

OROVILLE DAM CITIZENS ADVISORY COMMISSION

Hosted by the California Natural Resources Agency



ROLL CALL

- Lieutenant Collins
- Supervisor Connelly
- Supervisor Conant
- Secretary Crowfoot
- Chief Deputy Director Curry
- Supervisor Flores
- Supervisor Fuhrer
- Assemblyman Gallagher
- Supervisor Kimmelshue

- Deputy Licon
- Captain Million
- Director Nemeth
- Senator Nielsen
- Councilmember Pittman
- Mayor Reynolds
- Lieutenant Stokes
- Superintendent Teague
- Supervisor Vasquez
- Commissioner Widener

ITEM 1
WELCOME AND INTRODUCTIONS

ITEM 2
ACTION ITEMS, ROADMAP, 2022 REPORT

Commission Action Items Tracker

	Item	Meeting	Status
1	Tour of Joint Operations Center (State-Federal Flood Operations Center in Sacramento)	Mtg 2 11/2019	Completed.
2	Report out how instrumentation performed and was managed during winter operations.	Mtg 2 11/2019	Ongoing.
3	Invite State Water Contractors to future meeting(s)	Mtg 2 11/2019	Completed.
4	Provide regular updates and milestones developments from DWR on Forecast-Informed Reservoir Operations (FIRO) as well as Oroville and New Bullards Bar water control manual processes.	Mtg 3 02/2020	On track. Update planned for Q4 2021 meeting.
5	Follow-up on the status of the Federal Energy Regulatory Commission (FERC) relicensing.	Mtg 3 02/2020	On track. Anticipated for 2022 meeting.

Commission Action Items Tracker

	Item	Meeting	Status
6	Follow-up on the status of Federal Emergency Management Agency (FEMA) reimbursement for spillway reconstruction.	Mtg 3 02/2020	Ongoing.
7	Discussion to help state agencies and local partners address homelessness concern around Feather River.	Mtg 3 02/2020	For future Commission consideration.
8	DWR updates on debris and storm inflows.	Mtg 5 11/2020	DWR monitoring, will notify Commission as needed.
9	Agendize discussion on lessons learned from 1986 and 1987 water events.	Mtg 6 2/19/21	On track. Update at Q4 2021 meeting.
10	DWR to respond to Commissioner question regarding what constitutes “failure”.	Mtg 7 5/28/21	Completed. Hold ongoing Commission dialogue on the topic.

Commission Action Items Tracker

	Item	Meeting	Status
11	Request to develop single tracking log cataloging ongoing or future safety projects.	Mtg 7 5/28/21	Ongoing. Will address during annual dam safety and project updates.
12	Continue to discuss Risk Assessment and hear from outside experts.	Mtg 7 5/28/21	Ongoing.
13	Update on water theft prevention.	Mtg 8 8/27/21	For future Commission consideration.
14	Resources for sediment removal.	Mtg 8 8/27/21	For future Commission consideration.
15	Capital Improvement Projects discussion and expenditure chart for 2010-2017.	Mtg 8 8/27/21	On track.
16	Recreation expansion project updates, including Bidwell Ramp.	Mtg 8 8/27/21	Update planned for 2022.

Commission Roadmap

Public Meeting: (March 18, 2022) Partnerships

Topics

- FERC Relicensing
- Public Safety Partnerships: Evacuation Routes, Inundation Maps

Status Updates

Commission Report

Public Meeting: (TBD 2022) Facilities and Safety

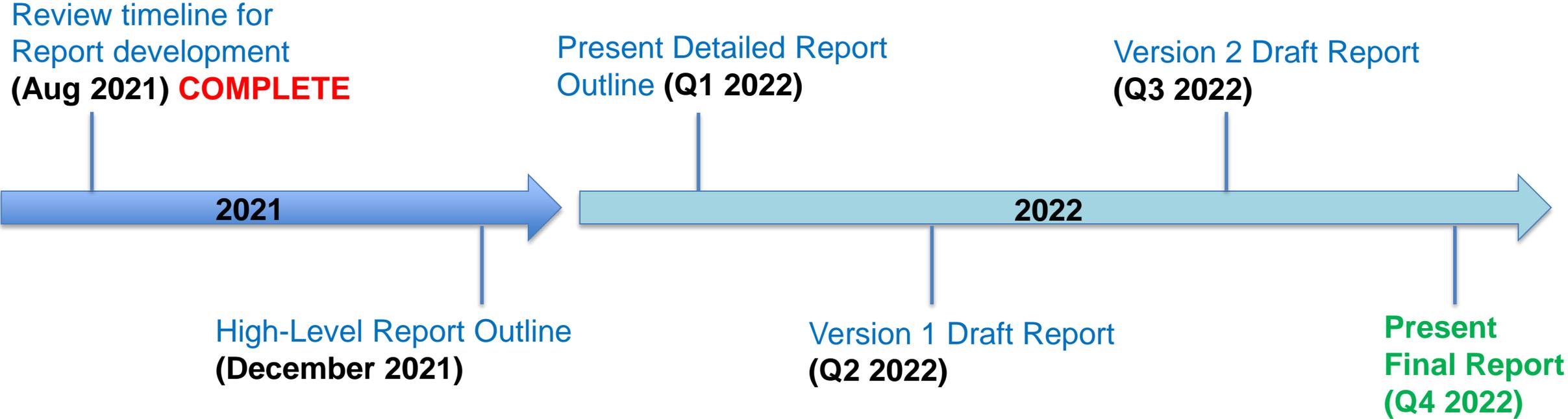
Topics

- Dam Safety
- Facilities Annual Maintenance Plan
- Sutter Butte Flood Control Agency (SBFCA)

Status Updates

Commission Report

Commission Report Development Timeline



Commission Report Outline

Introduction

➤ Commission Background

- Feb. 2017 spillway incident
- SB 955 legislation (Nielsen/Gallagher)
- Forum for input and information—non-regulatory body

➤ Commission Purpose

- Serve as a representative to the public for the purposes of providing public input and receiving information from the dam operator.
- Act as a unified voice from the communities surrounding Oroville Dam to provide public feedback, advice, and best practices to the dam operator.
- Publish a report at least once every three years

➤ Report and Content Mandated by SB 955

- “Publish a report at least once every three years”

Commission Report Outline

Executive Summary

- Overview of public meetings
- Overview of presentation topics
- Commission actions to-date

Content

- Overview of ongoing maintenance & improvements
- Register of communications from State agencies and other parties
- Notice of upcoming plans for dam and dam complex
- Overview of flood management projects
- Public safety progress: facility security, evacuation routes, inundation maps, etc.

Commission Report Outline

Conclusion

- Accomplishments to-date
- Forward-looking

Commissioner Signatures Page

Appendix

- Public meeting summaries
- Referenced presentations
- Requests and communications to the Commission

ITEM 3

JOINT OPERATIONS CENTER TOUR RECAP

Joint Operations Center Tour (Nov. 1, 2021) Recap

Oroville Dam Citizens Advisory Commission
Meeting #9
December 3, 2021

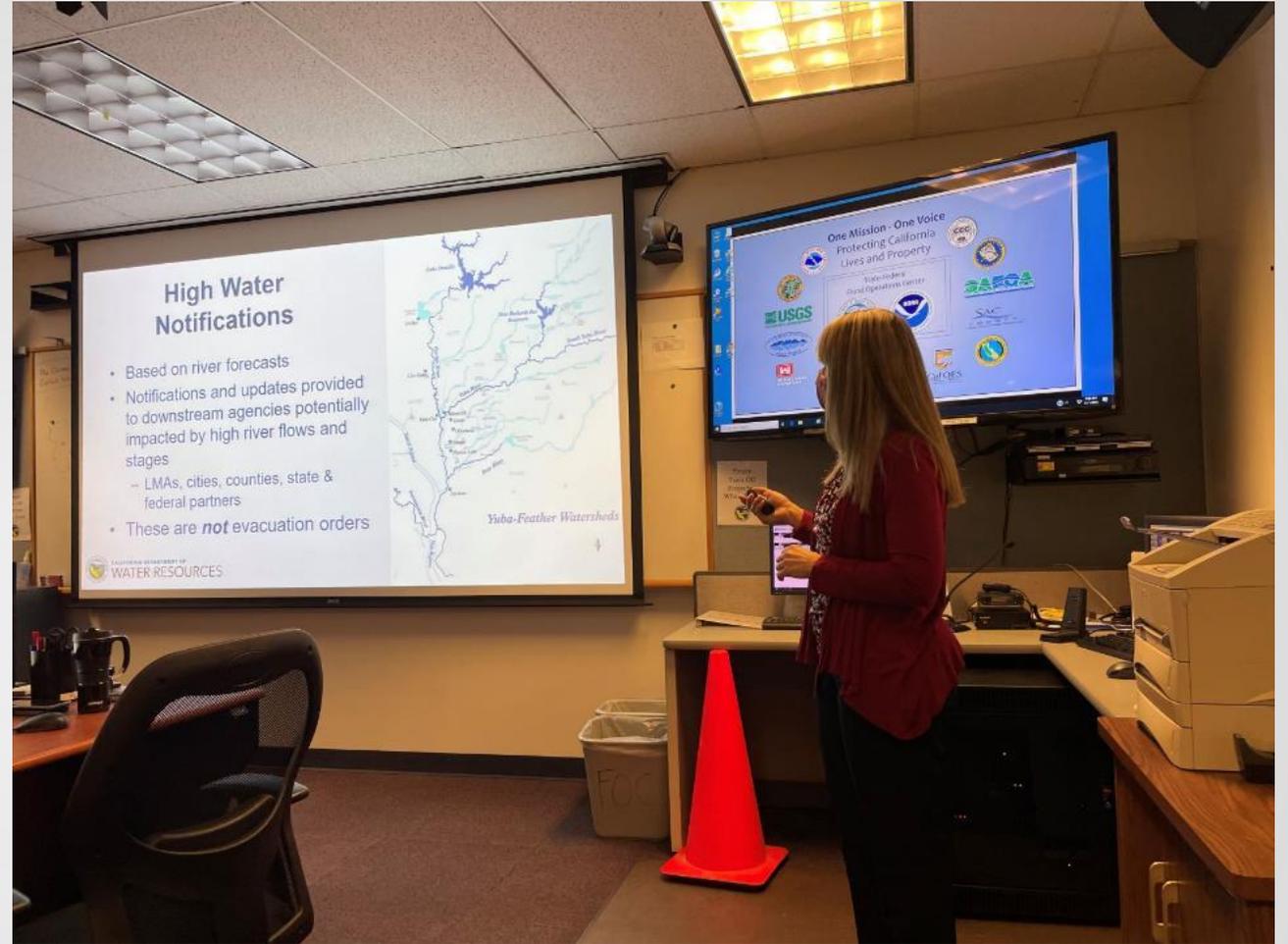


Image: CA DWR Flood Operations Center, Flood Operations Lead Liz Bryson, Nov. 1, 2021.



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Michael Mierzwa, P.E., State Floodplain Manager
CA Dept. of Water Resources, Division of Flood Management

Tour Attendees

Oroville Citizens Advisory Commission Members

- Sen. Jim Nielsen
- Asm. James Gallagher
- Lt. Steve Collins (Butte Co.)
- Matt Teague (State Parks)
- Supervisor Bill Connelly (Butte Co.)
- Supervisor Tod Kimmelshue (Butte Co.)

Agencies Represented

- National Weather Service
- US Army Corps of Engineers
- California Office of Emergency Services
- CA Natural Resources Agency
- CA Dept. of Water Resources (Exec, State Water Project and Flood Management)



Image: OCAC Members in State-Federal Flood Operations Center, Nov. 1, 2021.



Topics Covered

State-Federal Flood Operations Center

- Pre-Season Coordination Meetings
- General Forecasting Procedures
- Real-Time Coordination & Operations
- Long-Term Reservoir Control Manual Updates
- Data Networks & Gauging
- Public Notification of Forecasts & Inundation Maps

State Water Project and Central Valley Project - Project Operations Centers

- Overview of the Projects Physical Layout
- Staffing Requirements & 24/7 Operations
- Scheduling and Use of Real-Time Information
- Coordination w/ Flood Operations Center, companion Project, & local water management entities



ITEM 4
WINTER OPERATIONS PLAN

Lake Oroville Winter Operations

Oroville Citizen's Advisory Commission Meeting
December 3, 2021



John Leahigh
SWP Water Operations Executive Manager



CALIFORNIA DEPARTMENT OF
WATER RESOURCES

Winter Operations Overview

- Water Year 2021 Recap
- Flood Pool Requirements
 - Enhanced Flood Pool
- Water Year 2022 Outlook

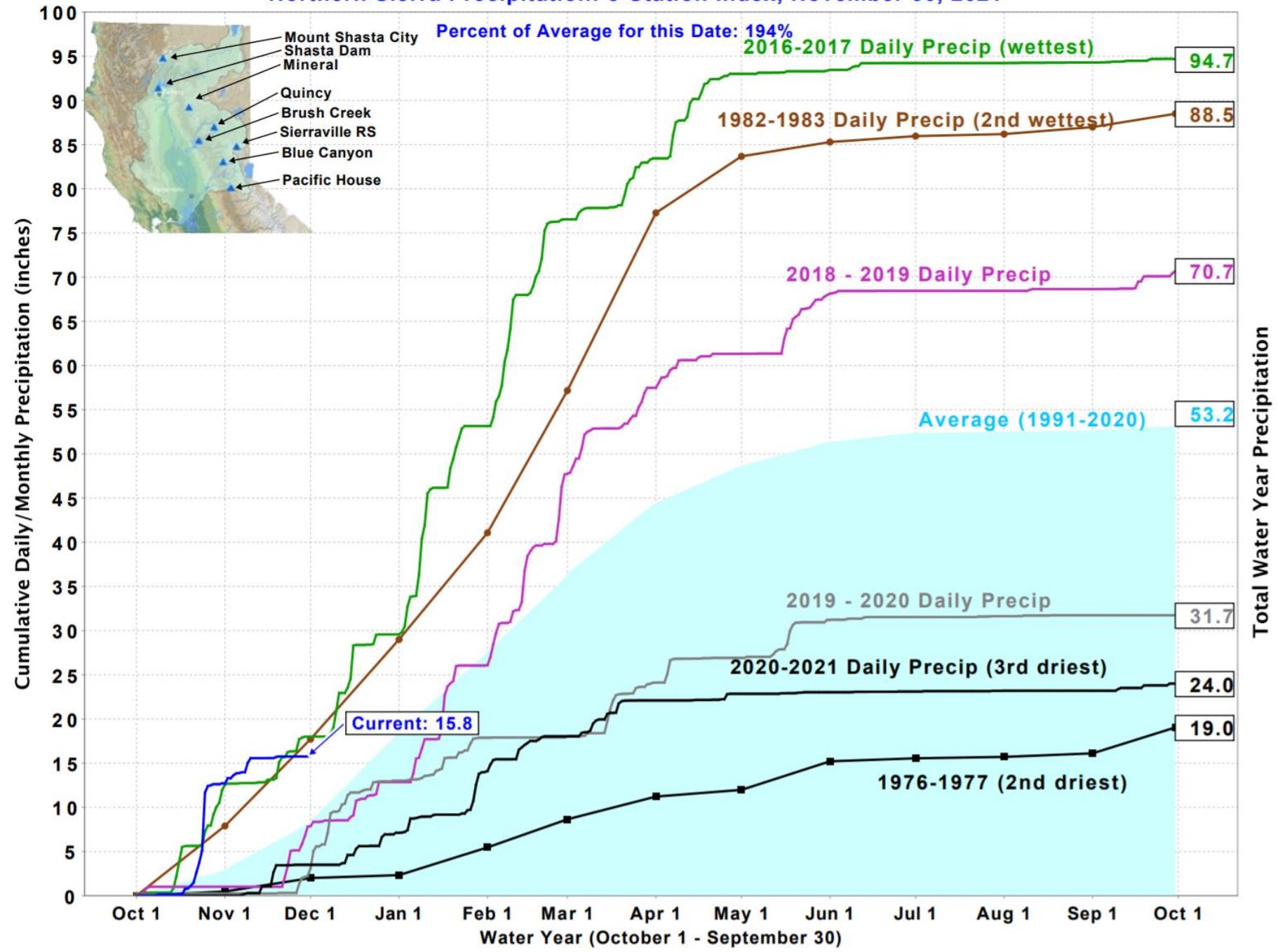


Water Year 2021 Re-Cap and Current Conditions

- Drought conditions persisted from WY 2020 to WY 2021
 - Northern Sierra Basin – 3rd driest on record
 - Record warm temperatures in Northern Sierra Basin
 - Reduced runoff efficiency in the Feather River Watershed
- Extreme soil moisture deficit
- Historical Low point for Lake Oroville at 787 TAF (9/30/2021)
- Series of Storms late October/early November
 - Nearly 50% of WY 2021 precipitation totals occurred in a 24-hour period
 - Modest gains in Lake Oroville ~260 TAF due to dry soil conditions
 - Soil moisture has improved, but not a drought buster
 - Lake Oroville storage remains at ~30% of capacity



Northern Sierra Precipitation: 8-Station Index, November 30, 2021



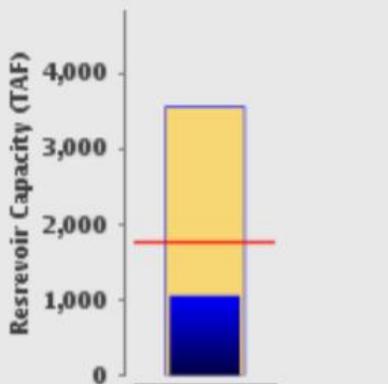


CURRENT RESERVOIR CONDITONS



Lake Oroville Conditions

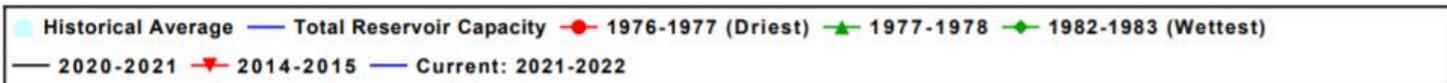
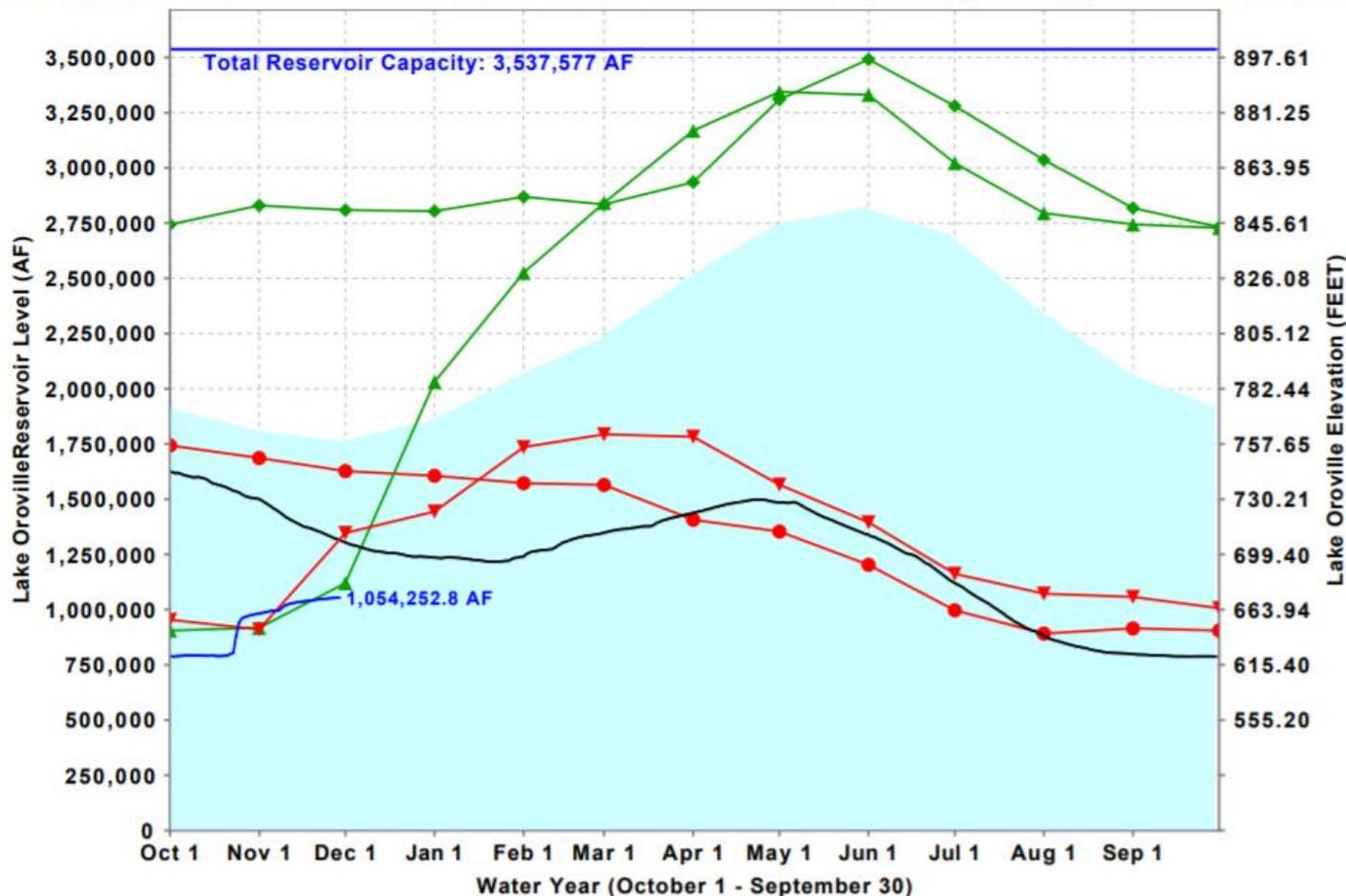
(as of Midnight - November 29, 2021)



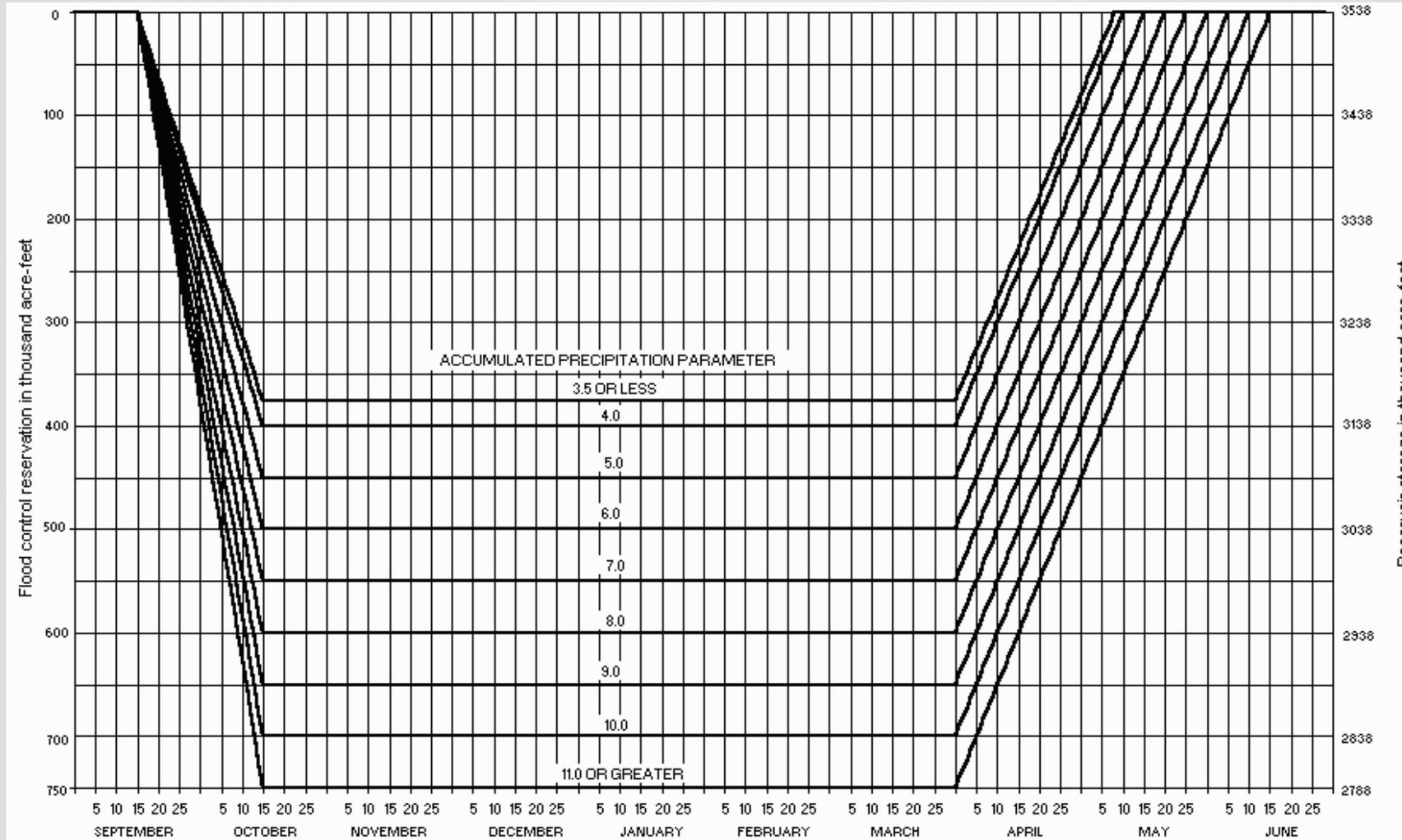
Current Level: 1,054,252.8 AF

30% (Total Capacity) | 60% (Historical Avg.)

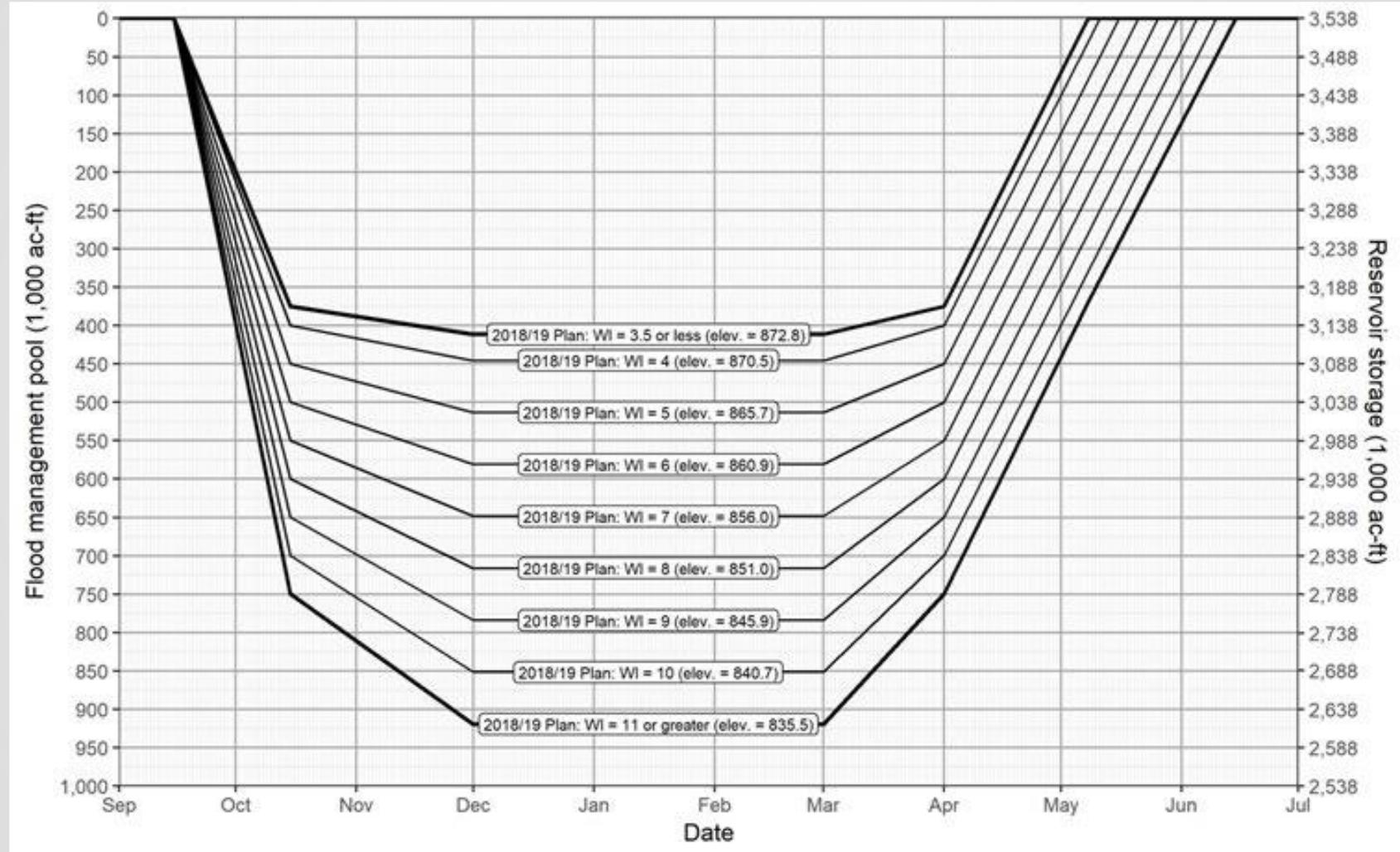
Lake Oroville Levels: Various Past Water Years and Current Water Year, Ending At Midnight November 29, 2021



USACE 1970 Flood Pool

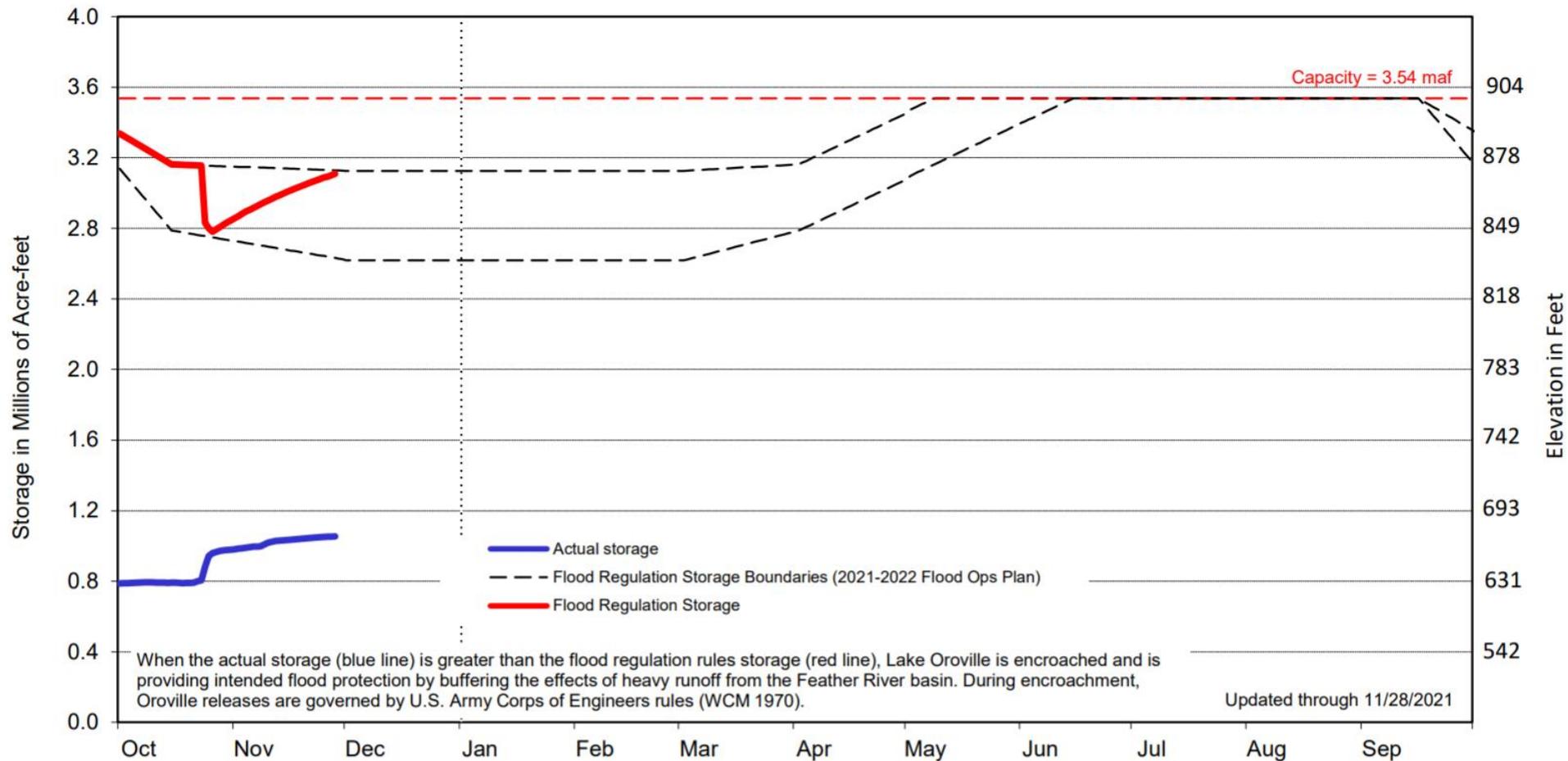


Enhanced Flood Pool Post-2017



Lake Oroville Storage

October 1, 2021 to September 30, 2022



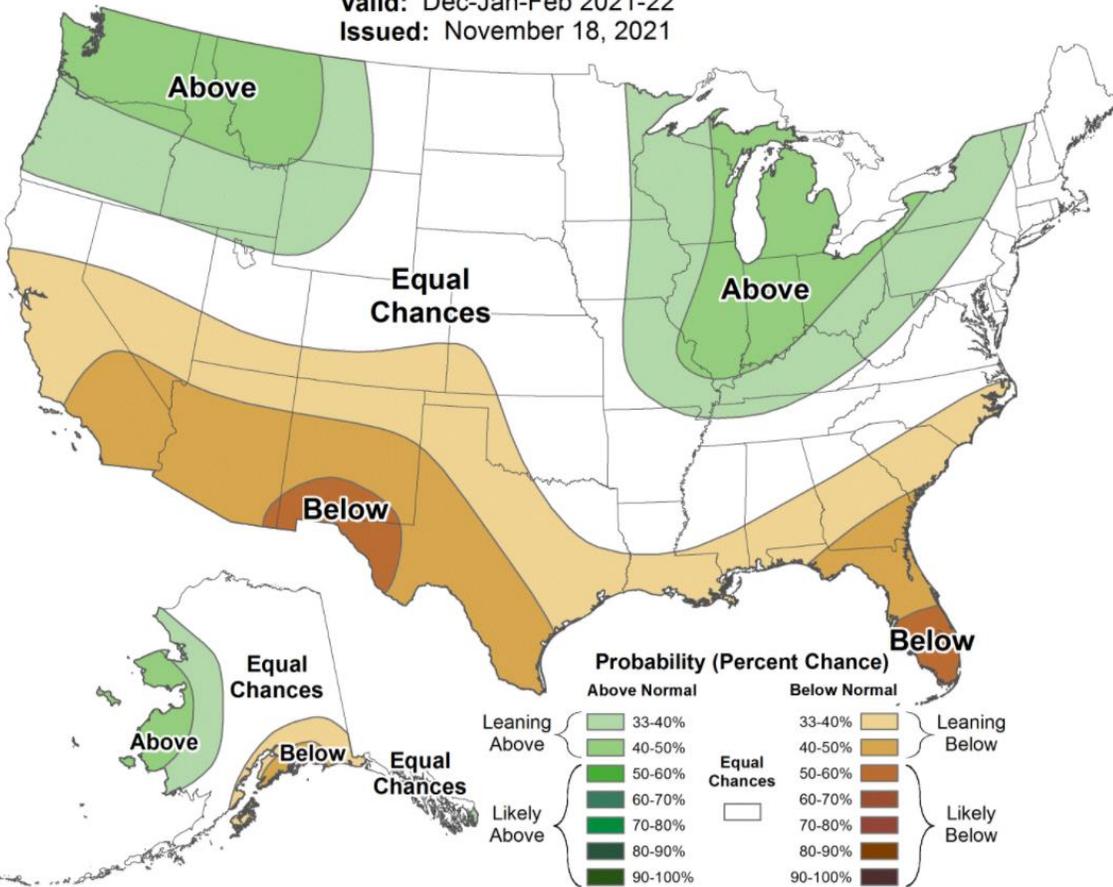
Winter Temperature and Precipitation Outlook



Seasonal Precipitation Outlook



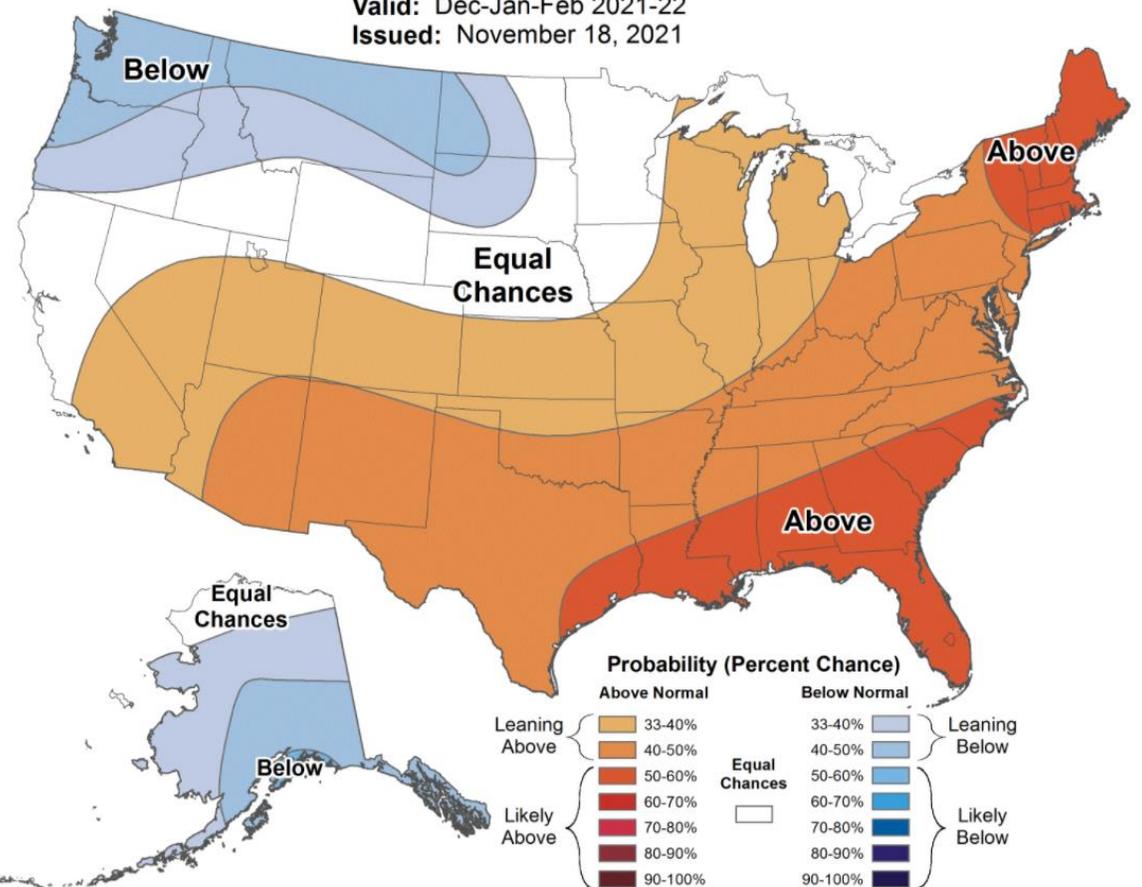
Valid: Dec-Jan-Feb 2021-22
 Issued: November 18, 2021



Seasonal Temperature Outlook



Valid: Dec-Jan-Feb 2021-22
 Issued: November 18, 2021



ITEMS 5

DOWNSTREAM FLOOD MANAGEMENT AND PREPAREDNESS

Downstream Flood Management and Preparedness

Oroville Dam Citizens Advisory Commission Meeting #9
December 3, 2021



Image: Feather River above confluence with Yuba River.



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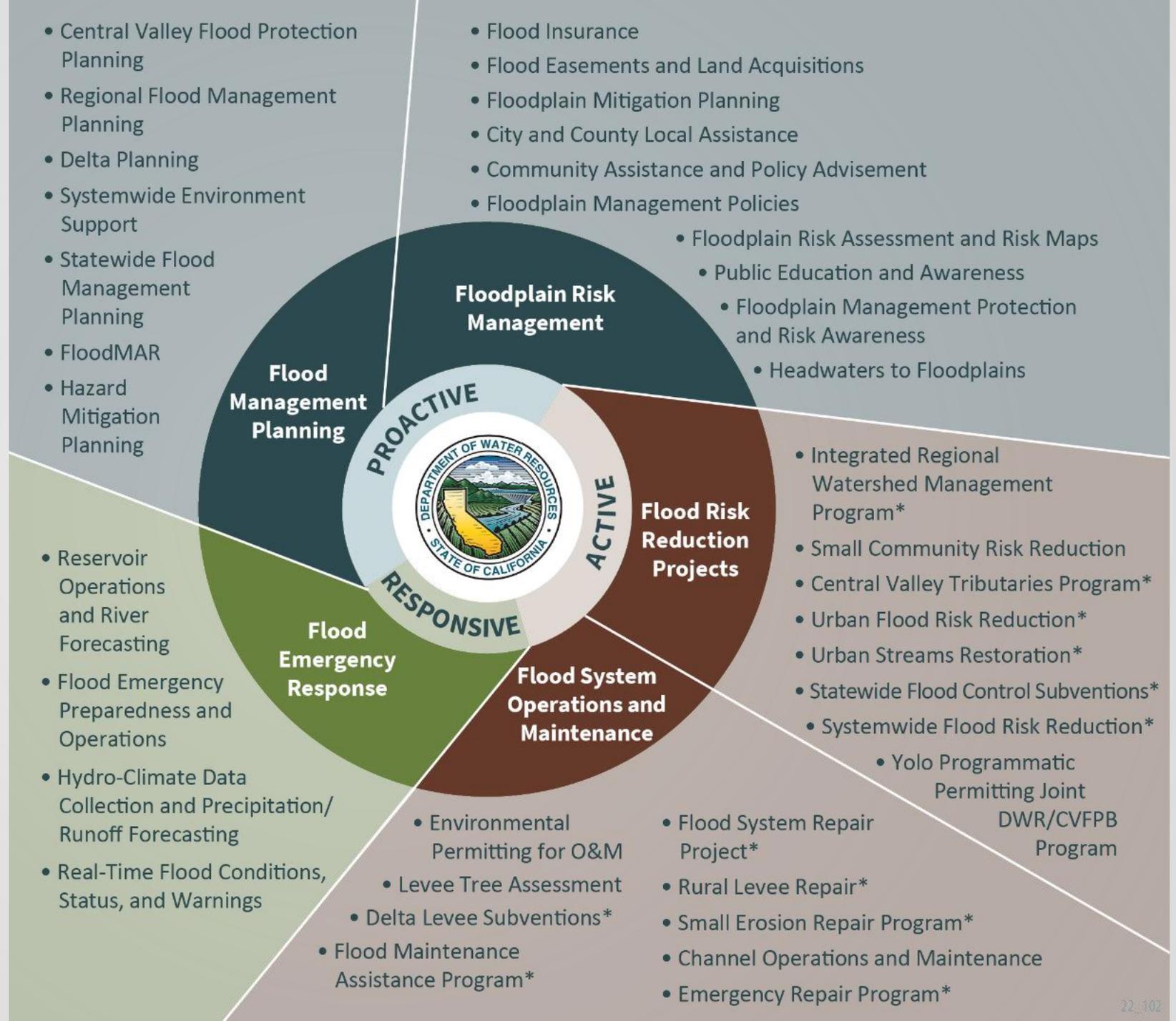
Gary Lippner, P.E., Deputy Director
CA Dept. of Water Resources, Flood Management and Dam Safety

Outline of Today's Topics

- Flood Risk Management Programs Portfolio
- Emergency Coordination
- Central Valley Flood Protection Plan
- Flood Risk Reduction Projects
- Floodplain Management
- Residual Risk Concept



Flood Risk Management Program Portfolio



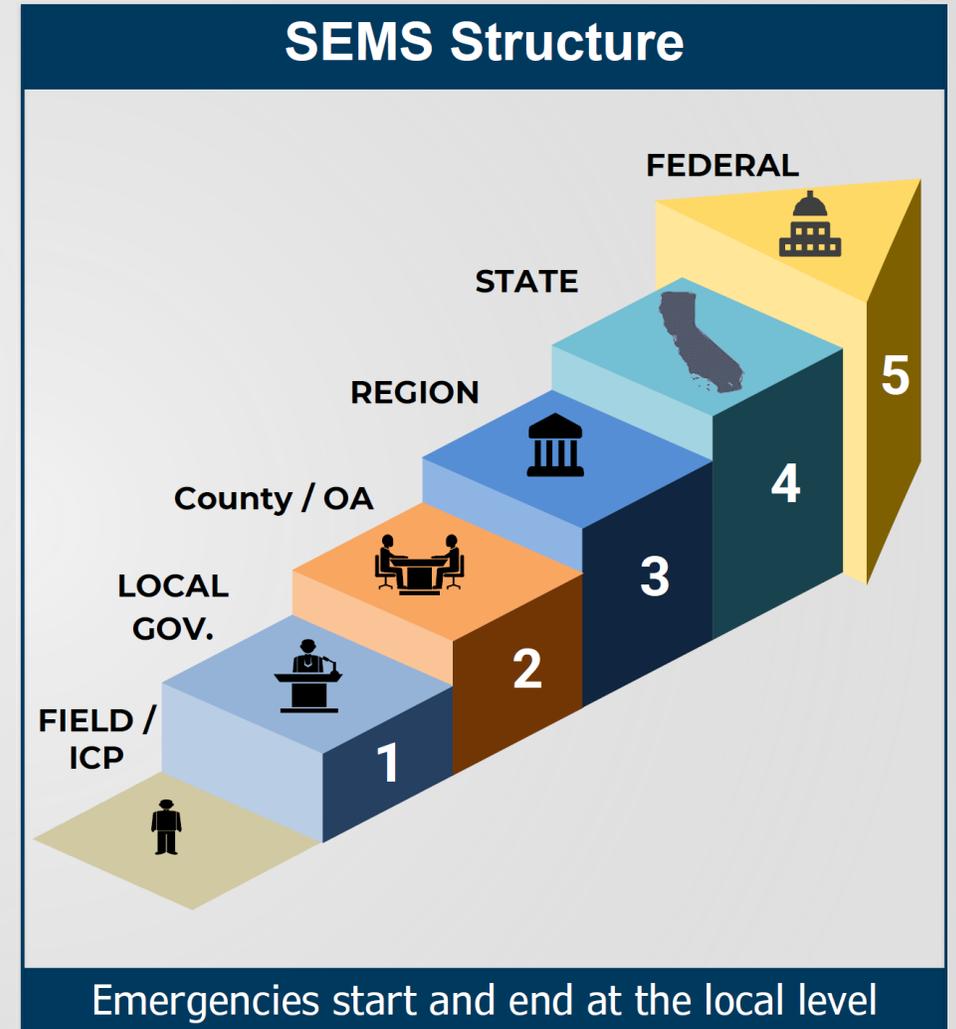
Flood Emergency Coordination

State-Federal Flood Operations Center (FOC) provides:

- Situational awareness
- Technical & direct assistance
- Conduit for federal assistance via PL 84-99

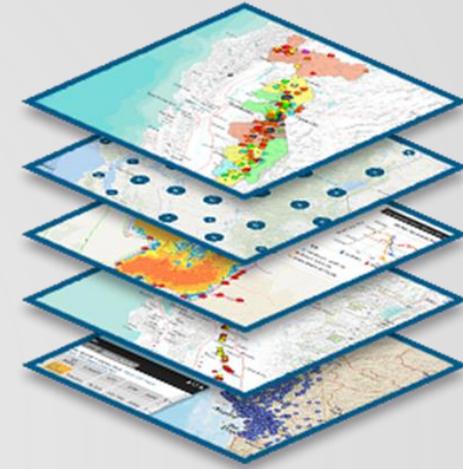
FOC does NOT:

- Declare emergencies
- Order evacuations
- Repair levees



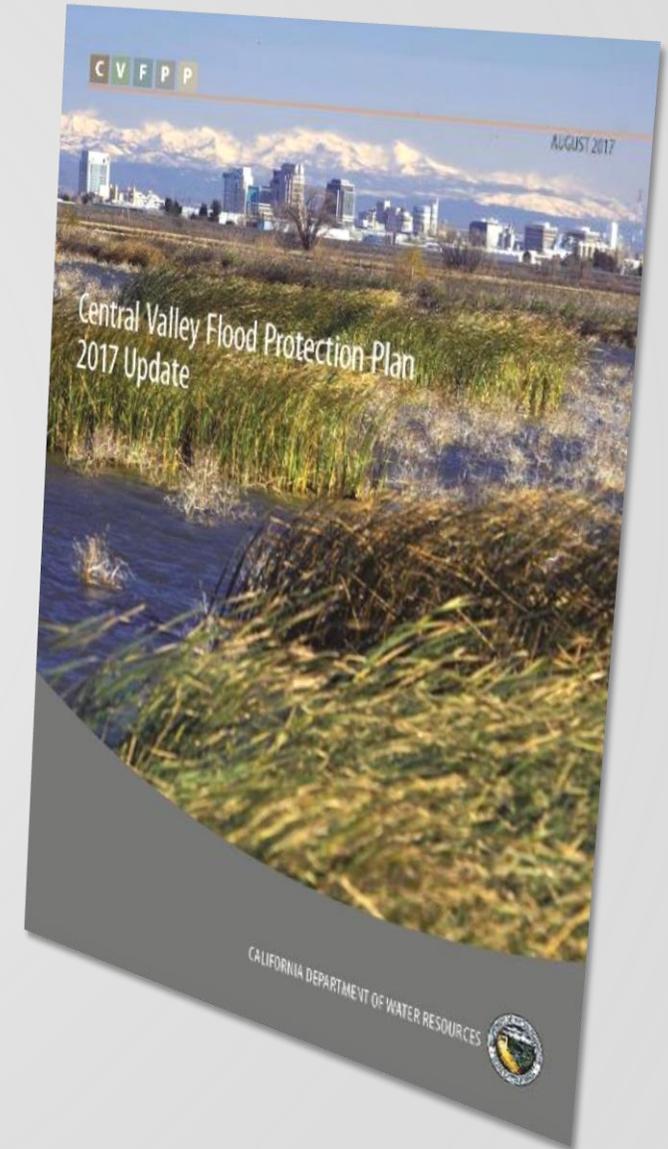
FOC Emergency Coordination Services

- Data sharing programs examples
 - California Data Exchange Center
 - Flood Emergency Information Exchange
 - Forecast-Informed Reservoir Operations
- Coordination examples
 - Preseason meetings
 - Directory of flood officials
 - Providing stockpiled supplies
 - Emergency response training



Central Valley Flood Protection Plan

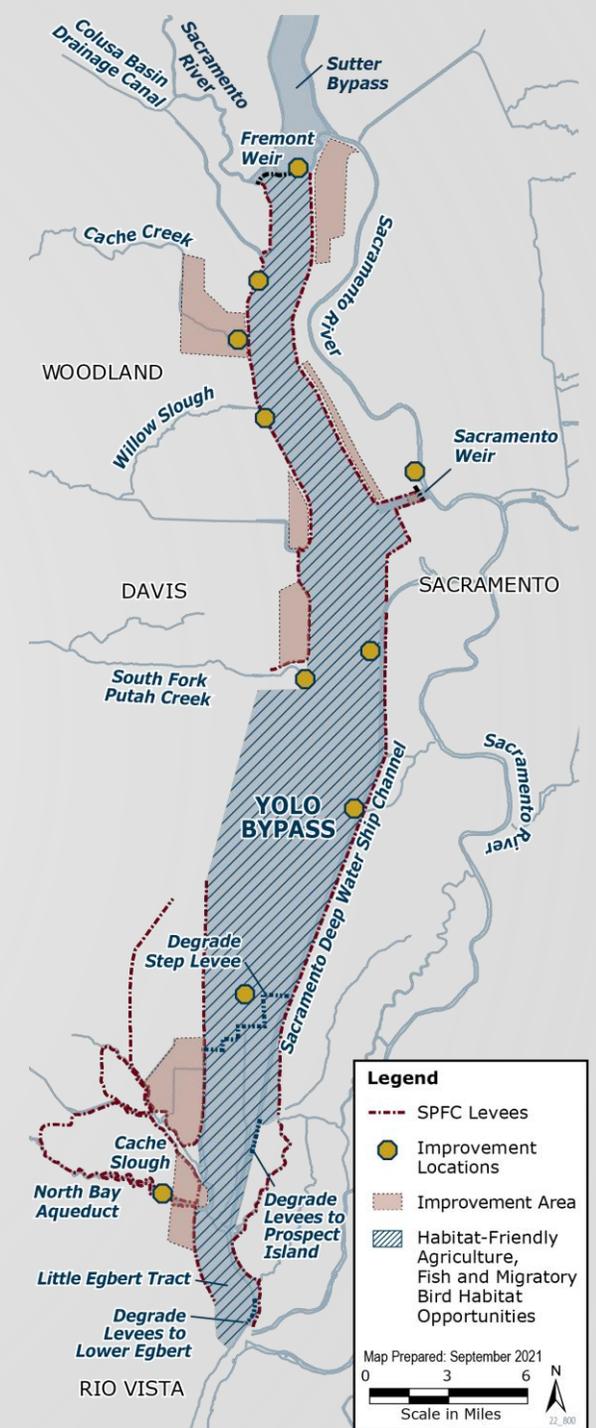
- Descriptive, not decisional
- Not a funding or permitting decision for specific projects
- Prioritizes the State's investment in flood management over the next three decades
- Promotes multi-benefit projects
- Integrates and improves ecosystem functions associated with flood risk reduction projects



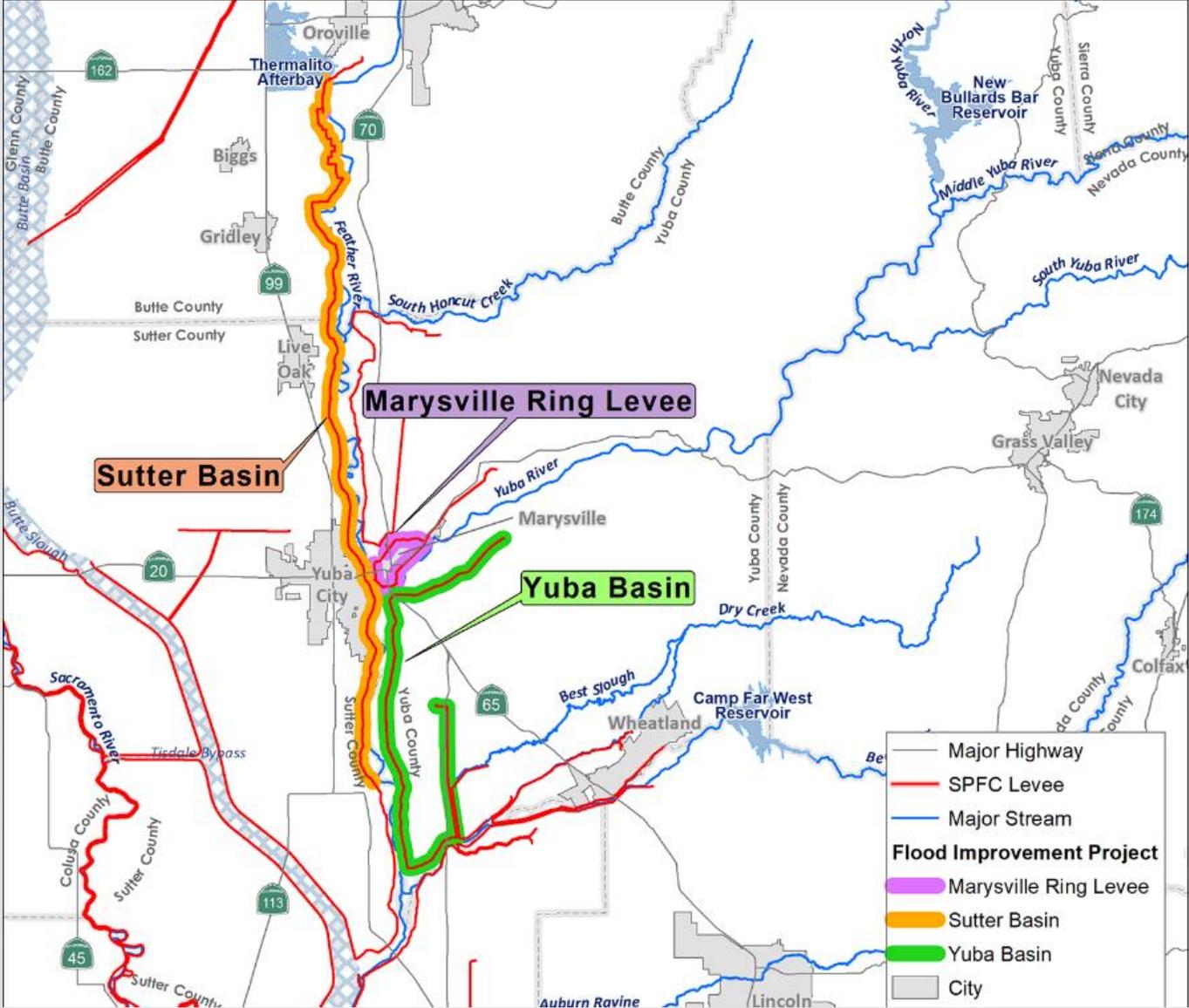
System-wide Improvements

The CVFPP included State-led system-wide improvements (such as the Yolo Bypass shown to the right), which:

- Provide broad region-scale benefits,
- Help address regional climate change resiliency,
- Are designed to eliminate downstream backwater induced effects but starting with capacity improvements to in downstream areas, &
- Include ecosystem enhancements to assist with regional conservation targets (also established in the CVFPP Conservation Strategy).



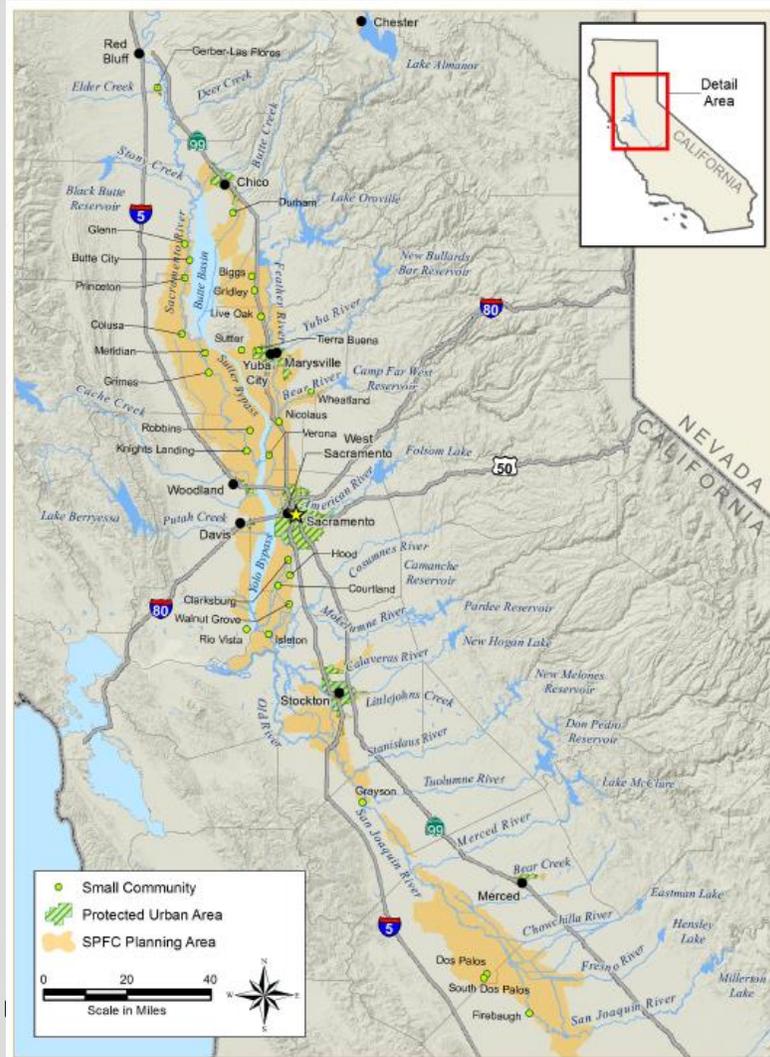
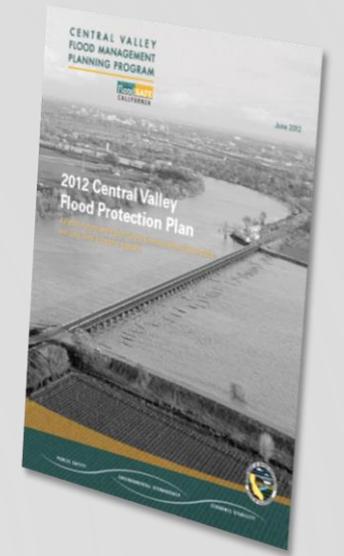
Ongoing Urban Flood Improvement Projects



Urban Flood Projects Overview

Project	Project Cost	State Share	Miles of Levee	People w/ Increased Protection	Assets w/ Increased Protection (millions)	Acres w/ Increased Protection	Acres Acquired in Fee or Easement	Acres of New Habitat	Percent Constr. Complete
Sutter Basin	\$441,784,137	\$289,678,589	40	95,000	\$6,900	208,000	2,196	150	100%
Yuba Basin	\$316,055,800	\$230,870,000	29	40,000	\$1,400	20,000	2,240	650	100%
Marysville Ring Levee	\$158,000,000	\$ 10,320,000	5	12,000	\$100	1,500	170	50	65%
Total	\$915,839,937	\$530,868,589	74	147,000	\$8,400	229,500	4,606	850	

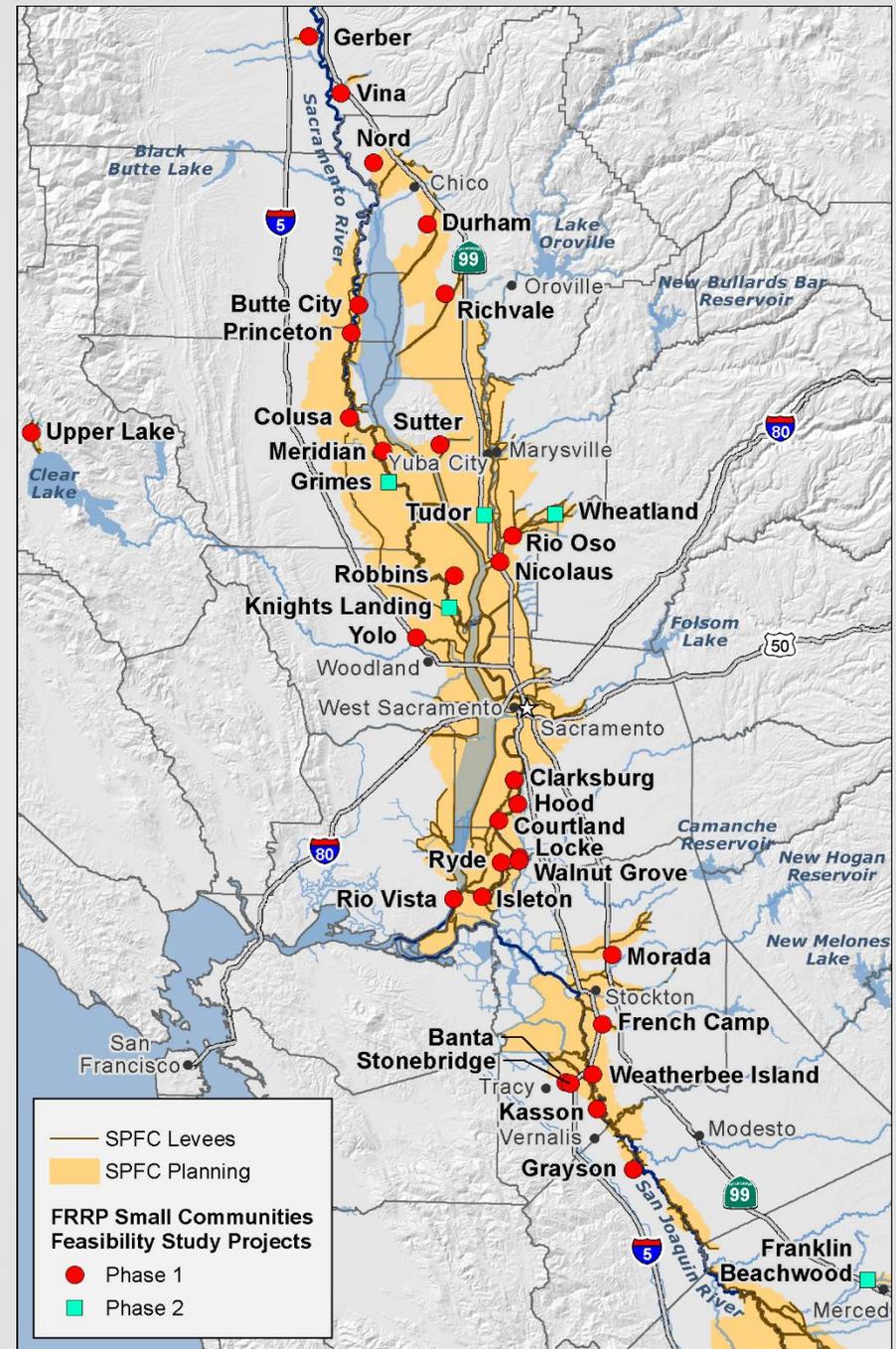
Small Community Flood Risk Reduction Program Background



- Program created within DWR following the adoption of the 2012 Central Valley Flood Protection Plan
- Described approaches for protecting small communities in Section 3.3 (page 3-9) via:
 - System improvements
 - Adjacent urban improvements
 - New state funded small community program
- \$50M of Proposition 1E funds set aside to initiate the program in 2015; completely committed

Current Implementation Status

- Phase 1 Studies:
 - 13 of 35 studies completed, 9 scheduled for completion in 2021 and remaining to complete by January 2023
- Phase 2 Design & Construction:
 - Scheduled for completion before March 2023
- No Current Funding for Future Solicitation



Examples of Rural Programs

- **Storm Damage DWR Emergency Repair (SDDER)**
 - **Objective:** Address 2017 flood damages where PL 84-99 was not available.
 - **Years active:** 2017 – Present (4 years, estimated completion 2023)
 - **Funding amount committed:** Approximately \$140M
 - **Number of projects:** 76 total (60 completed)
 - **Types of projects:** Erosion, seepage, and stability repairs
- **Flood System Repair Project (FSRP)**
 - **Objective:** Address critical rural levee repairs and provide all-weather access to ensure effective emergency response and manage residual flood risk.
 - **Years active:** 2013 – Present (8 years)
 - **Funding amount committed (State-share):** Approximately \$90M
 - **Number of projects:** 43 total (27 completed)
 - **Types of projects:** Access roads, erosion repairs, seepage berms, slurry walls, and flood control structures repairs.



Floodplain Management and the National Flood Insurance Program Alignment

		NFIP Key Activities			
		Mapping	Regulation	Insurance	Mitigation
DWR Floodplain Management Key Activities	Risk Assessment	✓			
	Risk Awareness		✓	✓	
	Financial Assistance				✓
	Flood Planning	✓			✓



Residual Flood Risk Management

USACE and DWR always message:

- Flood management acknowledge that there will always be residual flood risk
- A comprehensive approach be taken at the Federal, State, and local levels to manage different aspects of this risk



Final Thoughts

- The portfolio of flood management programs addresses comprehensive flood management needs
- Residual risk will always remain, but the key is to understand this residual risk and be prepared through maintenance, floodplain management, and emergency response
- Central Valley Flood Protection Plan (CVFPP) is updated every 5-years for the State's blueprint for protecting the Central Valley from flood risk
- Partnerships are paramount in advancing flood protection in the Feather-Yuba watershed



ITEMS 6
WATER CONTROL MANUAL UPDATE

OROVILLE DAM WCM AND NEW BULLARDS BAR DAM WCM UPDATE PROGRESS REPORT

Joe Forbis, PE
Chief, Water Management Section
Sacramento District
U.S. Army Corps of Engineers
03 December 2021



US Army Corps
of Engineers®



USACE WATER MANAGEMENT



- Basic objectives of water control management
 - Operate to authorized purposes and laws
 - Maintain structural and operational integrity
 - Avoid risk to public health and safety, life, and property
- USACE is responsible for water control management at USACE-owned projects
- USACE is also responsible for prescribing flood control and navigation regulations and guidance at non-USACE projects
 - Section 7 projects
 - Special acts of Congress
 - FERC conditions
 - Other agreements



USACE WATER MANAGEMENT



- Basic objectives of water control management
 - Operate to authorized purposes and laws
 - Maintain structural and operational integrity
 - Avoid risk to public health and safety, life, and property

WATER CONTROL MANUAL

- USACE is responsible for prescribing flood control and navigation regulations and guidance at non-USACE projects
- USACE is also responsible for prescribing flood control and navigation regulations and guidance at non-USACE projects
 - Section 7 projects
 - Special acts of Congress
 - FERC conditions
 - Other agreements



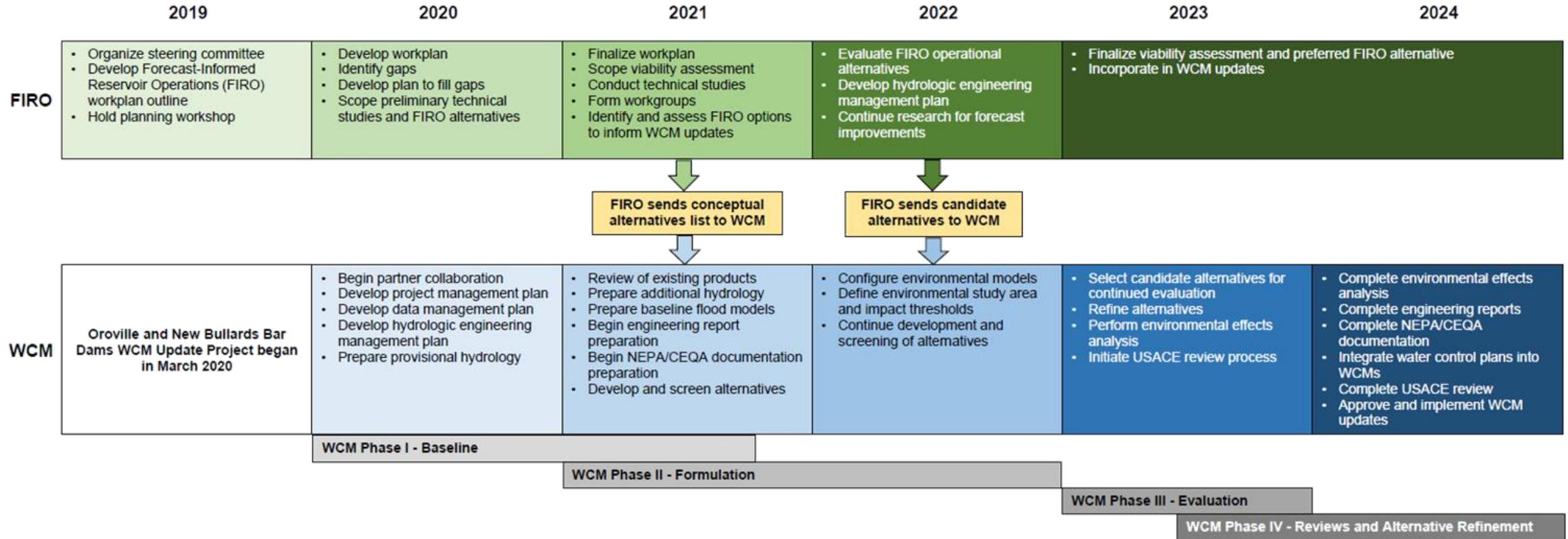
SIMPLIFIED WCM UPDATE PROCESS



	Year 1	Year 2	Year 3	Year 4	Year 5
PMP	Light Blue				
Public/Stakeholder Outreach	Light Blue	Light Blue	Light Blue	Light Blue	
Hydrology	Dark Blue	Dark Blue			
Existing Conditions	Dark Blue	Dark Blue	Dark Blue		
Project Alternatives Identification		Light Gray	Light Gray	Light Gray	
Environmental Effects Analysis		Dark Gray	Dark Gray	Dark Gray	
Reviews/Documentation		Dark Gray	Dark Gray	Dark Gray	Dark Gray
Final Review and Approval					Black



FIRO-WCM ALIGNMENT SCHEDULE





PHASE 1 – BASELINE STATUS



Task
<i>Develop project management plan</i>
<i>Develop data management plan</i>
Implement data management plan
Develop Oroville WCM outline
Develop NBB WCM outline
Develop master manual outline
<i>Develop hydrologic engineering management plan</i>
Review/update ORO annual max volume-frequency curves
Review/update ORO monthly inflow volume-frequency curves
<i>Review/update NBB annual max volume-frequency curves</i>
<i>Develop/review NBB monthly inflow volume-frequency curves</i>
Update HEC-HMS model of Yuba-Feather system (optional)
Develop event inflow timeseries required for HEC-ResSim model
Develop POR inflow timeseries required for HEC-ResSim model
Apply climate change projections to Yuba-Feather hydrology
Assess hydrologic uncertainty
Review/update New Bullards Bar PMF (optional)
Review/update Oroville PMF (optional)
Paleoflood study of Yuba-Feather system (optional)
Rainfall frequency study of Yuba-Feather system (optional)
Evaluate Yuba-Feather system channel capacity (optional)
Evaluate forecaster skill of hindcast ensembles

🕒 • PMP

✅ • DMP

🕒 • HEMP

🕒 • Hydrology –

- NBB Hydrology Update - Provisional
- Regional Consistency Analysis

🕒 • Reviewing PMF for both projects

○ • ResSIM model review for analysis



FIRO-WCM COMMON TASKS BETWEEN EFFORTS



1. Define flood operation objectives and performance metrics



2. Define alternative development strategy



3. Define existing condition to compare with alternatives



4. Prepare hydrology



5. Develop models and tools



6. Conduct basic performance evaluation



7. Develop system operations for promising alternatives



8. Conduct additional evaluation of promising alternatives



9. Identify recommended/selected alternatives



NEXUS -

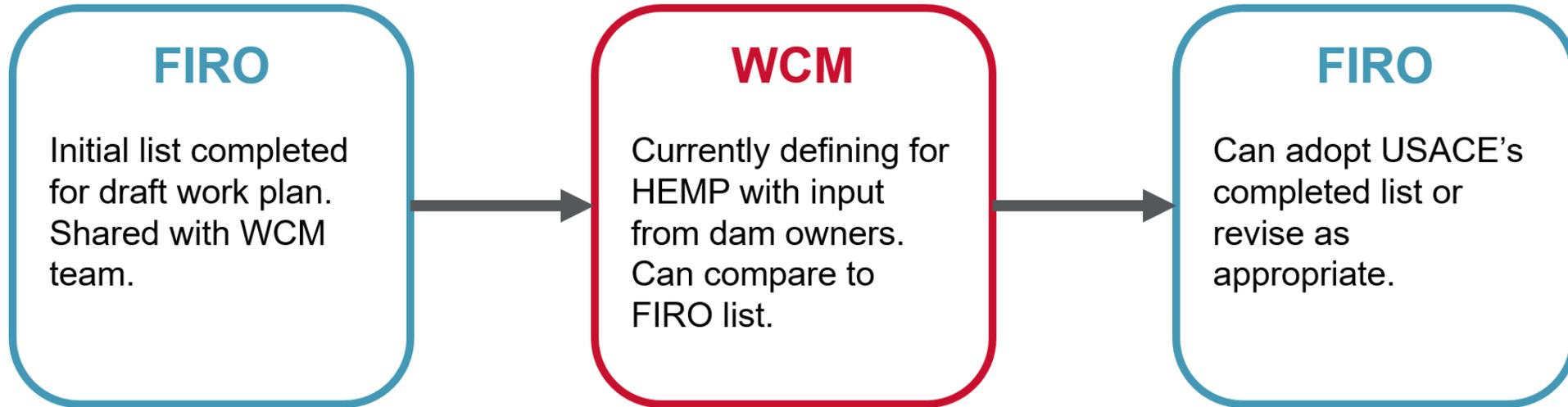
Efforts can complement each other while progressing independently.



TASK 1 - COMPLETE



1. DEFINE FLOOD OPERATION OBJECTIVES AND PERFORMANCE METRICS



NEXUS - FIRO and WCM objectives and metrics are synced. Any differences are deliberate.



2. DEFINE ALTERNATIVE DEVELOPMENT STRATEGY

WCM

a) Identify “knowns” for USACE in terms of developing alternative strategies: e.g., allocated flood control space can’t change, likely a type of guide curve operation (though not absolute).

b) Review FIRO alternatives developed for ORO CNA and NBB feasibility study. These are Folsom-like alternatives or have elements of a Folsom-like strategy.

c) Decide whether to:

- Adopt existing alternatives, and/or
- Build upon existing alternatives, and/or
- Develop other alternatives

FIRO

a) Review FIRO alternatives developed for ORO CNA and NBB feasibility study. These are Folsom-like alternatives or have elements of a Folsom-like strategy.

b) Can build on existing alternatives or develop other alternatives, especially with consideration of leveraging future forecast enhancements. For example, other alternatives could include greater use of forecast ensemble as input to the operation, use of forecasts with longer lead times, or definition of “FIRO space” (i.e., Mendocino-like or a new type of strategy).

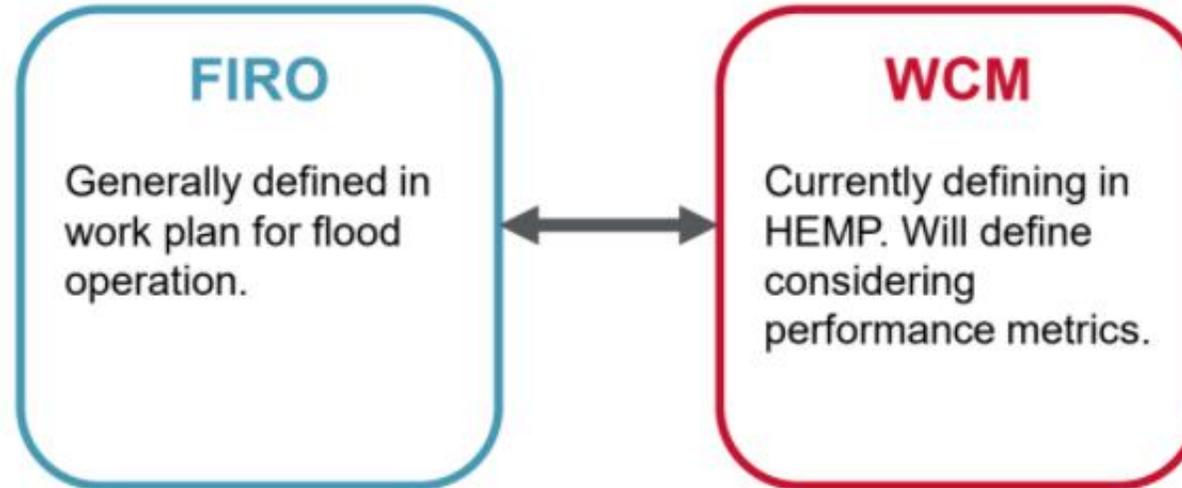
NEXUS – WCM and FIRO can share strategies and leverage any opportunities for coordinated evaluation.



TASK 3 – DEFINE EXISTING CONDITIONS TO COMPARE WITH ALTERNATIVES



3. DEFINE EXISTING CONDITION TO COMPARE WITH ALTERNATIVES



NEXUS - FIRO and WCM teams can work together to develop a specific, consistent definition(s).



TASK 4 – PREPARE HYDROLOGY



4. PREPARE HYDROLOGY

WCM

a) Review hydrology prepared for CNA, CVFPP, and other previous studies.

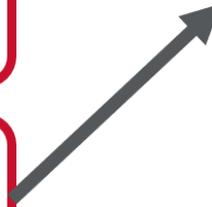
b) Prepare coordinated flood and period-of-record hydrology for Yuba-Feather system. Coordinate with CNRFC to obtain hindcast ensembles.

c) Complete review and approval of hydrology.

FIRO

a) Use existing hydrology “off the shelf” for alternative evaluation. Coordinate with CNRFC to obtain hindcast ensembles.

b) If available at time of alternative evaluation, USACE-approved hydrology could be used.



NEXUS - WCM can provide USACE-approved hydrology for use by FIRO, if needed.



TASK 4 - PREPARE HYDROLOGY



- Refining provisional annual frequency curves
→ Used to evaluate flood operation.
- Will refine seasonal frequency curves and examine regional consistency
→ Used to evaluate drawdown and refill portion of WCDs
- Will review historical data at headwater reservoirs



OTHER TASKS



- Environmental Modeling Plan Kick-off Meetings with YWA and DWR occurred In October
- Schedule workshops with upstream and downstream stakeholders for operational constraints research
 - First in mid-December 2021





OTHER TASKS



- FIRO PVA Workgroups populated with USACE representatives
- Leadership Alignment group continuing to hold meetings
- FIRO Agenda Item in WCM Planning Meetings
- FIRO/WCM Item Updates in F-CO quarterly meetings
- NBB ARC Spillway integration in FIRO and WCM Update

ITEM 7 PUBLIC COMMENT

**The Oroville Dam Citizens Advisory
Commission will now take public comment.**

We appreciate your input.

ITEM 8 ADJOURN

**Thank you all for joining us today, our next
Oroville Dam Citizens Advisory Commission
meeting will be on March 18, 2022.**