

Stakeholder's summary notes of Sept 4th Oroville WCM Ad Hoc Meeting

The meeting was scheduled to address the unanswered stakeholders questions submitted in advance of the June 13th Oroville Citizen Advisory Commission. It focused on stakeholders concerns for the lack of adequate flood protection within the Yuba-Feather FIRO Final Report. A set of questions and supporting documents guided the discussion and another set of documents from Dam Safety covered a discussion on dam infrastructure, (both sets of documents are attached below as appendixes to this Ad Hoc meeting.

1970 Oroville Water Control Manual Agreement

“By agreement between the State of California and the Corps of Engineers, selection of the maximum flood control space requirement for Oroville was based” ... on flood protection up to the magnitude of the standard project flood (SPF), with permissible releases limited to a maximum of 150,000 cfs. Chart 6 of the 1970 WCM graphs the (SPF) peak inflows of 440,000cfs as a 1/500 yr. event. Thus the agreement for the last 55 years was to provide flood control space for 1/500 yr. flood protection with outflows limited to 150,000 cfs.

Can Oroville Dam continue to contain 1/500 year events to 150,000 cfs releases?

FIRO Final Report Hydrographs of scaled historical events and associated return periods

The 1986 storm scaled by 140% is a 1/346 yr event - Viewing its hydrographs in the FIRO final report, the Auxiliary Spillway surcharged by 5 feet for 48 hrs, and downstream flows overtopped the Yuba City levees for 4 days with peak flows reaching 350,000 cfs although constraints at Yuba City is 180,000 cfs.

Approximately 800,000 acre feet of water was evacuated during early releases, but another 1,000,000 acre feet of water exceeds downstream constraints during storm's peak inflows. Hydrographs of the 1997 x 120% a 1/420 year event demonstrated similar results.

In both cases not enough water was evacuated during early releases to limit outflows to the 150,000 constraint, as agreed upon in the 1970 Water Control Manual.

Sizing of the flexible flood storage “FIRO Space”

During the Yuba-Feather Forecast-Informed Reservoir Operation (FIRO) study, it was determined by DWR that the reservoir could be emptied only down to the 835 ft. elevation, At the Sept. 4th meeting a DWR hydrograph was presented, demonstrating the outflows from the 1/500 year storm could be contained to 150,000cfs, if the reservoir was allowed to be emptied down to elevation 813 ft, the bottom of the FCO-Gates. (see appendix for hydrograph)

Level of Flood Protection allowed by DWR

Question - Why was elevation 835' made a hard constraint for the bottom of the FIRO Space? When viewing the hydrographs, recovery of the conservation pool from elevation 813' was not a concern, nor was the integrity of the dam's infrastructure.

Recommendation - Let the 1/500 year flood protection agreement in the 1970 Water Control Manual dictate the bottom of the FIRO Space, versus allowing a predetermined elevation

of 835 ft dictate the level of flood protection the state is willing to provide.

Reservoir Starting Elevation / Soil Wetness index / Snow Melt Runoff According to the DWR created hydrograph, Oroville Dam's ability to successfully pass a 1/500 year event depends on both the drawdown elevation and the reservoir starting elevation. But the 1970 WCM contains a soil wetness Index that allowed an additional 250,000 acre feet of water storage within the designed flood pool. That raised the reservoir starting elevation ahead of the next storm event and made it more difficult to provide the maximum amount of flood protection possible. To evacuate this added water storage and get back to the original starting elevation would require an additional 50,000cfs. of downstream releases lasting 2 ½ days.

The justification for storing additional water in the flood pool did not incorporate soil moisture readings, fire scared or frosted terrain conditions within the watershed, nor did it calculate for the snowpack sitting on top of the soil. During the 2017 spillway incident it was determined that extra ordinarily wet snow conditions contributed 35% of the runoff

Recommendation Any future attempt to store additional water in the flood pool and raise the reservoir's starting elevation during the winter season must incorporate the most accurate information available in determining its effects on the safety of the downstream communities.

Can FIRO early release reduce the costs and effects of evacuating downstream citizens?

FIRO Final Viability Analysis 4-3 Transfer of Benefits - suggests early releases can create more flood storage and then used to reduce downstream flows (to avoid the cost of evacuation). Determining the indirect cost of evacuations would help in assigning its appropriate priority in the HEC Res-Sim rule stack used to calculate reservoir releases in alternative WCM plan # ID4.

Climate-Altered Reservoir Flows - are available in the CVFPP 2022 Appendix D "Risk Analysis Summary by Index Point" and demonstrate its deteriorating effect on future flood protection. Understanding this encourages exploring resolution to the WCM update's inflexibility on how starting elevation, drawdown restrictions, snowmelt and spring refill are regulated.

Oroville Dam Safety provided a thorough set of documents highlighting the current status of various studies that will determine what Infrastructure improvements projects that were proposed in the Comprehensive Needs Assessment (CNA) get budgeted for in the future.

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