SOUTH FLORIDA WATER MANAGEMENT DISTRICT

November 15, 2026: Conditional Position Analysis (CPA) Implementation – LOSOM

Water Resources & Systems Modeling Bureau, Systems Modeling Unit
SFWMD



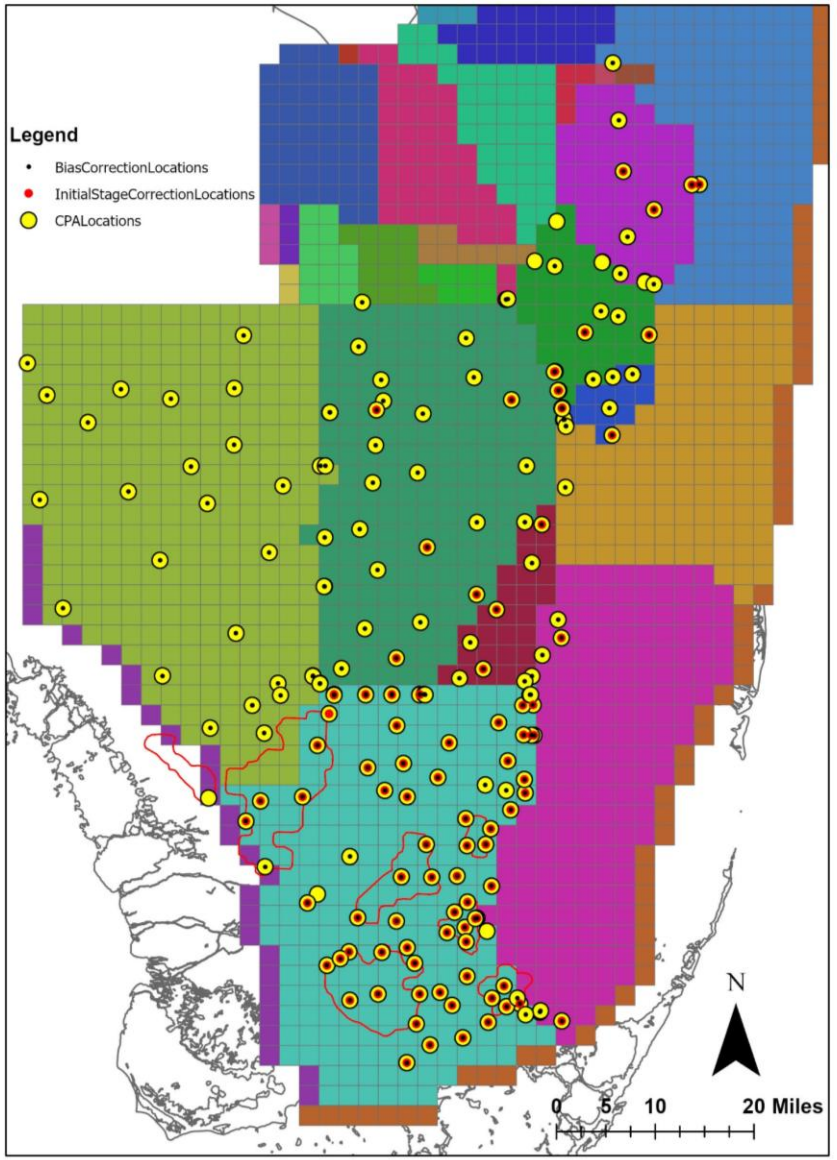
sfwmd.gov

CPA Overview

- CPA is a stochastic framework (CPA Overview) that transforms stages obtained from Dynamic Position Analysis (DPA) based on forecasted rainfall conditions over the next twelve months (Ali, 2016).
- CPA depends on DPA - DPA stage outputs are used as inputs to CPA (DPA). DPA uses a physically based model (SFWMM) to forecast stages from the currently observed stages using 52-years of historical rainfall.
- 3 rainfall outlook scenarios (climatological, CPC, and Preferred Scenario) are used to compare potential stage outlooks.
- CPA is implemented for 200+ locations in the greater Everglades including Lake Okeechobee and Lake Istokpoga*. Additionally, CPA is implemented for WCA1Avg (avg of Site 7, Site 8T, and Site 9) and WCA3AAvg (avg of Site 63, Site 64, and Site 65) stages (Khare et al., 2024) in the Everglades.

*see details on slide 16

Conditional Position Analysis (CPA) Gage Locations

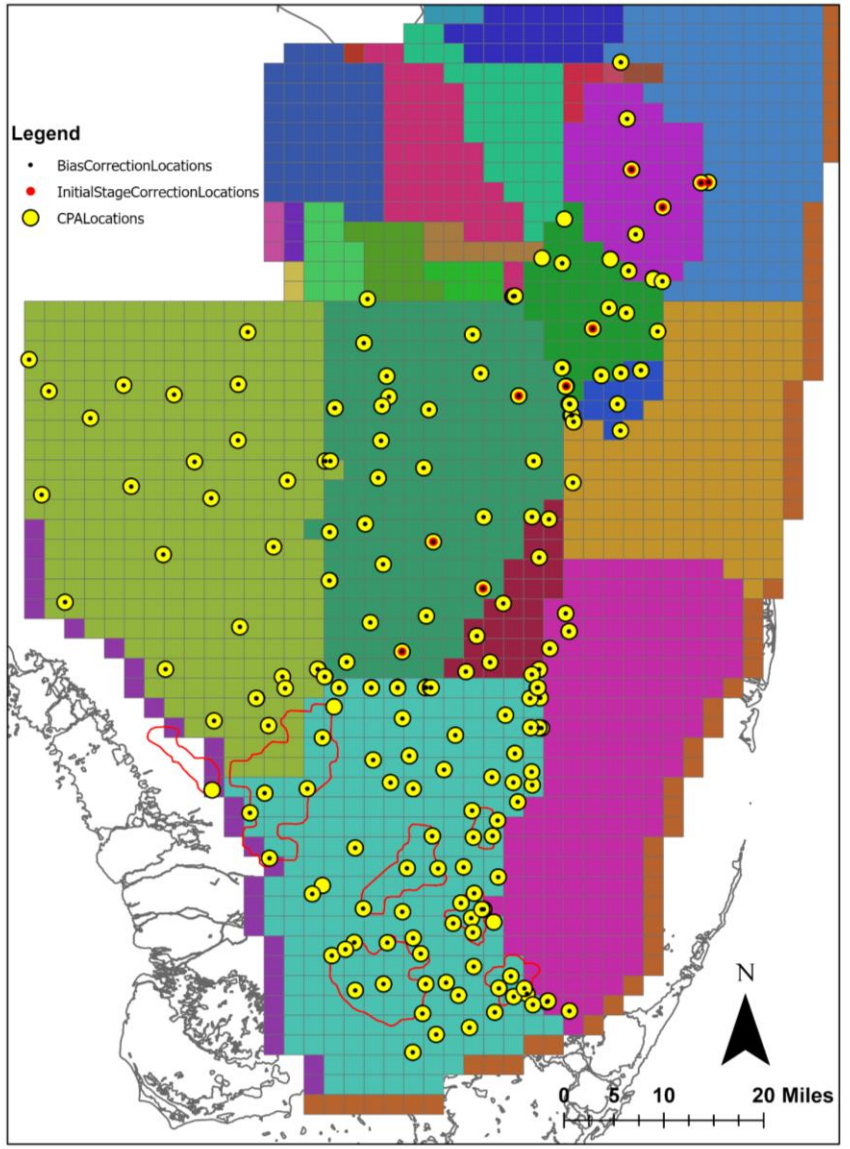


CPA Overview

CPA Outputs

- CPA forecasted stage percentiles from ‘Climatologic’ scenario are first collapsed on DPA stage percentiles. Corresponding adjustments are then applied to stage percentile lines for all other rainfall scenarios.

Conditional Position Analysis (CPA) Gage Locations



CPA: Rainfall Scenarios for November 15, 2026



Climatologic

- Climatologic scenario assumes equal chances of below-normal/dry, normal, and above-normal/wet rainfall conditions over next twelve 3 monthly seasons (slide 5).
- This scenario is the connecting link between DPA and all other scenarios simulated under CPA.

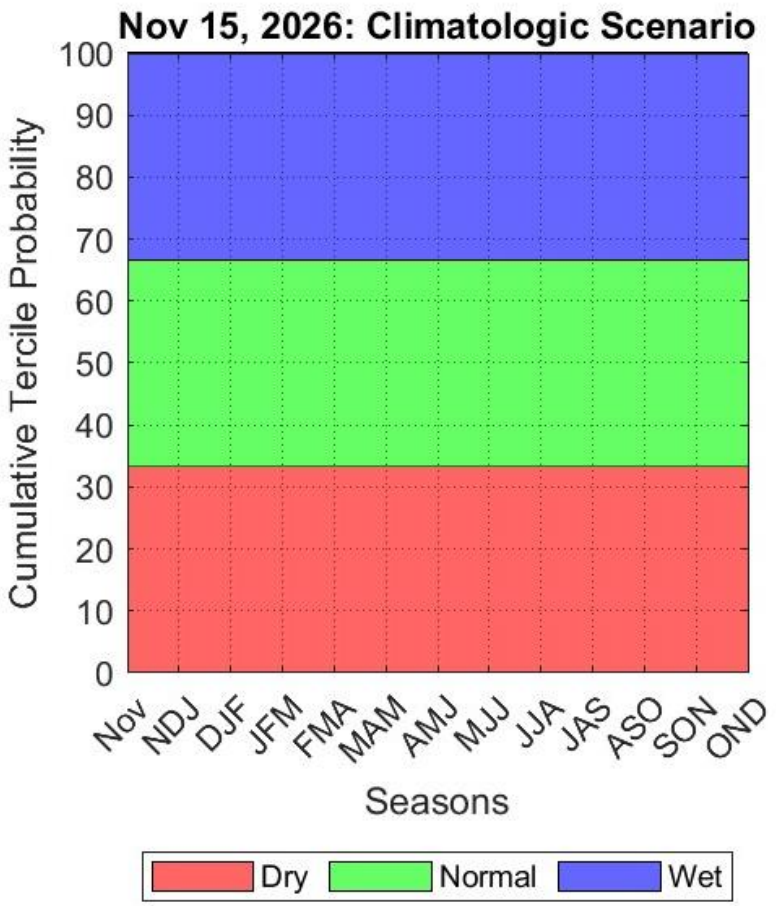
CPC

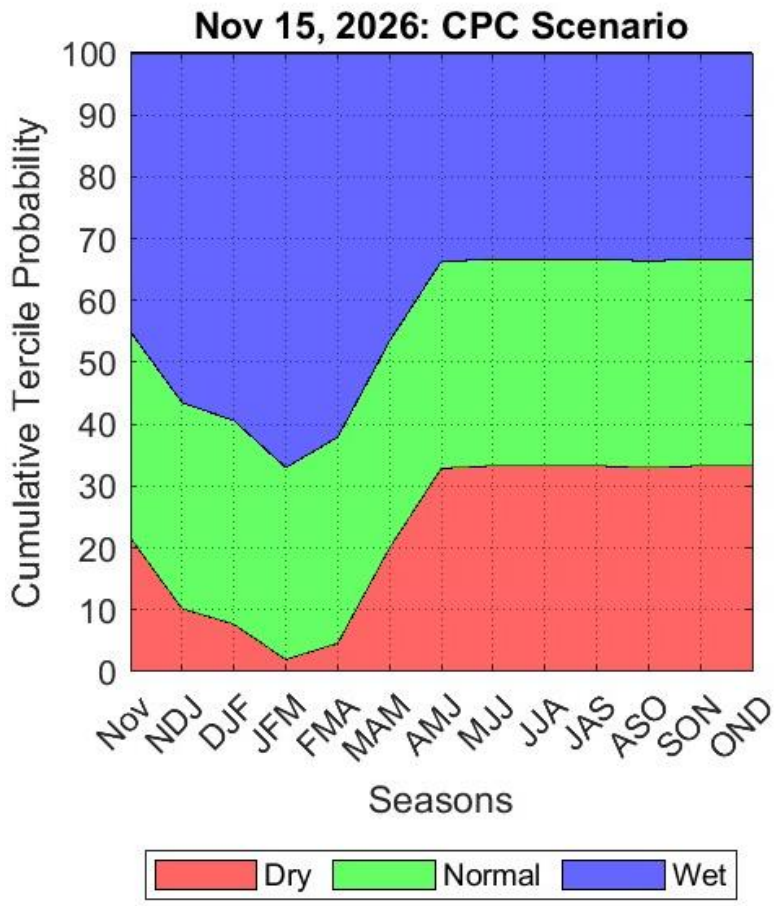
- This is based on official rainfall forecasts published by NOAA's Climate Prediction Center (CPC) every month (Climate Prediction Center - Forecasts & Outlook Maps, Graphs and tables (noaa.gov)).
- November 15, 2026, CPC rainfall scenario reflects the latest rainfall outlook released by CPC.

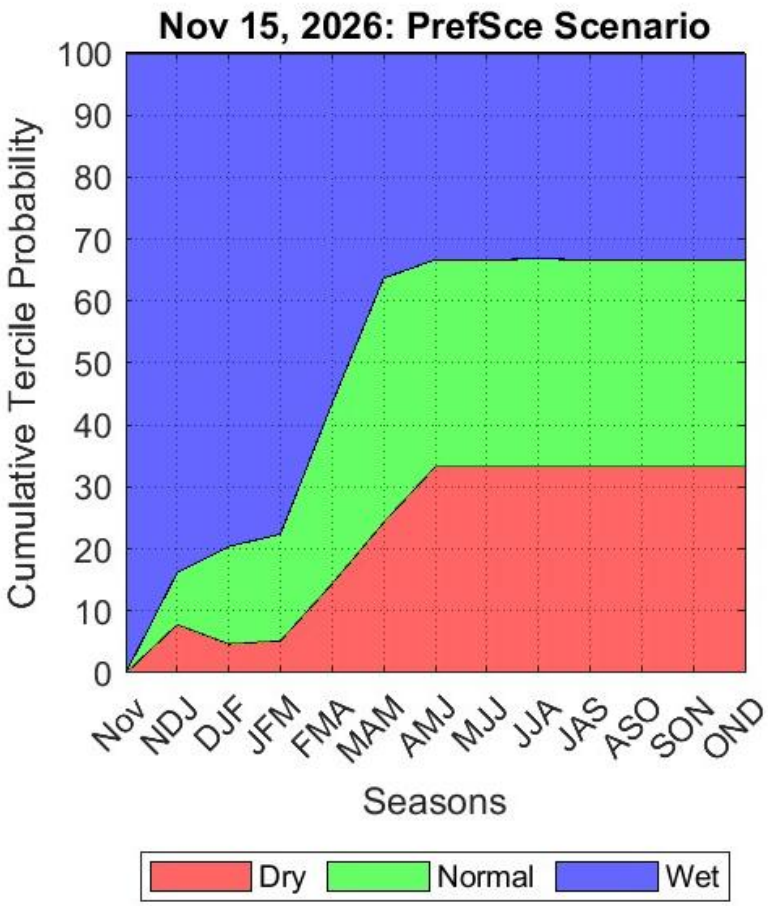
Preferred Scenario (PrefSce)

- This scenario (PrefSce) developed by the Water Resources & Systems Modeling Bureau (PrefSce Overview) represents a best professional judgement rainfall outlook.
- November 15, 2026, PrefSce rainfall scenario includes latest release of seasonal rainfall outlook from NOAA.
- The monthly probability of the remaining days of the current month is derived from the QPF estimates generated from WMD, WPC, ECMWF HRES, and 100 ECMWF ensembles, in combination with recently observed rainfall (NEXRAD) and historical rainfall data during 1991–2020.
- Seasonal rainfall tercile probabilities (except NDJ) are calculated based on historical data and projected Relative Oceanic Nino-3.4 Index (RONI) published by the CPC and adjusted for the seasonal weights of the ENSO signal to the historical rainfall.
- Seasonal rainfall tercile probabilities for the first season (NDJ) are calculated as a weighted blend of probabilities estimated from QPF for the remaining NDJ period, using the same approach applied to monthly probability estimation, and seasonal NDJ probabilities derived from historical data based on projected RONI and adjusted for seasonal weighting.

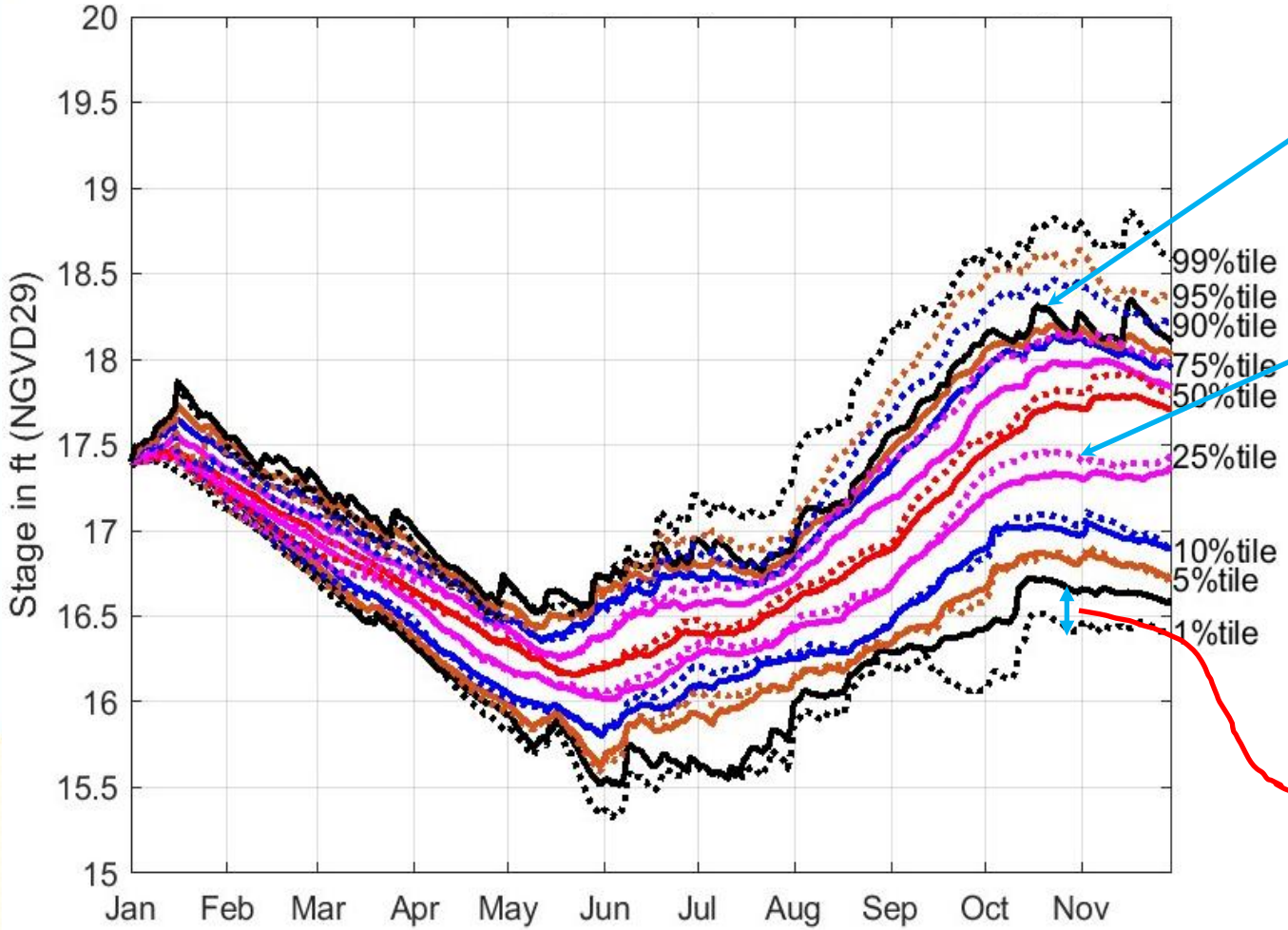
November 15, 2026 CPA: Rainfall Scenarios







CPA: Key to Reading Results



Solid lines → Climatological Scenario/DPA

Dotted lines → Alternative Rainfall Scenario

Black lines → 1% and 99%
Brown lines → 5% and 95%
Blue lines → 10% and 90%
Pink lines → 25% and 75%
Red lines → 50%

Need to focus on how DPA percentile lines shift under Alternate Rainfall Scenario

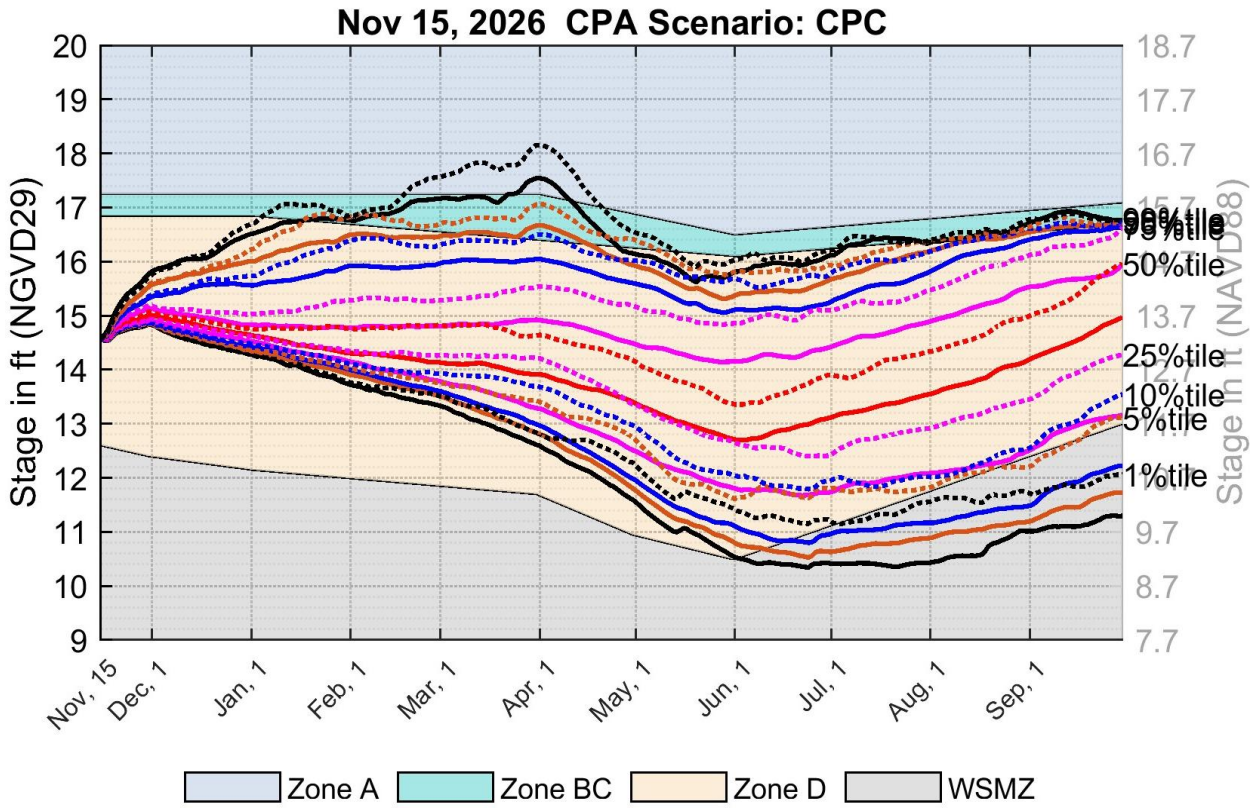


LOSOM

November 15, 2026 CPA: Lake Okeechobee

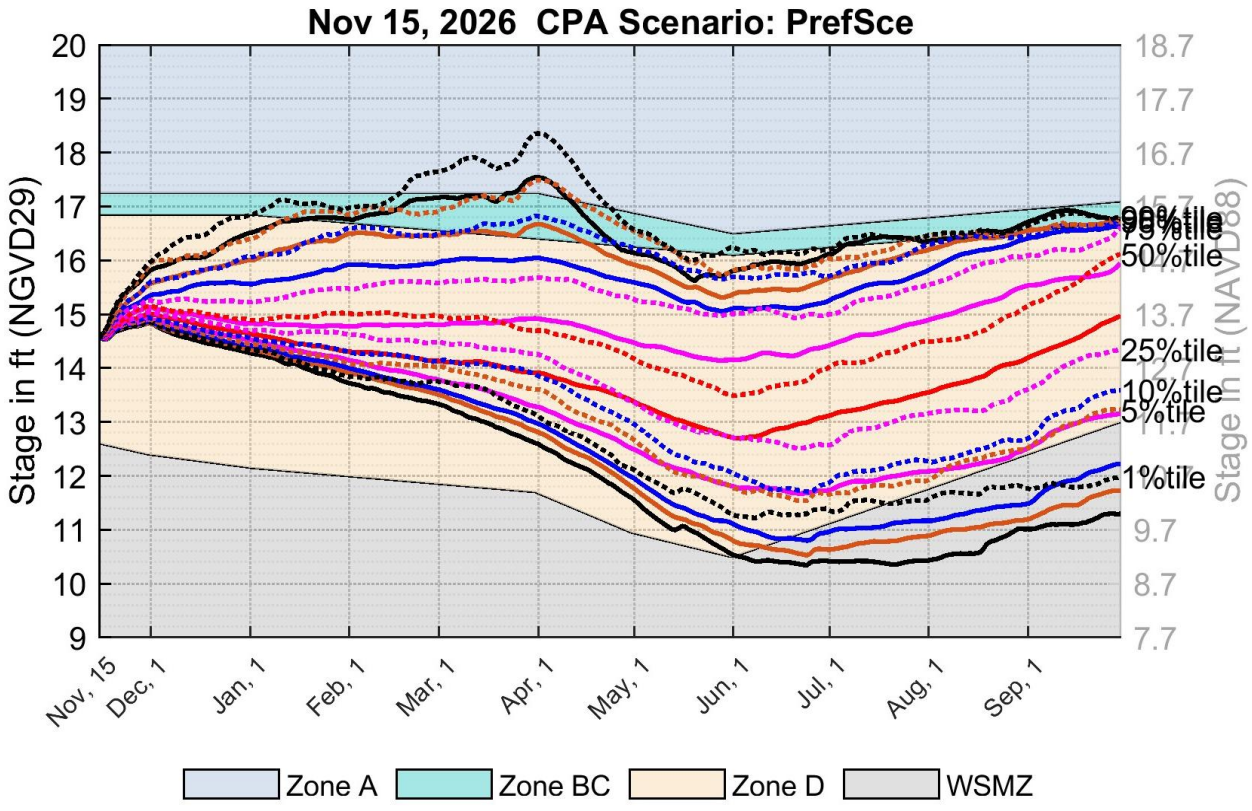
CPC

LOK



PrefSce

LOK



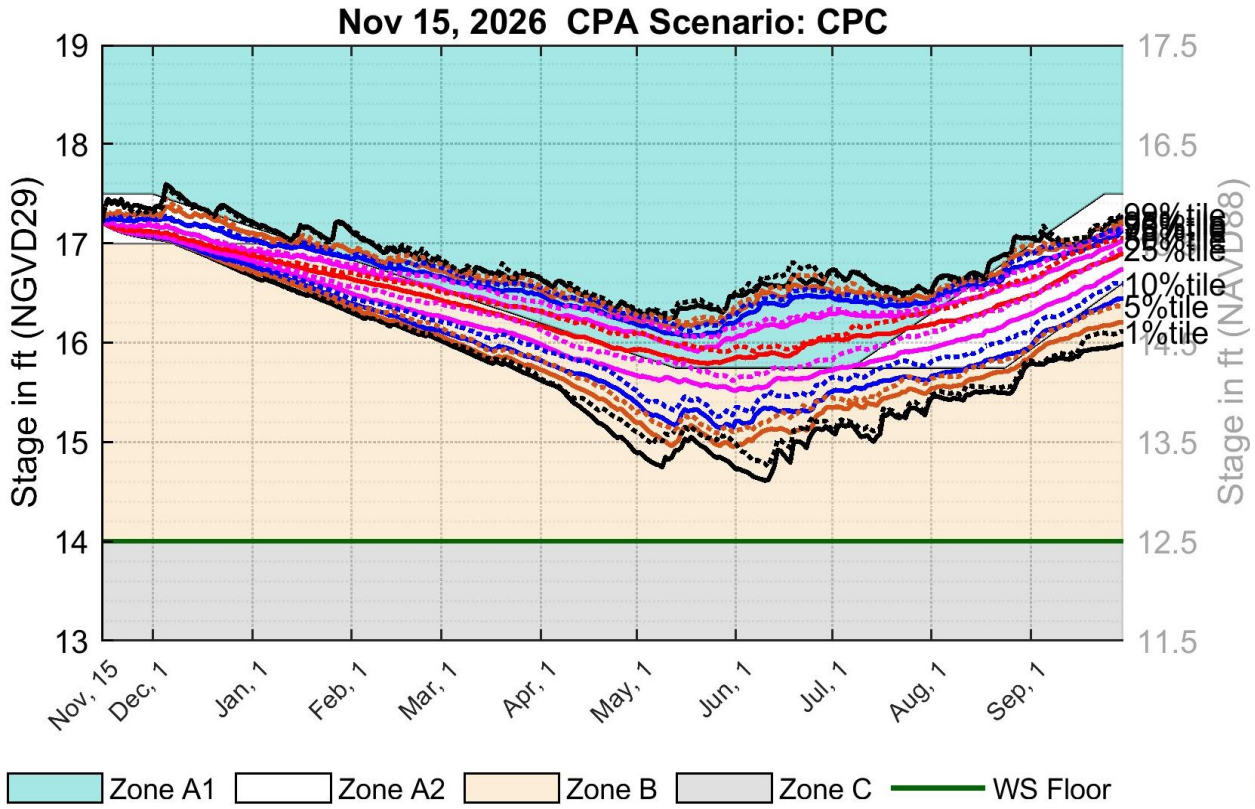
Secondary vertical axis shows stages in NAVD88. These stages are based on agreed upon regulation schedule conversion offsets between NGVD29 and NAVD88 (1.30 ft for Lake Okeechobee).

November 15, 2026 CPA: WCA-1 3-Gage Avg.



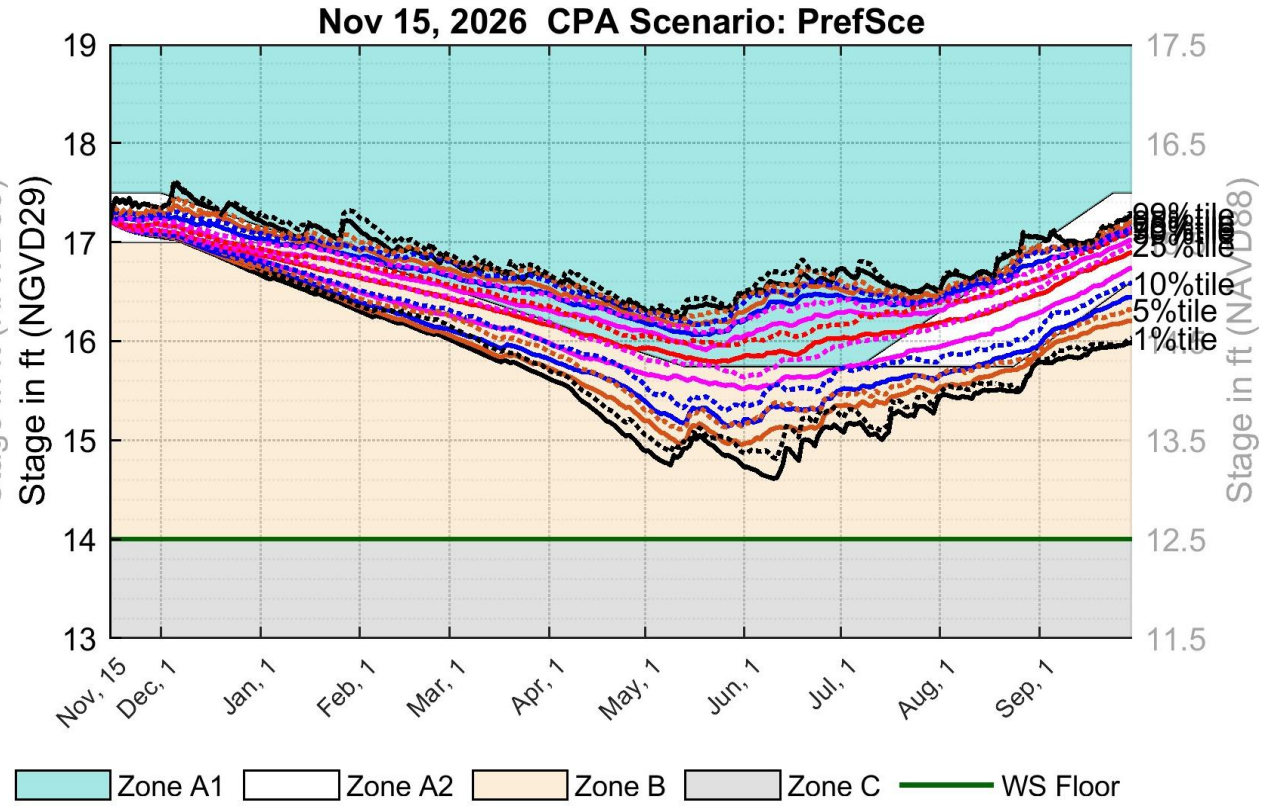
CPC

WCA-1 3-Gage Avg.



PrefSce

WCA-1 3-Gage Avg.

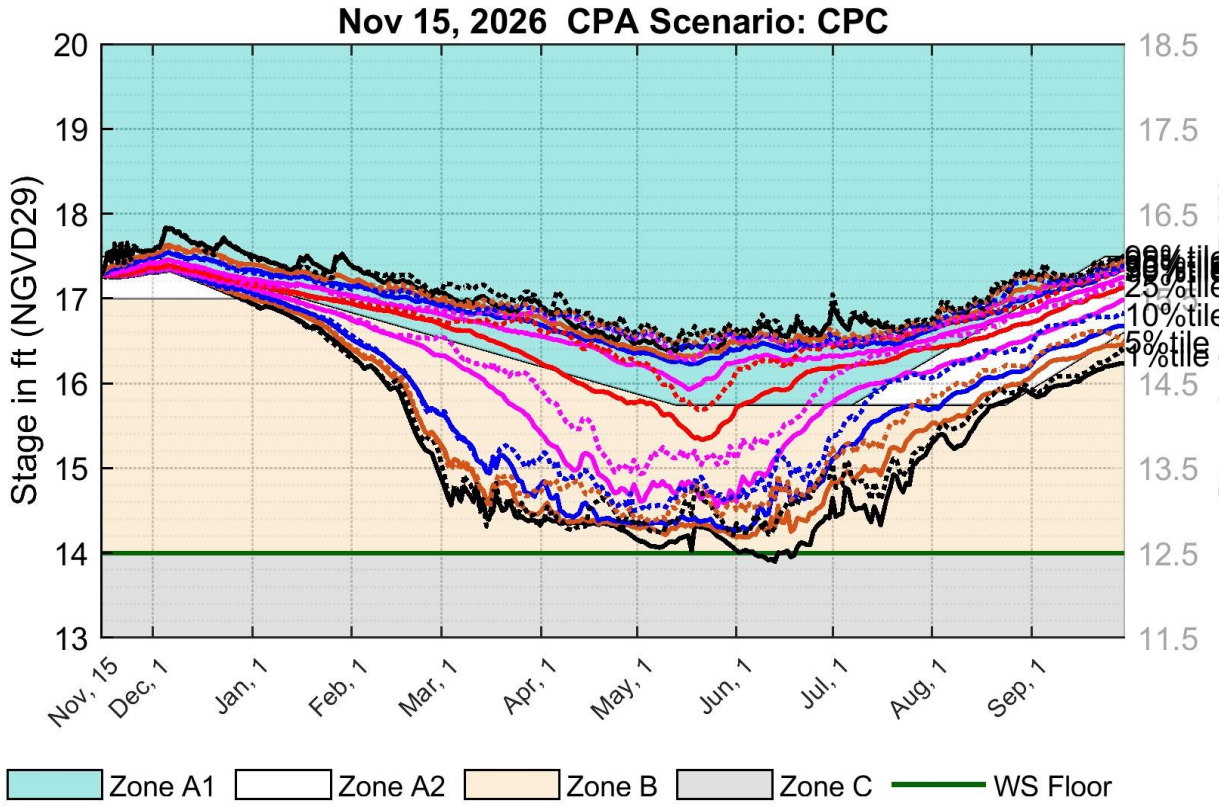


Secondary vertical axis shows stages in NAVD88. These stages are based on agreed upon regulation schedule conversion offsets between NGVD29 and NAVD88 (1.5 ft for WCA-1).

November 15, 2026 CPA: WCA-1 Site-8C

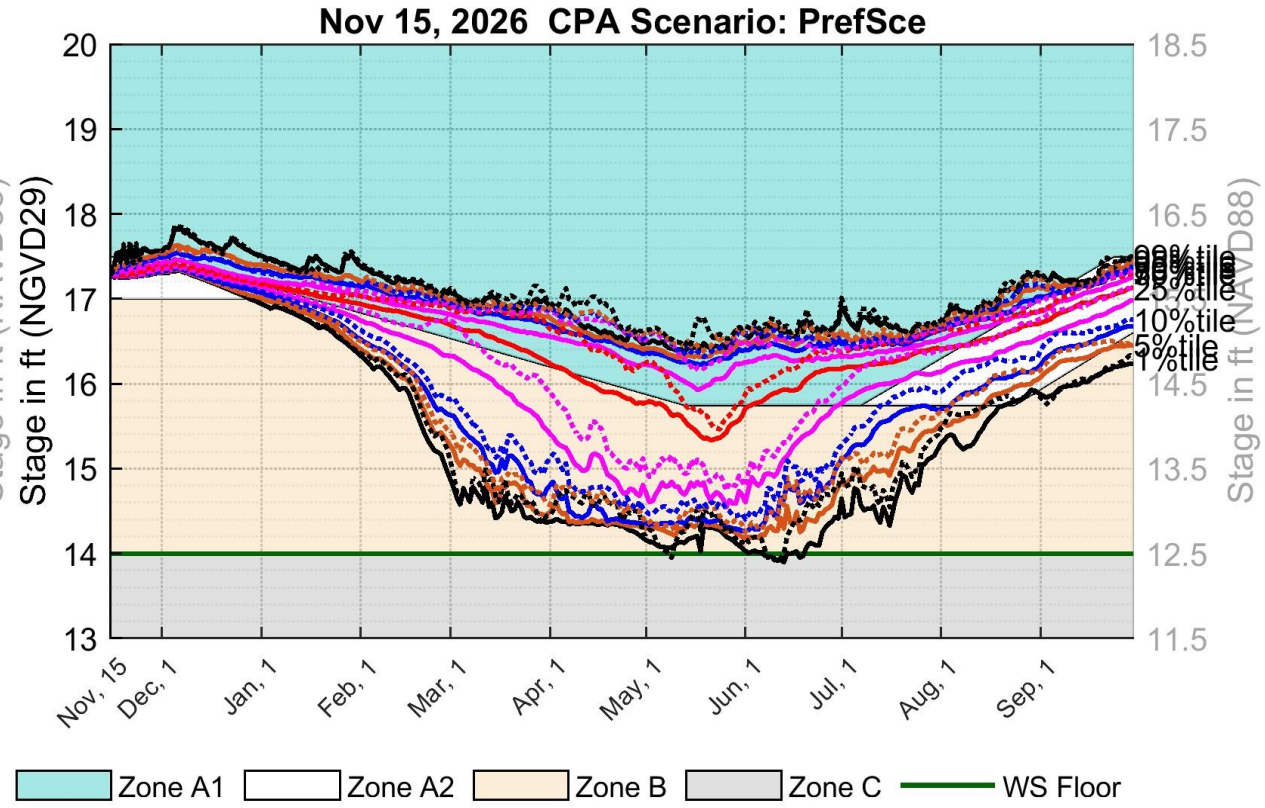
CPC

WCA-1 Site-8C



PrefSce

WCA-1 Site-8C

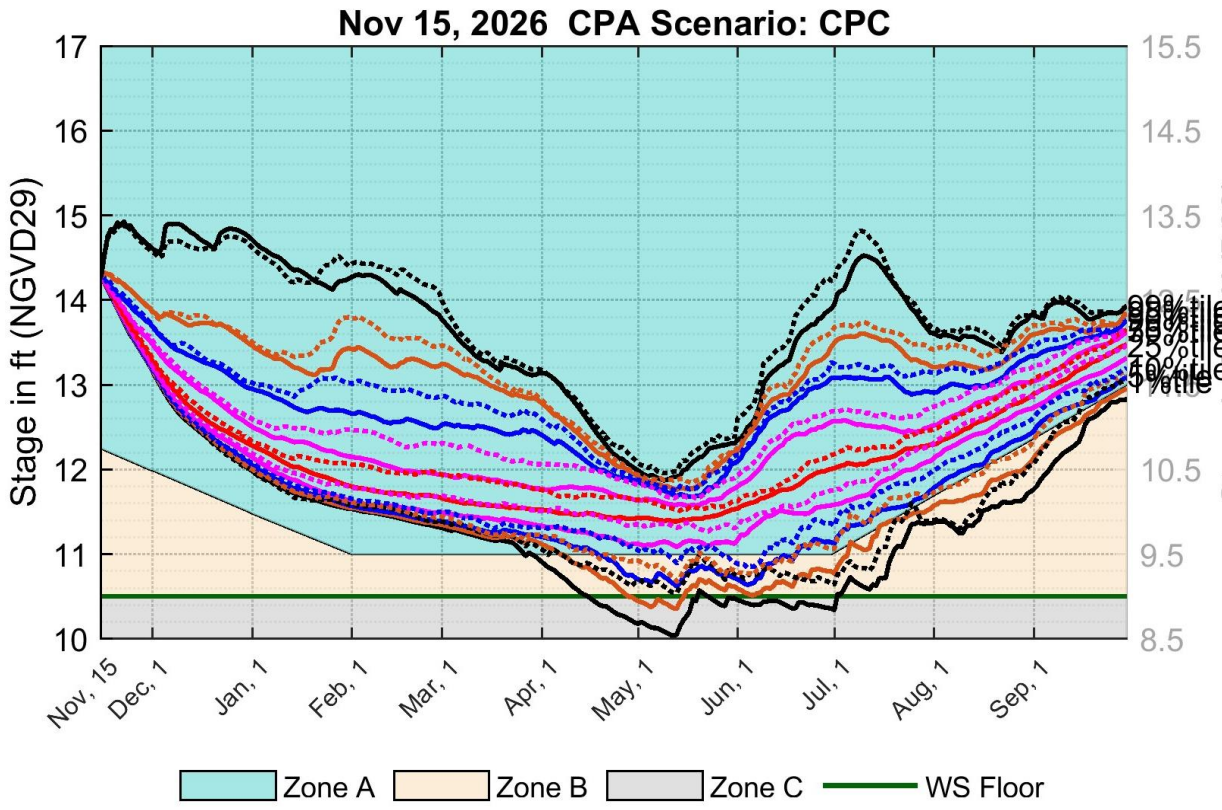


Secondary vertical axis shows stages in NAVD88. These stages are based on agreed upon regulation schedule conversion offsets between NGVD29 and NAVD88 (1.5 ft for WCA-1).

November 15, 2026 CPA: WCA-2A Site-17

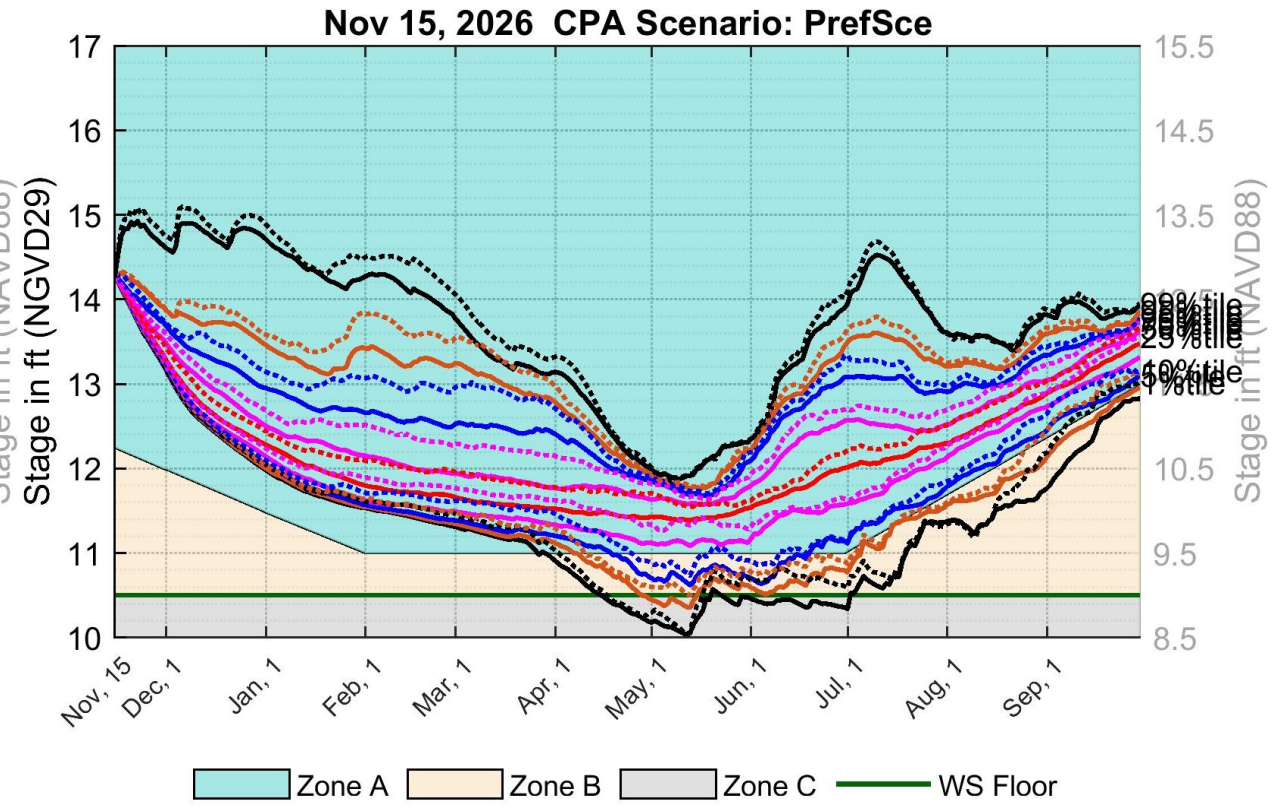
CPC

WCA-2A Site-17



PrefSce

WCA-2A Site-17

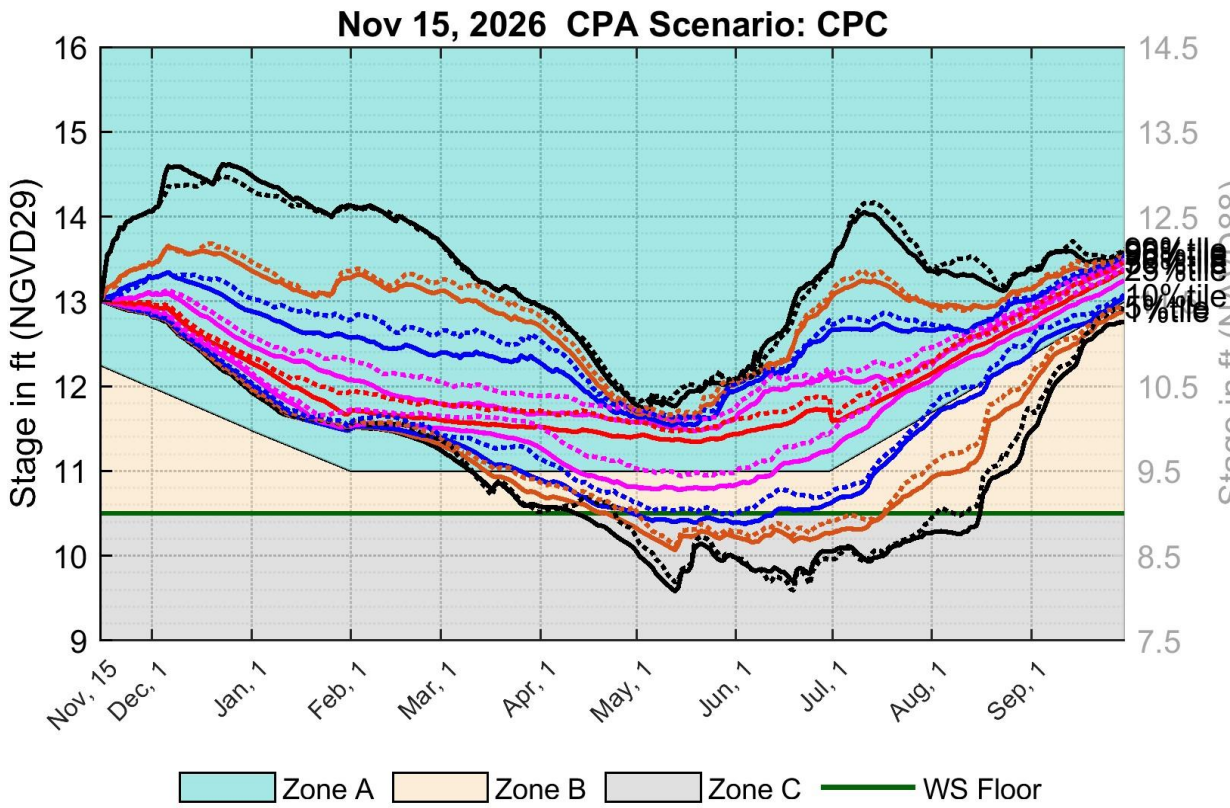


Secondary vertical axis shows stages in NAVD88. These stages are based on agreed upon regulation schedule conversion offsets between NGVD29 and NAVD88 (1.5 ft for WCA-2A).

November 15, 2026 CPA: WCA-2A S-11B_H

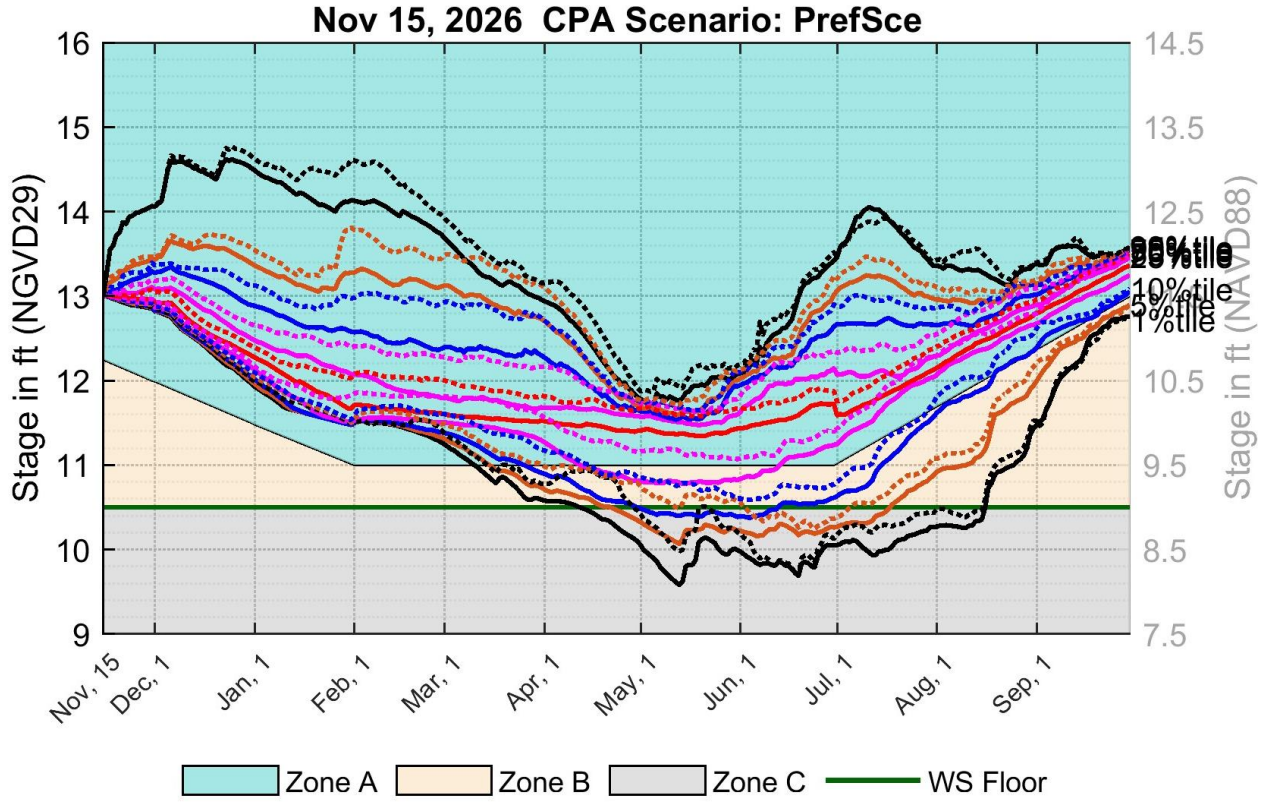
CPC

WCA-2A S-11B_H



PrefSce

WCA-2A S-11B_H

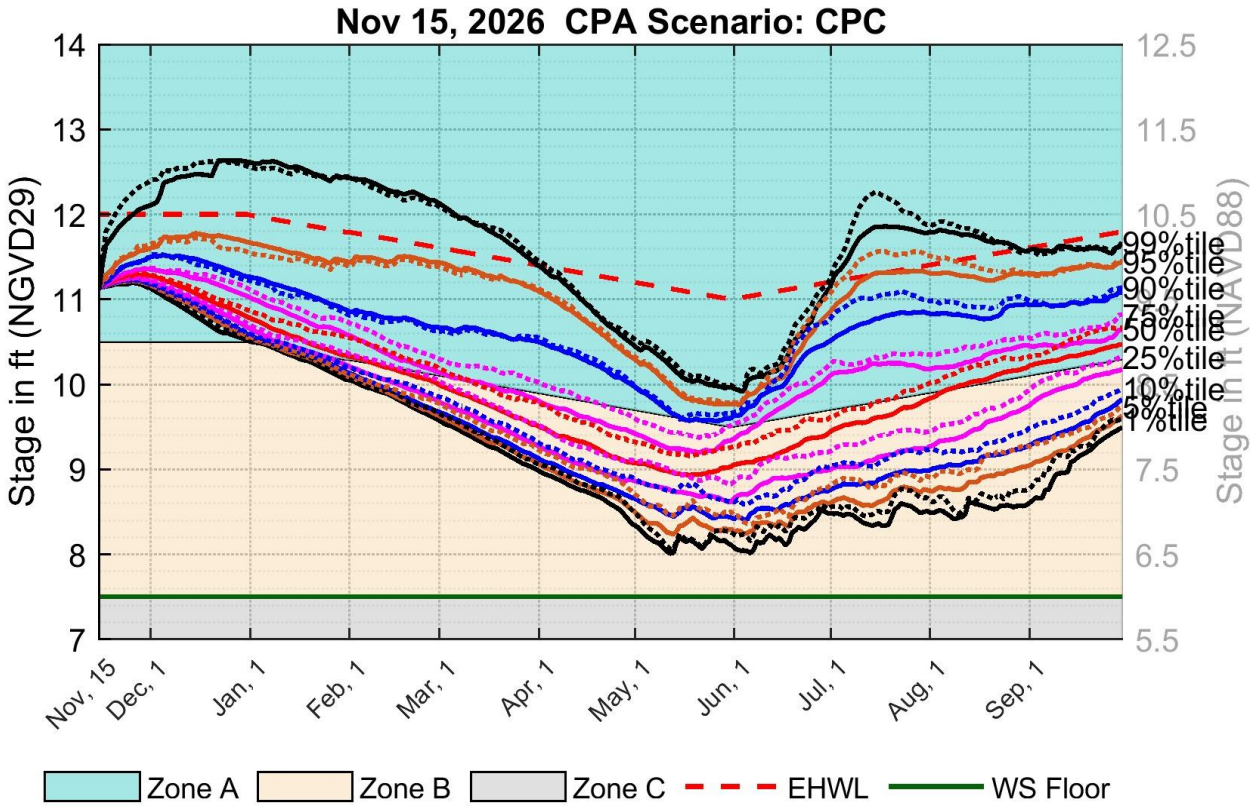


Secondary vertical axis shows stages in NAVD88. These stages are based on agreed upon regulation schedule conversion offsets between NGVD29 and NAVD88 (1.5 ft for WCA-2A).

November 15, 2026 CPA: WCA-3A 3-Gage Avg.

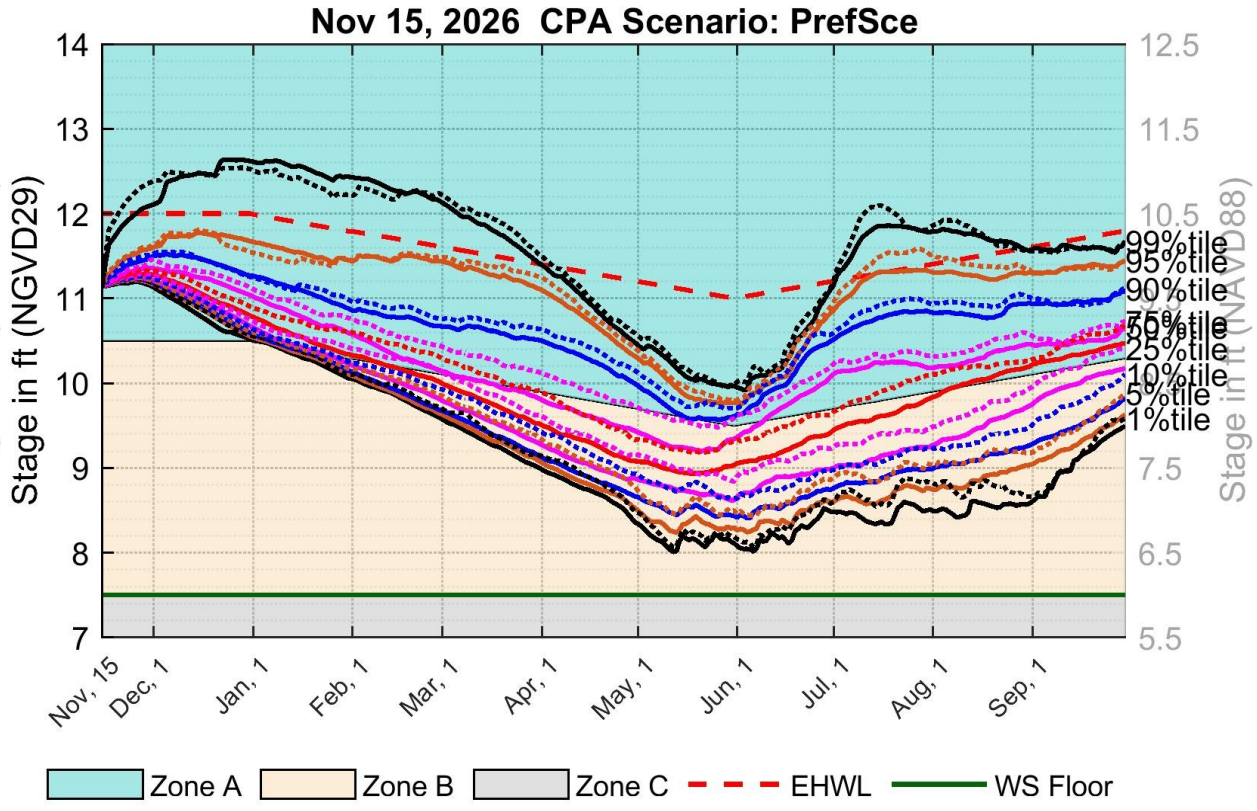
CPC

WCA-3A 3-Gage Avg.



PrefSce

WCA-3A 3-Gage Avg.



Secondary vertical axis shows stages in NAVD88. These stages are based on agreed upon regulation schedule conversion offsets between NGVD29 and NAVD88 (1.5 ft for WCA-3A).



NOVEMBER 15, 2026: CPA IMPLEMENTATION

LAKE ISTOKPOGA

Lake Istokpoga CPA Implementation Overview



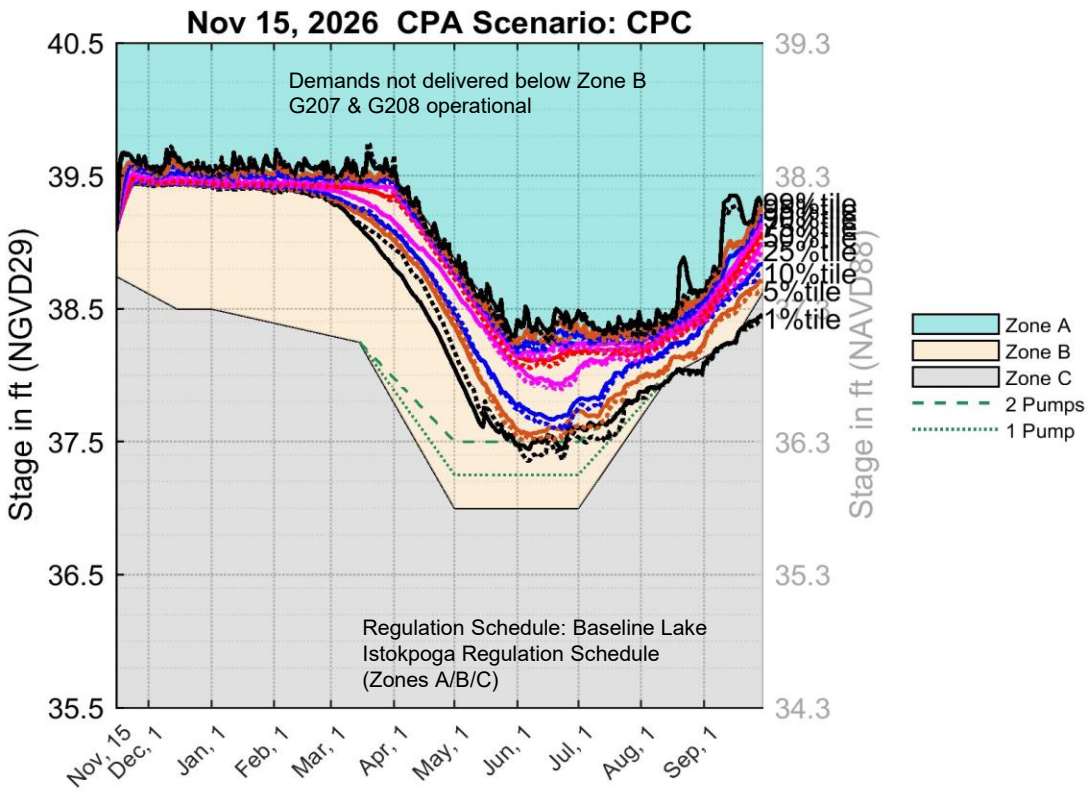
- CPA is implemented for Lake Istokpoga using a daily mass-balance based Lake Istokpoga Position Analysis (PA) model for the following scenarios:
  - **Baseline Release Logic:** Release based on standard Lake Istokpoga Regulation Schedule (Zones A/B/C). Deliveries not allowed below Zone B.
    - G207/208 Operational
    - G207/208 Not Operational
  - **C1 Temporary Deviation**: Lake Istokpoga Regulation Schedule (Zones A/B/C1/C) implemented with the 2026 temporary deviation line as the active water-supply floor. Deliveries allowed below standard Zone B but stop when stage falls below Zone C1.
    - G207/208 Operational
    - G207/208 Not Operational

November 15, 2026 CPA: Lake Istokpoga

Baseline Release (demands not delivered below Zone B) and G207/G208 pumps operational

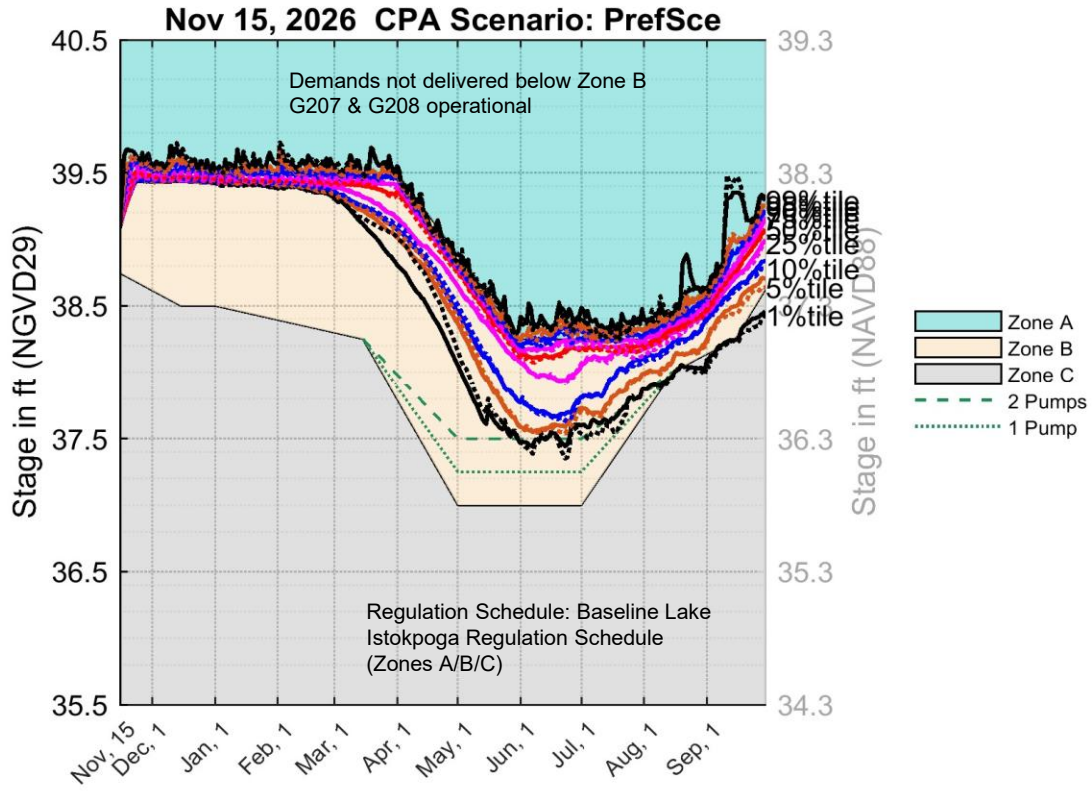
CPC

Lake Istokpoga



PrefSce

Lake Istokpoga



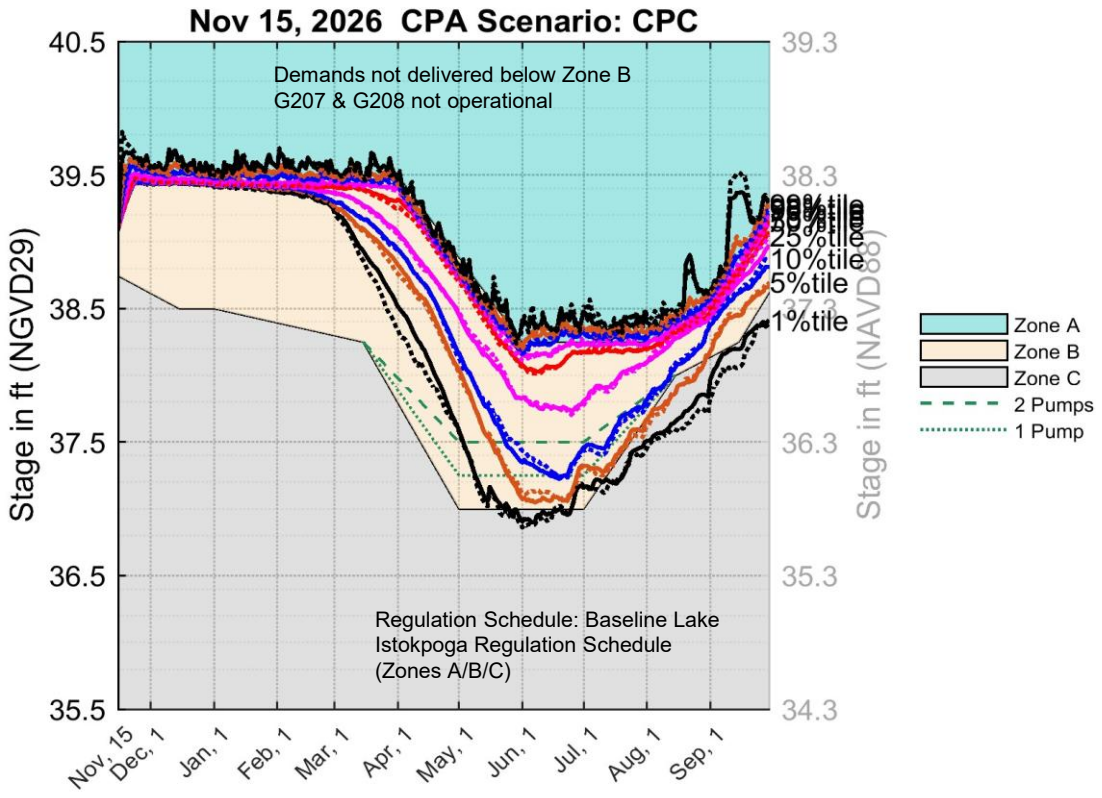
Secondary vertical axis shows stages in NAVD88. These stages are based on the agreed upon regulation schedule conversion offsets between NGVD29 and NAVD88 (1.2 ft for Lake Istokpoga).

November 15, 2026 CPA: Lake Istokpoga

Baseline Release (demands not delivered below Zone B) and G207/G208 pumps not operational

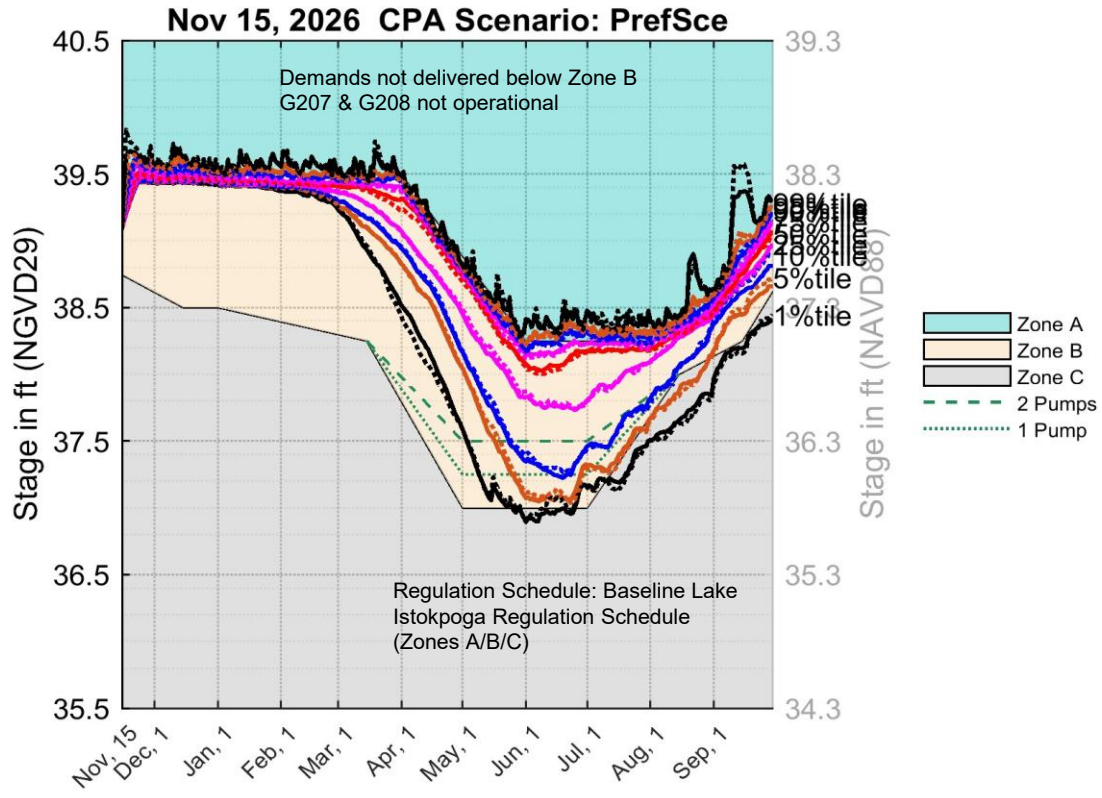
CPC

Lake Istokpoga



PrefSce

Lake Istokpoga



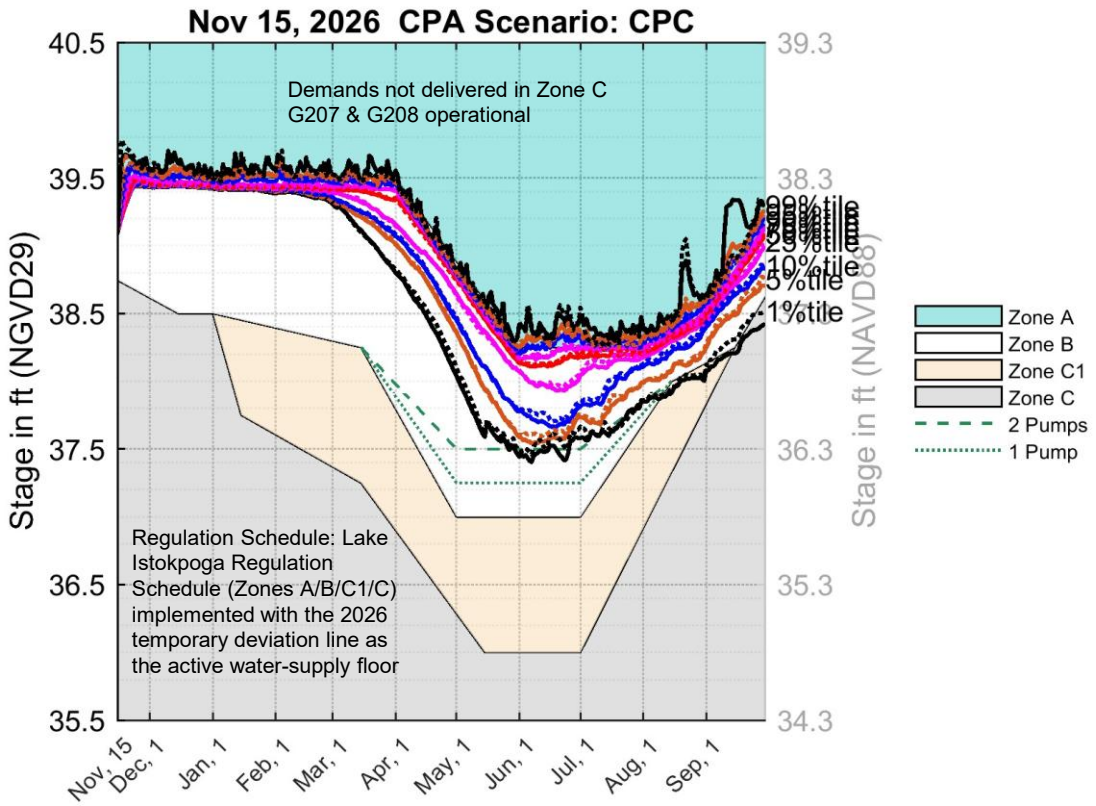
Secondary vertical axis shows stages in NAVD88. These stages are based on the agreed upon regulation schedule conversion offsets between NGVD29 and NAVD88 (1.2 ft for Lake Istokpoga).

November 15, 2026 CPA: Lake Istokpoga

C1 Temporary Deviation (demands not delivered in Zone C) and G207/G208 pumps operational

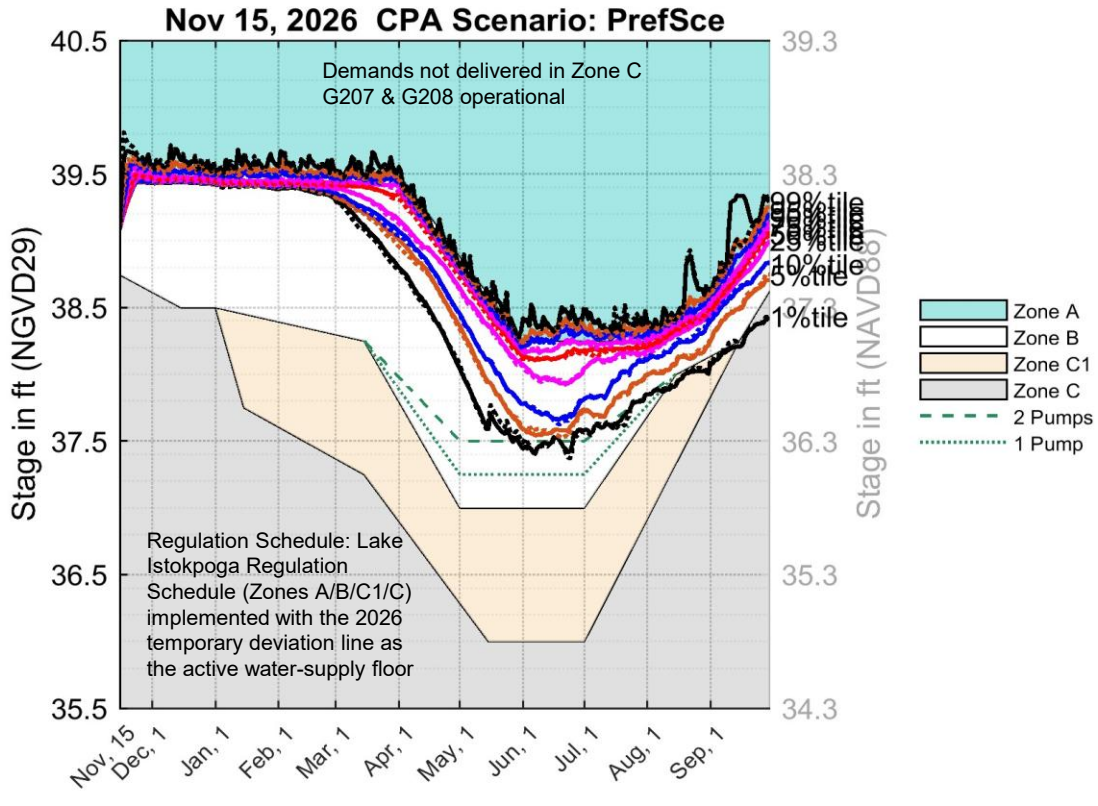
CPC

Lake Istokpoga



PrefSce

Lake Istokpoga



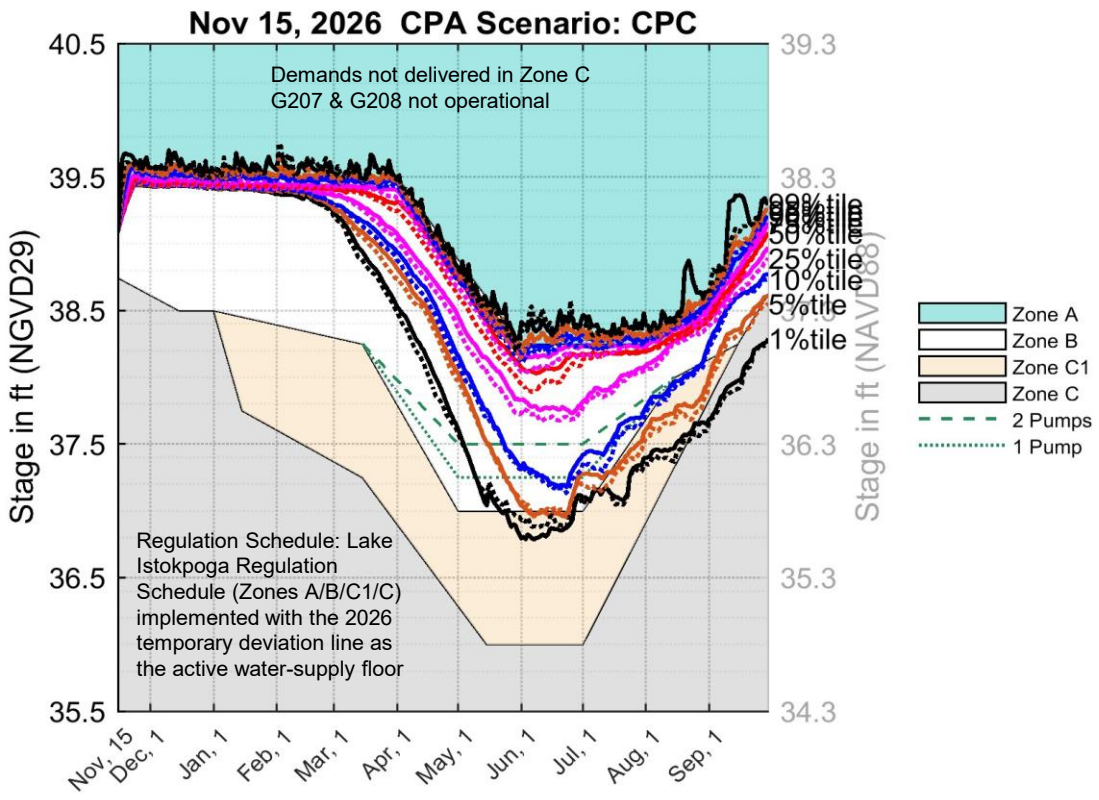
Secondary vertical axis shows stages in NAVD88. These stages are based on the agreed upon regulation schedule conversion offsets between NGVD29 and NAVD88 (1.2 ft for Lake Istokpoga).

November 15, 2026 CPA: Lake Istokpoga

C1 Temporary Deviation (demands not delivered in Zone C) and G207/G208 pumps not operational

CPC

Lake Istokpoga



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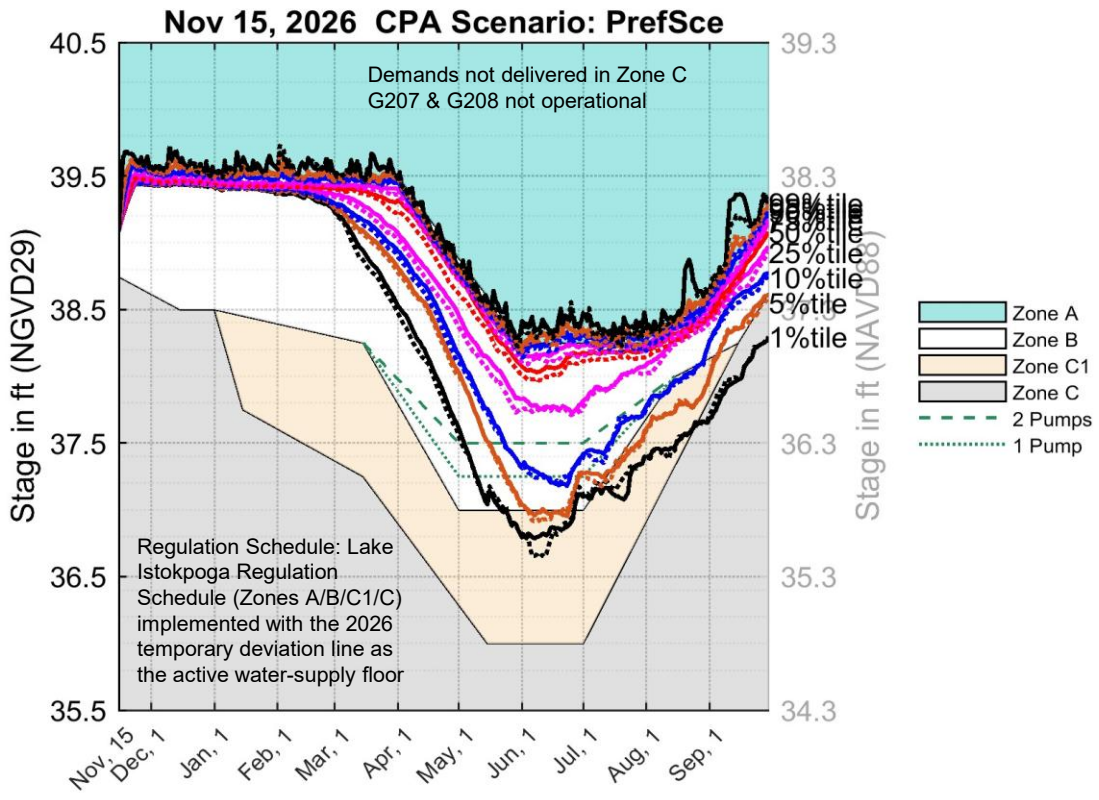
Lake Istokpoga



Secondary vertical axis shows stages in NAVD88. These stages are based on the agreed upon regulation schedule conversion offsets between NGVD29 and NAVD88 (1.2 ft for Lake Istokpoga).