉		
Florida Snapping	<i>Chelydra serpentina osceola</i>	☉		
Florida Softshell	<i>Apalone ferox</i>	☉		
Gopher Tortoise	<i>Gopherus polyphemus</i>	☉		T
Peninsula Cooter	<i>Pseudemys floridana peninsularis</i>	◆		
Striped Mud	<i>Kinosternon baurii</i>	☉		
<b>CROCODYLIA</b>				
American Alligator	<i>Alligator mississippiensis</i> (*Threatened because of similarity in appearance)	☉	T*	

**MEMORANDUM**

**TO:** Governing Board Members

**FROM:** Doug Bergstrom, Director, Administrative Services Division

**DATE:** January 09, 2014

**SUBJECT:** Security Guard Services Contract

**Summary**

This request is to enter into a three-year contract with two (2) optional one-year renewals with G4S Secure Solutions USA, Inc. (G4S) for Security Guard Services in an amount not to exceed \$559,478.52. The present security guard contract expires February 4, 2014. G4S will provide professional security guard services to maintain a safe and effective working environment for employees located at HQ. Services include 24-hour monitoring of security systems, daily visitor control, ID badge and access control assistance, crowd control, and site security. Security guard services have been traditionally outsourced by the District. Since it is not a core function staff recommends continuing to outsource the service.

**Staff Recommendation**

Staff recommends approval of this item.

**Additional Background**

The District did not directly solicit this contract. In accordance with State and District procurement policies, the District will piggyback this contract off a competitively bid security contract that was solicited by Orange County and became effective October 1, 2013.

**Core Mission and Strategic Priorities**

This item impacts all resource areas of the District. In this era of increased security threats the provision of professional security services are a critical component to the District's overall operations. The General Services Section in the Administrative Services Division will be responsible for implementing this contract.

**Funding Source**

The amount of the services for the three (3) year period is \$559,478.52 for which \$199,000.00 in ad valorem funds are budgeted in FY14 and the remainder is subject to Governing Board approval of the FY15-FY18 budgets.

**Staff Contact and/or Presenter**

Staff Contact: Bill Hancsak, Senior Security Specialist, ext.6167  
Presenter: Doug Bergstrom, ext. 6214

## **SOUTH FLORIDA WATER MANAGEMENT DISTRICT**

### **Resolution No. 2014 - 0104**

**A Resolution of the Governing Board of the South Florida Water Management District to authorize entering into a three-year contract with two (2) one-year renewal options with G4S Secure Solutions USA, Inc., for Security Guard Services in an amount not to exceed \$559,478.52 for which \$199,000 in ad valorem funds are budgeted in FY14 and the remainder is subject to Governing Board approval of the FY15 - FY18 budgets; providing an effective date. (Contract Number 4600002990)**

**WHEREAS**, the Governing Board of the South Florida Water Management District deems it necessary, appropriate and in the public interest to authorize entering into a three (3) year contract with two (2) one-year renewals with G4S Secure Solutions USA Inc., for Security Guard Services in an amount not to exceed \$559,478.52 for which \$199,000 in ad valorem funds are budgeted in FY14 and the remainder is subject to Governing Board approval of the FY15-FY18 budgets; providing an effective date (Contract Number 4600002990)

**NOW THEREFORE, BE IT RESOLVED BY THE GOVERNING BOARD OF THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT:**

**Section 1.** The Governing Board of the South Florida Water Management District hereby authorizes the execution of Contract Number 4600002990 with G4S Secure Solutions USA, Inc.

**Section 2.** This resolution shall take effect immediately upon adoption.

**PASSED and ADOPTED** this 9th day of January, 2014.

SOUTH FLORIDA WATER MANAGEMENT  
DISTRICT, BY ITS GOVERNING BOARD  
By:

\_\_\_\_\_  
Chairman

Attest:

\_\_\_\_\_  
District Clerk/Secretary

Legal form approved:  
By:

\_\_\_\_\_  
Office of Counsel

Print name:

\_\_\_\_\_

**MEMORANDUM**

**TO:** Governing Board Members  
**FROM:** Doug Bergstrom, Director, Administrative Services Division  
**DATE:** January 09, 2014  
**SUBJECT:** CERP Water Quality Studies

**Additional Background**

This agenda item will secure reimbursement for Implementation of CERP Water Quality Studies consistent with the laws and regulations governing the use of the Save Our Everglades Trust Fund, as described above

**Core Mission and Strategic Priorities**

Funds received from the state's Save Our Everglades Trust Fund will support Water Resource projects for the Restoration program area.

**Funding Source**

The funding source is the Florida Department of Environmental Protection, Save Our Everglades Trust Fund.

**Staff Contact and/or Presenter**

Staff Contact: Michelle Quigley, Section Administrator, ext.6382  
Presenter: Doug Bergstrom, ext. 6214

## SOUTH FLORIDA WATER MANAGEMENT DISTRICT

### Resolution No. 2014 - 0105

**A Resolution of the Governing Board of the South Florida Water Management District, authorizing the Executive Director or designee to submit reimbursement requests to the Florida Department of Environmental Protection for implementation of Comprehensive Everglades Restoration Plan Water Quality Studies using Save our Everglades Trust Funds; providing an effective date.**

**WHEREAS**, the Governing Board of the South Florida Water Management District (hereinafter, the "District") approved Resolution 2012-302, March 15, 2012, authorizing the District to enter into a cooperative agreement with the Florida Department of Environmental Protection (hereinafter, the "Department") for implementation of Comprehensive Everglades Restoration Plan (CERP) Water Quality Studies using Save Our Everglades Trust Funds; and

**WHEREAS**, on April 26, 2012, the District and the Department executed the Cooperative Agreement (SFWMD Contract No. 4600002608) for CERP Water Quality Studies using Save Our Everglades Trust Funds is attached and labeled "Attachment 1", and

**WHEREAS**, the CERP Water Quality Studies Annual Work Plan for Fiscal Year 2012 and Fiscal Year 2013 identifying the initial water quality studies to be implemented by the District is attached and labeled "Attachment 2", and

**WHEREAS**, the District approved Resolution 2012-1204, December 13, 2012, authorizing the District to seek reimbursement for expenditures supporting the CERP Water Quality Studies Annual Work Plan for Fiscal Year 2012 and Fiscal Year 2013, and

**WHEREAS**, the CERP Water Quality Studies Annual Work Plan for Fiscal Year 2014 identifying the water quality studies to be implemented by the District is attached and labeled "Attachment 3", and

**WHEREAS**, consistent with the applicable appropriations language and in accordance with the procedures set forth in Exhibit "A" of "Attachment 1", the executed cooperative agreement, the Department shall disburse to the District Save Our Everglades Trust Fund monies.

**NOW THEREFORE, BE IT RESOLVED** by the Governing Board of the South Florida Water Management District that:

**Section 1.** The Executive Director of the South Florida Water Management District or designee is hereby authorized to request reimbursement of funds based on actual expenditures incurred through implementation of Comprehensive Everglades Restoration

Plan Water Quality Studies.

**Section 2.** The reimbursement request to the Department will be in invoice format for the actual expenditures incurred by the South Florida Water Management District as described in Exhibit "A" of "Attachment 1", the Disbursement Procedure for CERP Water Quality Studies.

**Section 3.** This resolution shall take effect immediately upon adoption.

**PASSED** and **ADOPTED** this 9th day of January, 2014.

SOUTH FLORIDA WATER MANAGEMENT DISTRICT, BY ITS GOVERNING BOARD

By:

\_\_\_\_\_  
Chairman

Attest:

Legal form approved:

By:

\_\_\_\_\_  
District Clerk/Secretary

\_\_\_\_\_  
Office of Counsel

Print name:

\_\_\_\_\_

# Comprehensive Everglades Restoration Plan Water Quality Studies

## Annual Work Plan Fiscal Years 2013-2014

### COOPERATIVE AGREEMENT

between

**South Florida Water Management District**

and

**Florida Department of Environmental Protection**



Prepared by the

**Water Quality Bureau  
Water Resources Division  
South Florida Water Management District**

December 9, 2013

## Section 1 Background

The Florida Department of Environmental Protection (FDEP) is authorized by the Florida legislature to implement water quality studies associated with the Comprehensive Everglades Restoration Plan (CERP) designed to analyze and evaluate water quality issues as envisioned in §373.1501(4)(b), Florida Statutes (F.S.), or the Comprehensive Integrated Water Quality Feasibility Study (CIWQFS) described in the Central and Southern Florida Project Comprehensive Review Study (Restudy) in the development of a CERP project component. Additional information on the scope of the CIWQFS is further outlined in the Draft Project Management Plan, Comprehensive Integrated Water Quality Feasibility Study (USACE and FDEP, 2003).

In addition to FDEP statutory authorizations related to CERP, the South Florida Water Management District (SFWMD or District) is authorized by §373.1501(4)(b), F.S., acting as local sponsor of CERP projects for those project features within the SFWMD and subject to the oversight of FDEP, to continue data gathering, analysis, and research of project components, and further refinements of the restudy as a guide and framework for identifying other project components.

The Florida legislature created the Save Our Everglades Trust Fund (SOETF), codified in §373.472, F.S., within the FDEP to support restoration and conservation of natural systems, including the implementation of CERP. The FDEP has authorization through §373.470, F.S., to distribute SOETF funds to the SFWMD in accordance with a legislative appropriation and §373.026, F.S. The FDEP is also authorized in §373.046, F.S., to enter into interagency agreements with the SFWMD to assist the FDEP with carrying out its statutory responsibilities.

The above statutory authorizations granted to each agency provide a framework in which studies of water quality issues associated with Everglades restoration can be formulated, approved, funded, and appropriately resourced among staff from both agencies. The FDEP has executed the CERP Water Quality Studies interagency agreement, effective October 1, 2011, with the SFWMD to establish a general procedure for disbursing SOETF monies for SFWMD implementation, at the request of FDEP, of water quality studies related to CERP execution.

## Section 2 Annual Work Plan Update

Per the interagency agreement, the SFWMD shall prepare and submit an Annual Work Plan to the FDEP for approval, which outlines the studies, their duration, proposed budget for each fiscal year to implement the studies, and assurance that the studies are being conducted in accordance with §373.1501(4)(b), F.S. The FDEP shall provide confirmation of agreement with the SFWMD's proposal through approval of the annual work plan in accordance with Section 2(a), Exhibit "A" of the CERP Water Quality Studies interagency agreement.

In response to water resource needs, legislative directives, and funding opportunities, the initial Annual Work Plan [Fiscal Years (FY) 2012–2013] was developed by the SFWMD to carry out science studies related to agrochemicals and toxicants of concern to guide decision making in CERP activities (SFWMD, 2012). This Annual Work Plan (FY2013–FY2014) serves as an update to the proposed scope of work, budget, and duration outlined in the previous plan.

## 1. Water Quality Studies Outline

Residual agricultural chemicals (agrochemicals) are those chemicals found in formerly cultivated soils that were applied with the intended purpose to enhance agricultural production. Often, CERP restoration projects situated on former agricultural lands require some level of remediation to occur prior to construction to address agrochemicals. Copper is one such agrochemical that is of concern. Other agrochemicals of concern frequently encountered on CERP project lands include dichlorodiphenyltrichloroethane (DDT), chlordane, toxaphene, endosulfan, and selenium. Recommendations for cleanup and remediation on CERP project lands are made when conditions are encountered that may be hazardous to ecological resources when projects become operational (USACE and SFWMD, 2004; USACE and SFWMD, 2010). Copper does not break down or dissipate in the environment and can accumulate in aquatic organisms such as the Florida apple snail (*Pomacea paludosa*). Because the apple snail is the primary food item of the endangered Everglade snail kite (*Rostrhamus sociabilis plumbeous*) and important in the diet of other birds, copper presents a potential ecological risk that must be considered in CERP projects.

In addition to agrochemicals, there are other environmental toxicants, such as mercury, that can be present in the aquatic environment at levels that are harmful to birds and other wildlife (USACE and SFWMD, 2010). The current understanding among scientists is that mercury is introduced into the aquatic environment largely through atmospheric deposition and various biogeochemical processes linked to sulfate-reducing bacteria can occur to transform (methylate) mercury into a more toxic and bioaccumulative form (methylmercury) that is harmful to birds and wildlife. However, it is not well understood what impact CERP restoration projects may have on the mercury cycle and associated biogeochemical processes overall for the Everglades.

For both copper and mercury, there are large uncertainties regarding the associated rates of bioaccumulation and mechanisms that lead to high levels of copper and mercury in apple snails and fish, respectively. This Annual Work Plan update continues to focus on two studies specifically designed to obtain a better understanding of the rates of bioaccumulation of copper in apple snails and mercury methylation using field investigations and control experiments that will assist in decision making for CERP-related project components.

Each study has its unique objectives and methods for the investigations. A brief description of both studies follows, along with assurance that the study is being conducted in accordance with §373.1501(4)(b), F.S. A more detailed description of each of the studies through FY2014 is provided in **Attachment A**, respectively. It is anticipated that additional details associated with the mercury study proposed for FY2015 will be covered in the next Annual Work Plan update for FDEP approval as warranted (**Table 1**).

### **Study 1: Test Cell Mesocosm Copper in Snails Study**

Copper from former agricultural soils that have been flooded can accumulate in apple snails, which can expose snail kites when they feed in reclaimed areas (USACE, 2011). Recent results of a U.S. Fish and Wildlife Service (USFWS) funded study from Florida International University (FIU) showed bioaccumulation rates (copper uptake in snails) much higher than expected and higher than modeled for the derivation of the current 85 milligrams per kilogram (mg/kg) benchmark used to determine if soil remediation is necessary on a CERP project land. The copper in apple snails study will be conducted using test cell mesocosms under a range of sediment copper concentrations. The objective of the study is to determine if a revised (lower < 85 mg/kg) remediation benchmark is needed or remain with the current benchmark.

**Justification/Assurance:** This study is being accomplished to identify if a revised remediation level for copper is necessary on CERP project lands prior to construction. The following CERP documents give rise to this study and, therefore, the study is being conducted in accordance with §373.1501(4)(b), F.S.:

- CERP Guidance Memorandum 023.01: Water Quality Considerations for the Project Implementation Report Phase (USACE and SFWMD, 2004);
- Scientific and Technical Knowledge Gained in Everglades Restoration (1999–2009) (RECOVER, 2011); and
- Memorandum for Deputy Commanding General for Civil and Emergency Operations: Comprehensive Everglades Restoration Plan (CERP) – Residual Agricultural Chemicals (DAC, 2011).

### **Study 2: Evaluation of Factors Influencing Mercury Methylation in South Florida Marshes**

Mercury, which is largely deposited to Everglades marshes from the atmosphere, can become biologically available to fish and other wildlife through microbial methylation. Mercury levels in largemouth bass in the Everglades Water Conservation Areas (WCAs) and the Shark River Slough region of Everglades National Park (ENP) during the past two decades greatly exceed federal wildlife protection and human health criteria for fish consumption. Wet deposition of mercury from the atmosphere into shallow Everglades wetlands with organic-rich soils and high sulfate loads may be the causes for high mercury levels in fish. The mercury methylation study will be conducted via literature review, mesocosms and field investigations, and modeling.

**Justification/Assurance:** This study is being accomplished to better understand factors involved in transforming inorganic mercury into the more toxic bioaccumulative form (methylmercury), including biogeochemical relationships, current hydrologic patterns in the Everglades, and changes to future hydrology envisioned by CERP. The following CERP documents give rise to this study and, therefore, the study is being conducted in accordance with §373.1501(4)(b), F.S.:

- CERP Guidance Memorandum 042.01: Toxic Substances Screening Process - Mercury and Pesticides (USACE and SFWMD, 2010); and
- CERP Project Management Plan: Draft Comprehensive Integrated Water Quality Feasibility Study (USACE and FDEP, 2003).

## 2. Duration and Budget of Proposed Studies

The proposed budget and duration of the two studies covered under this FY2013–FY2014 Annual Work Plan are shown in **Table 1**. The study costs are for external contracts and do not include internal SFWMD labor, which is not reimbursable under the interagency agreement. The interagency agreement allows for other internal costs, such as laboratory supplies and equipment, to be reimbursable if the costs were approved in advance by the FDEP. The SFWMD is contributing laboratory supplies and equipment to cover analysis costs for the copper study but is not seeking reimbursement from SOETF funds.

As outlined in the initial Annual Work Plan, Study 1 was originally projected to span two years covering FY2012–FY2013. Participation and recommendations by the Interagency Copper Science Review Panel in the mesocosm study design and implementation, however, has resulted in an extension of this study into FY2014. In this Annual Work Plan update, the SFWMD is seeking FDEP approval to extend a portion of the FY2013 work and associated budget into FY2014 (**Table 1**).

Study 2 spans four years, with FY2012 as the initial year and FY2013–FY2015 covering the three-year work plan. For this study, a portion of the planned contractual work at the end of FY2013 resulted in an extension of the final report deliverable into early FY2014. In this Annual Work Plan update, approval by the FDEP is sought for FY2014 for both continuing and newly proposed work and the associated budget. It is anticipated that a separate request of the proposed FY2015 budget and related work for the mercury study (**Table 1**) will be made in the next Annual Work Plan update for FDEP approval, as warranted.

**Table 1.** Proposed studies, duration, and budget for CERP Water Quality Studies (FY2013-FY2015).

Study No.	Project Description	Project Component	FY2013	FY2014	FY2015
			External Contract	External Contract	External Contract
1	Copper in Snails Study <sup>1</sup>	External Entity Partnership	\$88,637.77	\$86,530.16	\$ -
2	Mercury Methylation Study <sup>2</sup>	External Entity Partnership	\$66,500.00	\$83,500.00	\$75,000.00
<b>Total</b>			<b>\$155,137.77</b>	<b>\$ 170,030.16</b>	<b>\$75,000.00</b>

<sup>1</sup> For Study 1, a portion of unspent FY2013 funding (\$86,530.16) is carried over into FY2014, but the FY2013–FY2014 total (\$175,167.93) reflects the same amount as the overall approved budget in the FY2012–FY2013 Annual Work Plan. This Work Plan modification is due to (1) extending the static hold period in the study (as requested by the U.S. Fish and Wildlife Service), and (2) delay in snail delivery as a result of lower growth rate of juvenile snails from the Harbor Branch Oceanographic Institute.

<sup>2</sup> For Study 2, a portion of unspent FY2013 funding (\$8,500) is carried over into FY2014, but the FY2013–FY2014 total (\$150,000) reflects the same amount as the overall approved budget in the FY2012–FY2013 Annual Work Plan. This Work Plan modification is due to a month delay (from September to October 2013) in completing the final report deliverable by DB Environmental, Inc. under contract.

### Section 3 SOETF Reimbursement Procedures

In accordance with Section 3(d)(2), Exhibit “A” of the CERP Water Quality Studies interagency agreement (effective October 1, 2011), the reimbursement of SOETF funds to the SFWMD for conducting water quality studies approved in this Annual Work Plan requires the FDEP to have provided review and approval of a Statement of Work (SOW), if applicable, in situations where the SFWMD has entered into a partnership agreement with an external private or public entity as provisioned in Section 1(c), Exhibit “A” of the agreement. For the two studies, the project-specific details and descriptions are presented in Attachment A of this document, which provides an update on the preliminary information in the FY2012–FY2013 Annual Work Plan, Attachment A.

### Section 4 References

- Corrales, J., G.M. Naja, C. Dziuba, R.G. Rivero and W. Orem. 2011. Sulfate threshold target to control methylmercury levels in wetland ecosystems. *Science of the Total Environment*, 409:2156-2162. Available at <http://www.ncbi.nlm.nih.gov/pubmed/21439608>.
- DAC. 2011. Memorandum for Deputy Commanding General for Civil and Emergency Operations: Comprehensive Everglades Restoration Plan (CERP) – Residual Agricultural Chemicals. Final Memorandum, September 14, 2011, Department of the Army, Civil Works, Washington D.C.
- Gilmour, C., E. Roden and R. Harris. 2008. Appendix 3B-3: Approaches to Modeling Sulfate Reduction and Methylmercury Production in the Everglades. In: *2008 South Florida Environmental Report – Volume I*, South Florida Water Management District, West Palm Beach, FL. Available at <http://www.sfwmd.gov/sfer>.
- Orem, W., C. Gilmour, D. Axelrad, D. Krabbenhoft, D. Scheidt, P. Kalla, P. McCormick, M. Gabriel and G. Aiken. 2011. Sulfur in the South Florida ecosystem: distribution, sources, biogeochemistry, impacts and management for restoration. *Critical Reviews in Environmental Science and Technology*, 41:249-288. Available at <http://www.tandfonline.com/doi/abs/10.1080/10643389.2010.531201>.
- RECOVER. 2011. Scientific and Technical Knowledge Gained in Everglades Restoration (1999–2009). Restoration Coordination and Verification, U.S. Army Corps of Engineers, Jacksonville, FL, and South Florida Water Management District, West Palm Beach, FL. August 2011. Available at: [http://www.evergladesplan.org/shared-definition/sd\\_2010.aspx](http://www.evergladesplan.org/shared-definition/sd_2010.aspx).
- SFWMD. 2012. Comprehensive Everglades Restoration Plan Water Quality Studies, Annual Work Plan, Fiscal Years 2012–2013. South Florida Water Management District, West Palm Beach, FL. August 10, 2012.
- USACE and FDEP. 2003. Draft Project Management Plan: Comprehensive Integrated Water Quality Feasibility Study. August 2003. U.S. Army Corps of Engineers, Jacksonville, FL, and Florida Department of Environmental Protection, Tallahassee, FL. Available at [http://www.evergladesplan.org/pm/pmp/pmp\\_docs/pmp\\_study\\_ciwqfs/082503\\_ciwqfs\\_pmp\\_main\\_body.pdf](http://www.evergladesplan.org/pm/pmp/pmp_docs/pmp_study_ciwqfs/082503_ciwqfs_pmp_main_body.pdf).
- USACE and SFWMD. 2004. CERP Guidance Memorandum 023.01: Water Quality Considerations for the Project Implementation Report Phase. March 2004. U.S. Army Corps of Engineers, Jacksonville, FL, and South Florida Water Management District, West Palm Beach, FL. Available at [http://www.cerpzone.org/documents/cgm/cgm\\_023.01.pdf](http://www.cerpzone.org/documents/cgm/cgm_023.01.pdf).
- USACE and SFWMD. 2010. CERP Guidance Memorandum 042.01: Toxic Substances Screening Process - Mercury and Pesticides. July 2010. U.S. Army Corps of Engineers, Jacksonville, FL, and South Florida Water Management District, West Palm Beach, FL. Available at [http://www.cerpzone.org/documents/cgm/111510\\_CGM\\_042-01\\_QAOT\\_20100721\\_Final\\_Signed.pdf](http://www.cerpzone.org/documents/cgm/111510_CGM_042-01_QAOT_20100721_Final_Signed.pdf).

## ATTACHMENT A: STUDY DETAILS

### **Study 1:     *Test Cell Mesocosm Copper in Snails Study***

#### **Background and Objectives**

Risks from agriculturally applied residual copper have become an issue at some prospective Everglades Restoration Water Resource Projects (WRPs) because apple snails, the primary food source of snail kites, can accumulate copper from soils that have been flooded, exposing snail kites feeding in reclaimed areas. To date, the USFWS, the authority that administers the federal Endangered Species Act for CERP projects, and the SFWMD have been using a soil screening level of 85 mg/kg for copper as an action level for conducting corrective actions in CERP project soils. Results of the previously mentioned USFWS-funded study from FIU show bioaccumulation rates in snails much higher than expected and higher than modeled in the derivation of the 85 mg/kg benchmark. The use of these new bioaccumulation results to revise the action level would likely result in a substantially lower cleanup target level concentration and significantly increased corrective action costs on former citrus properties.

The FIU studies represent the most comprehensive bioaccumulation data available for assessing uptake of copper by apple snails derived in a laboratory setting. However, the laboratory setting differs from actual WRPs in that they were essentially closed systems; no water was allowed to flow out of the testing tanks and, after initial filling, natural rain events were the only source of added water. Therefore, the conditions in the FIU experiments may represent possible exposure conditions during dry-down conditions in constructed Everglades Stormwater Treatment Areas (STAs).

However, most STAs and reservoirs will have water exchange much of the time. The outflow and inflow of water in the system results in nearly constant exchange of water in the aquatic habitats at varying rates, even during dry periods when water is still lost to infiltration. Data from other laboratory studies by FIU and the SFWMD suggest that flow substantially alters the copper concentrations in water overlying contaminated sediments and likely reduces the copper bioaccumulation potential in snails.

The uncertainties associated with the FIU studies could have a large effect on copper bioaccumulation and significantly impact corrective action costs which could impact WRP feasibility. As a result, additional studies to further characterize bioaccumulation are cost effective and will be used in conjunction with studies related to the bioavailability of copper in apple snails currently being completed by the USFWS to complete a comprehensive ecological risk assessment with the goal of supporting the 85 mg/kg benchmark or deriving a more appropriate benchmark using the best available data. The project is intended to address three main objectives:

1. Evaluate the importance of water exchange and natural food source on copper bioaccumulation potential in apple snails;
2. Assess the protectiveness of the 85 mg/kg copper benchmark for snail kites based on copper bioaccumulation under more natural conditions; and
3. Measure bioaccumulation of copper into apple snails over a range of sediment copper concentrations in soils from different former citrus groves.

## Study Scope and Deliverables

The project work for the Test Cell Mesocosm Copper in Snails Study shall be executed by Environmental Consulting & Technology, Inc. (ECT) under multiyear contract to the SFWMD. The study area is located west of Stormwater Treatment Area 1 West (STA-1W) and adjacent to the Arthur R. Marshall Loxahatchee National Wildlife Refuge, south of State Road 80.

### *Task 1: Planning and Work Plan*

A detailed work plan for the overall study shall be prepared including the (1) experimental rationale, design, and approach; (2) test cell system design and management plan, and identification of specific location for the test cell construction; (3) detailed sampling plan including sample types, sample number, sampling collection and handling procedures, and analysis methods; and (4) data evaluation and quality assurance plan. This task shall also include reconnaissance sampling and historical data review intended to identify the citrus property soils of appropriate quality and copper concentrations that are intended for use in the mesocosms. Analysis shall include identifying areas and volumes of materials that meet project requirements.

[Note: In Study 1, the initial task of the contract work order developed a detailed work plan for SFWMD review. The proposed work plan was also distributed to the Copper Interagency Working Group—with representatives from the Florida Department of Environmental Protection (FDEP), U.S. Fish and Wildlife Service (USFWS), U.S. Army Corps of Engineers (USACE), U.S. Geological Survey (USGS), and Florida Department of Agriculture and Consumer Services (FDACS)—for review and comment. Comments and subsequent revisions to the work plan resulted in an unplanned extension of construction initiation. A significant work plan comment from the USFWS (related to mesocosm water quality conditions required prior to initiation of sediment aging under flow conditions) resulted in an additional extension of the start of the snail exposure monitoring period. While these events extended the overall study duration into FY2014, there was no impact to the associated total budget (see **Table 1**).]

### *Task 2: Mesocosm Construction and Sampling*

The STA-1W test cell shall be constructed according to the final design. The work shall include acquiring the necessary building materials and equipment for handling and distribution water from the STA water supply. It shall also include securing authorizations required to construct the mesocosms and preparing the test cell by removing all vegetation and any contaminated soil remaining above the test cell liner. Soils selected for use in the mesocosms shall be transported to the test cell area and sampled according to the work plan prior to placement in the mesocosms.

Once construction is completed, tests shall be initiated as described in the study work plan. Implementation shall require ongoing monitoring and management of the mesocosms, periodic sampling, and documentation. Once soils have been placed into the mesocosms, water shall be introduced into each cell per the study work plan. The mesocosm shall remain unpopulated with snails for a period of no less than 120 days (at least 60 days static hold and 60 days flow aging) to allow for growth of periphyton and vascular plants prior to introducing apple snails into the mesocosms. Before introducing the snails, vegetation and biota in the chambers shall be characterized to document presence/absence and the relative similarity between chambers. This period also allows the process of conversion of soils to sediments in the mesocosm. Following this initial startup period, approximately 75 to 100 juvenile snails shall be introduced into each mesocosm. Snails shall remain in the mesocosm for a period of 180 to 300 days. During the

exposure period, samples of surface water, periphyton, snails, vascular plants, and sediments shall be collected at regular intervals.

As outlined in the study work plan, samples shall be collected and submitted to the District's testing laboratory for analysis. Water, sediment, periphyton, vascular plant, and snail sampling shall be conducted on a periodic basis. Copper is the primary target for analysis, but water quality sampling and characterization to ensure consistent plant and periphyton growth shall also be conducted. Laboratory analysis shall be carried out according to requirements specified in the study work plan and District quality assurance and quality control requirements. Data shall be received from the labs in electronic database format appropriate for the Florida Automated Data Processing Tool program.

### ***Task 3: Data Analysis and Report Preparation***

Study data shall be compiled for analysis and reporting. The report shall include all data collected and describe data quality, overall study implementation, and deviations, if any, from the study work plan. It shall also include an analysis of the data relative to the study objectives and summarize use of the data in managing potential risk to snail kites. The draft report shall be submitted to the SFWMD as well as the Copper Interagency Working Group for review and comment, with the final version of the report incorporating revisions as appropriate.

### ***Study 2: Evaluation of Factors Influencing Mercury Methylation Biotic Accumulation in South Florida Marshes***

#### **Background and Objectives**

The biogeochemistry of mercury (Hg) methylation in the Everglades environment is multifarious. It is believed that the primary source of methylmercury (MeHg) in South Florida wetlands is in situ methylation of inorganic Hg by sulfate-reducing bacteria. Because this process is biologically mediated, a suite of interactive environmental conditions and biogeochemical processes are highly influential on Hg methylation. Hg methylation is significantly affected by pH, the redox condition, and concentrations of mercury, sulfate, sulfide, and dissolved organic carbon in surface and porewater. Hg availability is influenced by the supply sources and removal mechanisms which include chemical precipitation and plant uptake and translocation. Other biogeochemical factors are important as well, such as the composition of the methylating microbial community and the availability of suitable electron donors. On the other hand, Hg accumulation in biota is controlled by a different set of biological factors such as fish trophic position, diet availability and fish physiology. Focused field and laboratory investigations are needed to better quantify the relationships between sulfate concentrations/loadings, dissolved organic carbon (DOC) quantity and quality, electron donors, and Hg methylation, the role of macrophytes in mercury transformation and translocation, and trophic accumulation in the various Everglades environments.

#### **Study Scope and Deliverables**

The project work for the mercury methylation and accumulation study shall be executed by Everglades Agricultural Area Environmental Protection District (EAA-EPD) and its subcontractor, DB Environmental Inc., under contract to the SFWMD. The field study area is located in the Everglades Protection Area (EPA), which includes the Arthur R. Marshall

Loxahatchee National Wildlife Refuge (Refuge), Water Conservation Areas (WCAs) 2 and 3, and Everglades National Park (ENP).

The tasks described below are described in the Year Two Scope of Work *Evaluation of Factors Influencing Methyl Mercury Accumulation in South Florida Marshes*, prepared by DB Environmental, Inc. under Agreement #4600002664. The Year Two research effort shall involve a continuation of laboratory soil-water slurry incubations to establish whether low levels of sulfate amendments, with and without inorganic Hg additions, elicit a MeHg accumulation response. The focus will be on waters/soils collected from the ENP. Drydown-reflood effects shall also be evaluated with soils and waters from the ENP, as this is a region that currently exhibits very high total mercury (THg) burdens in fish tissues. Field investigations shall be performed to characterize spatial and temporal variability in dissolved organic matter (DOM) in South Florida marshes, fish (*Gambusia*) and macrophyte tissue Hg levels in previously defined “hot spot” locations. Details of the proposed research tasks are provided below.

***Task 1. Minimum sulfate levels required to support/enhance mercury methylation***

The minimum sulfate concentration responsible for enhanced methylation throughout the Everglades has been variously reported to be in the range of 1-20 milligrams per liter (mg/L). Typically, the minimum sulfate (SO<sub>4</sub>) concentration associated with enhanced MeHg concentrations has been lower (2-4 mg/L) in minimally sulfate-impacted waters in the ENP. This task shall evaluate if non-abatable sources of sulfate (rainfall, groundwater, internal recycling of reduced sulfur species) in the Everglades are adequate to support environmentally detrimental levels of methylation.

Surface waters and soils shall be collected from pre-selected “low sulfate” sites such as the ENP. At the field collection site, multiple soil cores and bulk quantities of surface waters shall be collected for transport to the laboratory. At the time of collection, measurement of key parameters, such as oxidation reduction potential, shall be performed on soils and surface waters. The soil cores shall be incubated in laboratory under various concentrations of sulfate and inorganic Hg. Water samples shall be periodically taken from each incubation to monitor the responses of MeHg production to experimental manipulation of sulfate and mercury concentrations at the overlying water.

***Task 2. Effects of drydown/reflood cycles on methylmercury***

Drydown and reflooding may enhance the accumulation of MeHg in the soil or water column, due to release of mercury, sulfate, DOC, or other nutrients to the water column. Release of sulfate from soils to overlying water following drydown-reflooding has been associated with increased production of MeHg, but the role of DOC and other soil-water constituents (e.g., bioavailable Hg) has not been well defined.

Intact soil cores shall be collected at two sites within the EPA. The tentative sites selected are P-36 and P-33 in Shark River Slough. Multiple soil cores shall be collected from each site. In the laboratory, cores shall be subjected to drydown (probably for 3 to 4 weeks) and the dried cores shall be rehydrated with surface waters from the respective sites. Water chemical constituents shall be measured at pre-determined time space to evaluate drydown-reflooding effects on mercury methylation.

**Task 3. Characterization of *Gambusia* diet composition at mercury “hot spot” sites**

MeHg concentrations have been found to increase along the Everglades food chain. However, bioaccumulation of MeHg, particularly in mosquitofish (*Gambusia holbrooki*), is poorly correlated to water column MeHg concentrations across the greater Everglades, and may be mediated in part by periphyton MeHg concentrations and food web structure.

*Gambusia* samples shall be collected from the four sites monitored for the SFWMD hot spot study on wet and dry season. Fish shall be analyzed for tissue THg concentration and gut contents. Fish prey (gut contents) shall be identified to the lowest possible taxon. At each of the fish sampling sites, water samples shall be collected for analysis of filtered THg and MeHg, soil samples for THg and MeHg analysis, and periphyton (if present) for MeHg analysis.

**Task 4. Initial investigation of emergent macrophyte effects on mercury methylation, interception and emissions**

Year One findings demonstrate that availability of inorganic Hg is a crucial factor in promoting methylation. An alternative factor (to sulfate/sulfide) that may control bioavailability of Hg is the type, and density, of emergent macrophytes. Recent studies have demonstrated that the macrophyte communities can have a profound effect on cycling of both Hg and MeHg. Factors such as macrophyte type and standing crop potentially can exert a strong influence on Hg availability, as well as the production and transport of MeHg.

On two dates, coinciding with the fish sampling effort in Task 3, samples of the porewaters, surface waters, soils, belowground vegetation, and aboveground vegetation of separate open water and cattail-dominated areas near WCA-2A site F1 shall be taken. These two sampling locations will be in close proximity in order to minimize differences in surface water chemistry (e.g., loading of nutrients, DOC, and sulfate). On those same two dates, again coincident with the fish sampling efforts in Task 3, comparable sampling near WCA-2A site U3, in both a sawgrass stand and in an open water (slough) area shall be taken for the analyses of MeHg, THg, and other associated variables listed in the work plan.

**Task 5. Spatial characterization and dynamics of dissolved organic matter**

Results from the Year One study did not detect significant response of MeHg increases to the concentrated WCA-3A and WCA-2A surface water DOM amendments, which was unexpected as DOM has been shown to be an important variable in promoting MeHg production in the Everglades (Aiken et al., 2011). DOM, however, is not immutable; the quantity and quality of DOM changes in both time and space. For example, there is a generally recognizable north-south gradient in DOM in the Everglades.. The temporal and spatial changes in the DOM could be a critical determinant in controlling factors such as Hg bioavailability, and rates of MeHg accumulation.

Water samples shall be taken at key locations in the ENP, WCA-2A, WCA-3A, and outflows of selected Everglades Stormwater Treatment Areas (e.g., STA-3-4) to assess varying DOM concentrations and characteristics. Surface water samples shall be taken to determine THg and MeHg concentration at the above sites to assess the relationship between DOM quality and quantity and mercury methylation.

## MEMORANDUM

**TO:** Governing Board Members

**FROM:** Terrie Bates, Director, Water Resources Division

**DATE:** January 09, 2014

**SUBJECT:** Ecological Monitoring of Water and Habitat Quality Associated with the C-111 Spreader Canal Project

### Summary

This contract is designed to monitor the re-distribution of freshwater flow by the C-111 Spreader Canal Western Features (C-111 SC WF) Project and assess the resulting salinity and nutrient changes on habitat condition. It will track improvements in hydrology, salinity encroachment and vegetation as well as detect potential changes in water quality in affected coastal wetlands and in waters of Florida Bay. The project location is in the C-111 Basin in the Everglades Panhandle near US Hwy 1, and lower Taylor Slough. This contract documents the ecological benefits of the C-111 SC WF Project and provides data for permit compliance. The three-year project cost is \$356,323 of which \$86,323 in Florida Bay special revenue funds are budgeted in FY14.

### Staff Recommendation

Staff recommends approval of this agreement, which will allow the District to collect data and analyze information about the performance of the C-111 Spreader Canal, Western Features Project, monitor water quality changes, provide guidance for the next phase of the C-111 project, and determine its effects on critical habitat areas in southern Taylor Slough, the C-111 Basin, the Model Lands and Florida Bay.

### Additional Background

The C-111 Spreader Canal, Western Features Project came online in July 2012 with the implementation of the new S-199 and S-200 pump stations, opening of the Frog Pond detention area, and creation of a hydrologic barrier at the Aerojet Canal extension to reduce seepage from Taylor Slough toward the C-111 Basin to the east. This project will re-distribute water in the southern Everglades by retaining additional fresh water in Taylor Slough and increasing downstream water deliveries to central Florida Bay. The project will potentially reduce flows in the C-111 Basin to the east. The goal is to overall improve estuarine and wetland habitat by restoring vegetation and valued resources such as fisheries and bird prey complex.

### Core Mission and Strategic Priorities

This item is aligned with the District mission element to protect water resources by improving water quality and natural systems, and with several District priorities as identified in the 2012-2017 Strategic Plan (SFWMD 2012). It supports a critical CERP project intended to improve the quantity, quality, timing and distribution of water delivered to freshwater wetlands of Taylor Slough and the coastal ecosystem in Florida Bay via science-based research and monitoring. This contract supports the District's goal of habitat restoration and is also an integral component of the goal to collect hydrological data for the purpose of flow determination and hydrologic basin management.

**Funding Source**

This funding request in an amount of \$356,323 in Florida Bay special revenue funds for which \$86,323 is budgeted in FY14 and the remainder is subject to Governing Board approval of the FY15-FY16 budgets; providing an effective date.

**Staff Contact and/or Presenter**

Project Manager: Christopher Madden, [cmadden@sfwmd.gov](mailto:cmadden@sfwmd.gov) <mailto:cmadden@sfwmd.gov>, x4647

**SOUTH FLORIDA WATER MANAGEMENT DISTRICT**

**Resolution No. 2014 - 0106**

**A Resolution of the Governing Board of the South Florida Water Management District to authorize entering into a three-year agreement with Florida International University for ecological monitoring of water quality and habitat associated with the C-111 Spreader Canal Project in an amount of \$356,323 for which \$86,323 in Florida Bay Special Revenue Funds are budgeted and the remainder is subject to Governing Board approval of the FY15-FY16 budgets; providing an effective date. (Contract No. 4600002987)**

**WHEREAS**, the Governing Board of the South Florida Water Management District deems it necessary, appropriate and in the public interest to authorize the execution of a three-year agreement, Contract No. 4600002987, with Florida International University in the amount of \$356,323 subject to Governing Board approval of the FY15-16 budgets, to measure changes in habitat quality, nutrients and salinity associated with the C-111 Spreader Canal Project in surface waters and soil pore waters in wetlands and downstream waters of Florida Bay, in Taylor Slough, the C-111 Basin and the Model Lands.

**WHEREAS**, the effects of hydrologic restoration of Taylor Slough and Florida Bay by the C-111 Spreader Canal Project will be measured and documented by this work; **now therefore**

**BE IT RESOLVED BY THE GOVERNING BOARD OF THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT:**

**Section 1.** The Governing Board of the South Florida Water Management District hereby authorizes the execution of contract number 4600002987 with Florida International University.

**Section 2.** This resolution shall take effect immediately upon adoption.

**PASSED and ADOPTED** this 9<sup>th</sup> day of January, 2014.

SOUTH FLORIDA WATER MANAGEMENT DISTRICT, BY ITS GOVERNING BOARD  
By:

\_\_\_\_\_  
Chairman

Attest:

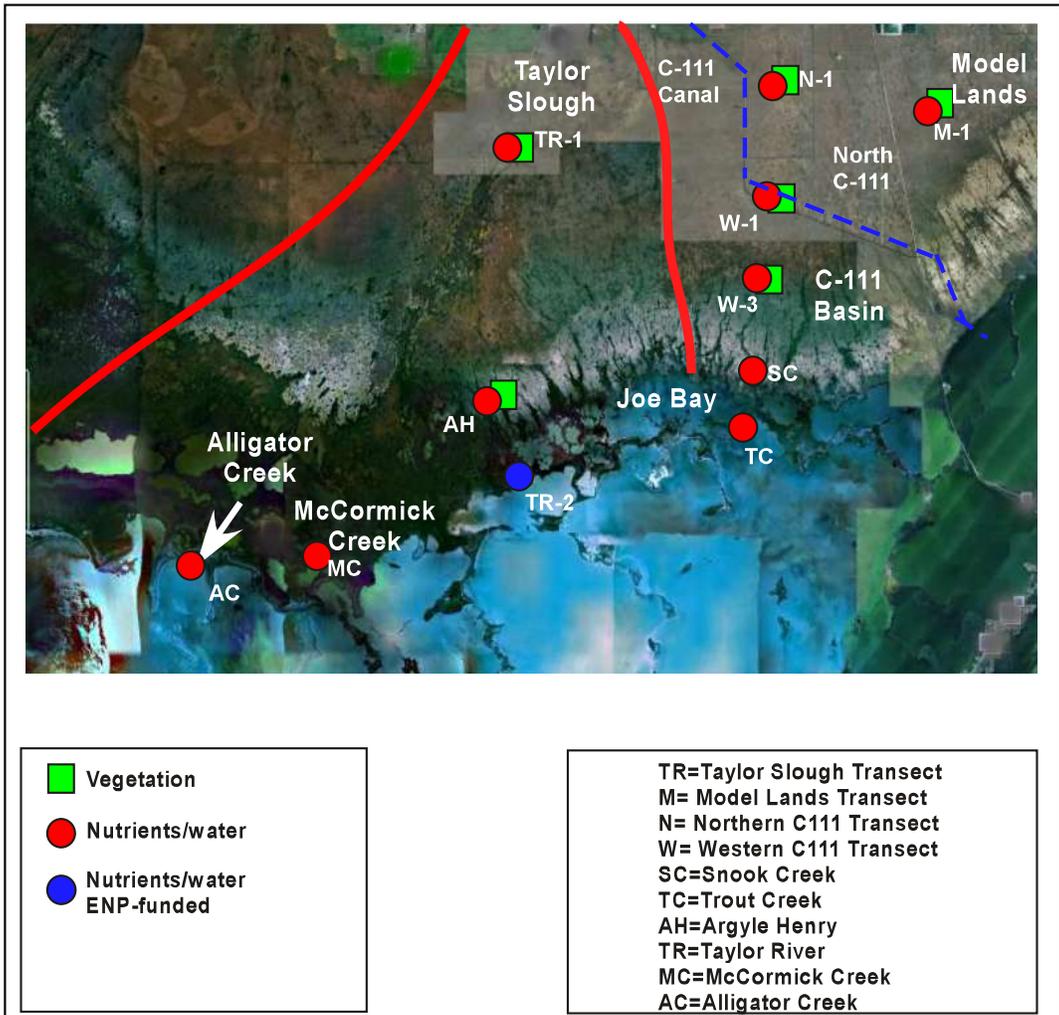
Legal form approved:  
By:

\_\_\_\_\_  
District Clerk/Secretary

\_\_\_\_\_  
Office of Counsel

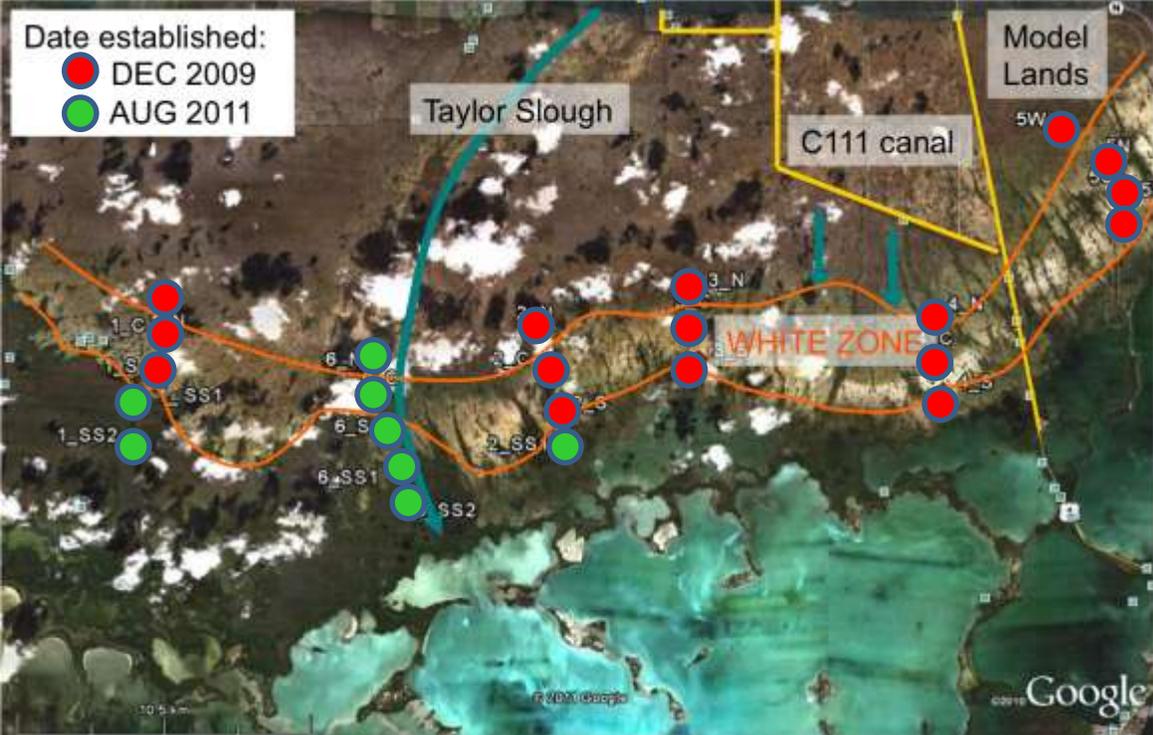
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### C-111 Spreader Canal Western Project Sample Site Map



Map of the Southern Everglades study area, including Taylor Slough, Model Lands and the C-111 Panhandle Region. Sampling sites are for vegetation, nutrients and water quality.

Attachment: Site\_maps (Resolution No. 2014 - 0106 : Ecological Monitoring of Water and Habitat Quality Associated with the C-111 Spreader



Map of the Southern Everglades study area, including Taylor Slough, Model Lands and the C-111 Panhandle Region. Spot salinity transects in red indicate general areas of upstream-downstream transects within which specific spot sites will be chosen for repeated sampling.

## MEMORANDUM

**TO:** Governing Board Members

**FROM:** Terrie Bates, Director, Water Resources Division

**DATE:** January 09, 2014

**SUBJECT:** FY2014 Five-Year Water Resource Development Work Program

### Summary

The water management districts are required to submit a Five-Year Water Resource Development Work Program to the Florida Department of Environmental Protection (FDEP) following final budget adoption. The work program describes the district's implementation strategy and funding plan for the water resource, water supply and alternative water supply (AWS) development components of each approved regional water supply plan. The work program identifies which projects in the water resource components will provide water, explains how each water resource, water supply and AWS development project will produce additional water available for consumptive uses; estimates the quantity of water to be produced by each project; and, provides an assessment of the contribution of the district's regional water supply plans in providing sufficient water needed to timely meet the water supply requirements of existing and future reasonable-beneficial uses for a 1-in-10 year drought event. The Five-Year Water Resource Development Work Program will be published in the FY2014 South Florida Environmental Report, Volume II as Chapter 5A.

### Staff Recommendation

Staff recommends that the Governing Board enter into this resolution accepting the Five-Year Water Resource Development Work Program pursuant to Section 373.536(6)(a)4 F.S. The FDEP has evaluated the work program document and provided comments. FDEP is required to submit a copy of a final evaluation report to the Governor, the President of the Senate and the Speaker of the House of Representatives.

### Core Mission and Strategic Priorities

Meeting the current and future demands of water users and the environment is part of the District's core mission. Florida law identifies water resource development projects (primarily the District's responsibility) and water supply development projects (involves public and private facilities which are the responsibility of local water users) as two types of projects to meet water needs. The Five-Year Water Resources Development Work Program is a progress report of water resources development projects identified in the District's regional water supply plans. Projects involving water conservation, resource evaluation and regional water resource development are an example of what is contained in the five-year plan.

### Funding Source

Implementation of the water resource and water supply projects identified in the District's regional water supply plans are funded through a combination of local, District and state funds as appropriate and available. The District has allocated \$113.2 million in ad valorem funding in FY2014 for Water Resource Development Projects.

### Staff Contact and/or Presenter

Terrie Bates, [tbates@sfwmd.gov](mailto:tbates@sfwmd.gov) <mailto:tbates@sfwmd.gov>, (561) 682-6952

## SOUTH FLORIDA WATER MANAGEMENT DISTRICT

### Resolution No. 2014 - 0107

**A Resolution of the Governing Board of the South Florida Water Management District accepting the FY2014 Five-Year Water Resource Development Work Program pursuant to Section 373.536(6)(a)4, Florida Statutes; providing an effective date.**

**WHEREAS**, pursuant to Section 373.536(6)(a)4, F.S. the District staff submitted the draft 2014 Five-Year Water Resources Development Work Program (Work Program) to the Florida Department of Environmental Protection (FDEP) for review and comment, including an evaluation of the program's consistency with the furtherance of the District's regional water supply plans and the adequacy of the proposed expenditures;

**WHEREAS**, the 2014 Work Program will be contained in Volume II of the FY2014 South Florida Environmental Report as Chapter 5A; **now therefore**

**BE IT RESOLVED BY THE GOVERNING BOARD OF THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT:**

**Section 1.** The Governing Board of the South Florida Water Management District hereby accepts the Five-Year Water Resource Development Work Program, to be included as Chapter 5A in Volume II of the FY2014 South Florida Environmental Report.

**Section 2.** A copy of the report will be made available at <http://www.sfwmd.gov/sfer>.

**Section 3.** This resolution shall take effect immediately upon adoption.

**PASSED and ADOPTED** this 9<sup>th</sup> day of January, 2014.

SOUTH FLORIDA WATER MANAGEMENT  
DISTRICT, BY ITS GOVERNING BOARD

By:

\_\_\_\_\_

Chairman

Attest:

Legal form approved:

By:

\_\_\_\_\_

Office of Counsel

\_\_\_\_\_

District Clerk/Secretary

Print name:

\_\_\_\_\_

**M E M O R A N D U M**

**TO:** Governing Board Members  
**FROM:** Temperince Morgan,  
**DATE:** January 09, 2014  
**SUBJECT:** Everglades Restoration Project Prioritization, Part 2 - State Restoration Projects

**Summary**

The Governing Board has requested a review of the various restoration projects that are being implemented or considered for implementation to provide recommendations regarding obligations and priorities. Multiple presentations will be given over the course of the next several months to provide background information relevant to this discussion. This is Part 2 of the presentation and will focus on state funded restoration projects.

**Staff Recommendation**

This item is for information only. No action is required.

**Additional Background**

The Governing Board has made the request to review the various restoration projects that are being implemented or considered for implementation and provide recommendations regarding obligations and priorities.

**Core Mission and Strategic Priorities**

All the projects that will be discussed as part of this prioritization support the District's core missions of safeguarding water supply, flood protection and protecting and restoring ecosystems as set forth in the priorities of the 10-Year Strategic Plan.

**Funding Source**

N/A

**Staff Contact and/or Presenter**

Temperince Morgan, [tmorgan@sfwmd.gov](mailto:tmorgan@sfwmd.gov), 561-682-6987

## MEMORANDUM

**TO:** Governing Board Members

**FROM:** Temperince Morgan,

**DATE:** January 09, 2014

**SUBJECT:** Modified Water Deliveries to Everglades National Park and C-111 South Dade Projects Update

### Summary

The Modified Water Deliveries to Everglades National Park (Modified Water Deliveries) and C-111 South Dade projects are federal projects designed and constructed to restore more natural hydropatterns to Everglades National Park. Both projects are nearing completion of the construction phase; both efforts are pre-requisites to implementing several key components of the Comprehensive Everglades Restoration program (CERP), including current Central Everglades Planning Project (CEPP). An overview will be provided for each project, including Congressional authorization, the terms of the Project Cooperation Agreements with the United States Army Corps of Engineers, as well as a description of the project purposes, features and the status of construction and operations associated with these projects.

### Staff Recommendation

This item is for information only; no action is required.

### Additional Background

The Modified Water Deliveries and the C-111 South Dade projects have been included in recent briefings as pre-requisites to the implementation of CEPP. Governing board members have requested a briefing on the history and the current status of these projects so that the dependency of CEPP on the completion of these pre-CERP restoration projects can be better understood.

### Core Mission and Strategic Priorities

These projects are consistent with the strategic priority of restoring the Northern and Southern Everglades. The Office of Everglades Policy and Coordination is responsible for policy and cost share negotiations with the Federal government as well as the permitting of structures the District will operate for these projects. OMC will ultimately be responsible for operating and maintaining the structures associated with these projects.

### Funding Source

The District's role as local sponsor for the Modified Water Deliveries project is primarily responsible for the operations, maintenance, repair, replacement and rehabilitation (OMRR&R) of certain project features which will be cost shared with the Corps of Engineers. The C-111 South Dade project includes cost sharing with the Corps of Engineers for both construction and OMRR&R of project features. A discussion of the path forward to complete each project will include issues associated with: crediting and cost-sharing arrangements, funding and the schedule to complete construction, the development and testing of operating plans and the process for the transfer of water control facilities to the District for operation and maintenance.

**Staff Contact and/or Presenter**

Tom Teets, Federal Policy Chief, [tteets@sfwmd.gov](mailto:tteets@sfwmd.gov), (561) 682-6993

## M E M O R A N D U M

**TO:** Governing Board Members

**FROM:** Temperince Morgan,

**DATE:** January 09, 2014

**SUBJECT:** Approving an agreement with FDEP for 319(h) Grant Funding

### Summary

On August 22, 2013, the South Florida Water Management District's Section 319(h) Grant Proposal entitled "Evaluation of Water Farming as a Means for Providing Water Storage/Retention and Improving Water Quality in the Indian River Lagoon/St. Lucie Watershed" was accepted for funding by the Florida Department of Environmental Protection. The award includes grant funding in the amount of \$1,506,401 with a requirement for \$1,581,000 in matching funds for the implementation of three Water Farming Pilot Projects to test and determine the cost effective feasibility of utilizing fallow citrus lands to retain, store and treat surface water to reduce total regional run-off and nutrient loading to natural systems. The Grant Funding Agreement provides the framework for grant reimbursables and cost match deliverables during the implementation, operations, maintenance and reporting phases of all three Water Farming Pilot Projects in the St. Lucie River Watershed.

### Staff Recommendation

Staff recommends that the Governing Board of the South Florida Water Management District approving an agreement with the Florida Department of Environmental Protection for a Section 319(h) Grant entitled "Evaluation of Water Farming as a Means for Providing Water Storage/Retention and Improving Water Quality in the Indian River Lagoon/ St. Lucie Watershed" in the amount of \$1,506,401 with \$1,581,000 required in matching funds for the implementation of a Water Farming Pilot Program

### Additional Background

The Section 319(h) Grant includes grant funding in the amount of \$1,506,401 with a requirement for \$1,581,000 in matching funds for the implementation of three Water Farming Pilot Pilots. These three Pilot Projects include Caulkins Citrus, Bull Hammock/Spur Land and Cattle and Evans Properties. The Grant Funding Agreement project budget by category is summarized below:

<u>Category</u>	<u>Grant Funding</u>	<u>SFWMD Match Funding</u>
Project Design and Permitting	-	\$ 110,900
Project Construction	\$ 598,356	-
Project Operations	\$ 908,045	\$1,237,392
Water Quality Monitoring	-	\$ 68,808
Public Outreach	-	\$ 156,400
Reporting	-	\$ 7,500
	<u>\$1,506,401</u>	<u>\$1,581,000</u>

### Core Mission and Strategic Priorities

Managed under the Dispersed Water Management (DWM) Unit of the Office of State Policy and Coordination, this grant proposal is consistent with the St. Lucie River Watershed Protection Plan storage and water quality goals as well as the strategic priority of protecting and restoring the northern and southern Everglades by expanding and improving water storage.

**Funding Source**

FDEP section 319 grant for water farming in the amount of \$1,506,401 with a required District funding match of \$1,581,000 from ad valorem funds.

**Staff Contact and/or Presenter**

Beth Lewis, [belewis@sfwmd.gov](mailto:belewis@sfwmd.gov), ext. 6343

Damon Meiers, [dmeiers@sfwmd.gov](mailto:dmeiers@sfwmd.gov), ext. 6876

## SOUTH FLORIDA WATER MANAGEMENT DISTRICT

### Resolution No. 2014 - 0108

**A Resolution of the Governing Board of the South Florida Water Management District approving an agreement with Florida Department of Environmental Protection (FDEP) to provide the District with 319(h) Grant funding in the amount of \$1,506,401 for the purpose of supporting the Water Farming Pilot Projects program; providing an effective date.**

**WHEREAS**, FDEP accepted for funding the District's Section 319(h) Grant Proposal entitled "Evaluation of Water Farming as a Means for Providing Water Storage/ Retention and Improving Water Quality in the Indian River Lagoon/ St. Lucie Watershed"

**WHEREAS**, the FDEP award includes grant funding in the amount of \$1,506,401 with a requirement for District matching funds in the amount of \$1,581,000

**WHEREAS**, this funding will be used for three pilot projects to test and determine the cost effective feasibility of utilizing fallow citrus lands to retain, store and treat surface water to reduce regional runoff and nutrient loading to natural systems; **now therefore**

### **BE IT RESOLVED BY THE GOVERNING BOARD OF THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT:**

**Section 1.** The Governing Board of the South Florida Water Management District hereby approving agreement number 4600002983 with the Florida Department of Environmental Protection for a Section 319(h) Grant entitled "Evaluation of Water Farming as a Means for Providing Water Storage/ Retention and Improving Water Quality in the Indian River Lagoon/ St. Lucie Watershed".

**Section 2.** This resolution shall take effect immediately upon adoption.

**PASSED and ADOPTED** this 9<sup>th</sup> day of January, 2014.

SOUTH FLORIDA WATER MANAGEMENT  
DISTRICT, BY ITS GOVERNING BOARD  
By:

\_\_\_\_\_

Chairman

Attest:

Legal form approved:  
By:

\_\_\_\_\_

District Clerk/Secretary

\_\_\_\_\_

Office of Counsel

Print name:

\_\_\_\_\_

**MEMORANDUM**

**TO:** Governing Board Members

**FROM:** Temperince Morgan,

**DATE:** January 09, 2014

**SUBJECT:** 36 month contract with the University of Florida Board of Trustees for the DWM Program (4600002986)

**Summary**

This contract is the result of a 319(h) Grant application and resulting award to the SFWMD for implementing a pilot program, known as the Water Farming Pilot Projects, to test and determine the cost effective feasibility of utilizing fallow citrus lands to retain and store surface water to reduce total regional run-off and nutrient loading to natural systems within the St. Lucie Watershed. The University of Florida Board of Trustees Center for Landscape Conservation Planning (University) will provide watershed coordination assistance associated with the Water Farming Pilot Projects 319(h) Grant. The University will be reimbursed \$156,400 for outreach, options assessment and opportunities identification, and focused follow-up, results and recommendations. The objective of the watershed coordination assistance is to identify opportunities for innovative funding and additional cost-effective strategies for nutrient load reduction. The term of the contract is 3 years and the total contract cost is \$156,400.

**Staff Recommendation**

Staff recommends approval for a contract with the University of Florida Board of Trustees in the total amount of \$156,400.

**Additional Background**

None

**Core Mission and Strategic Priorities**

Managed under the Dispersed Water Management (DWM) Unit of the Office of State Policy and Coordination, this project is consistent with the St. Lucie River Watershed Protection Plan storage and water quality goals as well as the strategic priority of protecting and restoring the northern and southern Everglades by expanding and improving water storage.

**Funding Source**

Ad Valorem Funds from the Dispersed Water Management Spend Down Plan Reserves in the amount of \$156,400 is budgeted in FY14.

**Staff Contact and/or Presenter**

Beth Lewis, [belewis@sfwmd.gov](mailto:belewis@sfwmd.gov), ext. 6343

Damon Meiers, [dmeiers@sfwmd.gov](mailto:dmeiers@sfwmd.gov), ext. 6876

**SOUTH FLORIDA WATER MANAGEMENT DISTRICT**

**Resolution No. 2014 - 0109**

**A Resolution of the Governing Board of the South Florida Water Management District to authorize entering into a three-year contract with the University of Florida Board of Trustees for Dispersed Water Management Program Water Farming Watershed Coordination Assistance for the purpose of providing outreach, options assessment and opportunities identification, and recommendations in the amount of \$156,400 which is budgeted in FY14; providing an effective date.**

**WHEREAS**, the Governing Board of the South Florida Water Management District deems it necessary, appropriate, and in the public interest to authorize entering into a contract with the University of Florida Board of Trustees for Dispersed Water Management Program Water Farming Watershed Coordination Assistance in the amount of \$156,400.

**NOW THEREFORE, BE IT RESOLVED BY THE GOVERNING BOARD OF THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT:**

**Section 1.** The Governing Board of the South Florida Water Management District hereby authorizes the execution of Contract No. 4600002986.

**Section 2.** This Resolution shall take effect immediately upon adoption.

**PASSED and ADOPTED** this 9<sup>th</sup> day of January, 2014.

SOUTH FLORIDA WATER MANAGEMENT DISTRICT, BY ITS GOVERNING BOARD  
By:

\_\_\_\_\_ Chairman

Attest:

Legal form approved:  
By:

\_\_\_\_\_ District Clerk/Secretary

\_\_\_\_\_ Office of Counsel

Print name:  
\_\_\_\_\_

**MEMORANDUM**

**TO:** Governing Board Members

**FROM:** Temperince Morgan,

**DATE:** January 09, 2014

**SUBJECT:** Approving a three year Water Farming Pilot Project agreement with Evans Properties, Inc.

**Summary**

This contract is the result of a solicitation request from the SFWMD for implementing a pilot program to test and determine the cost effective feasibility of utilizing fallow citrus lands to retain and store surface water to reduce total regional run-off and nutrient loading to natural systems. Evans Properties, Inc. will provide for the design, permitting, construction, operation and maintenance of the Water Farming Pilot Project located in the St. Lucie River Watershed in St. Lucie County. The contract term is 3 years, allowing up to one year for design, permitting and construction, and two years of operation and maintenance. The estimated average annual retention is 3,635 acre-feet per year. Evans Properties, Inc. will be reimbursed up to \$317,780 for facility design, permitting and construction. The contract further provides for a fixed payment of \$537,168.50 on an annual basis for a two year term for operations and maintenance costs. The total not to exceed contract cost is \$1,392,117.

**Staff Recommendation**

Staff recommends approval for a contract with Evans Properties, Inc. in a total not to exceed amount of \$1,392,117.

**Additional Background**

In July 2013, the Governing Board authorized staff to begin negotiations in ranked order with respondents to the Water Farming Pilot Project Solicitation (#6000000576). District Staff and the ranked respondent have negotiated the proposed agreement to provide a Water Farming Pilot Project in the St. Lucie River Watershed to test and determine the cost effective feasibility of utilizing fallow citrus lands to retain and store surface water to reduce regional run-off and nutrient loading to natural systems. The contract term is 3 years, allowing up to one year for implementation and two years of operation. The pilot project consists of a pump station, inverted siphon, riser control structures and berms that will retain an estimated 3,635 acre-feet per year of regional runoff on a 900 acre fallow citrus grove located in the St. Lucie River Watershed in St. Lucie County.

Over the two year operational and testing period of the project it is estimated that the cost per volume of storage is \$147 per acre-foot per year.

**Core Mission and Strategic Priorities**

Managed under the Dispersed Water Management (DWM) Unit of the Office of State Policy and Coordination, this project is consistent with the St. Lucie River Watershed Protection Plan storage and water quality goals as well as the strategic priority of protecting and restoring the northern and southern Everglades by expanding and improving water storage.

**Funding Source**

This contract is partially funded by an agreement with FDEP for Section 319(h) Grant Funding. Ad Valorem Funds from the Dispersed Water Management Spend Down Plan Reserves in the amount of \$317,780 is budgeted in FY14 and the remainder is subject to Governing Board approval of the FY15-FY16 budgets.

**Staff Contact and/or Presenter**

Beth Lewis, [belewis@sfwmd.gov](mailto:belewis@sfwmd.gov), ext. 6343

Damon Meiers, [dmeiers@sfwmd.gov](mailto:dmeiers@sfwmd.gov), ext. 6876

**SOUTH FLORIDA WATER MANAGEMENT DISTRICT**

**Resolution No. 2014 - 0110**

**A Resolution of the Governing Board of the South Florida Water Management District to authorize entering into a three-year contract with Evans Properties, Inc. for a Dispersed Water Management Program Water Farming Pilot Project for the purpose of providing water retention services and pilot project implementation information on fallow citrus lands in the St. Lucie River Watershed in an amount not to exceed \$1,392,117, of which \$317,780 is budgeted in FY14 and the remainder is subject to Governing Board approval of the FY15-FY16 budgets; providing an effective date.**

**WHEREAS**, the Governing Board of the South Florida Water Management District deems it necessary, appropriate, and in the public interest to authorize entering into a contract with Evans Properties, Inc. for a Dispersed Water Management Program Water Farming Pilot Project in an amount not to exceed \$1,392,117.

**NOW THEREFORE, BE IT RESOLVED BY THE GOVERNING BOARD OF THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT:**

**Section 1.** The Governing Board of the South Florida Water Management District hereby authorizes the execution of Contract No. 4600002949.

**Section 2.** This Resolution shall take effect immediately upon adoption.

**PASSED and ADOPTED** this 9<sup>th</sup> day of January, 2014.

SOUTH FLORIDA WATER MANAGEMENT DISTRICT, BY ITS GOVERNING BOARD  
By:

\_\_\_\_\_ Chairman

Attest:

Legal form approved:  
By:

\_\_\_\_\_ District Clerk/Secretary

\_\_\_\_\_ Office of Counsel

Print name:  
\_\_\_\_\_

## MEMORANDUM

**TO:** Governing Board Members

**FROM:** Temperince Morgan,

**DATE:** January 09, 2014

**SUBJECT:** Approving a 3 year Water Farming agreement with Spur Land and Cattle, LLC & Bull Hammock Ranch Ltd.

### Summary

This contract is the result of a solicitation request from the SFWMD for implementing a pilot program to test and determine the cost effective feasibility of utilizing fallow citrus lands to retain and store surface water to reduce total regional run-off and nutrient loading to natural systems. Spur Land and Cattle, LLC and Bull Hammock Ranch, Ltd. will provide for the design, permitting, construction, operation and maintenance of the Water Farming Pilot Project located in the St. Lucie River Watershed in Martin County. The contract term is 3 years, allowing up to one year for design, permitting and construction, and two years of operation and maintenance. The estimated average annual retention is 870 acre-feet per year. Spur Land and Cattle, LLC and Bull Hammock Ranch, Ltd. will be reimbursed up to \$136,000 for design, permitting and construction. The contract further provides for an annual fixed payment of \$54,720 for operations and maintenance costs for a two year term. The total not to exceed contract cost is \$245,440.

### Staff Recommendation

Staff recommends approval for a contract with Spur Land and Cattle, LLC and Bull Hammock Ranch, Ltd. in a total not to exceed amount of \$245,440.

### Additional Background

In July 2013, the Governing Board authorized staff to begin negotiations in ranked order with respondents to the Water Farming Pilot Project Solicitation (#6000000576). District Staff and the ranked respondent have negotiated the proposed agreement to provide a Water Farming Pilot Project in the St. Lucie River Watershed to test and determine the cost effective feasibility of utilizing fallow citrus lands to retain and store surface water to reduce regional run-off and nutrient loading to natural systems. The contract term is 3 years, allowing up to one year for implementation and two years of operation. The pilot project consists of a pump station, impoundment, riser control structures and berms that will retain an estimated 870 acre-feet per year of regional runoff on a 60 acre fallow citrus grove and 150 acres of adjacent open land located in the St. Lucie River Watershed in Martin County.

Over the two year operational and testing period of the project it is estimated that the cost per volume of storage is \$81 per acre-foot per year.

### Core Mission and Strategic Priorities

Managed under the Dispersed Water Management (DWM) Unit of the Office of State Policy and Coordination, this project is consistent with the St. Lucie River Watershed Protection Plan storage and water quality goals as well as the strategic priority of protecting and restoring the northern and southern Everglades by expanding and improving water storage.

**Funding Source**

This contract is partially funded by an agreement with FDEP for Section 319(h) Grant Funding. Ad Valorem Funds from the Dispersed Water Management Spend Down Plan Reserves in the amount of \$136,000 is budgeted in FY14 and the remainder is subject to Governing Board approval of the FY15-FY16 budgets.

**Staff Contact and/or Presenter**

Beth Lewis, [belewis@sfwmd.gov](mailto:belewis@sfwmd.gov), ext. 6343

Damon Meiers, [dmeiers@sfwmd.gov](mailto:dmeiers@sfwmd.gov), ext. 6876

**SOUTH FLORIDA WATER MANAGEMENT DISTRICT**

**Resolution No. 2014 - 0111**

**A Resolution of the Governing Board of the South Florida Water Management District to authorize entering into a three year contract with Spur Land and Cattle, LLC and Bull Hammock Ranch, Ltd for a Dispersed Water Management Program Water Farming Pilot Project for the purpose of providing water retention services and pilot project implementation information on fallow citrus lands in the St. Lucie River Watershed in an amount not to exceed \$245,440, of which \$136,000 is budgeted in FY14 and the remainder is subject to Governing Board approval of the FY15-FY16 budgets and; providing an effective date.**

**WHEREAS**, the Governing Board of the South Florida Water Management District deems it necessary, appropriate, and in the public interest to authorize entering into a contract with Spur Land and Cattle, LLC and Bull Hammock Ranch, Ltd. for a Dispersed Water Management Program Water Farming Pilot Project in an amount not to exceed \$245,440.

**NOW THEREFORE, BE IT RESOLVED BY THE GOVERNING BOARD OF THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT:**

**Section 1.** The Governing Board of the South Florida Water Management District hereby authorizes the execution of Contract No. 4600002948.

**Section 2.** This Resolution shall take effect immediately upon adoption.

**PASSED and ADOPTED** this 9<sup>th</sup> day of January, 2014.

SOUTH FLORIDA WATER MANAGEMENT DISTRICT, BY ITS GOVERNING BOARD  
By:

\_\_\_\_\_  
Chairman

Attest:

Legal form approved:  
By:

\_\_\_\_\_  
District Clerk/Secretary

\_\_\_\_\_  
Office of Counsel

Print name:  
\_\_\_\_\_

## M E M O R A N D U M

**TO:** Governing Board Members

**FROM:** Karen Estock, Division Director

**DATE:** January 09, 2014

**SUBJECT:** Approve the acquisition of fee title land containing 4,604.22 acres, more or less, for STA-1W

### Summary

STA-1W is located in Western Palm Beach County as shown on the attached map as Exhibit "A". The acquisition of approximately 4,604.22 acres of lands adjacent to STA-1W as shown on the attached map ("STA-1W Expansion Area") is critical to the expansion of STA-1W to meet the Water Quality Based Effluent Limit ("WQBEL") as prescribed in the Everglades Forever Act ("EFA") and National Pollution Discharge Elimination System ("NPDES") consent orders and permits. Shortly after the EFA and NPDES permits and consent orders became final in September 2012, the South Florida Water Management District ("District") began discussions with the landowners within the STA-1W Expansion Area, namely, Florida Crystals subsidiaries ("Crystals") and Gladeview Holdings, LC ("Gladeview"). Such discussions were tabled for approximately seven months pending resolution of third party legal challenges to extensions of Crystals' leases of Trustees of the Internal Improvement Trust Fund lands within the Everglades Agricultural Area. Discussions resumed in July 2013 after the litigation had been resolved. At its October 10, 2013 meeting, the District's Governing Board approved a non-binding letter of intent that provided the general terms of the proposed acquisition and exchange transaction. The Governing Board presentation and memorandum summarized the cost components of the transaction for all the parties. Crystals, Gladeview, and District staff have since worked out all other terms in a Land Exchange Agreement. The significant terms of the Land Exchange Agreement include:

- The District will acquire a total of approximately 4,604.22 acres of land as shown on the map attached as Exhibit "A." The breakdown of the acreage is that the subsidiaries of Crystals will convey approximately 2,003.38 acres ("Crystals Parcel") to the District and Gladeview will convey approximately 2,600.84 acres ("Gladeview Parcel") to the District.
- The District will convey to Crystals approximately 8,700 acres of land ("District Parcel"), and Crystals has the option to acquire a remaining additional 55 acres of land (the "Option Lands"), all as shown on the attached map.
- Gladeview will acquire approximately 2,865 acres from Crystals ("2,865 Acre Parcel") as shown on the attached map.
- The District will provide cash consideration to Gladeview in the amount of \$5,978,474.
- The District will receive \$450,000 from Crystals as detailed in the "Environmental Analysis" section below.
- The Option Lands consist of four (4) separate parcels that are currently being evaluated by Crystals for point source contamination.
- The District will lease back the 4,604.22 acres to Crystals on an interim basis consistent with the STA-1W Expansion Project, as detailed in the "Leases" section below.

- The District will extend two (2) existing leases with Crystals containing approximately 1,691 acres, as detailed in the “Lease” section below.
- Crystals will acquire the District Parcel from the District subject to the existing U.S. Sugar Corporation lease.
- The Closing of the land exchange is targeted for April or May of 2014.
- Each party will pay for the closing costs (documentary stamp tax and title insurance) in connection with the lands they are acquiring. The District is exempt from paying documentary stamp tax in connection with its acquisition of the Crystals and Gladeview Parcels.
- Each party will be responsible for any environmental remediation disclosed in the parties environmental audit for the lands they are acquiring.

### **Staff Recommendation**

Staff recommends approval of the acquisitions, exchanges and other considerations as detailed herein.

### **Additional Background**

The following represents additional information used for further evaluation of the transaction.

### **Appraisal Information**

The District obtained two appraisals for the District, Crystals, and Gladeview Parcels. Crystals also obtained an appraisal for the District Parcel and the combined Crystals and Gladeview Parcels. The appraisal information is set forth in the table below.

Appraisals	District Parcel	Crystals Parcel	Gladeview Parcel	<i>Combined Crystals and Gladeview Parcels</i>
SFWMD	\$ 63,000,000	\$ 18,400,000	\$ 23,900,000	\$ 42,300,000
SFWMD (approved)	\$ 68,000,000	\$ 18,760,000	\$ 24,600,000	\$ 43,360,000
Average	\$ 65,500,000	\$ 18,580,000	\$ 24,250,000	\$ 42,830,000
Crystals	\$ 56,800,000			\$ 42,000,000

### **Environmental Analysis**

The SFWMD has conducted an environmental audit of the Crystals and the Gladeview Parcels. The audit identifies two (2) different categories of contamination:

- (1) The contamination for which remediation is required to render the subject property suitable for use as a water resource project component has an estimated corrective action costs ranging from approximately \$7,500,000 to \$23,275,000. The corrective action costs will be the responsibility of the SFWMD and it is anticipated that those corrective actions will be integrated into the project construction process.

- (2) The contamination characterized as “point source” items represent localized areas of impact to be remediated regardless of the end use of the new owner. The total estimated corrective action costs for the “point source” items are \$710,000, of which Crystals will pay the District \$450,000 before May 2016.

### **Lease Analysis**

#### **Leaseback of Crystals and Gladeview Parcels**

At Closing, the District will lease to Crystals the 4,604.22 acres at an annual market rental of \$150 per acre. The following terms will be reflected in the lease:

- In January 2016, approximately 320 acres will be removed from the lease so that the District can commence project construction.
- In May 2016, another approximately 1284 acres will be removed from the lease so that the District can expand the project construction.
- Beginning May 2016, the remaining approximately 3000 acres will be leased by Crystals through February 1, 2017 for \$0 per acre. This offsets Crystal’s obligation to manage water within the construction area at no cost to the District during the lease back term and the risks of farming within an active construction project.

#### **Lease Extensions**

At Closing, the District will extend through March 31, 2019 at their current lease rental rates, two existing leases with Crystals, one for approximately 927.45 acres that originally commenced on January 5, 2006 and currently terminates on March 31, 2015 and one for approximately 763.44 acres that originally commenced on August 9, 2007 and currently terminates on March 31, 2016. The subject leased lands, identified as the Parker lands and Parcel 2 lands on Exhibit “B” are located in the District’s Compartment A-2 Everglades Agricultural Area in Palm Beach County and are adjacent to other District lands leased to Crystals through March 31, 2019.

#### **Core Mission and Strategic Priorities**

The STA-1W Expansion Project is of critical importance to comply with the Restoration Strategies Regional Water Quality Plan Consent Orders for the purpose of meeting State Water Quality Standards in the Everglades Protection Area. The subject land exchange provides the optimal acreage necessary to allow the District to stay on schedule and meet upcoming consent order milestones. The ability to utilize lands adjacent to the exiting STA-1W for the expansion project has been evaluated by the District engineering staff as the desired location negating the need to build additional conveyance and multiple pump stations needed to move water if the District used the current District Parcel L-8 lands. Building the expansion on lands adjacent to the existing STA-1W conveys a higher level of certainty the STA-1W expansion project and will assist in achieving the WQBEL as required by the EFA and NPDES permits and consent orders issued for the Everglades STA’s on September 12, 2012.

#### **Funding Source**

Ad valorem funds will be used for the \$5,978,474 cash payment and associated costs.

**Staff Contact and/or Presenter**

Richard Bassell, [rbassell@sfwmd.gov](mailto:rbassell@sfwmd.gov) <mailto:rbassell@sfwmd.gov>, 561-682-2510

## SOUTH FLORIDA WATER MANAGEMENT DISTRICT

### Resolution No. 2014 - 0112

**A Resolution of the Governing Board of the South Florida Water Management District to approve the acquisition of fee title land interests containing 4,604.22 acres, more or less, for the STA-1W Expansion Project, in Palm Beach County, along with the receipt of \$450,000, in exchange for the conveyance of fee title land interests in Palm Beach County containing 8,700 acres, more or less, and the option to require the District to convey fee title land interests containing 55 acres, more or less, for no additional consideration, and the payment of cash consideration in the amount of \$5,978,474 and associated costs for which ad valorem funds are budgeted; approve declaring surplus for exchange and conveyance of fee title land interests in Palm Beach County containing 8,755 acres, more or less, all without reservation of interests under Section 270.11, Florida Statutes; approve entering into a lease agreement with respect to the lands containing 4,604.22 acres, more or less, in Palm Beach County; approve lease extensions; providing an effective date.**

**WHEREAS**, the South Florida Water Management District (District) operates Stormwater Treatment Area 1West ("STA-1W") located in Western Palm Beach County as shown on the map attached as Exhibit "A"; and

**WHEREAS**, the STA-1W Expansion Project is a critical component of the District's Restoration Strategies Regional Water Quality Plan to meet State Water Quality Standards in the Everglades Protection Area; and

**WHEREAS**, the South Florida Water Management District is authorized to acquire land, or interests or rights in land, pursuant to Section 373.139, Florida Statutes and to exchange lands, or interests or rights in lands, pursuant to Section 373.089, Florida Statutes; and

**WHEREAS**, the Governing Board of the South Florida Water Management District at its October 10, 2013 meeting, approved a non-binding letter of intent that provided the general terms of the proposed acquisition and exchange transaction reflected by this Resolution; and

**WHEREAS**, the other parties to the acquisition and exchange transaction and the staff of the South Florida Water Management District have since worked out all other terms in a Land Exchange Agreement; and

**WHEREAS**, for the purpose of providing the District with the necessary lands for the STA-1W Expansion Project, the South Florida Water Management District desires to enter into the Land Exchange Agreement whereby (1) the District will acquire fee title to a total of 4,604.22 acres, more or less, as shown on Exhibit "A: from Gladeview Holdings, LC ("Gladeview") and subsidiaries of the Florida Crystals Corporation ("Crystals"), (2) the District will convey to Crystals fee title to 8,700 acres, more or less, as shown on Exhibit "A", (3) Crystals has the option to acquire an additional 55 acres, more or less, as shown on Exhibit "A: (4) Gladeview will acquire from Crystals 2,865 acres, more or less, as shown on Exhibit "A", (5) the District will be paid \$450,000 cash consideration, and (6) the District will provide cash consideration to Gladeview in the amount of \$5,978,474; and

**WHEREAS**, as further provided in the Land Exchange Agreement, the District will lease back the 4,604.22 acres to Crystals on an interim basis consistent with the STA-1W Expansion Project, so that approximately 320 acres will be removed from the lease in January 2016, approximately 1284 acres will be removed from the lease in May 2016, and the remaining approximately 3000 acres will be leased through February 1, 2017; and

**WHEREAS**, as further provided in the Land Exchange Agreement, the District will extend two (2) existing leases with Crystals of the Parker Lands and Parcel 2, containing a total of approximately 1,691 acres, as shown on attached Exhibit "B", for a period through March 31, 2019.

**NOW THEREFORE, BE IT RESOLVED** by the Governing Board of the South Florida Water Management District:

**Section 1.** The Governing Board of the South Florida Water Management District hereby approves the acquisition of fee title land interests containing 4,604.22 acres, more or less, for the STA-1W Expansion Project in Palm Beach County, and the receipt of \$450,000 cash consideration, in exchange for the conveyance of fee title land interests in Palm Beach County containing 8,700 acres, more or less, the grant of an option to require the District to convey fee title land interests in Palm Beach County containing 55 acres, more or less, and the payment of cash consideration of \$5,978,474 and associated costs, for which ad valorem funds are budgeted.

Owner	Tract No.	Interest	Acres	SFWMD Appraised Value
Stofin Co., Inc.	49102-249	Fee	1,537.73	\$14,460,000
S.D. Sugar Corp.	49102-251	Fee	465.65	\$ 4,300,000
Gladeview Holdings, LC	49102-250	Fee	2,600.84	\$24,600,000
<b>TOTALS</b>			<b>4,604.22</b>	<b>\$43,360,000</b>

Owner	Tract No.	Interest	Acres	SFWMD Appraised Value
South Florida Water Management District	SC200-030	Fee	8,713	\$68,000,000

**BUDGET**

Dollars	Fund	Fund Center	Functional Area	Commitment Item GL Acct #
\$5,978,474	401000, 402000, 406000	3510144000	B199	580020

**Section 2.** The Governing Board of the South Florida Water Management District hereby further approves declaring surplus for exchange and conveyance land interests containing 8,755 acres, more or less, all in Palm Beach County. The Governing Board hereby determines that the 8,755 acres, more or less, subject lands are no longer needed for conservation purposes and this Resolution has been approved by at least a two-thirds (2/3) vote of the Governing Board.

**Section 3.** The Governing Board of the South Florida Water Management District hereby further approves entering into a lease agreement with Crystals for the lease back of the 4,604.22 acres, more or less.

**Section 4.** The Governing Board of the South Florida Water Management District hereby further approves entering into extensions to two (2) existing lease agreements with Crystals of the Parker Lands and Parcel 2, containing a total of approximately 1,691 acres for a period through March 31, 2019.

**Section 5.** The Governing Board of the South Florida Water Management District hereby authorizes the Chair to execute the Agreement for Sale and Purchase and any instrument(s) of conveyance required to consummate the transaction contemplated therein. The Governing Board of the South Florida Water Management District hereby authorizes the Executive Director or the Executive Director's designee to execute all other documents necessary to consummate this transaction.

**Section 6.** This Resolution shall take effect immediately upon adoption.

**PASSED** and **ADOPTED** this 9th day of January, 2014.

SOUTH FLORIDA WATER MANAGEMENT DISTRICT, BY ITS GOVERNING BOARD  
By:

\_\_\_\_\_

Chairman

Attest:

Legal form approved:

By:

\_\_\_\_\_

District Clerk/Secretary

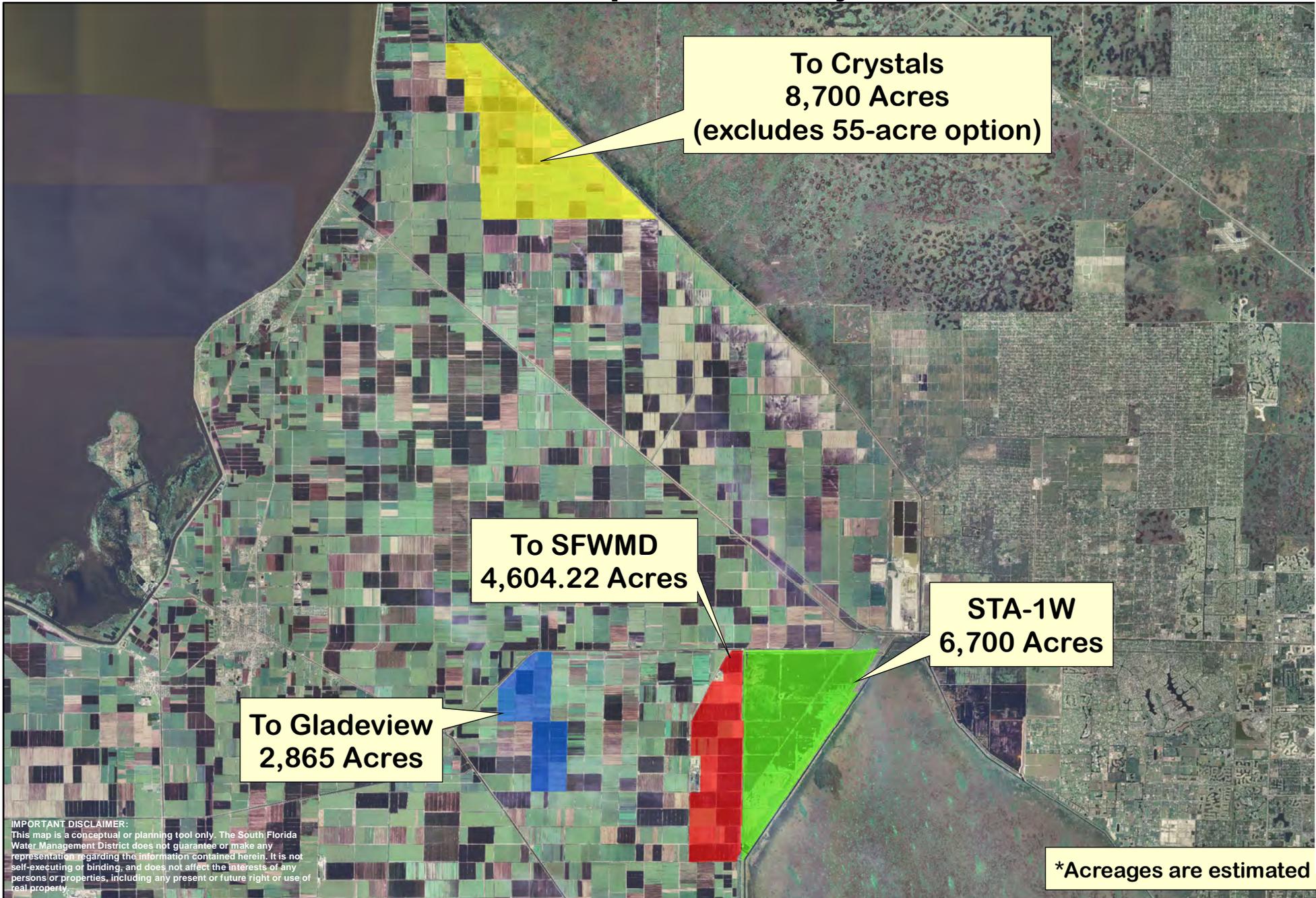
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Office of Counsel

Print name:

\_\_\_\_\_

# Land Exchange STA-1W Expansion Project

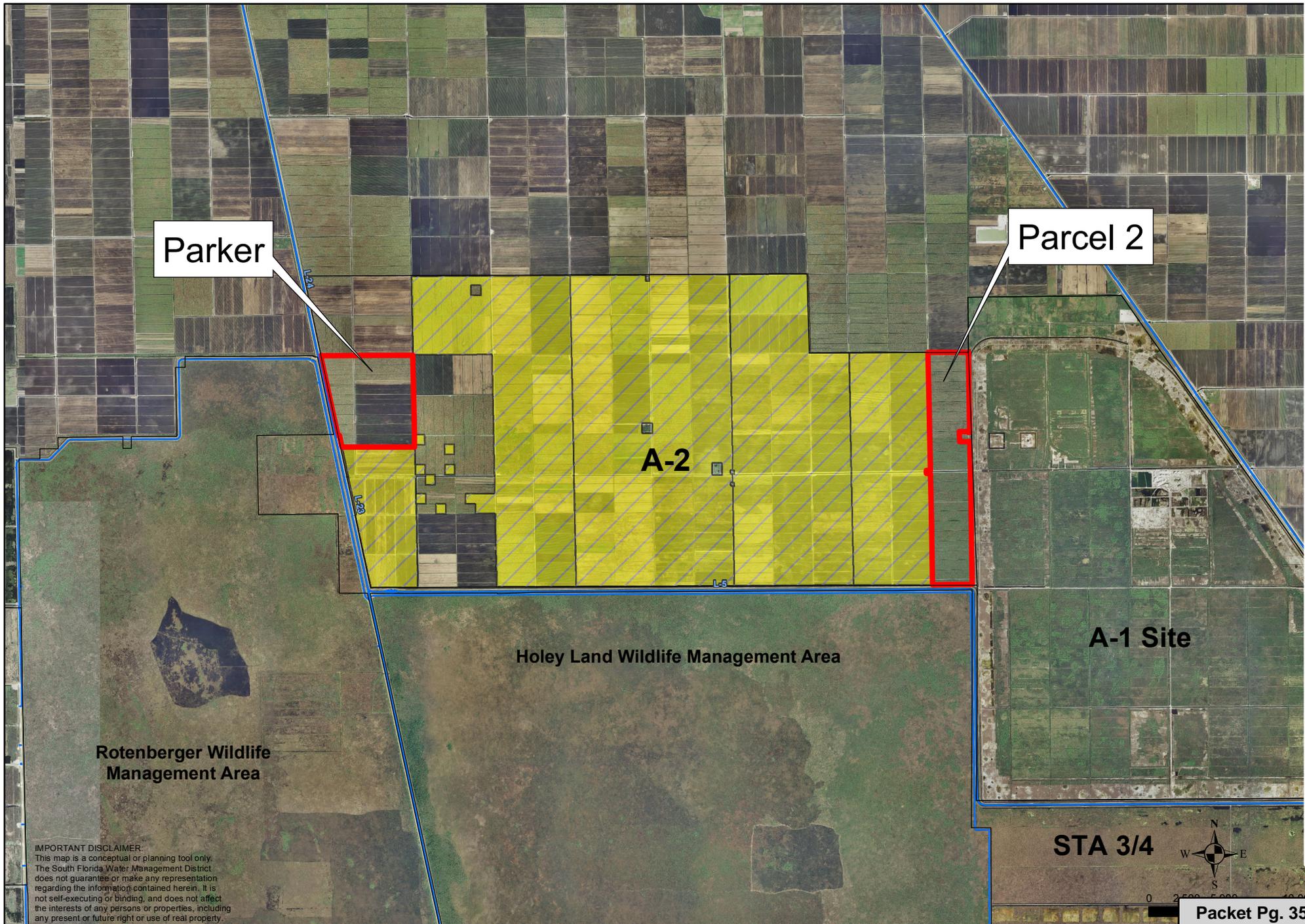


**IMPORTANT DISCLAIMER:**  
 This map is a conceptual or planning tool only. The South Florida Water Management District does not guarantee or make any representation regarding the information contained herein. It is not self-executing or binding, and does not affect the interests of any persons or properties, including any present or future right or use of real property.

\*Acreages are estimated

Attachment: ExhA\_Map\_ID\_1680\_203 (Resolution No. 2014 - 0112 : Approve the acquisition of fee title

# Lease Extensions



**IMPORTANT DISCLAIMER:**  
This map is a conceptual or planning tool only. The South Florida Water Management District does not guarantee or make any representation regarding the information contained herein. It is not self-executing or binding, and does not affect the interests of any persons or properties, including any present or future right or use of real property.

Attachment: ExhB\_Map\_ID\_1680\_203 (Resolution No. 2014 - 0112 : Approve the acquisition of fee title

## MEMORANDUM

**TO:** Governing Board Members  
**FROM:** Jeff Kivett, Division Director  
**DATE:** January 09, 2014  
**SUBJECT:** S-13 Refurbishment - Contract Number 4600002993

### Summary

The S-13 Pump Station was built in 1954 by the United States Army Corps of Engineers (USACE). The pump station is a coastal structure located on the C-11 canal in Broward County near the Town of Davie. This station provides area flood protection and acts as a barrier to the inland movement of salt water.

Due to age and current condition of the facility, the District initiated the S-13 Pump Station Repowering and Automation Project in February 2011 with the following goals: provide new electronically-controlled low-emissions engines, refurbish right-angle gear reducer and pump, provide new gen-sets, provide new ventilation fans for station, provide new trash rake and conveyor and provide complete station electrical upgrades.

Construction is scheduled to start in February of 2014 and continue 790 days through April of 2016. The project is phased for dry season construction. The District contracted in June 2013 for the purchase of three engines to meet the December 31, 2013 engine production deadline and December 31, 2015 installation date to meet Tier 4i engine emission requirements.

### Staff Recommendation

The project should proceed in a timely manner with a construction notice-to-proceed to meet the requirements of dry season / wet season construction and the Tier 4i statutory requirements. Staff recommends approval to enter into a 790 day contract in the amount of \$6,841,000.00 with Douglas N. Higgins, Inc., the lowest responsive and responsible bidder, for the construction of the S-13 Repowering and Automation.

### Core Mission and Strategic Priorities

One of the District's most critical missions is flood control. The S-13 Repowering and Automation project will refurbish and upgrade the pump station equipment and provide improved reliability. The project includes the automation of the station to the newest District standards and upgrading the engine drive systems to meet the new Tier 4i requirements.

### Funding Source

The lowest responsive and responsible bidder is Douglas N. Higgins, Inc. with a total amount of \$6,841,000.00 for which ad valorem funds of \$1,800,000.00 are budgeted and the remainder is subject to Governing Board approval of the FY15-FY16 budgets.

### Staff Contact

John Mitnik, Bureau Chief, Engineering and Construction  
561-682-2679 / jmitnik@sfwmd.gov

## SOUTH FLORIDA WATER MANAGEMENT DISTRICT

### Resolution No. 2014 - 0113

**A Resolution of the Governing Board of the South Florida Water Management District to authorize entering into a 790-day contract with Douglas N. Higgins, Inc., the lowest responsive and responsible bidder for the S-13 Repowering and Automation project in the total amount of \$6,841,000 for which ad valorem funds of \$1,800,000 are budgeted and the remainder is subject to Governing Board approval of the FY15-FY16 budgets; providing an effective date. (Contract Number 4600002993)**

**WHEREAS**, the S-13 pump station provides flood control and salt water intrusion protection for central Broward County; and

**WHEREAS**, repowering and automation of the S-13 pump station supports the District's flood control mission; and

**WHEREAS**, the Governing Board of the South Florida Water Management District deems it necessary, appropriate and in the public interest to authorize entering into this 790 day contract with Douglas N. Higgins, Inc., for the S-13 Repowering and Automation project; **now therefore**

**BE IT RESOLVED BY THE GOVERNING BOARD OF THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT:**

**Section 1.** The Governing Board of the South Florida Water Management District hereby approves the 790 day contract with Douglas N. Higgins, Inc. for the construction of the S-13 Repowering and Automation, in the amount of \$6,841,000.00.

**Section 2.** This project supports the District's Mission of flood control in central Broward County.

**Section 3.** This resolution shall take effect immediately upon adoption.

**PASSED** and **ADOPTED** this 9<sup>th</sup> day of January, 2014.

SOUTH FLORIDA WATER MANAGEMENT  
DISTRICT, BY ITS GOVERNING BOARD  
By:

\_\_\_\_\_

Chairman

Attest:

Legal form approved:

By:

\_\_\_\_\_

District Clerk/Secretary

\_\_\_\_\_

Office of Counsel

Print name:

\_\_\_\_\_

## MEMORANDUM

**TO:** Governing Board Members

**FROM:** Karen Estock, Division Director

**DATE:** January 09, 2014

**SUBJECT:** Adopting the SFWMD Florida Forever Work Plan, 2014 Annual Update, contained in Chapter 6A, Volume II

### Summary

#### Highlights

The 2014 SFER - Volume II, Chapter 6A presents the 2014 Florida Forever Work Plan.

#### Work Plan Updates

- Added the Lake Hicpochee Hydrologic Enhancement and Rio St. Lucie Stormwater Quality - Sediment Nutrients, NEEPP projects.
- Removed the Hybrid Wetland Treatment Technology, NEEPP project that has been transferred to FDACS as the lead agency.
- Removed the inactive Strazzulla Wetlands, CERP project. The land acquired for this project will be exchanged for U.S. Department of Interior land, located on the western side of Loxahatchee National Wildlife Refuge, which will become part of the Restoration Strategies Program.
- The Picayune Strand Restoration, CERP project land acquisition boundary has been revised to identify for acquisition the Fakahatchee Strand and Belle Meade land to be hydrologically impacted by the project, as determined by a revised 2013 Takings Analysis completed by the US Army Corps of Engineers.
- The conceptual land acquisition boundary for the Loxahatchee River Watershed Restoration Project (LRWRP), CERP has been updated, refining the acquisition area for the LRWRP Flow-way 2 Storage feature.

#### **Staff Recommendation**

Adopt the SFWMD Florida Forever Work Plan, 2014 Annual Update, contained in Chapter 6A, Volume II of the 2014 South Florida Environmental Report, providing an effective date.

#### **Additional Background**

### **FY2013 Land Acquisition Highlights**

- 70 acres for the Cutler South Flowway of the Biscayne Bay Coastal Wetlands, CERP project; and 3 acres for the Loxahatchee River Watershed Restoration, CERP project were acquired by the District through donation.
- Tenant Improvements located within the Kissimmee River Restoration Project flood plain were purchased for demolition and removal at a cost of \$440,400.
- Construction easements totaling 6 acres were acquired through donation for the Herbert Hoover Dike Rehabilitation Project and Loxahatchee River Watershed Restoration projects.
- A 6-acre access easement along the Cocohatchee Canal was conveyed to the District through a right-of-way permit.
- 235,695 acres (59%) of land acquired for CERP as of September 30, 2013

### **FY2013 External Partner Activity**

- Miami-Dade County, as an external partner, acquired 91 acres of land for \$234,560 within the Biscayne Bay Coastal Wetlands, CERP project; and 3 acres of land were acquired through donation within the C-111 Spreader Canal, CERP project.

### **Core Mission: Natural Systems/Water Quality Strategic**

**Priority 1:** Completing and implementing key ongoing and new restoration projects

**Priority 2:** Expanding and improving water storage

**Priority 3:** Implementing cost effective solutions to improve water quality treatment; reduce nutrient loads and achieve water quality standards

### **Funding Source**

The Plan identifies projects eligible for funding under the Florida Forever Act, as well as projects eligible for state acquisition monies from the appropriate account or trust fund under Section 373.139, Florida Statutes. Additionally, a summary of land acquisition activity as of September 30, 2013 is provided. Details on the District's land management activities are presented in Volume II, Chapter 6B.

### **Staff Contact and/or Presenter**

Ray Palmer, ext. 2246

## SOUTH FLORIDA WATER MANAGEMENT DISTRICT

### Resolution No. 2014 - 0114

**A Resolution of the Governing Board of the South Florida Water Management District adopting the SFWMD Florida Forever Work Plan, 2014 Annual Update, contained in Chapter 6A, Volume II of the 2014 South Florida Environmental Report; providing an effective date.**

**WHEREAS**, pursuant to Chapter 2005-36, amending Section 373.199, F.S., by March 1<sup>st</sup> of each year, as part of the consolidated water management annual report required by S. 373.199(7), the South Florida Water Management District is required to file a yearly update of the South Florida Water Management District Florida Forever Work Plan to further the goals of the Florida Forever Act and to submit the Work Plan to the Secretary of the Florida Department of Environmental Protection, the Governor, the President of the Florida Senate, and the Speaker of the Florida House of Representatives; and

**WHEREAS**, the South Florida Water Management District Florida Forever Work Plan, 2014 Annual Update is contained in Chapter 6A, Volume II of the 2014 South Florida Environmental Report; and

**WHEREAS**, pursuant to Section 373.139, F.S., a public hearing was duly held with regard to the intention of the South Florida Water Management District to adopt the South Florida Water Management District Florida Forever Work Plan, 2014 Annual Update; and

**WHEREAS**, on January 9, 2014, the South Florida Water Management District Florida Forever Work Plan, 2014 Annual Update, Chapter 6A, Volume II of the 2014 South Florida Environmental Report, was presented to the Governing Board of the South Florida Water Management District adopting the Work Plan 2014 Update;

**NOW THEREFORE, BE IT RESOLVED** by the Governing Board of the South Florida Water Management District:

**Section 1.** The Governing Board of the South Florida Water Management District hereby adopts the South Florida Water Management District Florida Forever Work Plan, 2014 Annual Update, contained in Chapter 6A, Volume II of the 2014 South Florida Environmental Report.

**Section 2.** A copy of the report will be made available at <http://www.sfwmd.gov/sfer>.

**Section 3.** This Resolution shall take effect immediately upon adoption.

**PASSED** and **ADOPTED** this 9th day of January, 2014.

SOUTH FLORIDA WATER MANAGEMENT  
DISTRICT, BY ITS GOVERNING BOARD

By:

\_\_\_\_\_

Chairman

Attest:

Legal form approved:

By:

\_\_\_\_\_

District Clerk/Secretary

\_\_\_\_\_

Office of Counsel

Print name:

\_\_\_\_\_

## M E M O R A N D U M

**TO:** Governing Board Members

**FROM:** Sharon M. Trost, PG, AICP, Director, Regulatory Division

**DATE:** January 09, 2014

**SUBJECT:** Adopt Proposed Rules for CUP Consistency

### Summary

The Florida Department of Environmental Protection (DEP) is leading a statewide effort (referred to as CUPcon) to improve consistency in the consumptive use permitting programs implemented by the water management districts (WMDs). The CUPcon goals include: 1) making the consumptive use permitting program less confusing for applicants; 2) treating applicants equitably statewide; 3) providing consistent protection of the environment; 4) streamlining the process; and 5) incentivizing behavior that protects water resources. The key changes to the rules include:

- Incorporation of updates to Chapter 62-40, F.A.C.;
- Revision of permit types to include: 1) General Permits by Rule for landscape irrigation, short-term dewatering and closed-loop systems; 2) Noticed General Permits; and 3) Individual Permits for those that do not qualify for a general permit;
- Revision of standard public water supply conservation plan and inclusion of goal based plans;
- Consistent standard permit conditions with the other WMDs and updating existing permit conditions;
- Reorganization of Applicant's Handbook (formerly Basis of Review);
- Inclusion of semi-annual pumpage reporting instead of quarterly reporting; and
- Incorporation of standardized application and compliance forms

### Staff Recommendation

Adopt Proposed Rules 40E-40E-1.021, 40E-1.602, 40E-1.603, 40E-1.6065, 40E-1.6107, 40E-1.615, 40E-1.659, 40E-2.011, 40E-2.041, 40E-2.061, 40E-2.071, 40E-2.091, 40E-2.101, 40E-2.301, 40E-2.331 40E-2.381, 40E-3.011, 40E-3.021, 40E-3.040, 40E-3.051, 40E-3.301, 40E-3.451, 40E-5.011, 40E-5.041, 40E-5.301, 40E-8.011, 40E-8.421, 40E-8.431, 40E-10.011, 40E-10.031, 40E-10.051, 40E-20.010, 40E-20.011, 40E-20.061, 40E-20.091, 40E-20.101, 40E-20.301, 40E-20.302, 40E-20.321, 40E-20.331, 40E-20.351, 40E-20.381, 40E-24.011, 40E-24.101, 40E-24.201, F.A.C., and reorganize and rename the Basis of Review For Water Use Permit Applications Within the South Florida Water Management District to improve consistency among the WMDs'

consumptive use permitting programs. The proposed rules are included in the Governing Board materials for this agenda item.

### **Additional Background**

The SFWMD held ten public workshops across the SFWMD boundaries and two stakeholder meetings. The DEP and WMDs reviewed all comments submitted by participants and amended the rule language as appropriate. A Statement of Economic Costs (SERC) was prepared to determine the regulatory impact of the CUPcon amendments. The SERC indicates the amendments will not have an adverse impact on economic growth; on permittees, small business, or small governments; or increase regulatory costs.

The proposed rules were published in FAR on December 10, 2013. The proposed rules were also provided to the Office of Fiscal Accountability and Regulatory Reform and the Joint Administrative Procedures Committee on November 26, 2013. As of December 16, 2013, the SFWMD has not received any comments from OFARR or JAPC. The District may publish a Notice of Change to address public comments received after publication of the Notice of Proposed Rule.

### **Core Mission and Strategic Priorities**

This item supports the core mission by simplifying the water use permitting process for its permittees while protecting the water resources of the District. The Water Use Permitting Bureau will implement the CUPcon amendments.

### **Funding Source**

The publication of the Notice of Proposed Rule was funded from Office of Counsel. The Water Use Permitting Bureau will fund implementation of the CUPcon amendments.

**Staff Contact: Maria C. Clemente, P.E., Water Use Bureau Chief**  
**Phone (561) 682-2308**

**Jennifer Bokankowitz, Attorney, Office of Counsel**  
**Phone (561) 682-2258**

## M E M O R A N D U M

**TO:** Governing Board Members

**FROM:** Doug Bergstrom, Director, Administrative Services Division

**DATE:** January 9, 2014

**SUBJECT:** Monthly Financial Statement – November 2013

The attached financial status report is provided for your review. This report provides a high level snapshot of District financial activity and includes revenue collections by source and expenditures by program. Also attached is a summary in the State Program format in compliance with Chapter 373.536(4)(e) F.S., requiring each District to provide a monthly financial statement in the form and manner prescribed by the Department of Financial Services to the District's Governing Board and make such monthly financial statement available for public access on its website. This unaudited financial statement is provided as of November 30, 2013, with 16.7% of the fiscal year completed.

**Schedule of Sources and Uses** – This financial statement compares revenues received and encumbrances/expenditures made against the District's FY2014 \$717.6 million consumable budget. Encumbrances represent orders for goods and services which have not yet been received.

- With the fiscal year 16.7% complete, 19.3% of the District's budgeted operating revenue (excludes fund balance) has been collected. The primary source of operating revenue received to date is taxes. Ad Valorem taxes comprise 64.0% of the budgeted operating revenues and drive collections based on the annual cycle of the property tax bill. The remaining revenue source is fund balance which represents the amount of prior year residual revenue that is budgeted in the current year and has already been received. Total FY2014 sources collected were 53.0% of budget or \$380.0 million.
- 15.4% of budgeted Ad Valorem tax revenue and 8.3% of Agricultural Privilege tax revenue have been collected to date. Ad Valorem and Agricultural Privilege tax collections peak November through January driven by the mailing of property tax bills in October and the 4.0% maximum discount available when paid in full by November 30. These taxes are budgeted at a discounted rate of 95.0% to allow for the discounts property owners may take advantage of through early payment options. Historical ad valorem trends for the past five years through November average a collection rate of 9.8%.
- There is \$9.1 million in budgeted intergovernmental revenue in ad valorem funds, which includes \$4.4 million in Alligator Alley toll revenue, \$2.8 million in WMLTF for moving water south, \$1.6 million in USACE reimbursements, and \$304K in DEP reimbursements for aquatic plant control activities. Actual revenues earned as of the end of November amount to \$2.0 million.

- There is \$92.0 million in budgeted intergovernmental revenue in dedicated funds, comprised of \$74.8 million in SOETF reimbursements, \$5.0 million in reimbursements from the Florida Fish and Wildlife Conservation Commission (FWC) for aquatic/invasive plant control and \$15K for Model Lands, \$6.9 million in WMLTF reimbursements for debt service expenses related to bonds and \$4.0 million for the Corbett Levee, reimbursement of federal revenues of \$538K for St. Lucie Watershed Water Farming and \$375K for Tropical Storm Isaac repairs, \$240K from Indian River Lagoon and Everglades License Tag proceeds, and \$175K reimbursement from FDEP for water quality studies. FY14 actual revenue to date amounts to \$26.2 million. Reimbursement requests are submitted to the state based on actual expenses incurred and are typically received later in the fiscal year.
- The District budgeted \$2.9 million in investment earnings in ad valorem funds for FY14. Total revenue to date is \$1.0 million or 35.0% of budgeted Investment Earnings; \$761K or 26.5% of investment earnings in ad valorem funds and \$245K in dedicated funds.
- Lease revenue represents amounts collected from leases of real property owned by the District. The timing of revenue received is based on the fee schedules within the agreements – monthly, semi-annual, or annual payments – and these varying timing issues impact the collection rate. The District has received \$711K which represents 23.4% of the current year budgeted lease revenue of \$3.0 million. The use of lease revenue collected for lands purchased with State or Federal funds is restricted based on the guidelines in the acquisition or grant.
- There is \$3.9 million in budgeted permit fee revenue, which includes water use permits (\$549K), right of way permits (\$68K), Environmental Resource Permit (ERP) application fees (\$1.5 million), and wetland mitigation fees for C-139 Annex Restoration (\$1.8 million). FY14 revenue amounts received include \$173K from water use permits, \$528K from ERP Application Fees, \$3.0 million in unbudgeted revenues from Lake Belt Mitigation fees, and \$13K from other applications and fees.
- Budgeted revenue in the Other category includes \$210K in civil penalties and enforcement fees and \$251K in miscellaneous revenues such as cash discounts, insurance reimbursements, refunds for prior year expenditures, and sale of recycled oil and scrap metal. Fiscal year collections amount to \$1.2 million at the end of the second month of the fiscal year, representing 260.4% of the budgeted \$461K. \$1.1 million of the amount received was a refund of prior year expenditure from Florida League of Cities.
- Sale of District Property represents the sale of real property and land. This is budgeted conservatively at \$250K due to the uncertainty involved. FY14 revenues received total \$155K.
- Self-insurance premiums represent the District's contribution and the contribution from active and retired District employees to the self-funded health benefits program. Also included is the District's contribution to the workers compensation, auto and general liability self-insurance program. Contributions of \$3.8 million received through November equate to 13.1% of the \$28.8 million budget.

### Expenditure and Encumbrance Status:

As of November 30, 2013, with 16.7% of the year complete, the District has expended **\$73.1 million or 11.1%** and has encumbered **\$176.0 million or 26.8%** of its non-reserve budget. The District has obligated (encumbrances plus expenditures) **\$249.1 million or 37.9%** of its non-reserve budget.

**Summary of Expenditures and Encumbrances by Program** – This financial statement illustrates the effort to date for each of the District's program areas. Provided below is a discussion of the primary uses of funds by program.

- The **Comprehensive Everglades Restoration Plan Program** has obligated 32.9% and expended 1.3% of their \$159.1 million budget. Principal expenditures include personnel services (\$883K), contractual services (\$828K), operating (\$68K), and capital outlay (\$270K). Capital outlay encumbrances (\$43.4 million) and contractual services encumbrances (\$7.0 million) include the following projects: Southern CREW, Biscayne Bay Coastal Wetlands, C-111 Spreader Canal, L-8 Flow Equalization Basin, Loxahatchee River Watershed Restoration Replacement Project - Mecca, C-44 Reservoir/STA Project, Loxahatchee Impoundment Landscape Assessment, Picayune Strand, WCA3 Decentralization and Sheetflow Equalization, CERP Monitoring and Assessment, Modified Water Deliveries & South Dade C-111 Project, and CERP Data Management.
- The **Coastal Watersheds Program** has obligated 40.7% and expended 4.3% of their total \$21.8 million budget. Principal expenditures include personnel services (\$553K), contractual services (\$354K), and capital outlay (\$15K). Contractual services encumbrances primarily consist of interagency agreements (\$6.6 million) including: St. Lucie River and Indian River Lagoon Initiatives, NEEP Rio St. Lucie project, Loxahatchee River Preservation Initiative, Lakes Park Restoration, Spanish Creek/Four Corners, Mirror Lakes/Halfway Pond Rehydration, Big Cypress Basin Stormwater Projects, Collier County Canal System Maintenance, Everglades City Water Management System Master Plan, Village of El Portal Stormwater project, and Miami Gardens NW 178<sup>th</sup> Dr. Stormwater Retrofit; remaining contractual encumbrances (\$1.2 million) include: St. Lucie River Regulatory Source Control, St. Lucie River Watershed WaSh Model Upgrade, water quality monitoring in Indian River Lagoon, St. Lucie River, Loxahatchee River, Lake Trafford, Florida Bay and Coastal Wetlands project, Biscayne Bay Water Quality and Submerged Aquatic Monitoring, public process to develop a restoration vision of the Caloosahatchee River and Estuary, Hydro Model for Naples and Rookery Bay, Naples Bay Salinity Data Collection, Big Cypress Basin Real-time Hydrologic Monitoring and Modeling System, and Collier County Water Quality Monitoring. Capital outlay encumbrances (\$101K) are for the Lake Hicpochee Hydrologic Enhancement project.
- The **District Everglades Program** has obligated 41.3% and expended 4.4% of their total \$104.6 million budget. Principal expenditures include personnel services (\$2.9 million), contractual services (\$247K), operating (\$940K), and capital outlay (\$519K). Contractual services encumbrances (\$3.1 million) primarily include the operations monitoring, maintenance, and repair of Stormwater Treatment Areas (STA), L-40 and STA 1E Exterior Levee Certification, STA Structure Inspection Program, Restoration

Strategies Science Plan projects, Diesel Oxidation Catalyst project and the Everglades Regulation Source Control. Operating encumbrances (\$560K) are in support of the overall operations and the maintenance of vegetation and exotic plant control of the STA's. Capital outlay encumbrances (\$35.0 million) include work on Everglades Agricultural Area A1 Flow Equalization Basin, STA 1W Expansion, Restoration Strategies Science Plan projects and completion of the Compartment B Cell 8 repairs.

- The **Kissimmee Watershed Program** has obligated 53.3% and expended 1.3% of their total \$27.2 million budget. Principal expenditures include personnel services (\$286K) and contractual services (\$67K). Contractual services and operating encumbrances (\$714K) primarily consist of Kissimmee River Restoration Evaluation (\$283K), Kissimmee Basin Modeling and Operating System (\$111K), the Oak Creek project (\$74K), Rolling Meadows project (\$8K), hydrologic monitoring (\$198K), and land acquisition costs and environmental risk assessments (\$40K). Capital outlay encumbrances (\$13.4 million) are primarily for the Kissimmee River Restoration land acquisition cases.
- The **Lake Okeechobee Program** has obligated 45.0% and expended 4.1% of their total \$23.7 million budget. Principal expenditures include personnel services (\$646K), contractual services (\$267K), and operating (\$57K). Contractual services and operating encumbrances (\$9.7 million) are primarily for the following: Dispersed Water Management and Florida Ranchland Environmental Services Projects (\$8.9 million), computer hardware, software, and equipment (\$566K), Northshore Navigation Canal project (\$95K), Lake Okeechobee Watershed Pre-Drainage Characterization study (\$76K), Lakeside Ranch project (\$8K), and water quality assessments and reporting (\$23K).
- The **Land Stewardship Program** has obligated 29.2% and expended 8.5% of their total \$20.4 million budget. Principal expenditures include personnel services (\$682K), contractual services (\$204K), operating (\$766K), and capital outlay (\$81K). Contractual services and operating encumbrances (\$4.2 million) include the maintenance of vegetation and exotic plant control, provision of law enforcement services, and management of District owned lands and facilities. Capital outlay encumbrances (\$47K) are for work on the C-139 Annex Mitigation project.
- The **Mission Support Program** has obligated 30.7% and expended 18.2% of their total \$46.3 million budget. Principal expenditures include personnel services (\$3.7 million), contractual services (\$1.0 million), and operating (\$3.6 million). Contractual services encumbrances (\$2.8 million) include annual audit, and legal and technical support services, IT consulting services and hardware / software, and systems maintenance for the fiscal year, and facilities maintenance and repair services. Operating encumbrances (\$1.9 million) include utilities, and space rental. Capital outlay encumbrances (\$1.0 million) include design, construction and inspection work to upgrade the chiller system to provide redundant cooling capacity for the IT data center, located within the Emergency Operations Center.
- The **Modeling and Science Support Program** has obligated 32.1% and expended 18.1% of their total \$13.0 million budget. Principal expenditures include personnel services (\$1.7 million), contractual services (\$425K), and operating (\$179K). Contractual

services and operating encumbrances (\$1.8 million) include technical and peer reviews, model maintenance and enhancements, computer hardware and software, organic analysis, and sediment/water quality sampling. Capital outlay encumbrances (\$55K) are for replacement field equipment.

- The **Operations and Maintenance Program** has obligated 33.5% and expended 9.9% of their total \$155.2 million budget. Principal expenditures include personnel services (\$8.9 million), contractual services (\$1.8 million), operating (\$4.4 million) and capital outlay (\$315K). Encumbrances for contractual services and capital outlay (\$34.5 million) primarily relate to the O&M capital program for maintenance and repair of existing water management system canals and water control structures including, Miami B-47 Building Replacement, Diesel Oxidation Catalyst Installation, G-16 Canal Dredging and Bank Stabilization, S-21 Cathodic Protection, S-5A Hardening and Service Bridge Refurbishment, S-235 Automation, BCB Field Station Design/Build, North Shore Trash Rake Project, S-13 Repower and Automation, G-94 A-D Refurbishment and Repairs, S-150 Replacement and Automation, Central and Southern Flood Control Structure Inspections, and Operations Decision Support System software. Operating encumbrances (\$2.0 million) are primarily associated with field station daily operations and maintenance including vegetation and exotic plant control for the Central and Southern Flood Control system.
- The **Regulation Program** has obligated 23.6% and expended 16.7% of their total \$23.2 million budget. Principal expenditures include personnel services (\$2.8 million), contractual services (\$309K), operating (\$648K), and capital outlay (\$74K). Contractual services and operating encumbrances (\$1.3 million) include application development, permit scanning contractors/support, computer hardware and software, and advertising services. Capital outlay encumbrances (\$263K) consist primarily of the ePermitting enhancement project which saves time and expenses with online filing/searching of permits.
- The **Water Supply Program** has obligated 37.4% and expended 12.0% of their total \$21.0 million budget. Principal expenditures include personnel services (\$918K), contractual services (\$87K), operating (\$1.5 million), and capital outlay (\$18K). Contractual services and operating encumbrances (\$5.3 million) include the Caloosahatchee Rule Making (\$72K), Central Florida Water Initiative (\$151K), WaterSIP grants (\$250K), Lower Floridan Aquifer (\$75K), interagency agreements for Alternative Water Supply projects (\$926K), Big Cypress Basin (\$3.2 million), Mobile Irrigation Lab (\$55K), and hydrologic data gathering and analysis (\$524K). Capital outlay encumbrances (\$20K) consist primarily of the Lower Floridan Aquifer project.
- **Debt Service** expenses amount to 70.9% (\$29.8 million) of the total \$42.1 million budget. Debt service principal and interest payments include Land Acquisition Bonds issued through the Water Management Lands Trust Fund and Certificates of Participation. Scheduled debt service payments are structured into a single principal payment and partial payment of interest in October and the balance of interest in April.
- **Reserves** of \$60.0 million are designated as economic stabilization reserves, including \$10.0 million for O&M capital projects.

Governing Board Members  
January 9, 2014  
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We hope these reports and the associated narrative will aid in understanding the District's financial condition as well as expenditure performance against the approved budget. If you have any questions, please feel free to call Mike Smykowski at (561) 682-6295.

DB/MS  
Attachment

### South Florida Water Management District Statement of Sources and Uses of Funds (Unaudited)

For the month ended: November 30, 2013. Percent of fiscal year completed: 17%

SOURCES	ACTUALS			
	ANNUAL BUDGET	THROUGH 11/30/2013	VARIANCE (UNDER) / OVER BUDGET	ACTUALS AS A % OF BUDGET
Ad Valorem Property Taxes	\$ 266,557,178	\$ 41,052,268	\$ (225,504,910)	15.4%
Agricultural Privilege Taxes	11,300,000	940,362	(10,359,638)	8.3%
Intergovernmental - Ad Valorem Funds	9,136,087	2,044,656	(7,091,431)	22.4%
Intergovernmental - Non Ad Valorem Funds	92,026,091	26,174,129	(65,851,962)	28.4%
<b>Intergovernmental Total</b>	<b>101,162,178</b>	<b>28,218,784</b>	<b>(72,943,394)</b>	<b>27.9%</b>
Investment Earnings - Ad Valorem Funds	2,870,000	760,184	(2,109,816)	26.5%
Investment Earnings - Non Ad Valorem Funds	-	244,855	244,855	-
<b>Investment Earnings Total</b>	<b>2,870,000</b>	<b>1,005,040</b>	<b>(1,864,960)</b>	<b>35.0%</b>
Leases	3,041,656	710,666	(2,330,990)	23.4%
Permit Fees/Miscellaneous Fees	2,110,999	714,195	(1,396,804)	33.8%
Mitigation Fees - Lake Belt & Wetlands	1,801,117	2,988,638	1,187,521	165.9%
<b>Licenses, Permits and Fees Total</b>	<b>3,912,116</b>	<b>3,702,833</b>	<b>(209,283)</b>	<b>94.7%</b>
Other	461,200	1,200,790	739,590	260.4%
Sale of District Property	250,000	154,490	(95,510)	61.8%
Self Insurance Premiums	28,799,913	3,773,493	(25,026,420)	13.1%
<b>SUB-TOTAL OPERATING REVENUES</b>	<b>418,354,241</b>	<b>80,758,727</b>	<b>(337,595,514)</b>	<b>19.3%</b>
Fund Balance	299,242,283	299,242,283	-	100.0%
<b>TOTAL SOURCES</b>	<b>\$ 717,596,524</b>	<b>\$ 380,001,010</b>	<b>\$ (337,595,514)</b>	<b>53.0%</b>

USES	ANNUAL BUDGET	EXPENDITURES	ENCUMBRANCES <sup>1</sup>	REPORTED	%	%	%
				AVAILABLE BUDGET			
CERP	\$ 159,138,834	\$ 2,050,460	\$ 50,341,329	\$ 106,747,044	1.3%	31.6%	32.9%
Coastal Watersheds	21,766,021	927,867	7,923,266	12,914,888	4.3%	36.4%	40.7%
District Everglades	104,624,323	4,598,572	38,648,341	61,377,410	4.4%	36.9%	41.3%
Kissimmee Watershed	27,245,316	359,175	14,153,040	12,733,101	1.3%	51.9%	53.3%
Lake Okeechobee	23,658,211	969,912	9,667,239	13,021,060	4.1%	40.9%	45.0%
Land Stewardship	20,411,543	1,737,073	4,229,586	14,444,884	8.5%	20.7%	29.2%
Mission Support	46,254,776	8,405,575	5,773,045	32,076,156	18.2%	12.5%	30.7%
Modeling & Scientific Support	13,017,567	2,356,197	1,819,865	8,841,505	18.1%	14.0%	32.1%
Operations & Maintenance	155,199,031	15,424,840	36,563,484	103,210,708	9.9%	23.6%	33.5%
Regulation	23,193,489	3,882,739	1,581,306	17,729,444	16.7%	6.8%	23.6%
Water Supply	20,969,598	2,518,569	5,322,541	13,128,488	12.0%	25.4%	37.4%
Debt Service	42,074,439	29,834,800	-	12,239,639	70.9%	0.0%	70.9%
<b>SUB-TOTAL NON-RESERVES USES</b>	<b>657,553,147</b>	<b>73,065,778</b>	<b>176,023,041</b>	<b>408,464,327</b>	<b>11.1%</b>	<b>26.8%</b>	<b>37.9%</b>
Reserves	60,043,377	-	-	60,043,377	0.0%	0.0%	0.0%
<b>TOTAL USES</b>	<b>\$ 717,596,524</b>	<b>\$ 73,065,778</b>	<b>\$ 176,023,041</b>	<b>\$ 468,507,705</b>	<b>10.2%</b>	<b>24.5%</b>	<b>34.7%</b>

<sup>1</sup> Represents unexpended balances of open purchase orders

<sup>2</sup> Represents the sum of expenditures and encumbrances as a percentage of the annual budget

Attachment: Statement of Sources and Uses of Funds\_NOV\_FY14\_Programmatic (1711) : Monthly

**South Florida Water Management District  
Statement of Sources and Uses of Funds  
For the Month ending November 30, 2013  
(Unaudited)**

	CURRENT BUDGET		ACTUALS THROUGH 11/30/2013	VARIANCE (UNDER) / OVER BUDGET	ACTUALS AS A % OF BUDGET
	<b>Sources</b>				
Taxes <sup>1</sup>	\$ 277,857,178	\$ 41,992,631	\$ (235,864,547)	15.11%	
Intergovernmental Revenues	101,162,178	28,218,784	(72,943,394)	27.89%	
Interest on Invested Funds	2,870,000	1,005,040	(1,864,960)	35.0%	
License and Permit Fees	3,912,116	3,702,833	(209,283)	94.7%	
Other <sup>2</sup>	32,552,769	5,839,440	(26,713,329)	17.9%	
Fund Balance	299,242,283	299,242,283	-	100.0%	
<b>Total Sources</b>	<b>\$ 717,596,524</b>	<b>\$ 380,001,010</b>	<b>\$ (337,595,514)</b>	<b>53.0%</b>	

<sup>1</sup> Includes Ad Valorem and Agricultural Privilege Taxes

<sup>2</sup> Includes Leases, Sale of District Property, and Self Insurance Premiums

	CURRENT BUDGET		EXPENDITURES	ENCUMBRANCES <sup>3</sup>	AVAILABLE BUDGET	% EXPENDED	% OBLIGATED <sup>4</sup>
	<b>Uses</b>						
Water Resources Planning and Monitoring	\$ 52,907,020	\$ 7,279,660	\$ 12,650,223	\$ 32,977,137	13.8%	37.7%	
Acquisition, Restoration and Public Works	331,890,554	27,285,583	114,303,776	190,301,195	8.2%	42.7%	
Operation and Maintenance of Lands and Works	267,513,468	26,528,498	44,818,692	196,166,278	9.9%	26.7%	
Regulation	26,593,678	4,386,565	1,686,032	20,521,081	16.5%	22.8%	
Outreach	2,630,816	424,888	61,932	2,143,996	16.2%	18.5%	
Management and Administration	36,060,988	7,160,585	2,502,385	26,398,018	19.9%	26.8%	
<b>Total Uses</b>	<b>\$ 717,596,524</b>	<b>\$ 73,065,778</b>	<b>\$ 176,023,041</b>	<b>\$ 468,507,705</b>	<b>10.2%</b>	<b>34.7%</b>	

<sup>3</sup> Encumbrances represent unexpended balances of open purchase orders and contracts.

<sup>4</sup> Represents the sum of expenditures and encumbrances as a percentage of the current budget.

This unaudited financial statement is prepared as of November 30, 2013, and covers the interim period since the most recent audited financial statements.

**South Florida Water Management District**  
 Summary of Uses - Statement of Sources and Uses of Funds (Unaudited)  
 As of: November 30, 2013

	Annual Budget	Expenditures	Encumbrances	Reported Available	% Expended	% Encumbered	% Obligated
<b>CERP</b>							
Personnel Services	\$ 6,351,974	\$ 882,639	\$ -	\$ 5,469,335	13.9%	0.0%	13.9%
Contractual Services	19,448,332	827,274	6,964,994	11,656,064	4.3%	35.8%	40.1%
Operating	1,309,815	67,858	12,598	1,229,359	5.2%	1.0%	6.1%
Travel	32,535	3,018	251	29,266	9.3%	0.8%	10.0%
Capital Outlay	128,663,210	269,672	43,363,486	85,030,052	0.2%	33.7%	33.9%
CERP Indirect	3,332,968	-	-	3,332,968	0.0%	0.0%	0.0%
<b>Total CERP</b>	<b>159,138,834</b>	<b>2,050,460</b>	<b>50,341,329</b>	<b>106,747,044</b>	<b>1.3%</b>	<b>31.6%</b>	<b>32.9%</b>
<b>Coastal Watersheds</b>							
Personnel Services	3,679,941	553,184		3,126,757	15.0%	0.0%	15.0%
Contractual Services	10,300,955	353,674	7,821,161	2,126,120	3.4%	75.9%	79.4%
Operating	140,055	5,361	252	134,442	3.8%	0.2%	4.0%
Travel	27,186	1,107	486	25,593	4.1%	1.8%	5.9%
Capital Outlay	7,617,884	14,541	101,367	7,501,976	0.2%	1.3%	1.5%
<b>Total Coastal Watersheds</b>	<b>21,766,021</b>	<b>927,867</b>	<b>7,923,266</b>	<b>12,914,888</b>	<b>4.3%</b>	<b>36.4%</b>	<b>40.7%</b>
<b>District Everglades</b>							
Personnel Services	18,257,070	2,890,755	-	15,366,315	15.8%	0.0%	15.8%
Contractual Services	9,925,372	247,442	3,085,350	6,592,580	2.5%	31.1%	33.6%
Operating	9,486,035	940,165	559,868	7,986,002	9.9%	5.9%	15.8%
Travel	32,185	1,644	237	30,304	5.1%	0.7%	5.8%
Capital Outlay	66,923,661	518,565	35,002,886	31,402,210	0.8%	52.3%	53.1%
<b>Total District Everglades</b>	<b>104,624,323</b>	<b>4,598,572</b>	<b>38,648,341</b>	<b>61,377,410</b>	<b>4.4%</b>	<b>36.9%</b>	<b>41.3%</b>
<b>Kissimmee Watershed</b>							
Personnel Services	2,095,900	286,439	-	1,809,461	13.7%	0.0%	13.7%
Contractual Services	7,835,667	66,968	697,705	7,070,995	0.9%	8.9%	9.8%
Operating	455,681	3,351	16,600	435,730	0.7%	3.6%	4.4%
Travel	22,405	1,666	-	20,739	7.4%	0.0%	7.4%
Capital Outlay	16,835,662	750	13,438,735	3,396,177	0.0%	79.8%	79.8%
<b>Total Kissimmee Watershed</b>	<b>\$ 27,245,316</b>	<b>\$ 359,175</b>	<b>\$ 14,153,040</b>	<b>\$ 12,733,101</b>	<b>1.3%</b>	<b>51.9%</b>	<b>53.3%</b>

Attachment: Summary Statement of Sources and Uses of Funds\_NOV\_FY14\_12162013 (1711 : Monthly

**South Florida Water Management District**  
 Summary of Uses - Statement of Sources and Uses of Funds (Unaudited)  
 As of: November 30, 2013

	Annual Budget	Expenditures	Encumbrances	Reported Available	% Expended	% Encumbered	% Obligated
<b>Lake Okeechobee</b>							
Personnel Services	\$ 3,983,403	\$ 645,676	\$ -	\$ 3,337,727	16.2%	0.0%	16.2%
Contractual Services	18,370,012	267,394	9,535,412	8,567,205	1.5%	51.9%	53.4%
Operating	795,289	56,842	130,174	608,272	7.1%	16.4%	23.5%
Travel	7,856	-	-	7,856	0.0%	0.0%	0.0%
Capital Outlay	501,652	-	1,652	500,000	0.0%	0.3%	0.3%
<b>Total Lake Okeechobee</b>	<b>23,658,211</b>	<b>969,912</b>	<b>9,667,239</b>	<b>13,021,060</b>	<b>4.1%</b>	<b>40.9%</b>	<b>45.0%</b>
<b>Land Stewardship</b>							
Personnel Services	4,070,333	681,971	-	3,388,362	16.8%	0.0%	16.8%
Contractual Services	12,070,627	203,946	3,946,484	7,920,196	1.7%	32.7%	34.4%
Operating	2,489,951	765,627	236,221	1,488,104	30.7%	9.5%	40.2%
Travel	15,610	4,693	-	10,917	30.1%	0.0%	30.1%
Capital Outlay	1,765,022	80,836	46,881	1,637,306	4.6%	2.7%	7.2%
<b>Total Land Stewardship</b>	<b>20,411,543</b>	<b>1,737,073</b>	<b>4,229,586</b>	<b>14,444,884</b>	<b>8.5%</b>	<b>20.7%</b>	<b>29.2%</b>
<b>Mission Support</b>							
Personnel Services	22,081,997	3,700,381	-	18,381,616	16.8%	0.0%	16.8%
Contractual Services	8,000,337	1,030,319	2,791,668	4,178,350	12.9%	34.9%	47.8%
Operating	16,833,288	3,585,095	1,936,878	11,311,315	21.3%	11.5%	32.8%
Travel	301,146	89,780	11,177	200,189	29.8%	3.7%	33.5%
Capital Outlay	2,370,976	-	1,033,322	1,337,654	0.0%	43.6%	43.6%
CERP Indirect	(3,332,968)	-	-	(3,332,968)	0.0%	0.0%	0.0%
<b>Total Mission Support</b>	<b>46,254,776</b>	<b>8,405,575</b>	<b>5,773,045</b>	<b>32,076,156</b>	<b>18.2%</b>	<b>12.5%</b>	<b>30.7%</b>
<b>Modeling &amp; Science Support</b>							
Personnel Services	9,511,745	1,720,562	-	7,791,183	18.1%	0.0%	18.1%
Contractual Services	2,680,450	425,227	1,479,447	775,777	15.9%	55.2%	71.1%
Operating	633,754	178,853	285,126	169,775	28.2%	45.0%	73.2%
Travel	42,818	3,505	159	39,154	8.2%	0.4%	8.6%
Capital Outlay	148,800	28,050	55,133	65,616	18.9%	37.1%	55.9%
<b>Total Modeling &amp; Science Support</b>	<b>\$ 13,017,567</b>	<b>\$ 2,356,197</b>	<b>\$ 1,819,865</b>	<b>\$ 8,841,505</b>	<b>18.1%</b>	<b>14.0%</b>	<b>32.1%</b>

Attachment: Summary Statement of Sources and Uses of Funds\_NOV\_FY14\_12162013 (1711 : Monthly

## South Florida Water Management District

### Summary of Uses - Statement of Sources and Uses of Funds (Unaudited)

As of: November 30, 2013

	Annual Budget	Expenditures	Encumbrances	Reported Available	% Expended	% Encumbered	% Obligated
<b>Operations &amp; Maintenance</b>							
Personnel Services	\$ 52,278,889	\$ 8,855,475	\$ -	\$ 43,423,414	16.9%	0.0%	16.9%
Contractual Services	35,836,932	1,827,687	21,336,409	12,672,836	5.1%	59.5%	64.6%
Operating	31,280,884	4,390,662	2,039,632	24,850,590	14.0%	6.5%	20.6%
Travel	165,173	36,223	21,318	107,631	21.9%	12.9%	34.8%
Capital Outlay	35,637,153	314,793	13,166,123	22,156,237	0.9%	36.9%	37.8%
<b>Total Operations &amp; Maintenance</b>	<b>155,199,031</b>	<b>15,424,840</b>	<b>36,563,484</b>	<b>103,210,708</b>	<b>9.9%</b>	<b>23.6%</b>	<b>33.5%</b>
<b>Regulation</b>							
Personnel Services	17,242,570	2,849,510	-	14,393,060	16.5%	0.0%	16.5%
Contractual Services	1,716,469	308,716	1,044,613	363,139	18.0%	60.9%	78.8%
Operating	3,869,461	647,684	274,043	2,947,734	16.7%	7.1%	23.8%
Travel	28,014	2,957	-	25,057	10.6%	0.0%	10.6%
Capital Outlay	336,975	73,872	262,649	454	21.9%	77.9%	99.9%
<b>Total Regulation</b>	<b>23,193,489</b>	<b>3,882,739</b>	<b>1,581,306</b>	<b>17,729,444</b>	<b>16.7%</b>	<b>6.8%</b>	<b>23.6%</b>
<b>Water Supply</b>							
Personnel Services	5,594,857	918,420	-	4,676,437	16.4%	0.0%	16.4%
Contractual Services	6,216,870	86,884	5,301,622	828,364	1.4%	85.3%	86.7%
Operating	9,111,777	1,494,501	1,219	7,616,057	16.4%	0.0%	16.4%
Travel	8,239	609	-	7,630	7.4%	0.0%	7.4%
Capital Outlay	37,855	18,155	19,700	-	48.0%	52.0%	100.0%
<b>Total Water Supply</b>	<b>20,969,598</b>	<b>2,518,569</b>	<b>5,322,541</b>	<b>13,128,488</b>	<b>12.0%</b>	<b>25.4%</b>	<b>37.4%</b>
<b>Reserves</b>							
Reserves	60,043,377	-	-	60,043,377	0.00%	0.00%	0.00%
<b>Total Reserves</b>	<b>60,043,377</b>	<b>-</b>	<b>-</b>	<b>60,043,377</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>
<b>Debt Service</b>							
Debt Service	42,074,439	29,834,800	-	12,239,639	70.9%	0.0%	70.9%
<b>Total Debt Service</b>	<b>42,074,439</b>	<b>29,834,800</b>	<b>-</b>	<b>12,239,639</b>	<b>70.9%</b>	<b>0.0%</b>	<b>70.9%</b>
<b>Grand Total</b>	<b>\$ 717,596,524</b>	<b>\$ 73,065,778</b>	<b>\$ 176,023,041</b>	<b>\$ 468,507,705</b>	<b>10.2%</b>	<b>24.5%</b>	<b>34.7%</b>

Attachment: Summary Statement of Sources and Uses of Funds\_NOV\_FY14\_12162013 (1711 : Monthly

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1. HALLANDALE BEACH PUBLIC WATER SUPPLY  
 CITY OF HALLANDALE BEACH  
 SEC 21-28 TWP 51S RGE 42E

APPL. NO. 060531-4  
 PERMIT NO. 06-00138-W  
 ACREAGE: N/A  
 LAND USE: PUBLIC WATER SUPPLY

PERMIT TYPE: WATER USE MODIFICATION/RENEWAL  
 WATER SOURCE: BISCAYNE AQUIFER  
 ALLOCATION: 108.5 MILLION GALLONS PER MONTH  
 LAST DATE FOR AGENCY ACTION: DECEMBER 19, 2013

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2. MARKHAM PARK TARGET RANGE  
 BROWARD COUNTY  
 SEC 4,5,33 TWP 49,50S RGE 40E

APPL. NO. 130117-4  
 PERMIT NO. 06-00311-S  
 ACREAGE: 33.24  
 LAND USE: RECREATIONAL

PERMIT TYPE: ENVIRONMENTAL RESOURCE (CONSTRUCTION/OPERATION MODIFICATION)  
 RECEIVING BODY: ON-SITE RETENTION  
 LAST DATE FOR AGENCY ACTION: JANUARY 17, 2014

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3. NEW U S FEDERAL OFFICE BUILDING  
 UNITED STATES OF AMERICA  
 SEC 22 TWP 51S RGE 40E

APPL. NO. 131021-12  
 PERMIT NO. 06-06562-W  
 ACREAGE: 20.00  
 LAND USE: DEWATERING

PERMIT TYPE: WATER USE EXPIRED/PREVIOUSLY PERMITTED  
 WATER SOURCE: WATER TABLE AQUIFER  
 ALLOCATION: NOT REQUIRED  
 LAST DATE FOR AGENCY ACTION: JANUARY 19, 2014

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Attachment: IP issued by ED December 2013(2) (1714 : Executive Director's Report)

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1. IMMOKALEE GROVE  
M B N PROPERTY  
SEC 8 TWP 48S RGE 29E

APPL. NO. 131003-15  
PERMIT NO. 11-00068-W  
ACREAGE: 100.00  
LAND USE: AGRICULTURAL

PERMIT TYPE: WATER USE RENEWAL  
WATER SOURCE: SANDSTONE AQUIFER  
ALLOCATION: 17.27 MILLION GALLONS PER MONTH  
LAST DATE FOR AGENCY ACTION: JANUARY 1, 2014

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Attachment: IP issued by ED December 2013(2) (1714 : Executive Director's Report)

1. CATAN  
 MSS INTERNATIONAL  
 SEC 2, 3, 10, 11 TWP 43S RGE 31E

APPL. NO. 100129-6  
 PERMIT NO. 26-01156-W  
 ACREAGE: 110.15  
 LAND USE: DIV & IMP  
 SECONDARY USER  
 AGRICULTURAL

PERMIT TYPE: WATER USE EXISTING/UNPERMITTED  
 WATER SOURCE: MYRTLE SLOUGH CANAL  
 ALLOCATION: 18.41 MILLION GALLONS PER MONTH  
 LAST DATE FOR AGENCY ACTION: JANUARY 12, 2014

2. CITRUS GROVE  
 HENDRY COUNTY LAND LLC  
 SEC 27 TWP 48S RGE 31E

APPL. NO. 130103-3  
 PERMIT NO. 26-00269-W  
 ACREAGE: 125.00  
 LAND USE: AGRICULTURAL

PERMIT TYPE: WATER USE RENEWAL  
 WATER SOURCE: LOWER TAMIAMI AQUIFER  
 ALLOCATION: 20.74 MILLION GALLONS PER MONTH  
 LAST DATE FOR AGENCY ACTION: JANUARY 16, 2014

3. FELDA / TANNER GROVE  
 MORENO FARMS INC  
 SEC 17 TWP 45S RGE 29E

APPL. NO. 130311-6  
 PERMIT NO. 26-00454-W  
 ACREAGE: 117.00  
 LAND USE: AGRICULTURAL

PERMIT TYPE: WATER USE EXPIRED/PREVIOUSLY PERMITTED  
 WATER SOURCE: SANDSTONE AQUIFER  
 ALLOCATION: 19.42 MILLION GALLONS PER MONTH  
 LAST DATE FOR AGENCY ACTION: JANUARY 19, 2014

Attachment: IP issued by ED December 2013(2) (1714 : Executive Director's Report)



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1. SUNSET FALLS  
SUNSET FALLS L L C  
SEC 5 TWP 46S RGE 24E

APPL. NO. 131031-17  
PERMIT NO. 36-05751-P  
ACREAGE: 109.63  
LAND USE: RESIDENTIAL  
COMMERCIAL

PERMIT TYPE: ENVIRONMENTAL RESOURCE (PERMIT EXTENSION)  
RECEIVING BODY:  
LAST DATE FOR AGENCY ACTION: DECEMBER 30, 2013

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Attachment: IP issued by ED December 2013(2) (1714 : Executive Director's Report)



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1. ISABIANCA ESTATES APPL. NO. 130722-7  
 ISABIANCA INVESTMENTS L L C PERMIT NO. 13-05486-P  
 SEC 15 TWP 54S RGE 39E ACREAGE: 2.39  
 LAND USE: RESIDENTIAL

PERMIT TYPE: ENVIRONMENTAL RESOURCE (NEW CONSTRUCTION/OPERATION)  
 RECEIVING BODY: ON-SITE RETENTION  
 LAST DATE FOR AGENCY ACTION: DECEMBER 27, 2013

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2. NEWLAND 137 APPL. NO. 131107-13  
 NEWLAND 137 L L C PERMIT NO. 13-04448-P  
 SEC 10 TWP 57S RGE 39E ACREAGE: 18.60  
 LAND USE: RESIDENTIAL

PERMIT TYPE: ENVIRONMENTAL RESOURCE (PERMIT EXTENSION)  
 RECEIVING BODY: ONSITE RETENTION  
 LAST DATE FOR AGENCY ACTION: JANUARY 6, 2014

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3. SR 836/SR 973 (NW 87 AVE.) INTERCHANGE IMPROVEMENT APPL. NO. 130906-9  
 MIAMI-DADE EXPRESSWAY AUTHORITY PERMIT NO. 13-01999-P  
 SEC 54 TWP 53S RGE 40E ACREAGE: 105.40  
 LAND USE: HIGHWAY

PERMIT TYPE: ENVIRONMENTAL RESOURCE (CONSTRUCTION/OPERATION MODIFICATION)  
 RECEIVING BODY: FONTAINEBLEAU CANAL AND NORTH LINE CANAL  
 LAST DATE FOR AGENCY ACTION: JANUARY 11, 2014

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4. SUNRISE GROWERS APPL. NO. 070302-35  
 SUNRISE GROWERS INCORPORATED PERMIT NO. 13-03516-W  
 SEC 13,33 TWP 55,57S RGE 38,38E ACREAGE: 345.00  
 LAND USE: AGRICULTURAL

PERMIT TYPE: WATER USE PROPOSED  
 WATER SOURCE: BISCAYNE AQUIFER  
 ALLOCATION: 133.92 MILLION GALLONS PER MONTH  
 LAST DATE FOR AGENCY ACTION: DECEMBER 31, 2013

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1. CAL-MAINE FOODS OKEECHOBEE  
CAL-MAINE FOODS INC  
SEC 7,8,17 TWP 36S RGE 36E

APPL. NO. 131107-23  
PERMIT NO. 47-00081-S  
ACREAGE: 561.00  
LAND USE: AGRICULTURAL

PERMIT TYPE: ENVIRONMENTAL RESOURCE (CONSTRUCTION/OPERATION MODIFICATION)  
RECEIVING BODY: WILLIAMSON DITCH  
LAST DATE FOR AGENCY ACTION: JANUARY 6, 2014

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Attachment: IP issued by ED December 2013(2) (1714 : Executive Director's Report)

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1. GRANDE LAKES NORTH  
 GRAND PLAZA L L C & JOHN YOUNG CENTRAL FLORIDA PAR  
 SEC 8,9 TWP 24S RGE 29E

APPL. NO. 131209-1  
 PERMIT NO. 48-00718-S-08  
 ACREAGE: 318.84  
 LAND USE: COMMERCIAL

PERMIT TYPE: ENVIRONMENTAL RESOURCE (PERMIT EXTENSION)  
 RECEIVING BODY: EXISTING SYSTEM.  
 LAST DATE FOR AGENCY ACTION: FEBRUARY 7, 2014

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2. LAKE NONA SOUTH  
 LAKE NONA LAND COMPANY L L C  
 SEC 18,19,24-27,30,31,35,36, TWP 24S RGE  
 30,31E

APPL. NO. 131028-10  
 PERMIT NO. 48-01053-W  
 ACREAGE: 754.80  
 LAND USE: LANDSCAPE

PERMIT TYPE: WATER USE MODIFICATION/RENEWAL  
 WATER SOURCE: UPPER FLORIDAN AQUIFER, ON-SITE LAKE(S)/POND(S), CITY OF ORLANDO  
 ALLOCATION: 125.74 MILLION GALLONS PER MONTH  
 LAST DATE FOR AGENCY ACTION: JANUARY 26, 2014

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3. LAKE NONA SOUTH WEST MASS GRADE PHASE 2 / WETLAND  
 LAKE NONA LAND COMPANY L L C  
 SEC 26, 27 TWP 24S RGE 30E

APPL. NO. 130822-7  
 PERMIT NO. 48-00195-S  
 ACREAGE: 277.60  
 LAND USE: COMMERCIAL

PERMIT TYPE: ENVIRONMENTAL RESOURCE (CONSTRUCTION/OPERATION MODIFICATION)  
 RECEIVING BODY: EXISTING LAKE NONA SOUTH MASTER STORM WATER MANAGEMENT SYSTEM  
 LAST DATE FOR AGENCY ACTION: DECEMBER 29, 2013

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Attachment: IP issued by ED December 2013(2) (1714 : Executive Director's Report)

1. BINKS FOREST GOLF CLUB APPL. NO. 121102-1  
 BINKS EXCHANGE CO L L C PERMIT NO. 50-01983-W  
 SEC 6,7,31 TWP 43,44S RGE 41E ACREAGE: 171.80  
 LAND USE: GOLF COURSE

PERMIT TYPE: WATER USE RENEWAL  
 WATER SOURCE: ON-SITE LAKES  
 ALLOCATION: 24.5 MILLION GALLONS PER MONTH  
 LAST DATE FOR AGENCY ACTION: JANUARY 26, 2014

2. FRENCHMANS CREEK COUNTRY CLUB APPL. NO. 130812-13  
 FRENCHMANS CREEK, INC. PERMIT NO. 50-00091-W  
 SEC 30 TWP 41S RGE 43E ACREAGE: 294.60  
 LAND USE: GOLF COURSE  
 LANDSCAPE

PERMIT TYPE: WATER USE MODIFICATION/RENEWAL  
 WATER SOURCE: SURFICIAL AQUIFER SYSTEM, ON-SITE LAKES  
 ALLOCATION: 42.2 MILLION GALLONS PER MONTH  
 LAST DATE FOR AGENCY ACTION: DECEMBER 26, 2013

3. GLENEAGLES COUNTRY CLUB APPL. NO. 130805-6  
 GLENEAGLES COUNTRY CLUB PERMIT NO. 50-01214-W  
 SEC 21,28 TWP 46S RGE 42E ACREAGE: 277.00  
 LAND USE: LANDSCAPE

PERMIT TYPE: WATER USE MODIFICATION/RENEWAL  
 WATER SOURCE: BISCAYNE AQUIFER, ON-SITE LAKES, PALM BEACH COUNTY SOUTHERN REGIONAL WATER  
 RECLAMATION FACILITY  
 ALLOCATION: 47.85 MILLION GALLONS PER MONTH  
 LAST DATE FOR AGENCY ACTION: JANUARY 2, 2014

4. HIGH RIDGE COUNTRY CLUB APPL. NO. 130830-7  
 HIGH RIDGE COUNTRY CLUB PERMIT NO. 50-00697-W  
 SEC 8 TWP 45S RGE 43E ACREAGE: 135.00  
 LAND USE: GOLF COURSE

PERMIT TYPE: WATER USE RENEWAL  
 WATER SOURCE: LWDD CANAL (E-4), ON-SITE LAKES/PONDS  
 ALLOCATION: 27.6 MILLION GALLONS PER MONTH  
 LAST DATE FOR AGENCY ACTION: FEBRUARY 2, 2014

Attachment: IP issued by ED December 2013(2) (1714 : Executive Director's Report)

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5. PIONEER ROAD COMMERCIAL / RESIDENTIAL  
 P E B B ENTERPRISES  
 SEC 6 TWP 44S RGE 42E

APPL. NO. 130619-5  
 PERMIT NO. 50-08137-P

ACREAGE: 23.53  
 LAND USE: COMMERCIAL  
 RESIDENTIAL

PERMIT TYPE: ENVIRONMENTAL RESOURCE (CONCEPTUAL APPROVAL AND  
 CONSTRUCTION/OPERATION MODIFICATION)  
 RECEIVING BODY: LWDD L-5 CANAL  
 LAST DATE FOR AGENCY ACTION: JANUARY 12, 2014

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6. ROYAL PALM POLO  
 POLO REALTY, INC.  
 SEC 34 TWP 46S RGE 42E

APPL. NO. 130725-3  
 PERMIT NO. 50-10354-P

ACREAGE: 121.67  
 LAND USE: RESIDENTIAL

PERMIT TYPE: ENVIRONMENTAL RESOURCE (NEW CONSTRUCTION/OPERATION)  
 RECEIVING BODY: LWDD L-39 & L-40 CANALS  
 LAST DATE FOR AGENCY ACTION: JANUARY 5, 2014

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7. STONEWAL ESTATES PHASE 1 PLAT 3  
 YVONNE CAMPBELL  
 SEC 23,26 TWP 42S RGE 41E

APPL. NO. 131105-10  
 PERMIT NO. 50-011111-S-04

ACREAGE: 93.20  
 LAND USE: RESIDENTIAL

PERMIT TYPE: ENVIRONMENTAL RESOURCE (PERMIT EXTENSION)  
 RECEIVING BODY: MASTER SYSTEM  
 LAST DATE FOR AGENCY ACTION: JANUARY 4, 2014

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Attachment: IP issued by ED December 2013(2) (1714 : Executive Director's Report)

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1. NOBEL OAKS ESTATES  
AURELIO AND MARIA PEREIRA  
SEC 4 TWP 36S RGE 40E

APPL. NO. 131115-4  
PERMIT NO. 56-02976-P  
ACREAGE: 9.62  
LAND USE: RESIDENTIAL

PERMIT TYPE: ENVIRONMENTAL RESOURCE (PERMIT EXTENSION)

RECEIVING BODY:

LAST DATE FOR AGENCY ACTION: JANUARY 14, 2014

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2. WESCOTT I  
WESCOTT GROVES, INC  
SEC 8,9,16,17,20,21 TWP 35S RGE 37E

APPL. NO. 120518-4  
PERMIT NO. 56-00082-W  
ACREAGE: 2040.00  
LAND USE: AGRICULTURAL

PERMIT TYPE: WATER USE MODIFICATION

WATER SOURCE: FLORIDAN AQUIFER SYSTEM, SURFICIAL AQUIFER SYSTEM, ON-SITE  
RESERVOIR, ORANGE AVENUE CANAL

ALLOCATION: 338.84 MILLION GALLONS PER MONTH

LAST DATE FOR AGENCY ACTION: JANUARY 7, 2014

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3. WILSON GROVES EAST  
A C R ACQUISITIONS, L L C  
SEC 29,32 TWP 37S RGE 39E

APPL. NO. 130715-26  
PERMIT NO. 56-00048-W  
ACREAGE: 1108.00  
LAND USE: AGRICULTURAL

PERMIT TYPE: WATER USE MODIFICATION/RENEWAL

WATER SOURCE: SFWMD CANAL (C-23)

ALLOCATION: 186 MILLION GALLONS PER MONTH

LAST DATE FOR AGENCY ACTION: JANUARY 22, 2014

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