



— BUREAU OF —
RECLAMATION

Central Valley Project Operations Overview

National Academy of Sciences

January 30, 2024

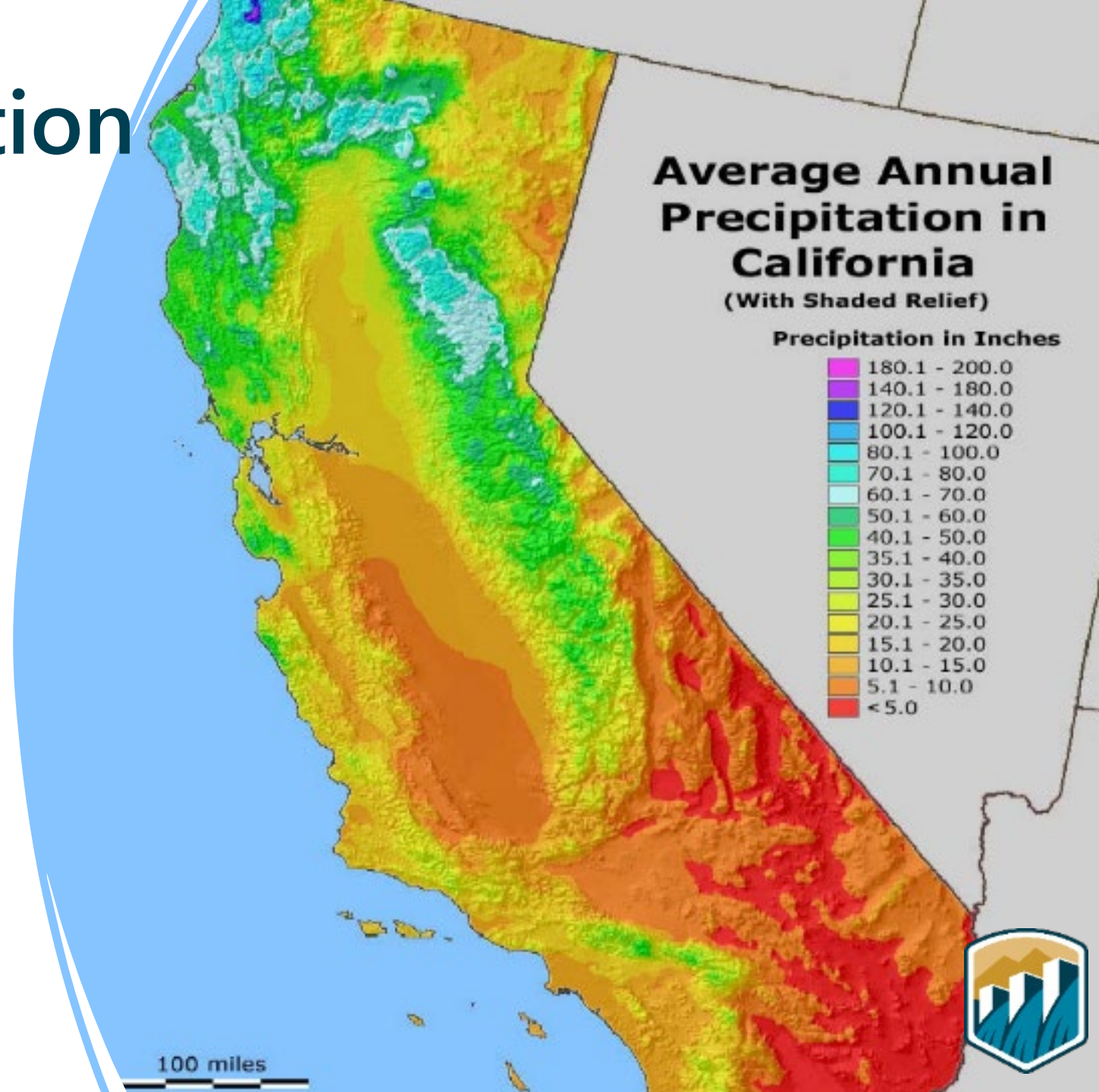
Interior Region 10, California Great Basin, Bureau of Reclamation

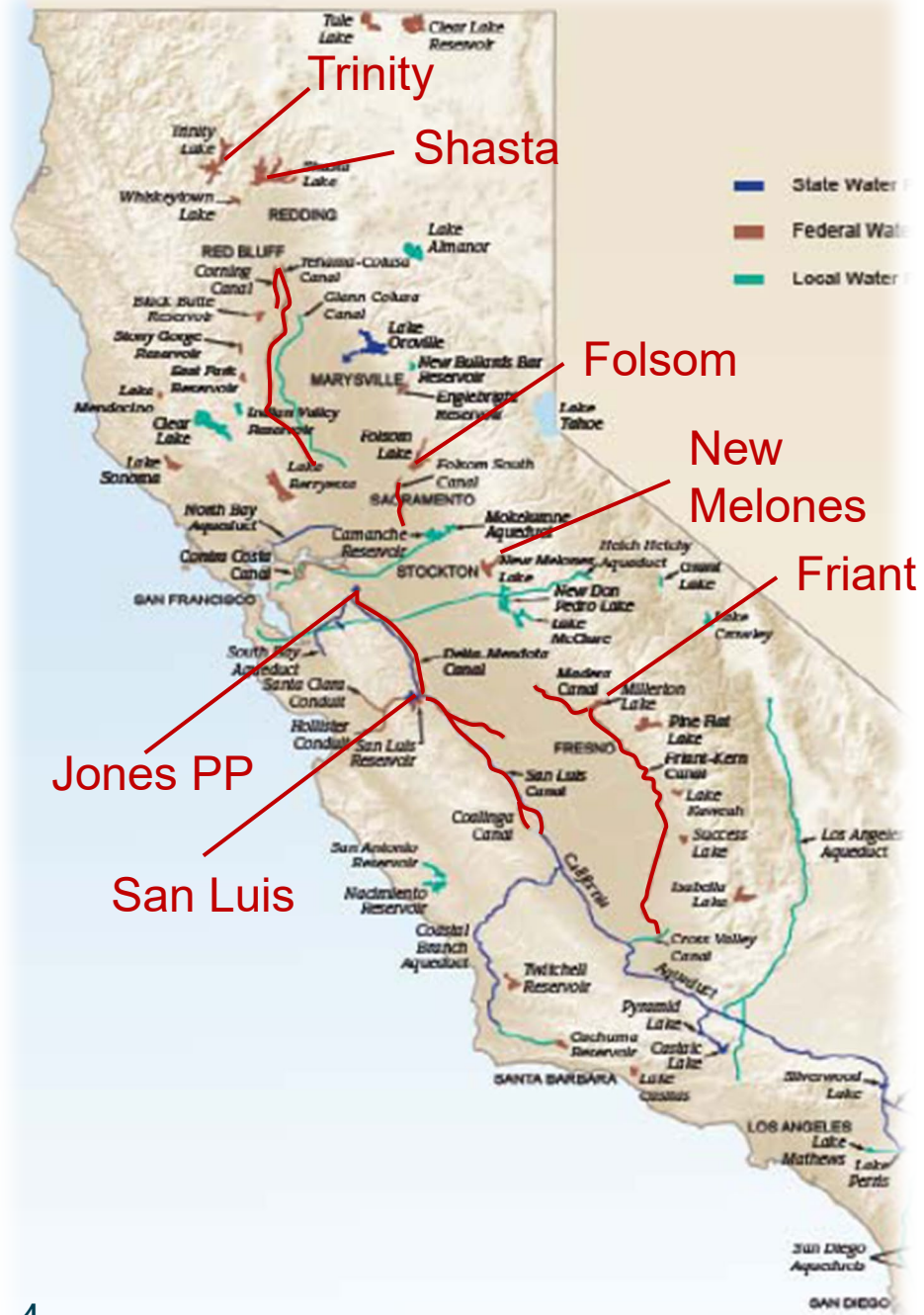
The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.



California Precipitation

- Most precipitation falls in the north; most water demand is in the south
- The wet season is winter and spring; water is needed more in the summer
- Precipitation varies from year to year; limited variation in demands





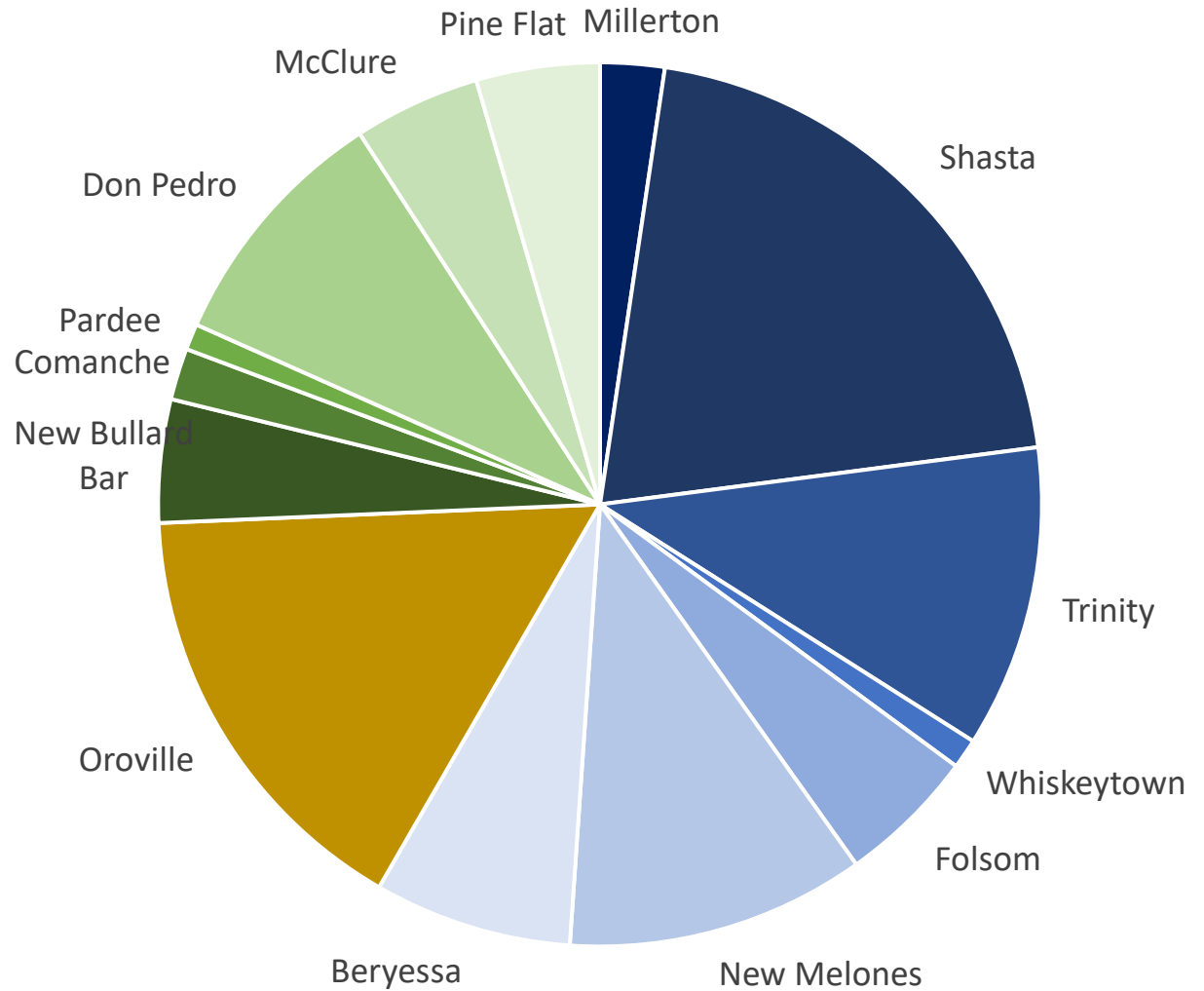
Major Central Valley Project Facilities

- 1940s – Construction of Shasta Dam, Friant Dam, Jones Pumping Plant, and Related Canals
- 1956 – Folsom Dam constructed
- 1961 – Trinity Division added to import water into the CVP from the Klamath.
- 1967 – San Luis Unit and State Water Project
- 1968 – San Felipe Unit
- 1979 – New Melones Dam



CVP Complexity

- Unique in the coordination with pre-existing local and state water resources development
- Unique in the financial and operational integration across multiple watersheds

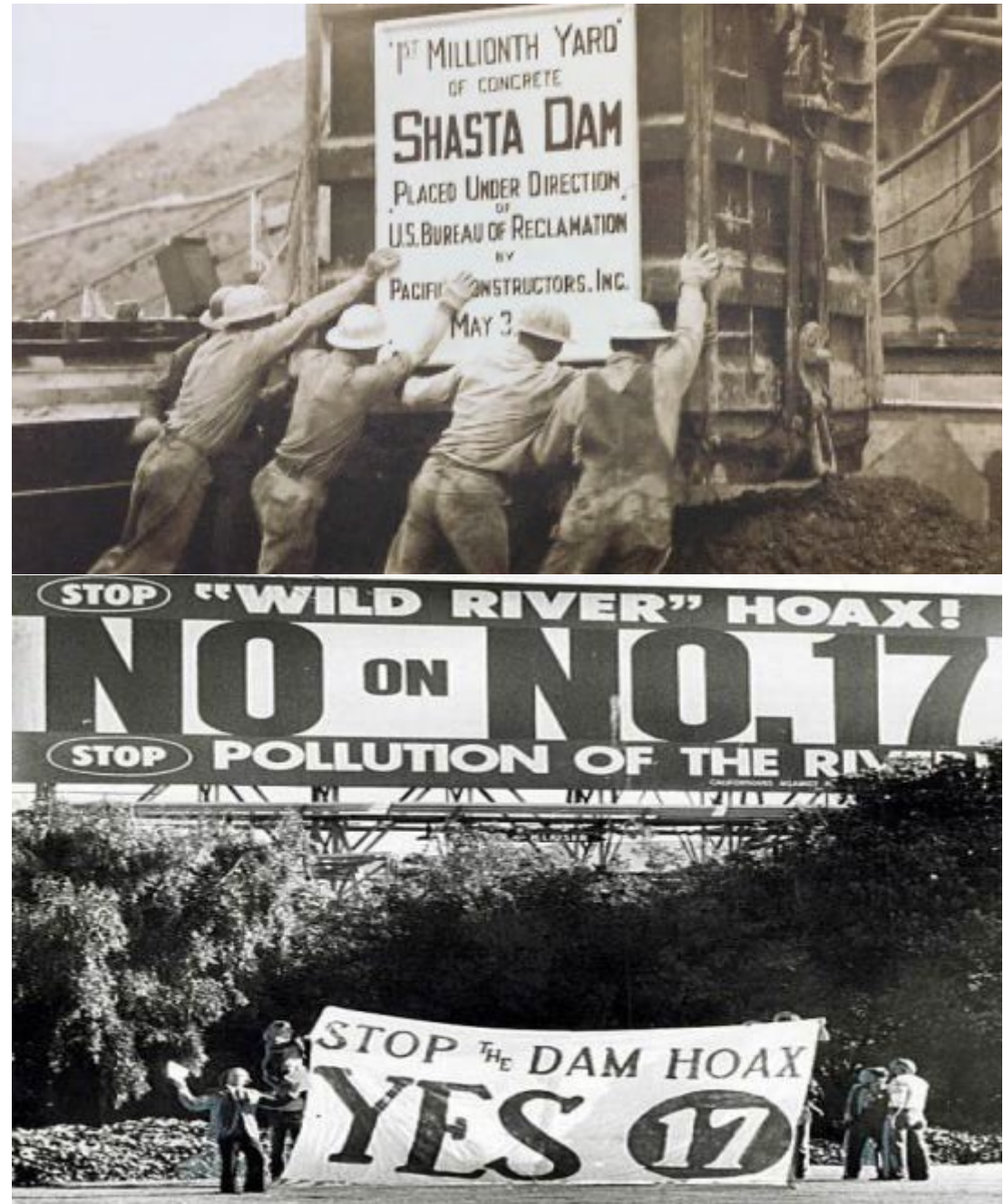


Relative capacity of major reservoirs in the Central Valley, CA, with Reclamation operated reservoirs in blue.



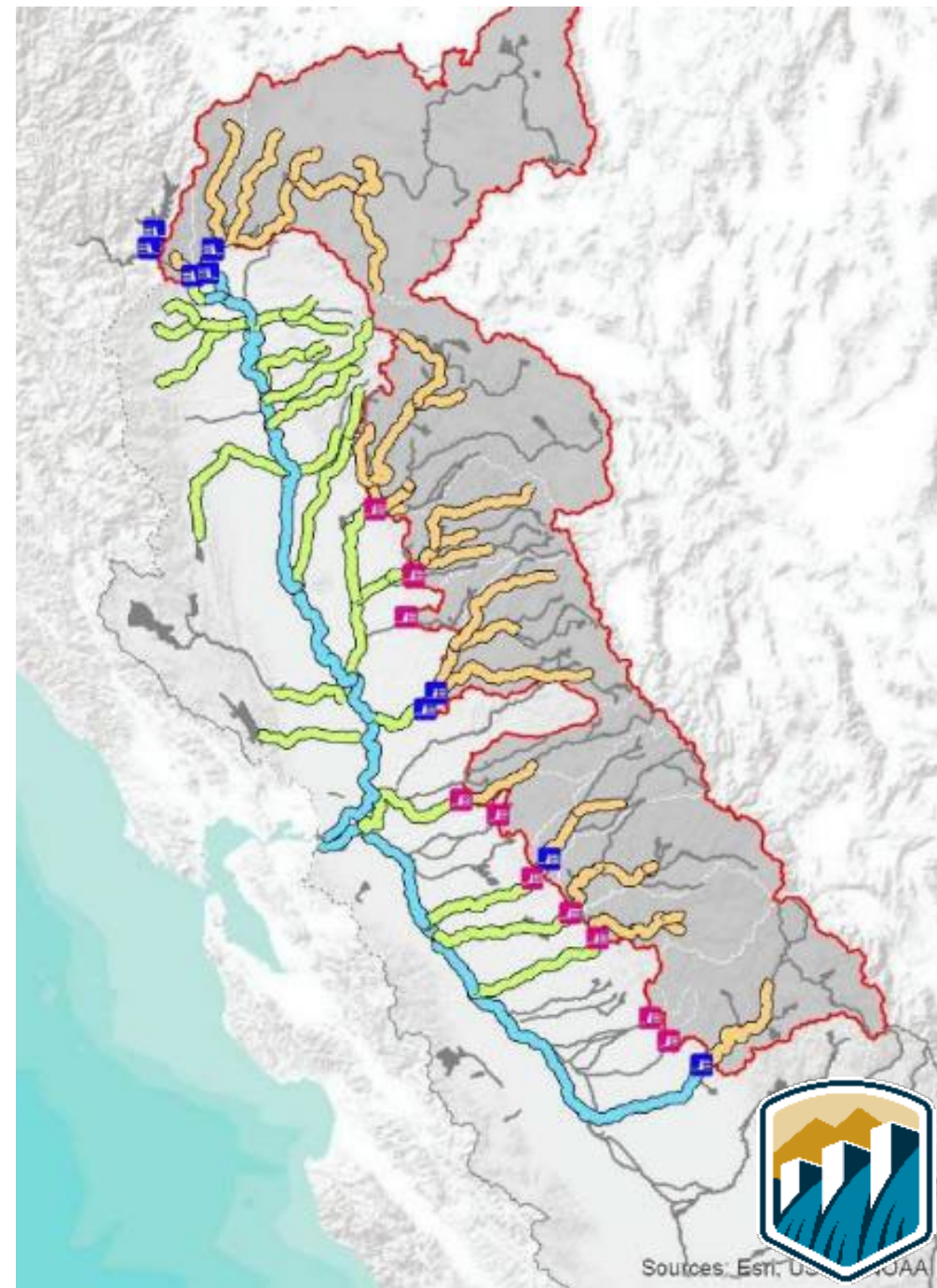
Challenges

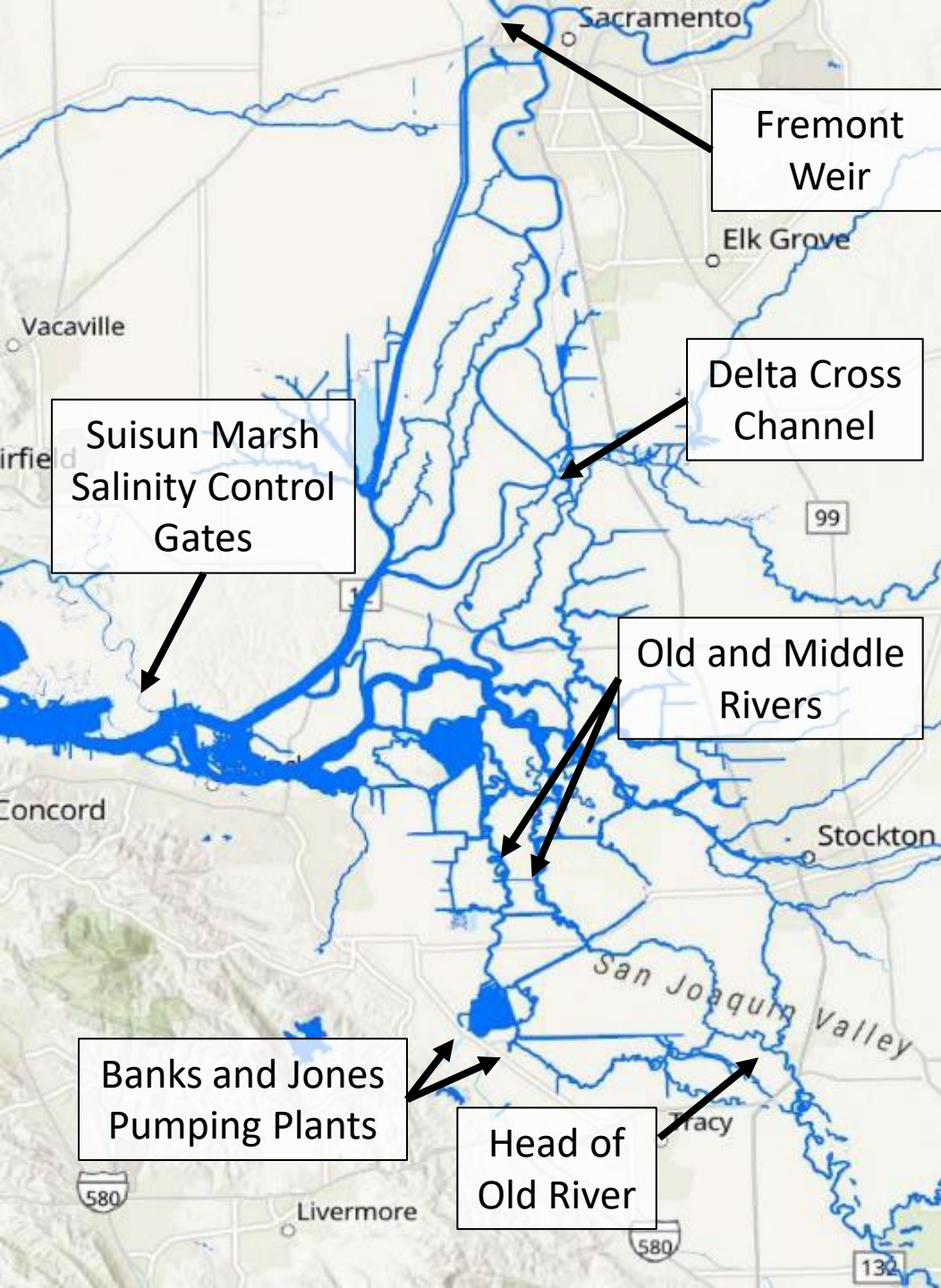
- Droughts and Floods
- Climate Change
- Aging Infrastructure
- Growing Populations
- Changing Hydropower Markets
- Groundwater and Subsidence
- Invasive Species
- Regulations and Coordination
- Water Quality Compliance
- Endangered Species



Central Valley Habitat

- Dams rimming the valley floor isolate salmon from historical habitats.
- Warm water conditions challenge spawning, incubation, and rearing.
- Levees isolate fish from historical floodplain habitat.
- Diversions impair adult passage and may entrain juveniles.
- Exports alter the hydrodynamics of the Delta.





Sacramento-San Joaquin Delta

- Largest fresh-water estuary on the West Coast of the Americas
- 700 miles of sloughs and waterways
- Hub of California water
 - 40% of the State's runoff
 - 2/3 of the State's drinking water
 - Irrigation of 4 million acres of farmland
- Numerous non-native and endemic native species



Seasonal Operation Goals (Winter/Spring)

Season	Wet	Dry
Winter	Manage storm events for reservoir flood control space/pass flood water. Export curtailment for fishery protection.	Conserve reservoir storage and meet downstream regulatory requirements. Export curtailment for fishery protection.
Spring	Manage storm events/snowmelt runoff for reservoir flood control space. Export curtailment for fishery protection.	Conserve reservoir storage and meet downstream regulatory requirements. Initial reservoir release for system demands. Export curtailment for fishery protection.



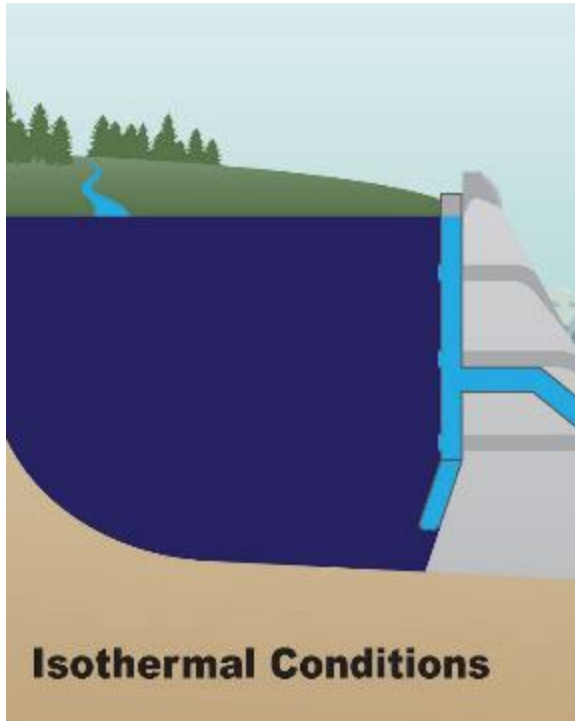
Seasonal Operation Goals (Summer/Fall)

Season	Wet	Dry
Summer	Reservoir release for system demands. Reservoir selective withdrawal to manage river water temperature. Export opportunity.	Reservoir release for regulatory requirements and system demands. Reservoir selective withdrawal to manage river water temperature. Export opportunity.
Fall	Reservoir release for system demands, regulatory requirements, and flood space management preparation. Manage river water temperature.	Reservoir release for system demands and conserve storage. Reservoir selective withdrawal to manage river water temperature. Export opportunity.

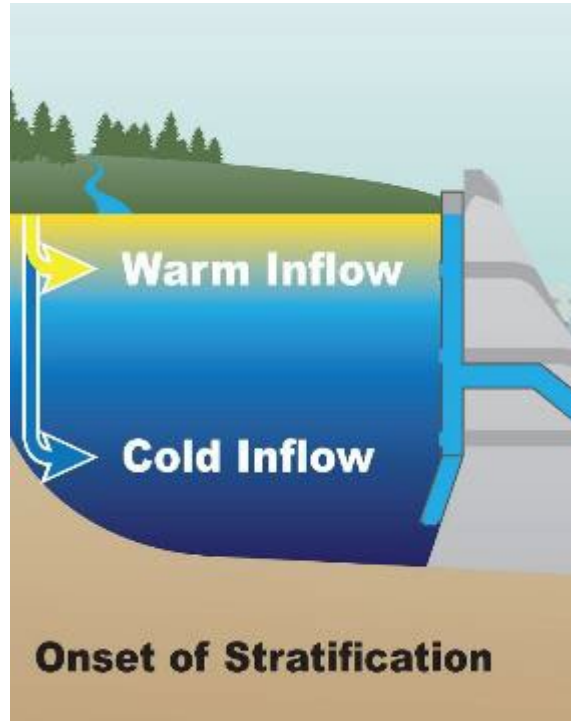


Tributary Temperature Operations

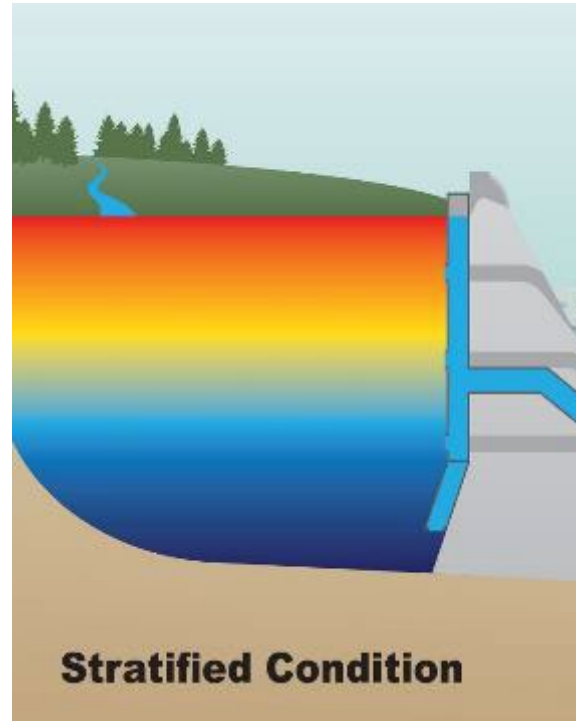
Winter



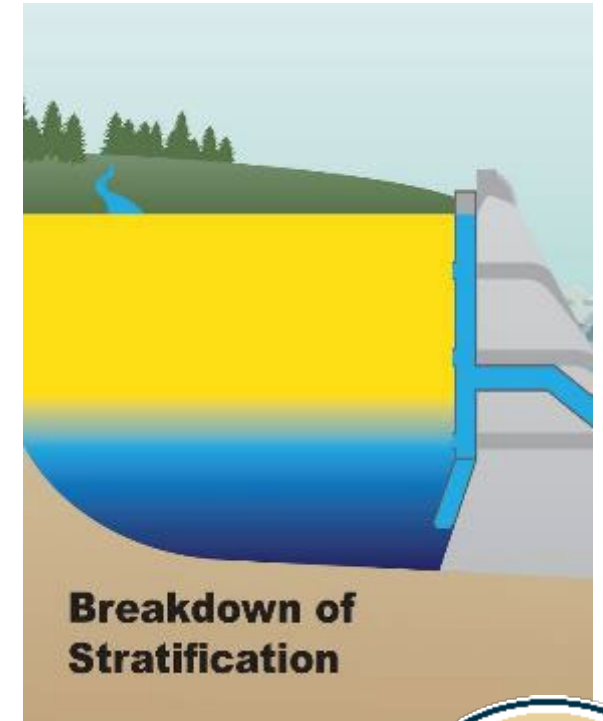
Spring



Summer



Fall



Tributary Temperature Operations



Wet and Dry

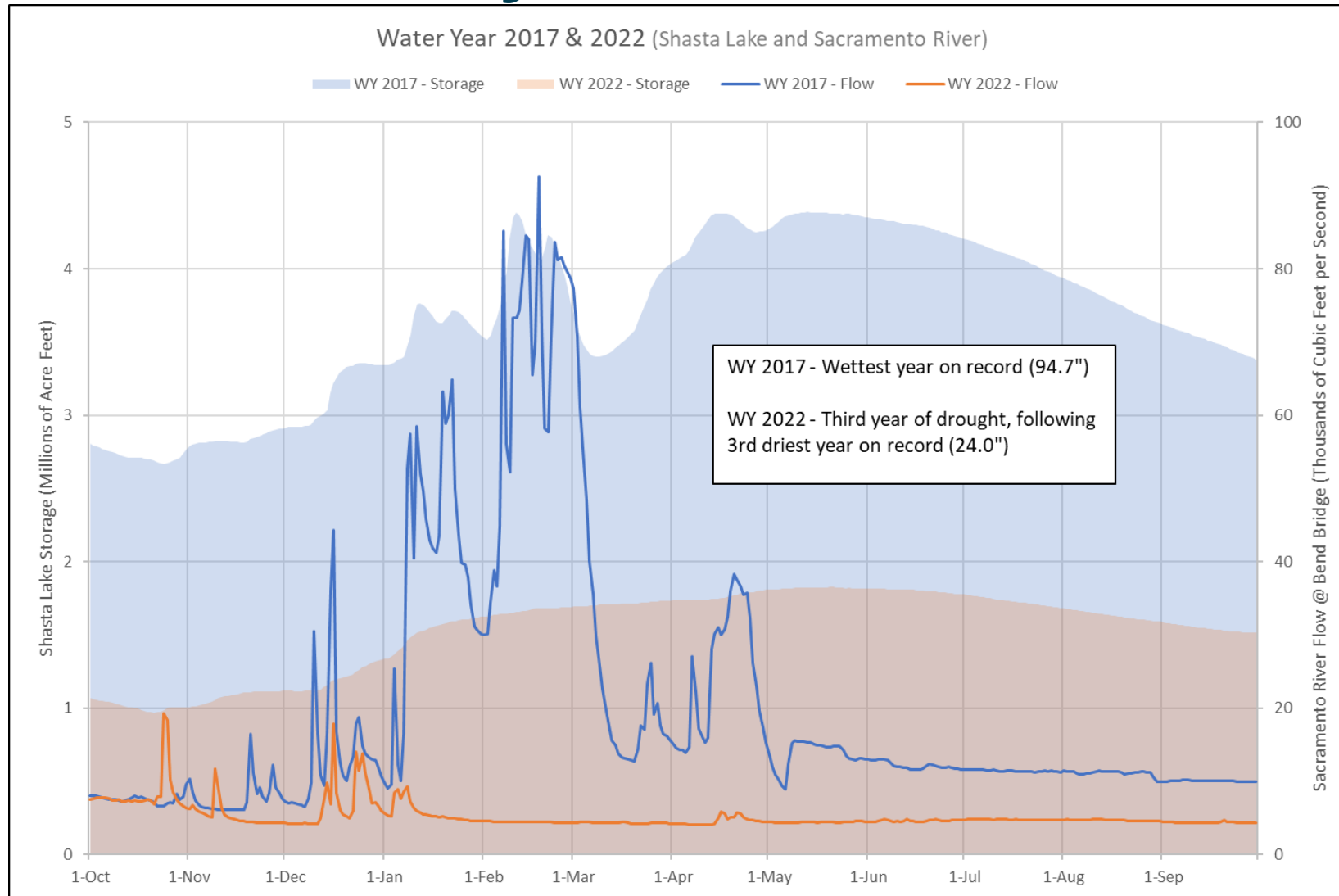


Photo: Ken James / California Department of Water Resources



CVP Operations – Takeaways

- Highly integrated system within the CA landscape
- High level of uncertainty – many variables and daily, seasonal and year over year uncertainties
- Coordination is key



Thank You!

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