

Dynamic Position Analysis for December 1, 2024

SFWMM Model Simulation of 52 years (1965-2016)

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December 1, 2024 Dynamic Position Analysis Modeling Assumptions

- The December 1, 2024 Dynamic Position Analysis (DPA) simulation is based on historical climatic conditions spanning the period 1965-2016. This DPA posting is made with the South Florida Water Management Model (SFWMM) v7.3.3.
- The December 1, 2024 DPA resets the initial stages for Lake Okeechobee (LOK) and the Water Conservation Areas (WCAs) on November 1st of each year of the DPA simulation and conditions the simulation to real time data during November to achieve real time stages on December 1st for LOK and WCAs.
- The Lake Okeechobee operations follow the Lake Okeechobee System Operating Manual (LOSOM). Modeling assumptions are consistent with modeling performed for LOSOM Supplemental Environmental Impact Statement (SEIS).
- LOK Temporary Forward Pump operations will be in place, whenever necessary, to improve water supply deliveries from LOK under low LOK stages.
- STA surface area values are modified to reflect current flowways under operation. STA depths are maintained to a minimum of 6 inches using Lake Okeechobee releases.

Modeling Assumptions Cont.

- Lake Okeechobee Water Shortage Management (LOWSM) is included in the simulation which reflects the current currently approved 40E-21 and 40E-22 water shortage rules.
- La Niña is favored to emerge during October-December (57% chance) and persist through January-March 2025.
- S-357 discharging to C111SD Northern Detention Area.
- WCA-3A is simulated using COP.
- To better approximate recent operational practices, flows south were increased within the discretion of LOSOM release guidance.

Lake Okeechobee Recovery Operations

Starting December 7 the U.S. Army Corps of Engineers (USACE) -Jacksonville District will begin releases under Lake Okeechobee Recovery Operations. The goal of recovery is to lower lake levels before the onset of the wet season to allow for recovery of lake ecology.

- SFWMM model assumptions for the December 1, 2024 DPA
 - Lake Okeechobee releases
 - 2100 cfs at S-79 to the Caloosahatchee River Estuary (CRE)
 - 750 cfs at S-80 to the St. Lucie Estuary (SLE)
 - 750 cfs is a regulatory release from Lake Okeechobee and therefore does not account for flow at S-97, S-49, or Gordy Road
 - Maximum practicable releases south

NOTE:

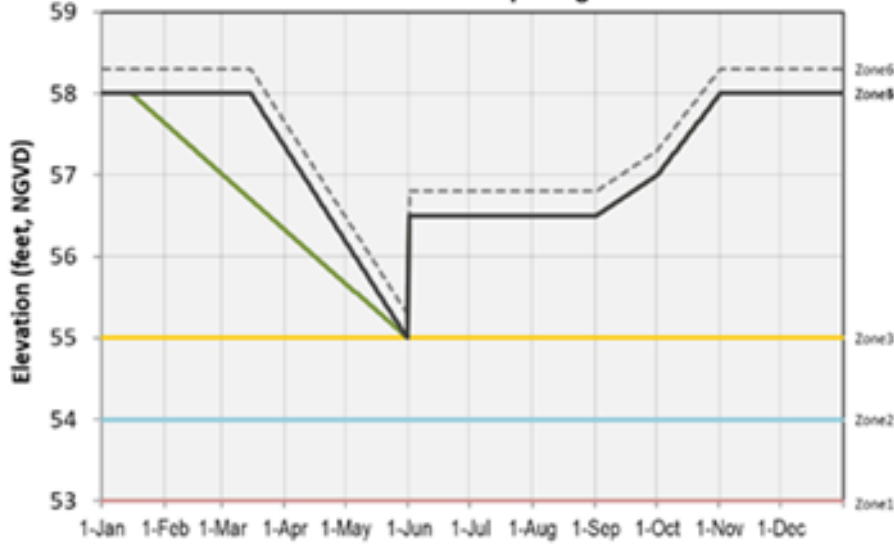
The above flow assumptions were applied to the entire simulation period and not just dry season, unlike the intention of RO. Hence, DPA-CPA results after June 1 are not applicable and masked for LO and downstream locations.

Upper Kissimmee Operations Screening (UK-OPS) Modeling Assumptions

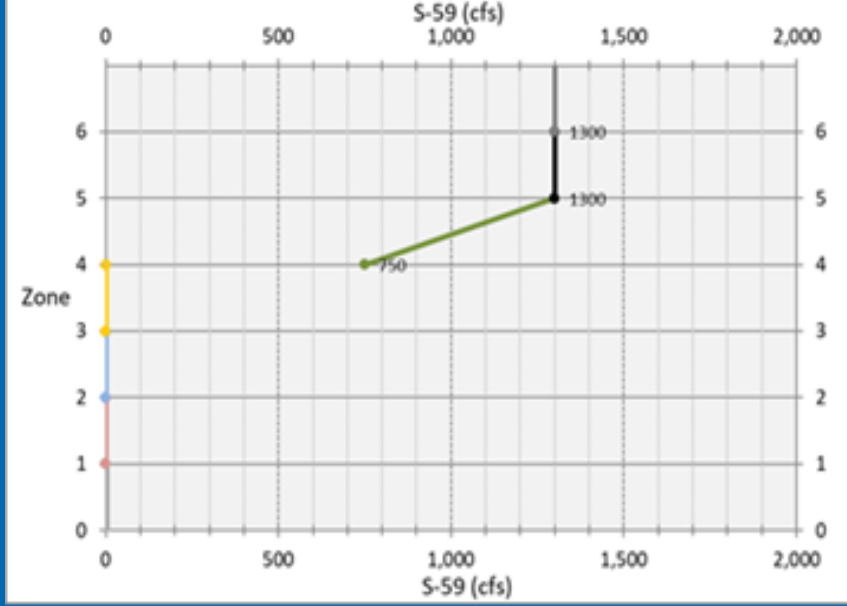
- All stages converted to NAVD88 were calculated based on offsets listed on Final Regulation Schedule Conversion (5/19/2020). NAVD88 axis applies only to regulation schedules and is plotted for informational purposes.
- The UK-OPS model is used for the simulation of the Upper Kissimmee Lakes and a rainfall-runoff regression model is used for the Lower Kissimmee Basin.
- Regulation schedule for KCH has been modified to the Kissimmee River Restoration Project Increment 1 Temporary Deviation regulation schedule per recommendations of river scientists
- Modeling assumptions for ETO and TOH for the 1-DECEMBER PA use the default regulation schedules with Snail Kite Recession Line.

- UK OPS Model assumptions for the 1_December_2024 PA
 - Hydrology (lake inflows) based on historical/observed stage and flow data from DBHYDRO (same assumptions since Jan 2016)
 - Regulation of East Lake Toho according to 1981 East Lake Toho Regulation Schedule with Snail Kite Recession Line (slide 5).
 - Regulation of Lake Toho according to Lake Toho Regulation Schedule with Snail Kite Recession Line (slide 5)
 - Regulation of Lakes Kissimmee, Cypress and Hatchineha is according to the Kissimmee River Restoration Project Increment 1 Temporary Deviation regulation schedule per recommendations of river scientists. Discharge rate of change limits apply except in flood control (slides 6) .

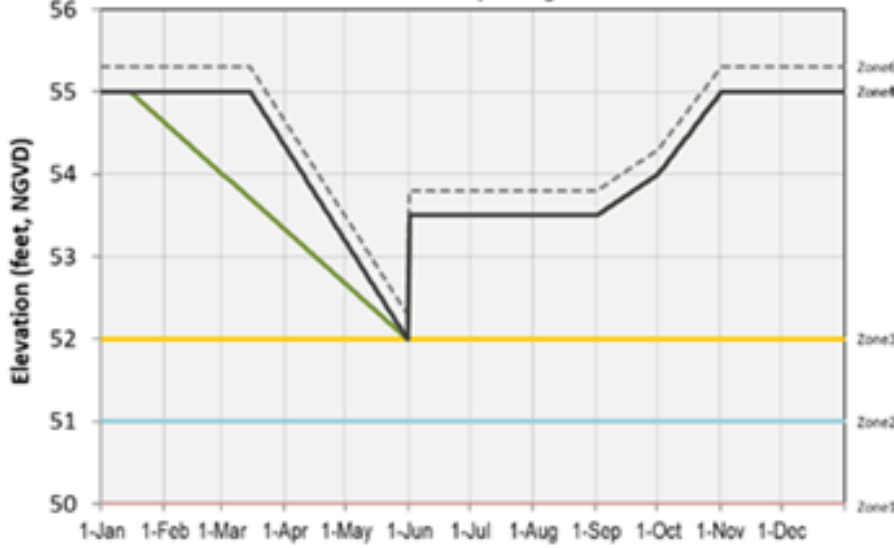
Operating Zones East Lake Tohopekalgia



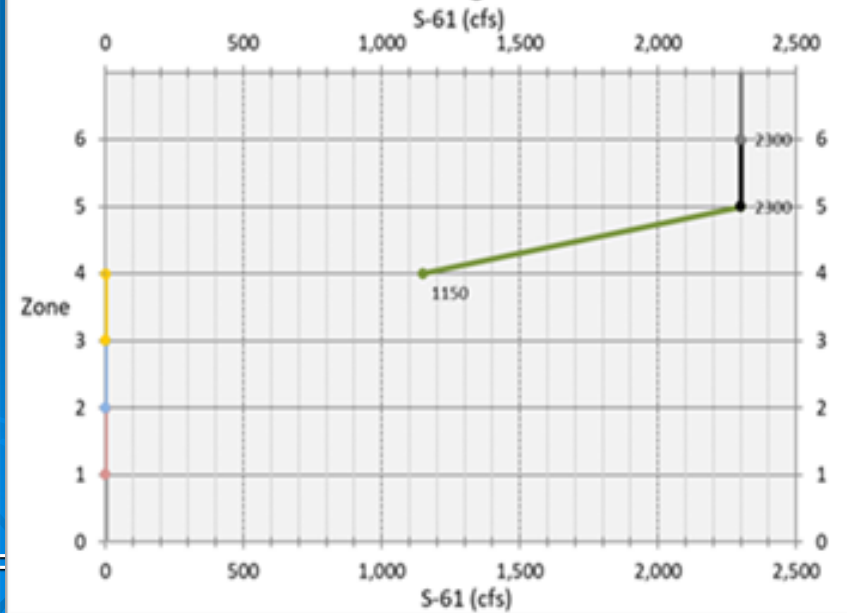
Zone Discharge Function

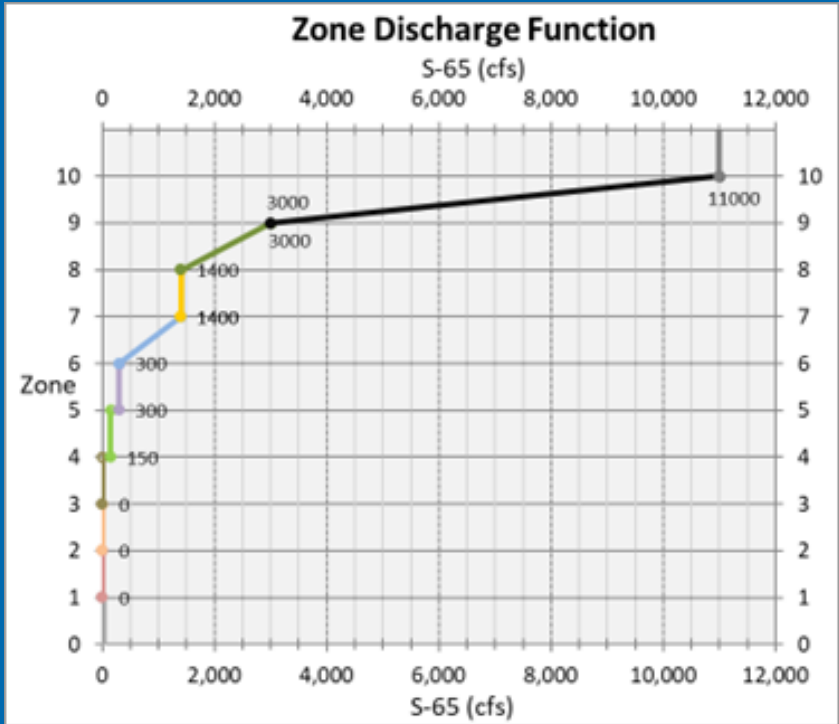
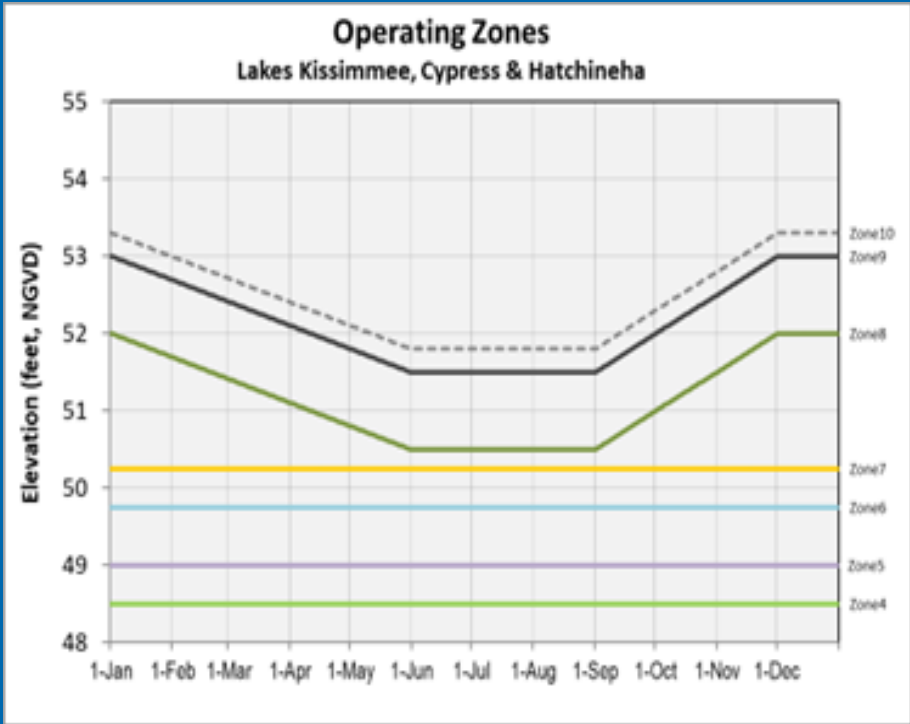


Operating Zones Lake Tohopekalgia



Zone Discharge Function





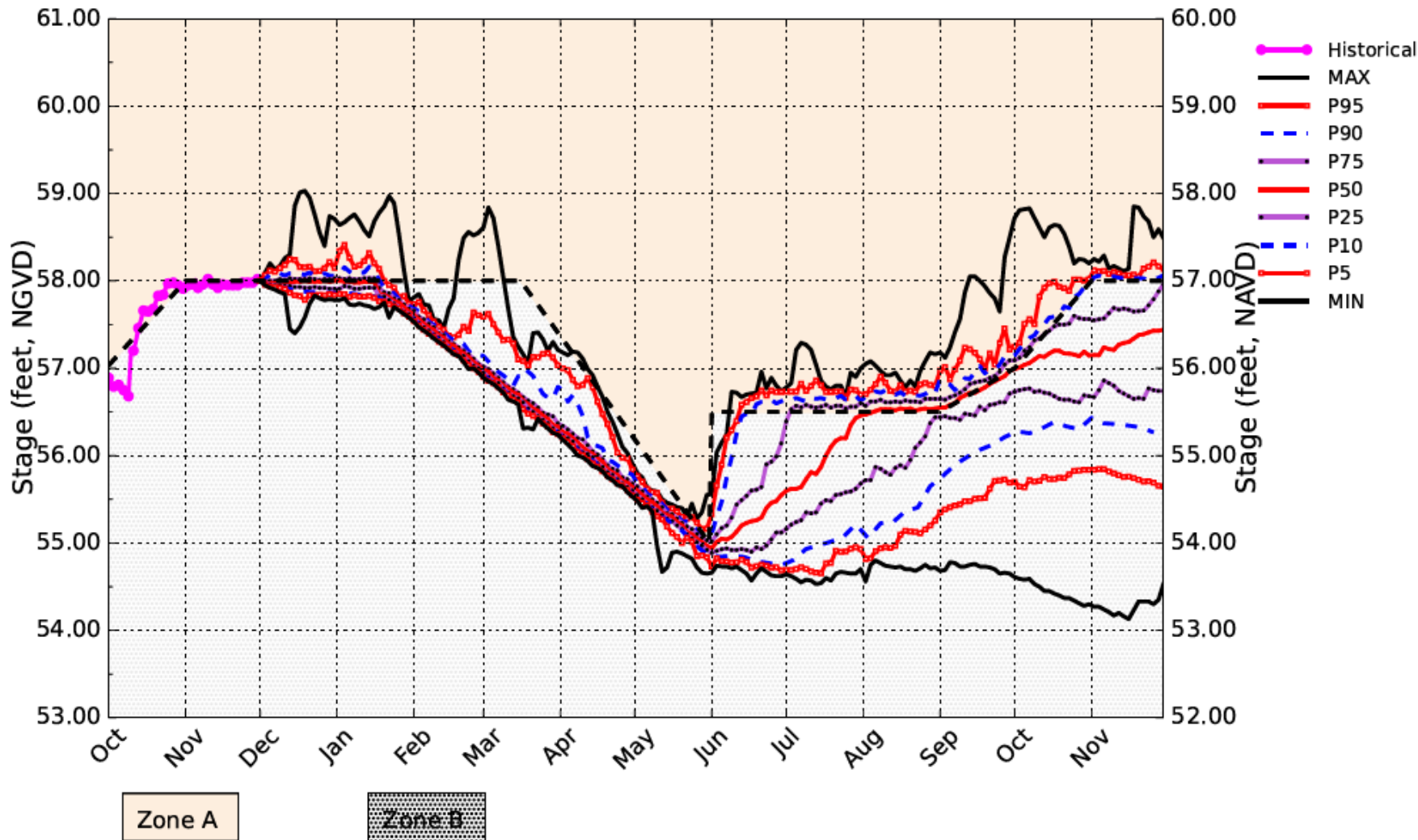
Dynamic Position Analysis



- Dynamic Position Analysis (DPA) is PA exposed to **recent** climatic and inflow conditions which allows for a better representation of initial conditions. The period of such an exposure is called the Warm Up Period (WUP) preceding the **PA Start Date**.
- DPA simulation is done by South Florida Water Management Model (SFWMM) based on historical climatic conditions spanning the period 1965-2016.
- During each of the 52 years, the SFWMM initializes stages for Lake Okeechobee and the Water Conservation Areas on the **Start Date of WUP**. It then utilizes real-time NEXRAD rainfall, S65E inflow and other boundary flows through the WUP such that the simulated stages on **PA Start Date** are as close as possible to the corresponding real-time values on the **PA Start Date**.
- The WUP enables the SFWMM to flush out initial condition issues prior to the start of the **PA Start Date**.
- Exposure to real time data during WUP reflects real time conditions and hence realistically represents memory persistence during the early days of DPA simulation.
- DPA by design allows for system's projection on any day of the month (not just the first day).
- DPA significantly improves the turnaround time of production.

S59_H UK-OPS Dec 1 2024 Position Analysis

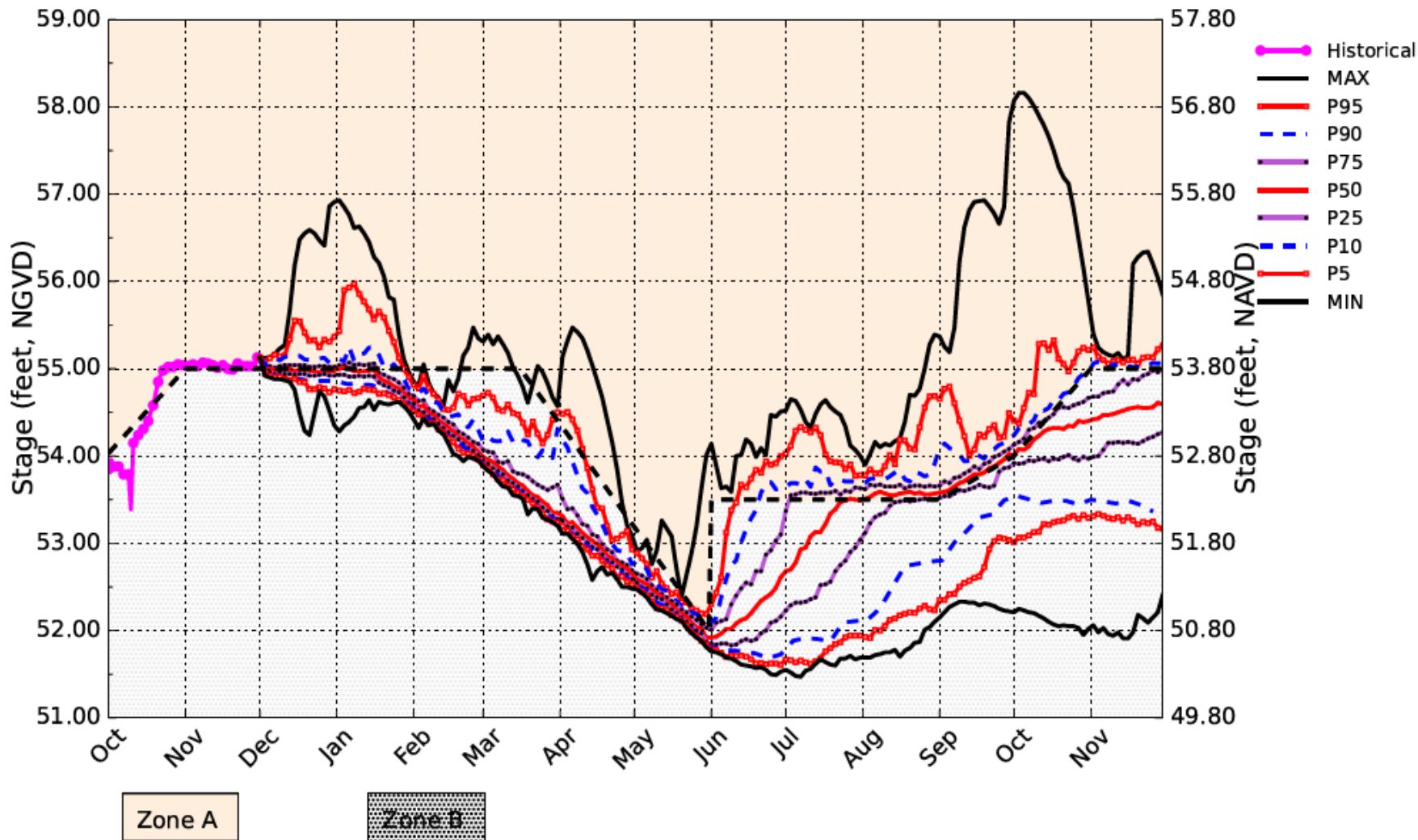
December 2024 Unconditional PA



(See assumptions on the Position Analysis Results website)

S61_H UK-OPS Dec 1 2024 Position Analysis

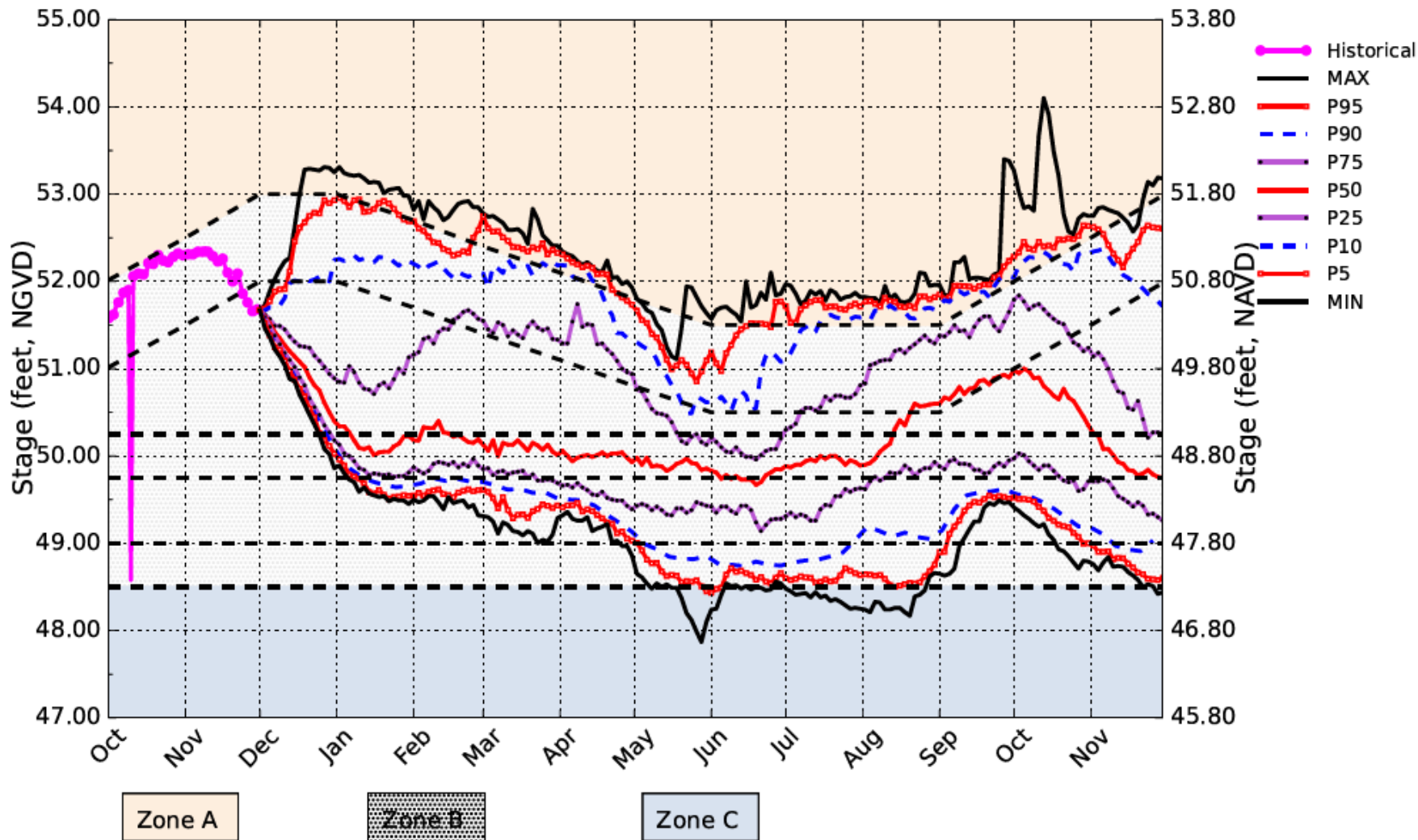
December 2024 Unconditional PA



(See assumptions on the Position Analysis Results website)

S65_H UK-OPS Dec 1 2024 Position Analysis

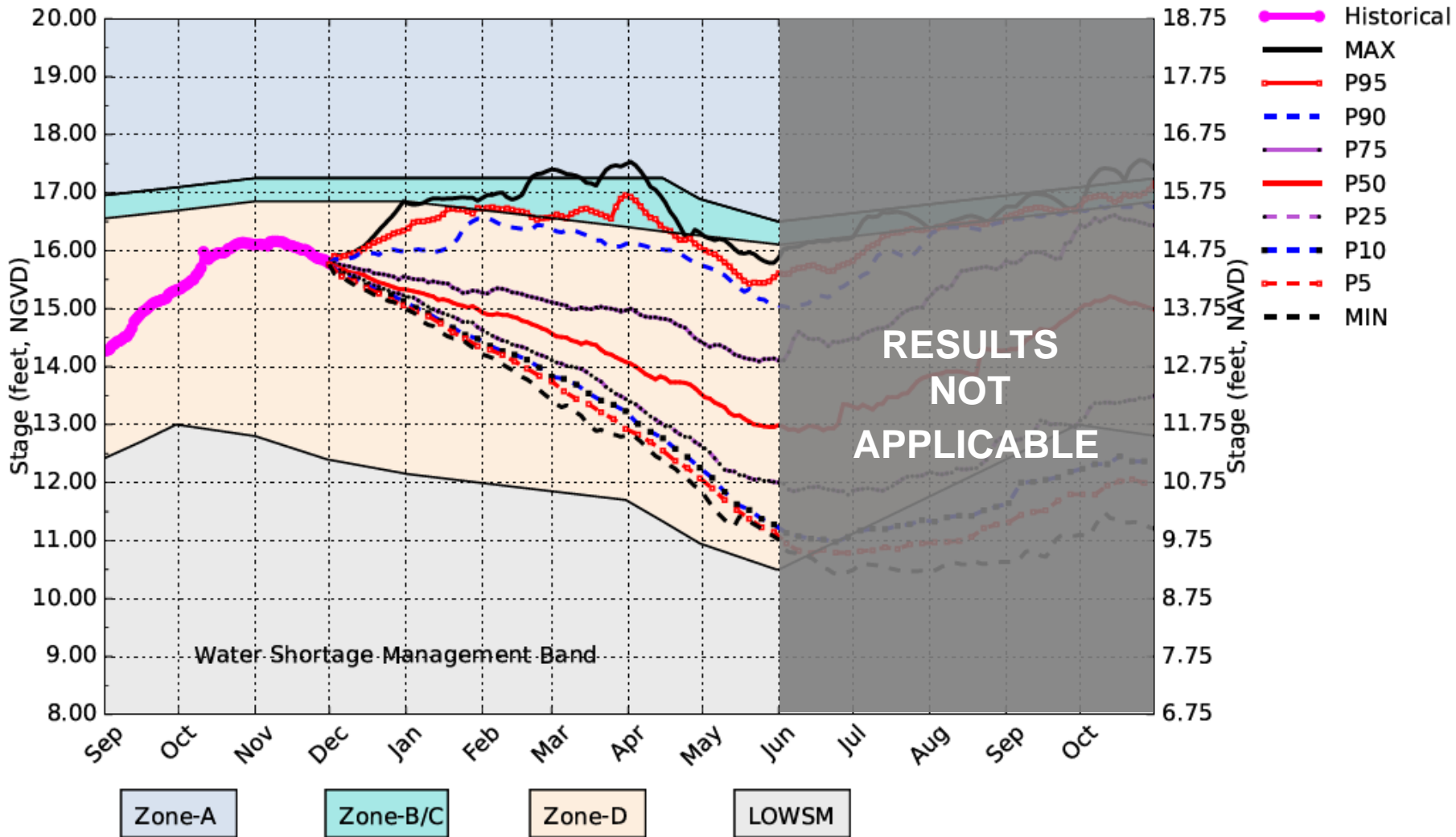
December 2024 Unconditional PA



(See assumptions on the Position Analysis Results website)

Lake Okeechobee SFWMM December 2024 Position Analysis

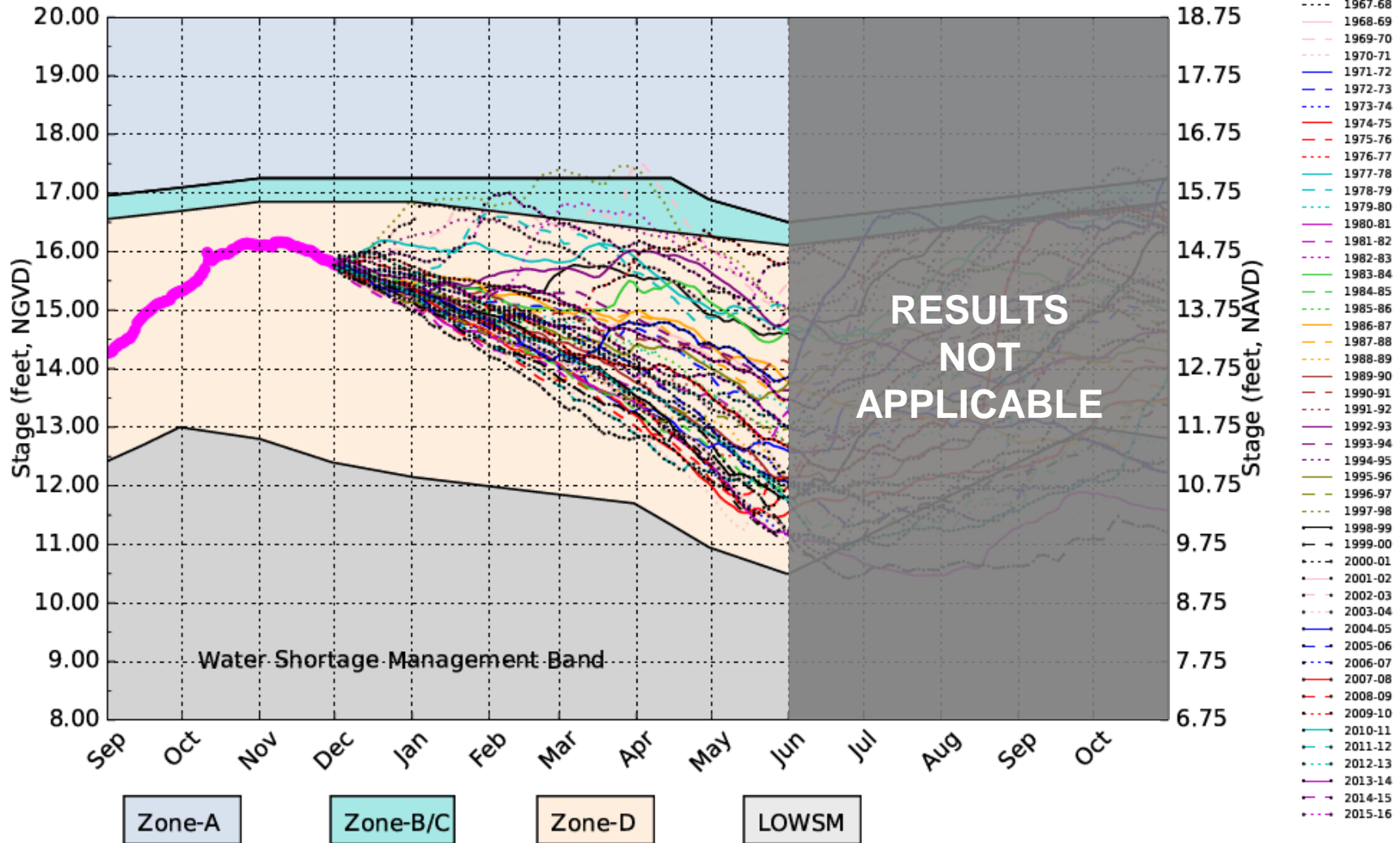
Percentiles PA



(See assumptions on the Position Analysis Results website)

Lake Okeechobee SFWMM December 2024 Position Analysis

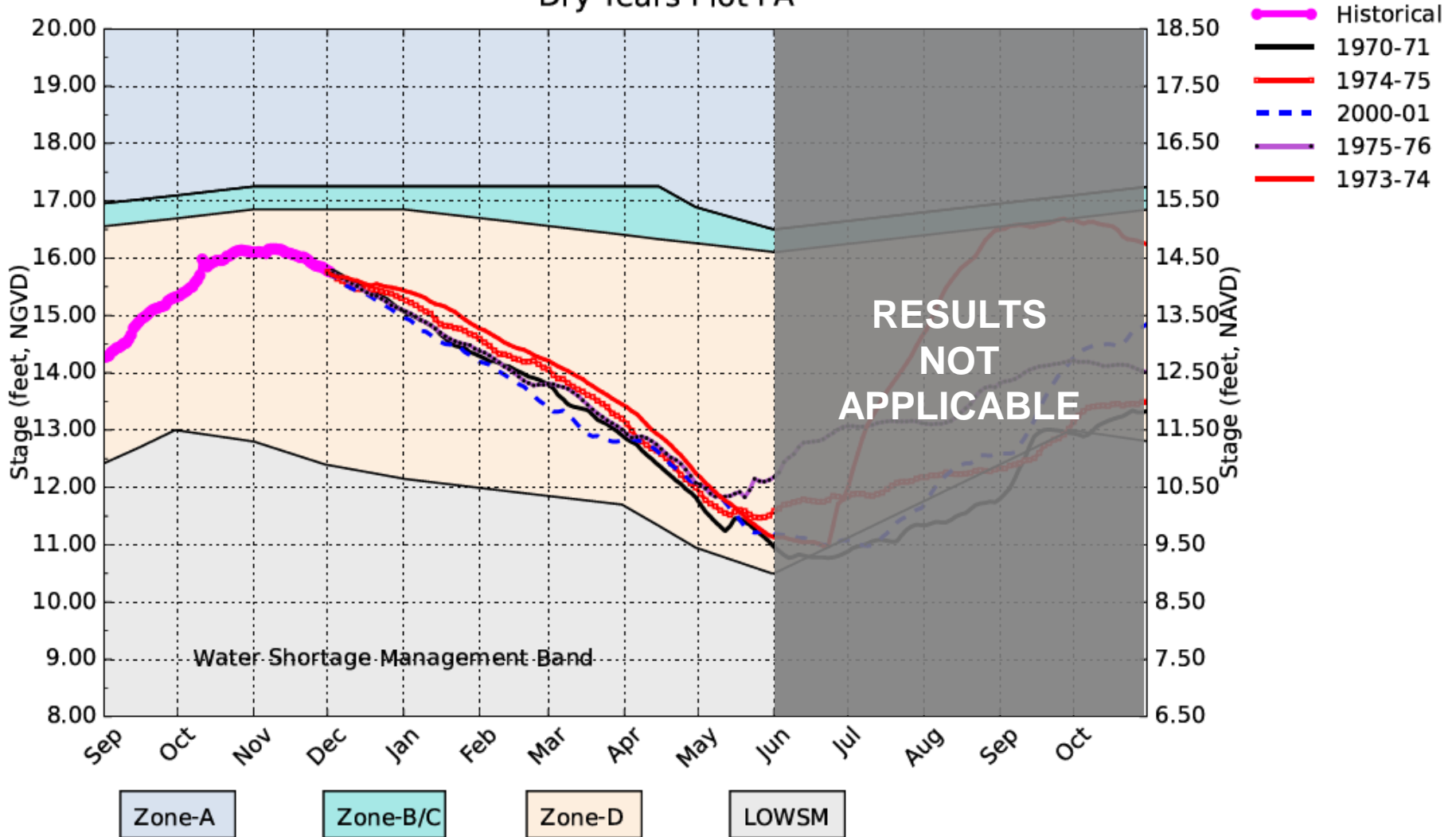
All Simulated Years Plot PA



(See assumptions on the Position Analysis Results website)

Lake Okeechobee SFWMM December 2024 Position Analysis

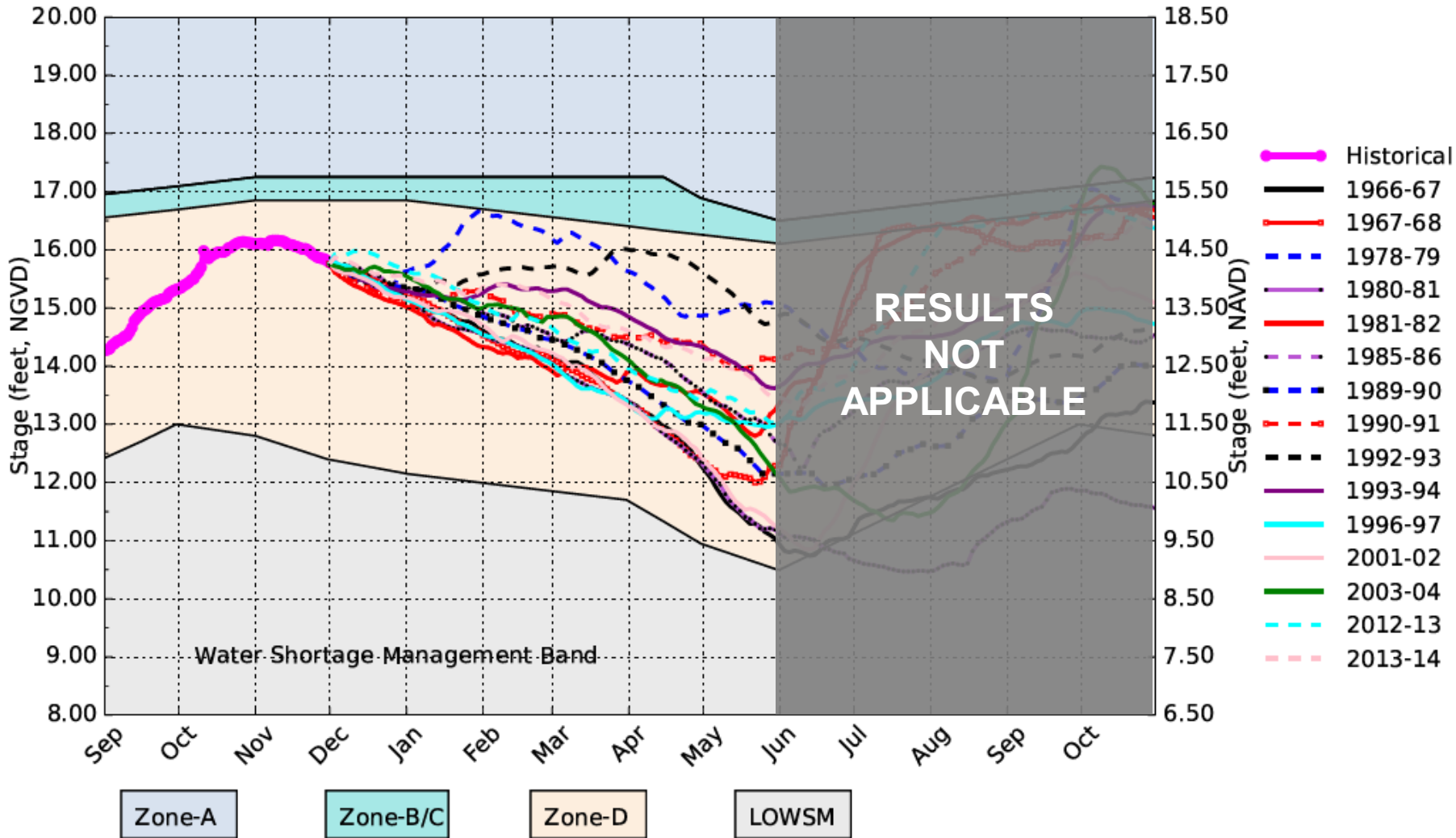
Dry Years Plot PA



(See assumptions on the Position Analysis Results website)

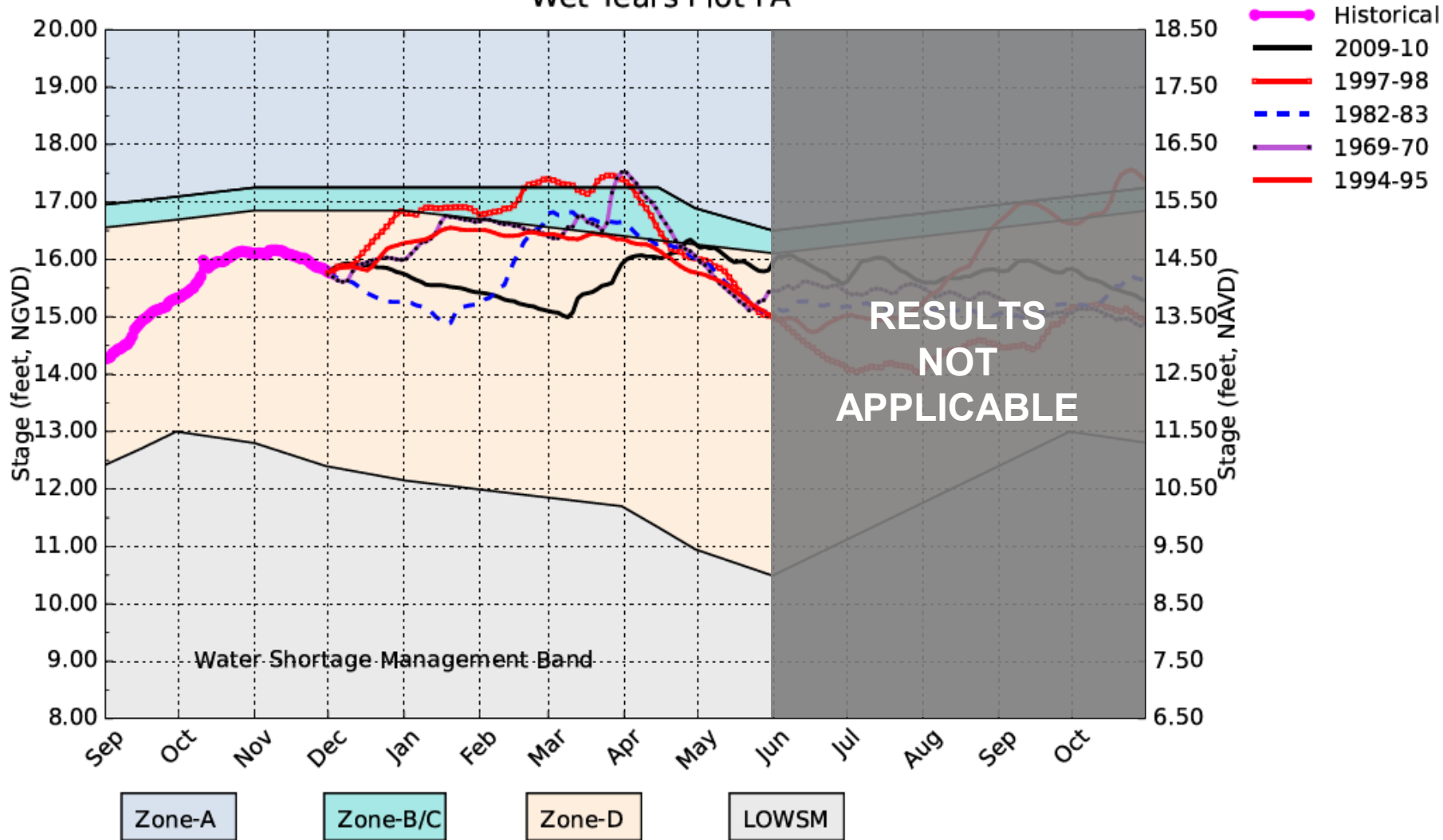
Lake Okeechobee SFWMM December 2024 Position Analysis

All ENSO Neutral Years Plot PA



Lake Okeechobee SFWMM December 2024 Position Analysis

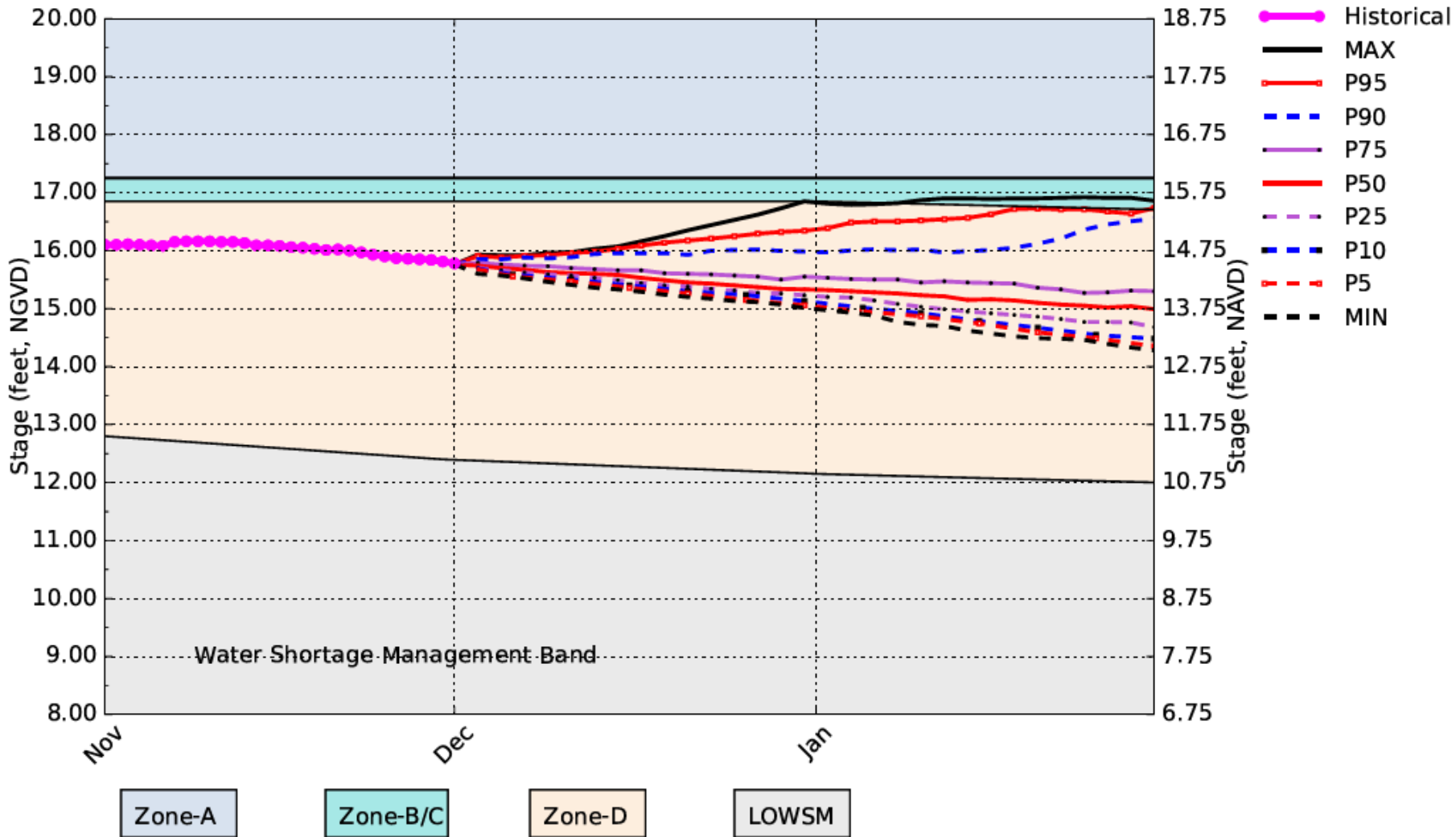
Wet Years Plot PA



(See assumptions on the Position Analysis Results website)

Lake Okeechobee SFWMM December 2024 Position Analysis

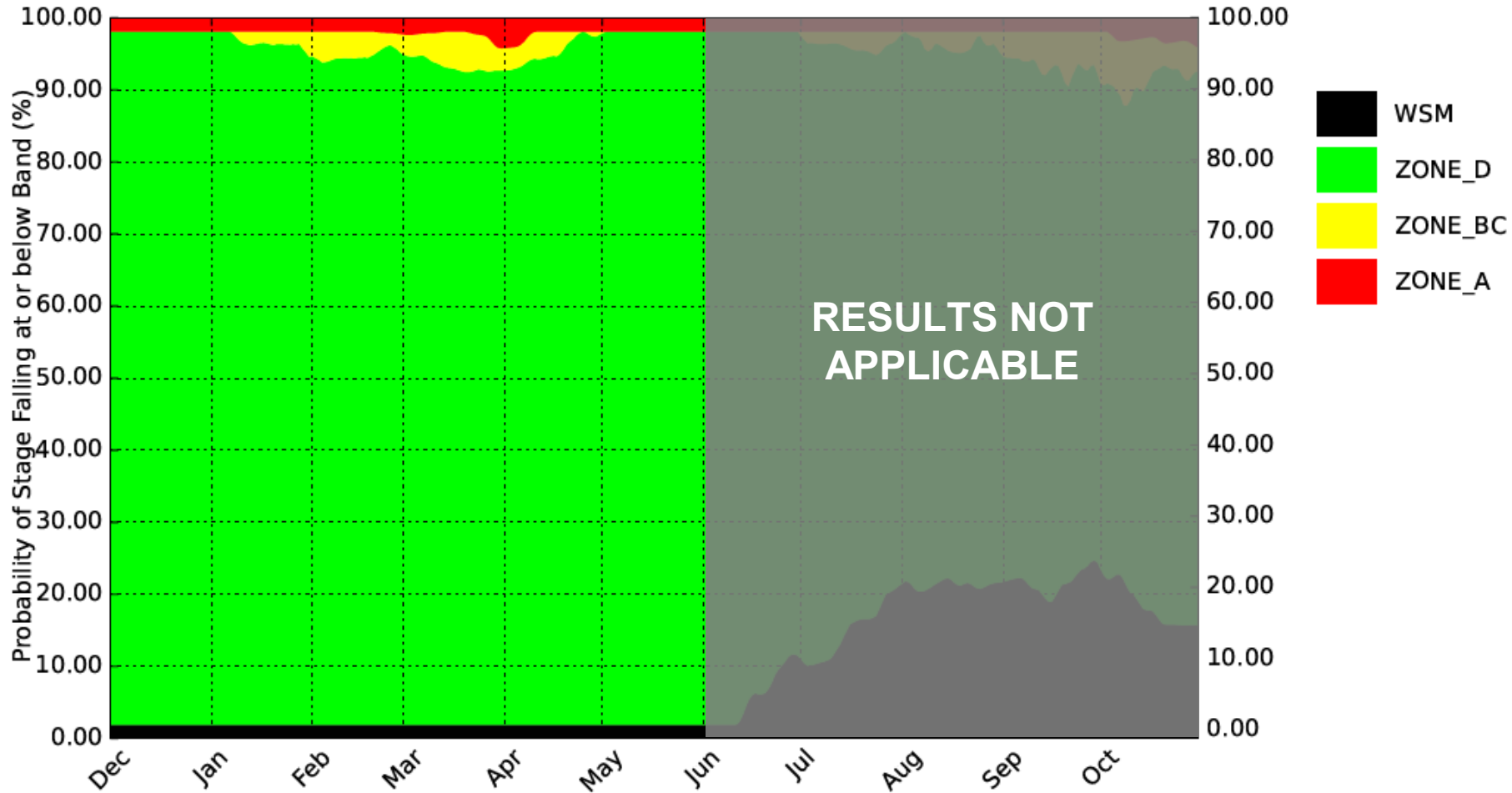
Percentiles PA



(See assumptions on the Position Analysis Results website)

Lake Okeechobee – Probabilities for Operational Bands

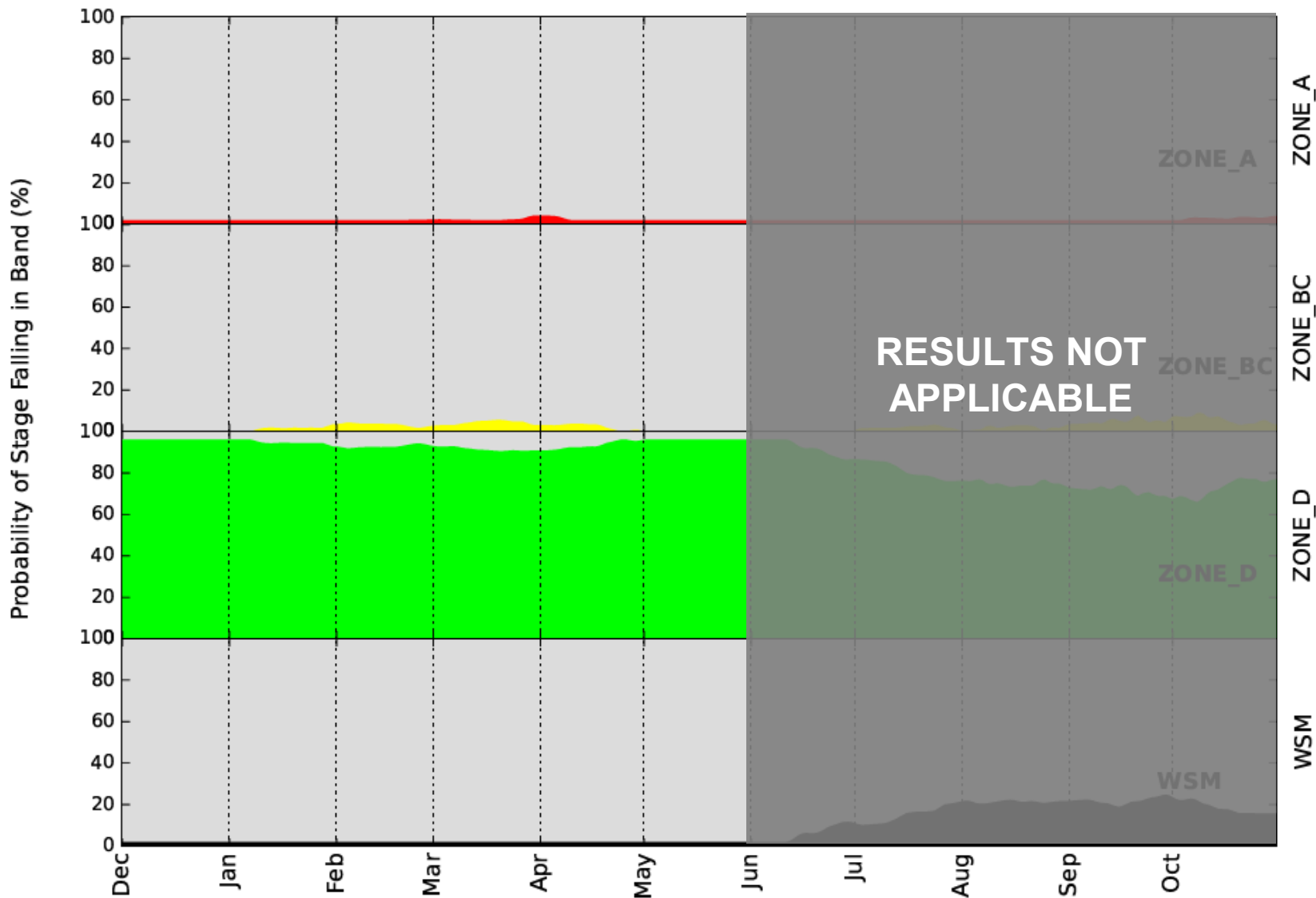
(See assumptions on the Position Analysis Results website)



The width for each band gives the probability of stage falling in that band, as defined by the operational schedules

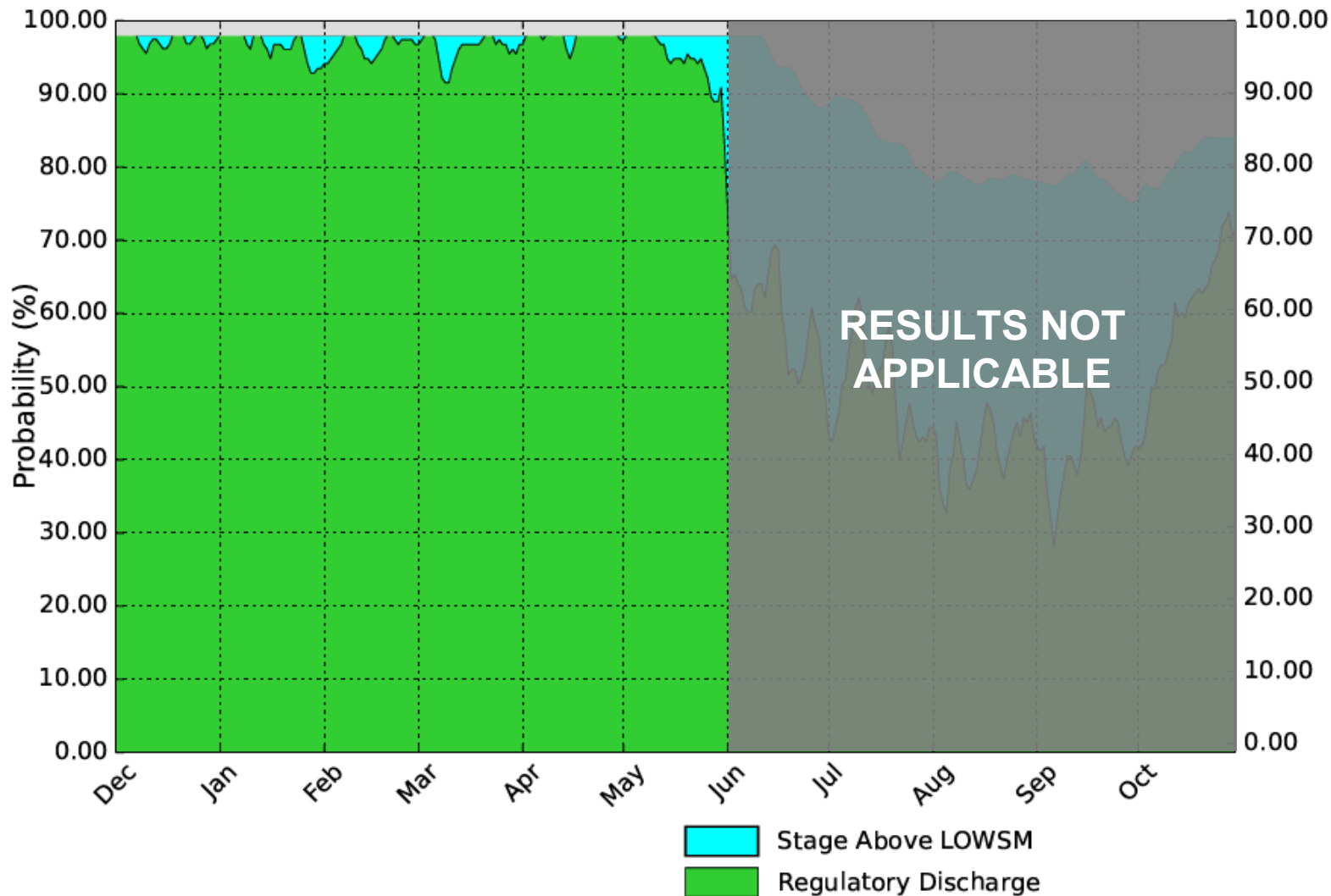
Lake Okeechobee – Band Probabilities

(See assumptions on the Position Analysis Results website)



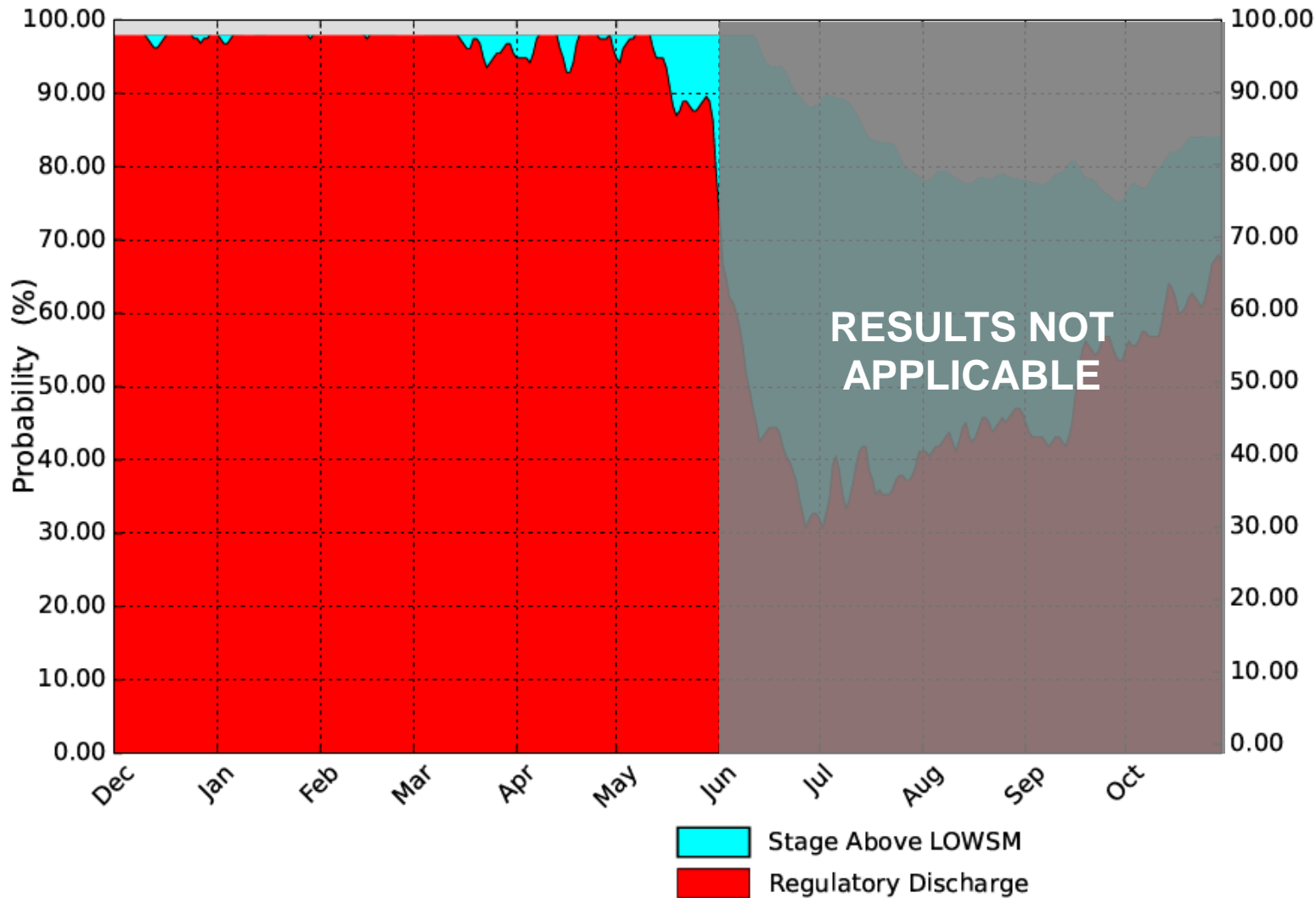
Lake Okeechobee – LOSOM Releases to the WCA's

Unconditional PA Operations(See assumptions on the Position Analysis Results website)



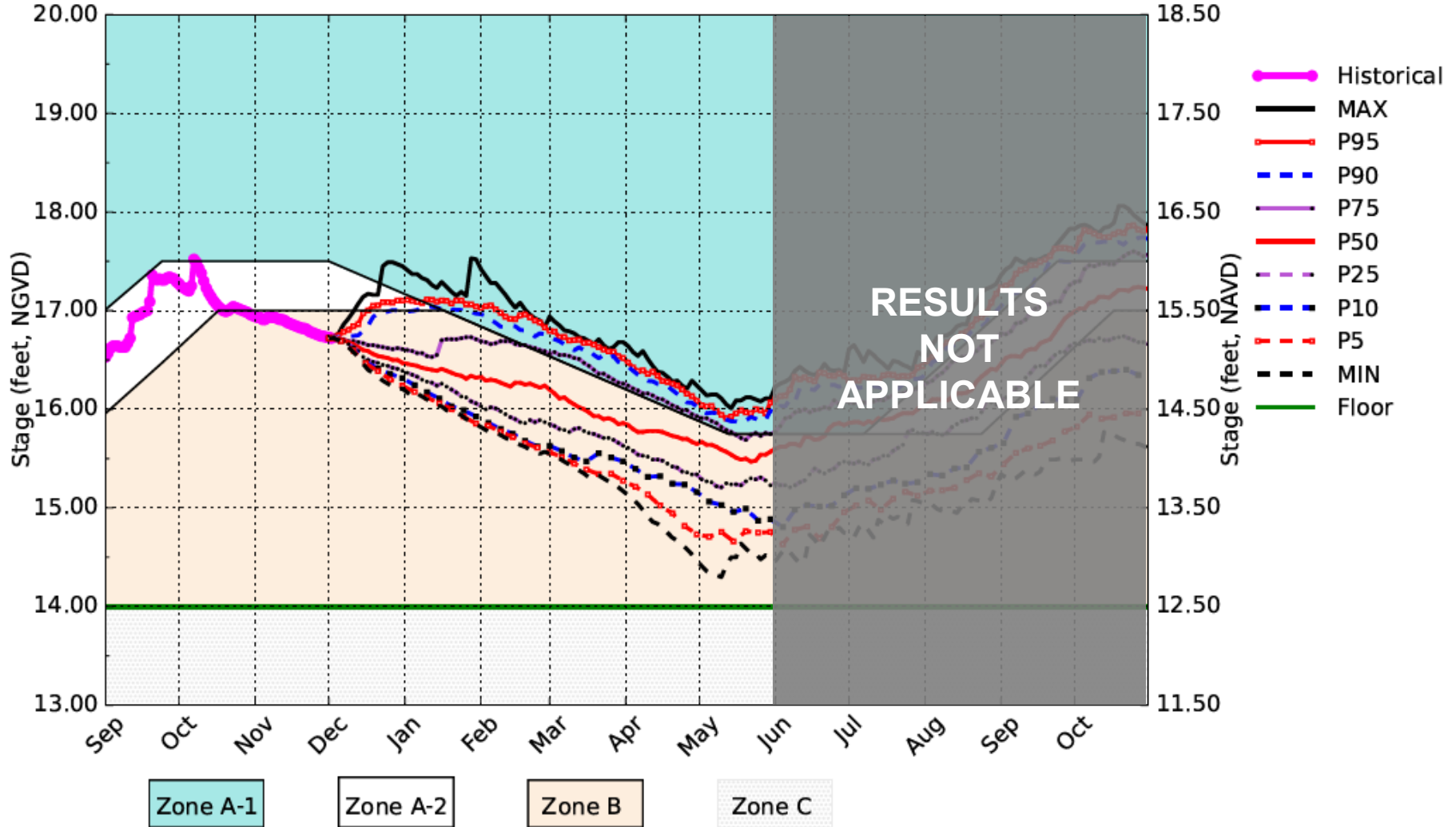
Lake Okeechobee – LOSOM Releases to the Estuaries

Unconditional PA Operations (See assumptions on the Position Analysis Results website)



WCA1 SFWMM December 2024 Position Analysis

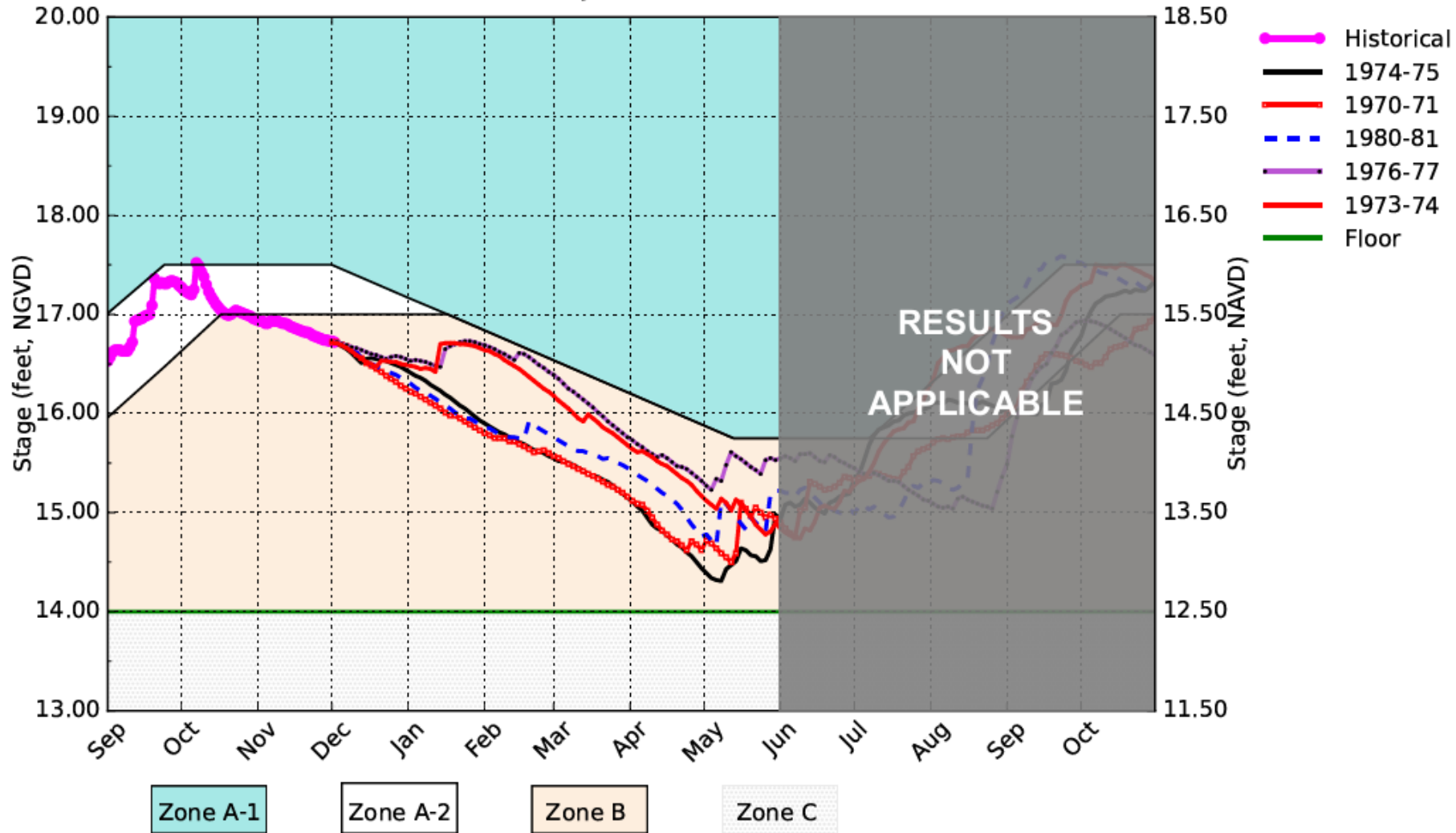
Percentiles PA



(See assumptions on the Position Analysis Results website)

WCA1 SFWMM December 2024 Position Analysis

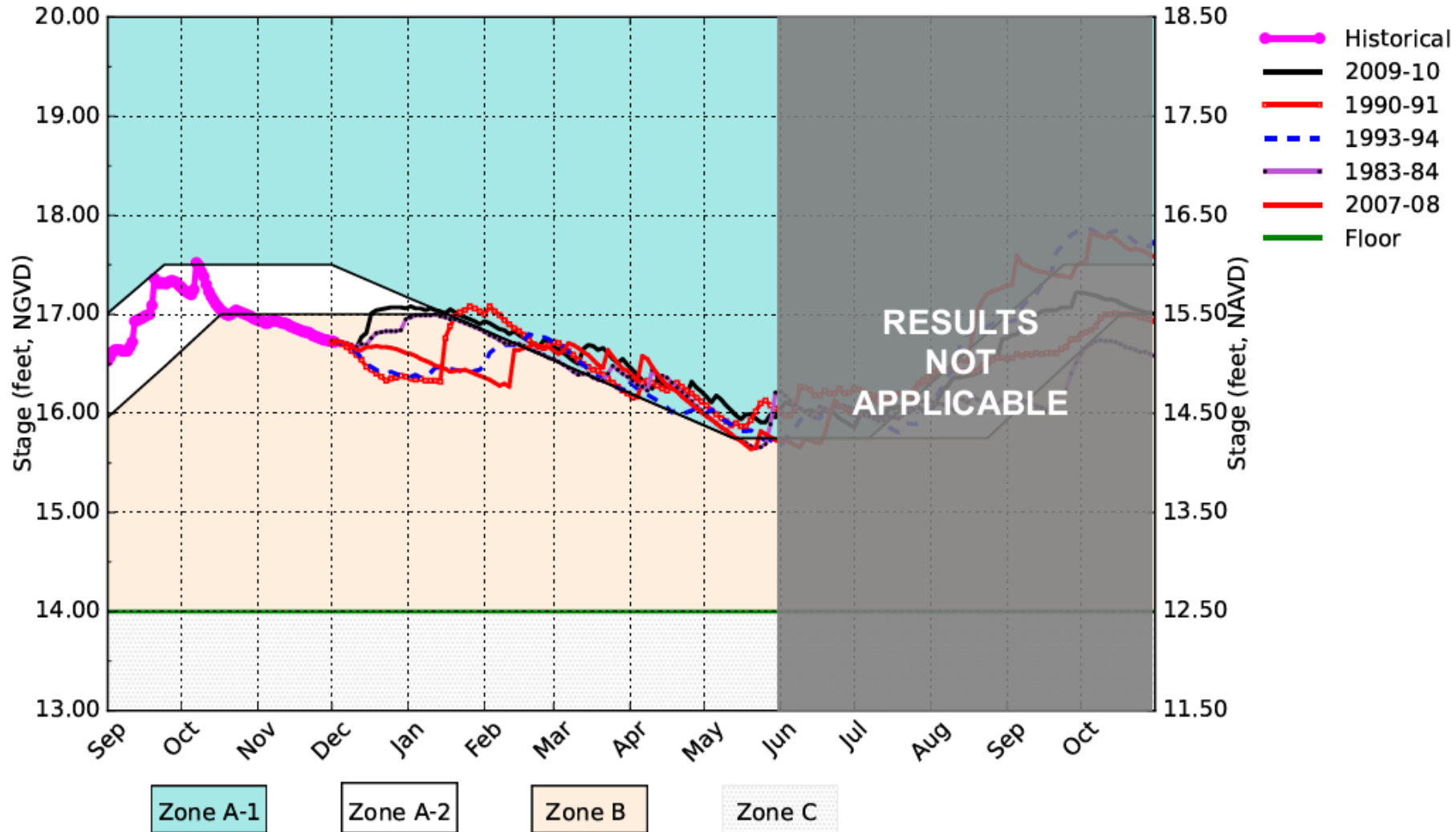
Dry Years Plot PA



(See assumptions on the Position Analysis Results website)

WCA1 SFWMM December 2024 Position Analysis

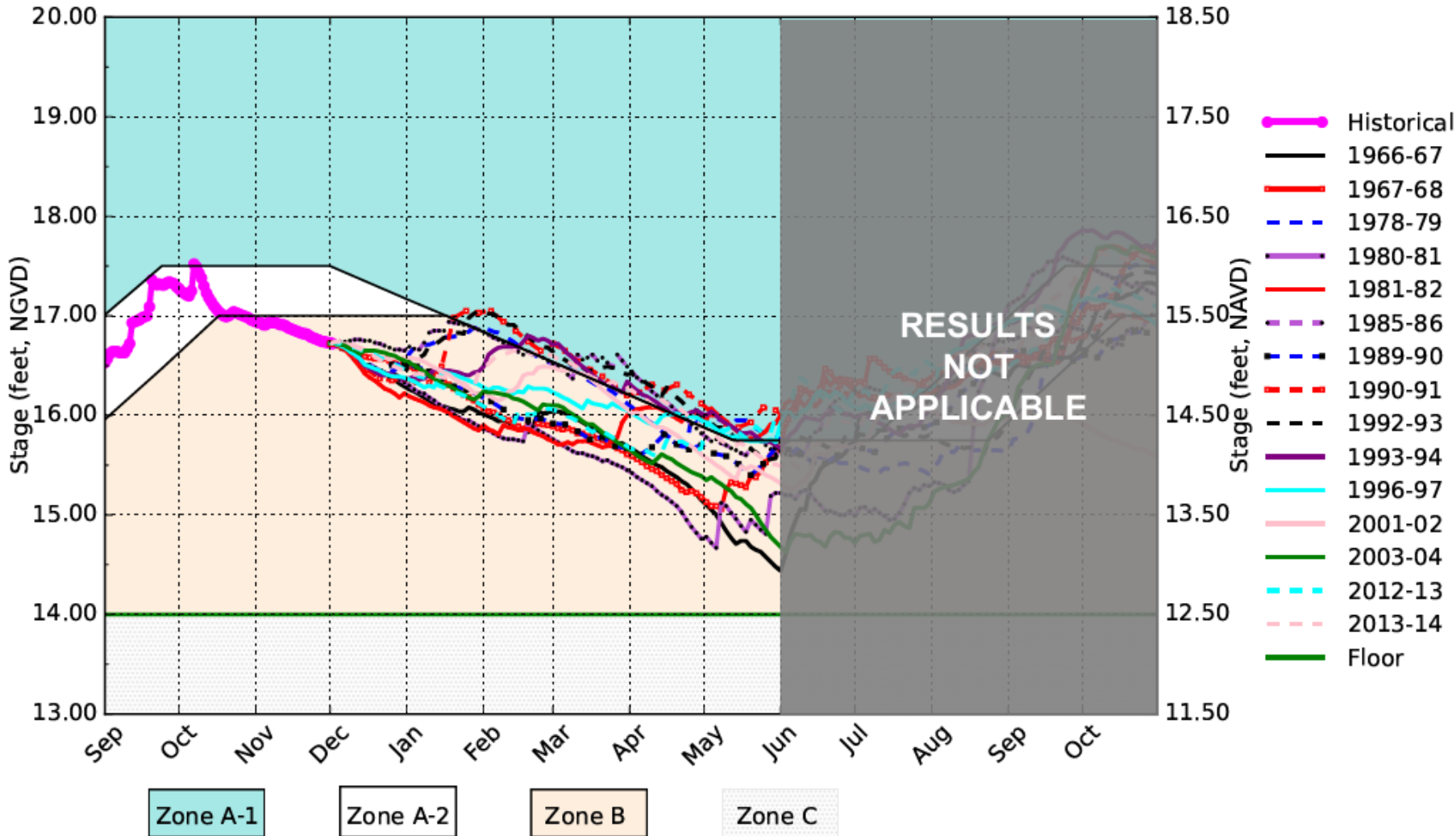
Wet Years Plot PA



(See assumptions on the Position Analysis Results website)

WCA1 SFWMM December 2024 Position Analysis

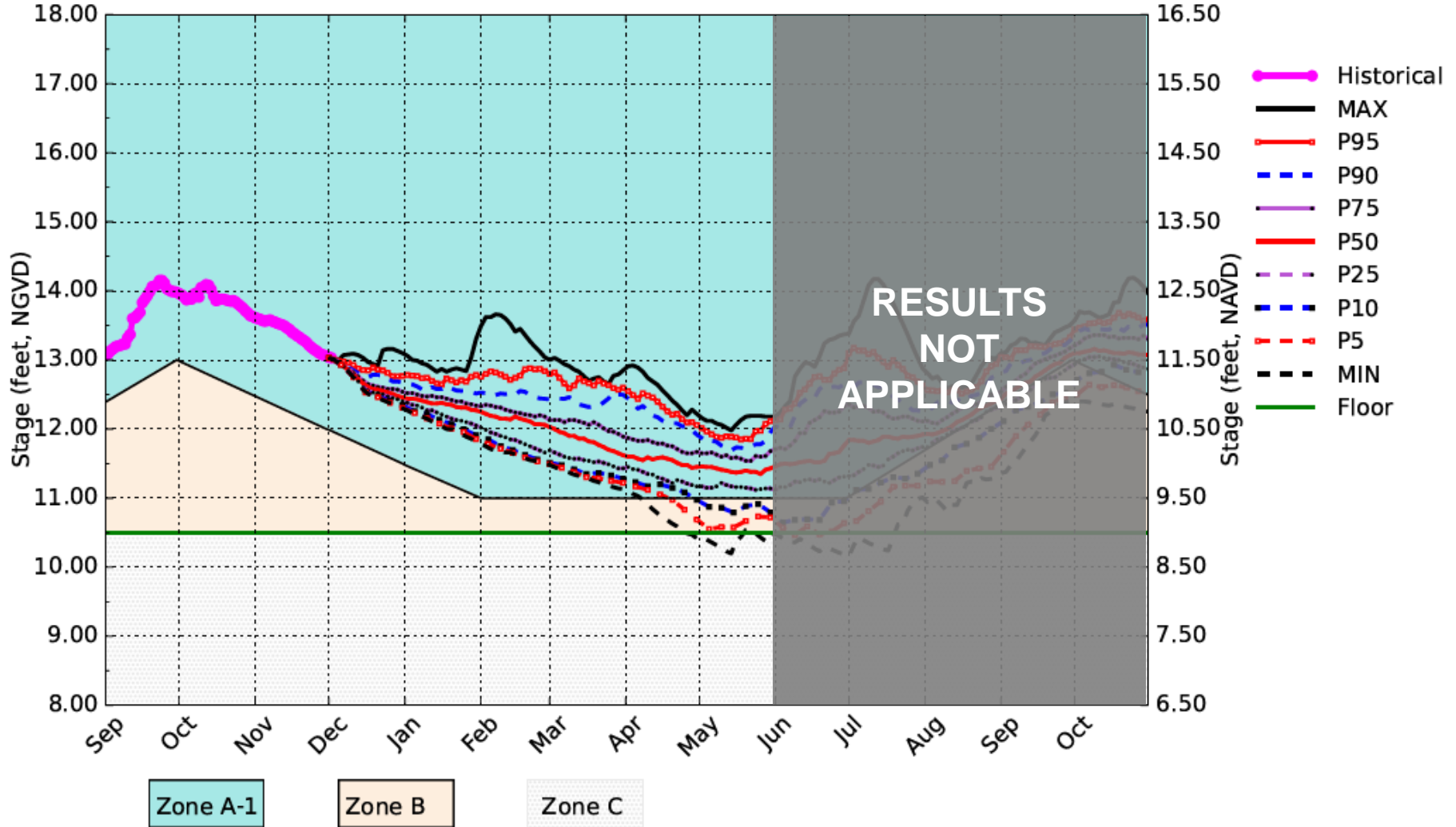
All ENSO Neutral Years Plot PA



(See assumptions on the Position Analysis Results website)

WCA2A SFWMM December 2024 Position Analysis

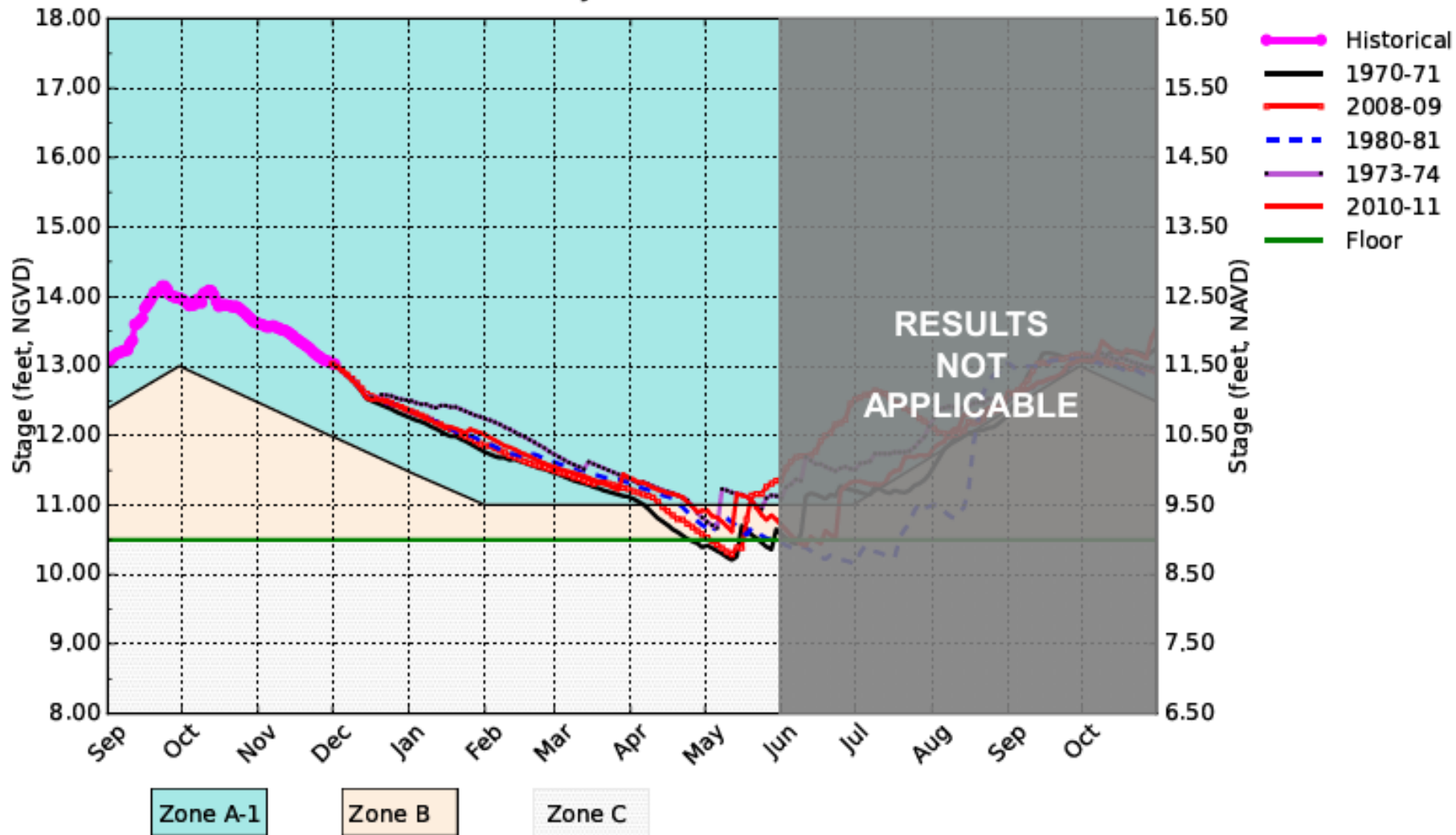
Percentiles PA



(See assumptions on the Position Analysis Results website)

WCA2A SFWMM December 2024 Position Analysis

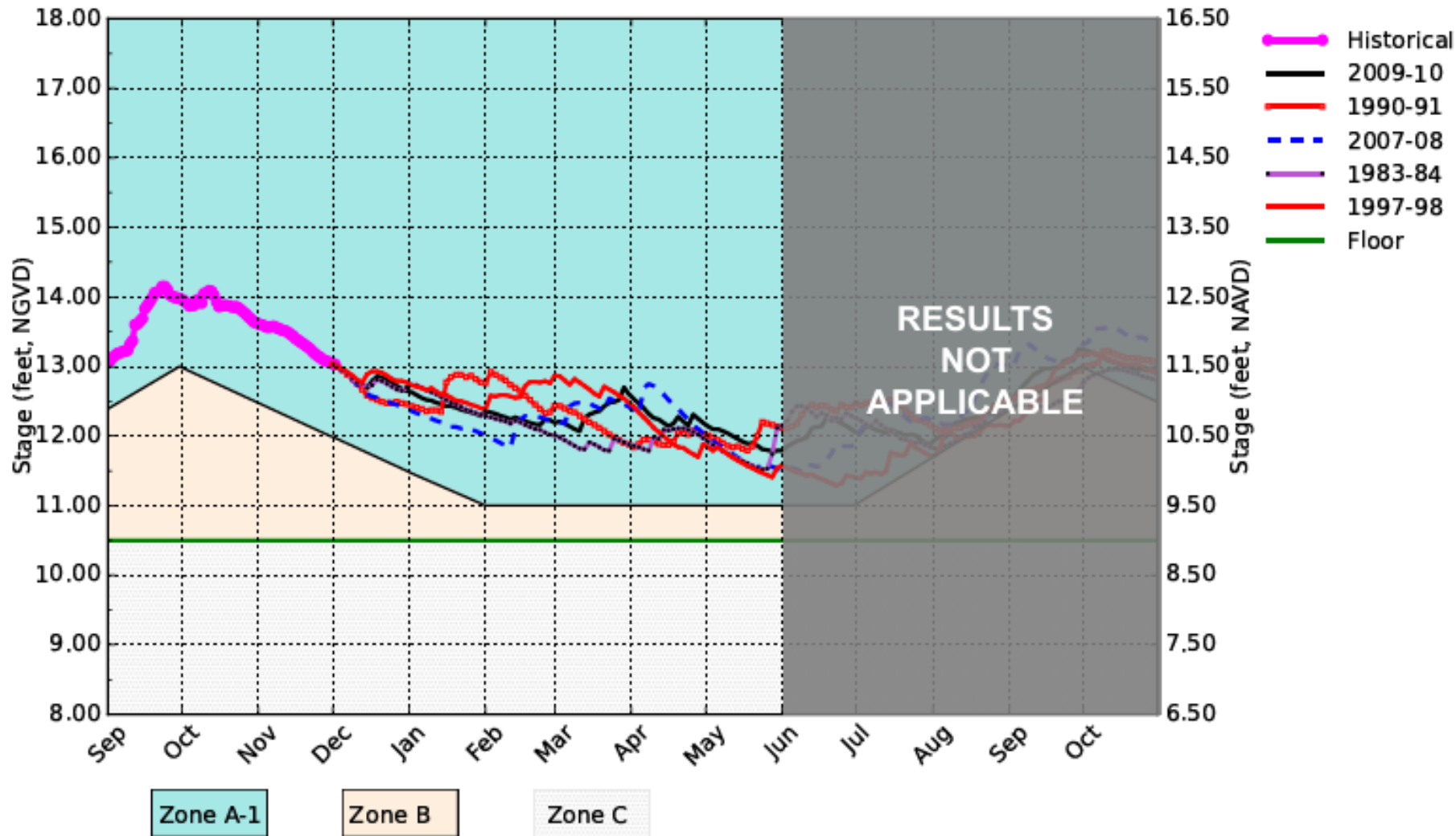
Dry Years Plot PA



(See assumptions on the Position Analysis Results website)

WCA2A SFWMM December 2024 Position Analysis

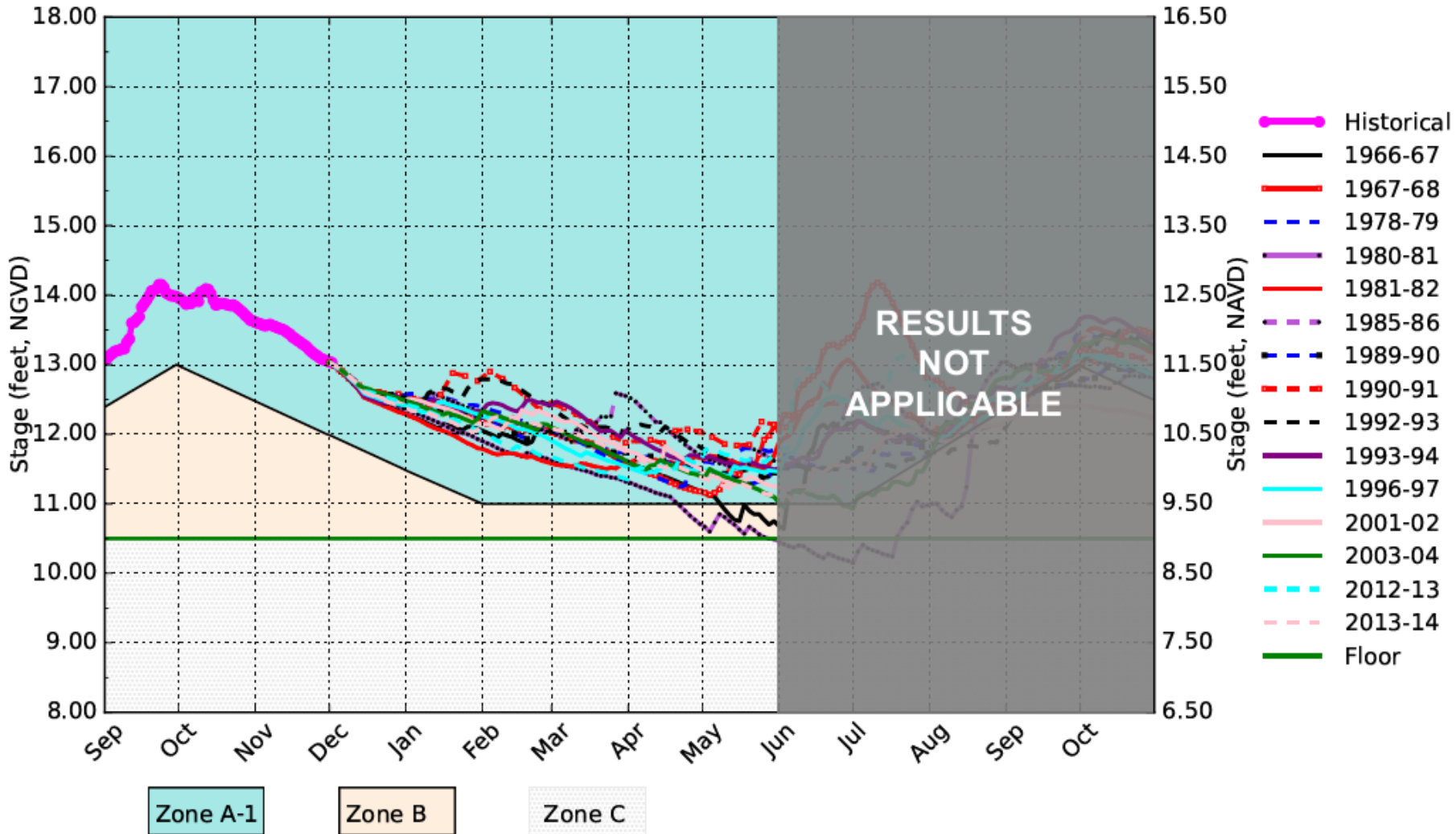
Wet Years Plot PA



(See assumptions on the Position Analysis Results website)

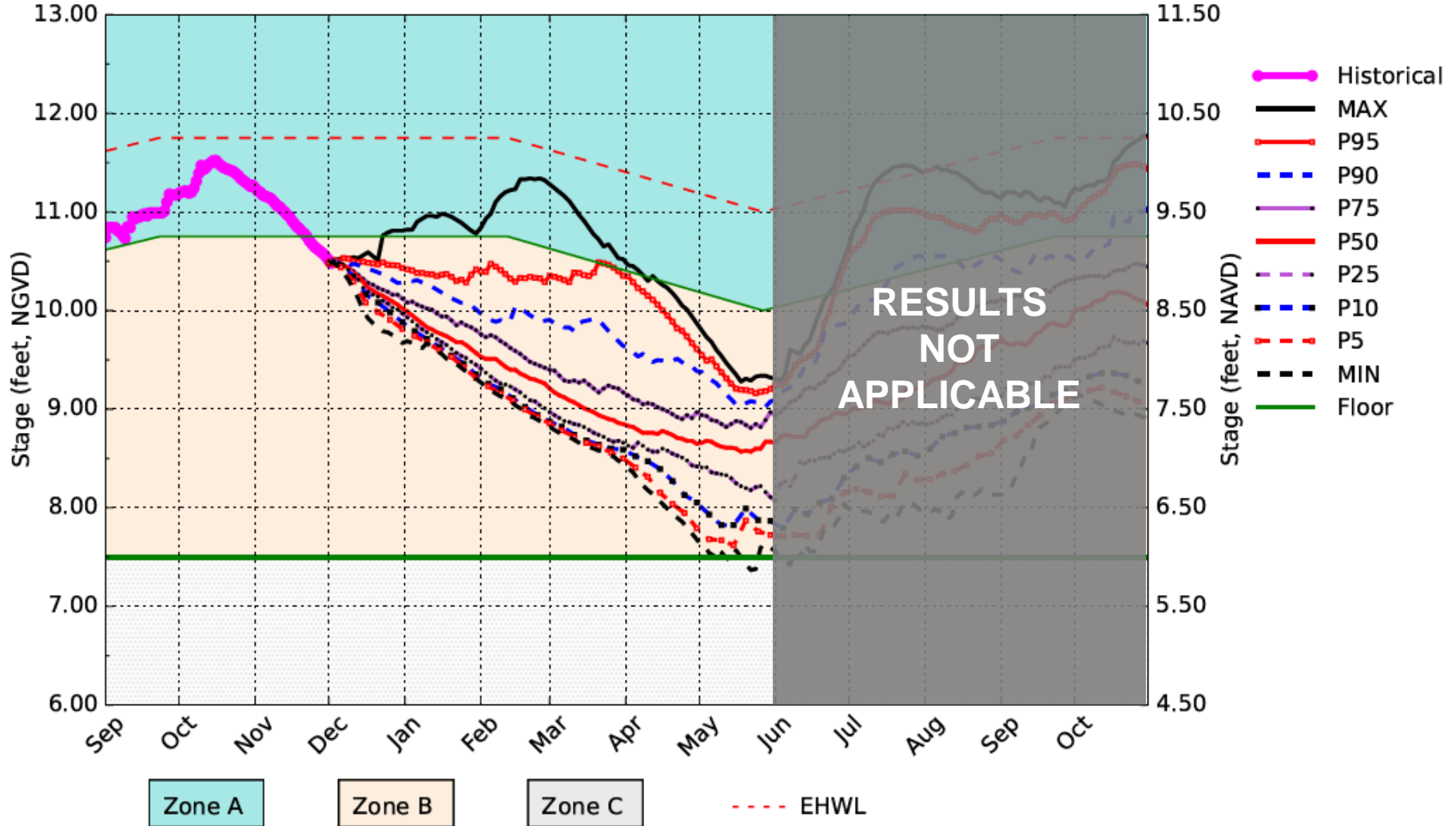
WCA2A SFWMM December 2024 Position Analysis

All ENSO Neutral Years Plot PA



WCA3A SFWMM December 2024 Position Analysis

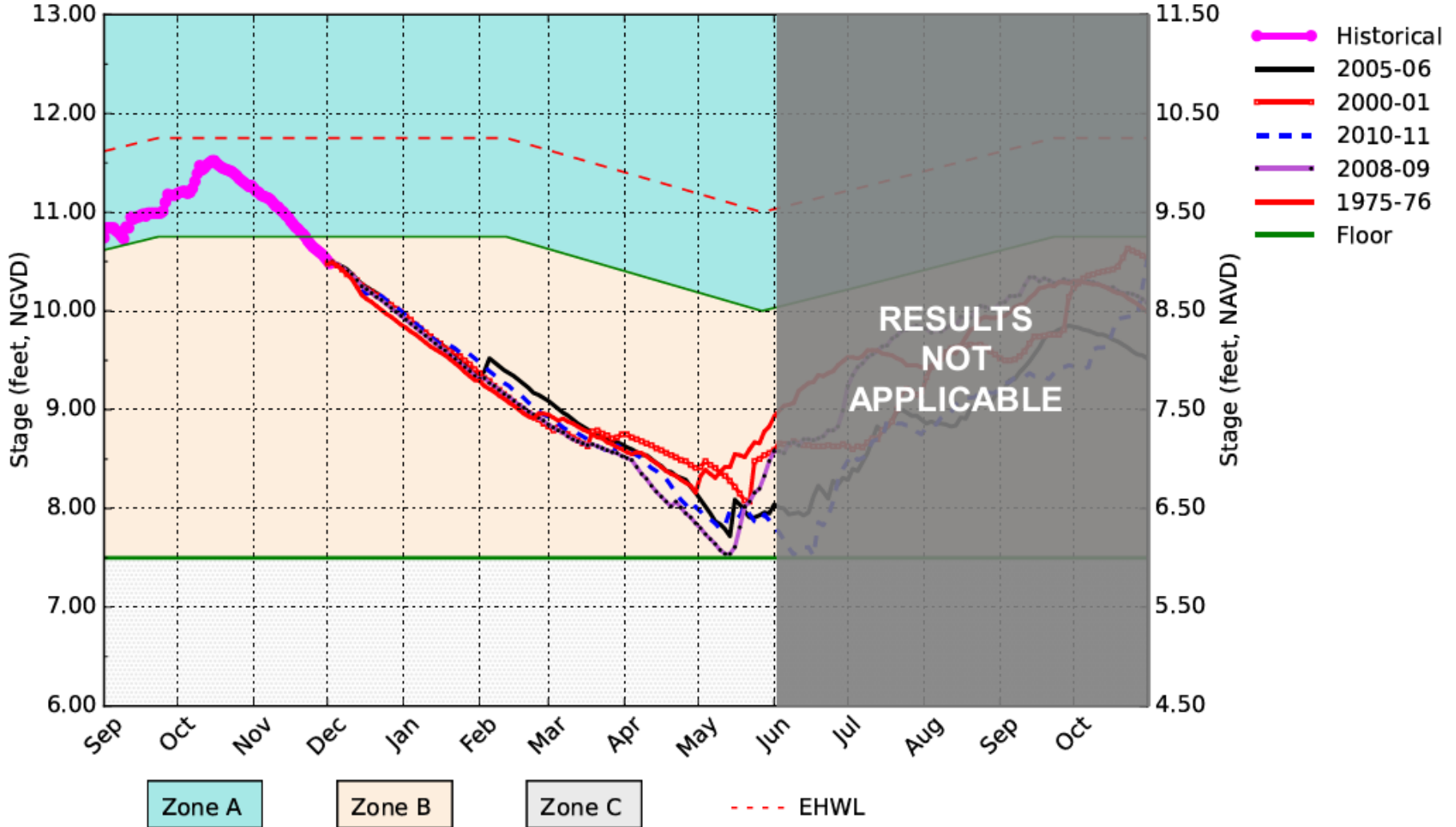
Percentiles PA



(See assumptions on the Position Analysis Results website)

WCA3A SFWMM December 2024 Position Analysis

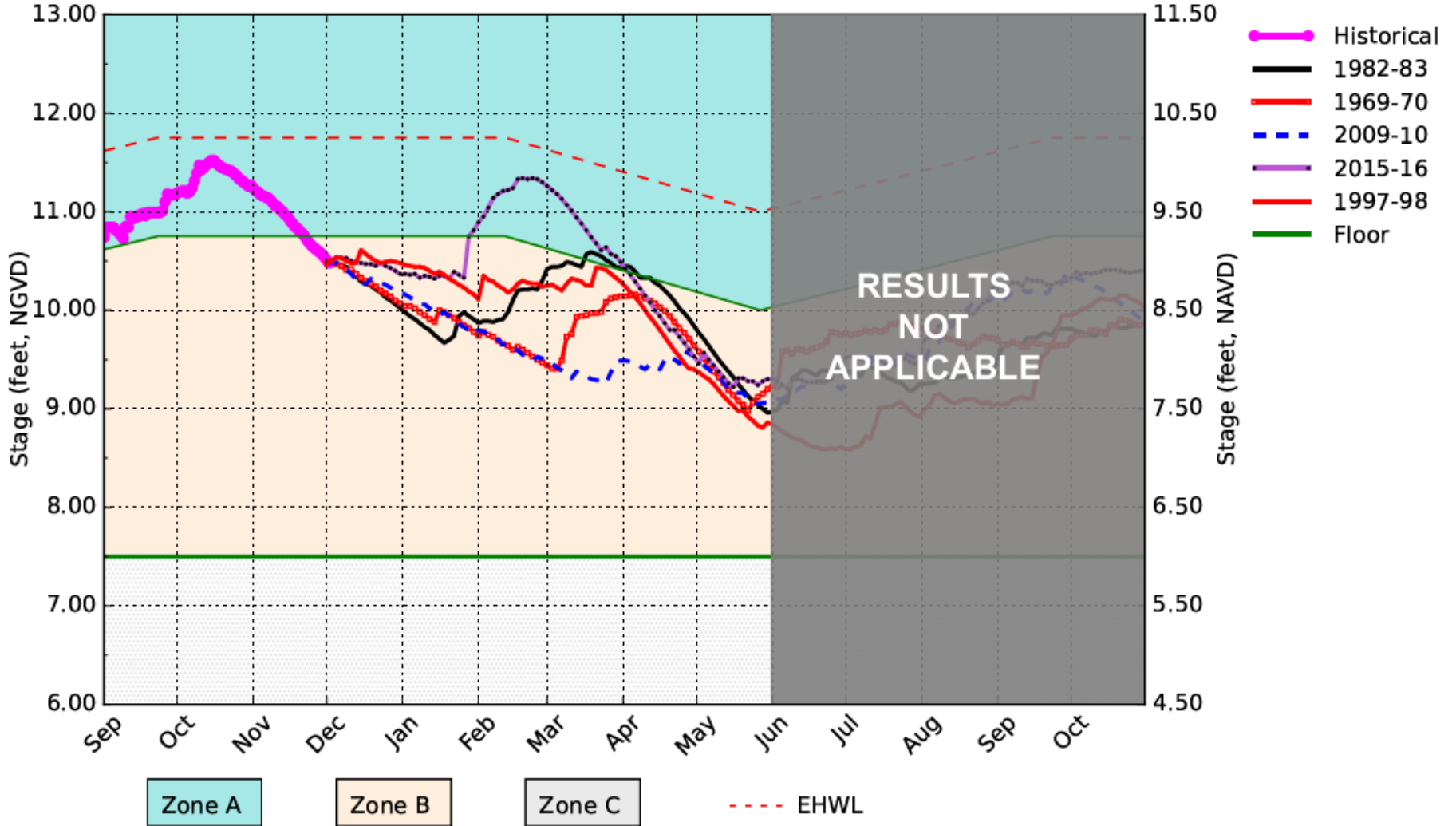
Dry Years Plot PA



(See assumptions on the Position Analysis Results website)

WCA3A SFWMM December 2024 Position Analysis

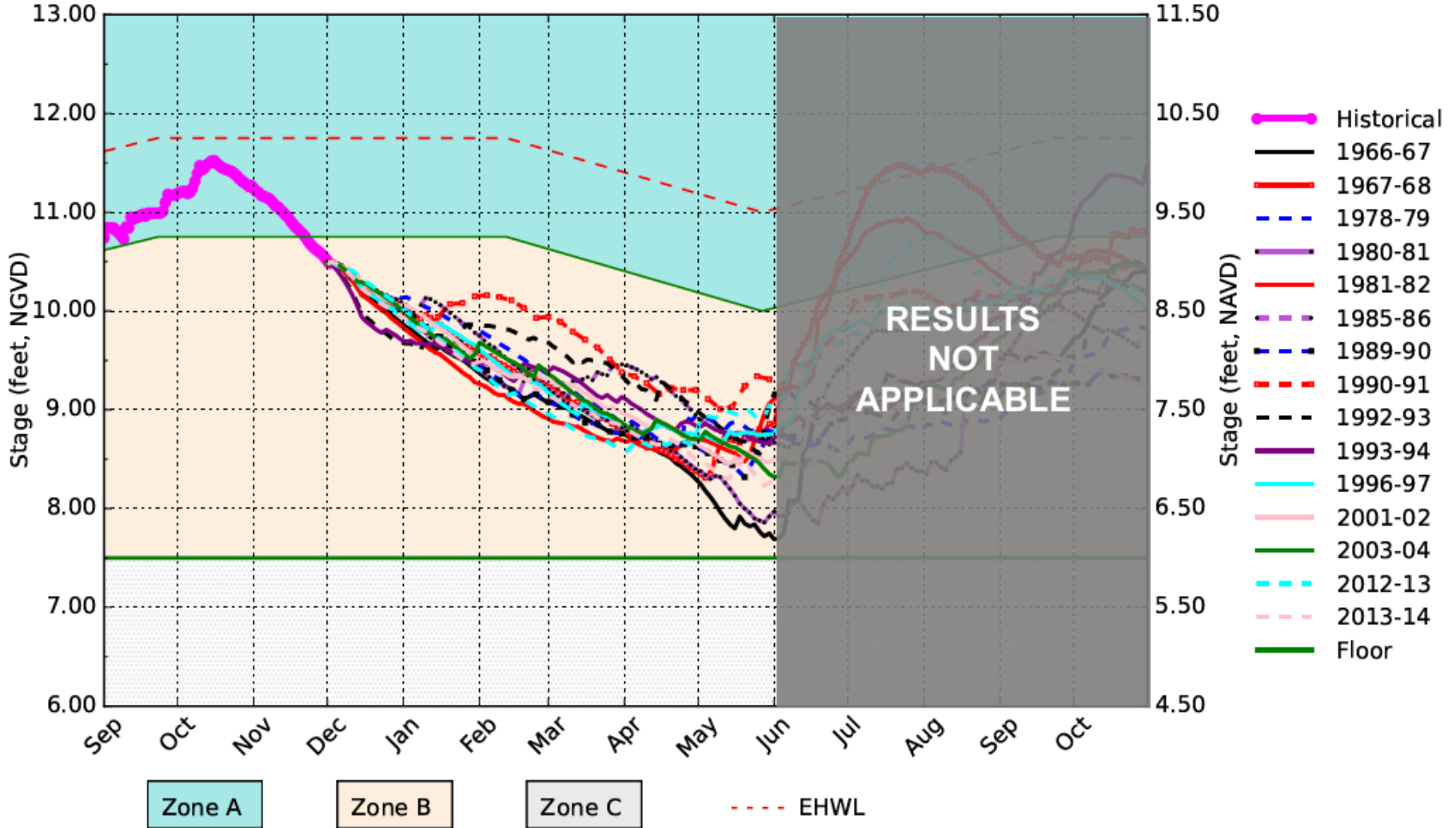
Wet Years Plot PA



(See assumptions on the Position Analysis Results website)

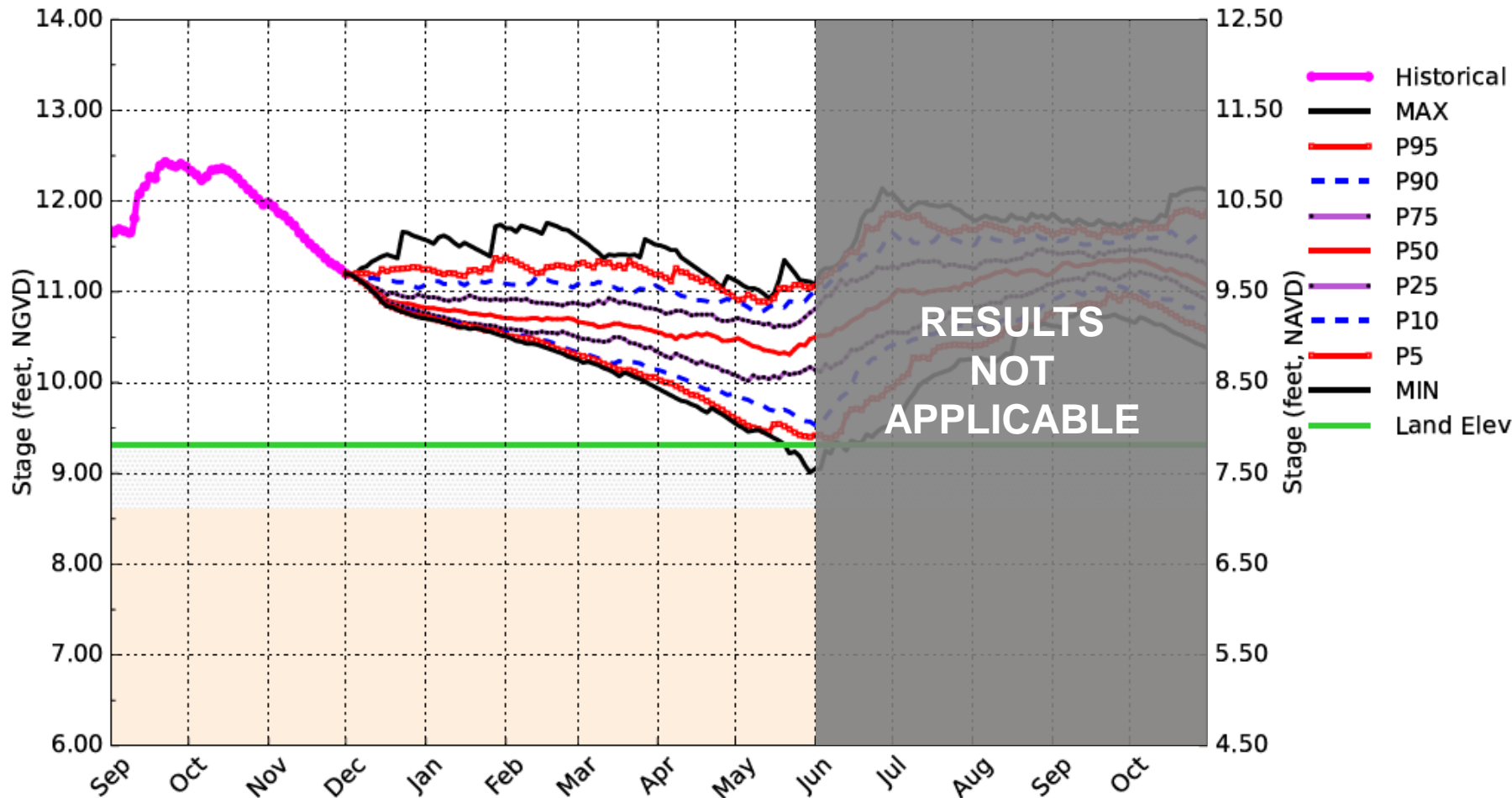
WCA3A SFWMM December 2024 Position Analysis

All ENSO Neutral Years Plot PA



3A-2 Gage SFWMM December 2024 Position Analysis

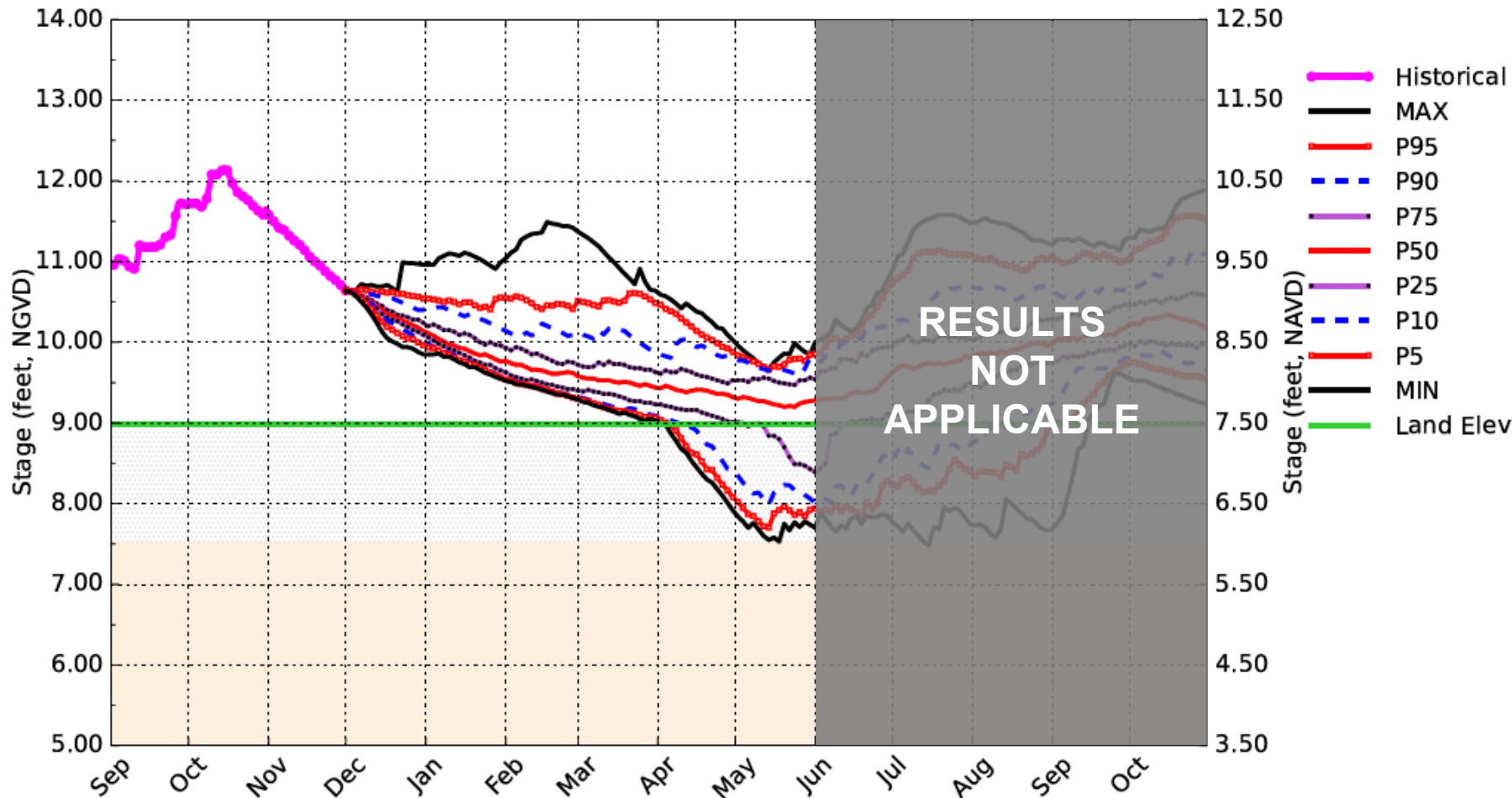
PA



(See assumptions on the Position Analysis Results website)

3A-3 Gage SFWMM December 2024 Position Analysis

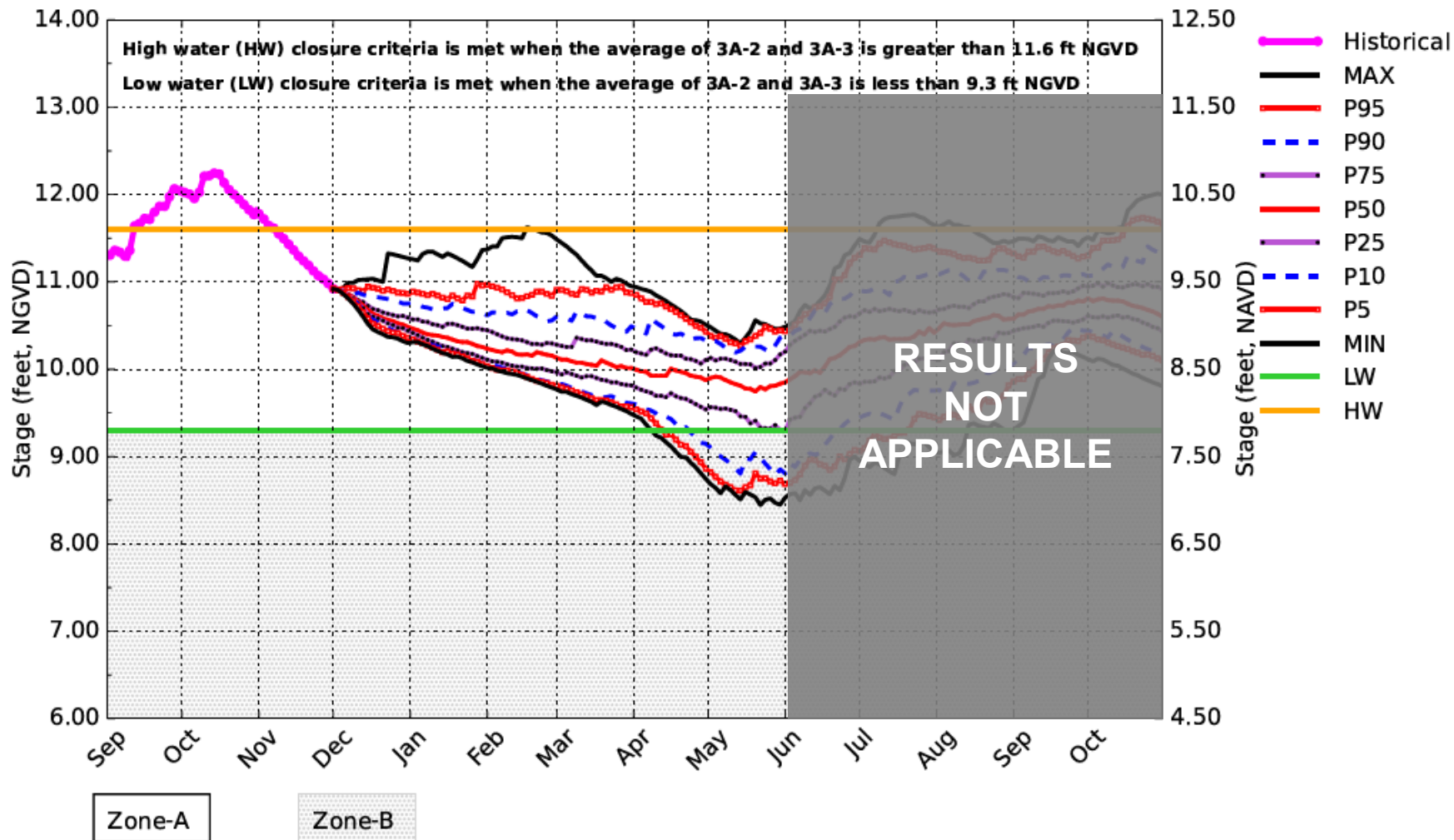
PA



(See assumptions on the Position Analysis Results website)

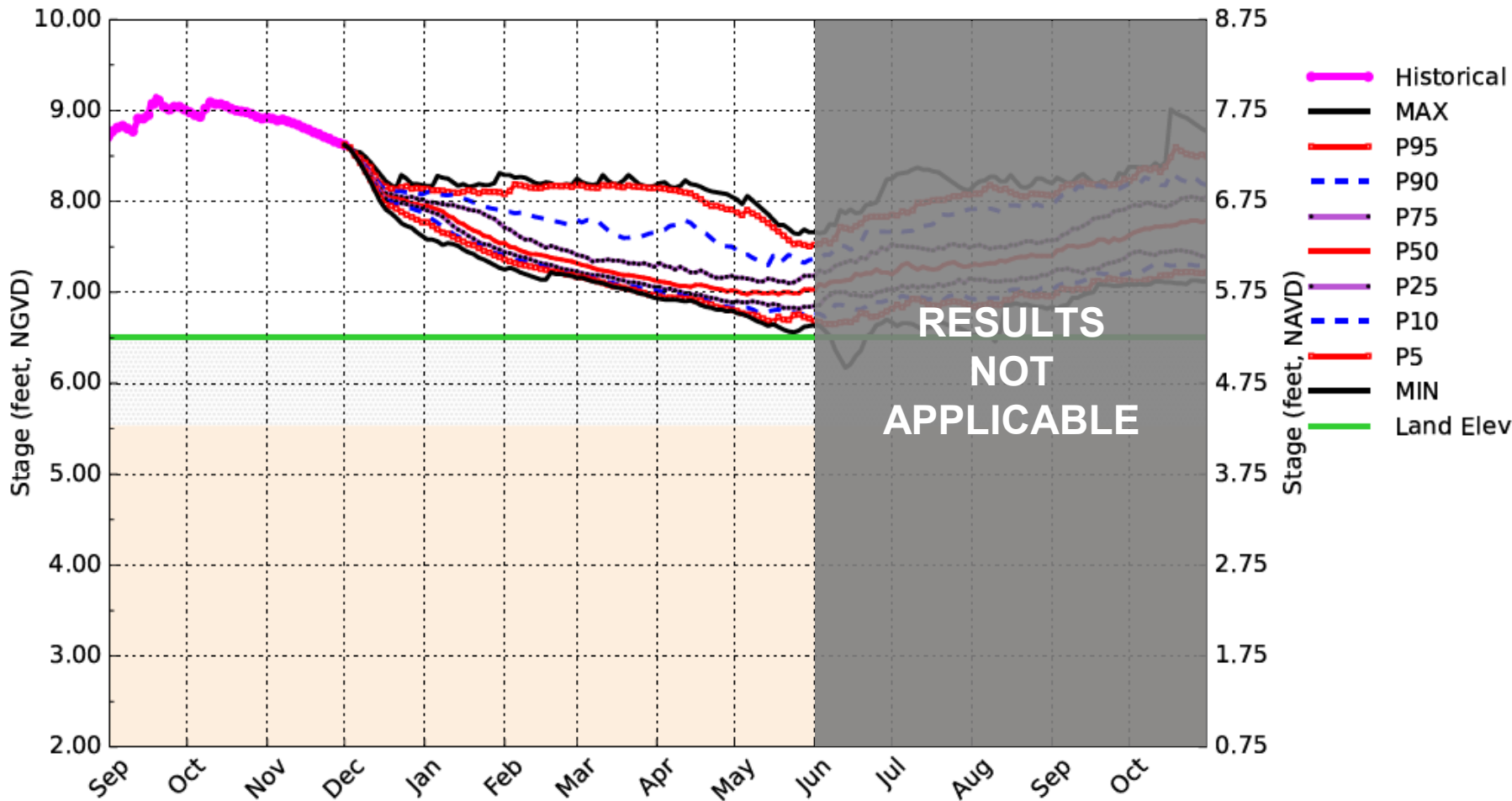
3A-2G Gage SFWMM December 2024 Position Analysis

PA



3-71 Gage SFWMM December 2024 Position Analysis

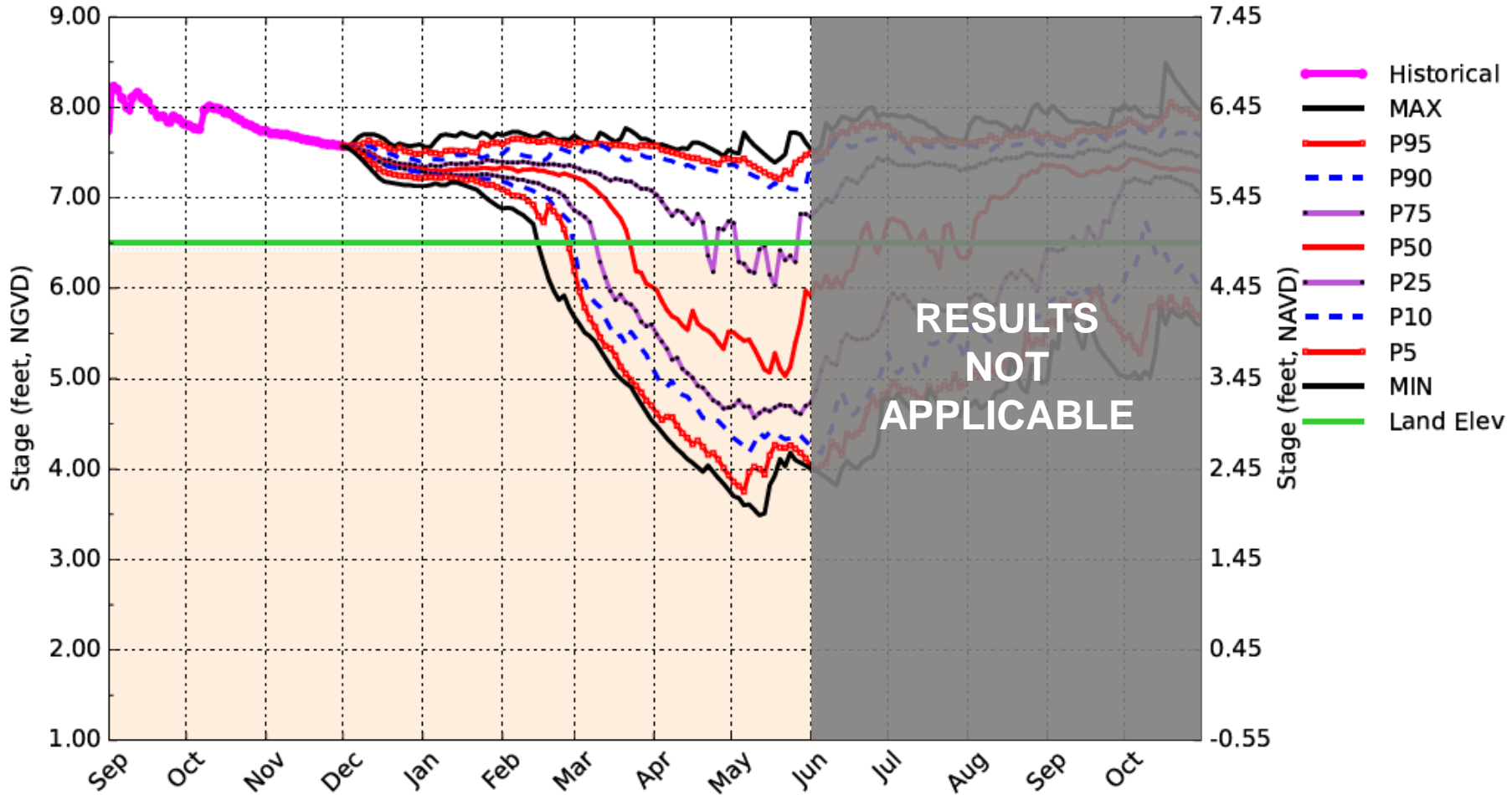
PA



(See assumptions on the Position Analysis Results website)

ANGEL Gage SFWMM December 2024 Position Analysis

PA



(See assumptions on the Position Analysis Results website)

Lake Okechobee Band Probabilities (%) at the Beginning of Each Month
(See assumptions on the Position Analysis Results website)

Initial Stage 16.23 ft. for 01/ 11/ 2024

Date(d/m/y)	HLM	ZONE_BC	ZONE_D1	WSM
1/11/2024	1.92	0	96.15	1.92
1/12/2024	1.92	0	96.15	1.92
1/1/2025	1.92	0	96.15	1.92
1/2/2025	1.92	3.42	92.74	1.92
1/3/2025	2.34	2.72	93.01	1.92
1/4/2025	4.23	3.1	90.75	1.92
1/5/2025	1.92	0.21	95.94	1.92