



— BUREAU OF —
RECLAMATION

Central Valley Project (CVP) Reclamation's Water & Power Operations Outlook for Summer 2022

Kristin White, Manager
Central Valley Operations Office
California-Great Basin Interior Region 10
U.S. Bureau of Reclamation
May 18, 2022

Agenda

- Background on CVP, CVO and Kristin White
- 2022 CVP Water
- 2022 CVP Hydropower



The Central Valley Project (CVP)

- 20 dams & reservoirs
- 500 miles of canals
- 11 powerplants
- 10 pumping plants
- Average annual production
 - About 5 million acre-feet ag delivery (approx. 3 mil acres of farm land)
 - About 600,000 acre-feet M&I supply (about 2 million people)
 - About 4,500 gigawatt hours hydroelectric energy (approximately a quarter is first delivered to Project Use Energy loads)
- Central Valley Operations Office
 - Line authority for directing and integrating CVP water and power operations.
 - 3 Operational divisions: Power, Water and Industrial controls



Existing Federal and State Storage and Conveyance Systems in California

- [illegible]

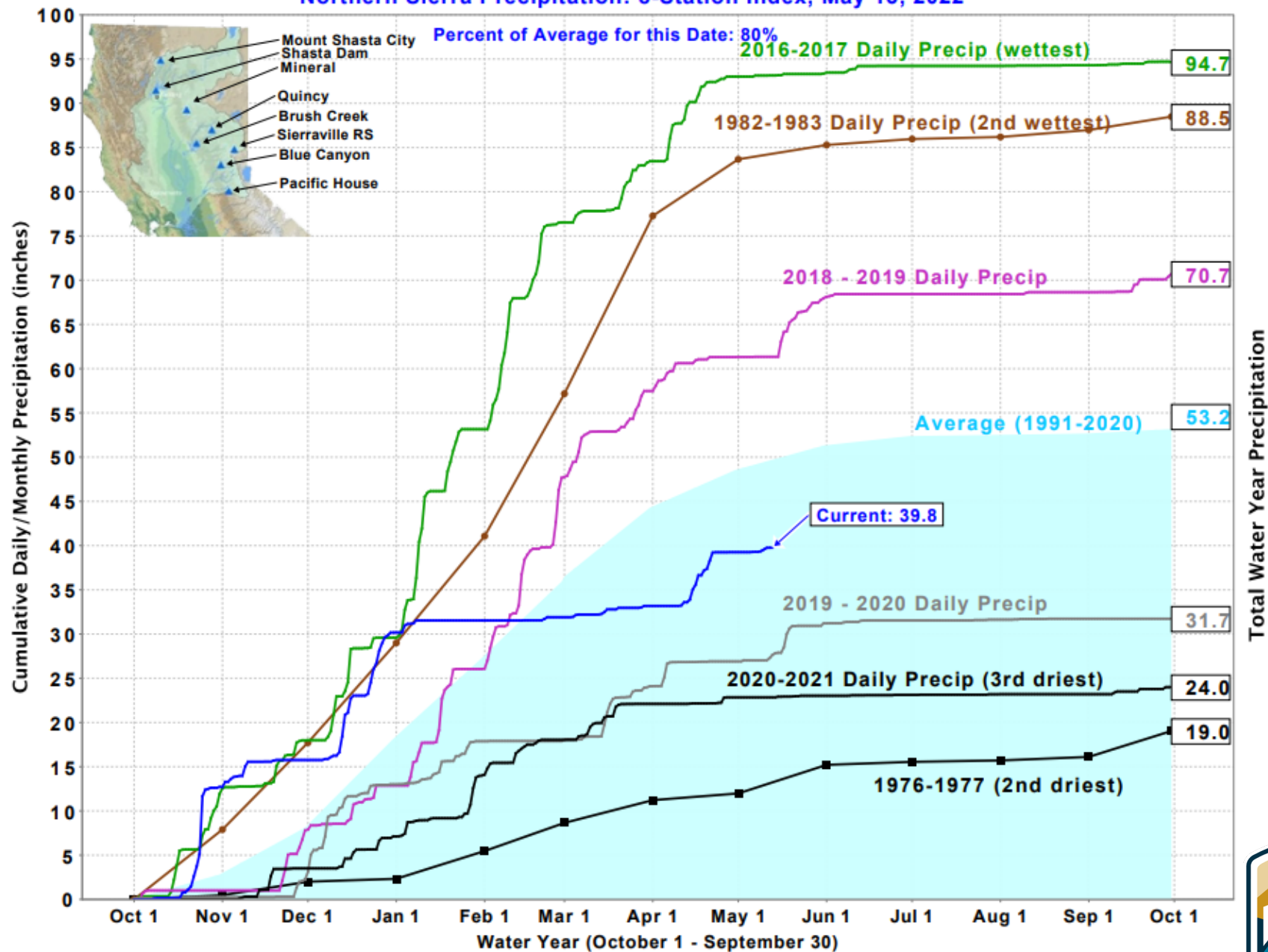


CVP WY22 Conditions Overview

- Navigating a third dry year with goals of public health and safety, and storage conservation
- On the heels of a dry 2020 and 2021
- Shasta storage currently around 1.8 MAF (47% of avg)
- WY22 meteorology and hydrology whiplash
- Bracing for unprecedented summer/fall Shasta operations



Northern Sierra Precipitation: 8-Station Index, May 13, 2022



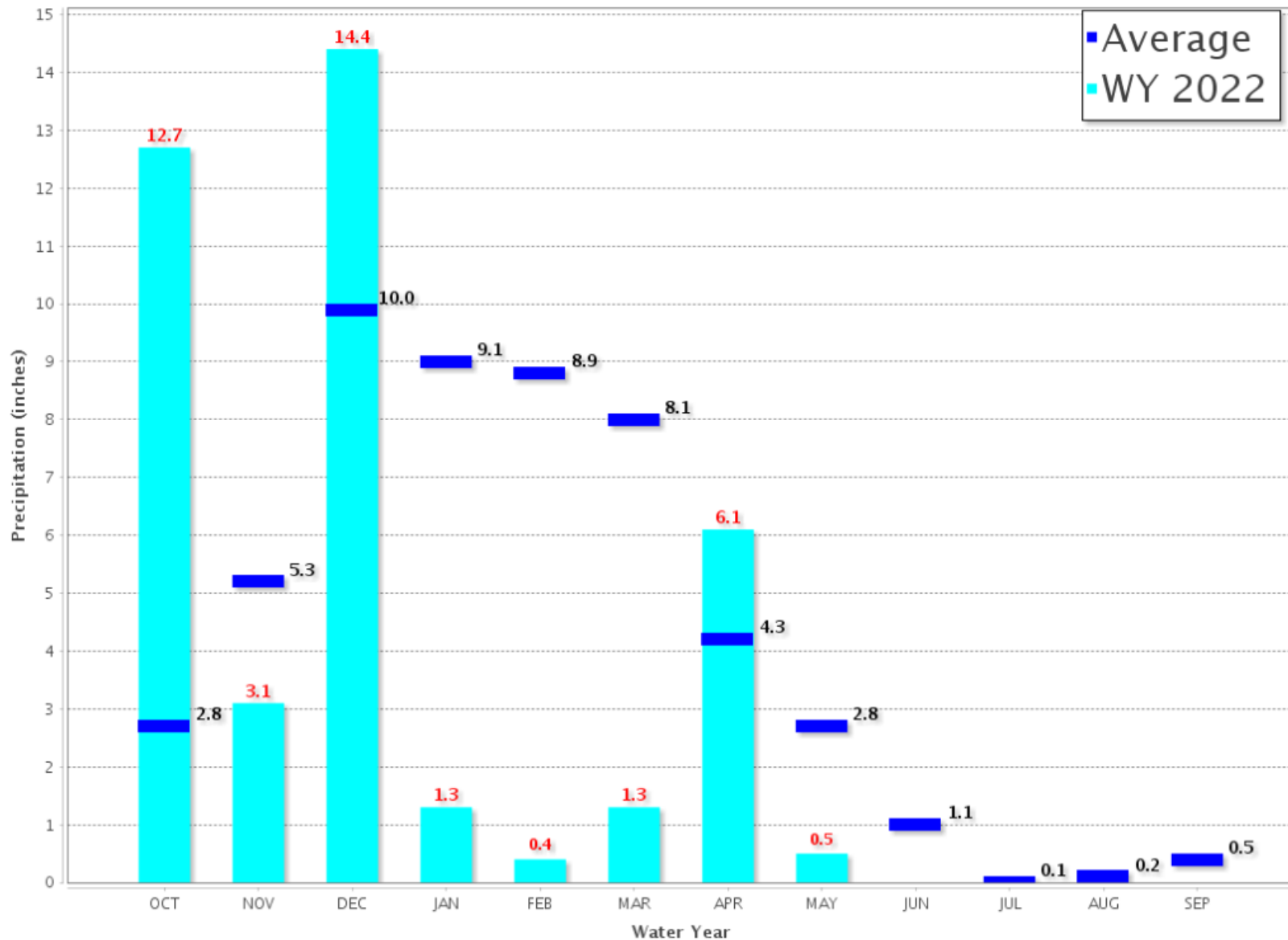


Northern Sierra 8-Station

Precipitation Index for Water Year 2022 – Updated on May 13, 2022 08:35 AM

Note: Monthly totals may not add up to seasonal total because of rounding

Water Year Monthly totals are calculated based on Daily precipitation data from 12am to 12am PST



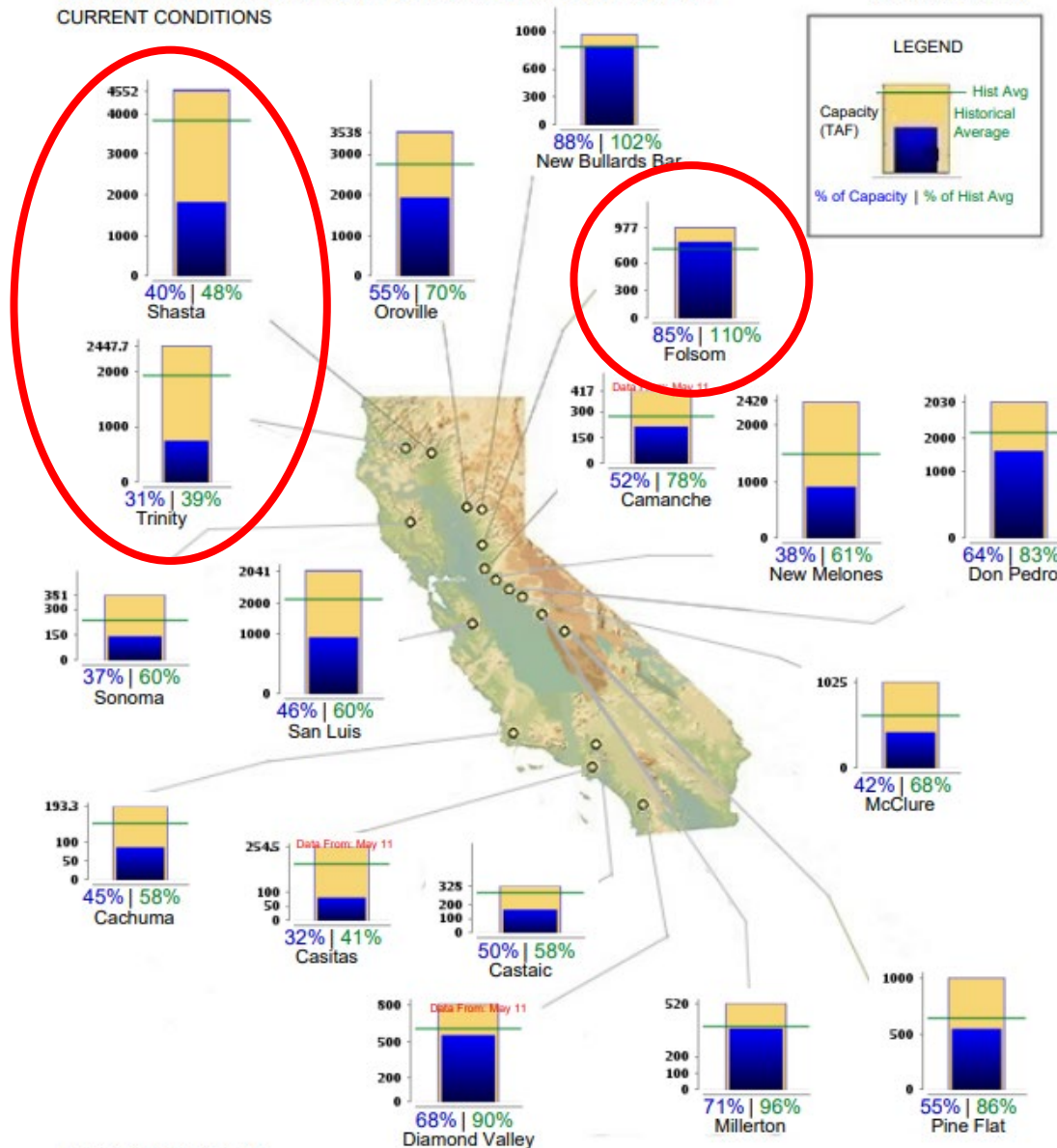


CURRENT RESERVOIR CONDITIONS

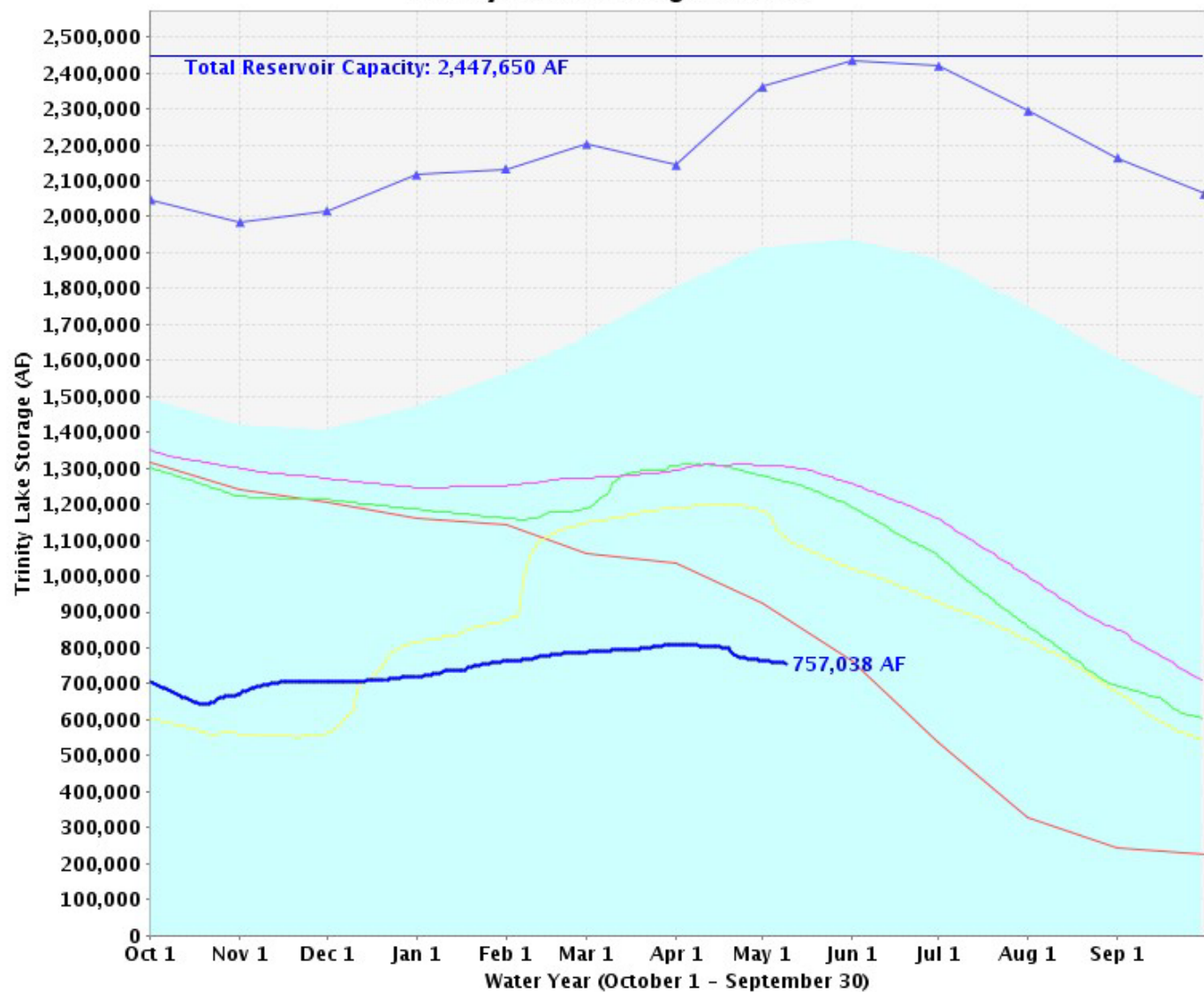
CALIFORNIA MAJOR WATER SUPPLY RESERVOIRS

CURRENT CONDITIONS

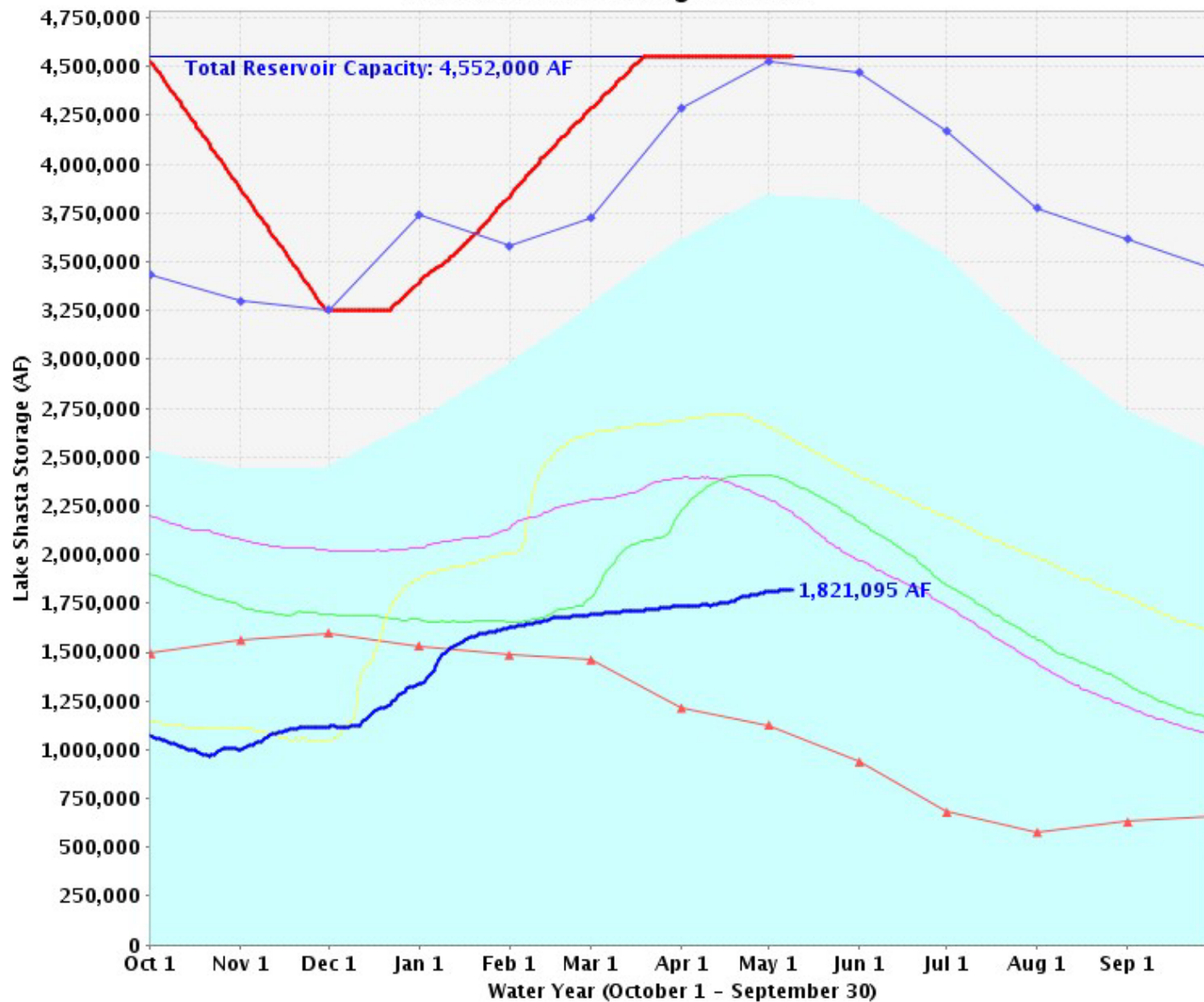
Midnight - May 12, 2022



Trinity Lake Storage Levels



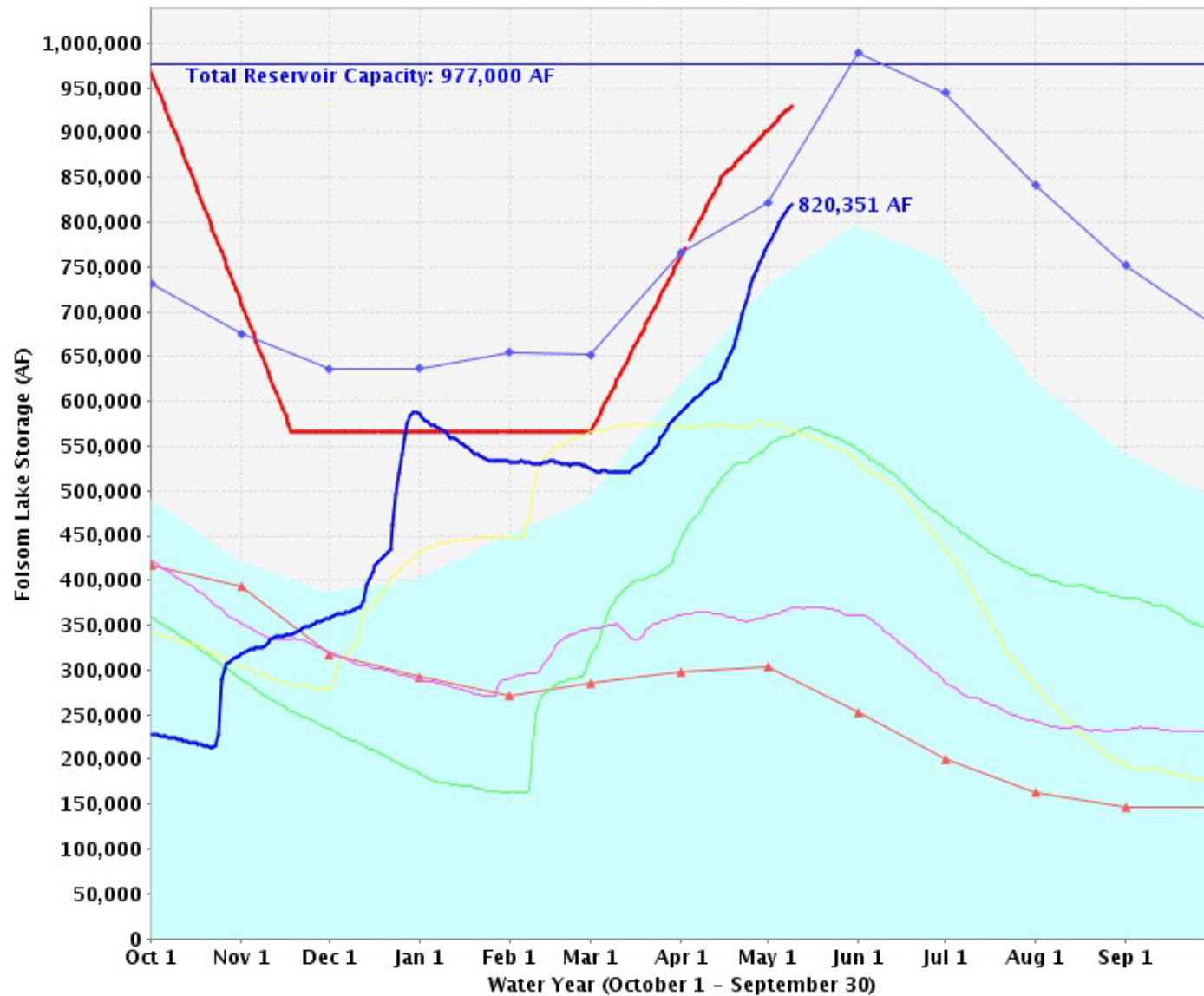
Lake Shasta Storage Levels



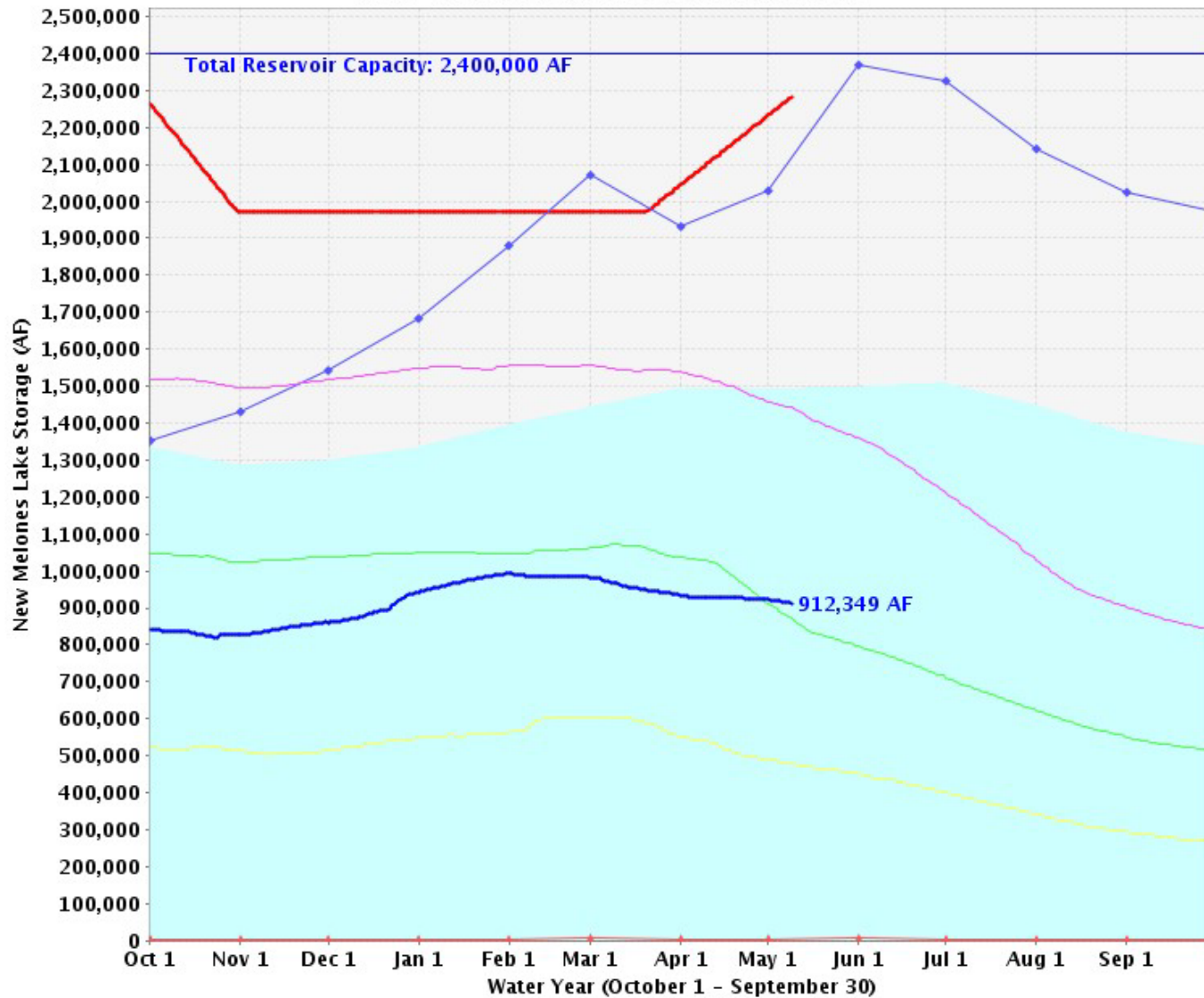
Historical Average — Total Reservoir Capacity — TOC — 1976-1977 (dry) — 1982-1983 (wet) — 2013-2014
 — 2014-2015 — 2020-2021 — 2021-2022(current)



Folsom Lake Storage Levels



New Melones Lake Storage Levels



■ Historical Average
 — Total Reservoir Capacity
 — TOC
 ★ 1976-1977 (dry)
 ◆ 1982-1983 (wet)
 — 2013-2014
 — 2014-2015
 — 2020-2021
 — 2021-2022(current)



WY22 Drought Actions

- **Delta:**
 - Requested and received relaxations for delta requirements April 1 – June 30 to limit how much stored water needs to be released for delta needs
 - Backfill West False River Drought Barrier notch to help with summer salinity
- **Upstream Operations**
 - Shasta Temperature Management plan and reduced releases
 - Trinity storage conservation (reduced imports) and temperature management
 - Rely heavily on Folsom and Oroville to maintain delta operations in the summer
- **Allocations:**
 - SWP: Reduced from 15% to 5%, which is primarily meeting public health and safety
 - CVP: 0% agricultural and all M&I reduced to only public health and safety
- **Settlement Contractors:**
 - Feather River: 50% reduction to deliveries
 - Sacramento River: 18% based on availability from Shasta
 - No north-to-south SRSC transfers expected this water year
 - San Joaquin River Exchange Contractors: 75% based primarily on availability from the upper San Joaquin



WY22 Shasta Temperature Mgmt Plan

- Keswick releases set through Interim Operation Plan process
 - Max monthly average releases May through August = 4,500 cfs
- Strategy:
 - Shape available cold water to achieve maximum benefit given shutter capabilities
 - Conserve coldwater for the fall to ensure operations of Livingston Stone National Fish Hatchery
- Process:
 - Plan Approval received in early May
 - Adjust and revise if necessary once Shasta Reservoir stratifies
- Areas of Uncertainty Unique to 2022
 - Flow range below historical lowest summer flows
 - Temperature models not calibrated for this low flow range
 - Downstream public health and safety demands that can not be met from other sources
 - Infrastructure limitations
 - Trinity River imports and Trinity River Temperature Management



Hydropower Operations Update

- **Total Generation Average**
 - 4,500 GWh: Average over the last 20 years
- **Generation (Base Resource)**
 - 3,438 GWh: Average over last 20 years
 - 1,211 GWh: 90% Forecast for next 12 months (April report)
- **FY 22 Generation Totals To Date**
 - 1,064 GWh: Total Day Ahead Scheduled Generation
 - \$69.1M: Value of Total Day Ahead Generation as Scheduled
 - \$64.95/MWh
 - 356 GWh: Total Day Ahead Scheduled Base Resource
 - \$26.6M: Value of Day Ahead Base Resource as Scheduled
 - \$74.71/MWh

Reference: Avg. FY 22 LMP \$58.12/MWh
Avg. FY 21 LMP \$46.48/MWh



Hydropower Operations Update cont.

- Minimum Power Pool & Low Reservoir Operations
 - None of the CVP's reservoirs are forecasted to reach minimum powerpool; however, some operations may approach it closer than previously experienced.
 - Reclamation therefore will be monitoring low reservoir turbine operations for roughness to avoid or mitigate potentially harmful cavitation damage.
 - NCAO has prepared to inject air into the Trinity turbine to smooth operations at low elevations.
- Outages minimized for summer operations
 - Lengthy outages are being minimized and coordinated with WAPA.
 - Trinity Unit 2 is the only CVP unit out for the summer due to the turbine runner in progress of being replaced.



Hydropower Operations Update cont.

Capacity Based on Estimated Gross Head (All values in MW)

Month	Trinity	JF Carr	Spring Creek	Shasta	Folsom	New Melones
JUN	43	74	182	523	177	227
JUL	41	147	182	501	162	215
AUG	38	147	182	381	97	205
SEP	35	147	182	363	94	198
OCT	32	150	91	355	90	96
NOV	60	154	91	354	87	94
DEC	58	154	91	352	85	95

* Trinity - 2 units available starting in November, due to runner replacement, and contingent on contractor schedule.

* Spring Creek - Only 1 unit available starting in October , due to runner replacement, and contingent on contractor schedule.



Updating Aging Infrastructure

- CVP powerplants
 - Constructed 1940s through 1979
- Life extension and capital improvements
 - Turbine runner replacements
 - Generator rewinds
 - Transformer replacements
 - Excitation replacements
 - Breaker replacements
- SMUD and preference customers have been instrumental towards Reclamation's progress through advanced customer funding and through committee discussions on Reclamation's planning of major projects.



Contact

Kristin White: 916-979-2199



— BUREAU OF —
RECLAMATION