

Water Resources Advisory Commission
November 7, 2013

Adaptive Protocols for Lake Okeechobee Operations

Water Conditions and Operations: Past, Present and 2013-14 Dry Season Outlook

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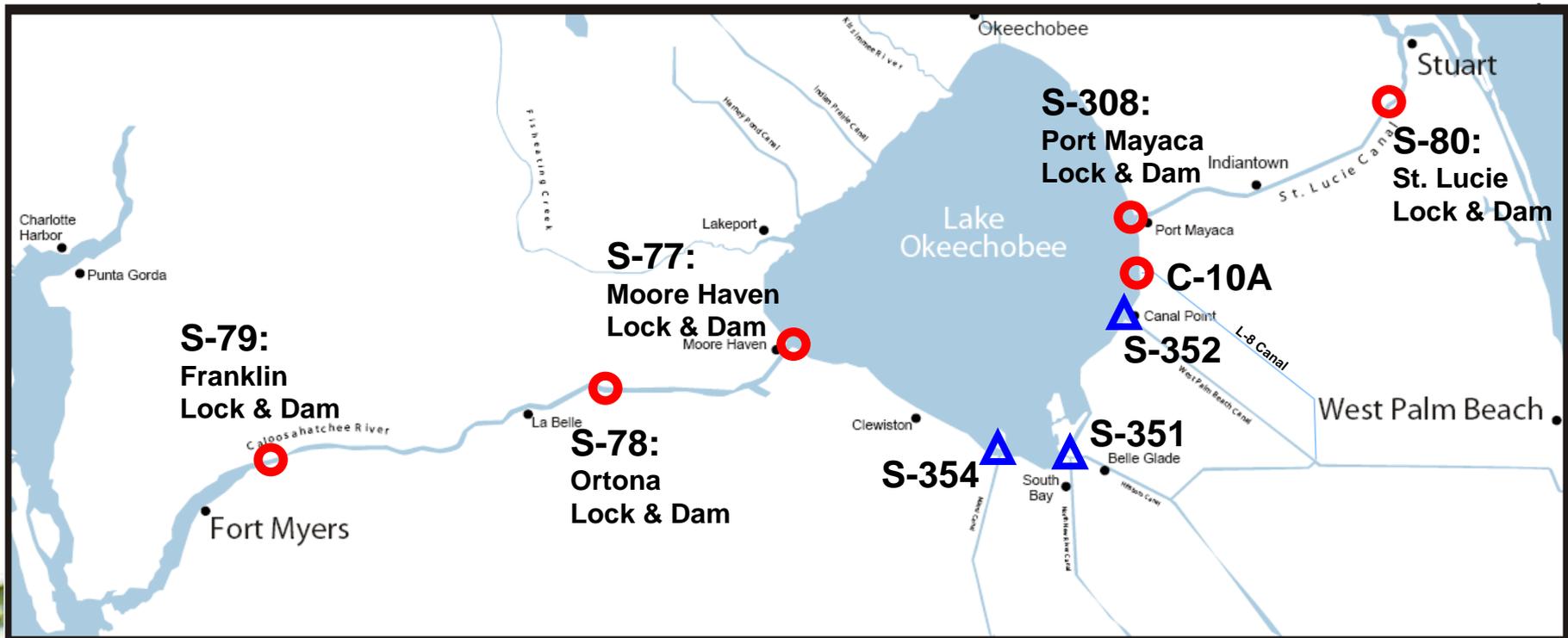
Topics

- 1. Brief Background**
- 2. Summary of 2013 Wet Season Water Conditions & Operations**
- 3. Current Water Conditions & Operations**
- 4. 2013-14 Dry Season Outlook and Tentatively Planned Operations**

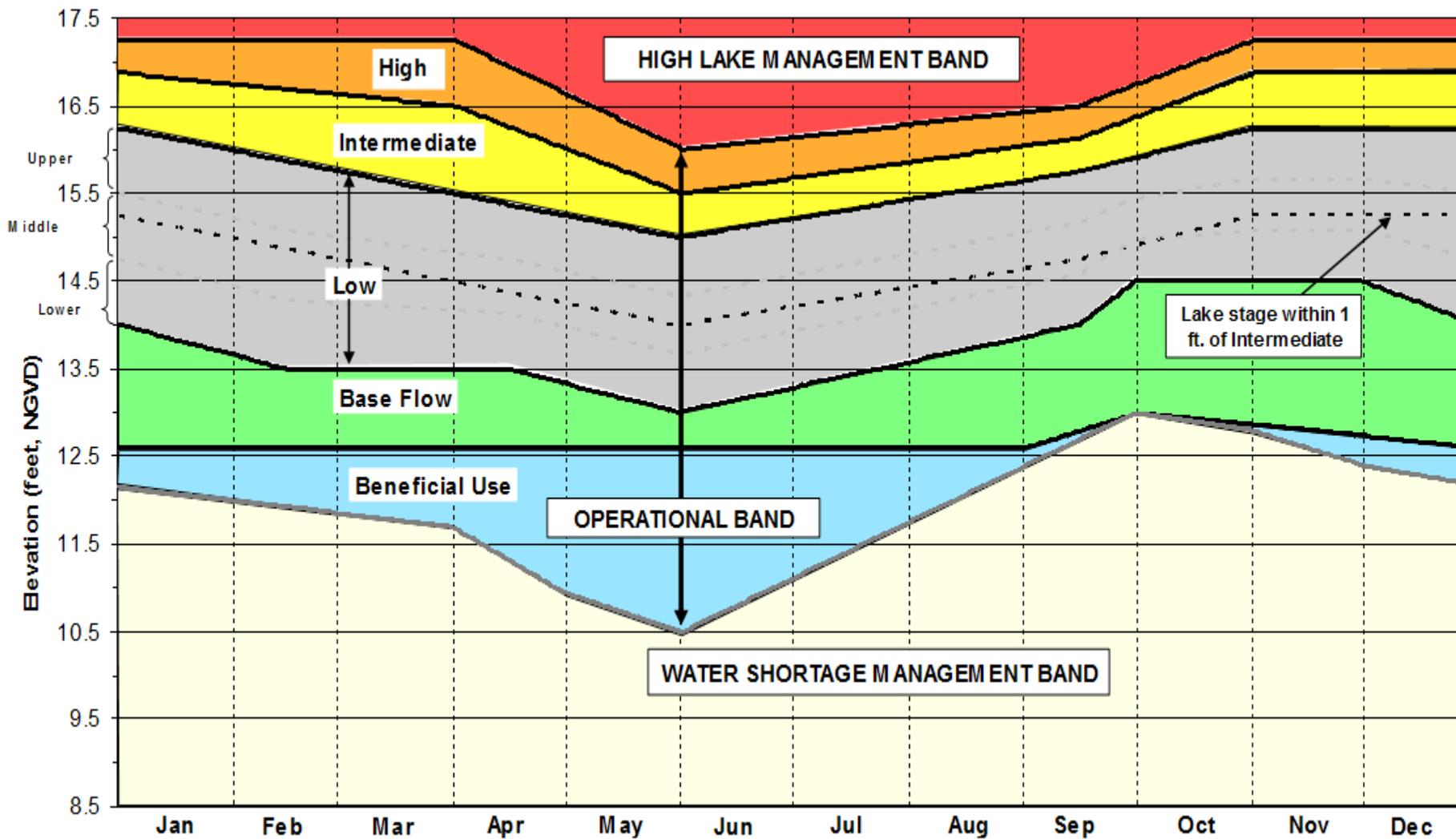
Part 1. Brief Background on Lake O Operations

Lake Okeechobee Outlet Structures

Lake Okeechobee outlet structures managed
by the USACE (red o) and the SFWMD (blue Δ)



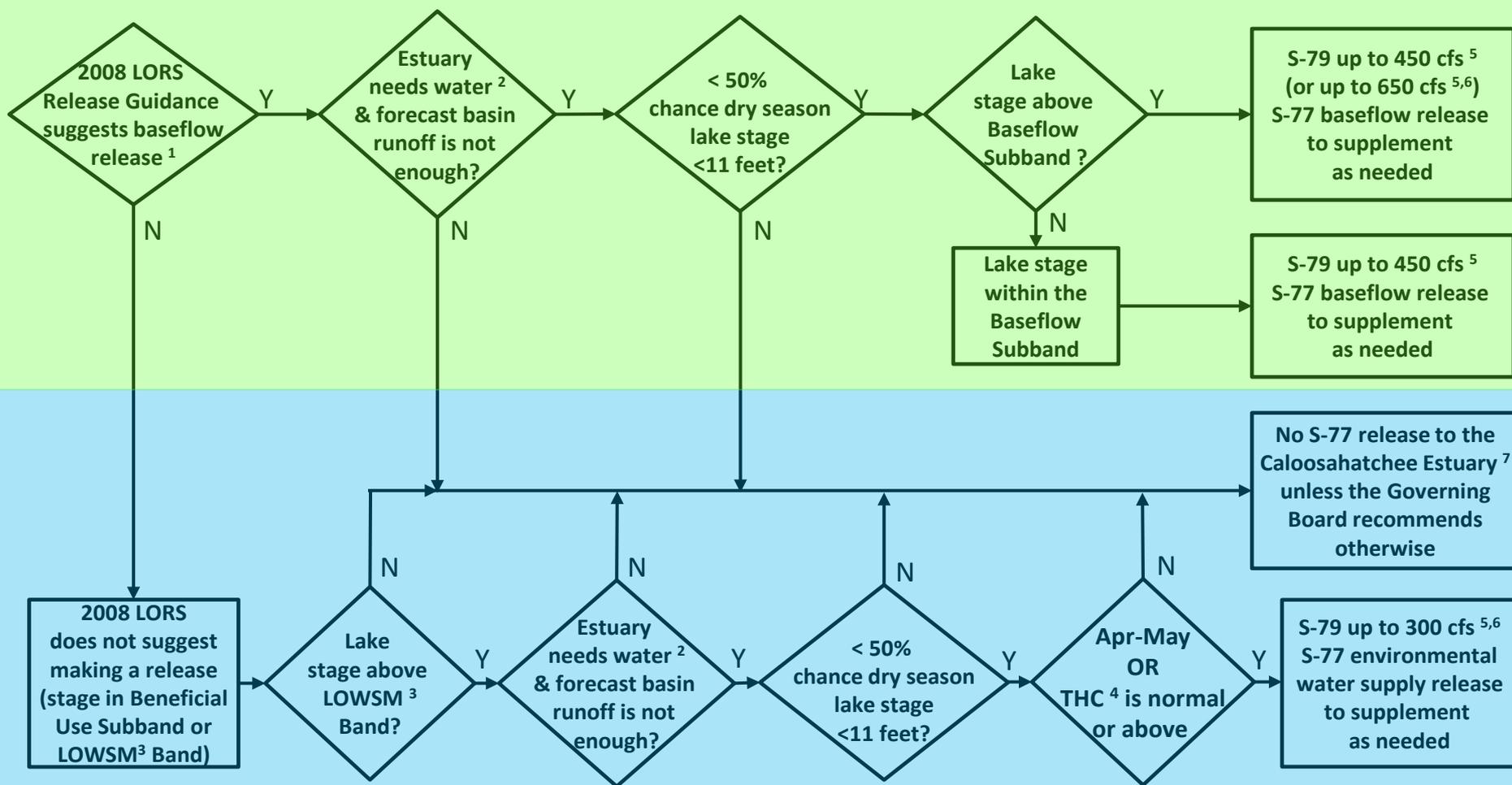
2008 Lake Okeechobee Interim Regulation Schedule (aka LORS-2008)



What are the Lake O Adaptive Protocols (AP)?

- AP document (16-Sep-2010) provides operational guidance to SFWMD and a framework for making Lake O release recommendations to the USACE
- Recommends the USACE make “conservative” releases in the Low Subband at the beginning of the dry season (if no impact to HHD safety)
- Flowchart used to guide SFWMD recommendations for Lake O Releases to the Caloosahatchee Estuary
 - for 2008 LORS Baseflow
 - for Environmental Water Supply
- Flowchart designed primarily to achieve SFWMD Governing Board-approved water supply balance between permitted water users, Caloosahatchee Estuary, and the Lake O MFL

Flowchart to Guide Recommendations for Lake Okeechobee Releases to the Caloosahatchee Estuary for 2008 LORS Baseflow & for Environmental Water Supply (revised 9-Aug-2012)



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

²Estuary “needs” water when the 30-day moving average salinity at I-75 bridge is projected to exceed 5 practical salinity units (psu) within 2 weeks.

³LOWSM = Lake Okeechobee Water Shortage Management.

⁴Tributary Hydrologic Condition (THC) is based on classification of Lake Okeechobee 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; cfs = cubic feet per second.

⁶After reviewing conditions in Water Conservation Areas (WCAs), Stormwater Treatment Areas (STAs), ENP, St. Lucie Estuary and Lake Okeechobee.

⁷Should this condition be reached, the Governing Board will be briefed at their next regularly scheduled meeting as part of the State of the Water Resources agenda item.

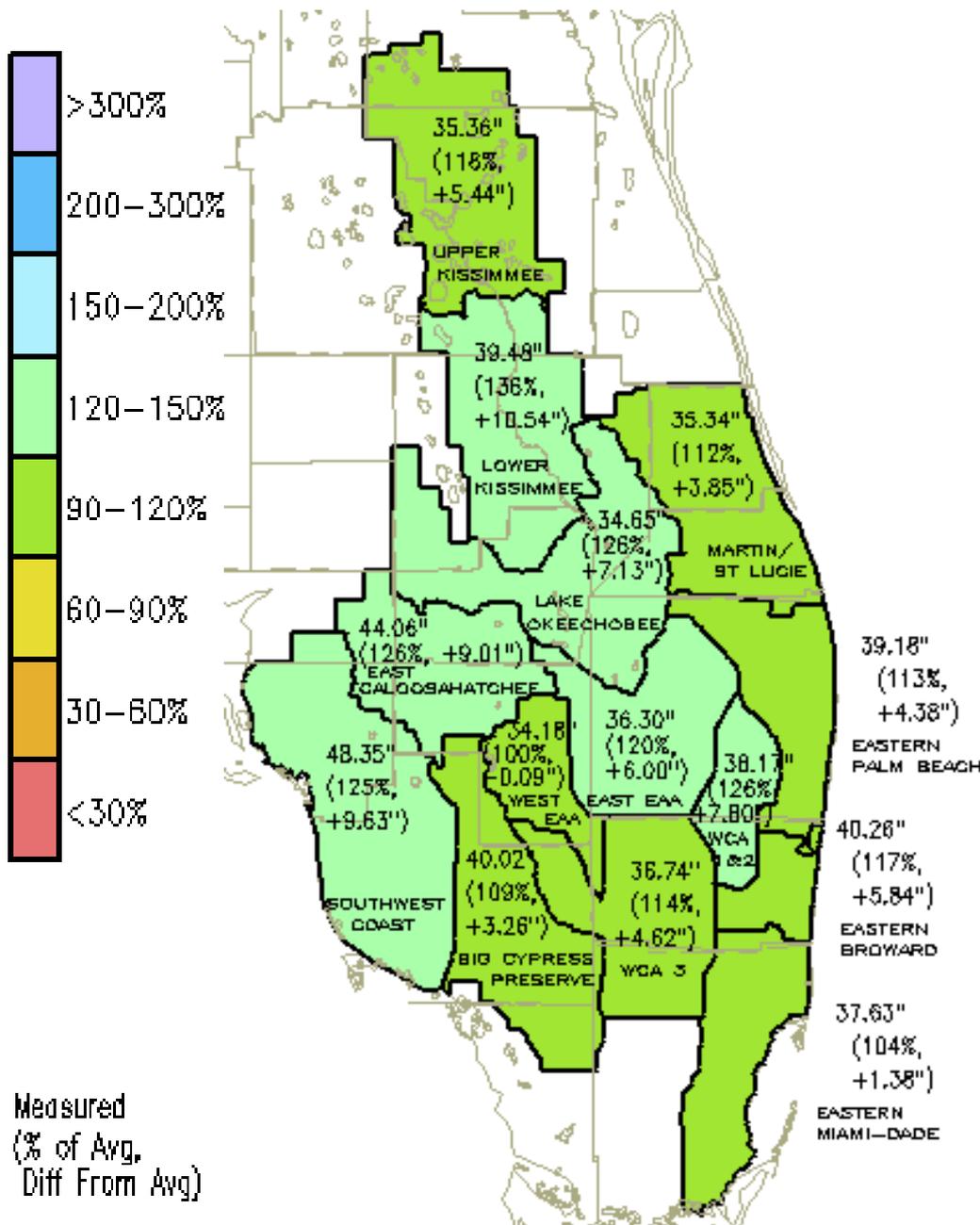
Part 2. 2013 Wet Season Water Conditions & Operations

Wet Season Rainfall

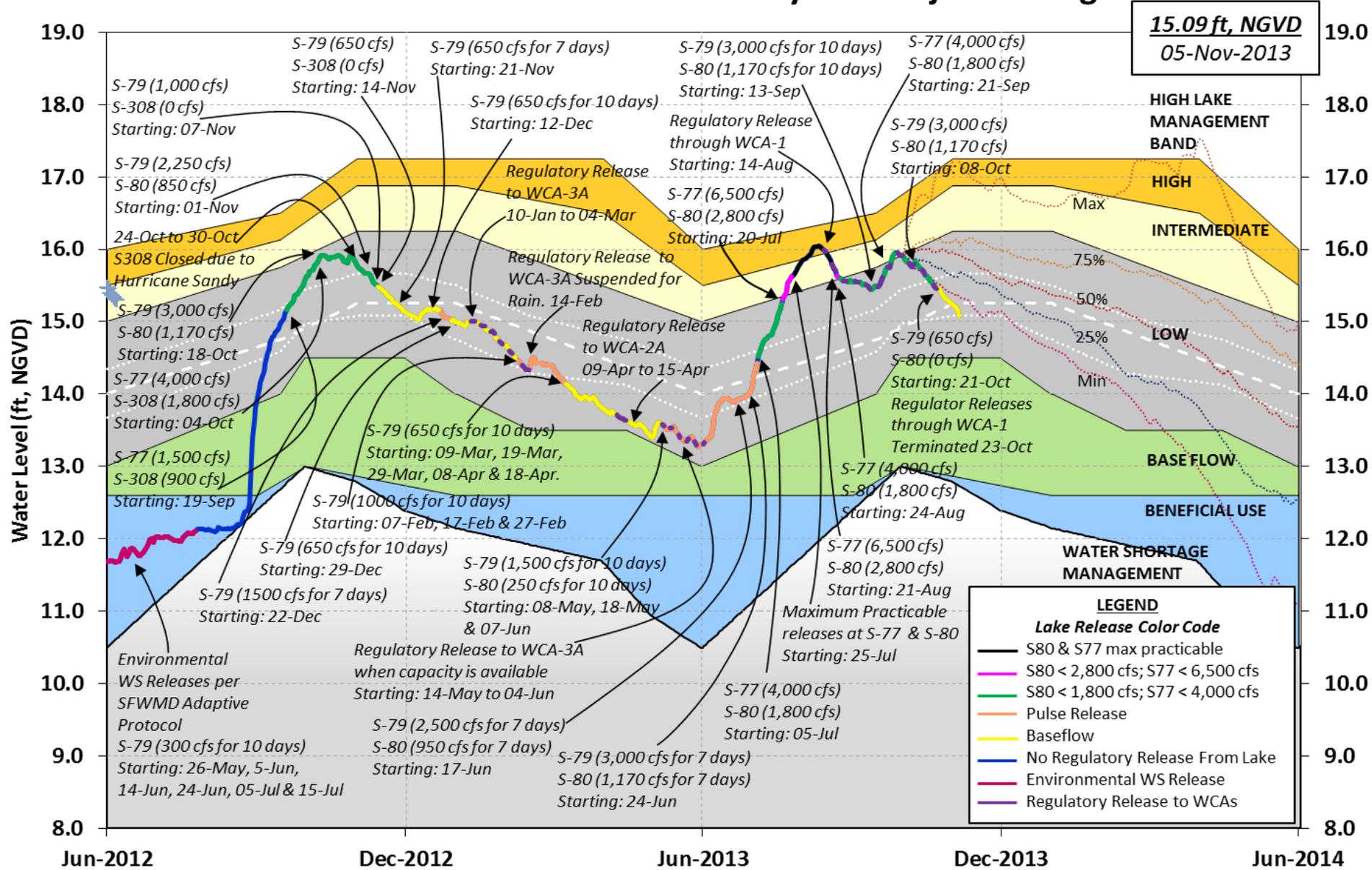
May 18 2013 – Oct 8 2013

DISTRICT-WIDE: 38.99"
(120% of Avg, or +6.37")

- Wet Season Started Early and Ended Early
 ~ May 18th – Oct 8th
- All basins > average
- April-July was record high (9-10" > average)
- August was dry (2" < average)
 September was near average
- April-September period with 45.2" was the wettest since 1960 (53-yr period)
- October was 2.4" < average



Lake Okeechobee Water Level History and Projected Stages

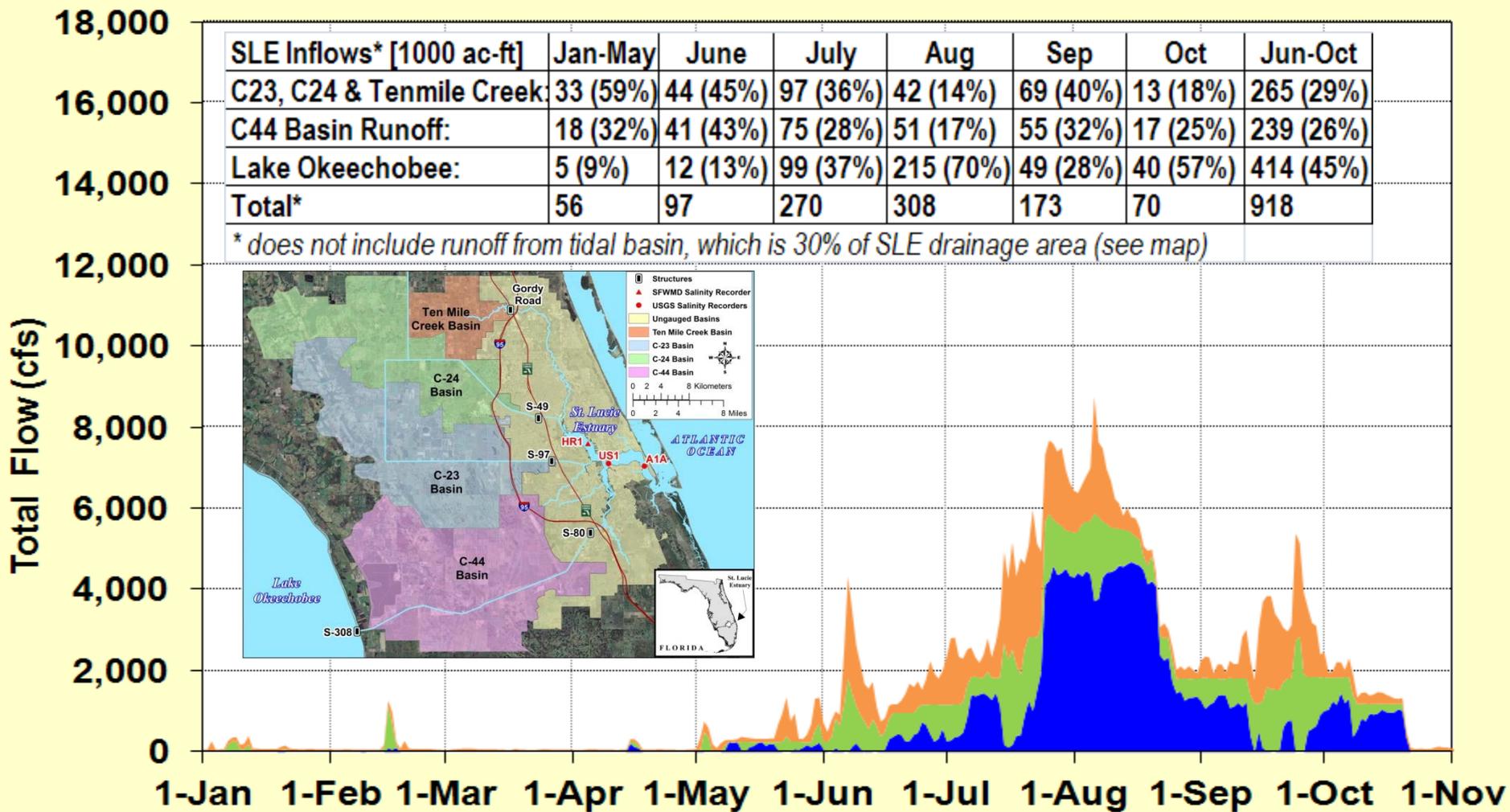


LORS-2008

Adopted by USACE 28-April-2008

Projected Stage Percentiles From
SFWMD-HESM Position Analysis

2013 Discharges: St. Lucie Estuary



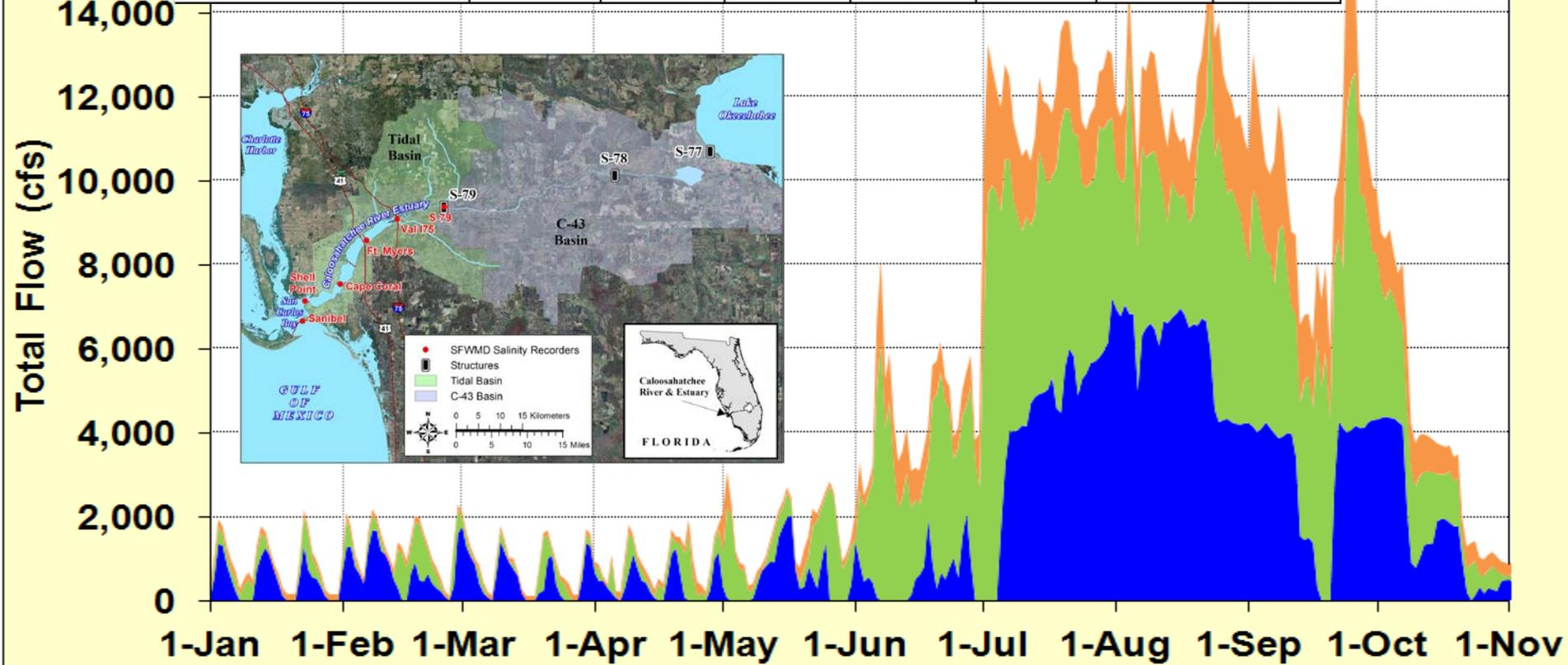
■ Inflow from C-24, C-23, and Tenmile Creek Basins*
Does not include runoff from tidal basin or groundwater
■ C-44 Basin Runoff
■ Inflow from Lake

Data through Oct 31st

Data are provisional and subject to change

2013 Discharges: Caloosahatchee Estuary

CRE Inflows [1000 ac-ft]	Jan-May	June	July	Aug	Sep	Oct	Jun-Oct
Tidal Basin (estimated):	49 (14%)	49 (19%)	120 (17%)	121 (16%)	129 (21%)	49 (20%)	469 (18%)
C43 Basin Runoff:	124 (36%)	173 (67%)	338 (47%)	252 (34%)	287 (48%)	92 (37%)	1142 (45%)
Lake Okeechobee	170 (50%)	34 (13%)	257 (36%)	369 (50%)	187 (31%)	106 (43%)	953 (37%)
Total	343	256	715	742	603	248	2563

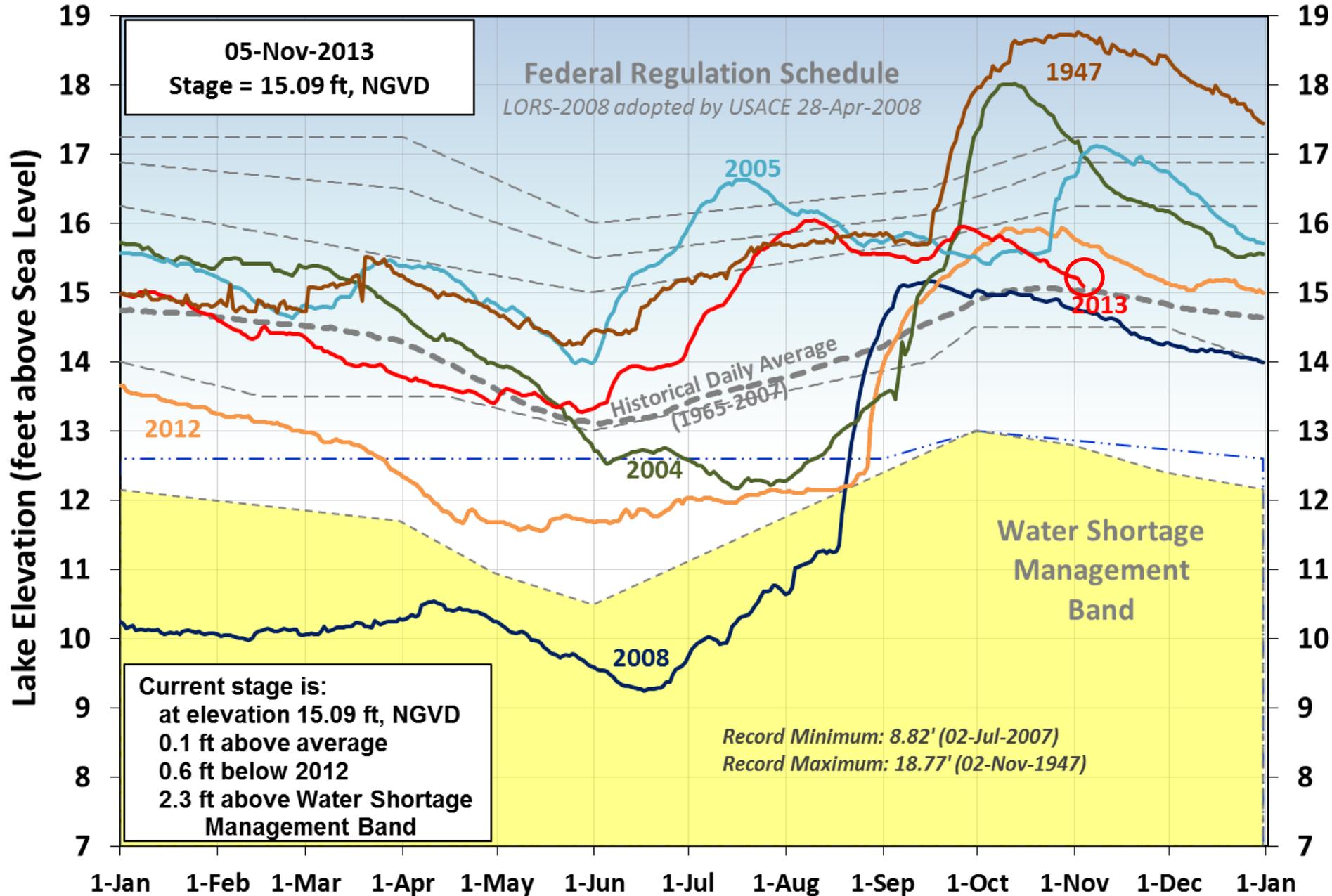


■ Inflow from Lake *Data through Oct 31st*
■ C-43 Basin Runoff
■ Tidal Basin Runoff (downstream of S-79)

Data are provisional and subject to change

Part 3. Current System Water Conditions & Operations

Lake Okeechobee Water Level Comparison



Lake Okeechobee: Current Operations

- **USACE's Lake O Regulation Schedule (2008 LORS)**
 - Stage (~15.1 feet, NGVD) and receding in the lower third of the Low Subband
 - Tributary Hydrologic Condition (THC) is in the normal classification
 - Seasonal Lake O Net Inflow Outlook is in the dry classification
 - Current week release guidance outcome:
 - S-79: up to 450 cfs
 - S-80: up to 200 cfs
 - Up to maximum practicable to the WCAs if desirable or with minimum Everglades impacts
 - USACE current operations: S-79: 650 cfs; S-80: 0 cfs
 - No Lake O regulatory releases to the WCAs
- **SFWMD's Lake O Adaptive Protocol (2010)**
 - Will be the basis for SFWMD recommendations as the Lake stage recedes into the Baseflow Subband of the 2008 LORS

Part 4.
2013-14 Dry Season Outlook &
Tentatively Planned Operations

U. S. Seasonal Precipitation Outlook

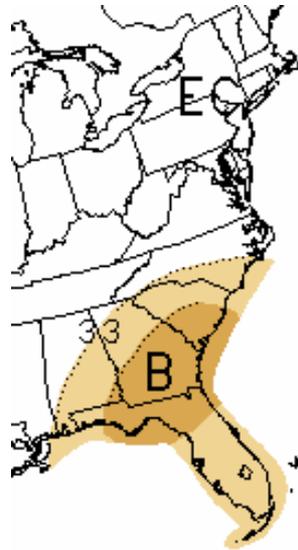
National Climate Prediction Center (CPC)

Oct 2013



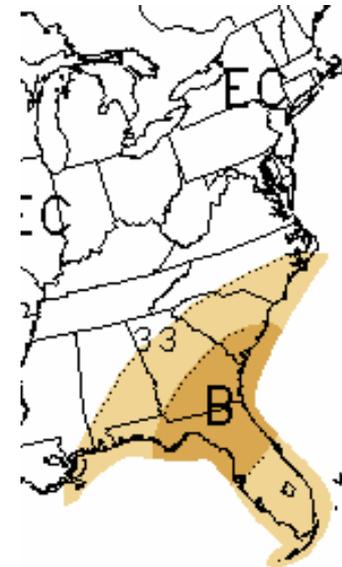
Posted 31-Oct-2013

Nov-Jan 2013



Posted 17-Oct-2013

Jan - Mar 2014



Posted 17-Oct-2013

The most-recent CPC precipitation outlooks for central & southern Florida indicate:

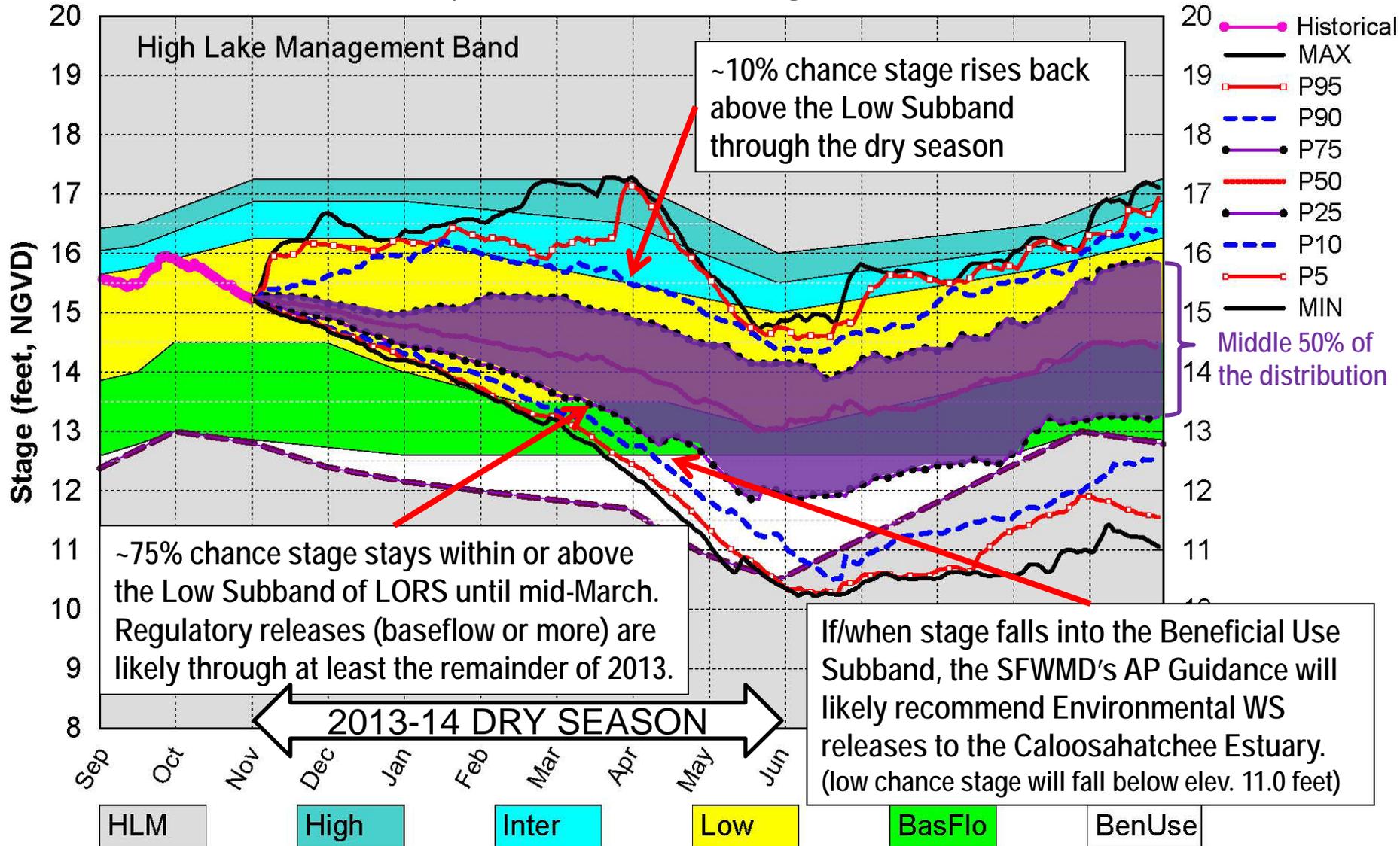
- Equal Chances (EC) of Above-Normal (A), Normal, and Below-Normal (B) rainfall for November,
- Increased chances of Below-Normal (B) rainfall for all 3-month windows starting with November and ending with March

Lake Okeechobee Stage Forecast

- **Future Lake stage depends on future rainfall**
- **Projections provided monthly by SFWMD Hydrologic and Environmental Systems Modeling (HESM) Section**
- **Position Analysis**
 - **Each 1-year simulation starts with current hydrologic conditions (e.g, 1-November)**
 - **41 1-yr simulations of system response to historical rainfall conditions**
 - **Statistical summaries used to display projections**

Lake Okeechobee SFWMM November 2013 Position Analysis

Percentiles based on 41 possible outcomes starting with Nov 1st initialization



(See assumptions on the Position Analysis Results website)

Tentatively Planned Operations (Nov-May)

- **The USACE plans to continue releases per the 2008 LORS**
- **Currently, releases through S-79 combines baseflow levels (650 cfs) for both Caloosahatchee and St. Lucie Estuaries**
- **If Lake O stage recedes below the Low Subband, consideration will be given to the SFWMD's Adaptive Protocol recommendations**



Questions??

