SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Northern Everglades and Estuaries Protection Program Update

Ten County Coalition- 05/30/08

Temperince Morgan- Program Implementation Manager

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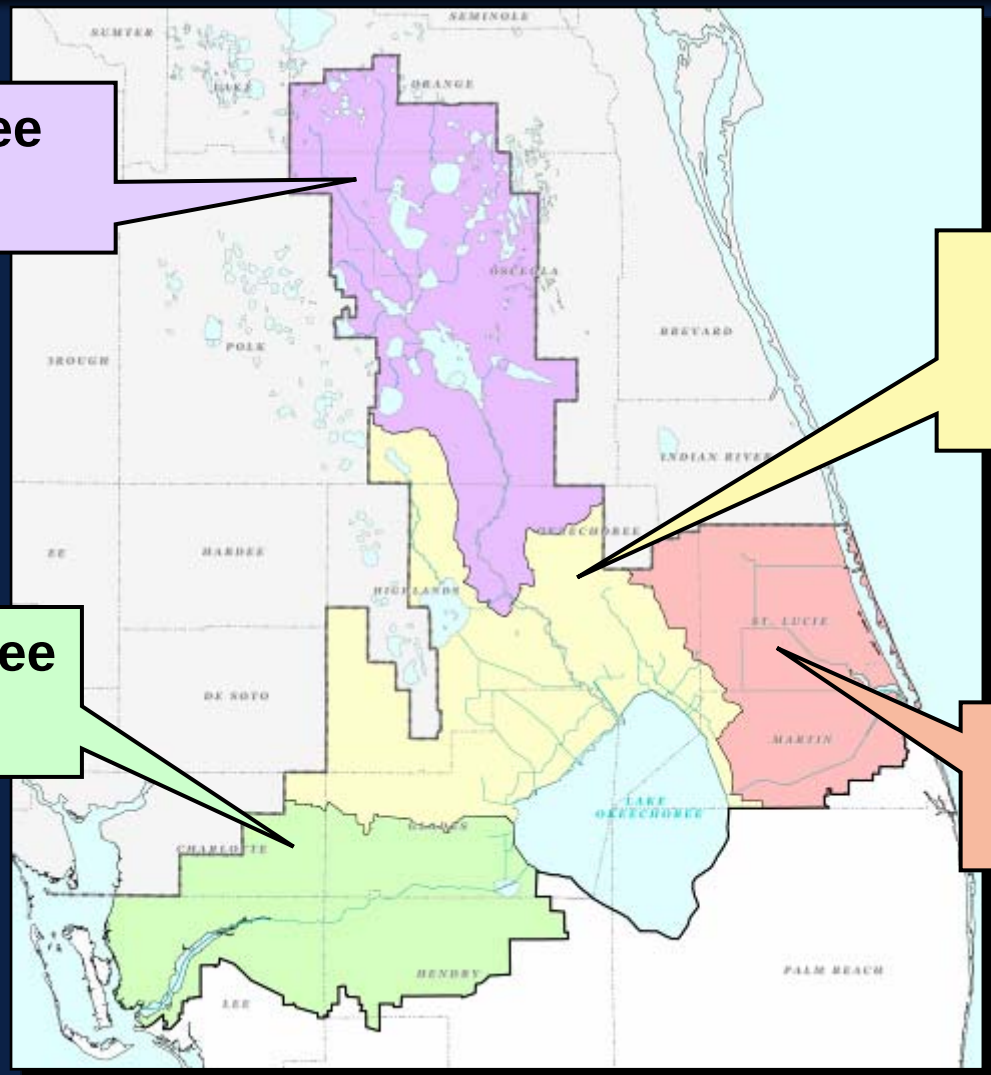
The Northern Everglades



Kissimmee Region

Lake Okeechobee Region

Caloosahatchee Region

St Lucie Region

Northern Everglades and Estuaries 2007 Legislation

- Recognizes that Lake Okeechobee, Caloosahatchee, and St. Lucie Watersheds are critical water resources of the state
- Builds upon existing restoration plans
- Technical plan to identify water quality treatment projects and water storage requirements for the Lake Okeechobee watershed by February 1, 2008
- Caloosahatchee and St. Lucie River Watershed Protection Plans to identify water quality and storage projects by January 1, 2009

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Lake Okeechobee Watershed Construction Project Phase II Technical Plan

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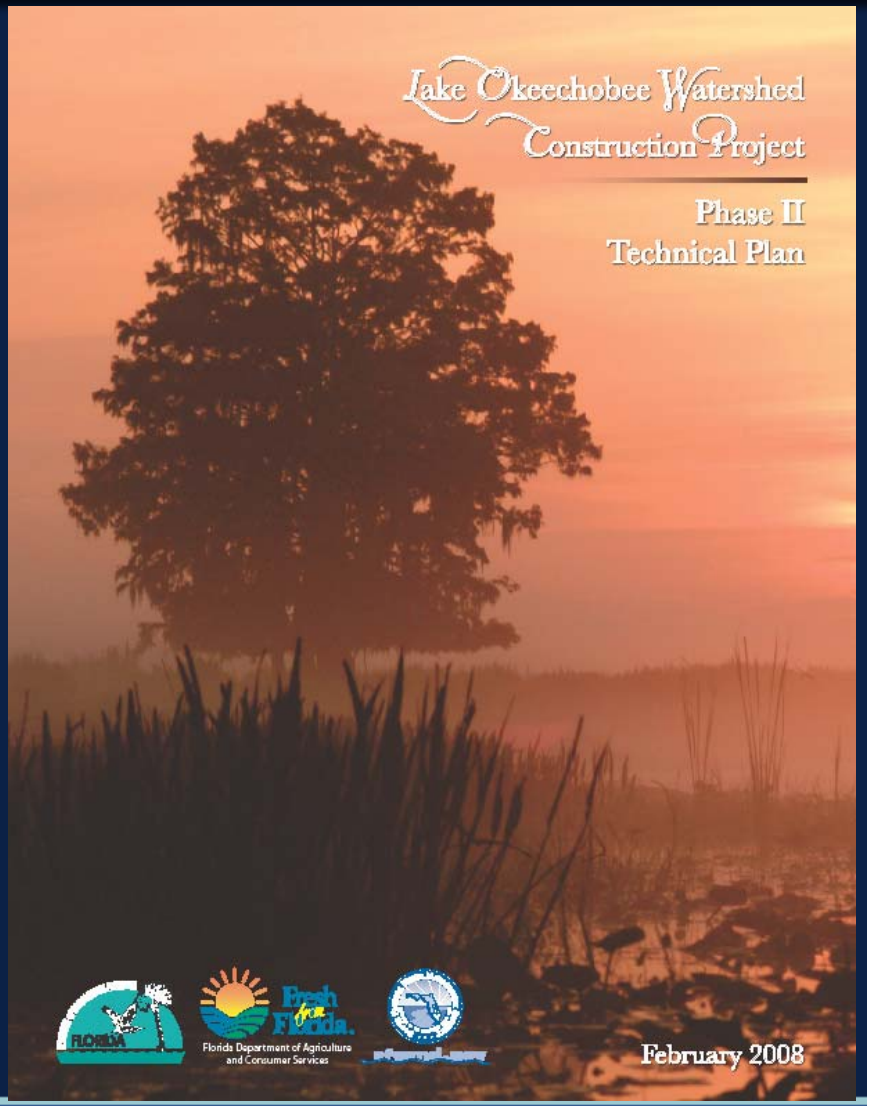
Lake Okeechobee Phase II Technical Plan

- **Delivered to Legislature on February 1, 2008**
- **No action was taken during session- therefore plan is deemed approved and may be implemented**



Lake Okeechobee Phase II Technical Plan- Moving Forward

- Process Development and Engineering
  - Identified in Northern Everglades legislation
  - Roadmap for plan refinement
  - Process to move through detailed planning and design to project implementation
  - Includes-
    - Model Refinement
    - Technology Refinement
    - Sub-Watershed Conceptual Planning

Lake Okeechobee- Process Development and Engineering

- **Hydrologic Model Refinement**
  - **Migration from Northern Everglades RSM water budget modeling to a more detailed/refined modeling approach**
- **Water Quality Model Development**
  - **Updating Watershed Assessment Model (WAM)**
- **Technology Refinement**
  - **Hybrid Wetland Treatment Technology**
  - **Chemical Treatment Feasibility Study**

Lake Okeechobee- Process Development and Engineering

- **Sub-Watershed Feasibility Studies**
  - **Fisheating Creek- selected due to challenges associated with this portion of the Lake Okeechobee watershed**
  - **Additional Sub-Watershed Feasibility Studies will be conducted over next several years**
- **Project Design and Construction**
  - **Lakeside Ranch STA- design and phased construction**

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Caloosahatchee and St. Lucie River Watershed Protection Plans

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River Watershed Protection Plans-Elements

- Watershed Construction Project
- Watershed Pollutant Control Program
- Watershed Research and Water Quality Monitoring Program

River Watershed Protection Plans-Plan Development

- Convened working teams
  - Construction Project and Pollutant Control Program Working Teams (one for each river watershed)
  - Research and Water Quality Monitoring Program Working Teams (one for each river watershed)
- Working Team Participation
  - Coordinating Agencies
    - South Florida Water Management District (SFWMD)
    - Florida Department of Environmental Protection (FDEP)
    - Florida Department of Agriculture and Consumer Services (FDACS)
  - Lee County
  - Martin County
  - Affected counties and municipalities
  - Various stakeholder groups and interested parties

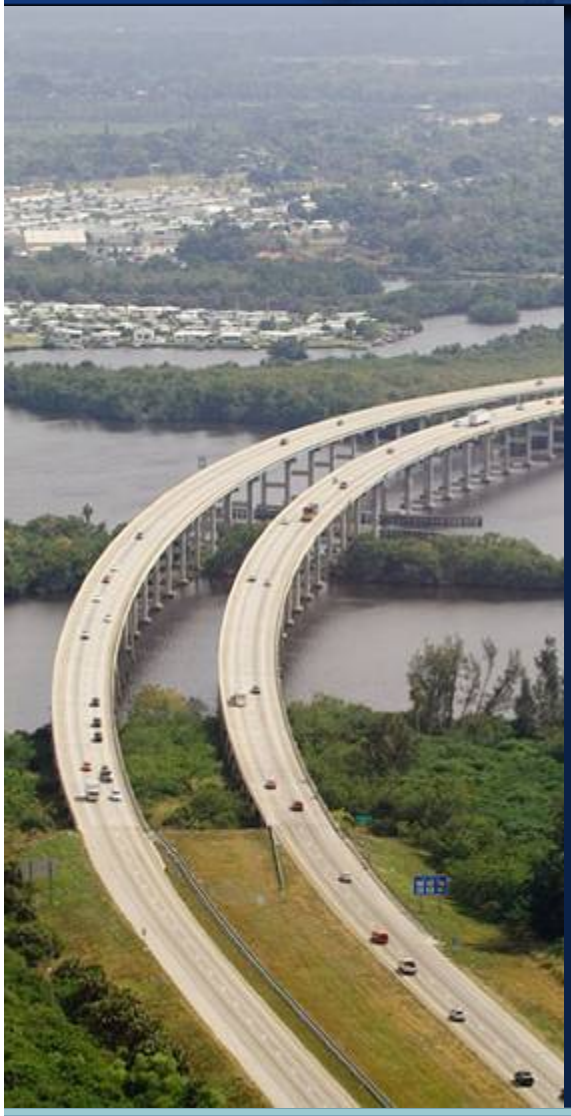
River Watershed Protection Plans-Schedule

▪ Formulation and Evaluation of Alternatives	Apr-Jul 2008
▪ Draft Plan for Public Review	Oct 2008
▪ Final Plan to Governing Board	Dec 2008
▪ Submit Plan to Legislature	January 1, 2009

River Watershed Protection Plans-Objectives

- Meet Total Maximum Daily Loads
- Manage watershed discharges to meet desirable salinity ranges for estuary
- Reduce pollutant loads by improving management of pollutant sources throughout the watershed
- Establish Research and Water Quality Monitoring Program sufficient to implement the program and projects

River Watershed Protection Plans-Constraints

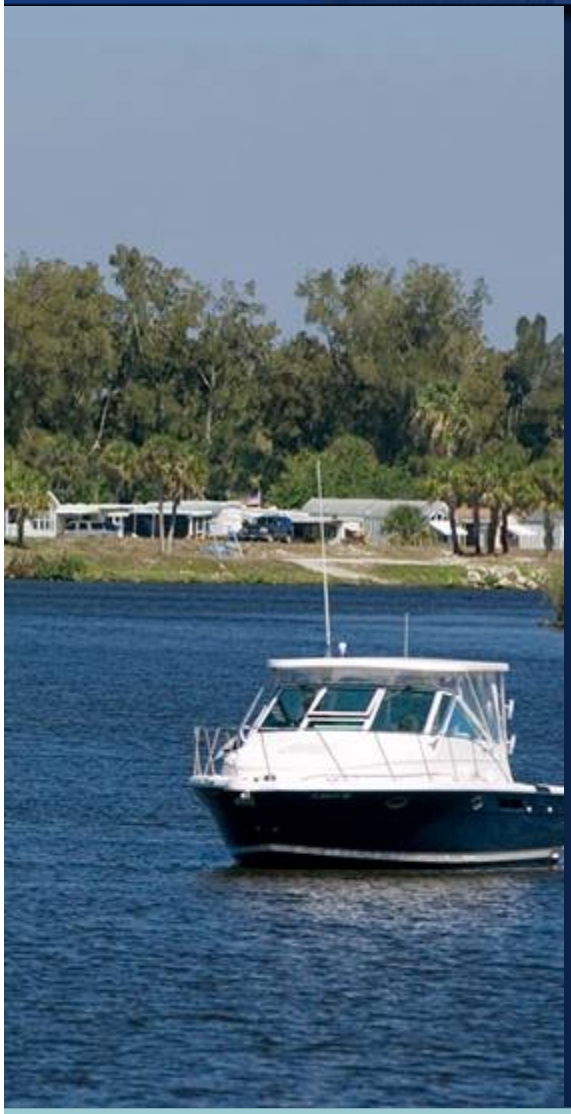


- Maintain existing levels of flood protection
- Maintain water supply for affected water user basins
- Minimum flows and levels

River Watershed Protection Plans- Alternative Formulation

- Compile and sort management measure by levels
- Formulate alternatives using a series of management measures
- Alternative 1- Current, ongoing, and planned projects (aka- Common Elements)
- Subsequent alternatives will build on Alternative 1

River Watershed Protection Plans- Water Quality and Quantity Evaluation



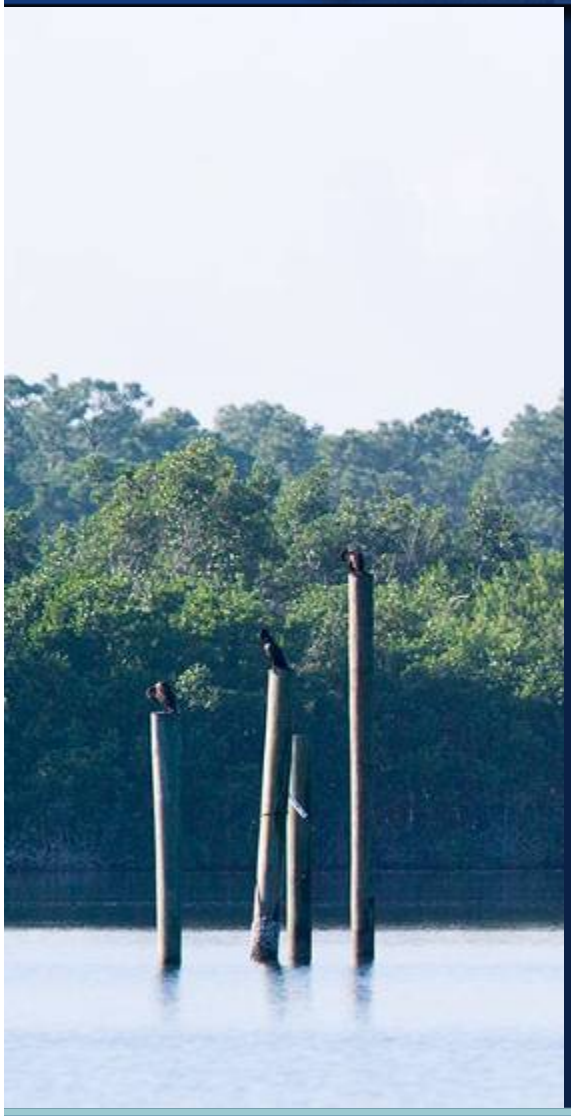
Water Quality

- Spreadsheet evaluation of phosphorus and nitrogen reduction
- Period of Record 1995-2005
- Phosphorus and nitrogen reduction for each management measure estimated based upon best available information

Water Quantity

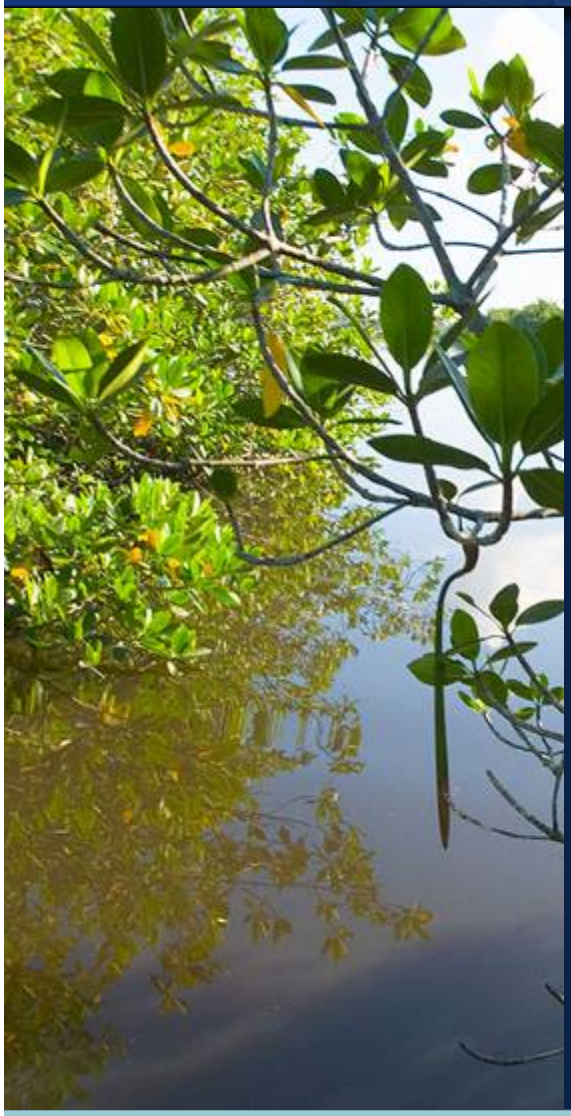
- Water Budget analysis using Northern Everglades Regional Simulation Model
- Simulation period 1970-2005

River Watershed Protection Plans- Water Quality and Quantity Performance



- Water Quality Performance
  - Phosphorus reduction
  - Nitrogen reduction
- Water Quantity (Storage) Performance
  - St. Lucie and Caloosahatchee Estuary Flows
  - Lake Okeechobee Stages
  - Lake Okeechobee Service Area Water Supply

River Watershed Protection Plans-Progress to Date



- Assembled working teams for each watershed
- Compiled lists of management measures
- Completed Regional Simulation Model Refinements and River Watershed Base Runs
- Alternative 1 Regional Simulation Modeling underway
- Completed development of water quality base conditions
- Preliminary water quality results for alternative 1

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Research and Water Quality Monitoring Plans

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Research and Water Quality Monitoring Program

- **Developed by the SFWMD, in cooperation with the coordinating agencies and local governments**
- **This program shall-**
  - **Build upon the SFWMD's existing research program**
  - **Be sufficient to carry out, comply with, or assess the plans, programs, and other responsibilities**
  - **Conduct an assessment of the water volumes and timing from Lake Okeechobee and Rivers Watersheds and their relative contribution to the timing and volume of water delivered to the estuary**

Research and Water Quality Monitoring Program - Objectives

- Adequate Monitoring to Quantify Project Level Load Reduction
- Adequate Monitoring to Measure Effects of Load Reduction
- Adequately Assess Water Volumes and Relative Timing of Water Entering Estuary
- Identify and Develop Tools (e.g. Models) to Predict Nutrient Load Reductions Achieved by Management Measures and Associated Ecosystem Response
- Provide Necessary Data to Support and Improve Predictive Tools and Apply Adaptive Management

Research and Water Quality Monitoring Plan- Development Schedule

- **Research and Water Quality Monitoring Plan Kick-Off- September 07**
- **Evaluation and Assessment of Existing Monitoring and Research- July 08**
- **Draft Research and WQ Monitoring Plan Incorporated into Protection Plan- October 08**
- **Final Protection Plan- December 08**

Research and Water Quality Monitoring Program- Status and Schedule

- **Interagency Working Team Meetings-**
  - **Held seven interagency working team meetings**
- **Research and Monitoring Plan Report**
  - **Goals, objectives and trend analyses – Draft Chapters 1 through 3 completed**
  - **Watershed and Estuarine Monitoring- Draft Chapter 4 completed**
    - **Inventory of Existing Water Quality, Flow and Habitat Monitoring**
    - **Assessment of the Existing Monitoring program and Identification of Needs/Gaps**
  - **Research for Adaptive Management- Chapter 5 on-going**
    - **Inventory and assessment of current research**
    - **Identify and prioritize research projects to meet the objectives**

River Watershed Protection Plans-Next Steps

- Complete Regional Simulation Modeling of Alternative 1 and initiate modeling of Alternative 2
- Finalize water quality results for Alternative 1
- Develop nutrient-reduction estimates for Alternative 2 management measures
- Formulate and evaluate Alternative 3
- Finalize monitoring and research assessments and complete drafting of Research and Water Quality Monitoring Plan

Questions?

https://my.sfwmd.gov/northerneverglades

Caloosahatchee River Watershed- Preliminary Water Quality Results for Alternative 1

Total Nitrogen (TN)*:

- **Current Load from Watershed:**

  2,900 Metric Tons/year

- **Load Reduction for Alternative 1:**
  - **898 Metric Tons/Year**
- **Remaining TN Load from Watershed:**
  - **2,002 Metric Tons/Year**

(* - based on 1995 – 2005 Period of Record)

Caloosahatchee River Watershed- Preliminary Water Quality Results for Alternative 1

Total Phosphorus (TP)*:

- **Current Load from Watershed:**
  - **326 Metric Tons/year**
- **Load Reduction for Alternative 1:**
  - **95 Metric Tons/Year**
- **Remaining TP Load from Watershed:**
  - **231 Metric Tons/Year**

(* - based on 1995 – 2005 Period of Record)

St. Lucie River Watershed-Preliminary Water Quality Results for Alternative 1

Total Phosphorus (TP):

- **Current Load from Watershed:**
  - **276.5 Metric Tons/year**
- **Load Reduction for Base Condition:**
  - **28.3 Metric Tons/year**
- **Load Reduction for Alternative 1:**
  - **101.6 Metric Tons/Year**
- **Remaining TP Load from Watershed:**
  - **146.6 Metric Tons/Year**

St. Lucie River Watershed-Preliminary Water Quality Results for Alternative 1

Total Nitrogen (TN):

- **Current Load from Watershed:**
  - **1296.1 Metric Tons/year**
- **Load Reduction for Base Condition:**
  - **103.5 Metric Tons/year**
- **Load Reduction for Alternative 1:**
  - **450.3 Metric Tons/Year**
- **Remaining TP Load from Watershed:**
  - **742.3 Metric Tons/Year**