Meeting Summary
Small Group Meeting
October 10, 2024
3–4 p.m.
Virtual

Participants

- Commissioner Robert Bateman
- Matt Mentink, community member
- Richard Thompson, community member
- Kevin Zeitler, ORAC
- Michael Bessette, SBFCA
- Chris Fritz, SBFCA
- David Gordon, DWR
- Mike Mierzwa, DWR
- David Sarkisian, DWR
- Jeremy Hill, DWR
- Laurence Sanati, DWR
- Annie Wagner, DWR
- Raquel Borrayo, DWR
- Eva Spiegel, Kearns & West

Meeting Purpose

To address questions regarding several topics related to reservoir management and risk including operational changes at DWR since 1997 and the U.S. Army Corps of Engineers' upcoming Water Control Manual Update process.

Action Items

- **Mike Mierzwa** will distribute the Flood Emergency Action Team Report (1997) to meeting participants. Report is also available upon request.
- **David Sarkisian** will circulate the images/figure depicting Flood Control Outlet flow modeling that illustrates the discharge capacity of the eight radial gates. (COMPLETE)
- **Commissioner Robert Bateman** will recirculate the downstream community members' priorities for the Water Control Manual update. (COMPLETE)
- **Matt Mentink** will contact the California Nevada River Forecast Center to discuss forecasting.

- **OCAC** will consider inviting the California Nevada River Forecast Center to present at a future meeting on how the agency conducts forecasting through modeling and provides expert assessments of weather impacts.

Summary

Introduction

David Gordon facilitated the meeting, beginning with a review of the meeting's purpose and agenda. The meeting's focus was to give participants responses to questions downstream community members asked regarding how DWR implemented changes after the 1997 flood and the U.S. Army Corps of Engineers' (USACE) upcoming Water Control Manual update process.

Lessons Learned from 1997

El Nino-driven precipitation resulted in devastating flooding events throughout California, including in Oroville and its downstream communities. It is important to note that evacuations are led by counties and that evacuation orders are not made by the State.

The 1997 Flood Event helped DWR identify two important lessons that drove a series of advancements in the Department.

- Forecasting tools at the time limited State and local agencies' preparation and response.
    - DWR has been forecasting since the 1960s but determined that it needed to invest more in the forecasting program to address this need.
    - Pre-releasing is directly related to forecasted incoming events. In response, DWR has installed new gauges and initiated new programs to evaluate snowpack to determine depth and snow water equivalent. This includes the use of technology, including remote sensing data to more accurately measure snowpack, evaluating incoming storms (including atmospheric rivers) and model forecast, including FIRO, which will be evaluated as a possible input into the Water Control Manual update.
- More robust coordination with reservoir operators was necessary to help minimize threats downstream of the Dam.
    - DWR has used new simulation models and tools to produce real-time understanding of inflows and reservoir level projections at Oroville and New Bullards Bar.
    - DWR has instituted a Forecast-Coordinated Operations with Yuba Water Agency and the USACE to formalize the procedures to coordinate real time and forecasting information and operations.

DWR operated the facility based on the Water Control Manual, which requires the recovery of the flood pool capacity as quickly as possible. DWR has subsequently evaluated the

Flood Enhancement Pool and the benefits of FIRO. The agency says these are important considerations for the Water Control Manual update process.

Then Governor Pete Wilson convened the Flood Emergency Action Team (FEAT) to evaluate the 1997 floods and produce recommendations. The FEAT Report was published in 1997 with a set of recommendations.

- Meeting participants requested a copy of the report.

Mr. Mentink and Mr. Bateman expressed concerns regarding the timing, duration and volume of releases ahead of and after the storm and the impact on levees. Mr. Mentink also said that nobody is taking responsibility for down-ramping protocols on the Middle and South Fork of the Yuba River and requested this be given attention. He said that he believes coordination should consider potential threats to levees and impacts of down-ramping too quickly.

Mr. Mentink and Mr. Bateman expressed that DWR had answered their questions regarding the 1997 flood and the topic had been addressed to their satisfaction.

FIRO

FIRO is designed to monitor the flood control pool based on inflows into a reservoir, precipitation and snow melt.

DWR is currently reviewing the FIRO report. The final FIRO report is expected to be released in January 2025. The report is being revised to align with comments facility operators provided on the draft.

Mr. Mentink requested that areas identified to handle releases should be called FIRO spaces.

Wetness Index

DWR explained that the Wetness Index is merely a snapshot in time of how wet a basin is. Reservoir operators consider forecasting, such as FIRO, and snowpack and snowmelt estimates to model inflows into reservoirs. Since the Wetness Index has a direct relationship with the Water Control Manual, DWR believe that the USACE will consider an evaluation of the Wetness Index during the Water Control Manual Update.

DWR stated that snowmelt calculations change daily based on data compiled by the National Weather Service's California Nevada River Forecasting Center (CNRFC). The agency's calculations consider temperature, hours of sunlight, inclination (angle of sunlight), snowpack, potential runoff and other factors. It is a collaborative forecasting process (known as the Collaborative Hydrologic Prediction System / Flood Early Warning System — CHPS-FEWS) that uses additional models if additional data and opinions are

required. In addition, the CNRFC has expert forecasters who evaluate the models and use their expertise and judgement in drafting and distributing their data.

Mr. Mentink said that downstream communities are concerned about the Wetness Index and that the Water Control Manual dictates 750,000-acre feet for flood storage that can be used for other purposes if it is not needed. Mr. Mentink said that the increased snowpack in 2017 caused the spillway to overtop and that if snowpack was integrated into the Wetness Index, that would have lowered the flood pool enough. He raised concerns regarding the water equivalent of snowpack. He said that he believes the Wetness Index should consider snowpack and not be put into reservoir forecasting. Mr. Mentink stated that he believes conservation space should be encroached on to make flood protection a priority.

Mr. Mentink is interested in understanding the data sets the CNRFC uses and would like to contact CNRFC for a discussion. Participants also suggested that the full Oroville Dam Citizens Advisory Commission may be interested in a presentation from the agency at a future meeting.

DWR said operators consider real forecast information coming in daily, including snowmelt in making operational decisions. The Forecast-Coordinated Operations (F-CO) Program also helps operators update release schedules on a common platform. DWR explained that snowmelt runoff, which is included in the CNRFC forecasts, would be factored into FIRO. DWR suggested that downstream community members ask the USACE how it is integrating snowmelt runoff into the Water Control Manual.

Spillway Release Flow Modeling

DWR discussed that spillway flow modeling and evaluation of the discharge capacity of the Flood Control Outlet (FCO) was performed in the 1960s by the Bureau of Reclamation for DWR. The FCO's discharge capacity is a function of the reservoir head, the gate opening height, and the number of gates that are opened. Physical modeling was done using a smaller scale model built to replicate main spillway and FCO releases. A photo of this physical model was provided in the first slide. The second slide presented a photo of the 1960's physical model passing the equivalent of 150,000 cubic feet per second (cfs). The third slide displayed the discharge capacity curves that were developed through the physical modeling effort.

After the 2017 spillway incident, DWR contracted with Utah State University to perform additional physical modeling to confirm the FCO's discharge capacity. Slides 4 and 5 of the presentation featured photos of the Utah State University physical model. The last slide presented a figure comparing with the 1960's and 2018 Utah State results. The 2018 Utah State curve sits on top of the 1960's Reclamation curve which indicates great agreement and confidence in the discharge curves. With respect to the accuracy of the curves and

FCO discharges, DWR indicated that FCO discharges are known to within 50 to 100 cfs, which is quite accurate considering the size and discharge capacity of the FCO.

DWR will distribute the slides to meeting participants.

City of Oroville Levee

SBFCA reported that its application for federal funding through the USACE for a feasibility study was not approved. As a result, the City of Oroville and SBFCA need to identify an alternative source of funding. SBFCA has met with the State to explore funding, however given the State's budget constraints it is unlikely that State funding will be available. They are still exploring alternative federal funding programs.

DWR emphasized that the Oroville levee is not federally owned such as the levees in Yuba City. If the downstream community members would like to better understand why the Oroville levee was not included in the federal levee program, DWR recommended they contact USACE.

DWR discussed the Central Valley Flood Protection Plan, which includes a Flood System Status Report. The Urban Levee Evaluation (ULE) and separate Non-Urban Levee Evaluation (NULE) assessment of the State Plan Flood Control levees in the Central Valley's Sacramento and San Joaquin river basins. This data was used to help bring the system into 200-year flood level protection standards (for urban areas). This information may be of interest to downstream communities.

Water Control Manual Update

USACE will be holding a meeting on October 15, 2024, to brief interested parties on the public engagement process for the Water Control Manual Update. DWR believes this meeting will not be an opportunity for public comment.

DWR anticipates that USACE will release a set of alternatives for the Water Control Manual Update that interested parties can evaluate and provide public comment on during the process. The process of the National Environmental Policy Act has not yet commenced.

Mr. Bateman stated that downstream communities want the Water Control Manual to reflect lessons the USACE learned from the 1997 flood event. He requested that DWR schedule a meeting in the next month to discuss the Water Control Manual Update.

DWR shared its Water Control Manual recommendations/priorities with the full Oroville Dam Citizens Advisory Commission.

Mr. Mentink said that downstream communities want USACE to make flood protection a priority in the Water Control Manual Update.

Conclusion

Mr. Gordon thanked everyone for participating in the discussion. He said that action items would be distributed to the full group. He asked Mr. Bateman to recirculate the downstream community members' priorities for the Water Control Manual Update.