



US Army Corps
of Engineers®



LORSS

Lake Okeechobee Regulation Schedule Study

Jan 24, 2007

Purpose

Provide Information on the Corps
revised LORSS TSP

Background Information

2003 - 2005
High Water/
Hurricane
Activity

Aug - Oct 2006
Released draft SEIS
& Operational
Guidelines (OG) for
Public Review

Nov- Feb 2007
Revise draft
SEIS and OG

June 2007
Release final
SEIS
& OG for 30 Day
Public Review

Aug 2005
Initiated
LORSS
Study

Oct 06
Accessed
Public
Comments

March 2007
Release revised draft
SEIS & OG
for 45 Day Public
Review

July 2007
Implement new
Lake Okeechobee
Regulation
Schedule

LORSS Goals & Objectives

Implement a new lake regulation schedule supported by a Supplemental Environmental Impact Statement by July 2007 (revised from January 2007)

Objectives of the new regulation schedule:

- Ensure public health and safety
- Manage Lake Okeechobee at lower lake levels
- Reduce high regulatory releases to the estuaries
- Continue to meet Congressionally authorized project purposes

LORSS Project Delivery Team

- U.S. Army Corps of Engineers
- South Florida Water Management District
- U.S. Fish and Wildlife Service
- National Marine Fisheries Service
- U. S. Environmental Protection Agency
- Florida Fish and Wildlife Conservation Commission
- Florida Department of Environmental Protection
- Lee County
- Martin County
- City of Sanibel

Study Assumptions

- **Assumes 2007 as the existing condition**
- **Operational Guidelines consider full period of record (1913 - current)**
- **SFWMD will operate temporary forward pumps**
- **SFWMD will implement new Lake Okeechobee Water Shortage Management Plan (DRAFT), to replace the current Supply Side Management Plan**

Study Constraints

- **Model Simulation period-of-record of 36 years (1965 - 2000)**
- **Herbert Hoover Dike integrity**
- **Use of existing C&SF infrastructure (no CERP projects)**
- **Stormwater Treatment Area (STA) 3 & 4 water quality treatment capacity**
 - 64,000 acre-feet annual average, as identified by SFWMD
- **Use existing regulation schedules for Water Conservation Areas and Kissimmee River chain of lakes**

Public Comments Summary on the Original TSP

- 17.25 high lake constraint
- Acceptable at managing lake lower
- Release more water south
- Increase storm water treatment areas and storage reservoirs
- Use SFWMD lands that are available for emergency Lake water storage
- Water supply concerns
- More equitable discharges to estuaries and WCA
- Concerns due to extreme high releases to Caloosahatchee Estuary
- Release more low flows to reduce high discharges
- Economic costs of high releases
- Account for wet weather cycle

Additional Work Performed Based on Public Comment

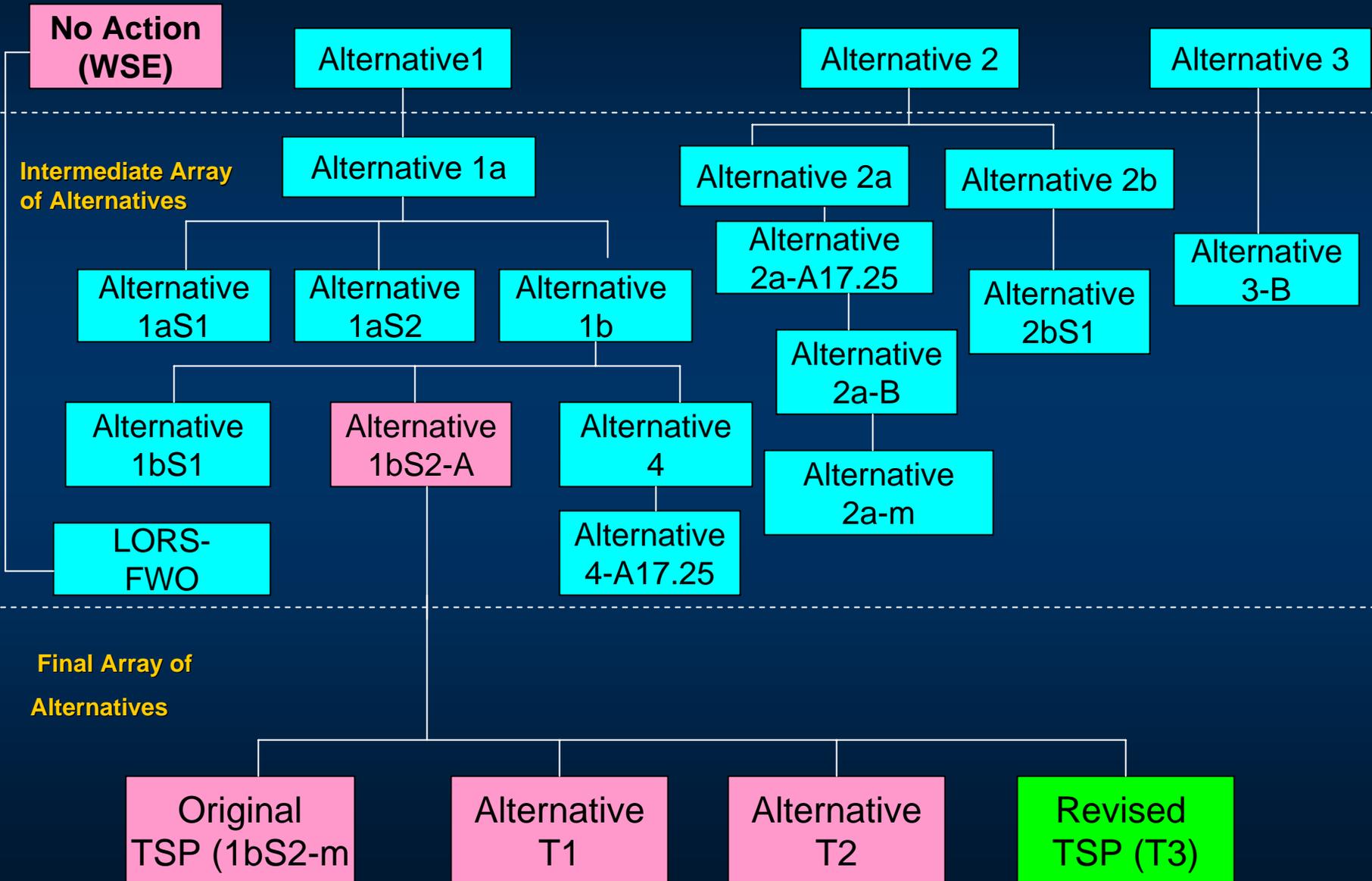
- Evaluate the 17.25 Lake elevation as a performance measure, not as a constraint
- Evaluate additional alternatives to reduce the frequency of >4,500cfs high flows to the Caloosahatchee Estuary
- Evaluate alternatives to obtain an equitable balance between the coastal estuaries, including Lake Worth Lagoon
- Evaluate alternatives to improve the balance between all system-wide performance measures

Additional Analysis Performed Based on Public Comment

- Analyze TSP performance against the 2003 to 2005 wet weather cycle
- Analyze benefits to coastal estuaries in utilizing SFWMD lands for emergency offsite water storage

Alternatives Evaluated

Initial Array of Alternatives



Revised TSP

- Produced best overall balance between study objectives
- Allows for quicker response and operational flexibility to lake conditions and tributary inflows, including late-season tropical events
- Manages the lake at lower elevations
- Improves preferred flow to the coastal estuaries
- Is equal to (extreme) and modestly improves (intermediate) high flow discharges to coastal estuaries
- Provides for environmental base flow to the Caloosahatchee Estuary during dry season
- Provides low volume regulatory flow to St. Lucie Estuary
- Measures pulse releases at S-79

Lake Okeechobee Stages

Lake Stages

Stage Envelope

Navigation

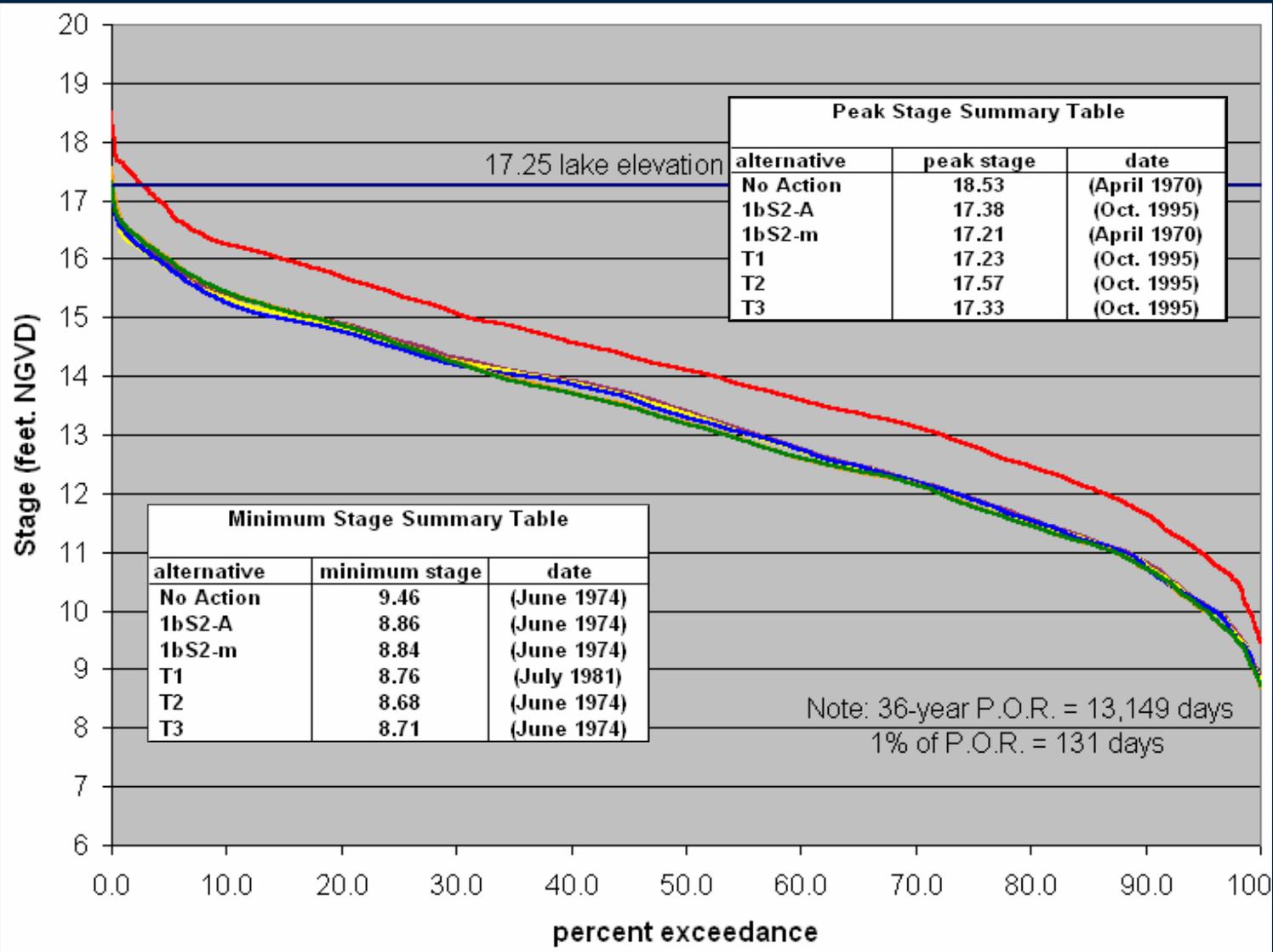
Water Supply

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Lake Okeechobee Regulation Schedule Study

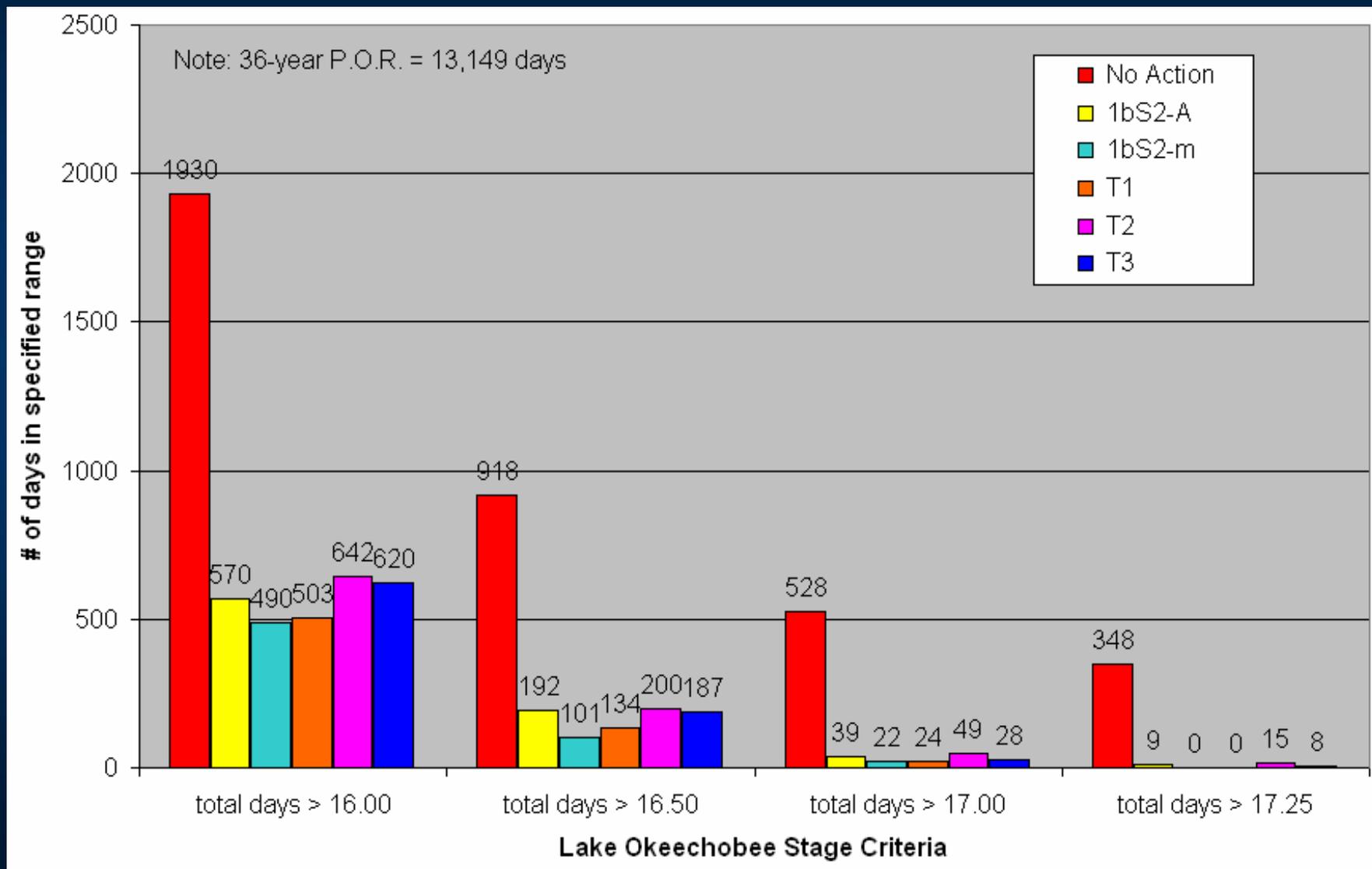
Lake Stage Duration Curves

Simulated Period of Record



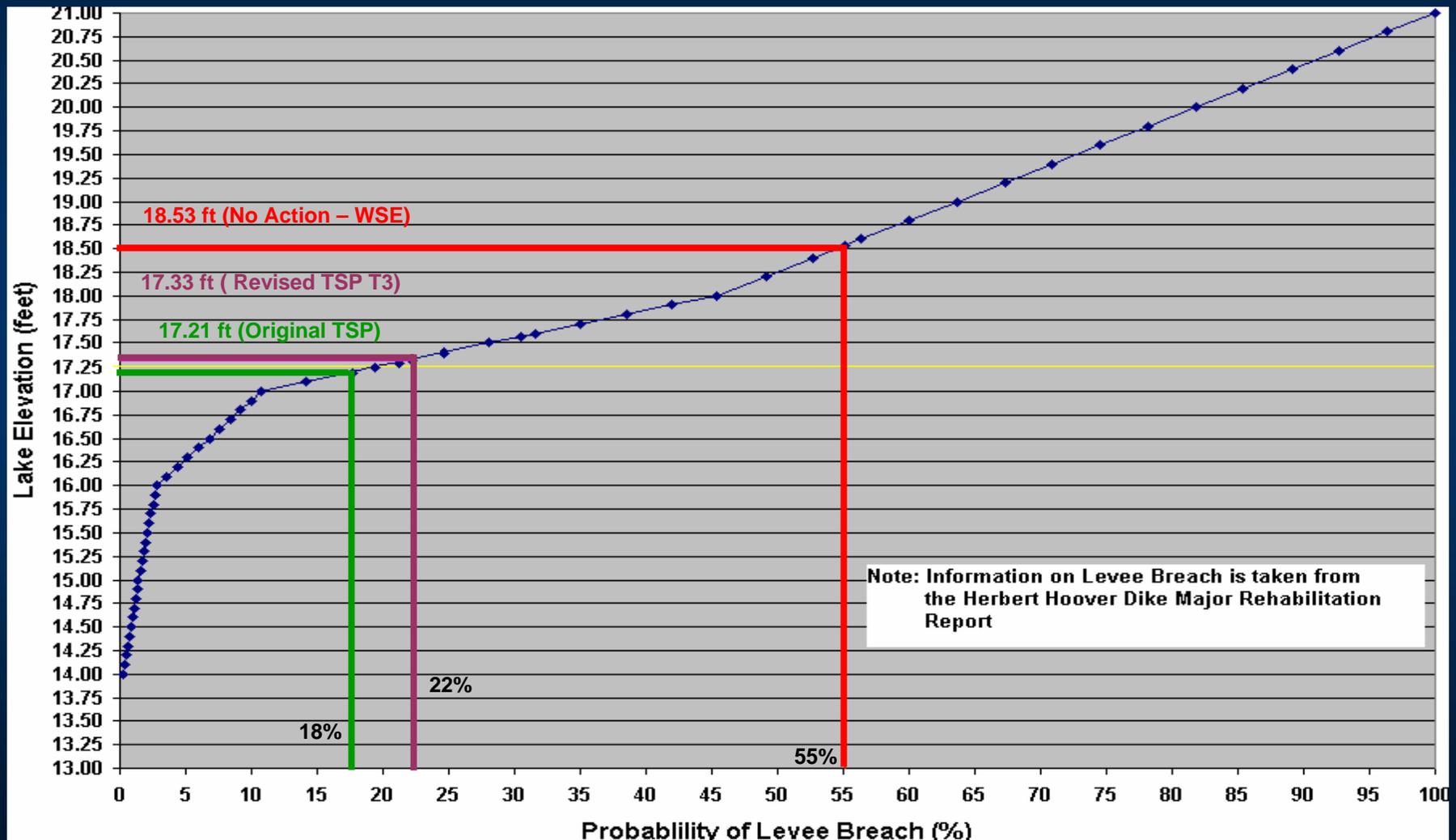
Summary of Lake High Stages (>16.00)

36-year Period of Record



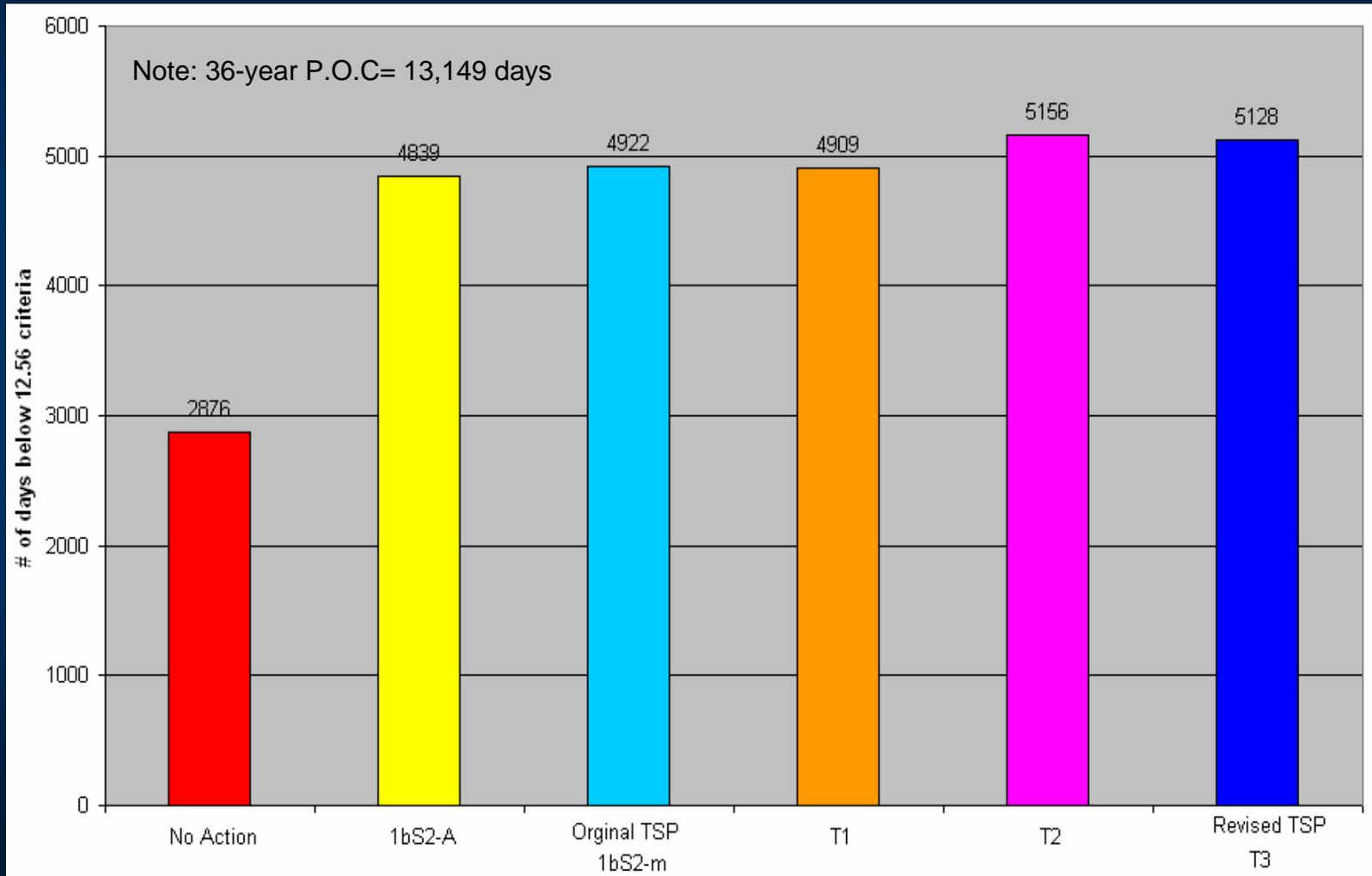
Combined Probability of Levee Breach

Selected Lake Stages (without intervention)

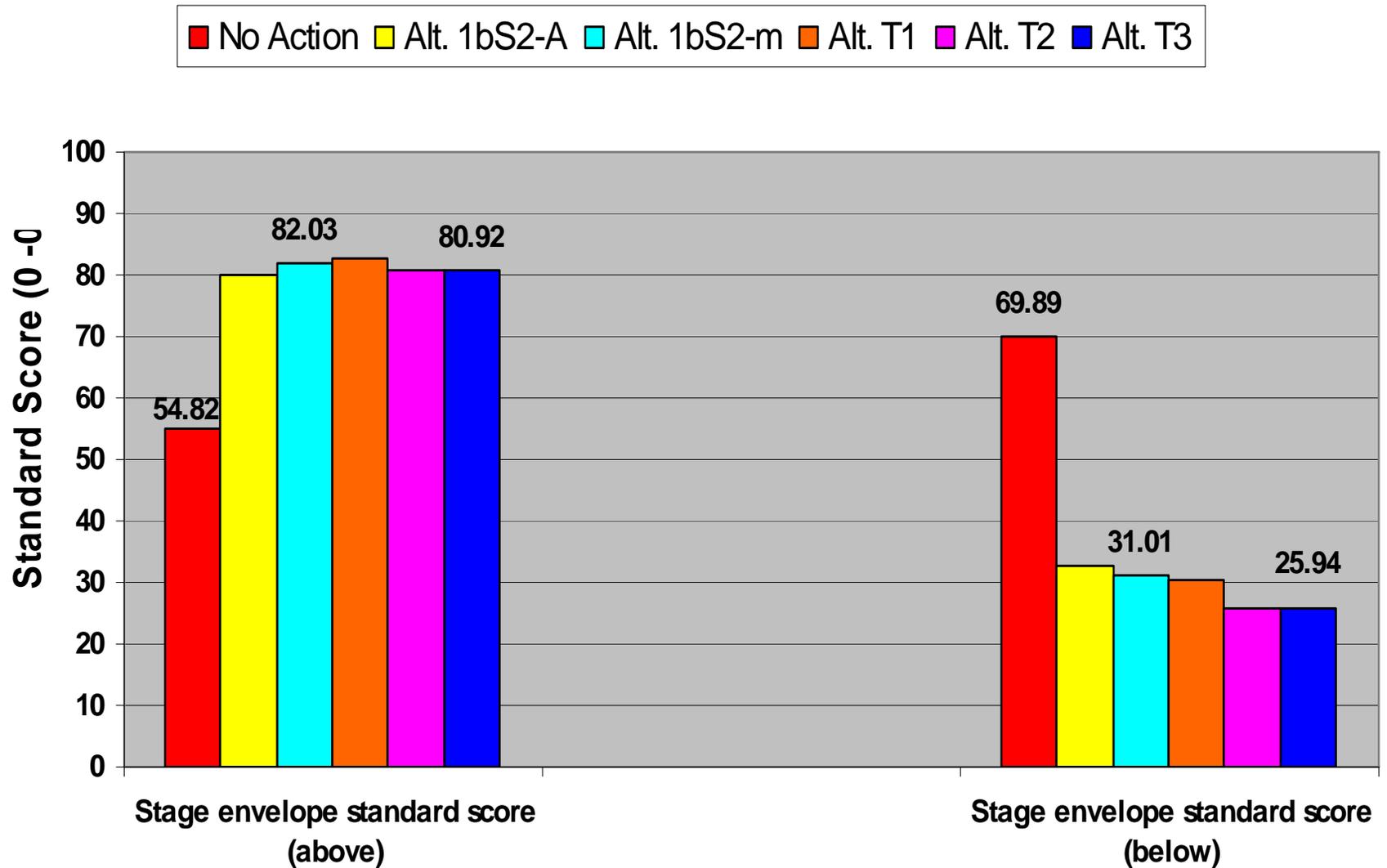


Summary of Lake Stages

36-Year Simulated POR: Below Navigation Criteria, 12.56 feet



Stage Envelope Standard Score (Above and Below)



Mean Annual EAA Supplemental Irrigation

**Demands/Demands not met from 1965-2000
for Drought Years 1971, 1975, 1981, 1985 and 1989**



Mean Annual Other LOSA Supplemental Irrigation Demands/Demands not met from 1965-2000 for Drought Years 1971, 1975, 1981, 1985 and 1989



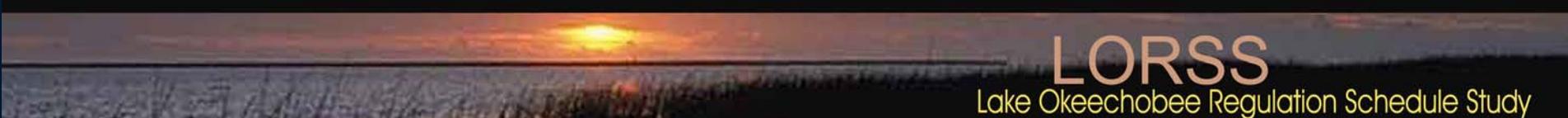
Ecological Condition

Caloosahatchee Estuary

St. Lucie Estuary

Lake Worth

Greater Everglades

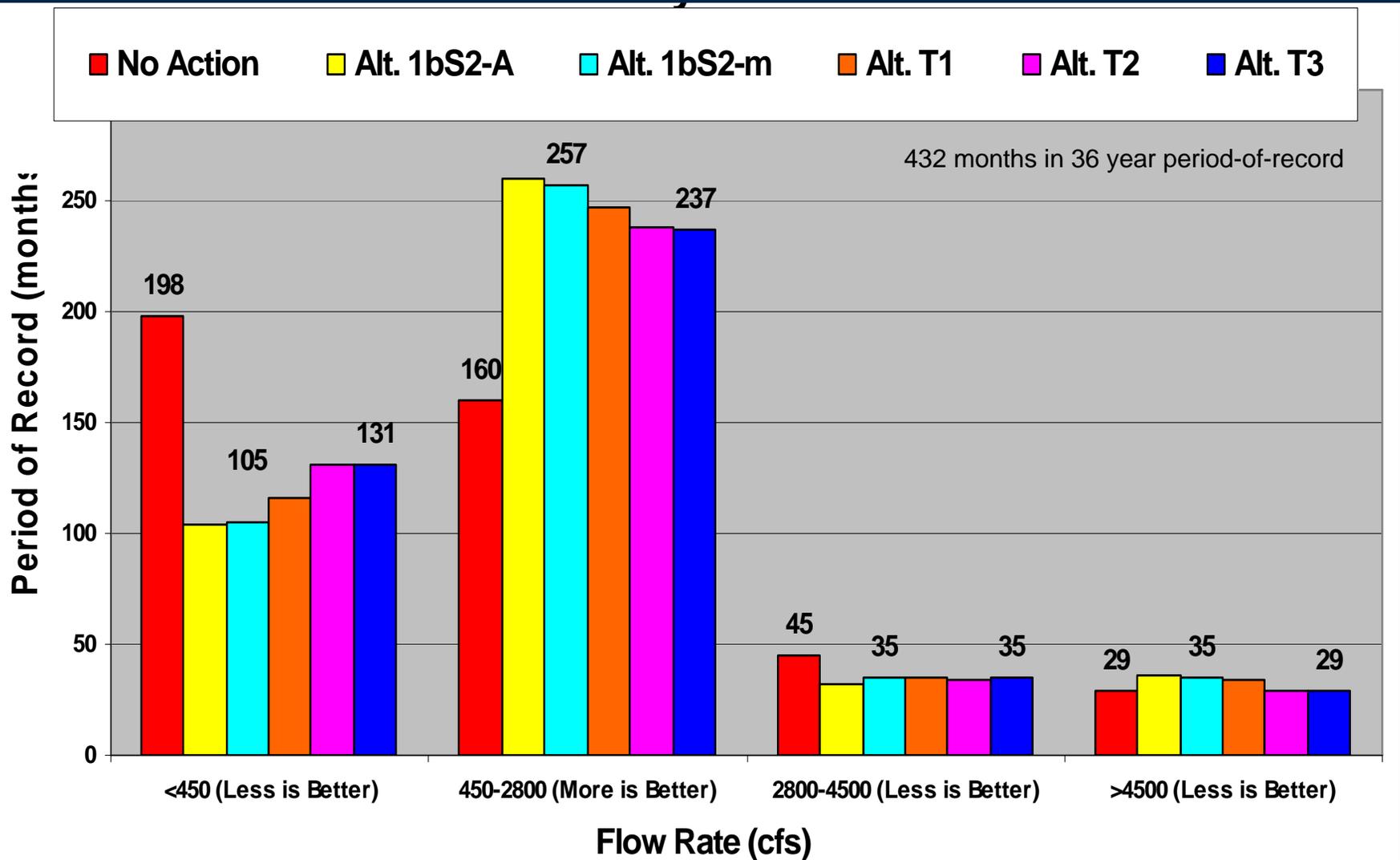


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Lake Okeechobee Regulation Schedule Study

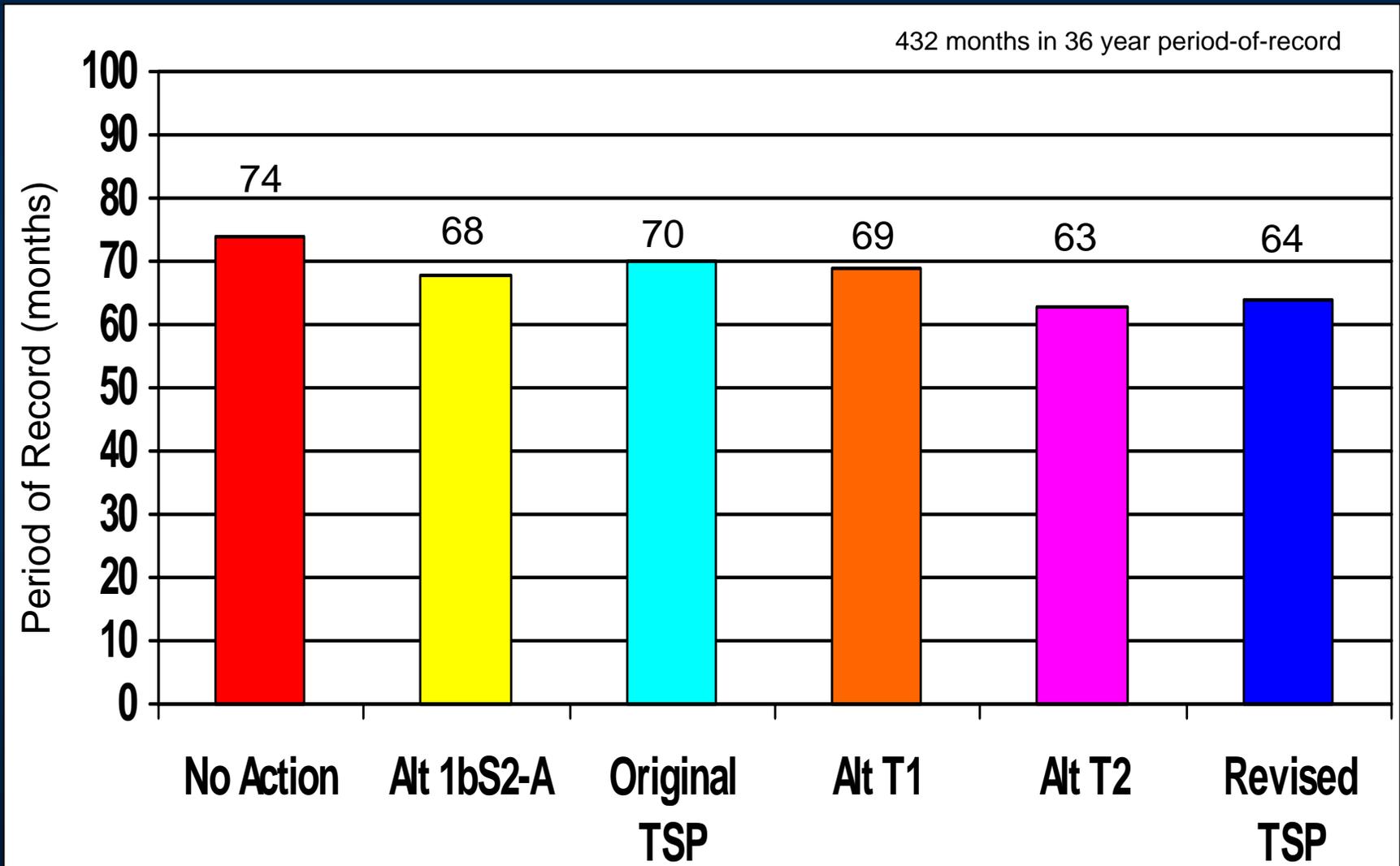
Caloosahatchee Estuary

Distribution of Mean Monthly Estuary Inflows



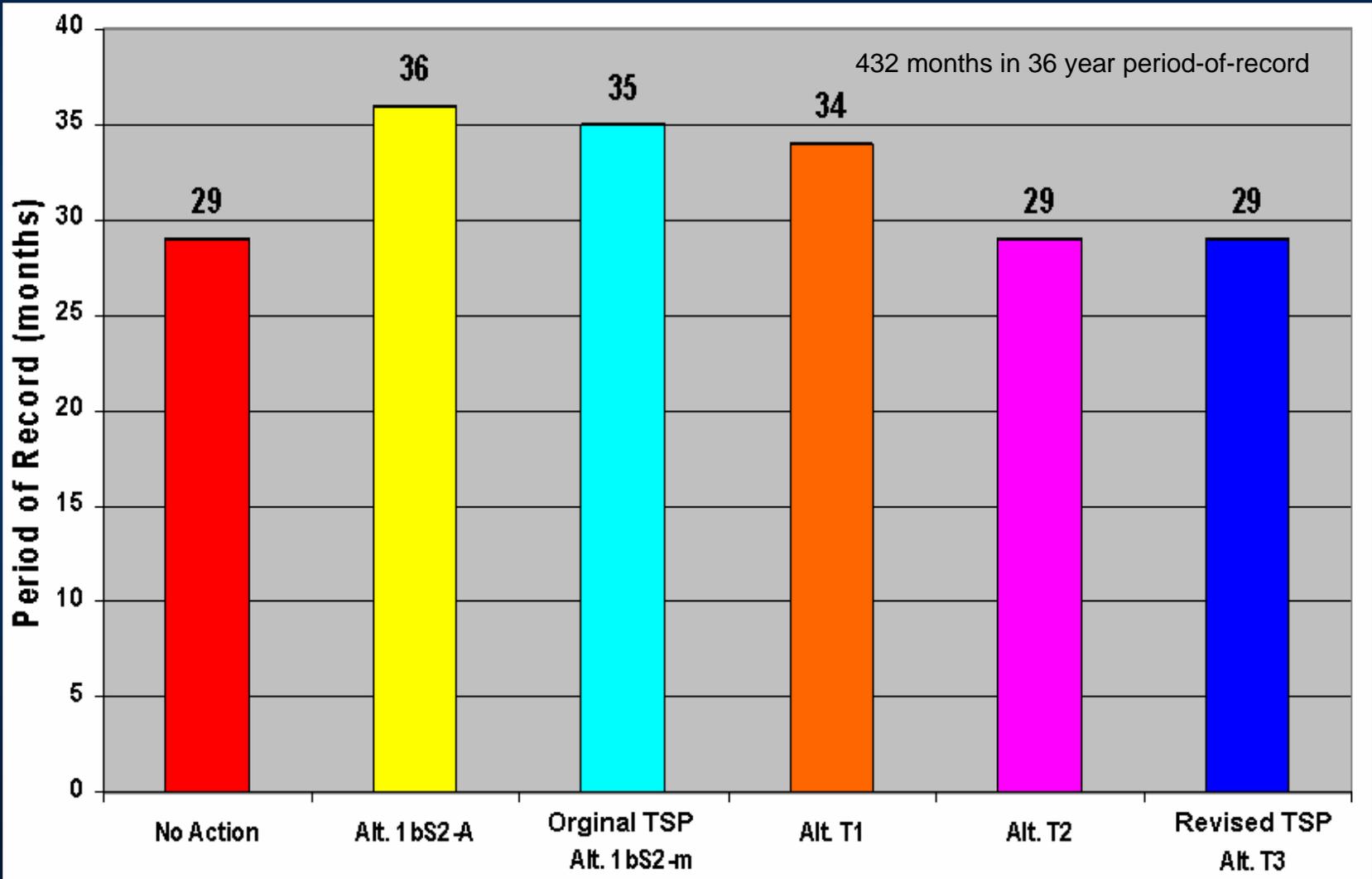
Caloosahatchee Estuary

Frequency of Flows > 2800 cfs at S-79



Caloosahatchee Estuary

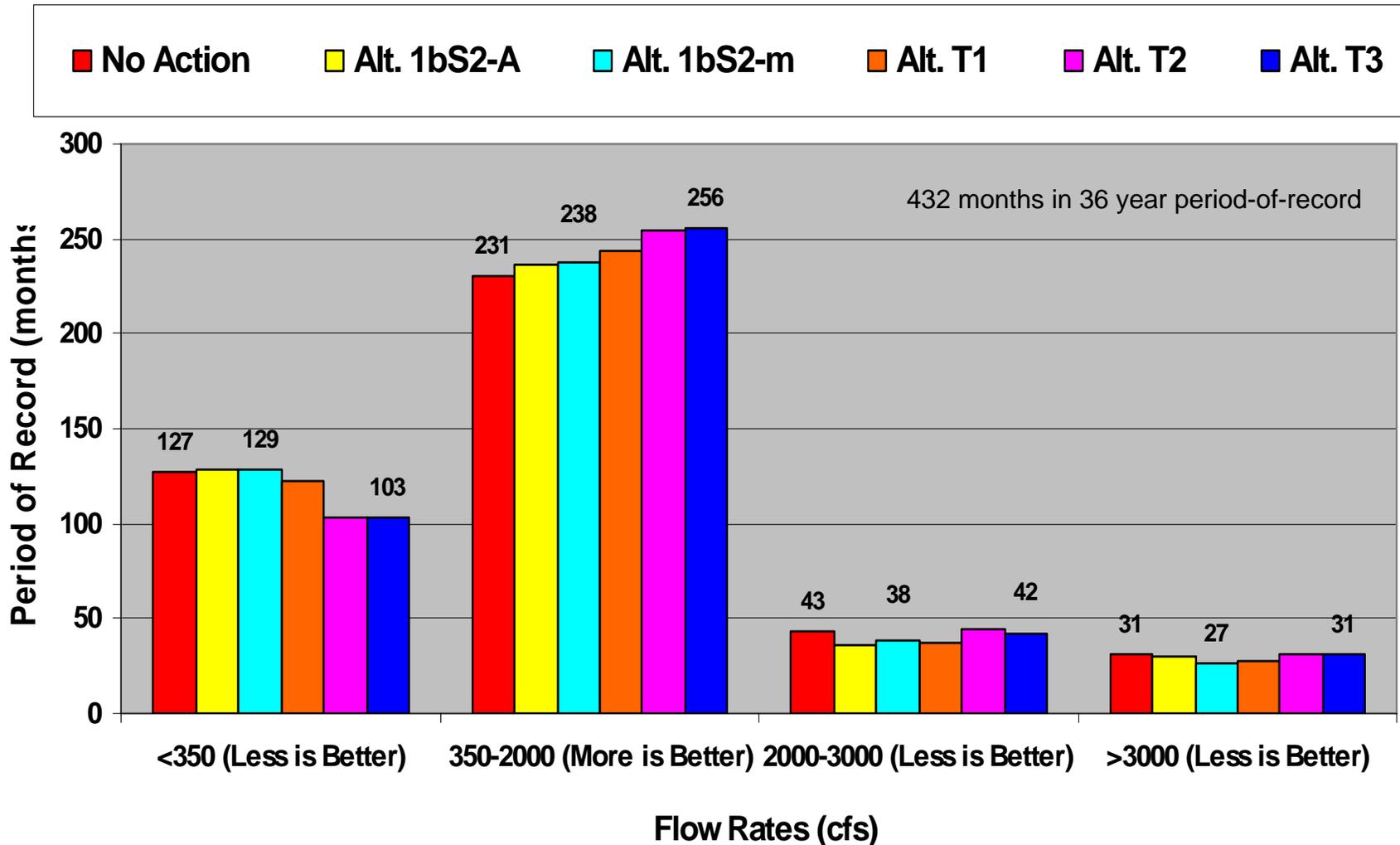
Frequency of Flows > 4500 cfs at S-79



St. Lucie Estuary

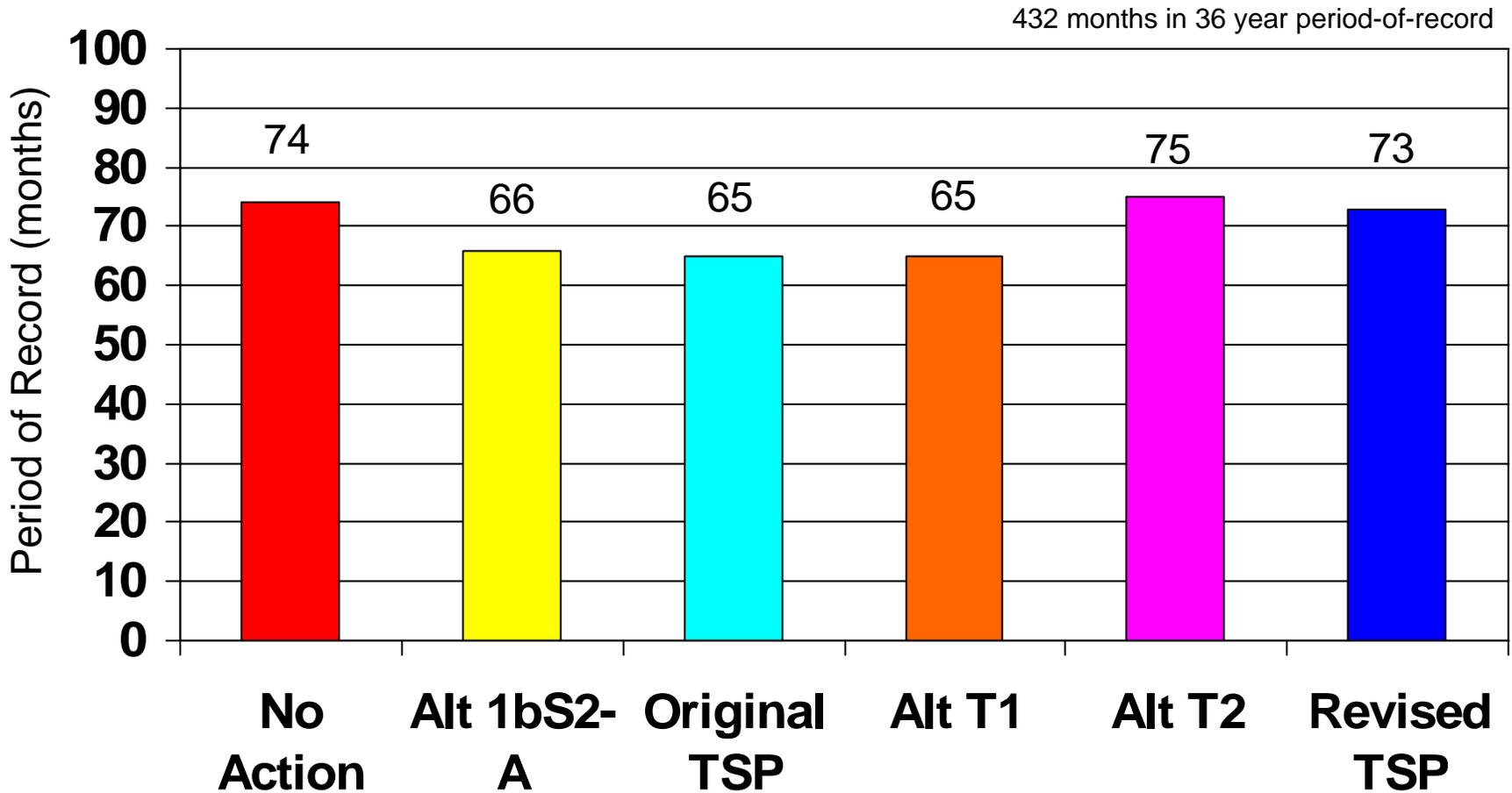
St Lucie Estuary

Distribution of Mean Monthly Estuary Inflows



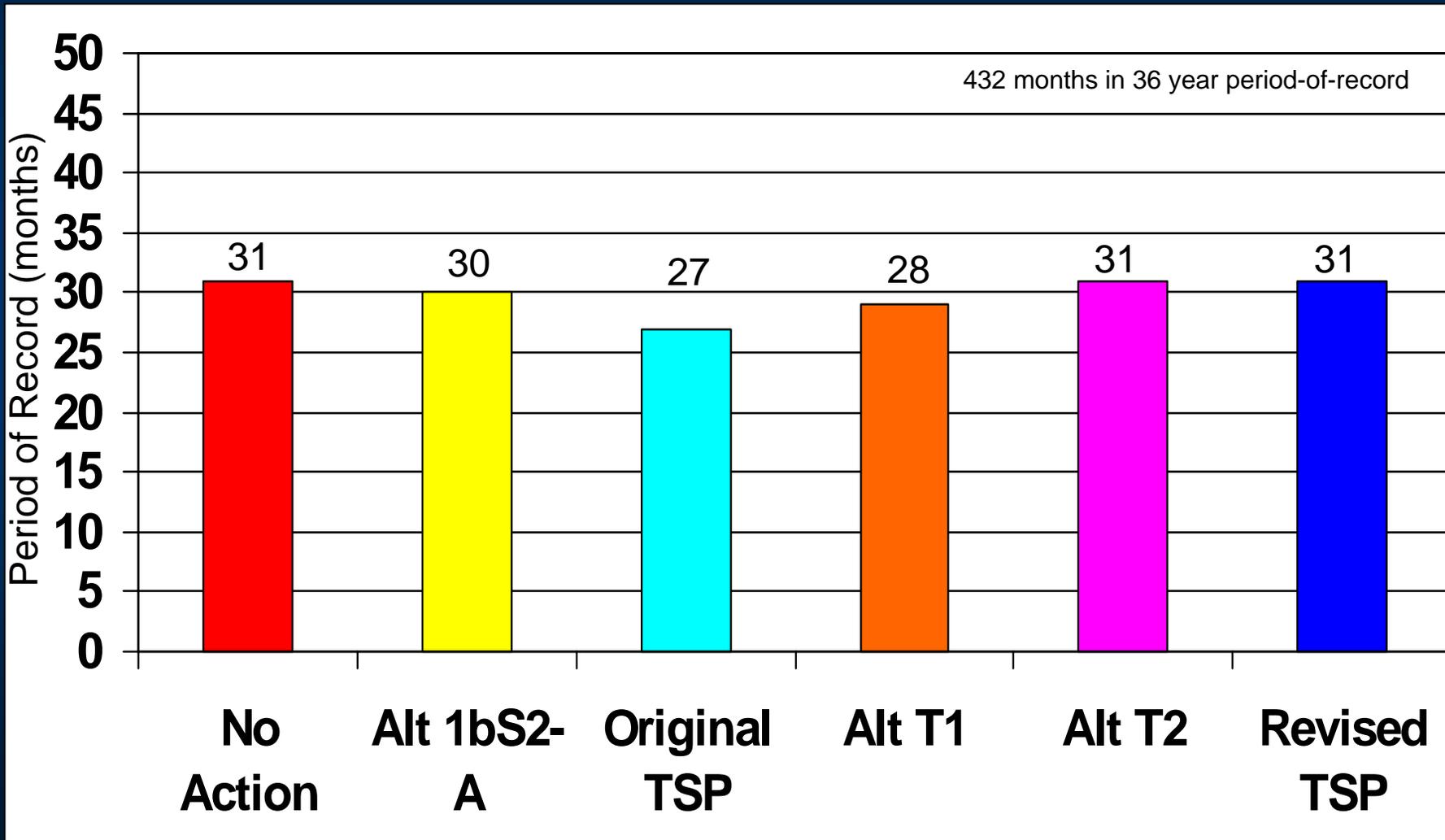
St Lucie Estuary

Frequency of Flows > 2000 cfs



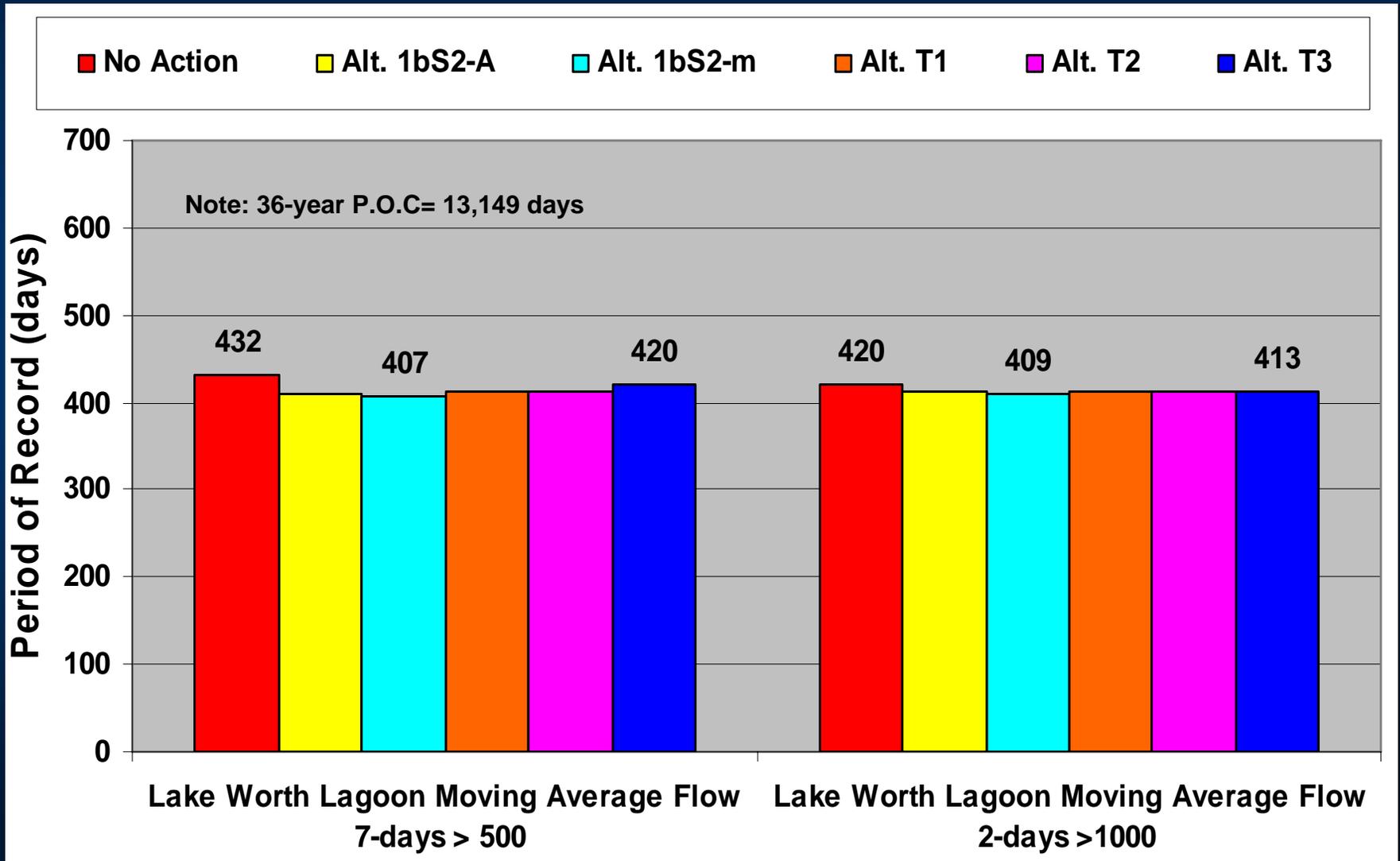
St Lucie Estuary

Frequency of Flows > 3000 cfs



Lake Worth Lagoon

Lake Worth Moving Average Salinity envelope criteria not met



Greater Everglades

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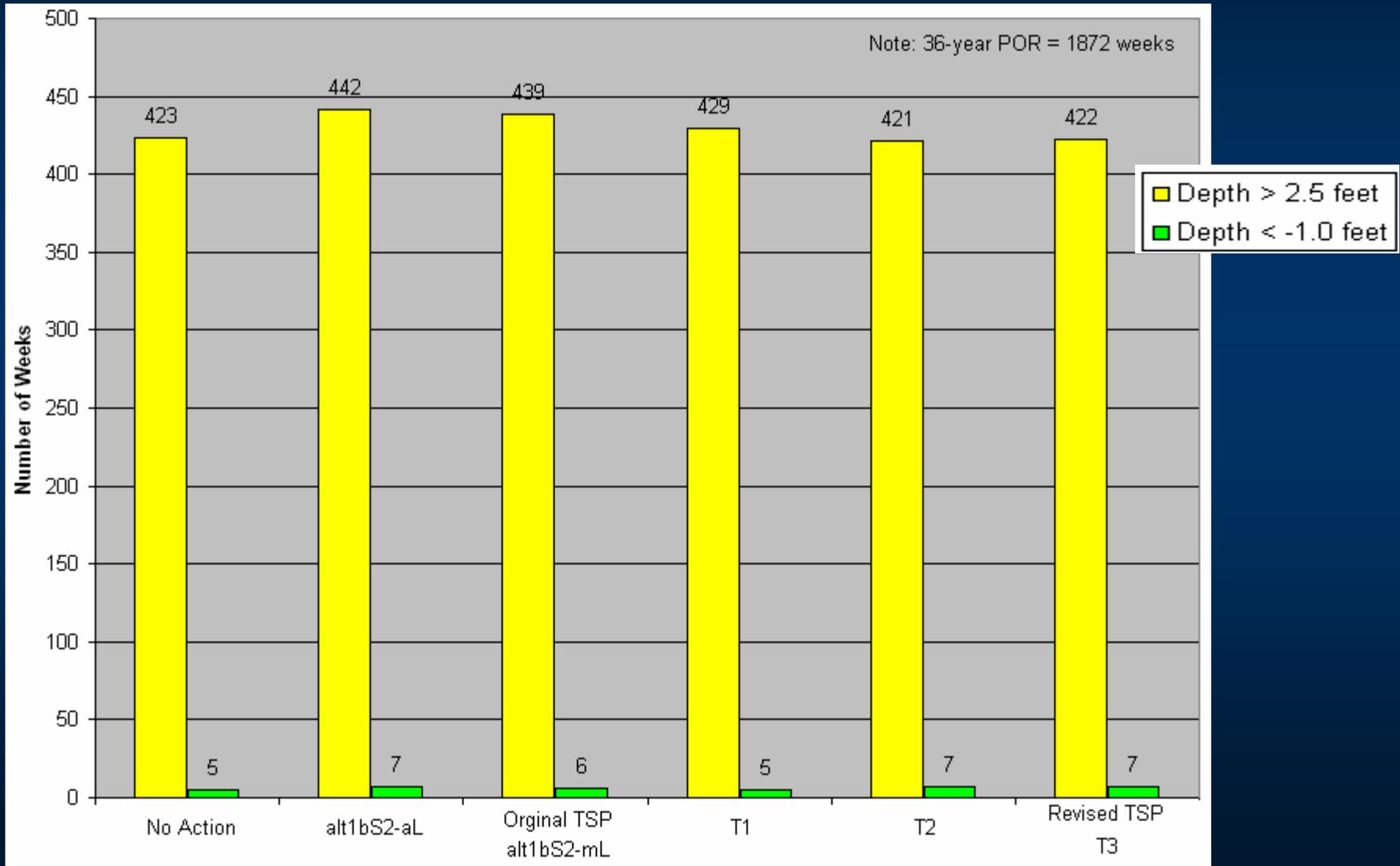
Greater Everglades Performance Measures

- Peat-dry out, tree island inundation, recession rates, water reversals, and snail kite habitat
- Only minor differences between the alternatives analyzed
- Ecologically, none of the differences are significant

Water Depths in Southern WCA-3A

Old South WCA-3A (IR 14)

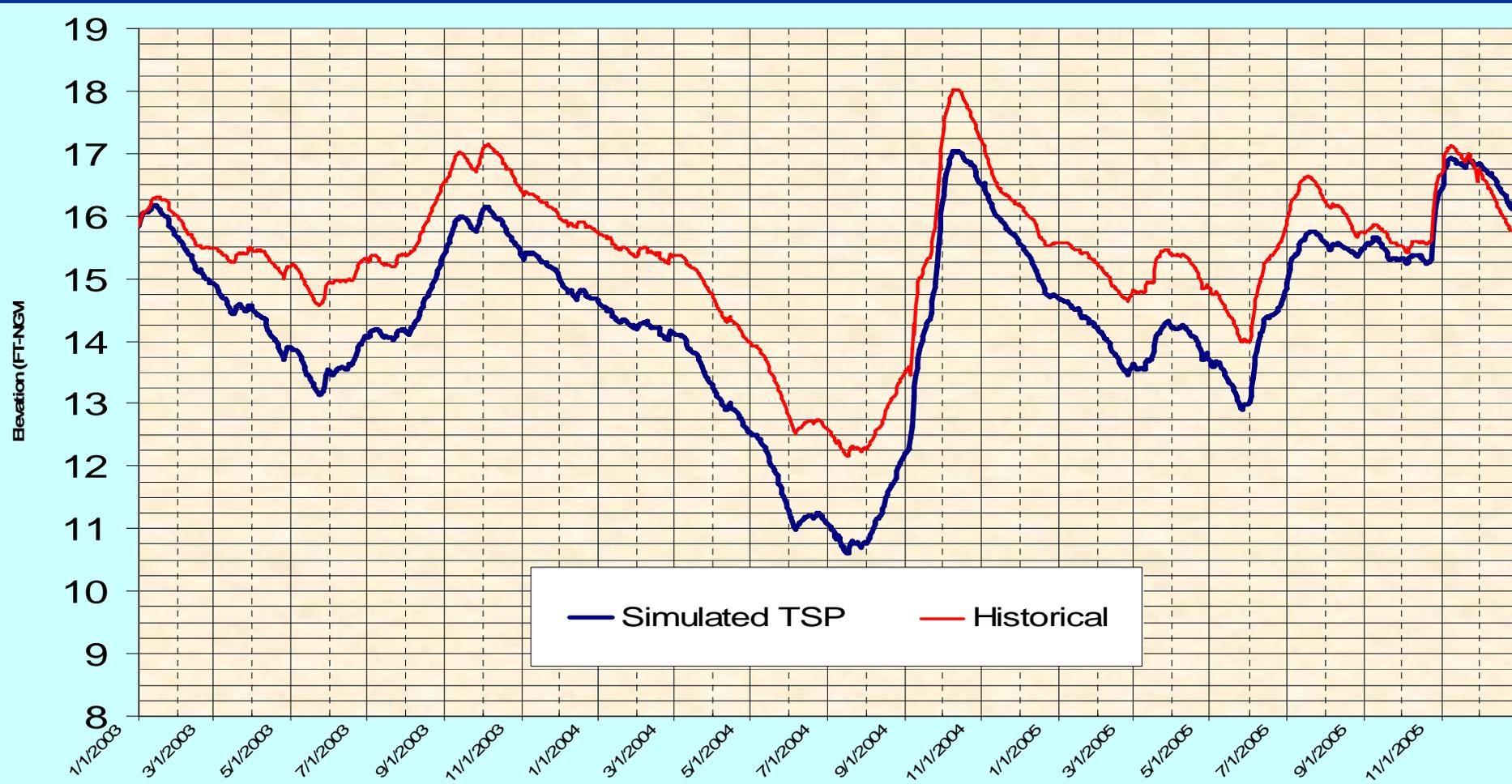
High/Low Depth Criteria Exceeded in Weeks



2003-2005 Revised TSP Performance

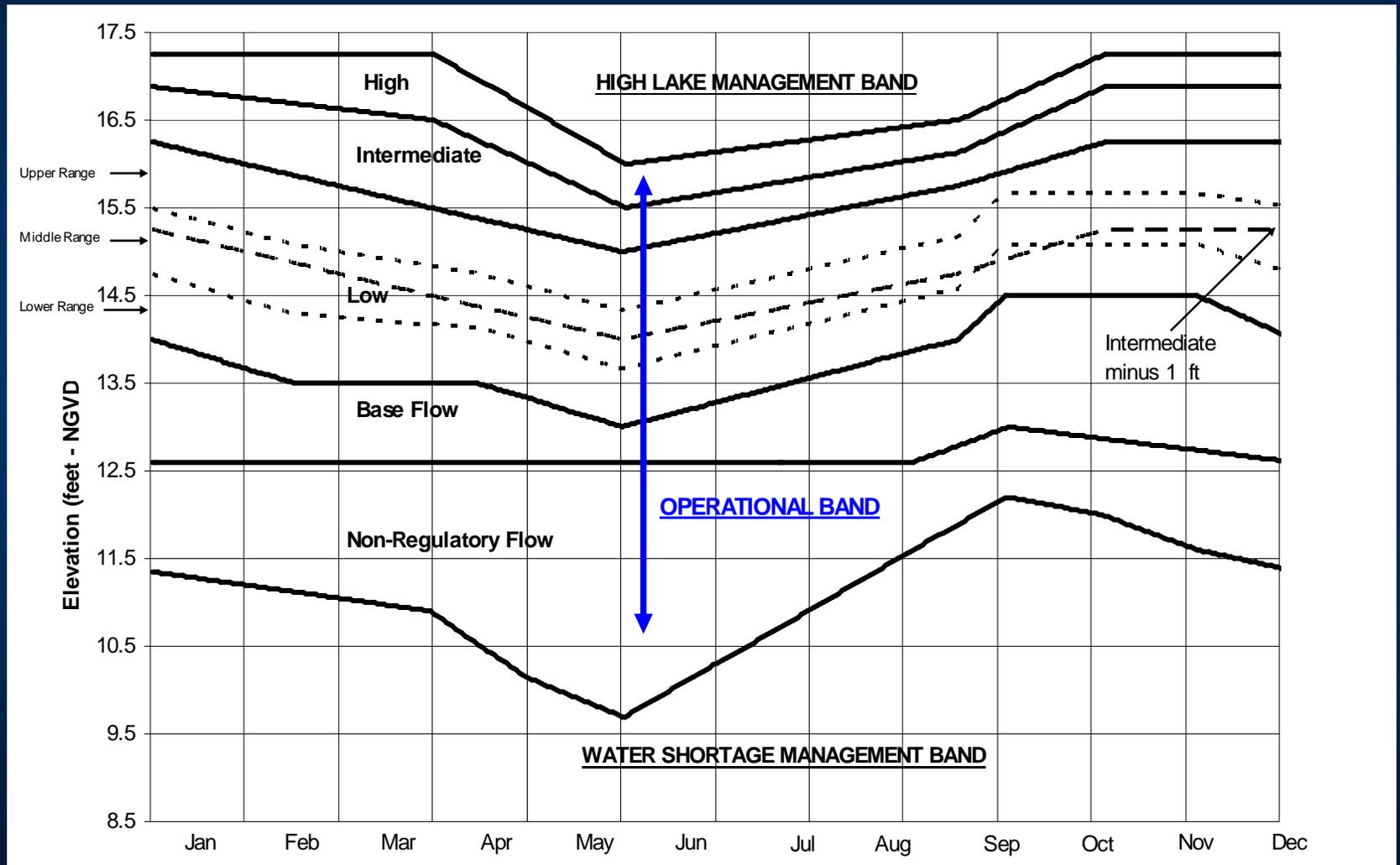
2003-2005

Revised TSP Performance

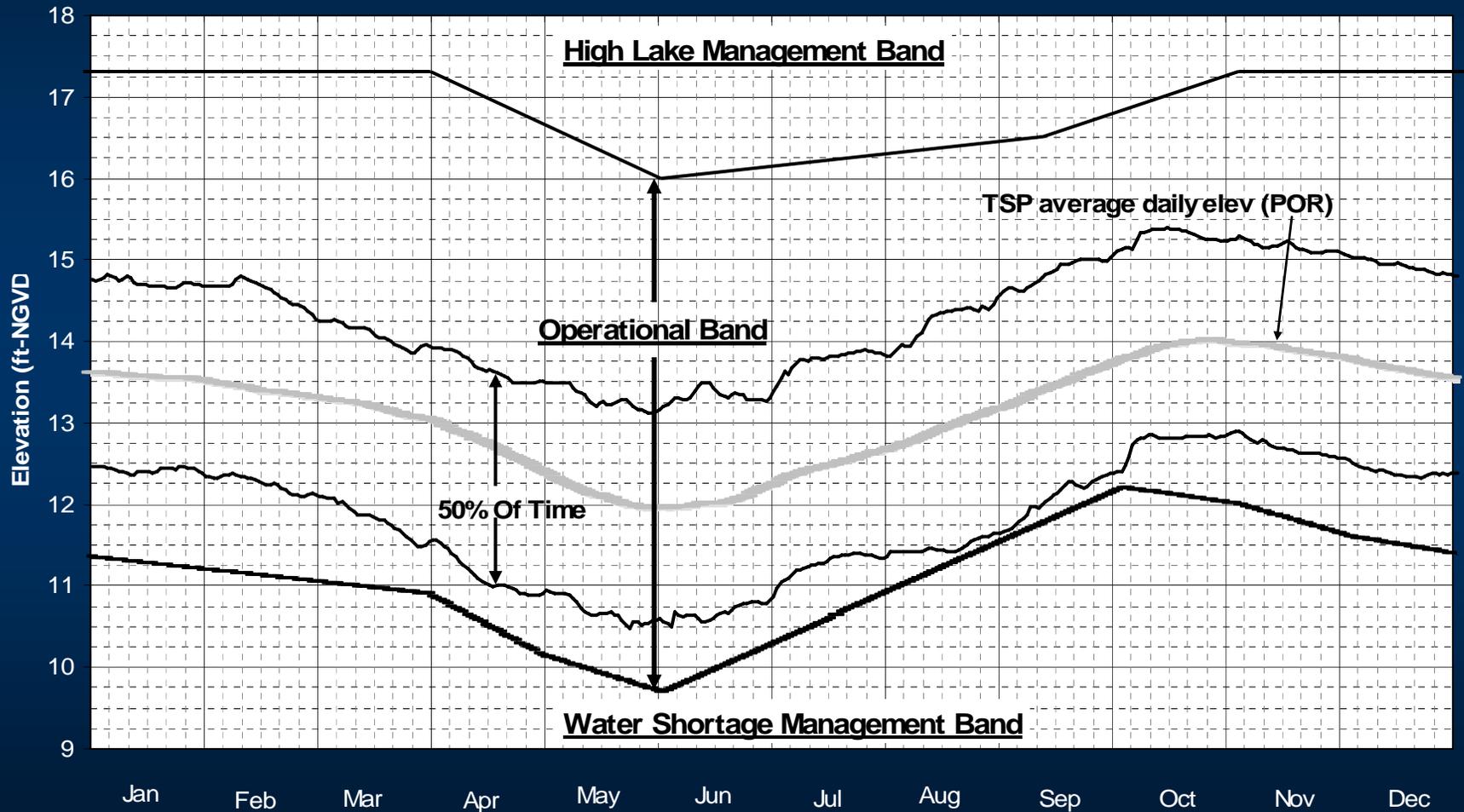


Revised Regulation Schedule

TSP Management Bands



TSP Performance



Lake Okeechobee Operational Guidance (1B-T3)

Part D: Establish Allowable Lake Okeechobee Releases to Tide (Estuaries)

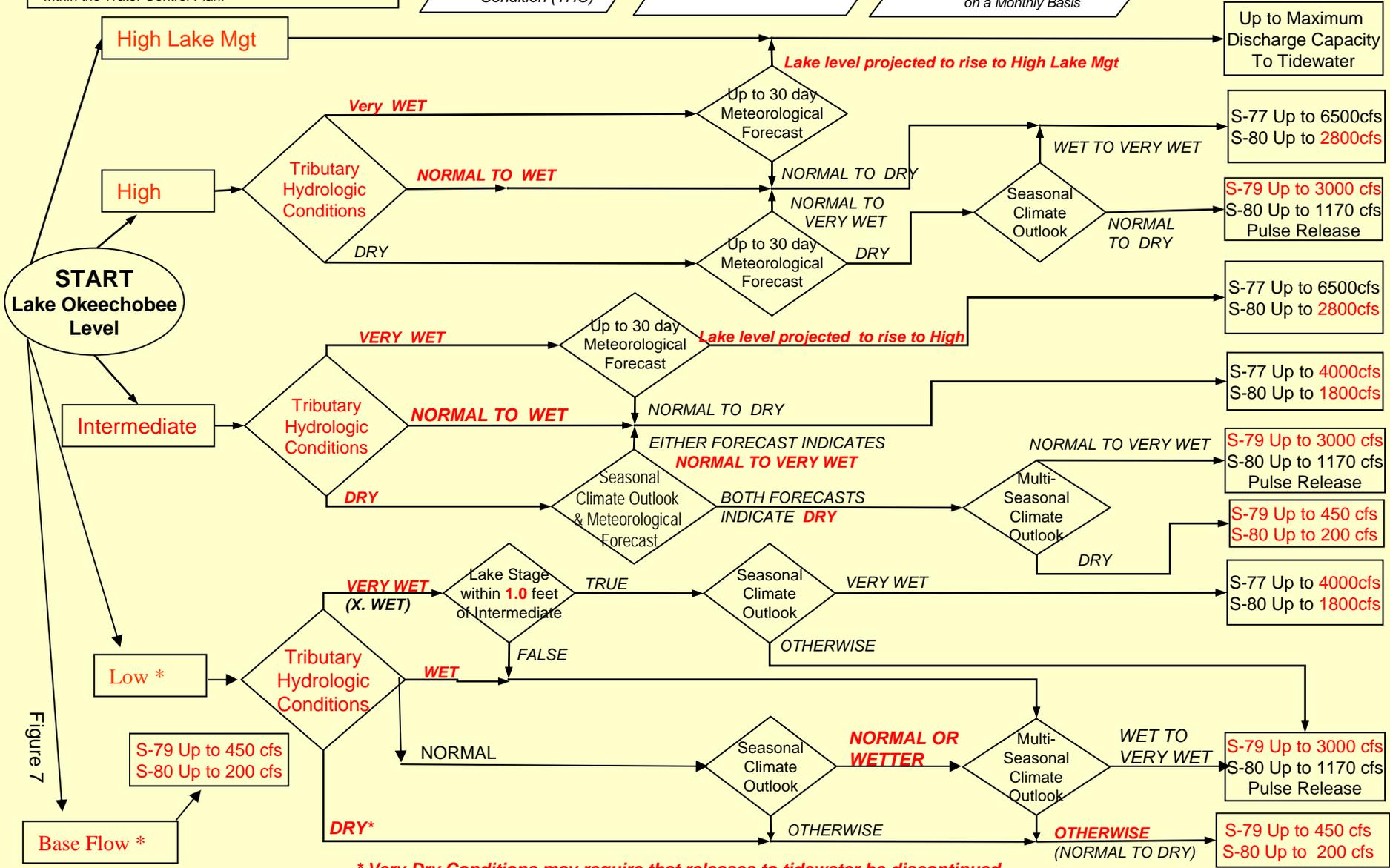
Note: This operational guidance provides essential supplementary information to be used in conjunction with other supporting documentation including text within the Water Control Plan.

Apply Tributary Hydrologic Condition (THC)

Check Special Lake Criteria daily as needed

Apply Meteorological Forecasts on a Weekly Basis; apply Seasonal and Multi-Seasonal Climate Outlooks on a Monthly Basis

NEW CONDITIONS



* Very Dry Conditions may require that releases to tidewater be discontinued

Figure 7

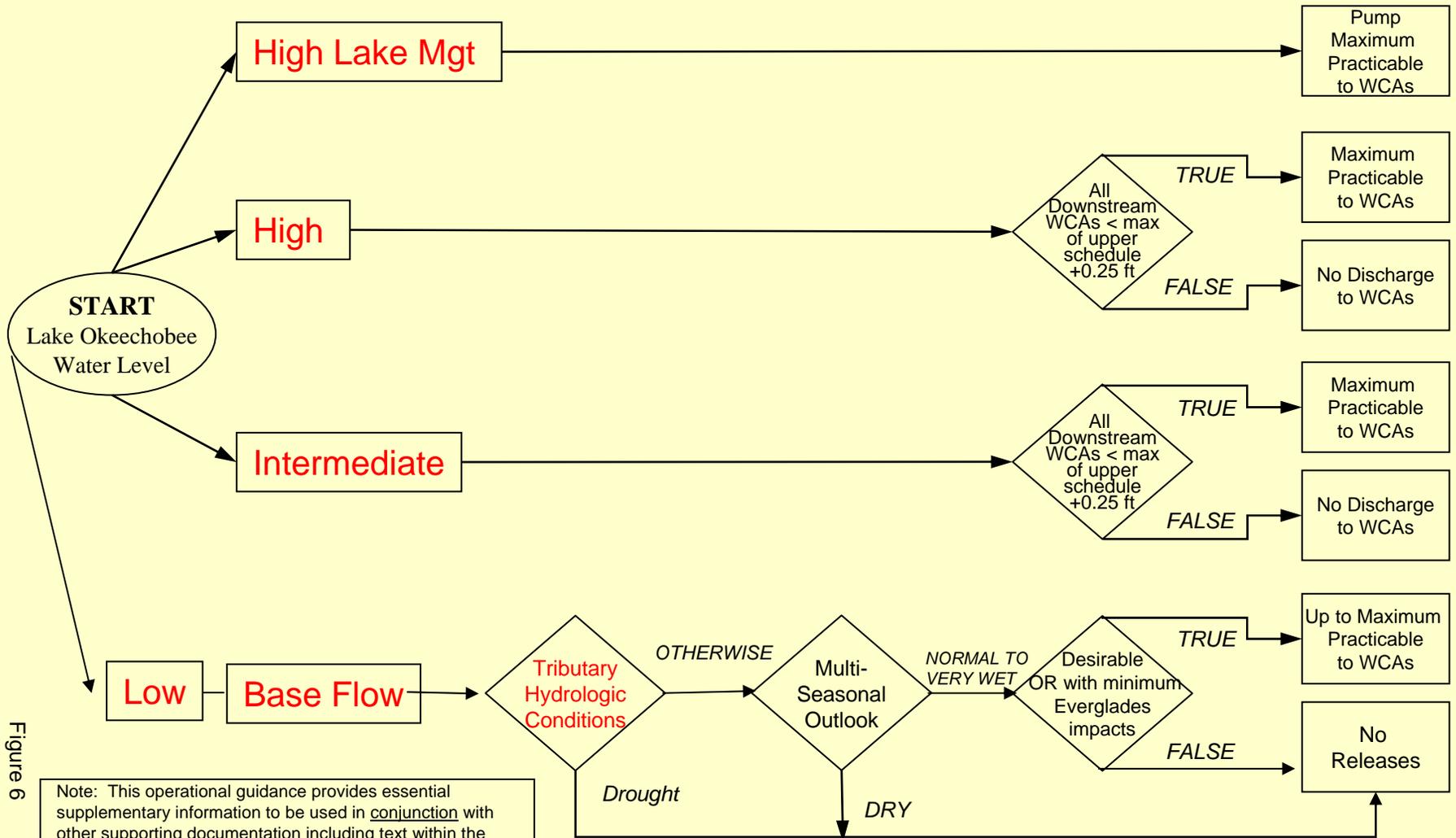
Lake Okeechobee Operational Guidance

Part C: Establish Allowable Lake Okeechobee Releases to the Water Conservation Areas

Apply Multi-Seasonal Climate Outlooks on a Monthly Basis

Apply Tributary Condition Criteria Daily

NEW CONDITIONS



Note: This operational guidance provides essential supplementary information to be used in conjunction with other supporting documentation including text within the Water Control Plan.

Figure 6

Benefits Analysis of Emergency Water Storage on SFWMD Lands

Analysis Assumptions

- LORSS TSP simulation mean monthly flows from the SFWMM were used for the analysis
- SFWMD public lands will be available for water storage, including all necessary conveyance and control infrastructure
- Storage will be used to capture Lake Okeechobee regulatory releases when undesirable 'high' flows are experienced at the St. Lucie below S-80 (SLE) and Caloosahatchee at S-79 (CRE) estuaries
- Storage was not used to capture local runoff in the C-43 and C-44 basins, which also contribute to the undesirable 'high' flows

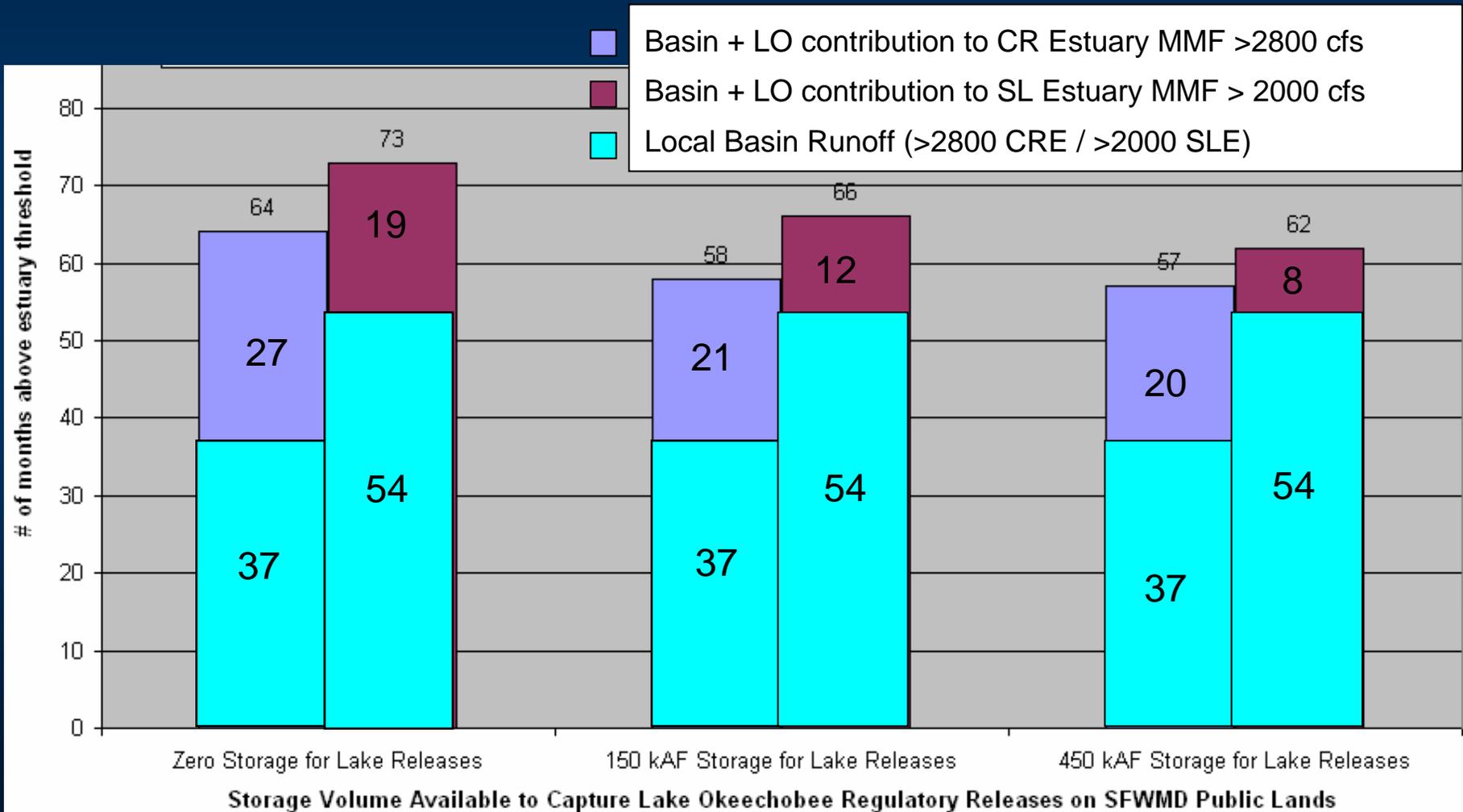
Analysis Assumptions

(continued)

- Storage volumes are available at the start of each water year
 - Water Year (Oct 1 thru Sept 30) are adjusted when high flow months extend across two years
- Two potential available storage conditions were evaluated
 - 150,000 acre-feet (lands presently identified by SFWMD) and 450,000 acre-feet (stated target of SFWMD)

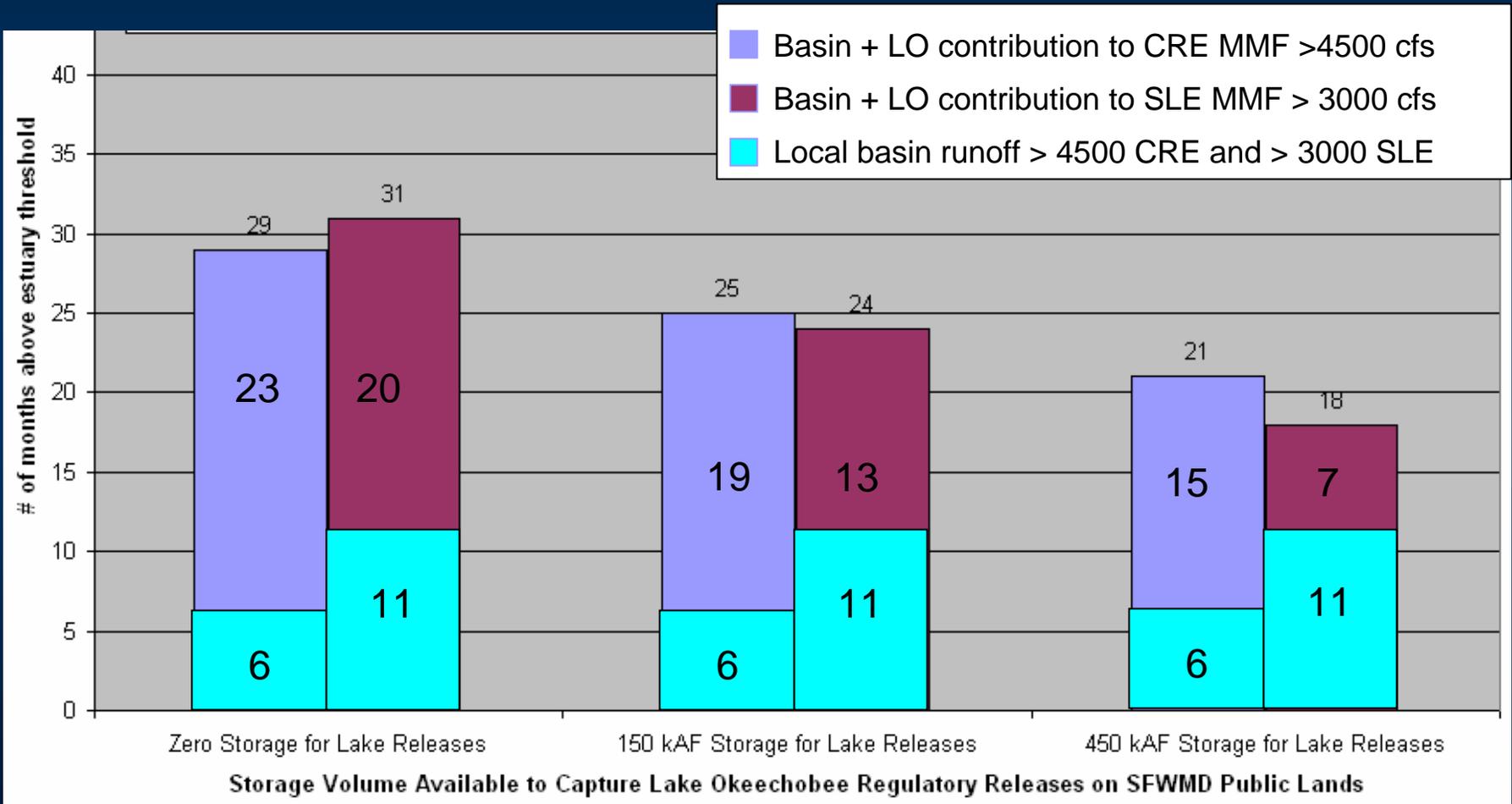
SFWMD Lands Water Storage Initiative

CRE flows >2800 cfs and SLE flows >2000 cfs



SFWMD Lands Water Storage Initiative

CRE flows >4500 cfs and SLE flows >3000 cfs



LORSS Schedule

<u>Task</u>	<u>Begin</u>	<u>End</u>
TSP Brief/ Corporate Board Approval		08 Dec. 2006
LORSS Public/Stakeholder Meeting on TSP	24 Jan 2007	and 08 Feb 2007
Revised Draft SEIS and Operational Guidelines	8 Dec 2006	08 Feb 2007
Revised DSEIS in Fed Register	09 Mar 2007	
45 Day Public Comment Period begins	09 Mar 2007	23 Apr 2007
NEPA and WCP Public Meetings	02 Apr 2007	05 April 2007
Final SEIS compiled	24 Apr 2007	16 May 2007
Final SEIS in Fed Register	01 Jun 2007	
30 Day public comment period of FSEIS	01 Jun 2007	30 Jun 2007
FSEIS/ROD & WCP to SAD	10 July 2007	

Public Comments

Jacksonville District website
www.saj.usace.army.mil

Project Manager Pete Milam
j.p.milam@saj.usace.army.mil

U.S. Army Corps of Engineers
Jacksonville District
701 San Marco Blvd.
Jacksonville, FL 32207-8175

Questions?

