



Lake Okeechobee Watershed Construction Project Phase II Technical Plan

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sfwmd.gov

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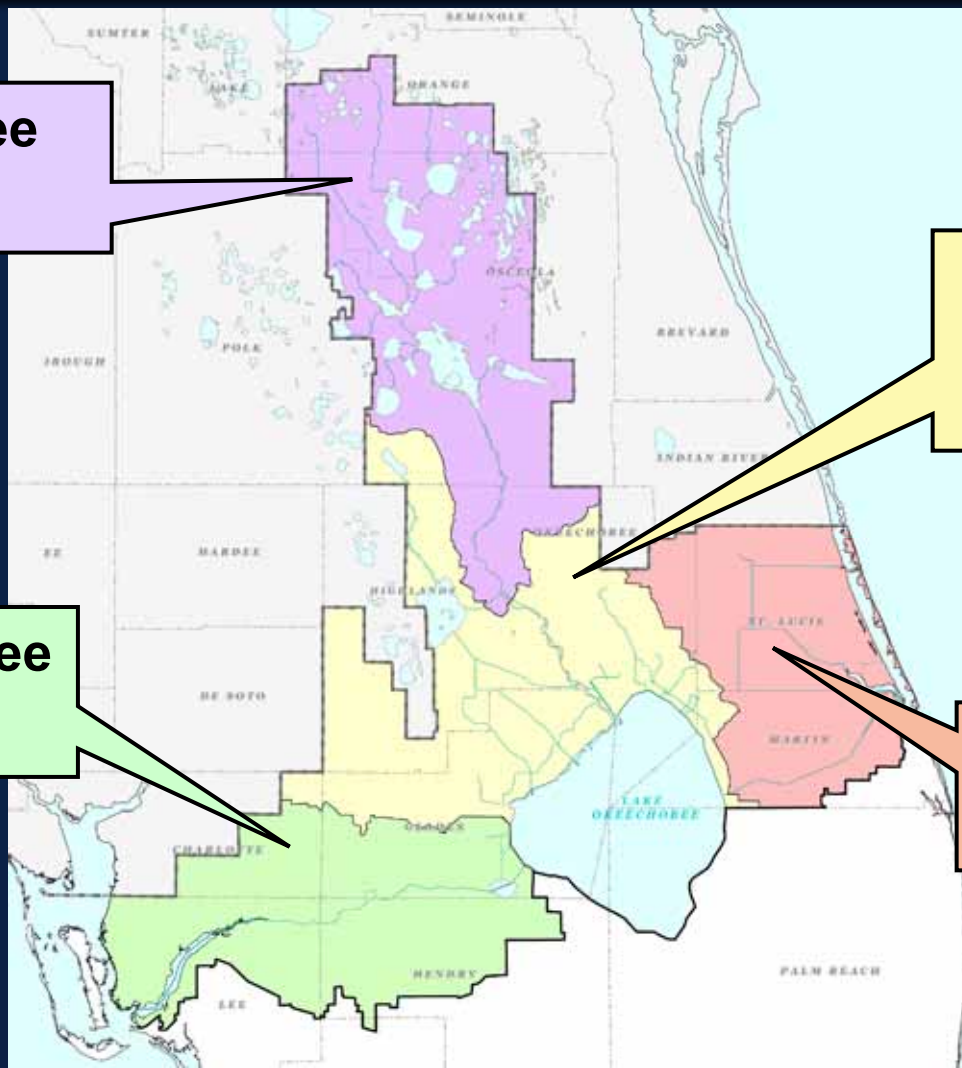
Northern Everglades and Estuaries Protection Program

**Kissimmee
Region**

**Lake
Okeechobee
Region**

**Caloosahatchee
Region**

**St Lucie
Region**





Northern Everglades and Estuaries 2007 Legislation – Senate Bill 392

- **Recognizes that Lake Okeechobee, Caloosahatchee, and St. Lucie Watersheds are critical water resources of the state**
- **Expands the use of the Save Our Everglades Trust Fund for Northern Everglades restoration**
- **Extends the Save Our Everglades Trust Fund through 2020**





Northern Everglades and Estuaries Specific Requirements



- **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 Rivers 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**





Lake Okeechobee Technical Plan Requirements

- **Developed by South Florida Water Management District, in cooperation with the Florida Department of Environmental Protection and Florida Department of Agriculture and Consumer Services**
- **Identify facilities to achieve Lake Okeechobee Total Maximum Daily Load**
- **Provide additional measures to increase water storage and reduce excess water levels in lake and discharges to estuaries**
 - **Identify storage goal to achieve desired lake levels and inflow volumes to estuaries while meeting other water related needs**



Alternative Formulation

- **Alternatives were formulated using a series of management measures**
- **Evaluated 4 alternatives**
 - **Alternative 1- Current, ongoing, and planned projects**
 - **Alternative 2- Maximizes storage capacity**
 - **Alternative 3- Maximizes phosphorus load reduction**
 - **Alternative 4- Integrates most efficient and effective combination of storage capacity and phosphorus load reduction**



Water Quality and Quantity Analyses

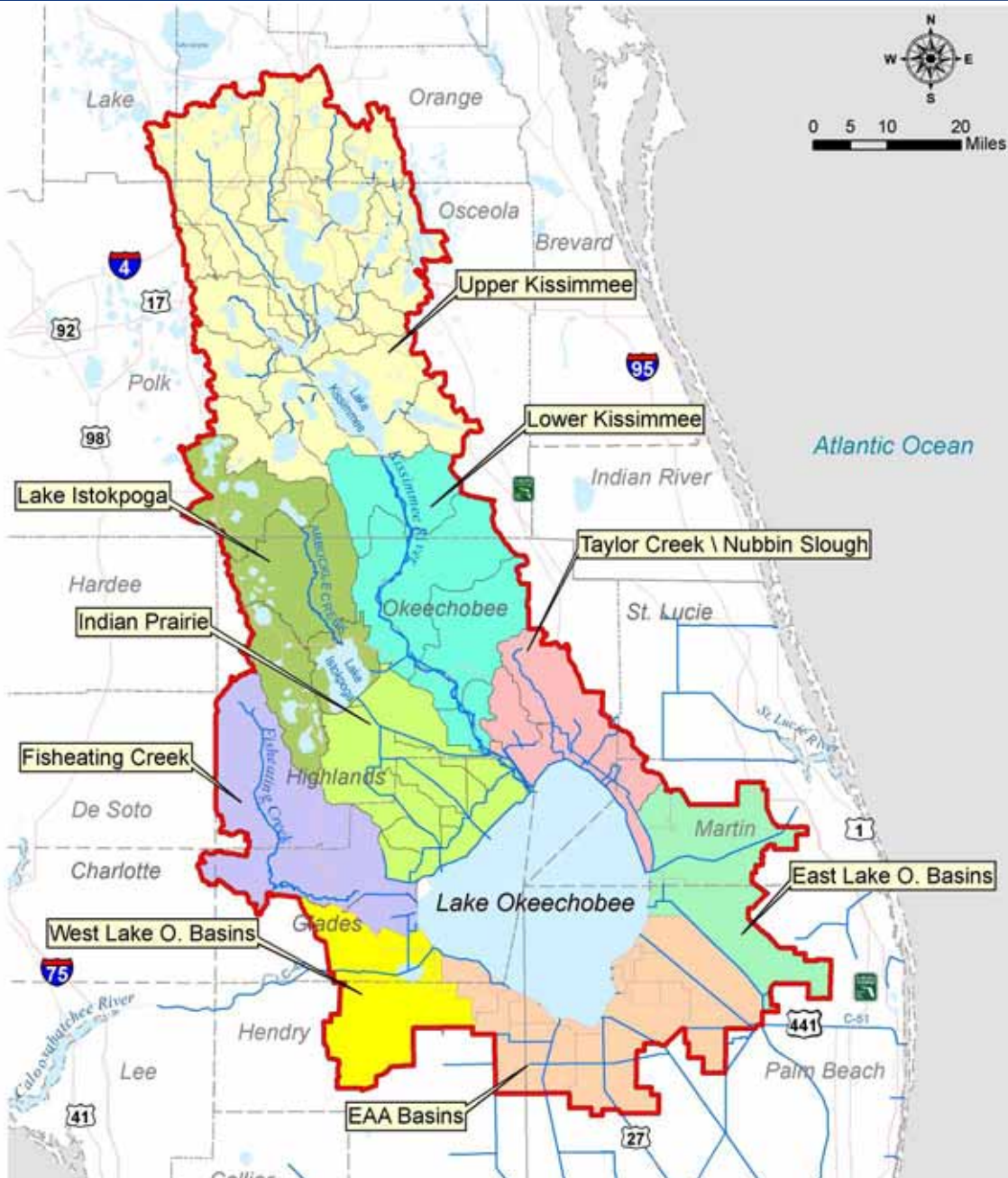
Water Quality

- Spreadsheet evaluation of phosphorus reduction
- Builds upon 2007 Lake Okeechobee Protection Plan Update
- Phosphorus 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

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9 Sub-Watersheds

- Upper Kissimmee
- Lower Kissimmee
- Taylor Creek/Nubbin Slough
- Lake Istokpoga
- Indian Prairie
- Fisheating Creek
- West Lake Okeechobee Basins
- East Lake Okeechobee Basins
- EAA Basins



Water Quality- Defining the magnitude of the problem



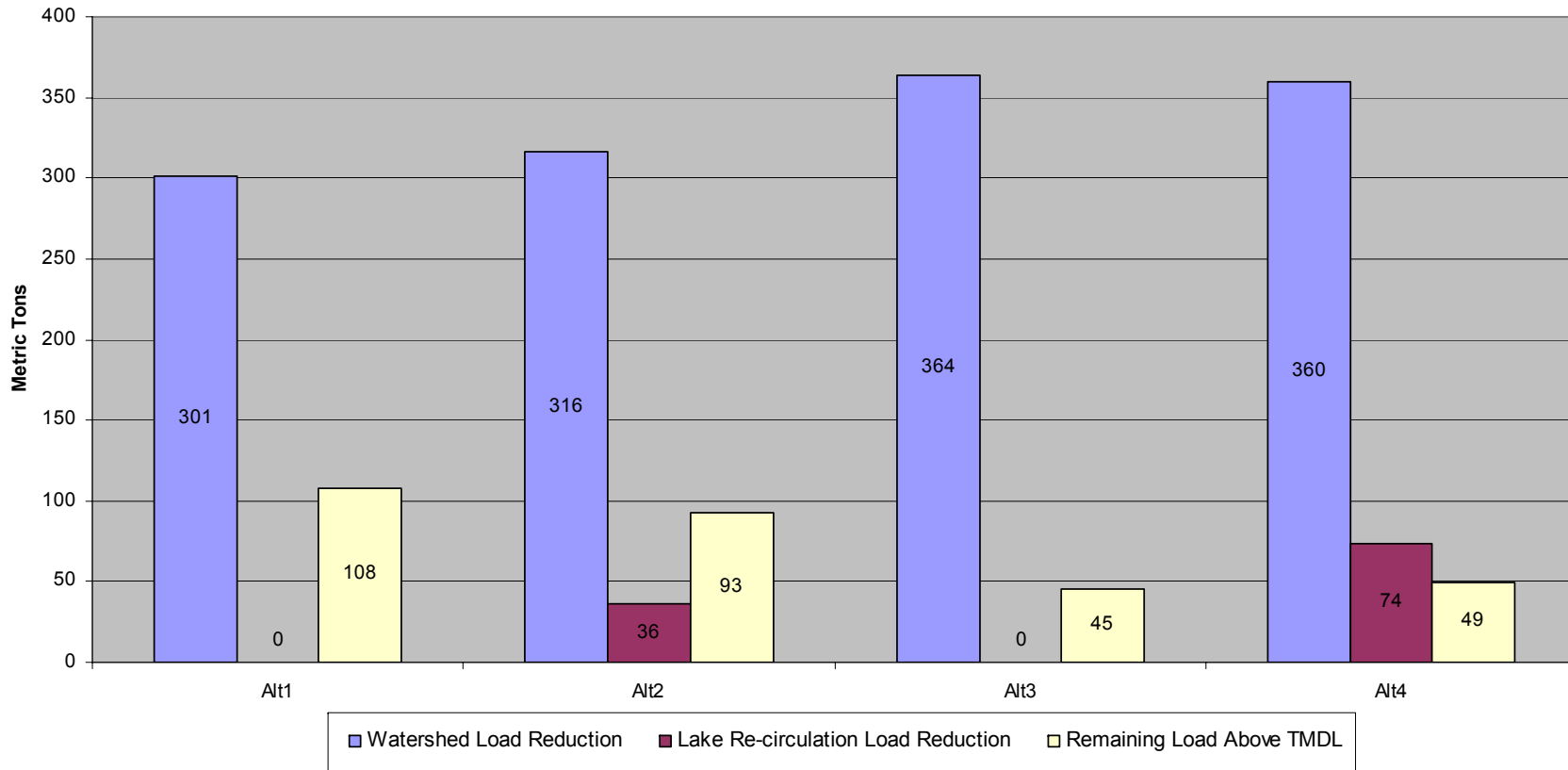
- **Phosphorus Load (Annual Average)**
 - Phosphorus TMDL allows for 105 metric tons from surface water inflows
 - Lake Okeechobee Protection Plan update based on 1991 – 2000 = 433 metric tons
 - Current analysis 1991–2005 = 514 metric tons
- **Based on current analysis, inflows exceed TMDL by 409 metric tons**



Phosphorus Results Summary

Lake Okeechobee Load Reduction Per Alternative

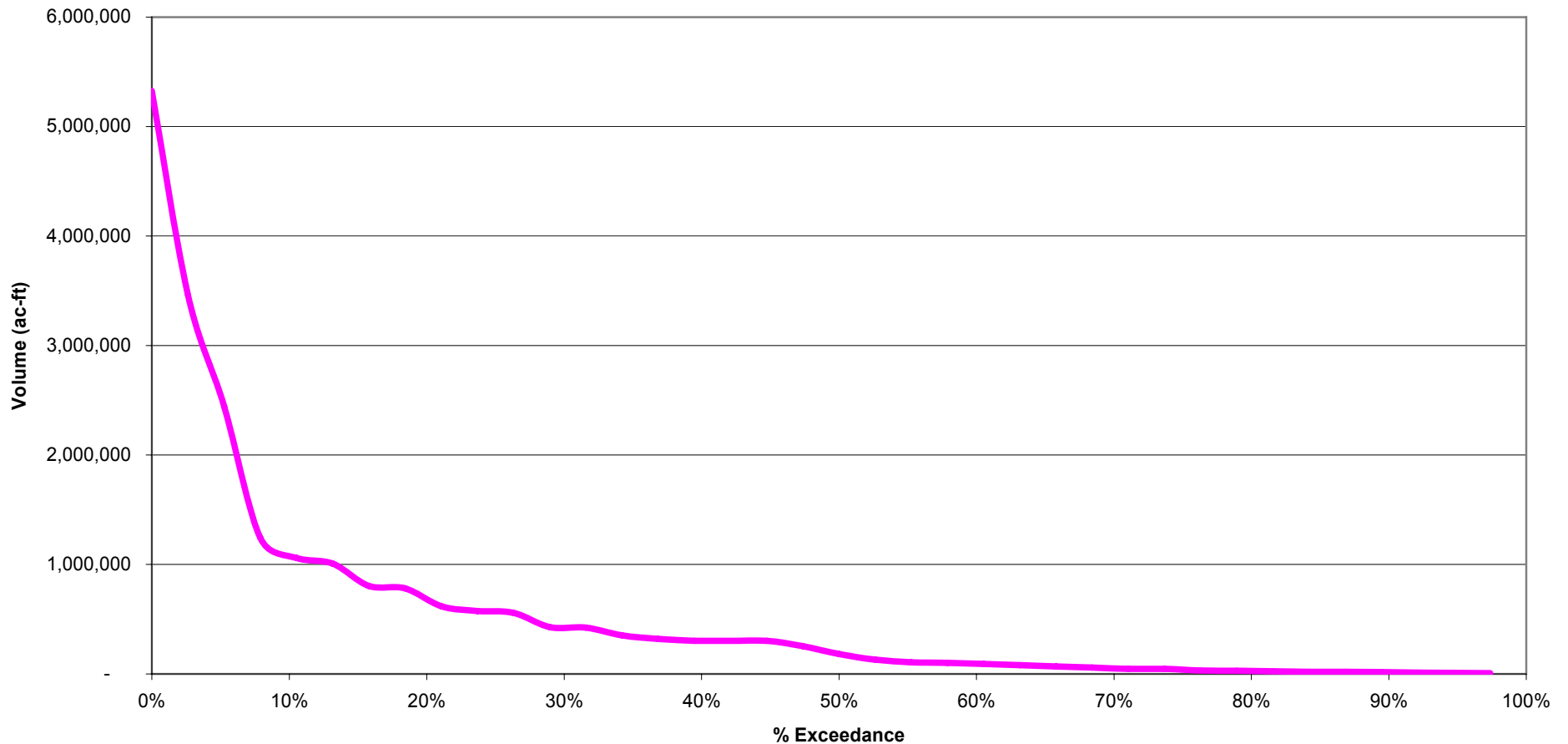
Note- Lake re-circulation load reduction not included in TMDL calculation





Water Quantity- Defining the magnitude of the problem

Lake Okeechobee regulatory releases
based upon Restudy 2050 Future Base (1965-2000)

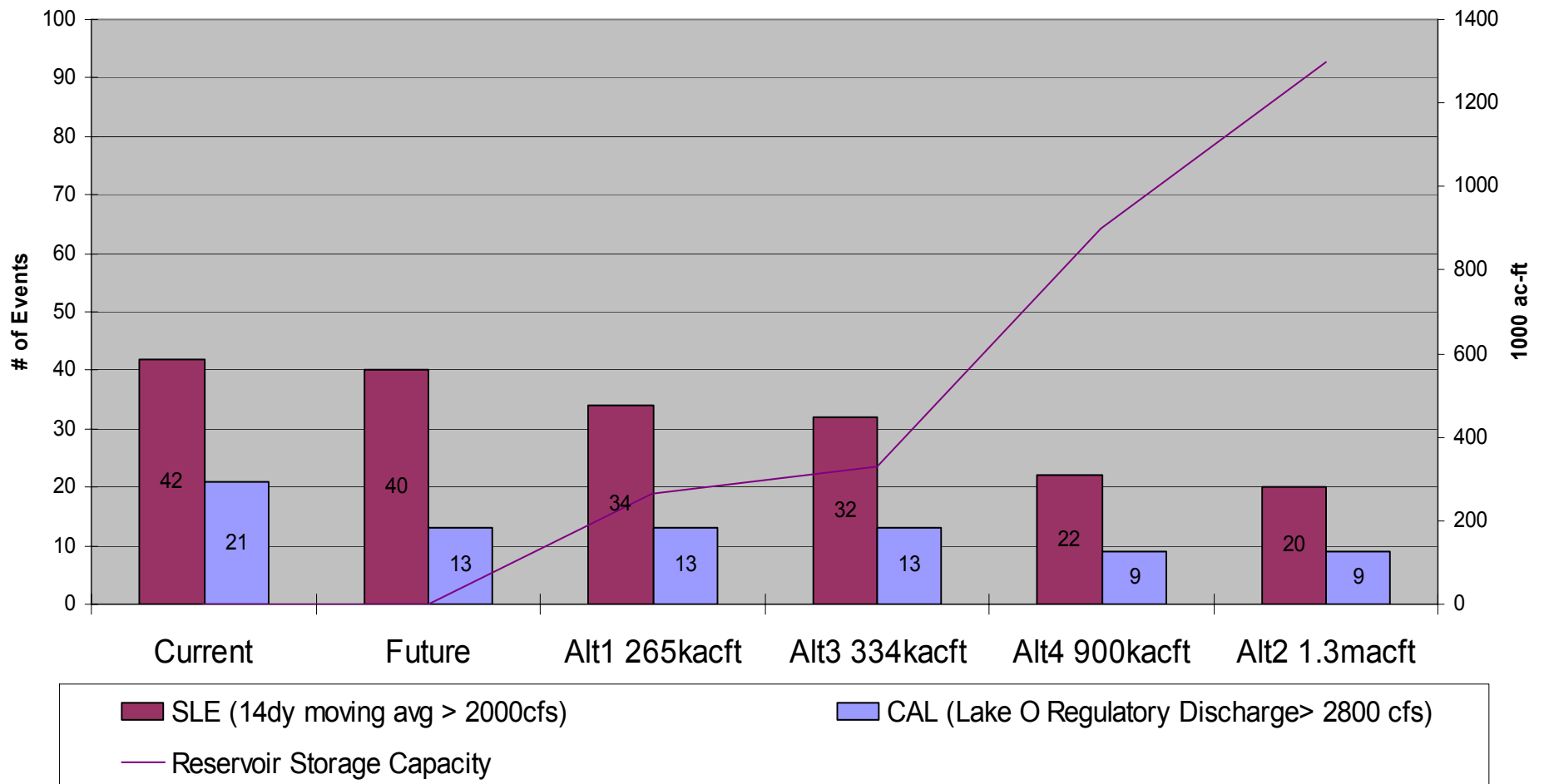




Water Quantity Results

St. Lucie and Caloosahatchee Estuary Salinity Envelopes

Note-Bars represent number of harmful events therefore fewer events are preferred

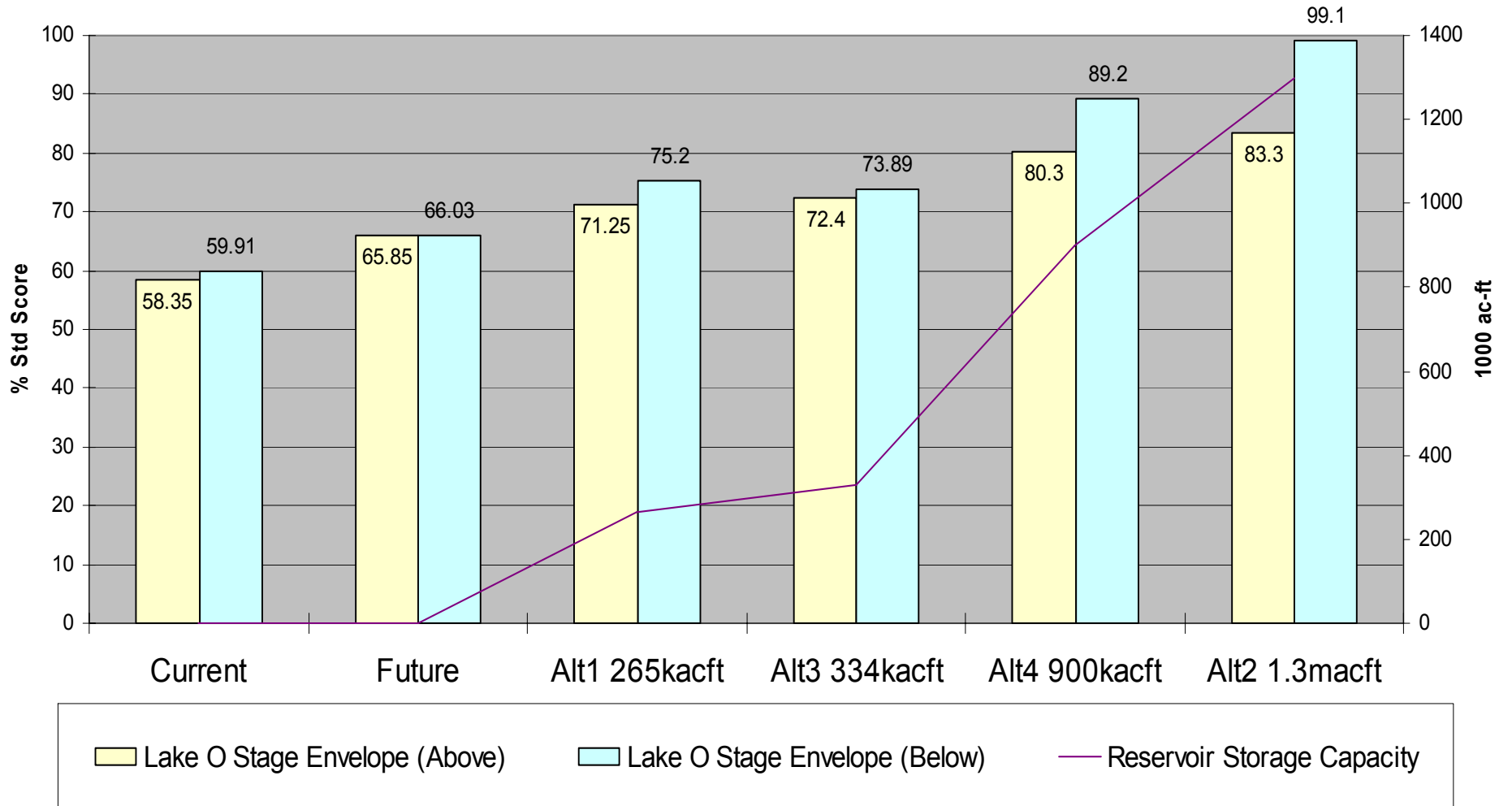




Water Quantity Results

Lake Okeechobee Stage Envelope

Note-Bars represent time spent within the preferred stage envelope, therefore higher scores are preferred





Identification of Plan Best Meeting Legislative Goals

- **Modified version of Alternative 4**
 - **Includes additional water quality projects necessary to meet the Lake Okeechobee TMDL for total phosphorus**
 - **Identifies the range of storage needed (900,000 ac-ft – 1.3 million ac-ft) for lake stage and discharge management**



Basis for Preferred Plan

- **Builds upon existing and planned programs and projects**
- **Emphasizes cost effective local features**
- **Promotes involvement of private landowners as partners in the restoration program (BMPs, FRESP, alternative water storage projects)**
- **Minimizes real estate acquisition requirements by maximizing use of state owned lands and promoting storage and treatment on privately owned lands**
- **Includes select regional projects to complement and build upon local features**
- **Recognizes need to further optimize and refine plan features**



Plan Recommendations – Water Quality Improvements



- 42,000 acres treatment wetlands
- Innovative “green” nutrient control technologies
- 1.7 million acres agricultural best management practices



Plan Recommendations – Increased Water Storage



- Between 900,000 and 1.3 million acre-feet of water storage north of the lake will improve lake levels and coastal discharges
 - Alternative water storage projects on public and private lands
 - Above-ground reservoirs
 - Aquifer Storage and Recovery



Plan Elements Local Level

- **Source control**
 - **Agricultural BMPs**
 - **Urban BMPs**
 - **Regulatory programs**
- **Land management activities**
- **Alternative water storage projects**
- **Florida Ranchlands and Environmental Services Program**
- **Local government initiatives**





Plan Elements Regional Level



- Reservoir-assisted stormwater treatment areas
- Reservoirs
- Stormwater treatment areas
- Aquifer storage and recovery wells
- Deep injection wells



Additional Plan Elements



- Managed aquatic plant systems
- Hybrid wetland treatment technology
- Chemical treatment
- Wetland restoration





Plan Implementation Strategy

- **Multiple Stages**
 - **Initial Implementation Stage- projects initiated 2008-2010**
 - **Mid Term Implementation Stage- projects initiated 2011-2015**
 - **Long Term Implementation Stage- projects initiated beyond 2015**



Initial Implementation Stage

- **Non-CERP Cost= \$260-320 Million**
- **CERP Cost= \$1-1.4 Billion**
 - **Costs are in 2007 dollars**
 - **CERP costs are eligible for 50 percent cost share with the federal government**
 - **LOER projects included in CERP cost are eligible for federal cost share, however those funds will be needed in advance of the CERP project from State and SFWMD sources**
 - **Costs do not include dollars that have already been expended to date**
 - **Costs include the full cost to build a project completely even if construction period goes beyond the initial implementation stage**



Questions

