

*Water Resources Advisory Commission
Lake Okeechobee Committee
February 24, 2010*

Adaptive Protocols For Lake Okeechobee Operations

Status Update

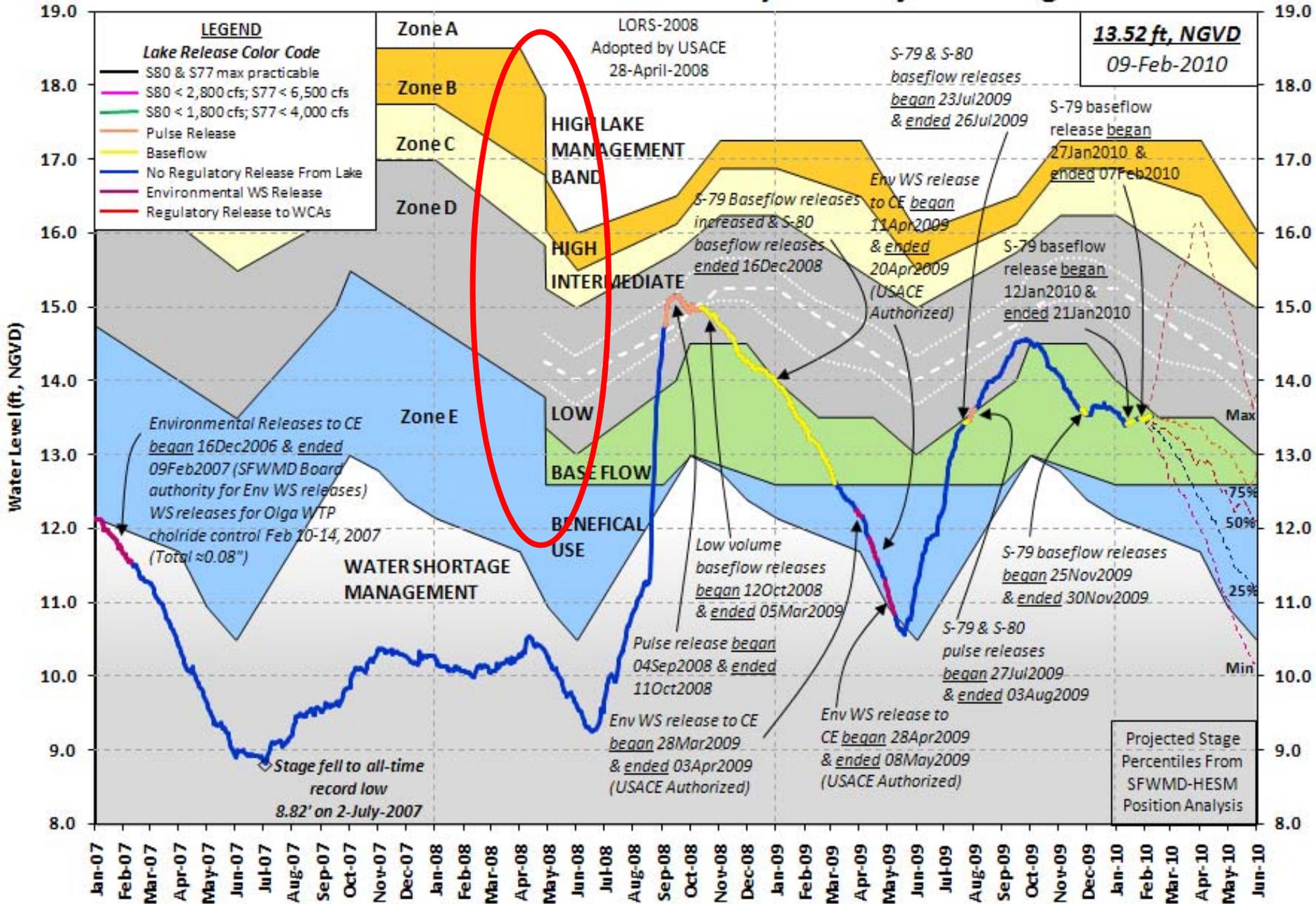
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2003 Adaptive Protocols Summary

- Identify specific discharge amounts in the Water Supply and Environment (WSE) regulation schedule where the schedule indicates an “up to” amount
- Aim to maximize benefits to environment without increased risk to water supply
- Allow environmental water deliveries to downstream ecosystems, not exceeding 300 cfs unless approved by the Governing Board, and only in Zone D or above
- Take advantage of opportunities where the WSE schedule calls for releases to the WCAs to provide freshwater to meet demands of the estuaries

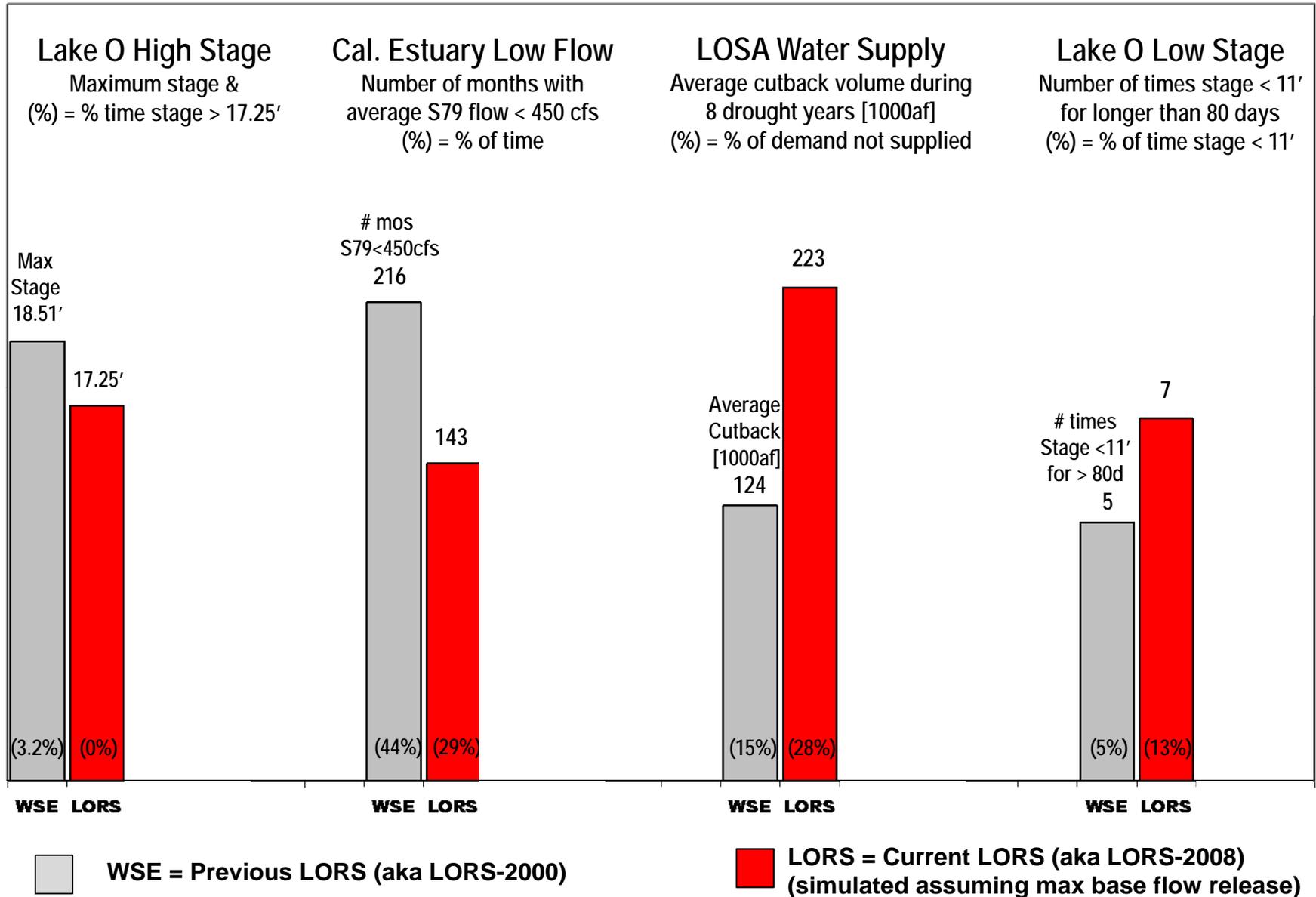


Lake Okeechobee Water Level History and Projected Stages



Performance Comparison (41-yr simulation)

WSE v. LORS



Draft Guiding Principles

Key Components

- Balance water supply, flood protection, and environmental protection
- Provide guidance where releases are expressed as a range of volumes, i.e. “up to 2000 cfs”
- Identify opportunities for “win-win” or “win-neutral” improvements
- Provide guidance on environmental deliveries to the estuaries in the Base Flow and Beneficial Use subbands



Adaptive Protocols

Areas of Consensus

- Clarify advisory role for SFWMD to make release recommendations to the USACE
- Recommend to the USACE to be “conservative” in releases in the Low subband at the beginning of the dry season as long as it does not impact dike safety (verify with modeling)
- Develop release decision flow chart for guiding releases in the Base Flow and Beneficial Use subbands



Stakeholder Suggestion #1

- Limit LORS-2008 releases (except low level release) to 50% of maximum limit when stage is within the Low subband during dry season
- Objective was to refrain from maximum releases during the early dry season in order to conserve water for the late dry season

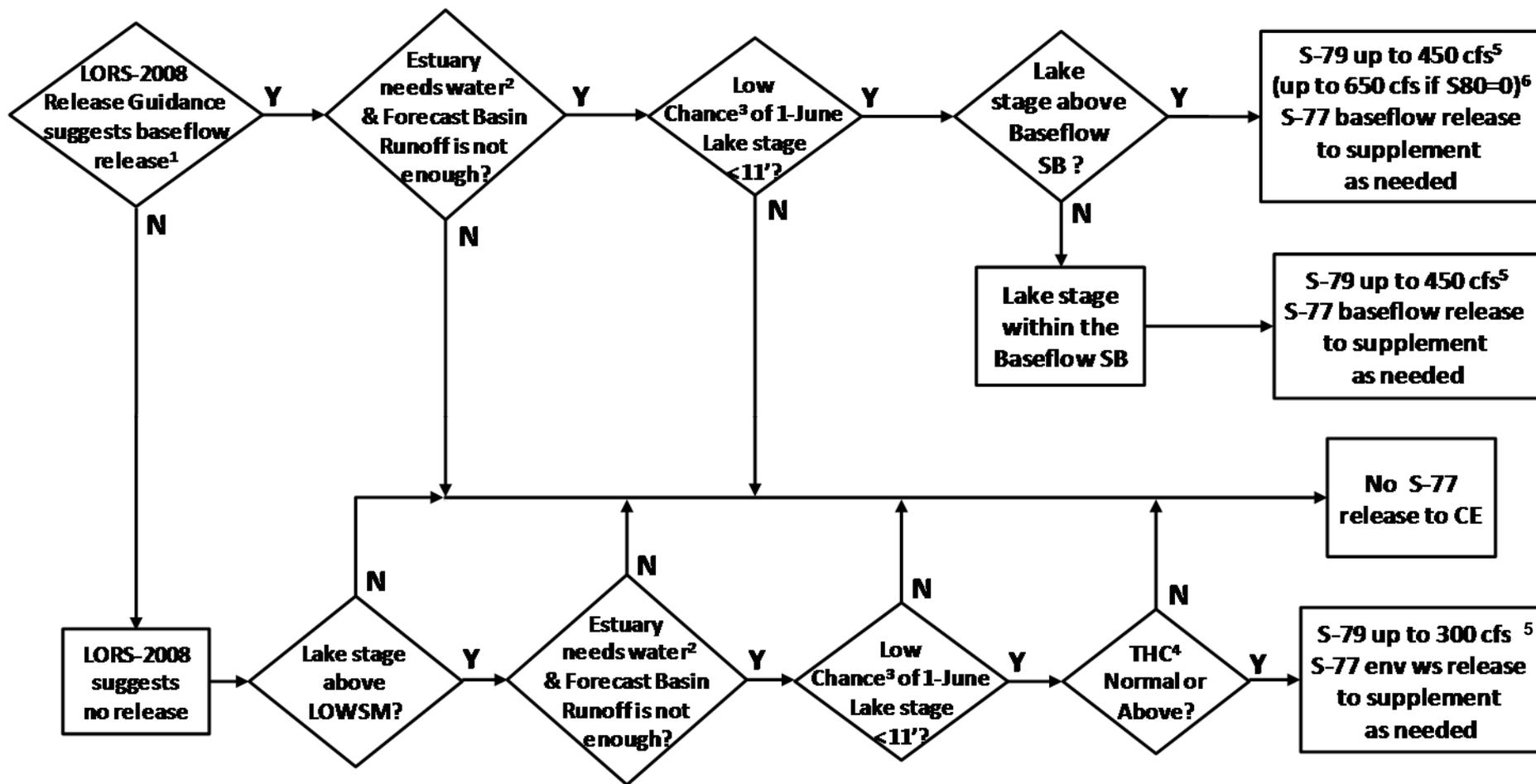


SFWMD Staff Proposed Protocol

- Provide additional release guidance to maximize benefits of low level releases and minimize adverse impacts to:
 - Lake Okeechobee water levels
 - permitted water supply users
- Protocol provided in a flowchart as suggested by stakeholders during previous Adaptive Protocols Issue Team meetings
- “Bookend Simulations” performed to bracket the range of possible performance from proposed protocols



Flowchart to Guide Recommendations for Lake Okeechobee Releases to the Caloosahatchee Estuary for LORS-2008 Baseflow & for Environmental Water Supply



¹The LORS-2008 Release Guidance (Part D) can suggest baseflow releases in the Intermediate, Low, or Baseflow Subbands.

²For simulation testing, estuary “needs” water when 30d moving avg. salinity at I-75 bridge is projected to exceed 5psu within 2 weeks.

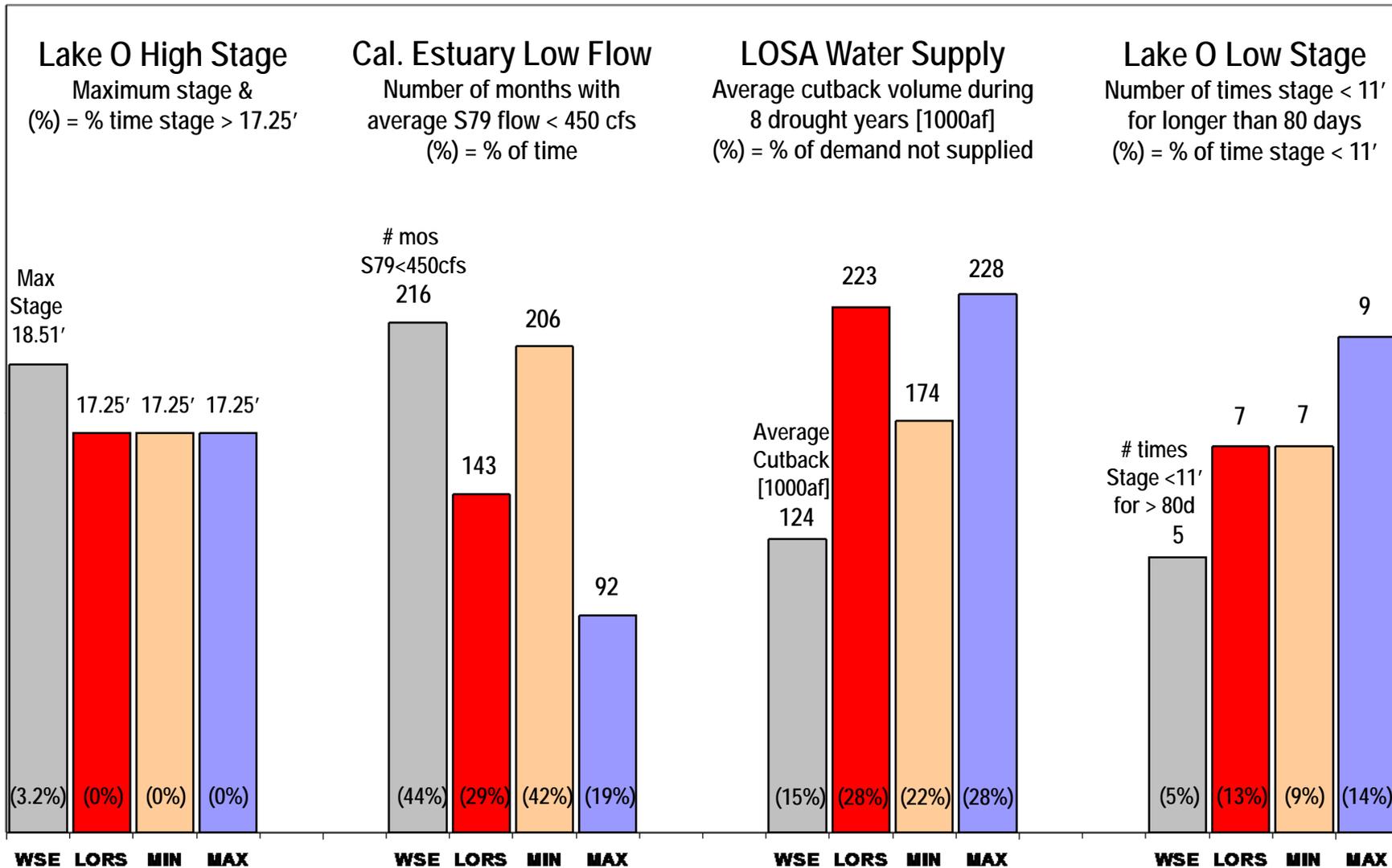
³For simulation testing, “Low chance” is defined as less than a 30% chance that the 1-June Lake stage falls below elevation 11.0', NGVD.

⁴THC = Tributary Hydrologic Condition is based on classification of Lake O Net Inflow and Palmer Index.

⁵Can release less than the “up to” limit if lower release is sufficient to reach or sustain desired estuary salinity.

⁶Based on confirmation that the St. Lucie Estuary does not need all or a portion of this baseflow

Performance Comparison (41-yr simulation)



WSE = Previous LORS (aka LORS-2000)
 LORS = Current LORS (aka LORS-2008) (simulated assuming max base flow release)

MIN = No base flow or Env WS from Lake O
 MAX = up to 650cfs base flow (& up to 650 cfs Env. WS release in Beneficial Use subband)

Simulated Performance of Proposed Protocols

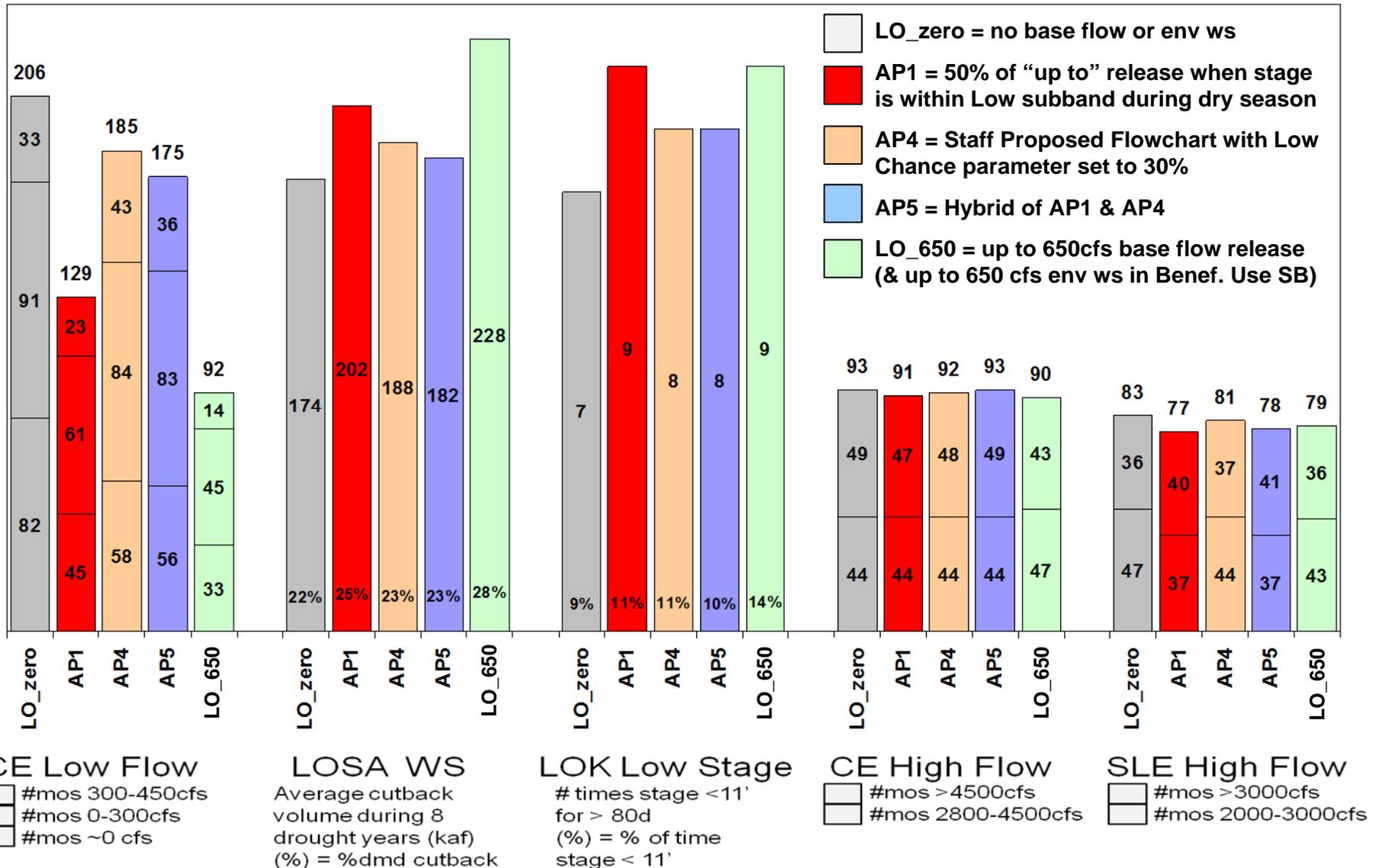
Simulations:

- LO_zero: zero base flow releases & zero Environmental water supply deliveries
- LO_650: up to 650 cfs base flow releases in the Base Flow subband & up to 650 cfs environmental water supply deliveries in the Beneficial Use subband
- AP1: Stakeholder Suggestion #1
- AP4: Staff Proposal (Low Chance parameter = 30%)
- AP5: Hybrid of AP1 & AP4



Performance Summary (Stakeholder & Staff Proposals & Hybrid)

Summary of Simulated Performance



Summary and Conclusions

- Simulated performance of all proposed protocols falls within the bounds set by the LO_zero and LO_650 “Bookend Simulations”
- AP5 shows promising results
 - Integrates dry season conservative release strategy for the Low subband with the potential for releases in Base Flow & Beneficial Use subbands
 - Performance generally improved compared to the original stakeholder & staff proposals (synergistic effect)
- Work underway to integrate recently developed salinity regression models into the LOOPS Model
 - Goal is to produce salinity-based performance measures



Outstanding Stakeholder Concerns

- Impact of low lake stages caused by shift to LORS 2008 on:
 - Water supply
 - Lake Okeechobee Minimum Flow & Level
- Existing legal rights of permitted water users
- Estuary environmental needs



THANK YOU!