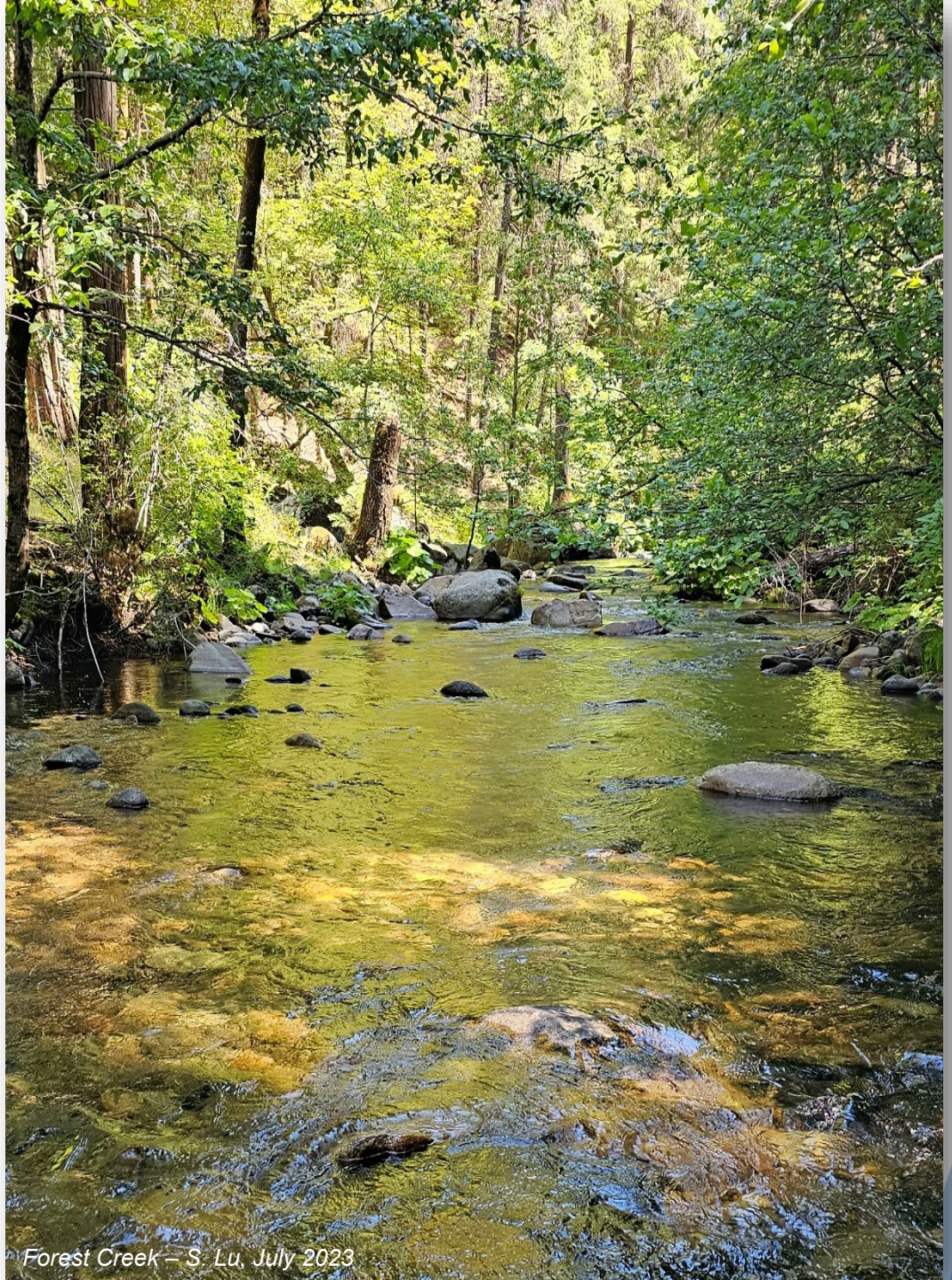
EBMUD

Project System Operations

System Operations Overview

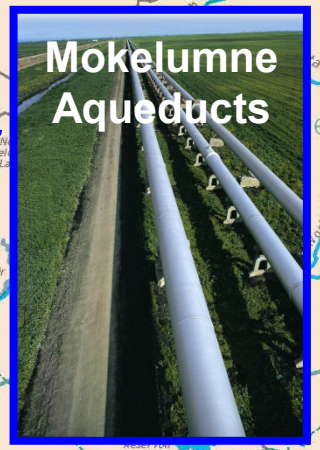
- Mokelumne River Water Operations Overview
- Resources Management
- Water Year 2024 Review
- Current Water Supply



Forest Creek – S. Lu, July 2023

Water System Overview

Water Supply Components



MOKELUMNE WATERSHED
WATER SERVICE AREA
SACRAMENTO SAN JOAQUIN DELTA
EBMUD RESERVOIR
WATERSHED RESERVOIR OPERATED BY OTHERS
RA RECREATION AREA
PH POWER HOUSE
WATER TREATMENT PLANT

SCWA WATER TREATMENT PLANT
FREEPORT REGIONAL WATER PROJECT
A 185 MGD INTAKE & PUMPING PLANT
EBMUD 100 MGD CLAY STATION PUMPING PLANT
FOLSOM SOUTH CANAL CONNECTION
CAMANCHE RESERVOIR
PARDEE RESERVOIR
PARDEE CENTER
EBMUD CAMANCHE PUMPING PLANT
MOKELUMNE AQUEDUCTS
BAYSIDE MGD GROUNDWATER FACILITY

NOT TO SCALE

Water Operations Overview

Mokelumne River – Pardee & Camanche Reservoirs

Operated in integrated manner to provide water supply benefits and meet a variety of state, federal, and local obligations

Reservoir	Capacity
Pardee	204 TAF (Elev. 567’)
Camanche	417 TAF (Elev. 235’)

TAF: Thousand Acre-Feet

- Municipal water supply
- Obligations to downstream diverters
- Fishery requirements
- Water quality (temperature, DO)
- Contribution to Delta inflow/outflow
- Flood control (streamflow regulation)
- Power generation

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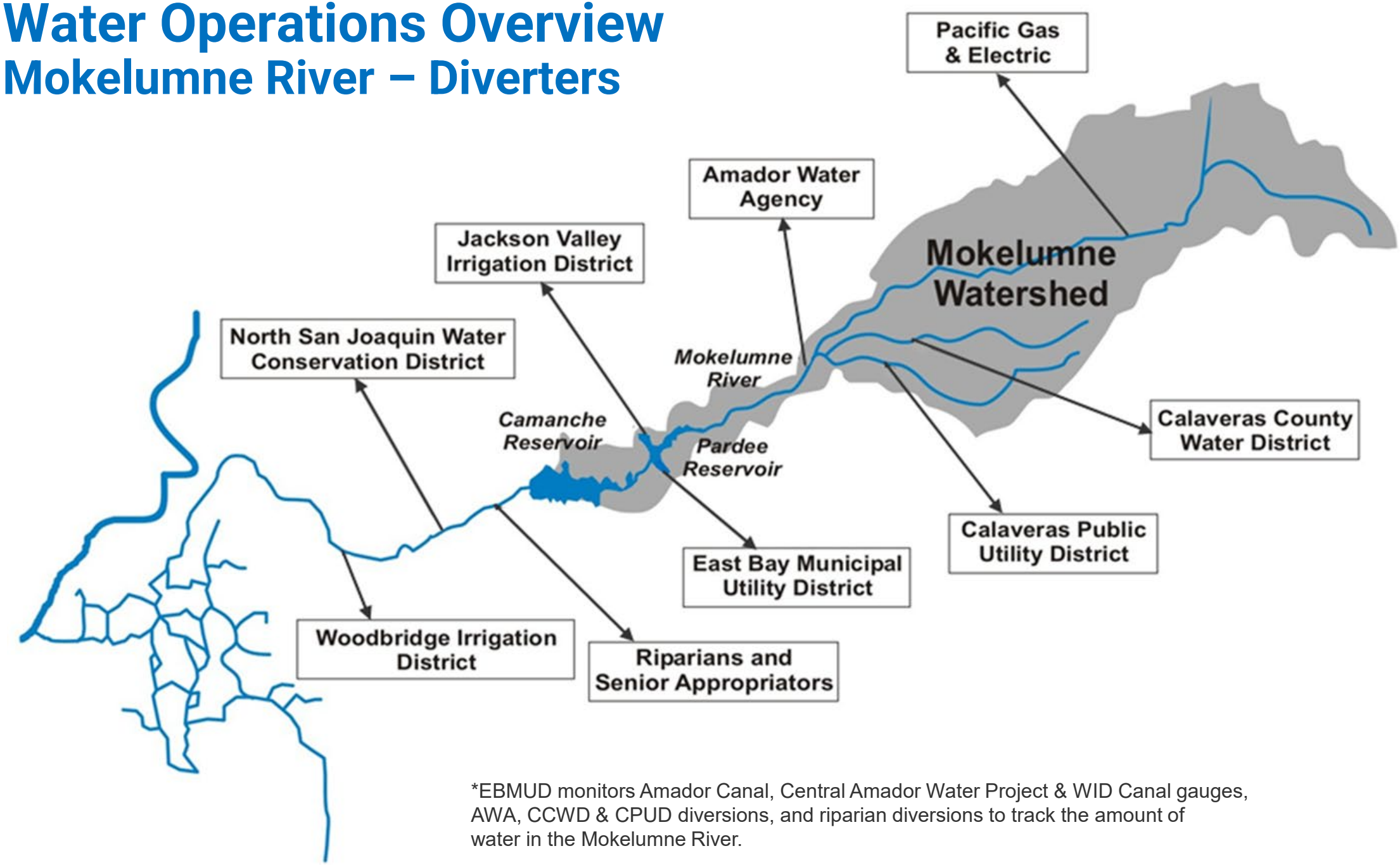
Water Operations Overview
Mokelumne River – Diverters



*EBMUD monitors Amador Canal, Central Amador Water Project & WID Canal gauges, AWA, CCWD & CPUD diversions, and riparian diversions to track the amount of water in the Mokelumne River.

Water Operations Overview
Resource Management & Water Quality

- Conserve and develop fish and wildlife resources
  - EBMUD, California Department of Fish and Game and the US Fish and Wildlife Service jointly signed a Joint Settlement Agreement in 1998 (JSA)
  - Minimum instream flows at Camanche and below Woodbridge (also reinforced with SWRCB action)
- Water Quality
  - Temperature in the reservoir and river (coldwater pool management)
  - Dissolved oxygen in the river

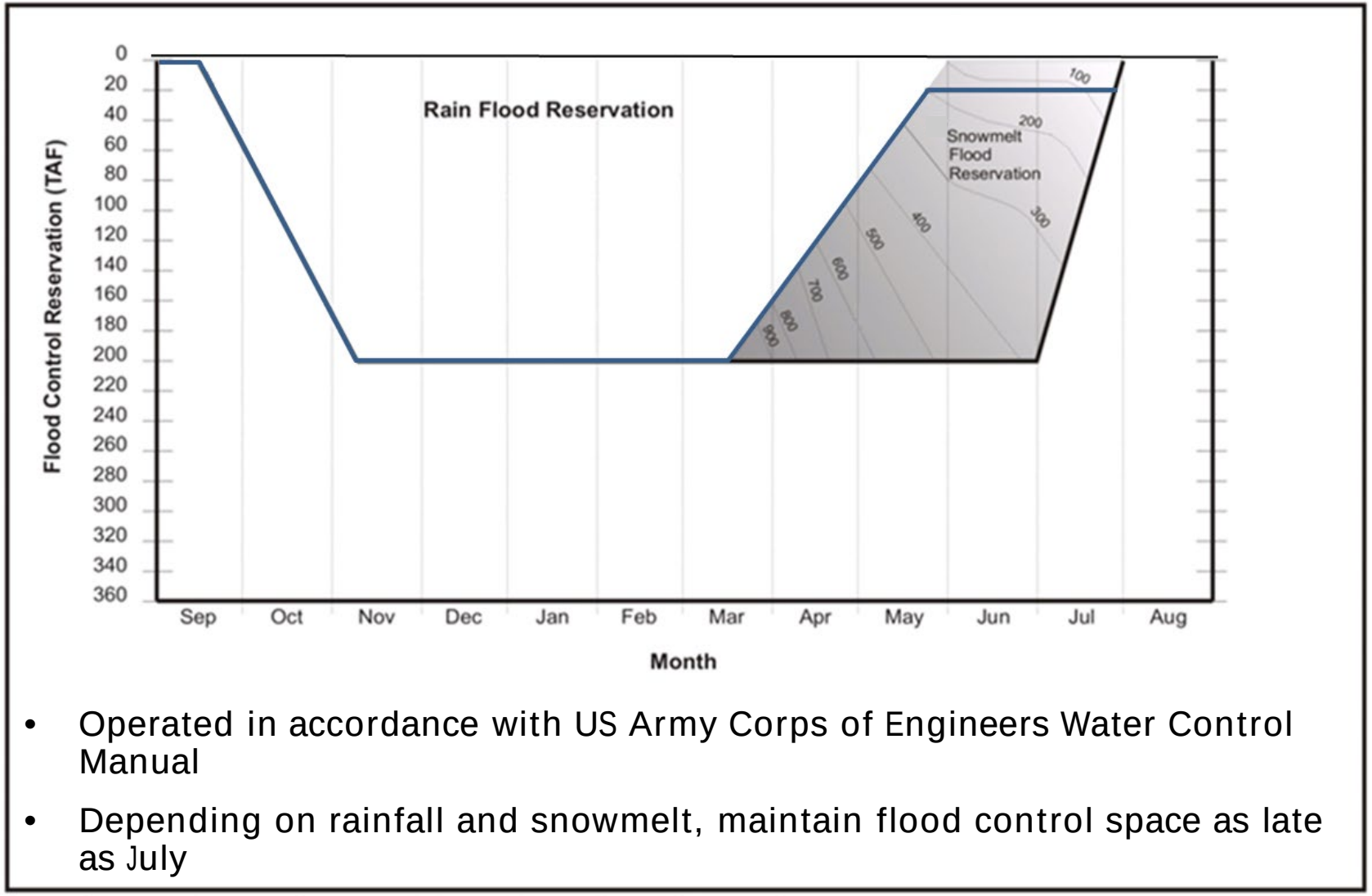
Water Operations Overview

JSA Year Type Basis

WY2024 DWR April 1 Bulletin 120 Median Forecast = 730 TAF

Year Type	Basis	Critically Dry	Dry	Below Normal	Normal and Above
Oct'23-Mar'24	Pardee & Camanche Storage on Nov 5th	269 TAF or Less	270 TAF to 399 TAF	400 TAF To Max Allowable	> Max Allowable
Apr'24-Sep'24	DWR April 1st Unimpaired Runoff Forecast	299 TAF or Less	300 TAF to 499 TAF	500 TAF to 889 TAF	890 TAF or More
Oct'24-Mar'25	Pardee & Camanche Storage on Nov 5th	269 TAF or Less	270 TAF to 399 TAF	400 TAF To Max Allowable	> Max Allowable

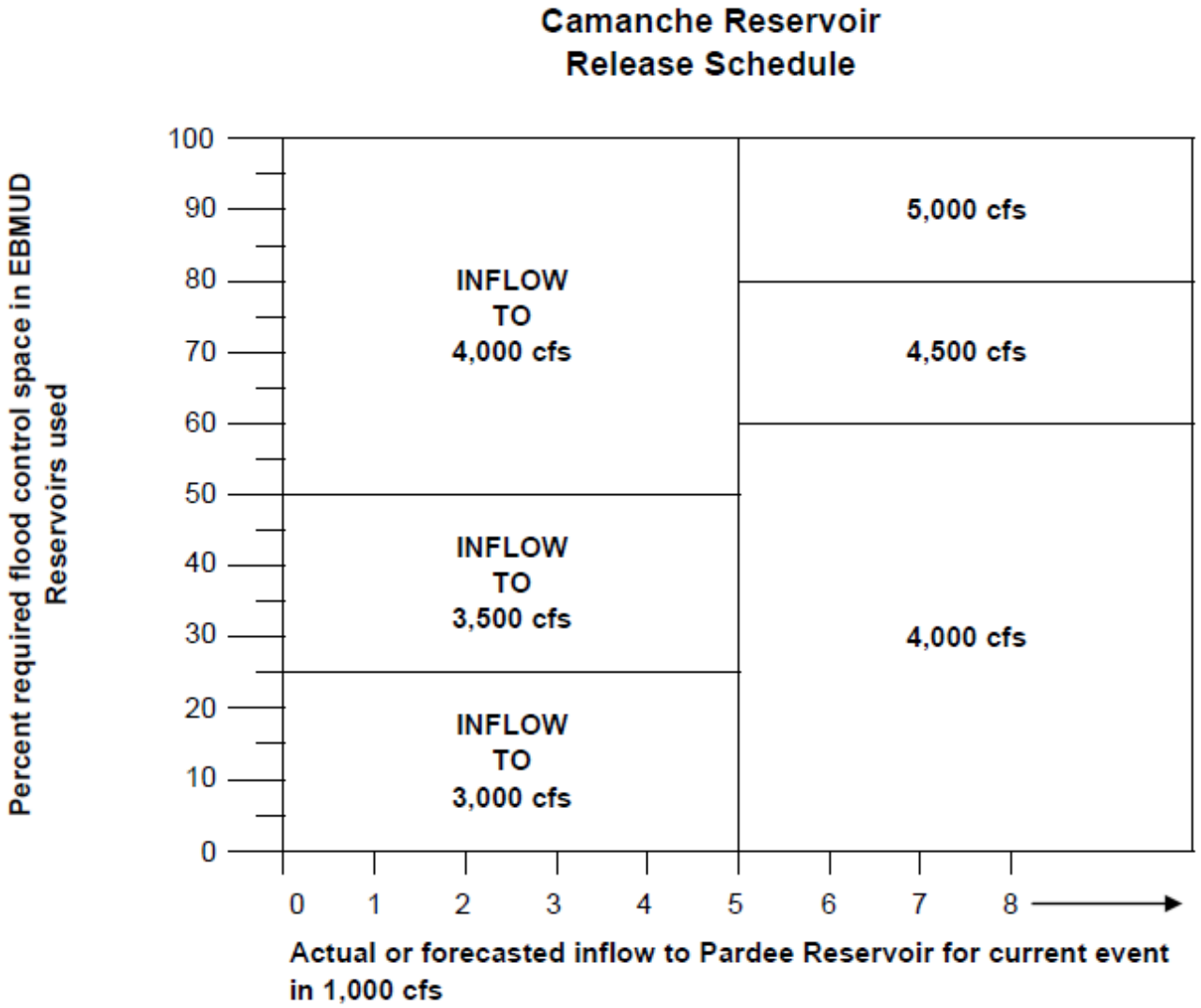
Water Operations Overview
Flood Control Operations



- Operated in accordance with US Army Corps of Engineers Water Control Manual
- Depending on rainfall and snowmelt, maintain flood control space as late as July

Source: US Corps of Engineers Water Control Manual for Camanche Dam and Reservoir, September 1981

Water Operations Overview
Flood Control Operations



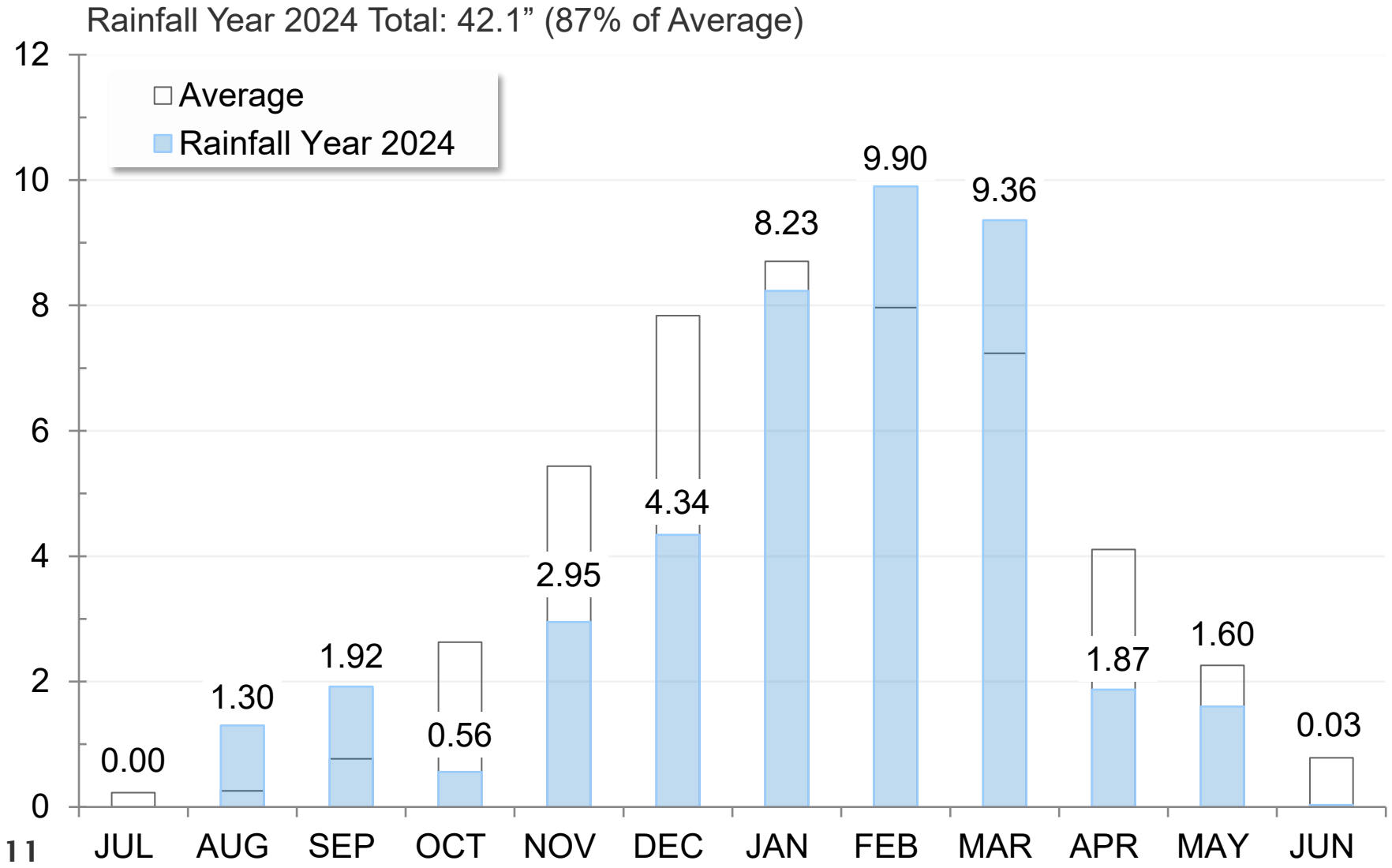
Note:
From the Flood Control Diagram, Camanche Reservoir
US Army Corps of Engineers, 1982

Water Operations Overview
Camanche Reservoir Release Information

- Operational bulletins issued for pending release changes to notify staff of: EBMUD, USACE, resource agencies, and downstream districts.
- Release information and projected release changes are available to the public on the EBMUD Water Supply
  - https://www.ebmud.com/water/about-your-water/water-supply/water-supply-reports/#releases
- Automated phone call notifications are available by request for release changes greater than 1,000 cfs
  - Email watersupply@ebmud.com with full name and phone number

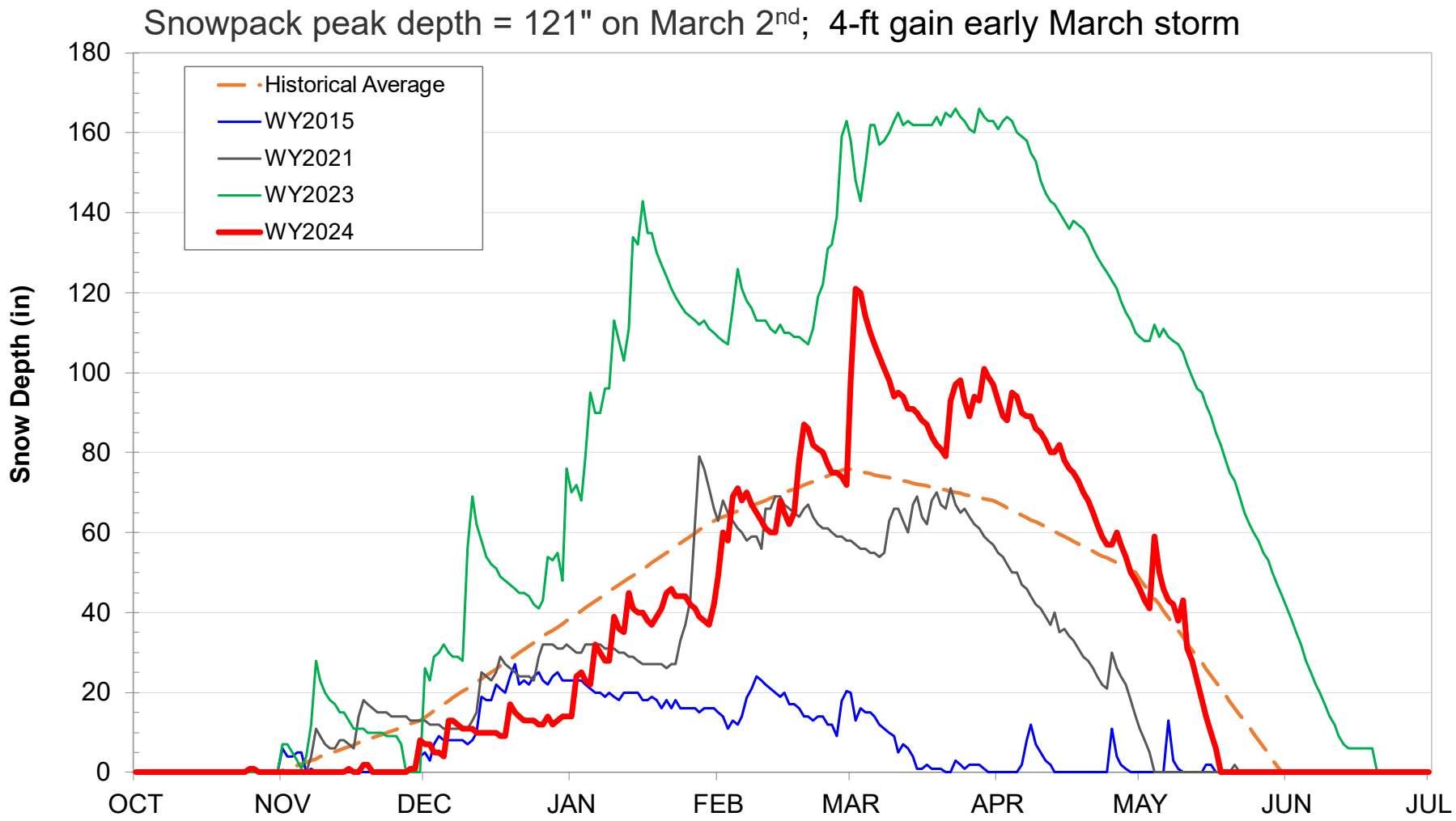
Water Year 2024 Review

Mokelumne Precipitation

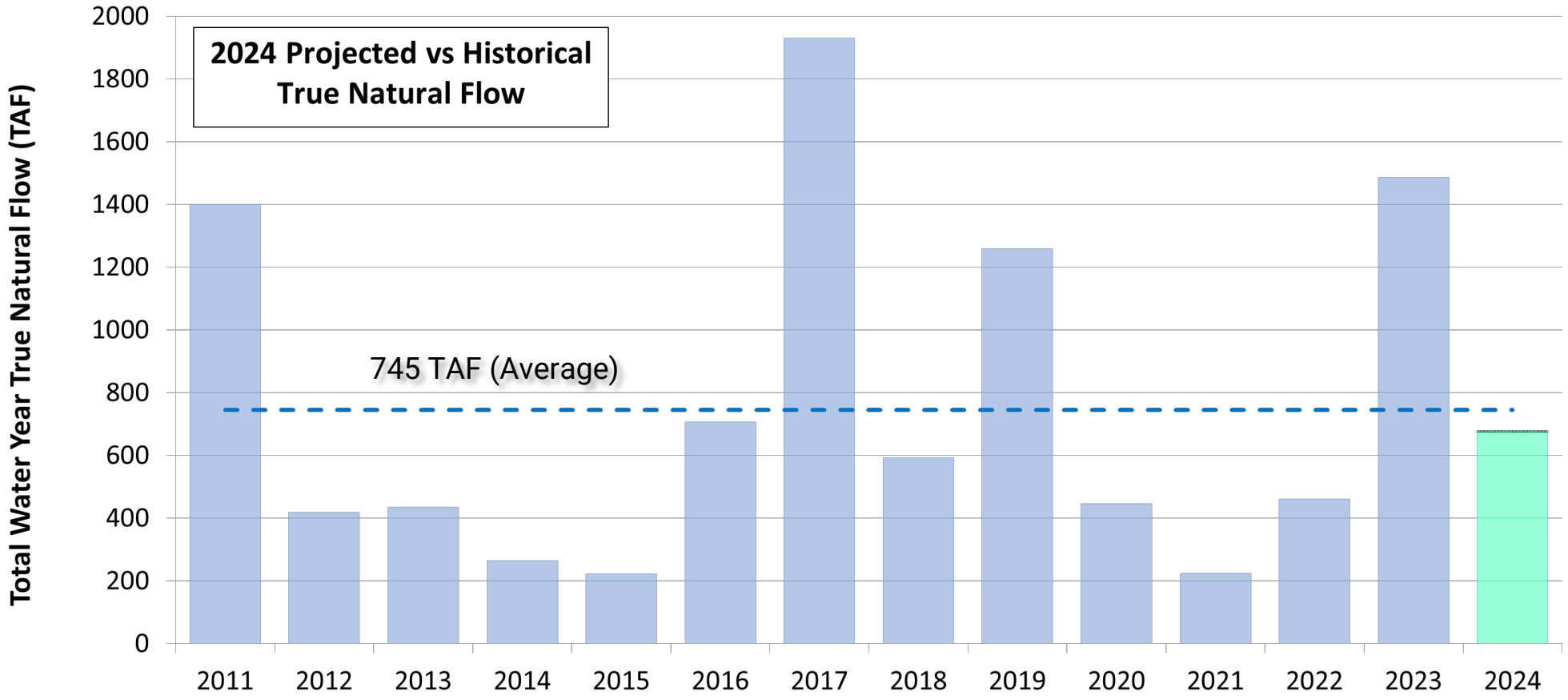


Water Year 2024 Review

Caples Lake Snow Depth



Water Year 2024 Review
Historical Runoff Comparison



Water Year 2024 Review

Current Reservoir Storage

Pardee Reservoir & Spillway

As of 9/17/2024	Current Storage	Percent of Average	Percent of Capacity
Pardee	192,750 AF	101%	95%
Camanche	361,610 AF	132%	87%
East Bay	124,200 AF	105%	83%
Total System	678,560 AF	116%	88%

Water Year 2024 Review

Upper Mokelumne Precipitation:	42.1” (48.3” avg)
Snowpack water content (max):	34.1” (31.8” avg)
Total unimpaired runoff:	675 TAF* (745 avg)
End of Water Year Storage:	630 TAF*

** Projected values*

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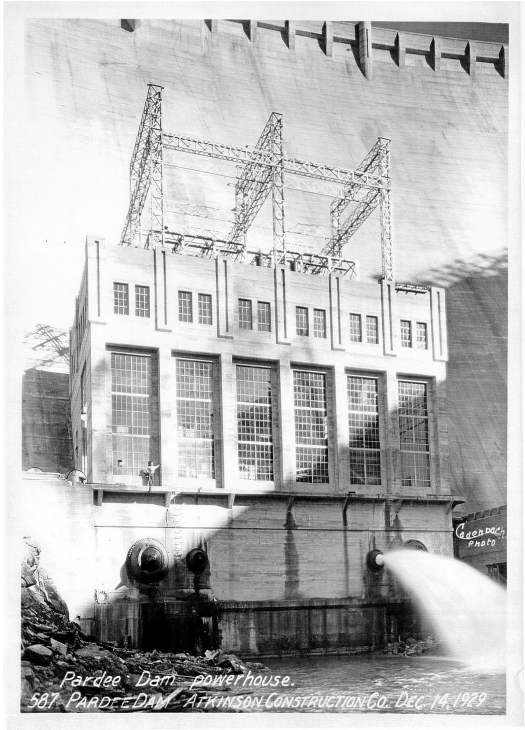
Hydro Generation

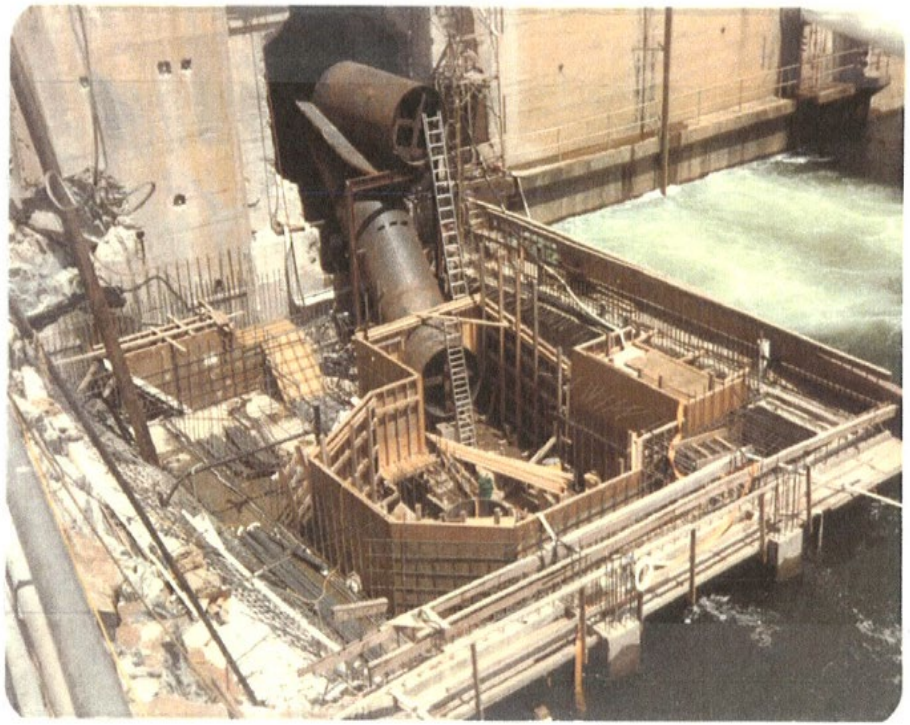
Hydro Generation Overview

- Pardee and Camanche Powerhouses
  - Chronology
  - Hydropower Generation
- Other Renewable Energy Generation
  - Camanche Area Photovoltaic Systems

Pardee Powerhouse Chronology



Original Construction (Units 1 and 2)



Construction of Unit No. 3

1928 — 1983 — Today

- Provides renewable energy
- 28.6 MW authorized installed capacity

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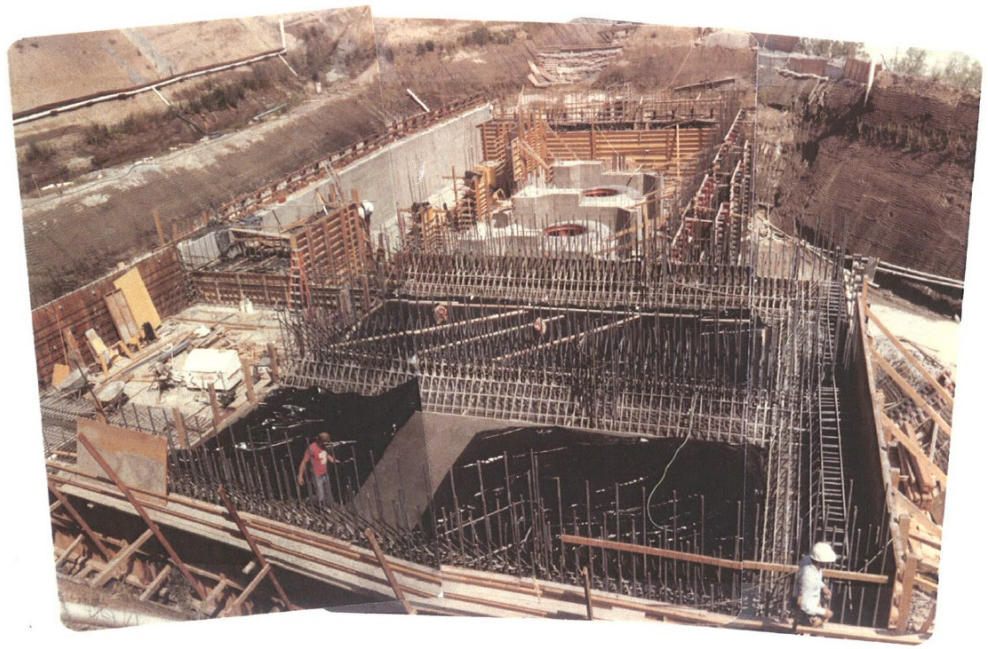
Camanche Powerhouse Chronology



Original Construction of Units 1, 2, and 3

Current Condition (Unit No. 3)

1983 → Today

- Provides renewable energy
- 9.45 MW authorized installed capacity

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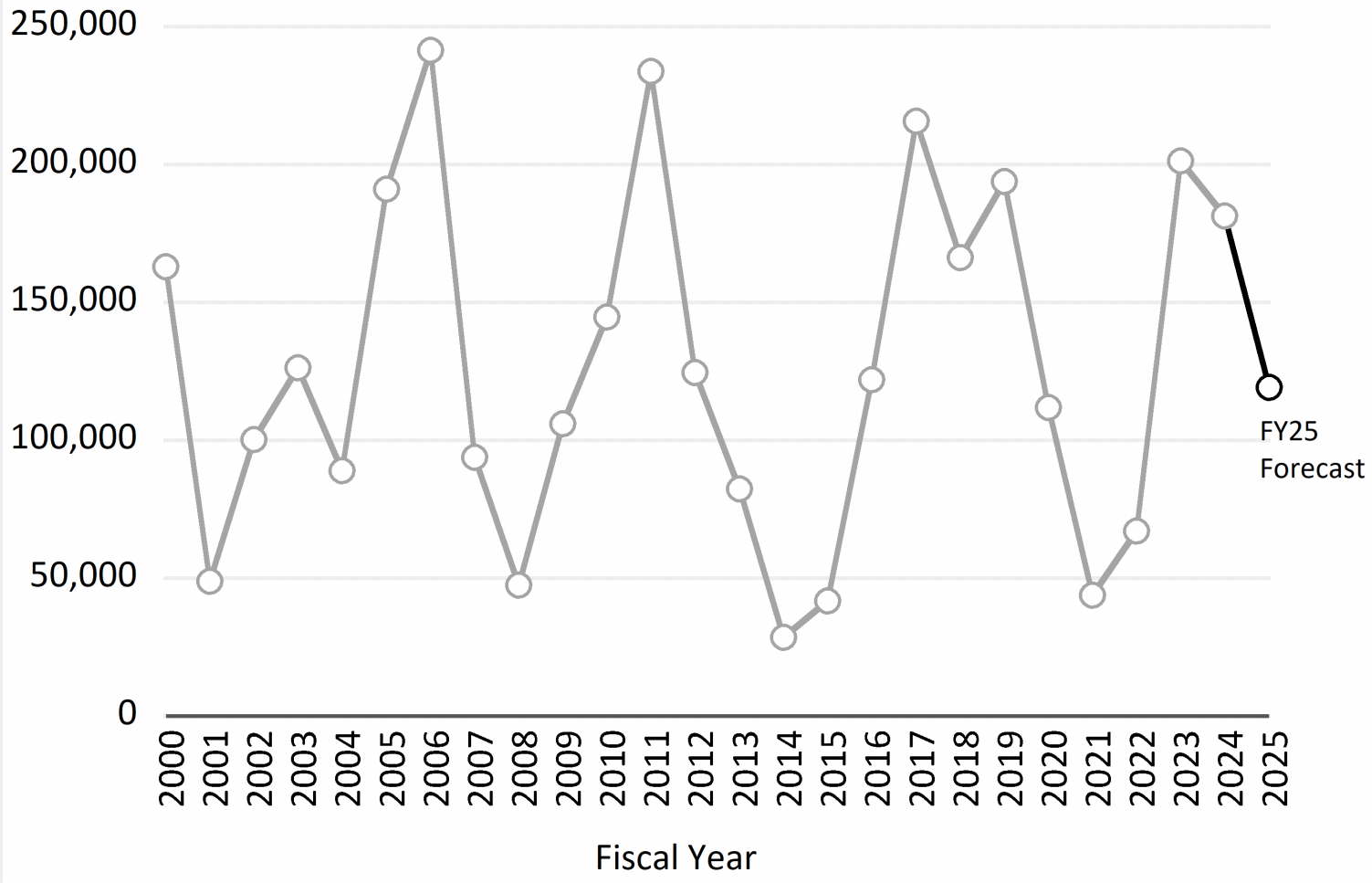
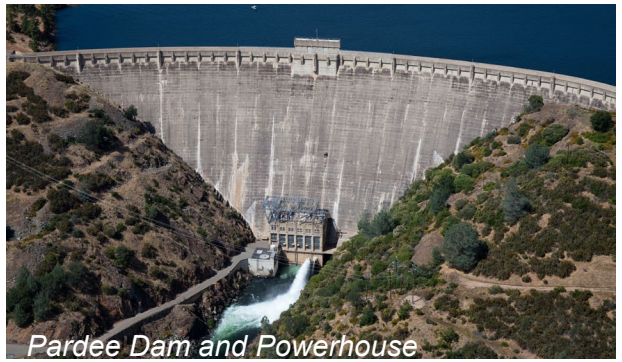
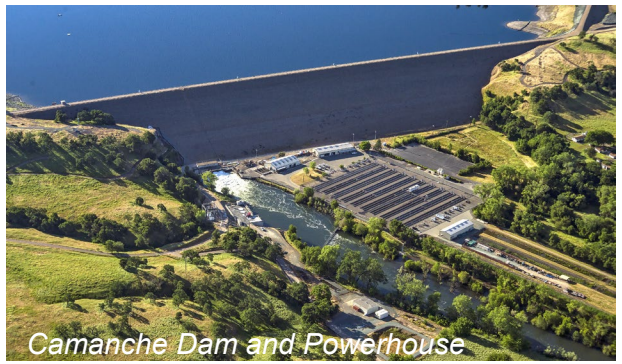
Hydropower Generation: Overview

Total Hydropower Generation
(MWh, Pardee and Camanche Powerhouses)




Pardee Dam and Powerhouse


Camanche Dam and Powerhouse

Hydropower Generation: Benefits

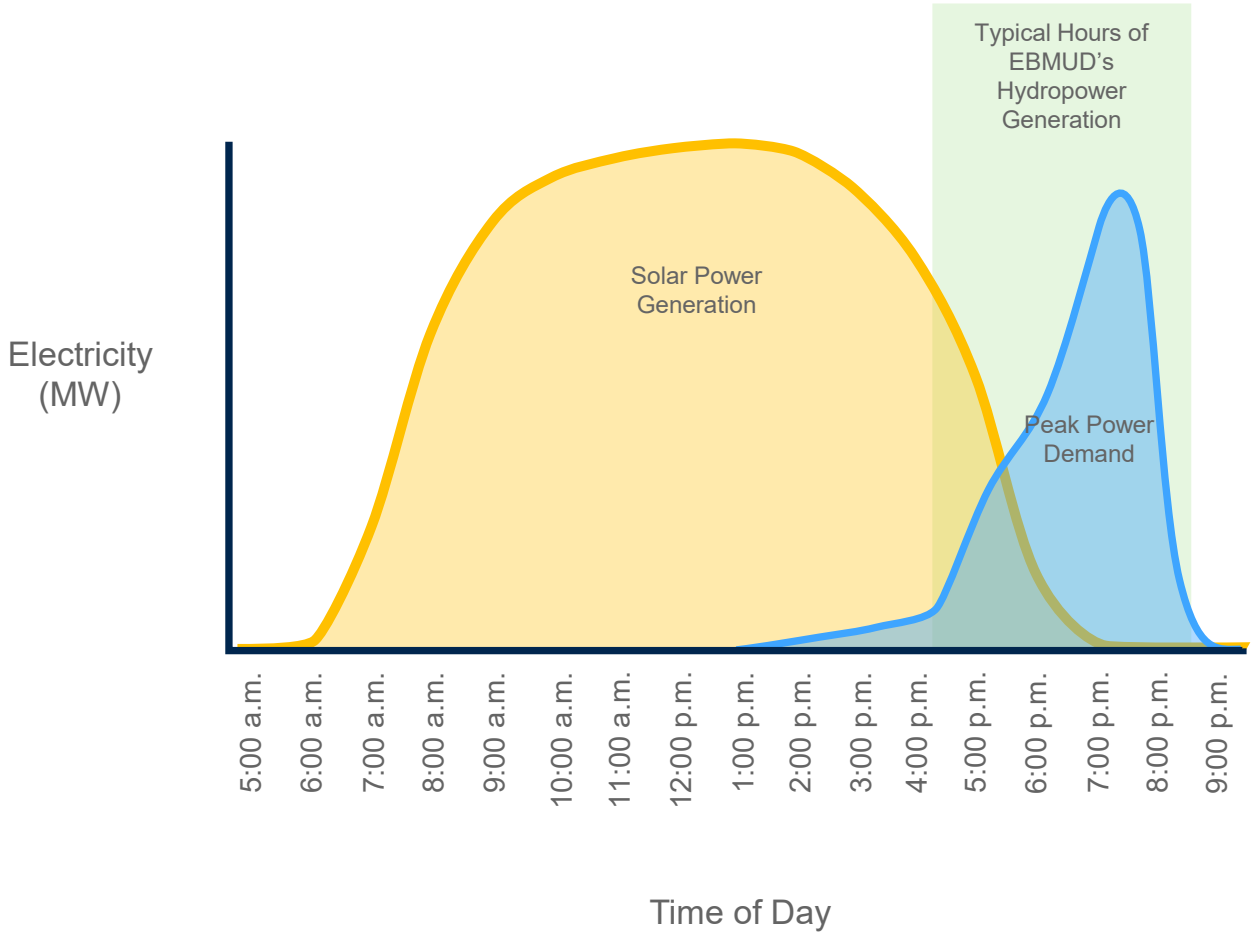
- **Renewable Energy**. Pardee and Camanche hydroelectric generation facilities meets the California Energy Commission's Renewable Portfolio Standard for small hydroelectricity.

- **Greenhouse Gas Reductions**. Clean energy produced from Pardee and Camanche powerhouses supports California's requirement for carbon-free electricity by 2045.

- **Electric Grid Reliability**. Generation from Pardee and Camanche powerhouses provide electricity during peak demands in the evening when solar systems are generating less electricity.

Hydropower Generation: Electric Grid Reliability

Pardee and Camanche powerhouses support the reliability of the electric grid during the peak demands in the evening.



Source: California Independent System Operator

Other Renewable Energy Generation

- Supports District's goal to achieve carbon neutrality by 2030
- Other renewable energy is generated in the Camanche Area
  - Camanche Dam Photovoltaic (PV) System (363 kW)
  - South Shore Wastewater Ponds PV System (49 kW)
  - Recreational Area Water Treatment Plant PV System (150 kW)
  - North Shore Wastewater Ponds PV System (49 kW)

Camanche Dam PV System

Camanche South Shore Wastewater Ponds PV