



# Oroville Dam Citizens Advisory Commission Report



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We are pleased to submit this first triennial report to the Legislature on the work of the Oroville Dam Citizens Advisory Commission.

The Commission was born of a public safety emergency in February 2017. In record-breaking storms that year, the Dam's main spillway and the emergency spillway suffered significant damage, and approximately 188,000 people downstream were evacuated on an emergency basis. The Dam was never compromised, and the spillways have been repaired and improved over the last five years. However, the emergency and the fear and concerns it raised made plain the critical importance of those managing the Oroville facilities to strengthen communication and information sharing with those who live, work, and recreate in this area.

Since its creation by the Legislature and Governor in 2018, the Commission has established a regularly scheduled forum where people from communities surrounding California's second-largest reservoir are updated on activities and ongoing safety efforts at the reservoir. These meetings allow local officials and residents to ask questions and offer input to the government officials who manage that reservoir and its Dam, and its associated facilities.

Meeting for at least two hours at a time, multiple times a year, the wide spectrum of representatives on the Commission have delved into subjects of keen concern to Oroville area residents: status of efforts by the Department of Water Resources (DWR) to complete improvements after the 2017 spillways incident; efforts to revamp the federal rules that guide flood control operations at Oroville Dam; assessments of downstream risk in major winter storms; and DWR's operations and maintenance practices. The Commission has made site visits, convened technical experts on an array of topics, and provided local residents opportunities to ask frank questions of high-level State decision makers.

As chair and vice chair of the Commission, we are grateful to those who have taken the time to raise concerns and offer input to the Commission. We also appreciate all of those in local, State, and federal government; academia; and the private sector who have shared their expertise. Lake Oroville plays a large role in California's economy and environment, and dam operators balance multiple needs that include flood control, water supply, environmental needs, electricity generation, and recreation. Maintaining safe operations of the Dam and reservoir as all these needs are met is essential. In the wake of the 2017 spillway incident, community questions and concerns regarding safety continue to be voiced. The role of the Commission as a forum to discuss and address these concerns remains vital.

The work of the Commission is ongoing, dynamic, and essential to ensure trust among State agencies and local communities. We are committed to listening to and working to address, as best possible, the questions and concerns of Oroville-area citizens, and we will encourage our successors to do so as well. Together we can continue to foster open dialogue that ensures the safety and effective operation of Lake Oroville.

Sincerely,

California Secretary for Natural Resources, Wade Crowfoot, Chair

California State Senator, Jim Nielsen, Vice Chair

# **Oroville Dam Citizens Advisory Commission Report**



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## Executive Summary

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The Oroville Dam Citizens Advisory Commission was established by Senator Jim Nielsen’s Senate Bill 955 (2018), coauthored by Assembly Member James Gallagher. After the 2017 spillway incident, the Commission was created “to serve as a representative to the public for the purposes of providing public input and receiving information from the dam operator” and to “act as a unified voice from the communities surrounding Oroville Dam to provide public feedback, advice, and best practices to the dam operator.”

The Commission serves as a public forum for discussing issues related to the Oroville Dam facilities, including maintenance and flood management elements on the Feather River. The Commission provides a public way to share information, feedback, and best practices, and to elevate questions and concerns from surrounding communities.

Between September 2019 and July 2022, the Commission held 11 meetings, including a public site visit to the Dam, and sponsored one flood safety stakeholder technical workshop. Dates of the Commission’s public meetings:

- September 30, 2019
- November 20, 2019
- February 21, 2020
- August 21, 2020
- November 13, 2020
- February 19, 2021
- May 28, 2021
- August 27, 2021
- December 3, 2021
- March 25, 2022
- July 29, 2022

This report summarizes the Commission’s first three years of work, which unfolded primarily in public meetings that involved updates and presentations on a wide range of topics, including but not limited to:

- The Oroville Dam Safety Comprehensive Needs Assessment
- Dam facilities annual maintenance plan
- Dam facilities asset management
- Dam safety from a regulatory and facility owner perspective
- Flood management projects
- Forecast-informed reservoir operations
- Piezometers

## Oroville Dam Citizens Advisory Commission Report

- Recreation
- Risk assessment
- Public safety partnerships
- Spillway cameras
- U.S. Army Corps of Engineers' Water Control Manual
- Winter operations

Through meeting presentations and discussions, the Commission has hosted an ongoing dialogue that elevated local residents' questions and concerns to leaders of DWR, which operates the Oroville Dam, and other State agencies including the California Natural Resources Agency, Department of Parks and Recreation, and Governor's Office of Emergency Services. In turn, State employees were provided the opportunity to build community understanding of the factors and constraints involved in managing and maintaining the centerpiece reservoir of the State Water Project (SWP), which provides flood control and water to two-thirds of Californians.

As required by Senate Bill 955, this triennial report provides:

- An overview of ongoing maintenance and improvements made at the Dam and its facilities;
- A register of communications received from the department and other parties to the Commission;
- Notice of upcoming plans made by the department for the Dam and its site; and
- An overview of flood management projects on the Feather River affecting public safety and flood risk reduction.

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## 1.0 Foreward

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Senator Jim Nielsen’s Senate Bill 955 (2018), coauthored by Assembly Member James Gallagher, established the Oroville Dam Citizens Advisory Commission. The Commission was created, “to serve as a representative to the public for the purposes of providing public input and receiving information from the dam operator” and to “act as a unified voice from the communities surrounding Oroville Dam to provide public feedback, advice, and best practices to the dam operator.” In essence, the Commission is a forum for information sharing and feedback.

The 2017 Oroville Dam spillway incident was the impetus for Senate Bill 955 and the Commission. In February of that year, both the gated main spillway and the ungated emergency spillway suffered significant erosion scour damage while releasing flood waters that had flowed into Lake Oroville. Concerns for the stability of the spillway crest structures resulted in the temporary evacuation of approximately 188,000 residents downstream of the Dam.

Flood waters were successfully managed by making controlled reservoir releases down the damaged gated main spillway through May 2017, when the gates were closed for the year and the California Department of Water Resources (DWR) began repairs to the two spillways. By the fall of 2018, the entire 3,000-foot-long chute for the gated main spillway had been completely reconstructed, and major erosion-resistant armoring had

been added to the emergency spillway. Following this incident, the Oroville Dam Citizens Advisory Commission was created to be a public forum for discussing issues related to the Oroville Dam facilities.

The Commission held its first meeting in September 2019 in the community of Oroville. California Natural Resources Agency (CNRA) Secretary Wade Crowfoot chairs the Commission with Senator Jim Nielsen serving as vice chair until his retirement from the California Senate on November 30, 2022. The Commission follows the Bagley-Keene Open Meeting Act.

The Commission Charter outlines its responsibilities to discuss maintenance, findings, reports, and upcoming actions, and to conduct other communications regarding operations, maintenance, and public safety activities at Oroville Dam and its facilities, and flood management elements on the Feather River. This includes the Dam’s appurtenant structures such as the Feather River Hatchery and the Oroville Thermalito Complex.

This report summarizes the first three years of the Commission’s work, following the requirements set forth in Senate Bill 955. It was drafted with guidance and input from volunteer members of the Commission: Butte County Supervisor, Bill Connelly, Butte County Sheriff’s Office, Lieutenant Stephen Collins, and the office of Senator Jim Nielsen.

The Commission thanks the public for their input into the Report process and their ongoing engagement with the Commission at public meetings and other forums. The Commission posted to its website a dedicated landing page sharing a Draft version of the Report and information about the public comment period, process and parameters of the Report, as specified in Senate Bill 955.

The public input received is included in the Appendix of the Report and provides the Commission with items for consideration as it scopes agendas and topics for future Commission meetings and activities.

Under existing law, the Commission will publish a report every three years detailing the following four areas:

- An overview of ongoing maintenance and improvements made at the Dam and its site.
- A register of communications received from the department (DWR) and other parties to the Commission.
- Notice of upcoming plans made by the department for the Dam and its site.
- An overview of flood management projects on the Feather River affecting public safety and flood risk reduction.





## 2.0 Commission Structure

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The Oroville Dam Citizens Advisory Commission is a 19-member advisory body within the CNRA. It is an independent entity, but its work occurs in conjunction with other efforts to address needs related to the Oroville Dam and its facilities. This includes the Oroville Dam Safety Comprehensive Needs Assessment (CNA), which was completed in 2021 to evaluate options for increasing long-term infrastructural and operational resilience of the Oroville facilities. The CNA was guided by participation and feedback from the Independent Review Board (IRB) and a community-based Ad Hoc Group, the latter of which had some overlap in member representation with the Oroville Dam Citizens Advisory Commission.

The Sacramento River Forum, enacted by Senator Nielsen's SB 1086 (1986), served as the model for the Oroville Dam Citizens Advisory Commission. The new Commission was also designed to be a cooperative forum that brings together multiple stakeholders for the purposes of information sharing, education and discussion, as well as a vehicle to connect stakeholders with State agency decision makers. Like the Sacramento River Forum, the Oroville Dam Citizens Advisory Commission is not a regulatory body. Instead, the Commission serves as a transparent public forum to share information and to provide public feedback, advice, and best practices.

The Commission comprises the following members:

- The Secretary for the CNRA or their designee, who shall be the Chairperson
- The Director of DWR or their designee
- The Director of the Department of Parks and Recreation or their designee
- The Director of the Office of Emergency Services (Cal OES) or their designee
- The Commander of the California Highway Patrol field division that services the County of Butte or their designee
- The member of the California State Senate representing the City of Oroville or their designee
- The member of the California State Assembly representing the City of Oroville or their designee
- The Chairperson may request the participation of other State agencies if particular expertise or input is warranted
- Two members appointed by the City Council of the City of Oroville
- Three members appointed by the Board of Supervisors of the County of Butte
- Two members appointed by the Board of Supervisors of the County of Sutter
- Two members appointed by the Board of Supervisors of the County of Yuba
- One county deputy sheriff appointed by the Sheriff of Butte County
- One county deputy sheriff appointed by the Sheriff of Sutter County

## 3.0 Key Groups and Terms

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### **Oroville Dam Safety Comprehensive Needs Assessment (CNA)**

Following the February 2017 spillway incident, DWR made commitments to federal and State dam safety regulators, the Federal Energy Regulatory Commission (FERC) and the California Division of Safety of Dams (DSOD) to assess all the facilities within the Oroville Dam Complex to identify any further Dam safety and operational needs. In addition, DWR committed to identifying potential measures to address those needs and reduce Dam safety risks should such measures be needed. This assessment became known as the Oroville Dam Safety CNA. It was published in November 2020.

### **Ad Hoc Group**

Senator Nielsen and Assembly Member Gallagher appointed a group of community members to represent the community during the development of the CNA. The Ad Hoc Group's role was primarily to communicate accurate information and context about elements of the CNA under consideration – and the final document – to the stakeholders and interest groups that they represent. The Ad Hoc Group also provided community and stakeholder perspectives to the Independent Review Board (see below) as the Oroville Dam CNA was developed. The Ad Hoc Group received questions about the CNA from the community and interested parties and communicated relevant questions or concerns to the Independent Review Board.

### **Independent Review Board (IRB)**

After the February 2017 spillway incident, DWR convened an IRB of dam safety technical experts to independently review key deliverables associated with the CNA and document its review of DWR's work products. Its members were national experts with diverse technical expertise, experiences, and perspectives. They represented disciplines in geotechnical, hydraulics, structures or hydraulic structures, operations, engineering geology, and environmental resources. Collectively, they had experience with safety and dam design modification of large dams, complex multi-purpose dam safety operations and projects, large government organizations, water policy, environmental science, and stakeholder engagement.

### **Federal Energy Regulatory Commission (FERC)**

With authorities granted by Congress, the FERC licenses and regulates non-federal hydropower projects, including oversight of all ongoing project operations, including dam safety and security inspections, public safety, and environmental monitoring.

### **Forecast-Informed Reservoir Operations (FIRO)**

FIRO is a reservoir-operations strategy that uses enhanced monitoring and improved weather and water forecasts to inform decision making to selectively retain or release water from reservoirs to optimize water supply reliability and environmental co-benefits and to enhance flood-risk reduction.

### **U.S. Army Corps of Engineers (USACE) Water Control Manual**

The 1970 USACE Lake Oroville [Flood] Water Control Manual prescribes how the as-built reservoir must be operated for flood management. The USACE plans to update the Oroville manual.

### **Emergency Action Plan (EAP)**

Senate Bill 92 of 2017 set forth new requirements focused on dam safety. As part of this legislation, dam owners must now submit inundation maps to DWR that show the flooding that could occur in a hypothetical dam failure or failure of critical dam structures. After the maps are approved, the dam owner must submit an EAP to Cal OES. An EAP outlines actions to be undertaken during an emergency to minimize or eliminate the potential loss of life and property damage. Dam owners must submit updated plans and inundation maps every 10 years, or sooner under certain conditions. Cal OES reviews and approves the emergency action plans. Senate Bill 92 set forth additional provisions for emergency action plans including compliance requirements, exercises of the plan, and coordination with local public safety agencies.

### **State-Federal Flood Operations Center (FOC)**

Located in Sacramento, California, is a component of the Division's Flood Operations Branch (FOB). Year-round, the State-Federal FOC is the focal point for the gathering, analyzing, and disseminating flood and water-related information to stakeholders. During emergency situations, the State-Federal FOC provides a facility from which DWR can centrally coordinate emergency response state-wide.

## 4.0 Oroville Dam Citizens Advisory Commission Speakers, September 2019-October 2022

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- Wade Crowfoot, Secretary, CNRA
- Christina Curry, Deputy Director, Cal OES
- Ted Craddock, Deputy Director, SWP, DWR
- Dave Duval, Manager of Division of Operation and Maintenance, SWP
- Joe Forbis, Manager of Water Management, USACE, Sacramento District
- California State Assembly Member James Gallagher
- Eric Halprin, Principal, Halprin Consultants
- John James, Water Operations Project Manager, Yuba Water Agency (YWA)
- John Leahigh, Principal Engineer, Division of SWP Operations, DWR
- Gary Lippner, Deputy Director of Flood Management and Dam Safety, DWR
- Brian Marshall, Fire Chief, Cal OES
- Bruce Muller, Chair, CNA, IRB
- Karla Nemeth, Director, DWR
- Lori Nezhura, Deputy Director of Planning, Preparedness, and Prevention, Cal OES
- California State Senator Jim Nielsen
- David Rennie, Manager, Asset Management, Division of Operations and Maintenance, DWR
- Dave Sarkisian, Manager of Dam Safety Services, SWP, DWR
- Eric See, Environmental Program Manager, Oroville Field Division, DWR
- Dr. Rune Storesund, Consulting Engineer, Storesund Consulting
- Sharon Tapia, Manager, Division of Dam Safety (DSOD), DWR
- Matt Teague, Superintendent, California State Parks
- John Yarbrough, Assistant Deputy Director, SWP, DWR



## 5.0 Three-Year Accomplishments

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This report was prepared using sources from the Commission including meeting summaries, transcripts, and presentations. It summarizes most of the topics that commissioners considered between September 2019 and July 2022. The exceptions are a briefing commissioners received on DWR communications during Meeting 3 and a presentation by a representative from the State Water Contractors during Meeting 8. Two site visits also are not summarized here: DWR hosted a public tour of the Oroville facility prior to the Commission's second meeting on November 20, 2019; and commissioners participated in a tour of the joint State-Federal FOC in Sacramento on November 1, 2021.

The report is divided into the four overarching areas, as required by Senate Bill 955:

- An overview of ongoing maintenance and improvements made at the Dam and its site.
- A register of communications received from the department and other parties to the Commission.
- Notice of upcoming plans made by the department for the Dam and its site.
- An overview of flood management projects on the Feather River affecting public safety and flood risk reduction.



Additional detail and information on every topic covered can also be found in each meeting's presentation materials, summary and transcript. These reference materials are available online on the Commission webpage at <https://resources.ca.gov/Initiatives/Oroville-Dam-Citizens-Advisory-Commission>.

## **6.0 An overview of ongoing maintenance and improvements made at the dam and its site**

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With the Commission's focus on ensuring that the public has information about the safety and condition of the Oroville Dam and its facilities, many presentations to the Commission addressed maintenance and improvements. Presentations also focused on a variety of related topics including wildfire preparedness, recreation facilities, maintenance and funding, and regulatory oversight.

### **6.1 Fire Response and Prevention: Meetings 5 and 6**

Wildfire risk is high in the region surrounding the Oroville Dam. Annual treatment and maintenance help mitigate the risk to dam facilities. The Commission received updates on fire-related activities during Meetings 5 and 6.

#### **Meeting 5, November 13, 2020**

Ms. Curry and Mr. Marshall presented an overview of the fire season and mitigation efforts. As of Meeting 5, the 2020 fire season had burned 4 million acres across California. In the Oroville region, the September 2020 North Complex Fire burned 320,00 acres in and around Butte County, destroying 1,523 single family homes and 51 commercial properties. Ms. Curry and Mr. Marshall emphasized the mutual aid system in their presentation. They covered the ways Cal OES and Butte County Sheriff's Office coordinate search and rescue, oversight of hazardous materials, and debris removal in advance of the rainy season.

Mr. Teague reported impacts to the recreation area from the August 2020 Potts Fire and the North Complex Fire. Debris collection and monitoring are done via vessels docked on the lake, per Mr. Craddock.

#### **Meeting 6, February 19, 2021**

Mr. Duval presented on the SWP Fire Modernization Program. Commissioners heard that DWR had hired consultants to evaluate and inspect each facility in the SWP and create core goals for the agency's fire modernization effort. They also learned that fire and life safety upgrades have been completed at Thermalito, as well as upgrades to the Hyatt Powerplant. Mr. Duval noted that annually, the Oroville Field Division works with the California Conservation Corps (CCC) and CAL FIRE to reduce flammable vegetation at the facility and on adjacent lands.

Senator Nielsen remarked that for many years, management of the forest and wildland was not prioritized, and California is now paying the price for this neglect with catastrophic fires, erosion, and runoff during the rainy season. The Senator commended the State for prioritizing forest management and shared that a few years prior, the State Budget allocated money for a CCC camp in Butte County.

Secretary Crowfoot emphasized that there has been strong bipartisan leadership in the Legislature and commitment with the Administration to make investments to not only fight fires but also reduce risk to help prevent catastrophic fire.

Mr. Duval addressed Commissioner Pittman's questions on DWR radio and emergency communications systems. He explained that DWR works closely with CAL FIRE and said DWR uses the communications system that CAL FIRE requires. Coordinates with GPS are used for emergency response. CAL FIRE and the State Fire Marshall reviewed all the plans for Hyatt hydroelectric facility and approved the upgrades.

## **6.2 Recreation Updates: Meetings 4, 5 and 7**

The recreational facilities at Lake Oroville are an important asset to the community. These facilities attract thousands of visitors annually to swim, boat, water ski and camp. Although the focus of the Commission is largely public safety, it does receive recreation updates as part of its work. Recent drought years have caused lower lake levels and reduced access. In summer 2021, boat launch areas closed, and recreation access times were limited. Wildfires have also impacted recreation areas.

### **Meeting 4, August 21, 2020**

Mr. Teague and Mr. See presented on the status of recreation access and the recreation improvement projects recently completed and currently underway. They provided an overview of recreation facilities, noted COVID-related closures and information about facilities reopening. Mr. Teague delivered a report on the recreation projects initiated after the spillway incident. He also gave an update on COVID-related impacts and on recreational attendance over the past four years, reflecting both paid and non-paid attendance. He discussed the Potters Fire impacts to the trail system. Council Member Pittman's question about Clay Pit State Vehicle Recreation Area, which recently came under State Parks jurisdiction, was noted as a topic that could be addressed at a future meeting. Mr. See presented information on the recreation projects started after the 2017 spillway incident.

### **Meeting 5, November 13, 2020**

Mr. Teague focused his briefing on recent wildfire impacts at the reservoir and recreation area. The Potters Fire in August 2020 forced the temporary closure of the spillway. While that fire was contained, it burned very hot and caused extensive tree damage. Due to impacts, State Parks had planned to keep the North Fork and Potters trails closed in winter 2020-2021 and to reassess and complete hazard tree work in the spring. The North Complex Fire in September 2020 was slowed by extensive prescribed burns that had been completed around Loafer Creek that prevented the fire from burning into the Loafer Creek Marina, Kelly Ridge, and the City of Oroville where it could have caused significant damage. Mr. Teague discussed the close coordination between State, local, and federal agencies in addressing damage

repair immediately and the ongoing partnership with Pacific Gas & Electric (PG&E) to implement erosion prevention measures. Secretary Crowfoot emphasized that the kind of prescribed burns used around Oroville should be replicated throughout California to prevent and slow down catastrophic fires.

### **Meeting 7, May 21, 2021**

Supervisor Connelly expressed concern that the Delta and its fish are being prioritized over local recreation needs. He asked for more compromise and water reserved for local recreation needs and if there is any assistance that can be provided to local houseboat owners whose boats are now in storage.

Secretary Crowfoot thanked the Supervisor for his comments on the importance of recreational opportunities at Lake Oroville. He said that per the SWP, water must flow to protect the drinking water quality from being fouled with salt water, which provides water to 27 million Californians (two-thirds of the State's residents).

Superintendent Teague said that the Parks Department sympathizes with houseboat owners and the private business owner of the marinas. He said that there have been years when boat owners have not had access to their boats and during the previous drought, boats were also removed from the lake. The Camp Fire in 2018, the North Complex Fire and COVID-19 all resulted in park closures, which impacted access. He said that the Department is working with the concession owner to set a realistic capacity number to avoid unforeseen conditions.

## **6.3 Winter Operations: Meetings 2, 5, 6 and 9**

The Oroville Dam, the spillway and other facilities are critical to the safety and well-being of the surrounding communities in Butte and Yuba counties downstream on the Feather River. Each year, DWR engages in preparations to ensure that the dam and spillway are ready to handle the upcoming winter rainy season and potential large storms. Winter operations for the Feather River System and Oroville Dam Complex were important topics addressed by the Commission during Meetings 2, 5, 6 and 9.

### **Meeting 5, November 13, 2020**

Due to the drought, Commissioners learned that the Oroville Dam capacity was at 42 percent, which was 69 percent of average for the time of year. The USACE Water Control Manual requires DWR to keep a certain level of space in the reservoir to accommodate inflows from large storms. For Lake Oroville, the upper portion of the reservoir pool needs to be available to store and attenuate incoming flows. The amount of available flood control storage needed depends on the time of year and how wet the upper watershed is prior to a storm. Dry conditions in 2020 meant that the lake was low enough that DWR did not need to release water to ensure sufficient space was available for flood control. The Commission learned that the National Oceanic and Atmospheric



Association (NOAA) long-range forecast suggested that drier conditions would continue through 2021. In addition, the Commission learned from Mr. Leahigh about how the National Weather Service and the California-Nevada Weather Forecast Center produce the inflow forecasts for Lake Oroville.

### **Meeting 6, February 19, 2021**

Mr. Leahigh provided follow-up on winter operations and hydrology. For Water Year 2020, which was the tenth driest on record, most areas of Northern California reached 50 percent to 70 percent of normal precipitation. In February 2021, Water Year 2021 was the eighth driest on record for the first four months of the water year, which begins October 1. Low precipitation in recent years resulted in low storages at Oroville; at that time, the lake was just over one-third of capacity and 54 percent of historical average. Surface storage was below levels seen in 2014 and 2015, but in February 2021, snowpack levels were greater compared to those years.

Commissioners learned how water management becomes a challenge during dry years. Secretary Crowfoot followed up by explaining that State agencies were preparing for a period of extended drought and the potential impact on the 27 million Californians and agricultural users dependent on SWP deliveries. He emphasized Oroville's role in water supply. The State notified SWP contractors the previous September that allocations would be at 10 percent. With continued drought, California was predicted to enter Water Year 2022 in worse condition. In addition, commissioners learned that Sacramento Valley rice growers were on the threshold of not receiving full allocations for the year.

### **Meeting 9, December 3, 2021**

Meeting 9 came shortly after an atmospheric river delivered a significant amount of rain in California. While this rain event helped, lake levels only rose by 7 percent as a result and the reservoir was then holding just 30 percent of its capacity.

In this meeting, commissioners were updated on the requirements for reservoir vacant space outlined in the current USACE Water Control Manual. The amount of vacant space required for flood control ranges from 0 percent to 22 percent, depending on both the time of the year and the level of soil saturation. The more saturated the soil in the watershed, the more vacant space is required to absorb peak inflows from large storms. Mr. Leahigh described how the current requirements are expected to be updated because of the FIRO effort and effort to develop a new Water Control Manual.

Adherence to the current flood control requirement of 13 additional feet of flood pool has not had any effect on storage in 2021. Given the unpredictable nature of precipitation in California, there is still a 25 percent to 30 percent chance that the flood pool could become relevant in the winter.

## **6.4 Dam facilities annual maintenance plan: Meetings 1 and 8**

Facility maintenance is integral to the safety of downstream communities from the Oroville Dam. The Commission received updates on the facilities and DWR's annual maintenance process and budget during Meetings 1 and 8.

### **Meeting 1, September 30, 2019**

Director Nemeth introduced the presentation by discussing her perspective on changes at the facility following the 2017 spillway incident. This includes increased investments in statewide infrastructure to serve multiple purposes – public safety, environmental protection, and provision of water. She framed her presentation with the fact that the Dam is integral to supplying water to 27 million Californians.

Mr. Yarbrough provided a presentation that addressed:

- Key features of the Oroville complex infrastructure;
- The downstream extent of DWR's area of authority versus the areas maintained by local reclamation districts;
- Oroville-related forums for public participation;
- Benefits provided by the Oroville facility, including water supply, flood management, environmental improvements, energy production, and recreation access; and
- Major activities and processes underway at Oroville.

### **Meeting 8, August 27, 2021**

Mr. Duval provided the Commission with a presentation on DWR's SWP asset evaluation and project prioritization. Commissioners learned that the Asset Management Program uses an international standard (ISO 55001) that considers mandatory requirements, benefits, risk, and resources that meet the balance between performance, cost and risk. Risk-Informed Prioritization, or Risk Informed Decision Process, assesses risk for facilities and residents in the surrounding community and examines the severity of the result of failure. It includes risk identification, risk assessment, financial management and resource planning. Resources are reviewed in terms of necessary budget and technical expertise. The SWP Capital Prioritization Process includes condition assessment, monitoring, studies, project identification, risk evaluation, resource estimates and project prioritization.

Mr. Duval covered expenditures on annual operations and maintenance and capital projects. He shared that the spillway review is part of the annual process when FERC, the State DSOD, or DWR conducts inspections.

## **6.5 Dam safety from regulatory and facility owner perspective: Meeting 7**

Understanding regulatory and public safety perspectives and related issues is critical to the work of the Commission as a public body. This topic was addressed in two presentations in Meeting 7.

### **Meeting 7, May 21, 2021**

Ms. Tapia presented an overview of California's dam safety regulation program. DWR, through the DSOD, has regulatory authority for over 1,240 non-federally owned and operated dams, owned by more than 600 different owners, including water agencies, private companies, districts, individuals, cities, counties, and associations. Ms. Tapia explained the criteria that determine which dams are under State regulatory jurisdiction: dams that are 25 feet or more in height with 50-acre feet or more storage capacity. Classification of dams is categorized by downstream hazard potential should the dam fail when the reservoir is full. Commissioners learned during the presentation about the three national categories of severity of dam safety risk: low, significant, and high. California has an additional category: extremely high. Over half of DSOD regulated dams are considered high or extremely high.

DSOD has regulatory authority to supervise maintenance and operations of dams and reservoirs to protect loss of life and property. Low-hazard dams are inspected every two fiscal years, while all others must be inspected each fiscal year. DSOD also responds to dam safety incidents and emergencies.

Commissioners learned about the origin of California's Dam Safety Program. The State created the program in 1929, one year after the failure of the Saint Francis Dam in Los Angeles County. They were also briefed on recent dam safety initiatives and legislation including the Governor's four-point plan to bolster dam safety and flood protection, embodied in this legislation: AB 1270 (2018), SB 92 (2017), and AB 2516 (2018).

DWR has a role through DSOD as a dam safety regulator and additionally a role, through the SWP, as a dam owner. To avoid conflict, these two functions are organizationally and operationally separated within DWR.

Mr. Sarkisian addressed public safety issues from the perspective of a dam owner. There are 26 SWP dams, including 10 within the Oroville Field Division. Mr. Sarkisian shared that dam safety activities include surveillance and inspections; dam safety assessments; maintenance, design, and construction; emergency action plans; and independent reviews. Independent reviews occur every five years as part of the Director's Dam Safety Review Board and, for those dams with a FERC hydroelectric power license, every five years as part of FERC's Part 12D dam safety process.

Steps and actions to evaluate the SWP Dam Safety Program following the spillway incident included:

- Independent forensic team report;
- Owner's dam safety program audit;
- International Standards Organization ISO 55000 Standard/American Association of State Dam Safety Officials (ASDSO) peer review, which blended asset management standards with dam safety best practices to identify opportunities for improvements
- Management reviews/visits with peer; and
- Use of a dam safety program maturity matrices tool to benchmark the program against industry best practices
- Identified improvement areas include:
  - Update SWP Dam Safety Policy;
  - Define a top-down organizational structure to enhance communication, accountability, and responsibility for implementation of the SWP Dam Safety Program;
  - Increase training and interaction with dam safety organizations;
  - Implement cross-divisional dam safety teams;
  - Link SWP Dam Safety Program to the Division of Operations and Maintenance Asset Management Program; and
  - Foster culture of continuous improvement.

Mr. Sarkisian explained that the SWP took the recommendations and created multi-year Dam Safety Program initiatives. This began with 30 total, which became consolidated into 16, including:

- Solidify guiding documents;
- Complete SWP Dam Safety Program Functional Design implementation;
- Enhance DWR's approach to dam safety risk management;
- Enhance emergency preparedness;
- Identify Dam Safety Program-related core competencies;
- Formalize and expand Dam Safety Program training;
- Enhance industry outreach;
- Develop Dam Safety Program management-of-change program and communication plan; and
- Develop more formal dam safety management review.

## 6.6 Spillway Cameras: Meeting 8

Commissioners requested an update on the status of the temporary spillway cameras that had been installed after the 2017 incident and recently decommissioned.

### Meeting 8, August 21, 2021

Mr. Yarbrough provided this presentation. After the spillway incident, DWR installed two temporary web cameras for the public because DWR had to restrict public access during reconstruction. The cameras allowed the public to see the facility. In early 2021, four years after the incident, DWR began to decommission the cameras. However, DWR was notified by staff in Senator Nielsen's and Assembly Member Gallagher's offices that members of the public noticed when the cameras were removed. DWR reinstalled the top temporary camera to maintain the public's ability to see the spillway. The bottom camera will not be reinstalled due to vandalism issues. DWR will keep the top temporary camera operational until a permanent solution is implemented.

## 6.7 Piezometers: Meeting 10

Piezometers are instruments that measures pore water pressure and are used to assess conditions within and under a dam. The measurement of pore pressures helps engineers understand and assess seepage through the dam or its foundation. Elevated pore pressures and excess seepage can have destabilizing effects on a dam and its appurtenant structures. The Commission has discussed DWR's plans to install additional piezometers at the Oroville facility throughout its meetings. Meeting 10 included a formal presentation.

### Meeting 10, March 25, 2022

Mr. Sarkisian delivered an update on the status of the installation of additional piezometers at the Oroville Dam and recent work associated with the Palermo Tunnel, which moves water from the lake into the Palermo Canal.

The CNA recommended early implementation of this action. The



planned piezometer locations include the flood control outlet, the dam toe, the core block and the grout gallery.

In 2020, four piezometers were installed at the Flood Control Outlet Headworks and eight piezometers were installed at the dam toe. Mr. Sarkisian informed commissioners that eight core block and grout gallery piezometers will be installed soon. Data collected from these instruments will help determine if additional piezometers in other locations are warranted.

## **6.8 Palermo Tunnel: Meeting 10**

The Palermo Tunnel is an important part of the Oroville infrastructure. It conveys water from Lake Oroville to the Palermo Canal, a source of water for the South Feather Water and Power Agency, which distributes water to the communities of Oroville, Palermo and Bangor.

### **Meeting 10, March 25, 2022**

Mr. Sarkisian then covered the Palermo Tunnel in his update. He shared that to dewater the tunnel more reliably, the SWP refurbished the bulkhead of the tunnel used to block the tunnel intake. In his presentation, he detailed the engineering the SWP and its contractors undertook to remove, recoat, and reinstall the bulkhead.

Supervisor Connelly asked what the condition of the tunnel was and if there was a valve on the downstream side. Mr. Sarkisian shared with the Commission that the Palermo Tunnel's condition in 2016 was good and explained that downstream there is a tunnel plug that leads to a valve. Supervisor Connelly also inquired about seepage or leakage from the tunnel and whether there is a way to ensure that none occurs. Mr. Sarkisian explained that the conditions assessment and maintenance shows that the Tunnel is performing as designed and intended.

## 7.0 A register of summarized communications received by the Commission from DWR and other parties

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### **May 24, 2021, Matt Mentink email to Rob Olmstead, Elizabeth Williamson and Elizabeth Whitmore**

Matt Mentink emailed Rob Olmstead of Sen. Nielsen's office, Elizabeth Williamson of CNRA and Elizabeth Whitmore of DWR in advance of Meeting 7 to offer several suggestions for Commission operations and upcoming meetings.

### **August 27, 2021, Kevin Dossey sent email to Secretary Crowfoot on the Bidwell Boat Ramp extension**

Kevin Dossey emailed Secretary Crowfoot of CNRA with questions and comments regarding the Bidwell Canyon Stage 3 Boat Ramp.

### **August 30, 2021, Director Nemeth email to Kevin Dossey regarding the Bidwell Boat Ramp Extension**

DWR Director Nemeth responded to Kevin Dossey's email to Secretary Crowfoot and communicated that her office would provide an update.

### **August 31, 2021, Robert Bateman email to Elizabeth Williamson (forwarded to Nancy Vogel)**

Robert Bateman emailed Elizabeth Williamson of CNRA, who forwarded to NV of CNRA, questions they wanted shared with commissions regarding impacts to public safety from Oroville Dam releases. The email included a summary of a proposed study by Dr. Rune Storesund.

### **September 3, 2021, Matt Mentink email to Elizabeth Williamson, John Yarbrough, Rob Olmstead and Curtis Grima with document outlining recommendations following Meeting 8**

Matt Mentink provided Commission and legislative staff with a document outlining recommendations for the Commission.

### **October 8, 2021, Kevin Dossey email to Director Nemeth regarding Loafer Boat Ramp and Bidwell Stage 3 ramp**

Kevin Dossey emailed DWR Director Nemeth to comment on the commencement of the Loafer Point Boat Ramp project and inquire about progress on the Bidwell Stage 3 Ramp. Kevin Dossey also included a copy of remarks that they had prepared for the public comment section of Meeting 8.

### **November 5, 2021, Mr. Yarbrough email to Kevin Dossey regarding the Bidwell Boat Ramp Extension**

John Yarbrough of DWR responded with an update on the Bidwell Canyon Stage 3 Boat Ramp Extension Project and provided information on the Loafer Point Boat Ramp project and the connection of the two projects.

### **December 1, 2021, Kevin Dossey email to John Yarbrough regarding the Bidwell Boat Ramp Extension and the Loafer Point Boat Ramp Extension**

Kevin Dossey responded to Mr. Yarbrough's email regarding the two

projects and addressed his assessment that they are individual projects related to recreation access.

**December 5, 2021, Matt Mentink email to Secretary Crowfoot**

Matt Mentink emailed Secretary Crowfoot to follow up on the Meeting 9 (December 3, 2021). Matt Mentink outlined suggestions for the Commission that had been shared with John Yarbrough.

**December 7, 2021, John Yarbrough email to Mr. Mentink**

Mr. Yarbrough responded to Matt Mentink to address a December 5 email to Secretary Crowfoot. Mr. Yarbrough offered a phone conversation to discuss a path forward on the items Matt Mentink outlined in the communication to Secretary Crowfoot.

**December 9, 2021, Matt Mentink email to Mr. Yarbrough**

Matt Mentink emailed Mr. Yarbrough and several commissioners and other stakeholders to request adding FIRO as a topic for the Meeting 10 agenda and expressed interest in a phone conversation.

**January 11, 2022, Matt Mentink email to John Yarbrough, Nancy Vogel, Rob Olmstead, Curtis Grima and Kearns & West with document outlining recommendations following Meeting 9**

Matt Mentink provided Commission and legislative staff with a document outlining recommendations for the Commission.

**February 8, 2022, Kevin Dossey email to John Yarbrough regarding the Bidwell Boat Ramp Extension**

Kevin Dossey provided several documents related to the Bidwell project and FERC.

**February 11, 2022, John Yarbrough sent email to Kevin Dossey regarding the Bidwell Boat Ramp Extension**

John Yarbrough acknowledged the receipt of the FERC related documents and communicated that they had been shared with DWR staff.

**March 28, 2022, Robert Bateman email to Secretary Crowfoot regarding Meeting 10**

As Secretary of the Feather River Alliance, Robert Bateman emailed Secretary Crowfoot following Meeting 10. Robert Bateman noted inundation maps presented to the Commission and posed questions regarding the FERC relicensing process. He also acknowledged the Flood Safety Stakeholder Technical Workshop scheduled for April 2022.

**April 20, 2022, Nancy Vogel email to Robert Bateman responding to their March 28, 2022 email**

Ms. Vogel responded to Matt Mentink's letter regarding the FERC relicensing process.

**April 29, 2022, Robert Bateman email to Kearns & West to follow up from the April 29, 2022 workshop**

Robert Bateman emailed Kearns & West questions grouped by four main areas related to the Flood Safety Stakeholder Technical Workshop.



**May 3, 2022, Robert Bateman email to Nancy Vogel regarding Meeting 10 and FERC**

Robert Bateman emailed Nancy Vogel to raise several issues pertaining to the Feather River Alliance's perspective on the FERC licensing process. The email contained a letter the Feather River Recovery Alliance sent FERC on February 11, 2022.

**August 10, 2022, Robert Bateman, Bill Connelly and Matt Mentink letter sent to Secretary Crowfoot and Director Nemeth regarding Commission formation**

Robert Bateman, Bill Connelly and Matt Mentink signed a letter to the Commission related to the structure of the Commission meetings.

*Please see the appendix for the items listed in this Register of Communications as well as the full text of all public comments received on the Draft Commission Report.*

## **8.0 Notice of upcoming plans made by DWR for the dam and facilities**

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### **8.1 Dam facilities asset management: Meetings 8 and 11**

Dam facilities management is integral to the Commission's ongoing discussions on Oroville and downstream public safety. Although the topics surface in many Commission's meetings, two presentations during Meeting 8 focused exclusively on the topic.

#### **Meeting 8, August 27, 2021**

Two back-to-back presentations addressed Oroville facilities maintenance. Mr. Duval presented on Oroville facilities asset management and the Oroville facilities annual maintenance plan. During the presentations, Commissioners learned how DWR bases its Asset Management Program on international standard (ISO 55001) that considers factors that balance performance, cost and risk. DWR uses this framework to review resources, projects, creates multi-year capital plans, and determines its budget needs.

Commissioners also received an update on the SWP's annual operations, maintenance, and capital project expenditures. Mr. Duval showed data from calendar years 2018 through 2022 and highlighted how the allocations increased annually. For example, projected expenditures for 2021 and 2022 were more than \$100 million. Mr. Duval provided an overview of activities for the Hyatt Powerplant, the Thermalito Powerplant, the Thermalito Diversion Dam Powerplant, the Oroville Dam/Lake, Thermalito Forebay and Afterbay, and other locations, and the Upper Feather River dams and lake.

Commissioner questions focused on vegetation management and maintenance projects facilitated by better access due to drought conditions and lower lake levels.

#### **Meeting 11, July 29, 2022**

Mr. Rennie provided the first part of the update on the SWP asset management and operations and annual maintenance projects. He started with an overview of the SWP, which encompasses water supply, flood control, recreation, wildlife enhancement, and power generation. For operating expenses and capital projects for the Oroville Dam facility, commissioners learned that DWR annually spends between \$80 million and \$100 million. The update included an overview of the different types of maintenance conducted including condition assessment (inspections), civil maintenance, security, etc. as well as work on the infrastructure and upper watershed. Mr. Sarkisian told the Commission that in 2018 there was an approximately \$300 million investment in the Emergency Spillway during the Spillway Recovery.

## **8.2 Water Control Manual: Meetings 3 and 9**

The Oroville Dam is located within the USACE South Pacific Division's Sacramento District. It uses a Water Control Manual as a guiding document that provides operational instructions for dam management. The Oroville Dam Water Control Manual is being updated and commissioners have received two updates on this topic to date. Mr. Forbis provided both presentations. These presentations occurred during Meetings 3 and 9.

### **Meeting 3, February 21, 2020**

Commissioners received a briefing on the USACE South Pacific Division Oroville Dam Reservoir Flood-Control Manual and the update process. The Sacramento District is one of four in the South Pacific Division. Mr. Forbis discussed the agency's authority related to flood control operations and Oroville Dam's flood space manual. He also covered water control manuals in general and the update process and timing.

USACE had recently updated the Folsom Dam Flood-Control Manual. Mr. Forbis discussed flood history and the auxiliary spillways and addressed FIRO and the Yuba-Feather River system.

Commissioners asked a variety of questions related to the USACE role and the manual update process. Commissioners heard that required reservoir space varies depending on the season and watershed soil saturation levels and that the agency is not responsible for upstream flood control. Maximum flow was set at 150,000 cubic feet per second coming from the Dam and the USACE coordinates with DWR for real-time operations. Director Nemeth explained how DWR works with both flood control agencies and the USACE to create operations plans for enhanced public safety. Mr. Forbis explained that dam owners have latitude to operate outside of the flood control space required by the USACE.

Commissioners heard that the USACE relies largely on its own data for the manual update process. Mr. Forbis was asked whether the \$4 million in federal funding for the Oroville and New Bullards Bar Water Control Manual updates was adequate. He explained that it will likely cost more and that it is reasonable to expect the process to be completed within five years if there are no FIRO-related delays.

Commissioners learned about the differences between FIRO and the Water Control Manual update process. The FIRO effort focuses on how forecasting can be improved and then how that can be used in operations to improve flood protection and water supply, while the manual update establishes operational rules to best ensure flood protection. Commissioners heard that California has three primary watersheds participating in a FIRO process. Only the Yuba-Feather system involves multiple reservoirs.

### **Meeting 9, December 3, 2021**

Mr. Forbis reviewed the two manual updates in progress during Meeting 9 and framed his briefing on the USACE's three main objectives in water control management: operating to the authorized purposes of a dam or project, maintaining the integrity of the project, and avoiding risk to public health and safety, life, and property both upstream and downstream. Commissioners heard again about the extensive process involved in updating water control manuals, and that the process takes multiple years to complete due to complexity. This includes establishing the project management plan, ensuring that the public and stakeholder outreach and communication and coordination is ongoing throughout the project, setting up the baseline hydrology, understanding existing conditions, developing alternatives, and reviewing and approving the proposed manual update. In addition, changes to the Oroville and New Bullards Bar Water Control Manual will be made collaboratively to benefit the entire region. Mr. Forbis and DWR staff said that the manual update would include recommended releases reflecting current conditions and the anticipated effects of climate change.

Progress includes:

- FIRO updates will be made in sync with the two manual updates;
- Project management, data management, and hydraulic plans for the Water Control Manual have been developed, and implementation has begun;
- The flood operation objectives and performance metrics for each project have been defined and established;
- Kickoff meetings between USACE, the YWA and DWR have been held; and
- Workshops were being scheduled with stakeholders.

### **8.3 Comprehensive Needs Assessment: Meetings 4 and 5**

The Commission charter notes that the Oroville Dam CNA would evaluate options to increase the long-term infrastructural and operational reliance of Oroville facilities. Two bodies, the IRB and the community-based Ad Hoc Group, participated and provided feedback. Several members of the Ad Hoc Group also serve on the Commission: Senator Nielsen, Assembly Member Gallagher, Supervisor Connolly, and Genoa Northern (née Widener). The Commission heard updates during Meetings 4 and 5.

The CNA was a planning study launched tasked with:

- Identification and prioritization of Dam safety and operational needs;
- Identification of measures to improve the safety and reliability of Oroville Dam and its related structures; and
- Identification of potential plans (combinations of measures) for DWR to consider for future implementation and prioritization through normal practices and procedures.

#### **Meeting 4, August 21, 2020**

Director Nemeth acknowledged Senator Nielsen and Assembly Member Gallagher's work to set up the Ad Hoc Committee. Mr. Craddock and Mr. Yarbrough gave a presentation on the CNA. This meeting served as the forum to present preliminary results of the CNA, with the report being finalized by August 21, 2020 and a public release expected in October of 2020.

The speakers addressed how the CNA fits in with DWR's other dam safety-related activities, including its Capital Improvement Program, the FERC Level 2 Risk Assessment, the FERC Part 12D Inspection, and the USACE update to the Water Control Manual. They explained the six facility components analyzed to determine how a failure could occur, the likelihood of those failures, and consequences. They also discussed DWR's method for developing and prioritizing risk-reduction measures as well as the roles of the IRB and the Ad Hoc Group.

Commissioners received a briefing on the preliminary results. The CNA did not identify any dam safety issues that needed immediate risk-reduction actions. Several measures were identified for near-term implementation, and additional information was needed on several other measures.

Commissioner Northern expressed concern regarding DWR's prior approach to quantifying risk during inspections. Acknowledging that risk assessment is not an exact science, Northern mentioned that the IRB recommended that DWR compare the CNA and FERC Level 2 Risk Analysis to determine if there is a systematic reason DWR's estimates are lower. She requested that the FERC Level 2 Assessment of the Part 12D Inspection be addressed along with the CNA.

Assembly Member Gallagher asked DWR to provide high-level takeaways from the CNA, what needs more investigation, and what can be implemented in the short and long term. Mr. Yarbrough described areas that need further risk review – the headworks and area where the spillway connects to the embarkment. He gave an overview of capital improvement projects underway – refurbishing the intake gate, turbine shutoff valve and power lines at Hyatt, the installation of new turbine runners at Hyatt, upgrading the river valve system and refurbishing the flood control outlet gate structure. He also reported that DWR was almost done with the installation of piezometers.

### **Meeting 5, November 13, 2020**

The CNA presentation served as an opportunity to review the process following the release of the final version of the CNA and conclusion of the Ad Hoc Group's work. Secretary Crowfoot acknowledged the Group's work and commended Assembly Member Gallagher and Senator Nielsen for their leadership. Assembly Member Gallagher emphasized the ways in which the process was technical but allowed for important community perspectives to be brought forward and incorporated. He stressed that the CNA was a first step, and that the Oroville Dam Citizens Advisory

Commission will help drive long-term implementation. Senator Nielsen and Secretary Crowfoot agreed.

Three speakers provided the presentation: Director Nemeth, Mr. Mueller, and Mr. Yarbrough.

Director Nemeth focused her remarks on the factors that led to a successful CNA process: DWR's expertise, input from the Independent Review Board, and feedback from the Ad Hoc Group. The CNA was a response to conclusions provided in the Independent Forensic Report completed by independent experts approved by FERC after the 2017 spillway incident.

Mr. Mueller's remarks addressed the IRB's members and experience. He also presented the IRB's perspective on dam safety and the status of its recommendations provided during the CNA process. Mr. Muller reported that DWR had addressed 74 of the IRB's 79 recommendations and provided an explanation of the five not implemented and commended DWR's continued work.

Mr. Yarbrough presented on behalf of DWR. He emphasized that the CNA concluded that no dam safety issues that need immediate risk-reduction have been identified. Commissioners learned how the FERC Part 12D Safety Inspection differs from the CNA and the next steps by DWR, which include the completion of early implementation projects, design of safety measures for the near term, deployment of \$224 million for capital improvement projects, implementation of studies and surveillance enhancements, and integration of CNA measures into DWR's process.

Commissioners inquired about a new low-level outlet. Mr. Yarbrough explained that DWR does not see an immediate dam safety risk that would necessitate adding a new low-level outlet. DWR intends to continue to evaluate the head works structure to determine whether it will eventually need to be replaced or refurbished, along with the feasibility of both of those options. If neither is feasible, a new low-level outlet could be a viable alternative for continuing safe operations.

#### **8.4 Risk Assessment: Meetings 7 and 10 and stakeholder technical workshop**

With the Commission's genesis in the 2017 spillway incident, the topic of public safety risk has been a thread of discussion through most meetings. Discussions have centered on how to accurately assess risk, which is not a precise science. One of the challenges is that risk is assessed in a moment in time, and many factors – human, engineering, and scientific–affect risk assessment, scenarios and planning. Two Meetings, 7 and 10, included presentations on risk and the topic also served as the focus of a special stakeholder technical workshop held in April 2022.

### **Meeting 7, May 28, 2021**

Dr. Storesund presented on risk assessment. He served as a member of the Ad Hoc advisory group on the CNA between 2018 and 2020. On May 10, 2021, he submitted a report to the committee outlining his reflections and recommendations.

His presentation in Meeting 7 addressed the socio-technical system that affects risk, which is a combination of physical performance risk and human/organizational factors, with safety being the goal. Dr. Storesund recommended performance insurance that places financial accountability on dam owners/operators and their consultants. According to Dr. Storesund, the insurance and bonding industry rate dams as high risk based on the lack of empirical performance data and doubt reliability of dam-risk assessments. He told the Commission that what is classified as failure is vague, and that several assessment methods should be used.

Dr. Storesund suggested that the Commission take several actions including:

- Re-engage the Independent Forensic Team and request a review of the implementation of lessons learned and provide a more concrete definition of “safe;”
- Acknowledge financial accountability associated with performance and identify who will receive payment if they need to be made whole in the aftermath of such an event. Use research, assumption audits, design assumptions, etc. and determine validity for today and future;
- Scrutinize asset management, operations, management methods and procedures; and
- Mandate life cycle-based management of all dam assets immediately.

Mr. Halprin presented on the state of dam safety programs in the United States. Previously Mr. Halprin worked for the USACE as Special Assistant for Dam and Levee Safety and served as Vice Chair of the National Committee on Levee Safety.

He told commissioners that risk analysis is a tool that modern programs use to show how facilities were designed and to project how they will perform. Risk is a framework to understand models and methodology, and engineering is a balance between various factors such as safety, prevention of loss of life and economic damage, and project benefits. Over time, tools to predict extreme events have improved but a need for more consultants in this field remains.

Commissioners received a historical overview of well-known dam safety failures that provided the basis of earlier standards for risk. Mr. Halprin told the Commission that modern dam safety programs shifted focus around 2000 because the prior standards were based on the wrong priorities and poor understanding of how infrastructure would perform. The risk-informed safety approach now used around the world includes:

- Understanding how things can fail and the risk associated;
- Risk-informed decisions;

- Sharing responsibilities via improved communication; and
- Governance: people, processes and policy.

Commissioners were briefed on the core questions used for a risk-informed view of infrastructure safety, which are:

- What are the hazards and how likely are they to occur?
- How will infrastructure perform in the face of those hazards?
- Who and what are in harm's way?
- How susceptible to harm are they?
- How much harm is caused?

Commissioners were briefed on the ways that modern dam safety programs address mitigating the effects of human factors in several ways, including:

- Command control for incident decision making;
- Risk-informed safety programs;
- Effective communications and public awareness;
- Training exercises;
- Continuing and periodic evaluations; and
- Qualification based roles and responsibilities.

Secretary Crowfoot asked that risk assessment be an ongoing topic during Meeting 7, which led to further discussion in Meeting 10 and the April 2022 flood safety stakeholder technical workshop.

### **Meeting 10, March 25, 2022**

Dr. Storesund told commissioners that he believes there is an existing risk because elevated releases from the Oroville Dam over 150,000 cubic feet per second could be hazardous to downstream communities. He reported that he submitted a request to Cal OES to help provide funding for him to evaluate the impact of elevated releases and provide an updated set of inundation maps that accounts for extraordinary events and a probable maximum flood.

Ms. Curry told commissioners that she endorses the idea, and that staff has taken Dr. Storesund's input on inundation maps. Cal OES offers funds to help counties and cities update local hazard mitigation plans and it regularly works with government agencies to ensure that these plans are up to date. Dr. Storesund said he thinks DWR can provide the local 25 percent match in funding or in-kind services needed to obtain a grant from Cal OES.

Secretary Crowfoot suggested that DWR consider such a partnership but noted that the State must be mindful of funding procedures and potential conflicts, as many of the State agencies in question are members of the Commission.



Supervisor Conant inquired if Dr. Storesund's work would answer questions about whether an event was a once-in-a-hundred-year event or once-in-a-thousand-year event. Dr. Storesund replied that he could develop recurrence intervals to elevated releases with the caveat that those predictions would be based on past data that does not account for climate change.

Senator Nielsen thanked Cal OES for work on the statewide Next-Generation NG911 emergency system upgrade. Deputy Director Curry reciprocated and noted that the agency is committed to the modernized system.

Director Nemeth emphasized the importance of DWR and Cal OES working with county offices of emergency services and listening to local community needs. She applauded Butte County for its partnership with DWR on emergency preparedness.

Supervisor Conant asked if Cal OES should join the next meeting to speak on the integration of statewide and county office of emergency services. Secretary Crowfoot suggested that facilitators organize the appearance at future meeting. Dr. Storesund asked if counties could send letters of support for more inundation maps to Cal OES. He noted that Butte County already had done so.

Senator Nielsen asked if there was some way the accomplishments and work of the Commission since its inception could be publicized. Secretary Crowfoot tasked facilitators with compiling a list of the Commission's accomplishments that could be addressed at a future meeting.

### **Flood Safety Stakeholder Technical Workshop, April 21, 2022**

In April 2022, the Oroville Dam Citizens Advisory Commission sponsored a Flood Safety Stakeholder Technical Workshop. The purpose of the workshop was to allow officials from CNRA, DWR, and other government agencies to hear directly from and speak directly to community stakeholders about their goals, interests and concerns related to flood safety and downstream communities. Meeting materials and a transcript have been posted to the Commission website. Participation in the workshop included a wide range of experts, including the National Weather Service, USACE, FEMA, DWR, Cal OES, and University of California, Berkeley's Center for Catastrophic Risk Management.

Workshop agenda and presentation topics included:

- Extreme precipitation;
- Designing for and managing large floods;
- Role of Oroville Dam in flood management;
- Inspection and channels;
- Floodplain mapping;
- Proposed risk planning study;

- Forecasting and noticing flood events;
- State-Federal FOC;
- Emergency action plans; and
- Opportunities for engagement and mitigation.

## **8.5 Forecast-Informed Reservoir Operations: Meetings 2 and 3**

The Commission in its first three years received three presentations on FIRO. The topic was also briefly touched on during other meetings and discussions. FIRO is a reservoir operations strategy that uses improved weather and water forecasting and enhanced operational flexibility to allow reservoir operators to make better decisions about releasing or retaining water.

### **Meeting 2, November 20, 2019**

The Commission's discussion regarding flood management and public safety touched on FIRO as a tool that helps water management agencies more effectively balance flood management and water supply in reservoir operations.

### **Meeting 3, February 21, 2020**

Mr. Forbis covered FIRO during his briefing. FIRO will be used to help expedite the USACE Water Control Manual Update process.

Commissioners learned that FIRO is based on the theory that knowledge of runoff volumes and timing can result in optimal storage and release decisions. The FIRO effort focuses on how forecasting can be improved and then how that can be used in operations, while the manual update establishes operational rules to best ensure flood protection. However, Mr. Forbis explained that this is a challenge to do because of limited forecast data. FIRO focuses on how forecasting can be improved and used in operations. This differs, he told commissioners, from the USACE Water Control Manual Update, which establishes operational rules to best ensure flood protection.

## **9.0 An overview of flood management projects on the Feather River affecting public safety and flood risk reduction**

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Downstream flood management and flood preparedness presentations provided commissioners with an overview of flood management projects on the Feather River that affect public safety and flood risk reduction. These topics were specifically addressed in Meetings 2, 6, 9 and 10.

### **Meeting 2, November 20, 2019**

The second Commission meeting provided an opportunity for commissioners to take a tour of the Oroville Dam facilities followed by a discussion of winter operations and safety.

Three individual presentations comprised the first winter operations update to the Commission. The presentations addressed:

- Yuba-Feather Flood Management System history and roles and responsibilities of local, State, and federal agencies;
- The coordinated use of infrastructure to serve water supply and flood management needs;
- Recent flood-risk reduction projects and maintenance, focusing on levee maintenance;
- Flood preparedness essentials including agency partnerships and flood insurance; and
- The importance of improved and better coordinated forecasts to maximize the efficacy of current flood control infrastructure in managing larger or more frequent storms.

Mr. Lippner provided extensive background about the Dam and its history to put current winter operations preparations into context. He stressed that it is impossible to fully eliminate risk and that flood preparation is key, as is proper maintenance of the levee system. Preparation for winter includes outreach to local government partners and the activation of the State-Federal FOC during needed events.

Commissioners also learned about reservoir flood control operations from Mr. Leahigh. He covered DWR's interim flood control planning, the upcoming completion of the CNA and the use of FIRO.

### **9.1 Flood Management Projects: Meetings 2, 6 and 9**

#### **Meeting 6, February 19, 2021**

Mr. Lippner introduced the presentation on downstream flood safety partnerships for the Feather and Yuba rivers. Mr. James addressed how flood management agencies

collaborate on flood-risk reduction projects in preparation for emergencies, as well as FIRO. Commissioners learned that the agencies involved include the YWA, DWR, the USACE and the National Weather Service. The Bullards Bar Reservoir is the YWA's primary asset providing flood protection, hydroelectric power generation, and environmental benefits downstream.

Mr. James informed commissioners that reservoir flood operating rules for Lake Oroville and the New Bullards Bar Reservoir are based on time of year and do not include specific forecast-informed releases. YWA and DWR are working with the USACE to integrate FIRO. YWA is planning a secondary spillway that will serve as an additional outlet at New Bullards Bar that would reduce downstream water levels by two to three feet during large events. The second spillway combined with FIRO is estimated to double flood protection in some areas.

Director Nemeth shared with commissioners that the agency is working with the YWA and the USACE on the Water Control Manual Update. Mr. Leahigh explained that there is a great deal of overlap between FIRO and the Water Control Manual Update with this multi-agency process.

### **Meeting 9, December 3, 2021**

Mr. Lippner provided a review of downstream flood management and preparedness. He briefed commissioners on the three broad categories that comprise DWR's flood management programs – responsive services (before and during events), proactive services that enhance local capacity to avoid or respond to events, and active services designed to reduce losses during events. Within these fall planning, floodplain management, flood risk reduction, systemwide maintenance and flood emergency response.

As this presentation occurred following the tour of the Flood Operations in November, Mr. Lippner addressed the public safety benefit of the facility. He also detailed how the Central Valley Flood Protection Plan, prepared by DWR and adopted by the Central Valley Flood Protection Board, is a long-range blueprint for Central Valley flood management. The next update will be released in 2022. The presentation concluded with an overview of flood risk reduction projects including the Small Community Flood Risk Reduction Program and the Rural Flood Risk Reduction programs. Commissioners learned that DWR champions the National Flood Insurance Program as instrumental in assessing and mitigating flood risk.

## **9.2 Public Safety Partnerships: Meeting 10**

### **Meeting 10, March 25, 2022**

Ms. Nezhura gave an overview of EAPs. These plans must adhere to Federal Emergency Management Agency guidelines and include updated inundation maps and emergency notification flowcharts. EAPs identify emergency conditions and specific

actions to minimize loss of life or property based on approved inundation maps. She covered how dam owners are mandated to coordinate with local law enforcement, fire, Cal OES and other State and federal agencies. They are also required to incorporate the results of this outreach into their EAPs and demonstrate to Cal OES that this outreach has been done. The presentation described the Oroville Dam EAP and the purpose of notification flowcharts. Ms. Nezhura shared that Oroville's hazard level was classified as "extremely high" based on the potential impact of dam failure on highly populated areas or critical infrastructure.

Mr. Sarkisian provided a presentation on inundation mapping and EAPs at the Oroville facility. Prior to 2017 the Oroville Dam did have inundation maps in its EAP. Senate Bill 92 (2017) raised inundation mapping and EAP requirements. The legislation enhanced public safety awareness and standards. Existing hydraulic models used to develop the Oroville inundation maps could be used to investigate a variety of flood scenarios. The bill mandated that dam owners, including the SWP, submit inundation maps for approval by the DWR's DSOD. EAPs must now account for uncontrolled releases from appurtenant structures, such as spillways. Mr. Sarkisian explained the maps contained in the Oroville EAP.

## 10.0 Conclusion

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The Oroville Dam Citizens Advisory Commission has made significant progress in its first three years of existence, advancing its mandate as outlined in Senate Bill 955. Founded as a forum to increase communication and transparency, the Commission has held 11 productive public meetings and a technical stakeholder workshop. Commissioners toured the Oroville Dam facilities early in their work and participated in a briefing and tour of the State-Federal FOC facility in Sacramento at the end of 2021. Meetings have been well attended and productive and have contributed to the ongoing dialogue about the facility and public safety. The Commission monitors ongoing action items and requests that emerge during its meetings. In addition, the Commission has prioritized timely responses to stakeholder inquiries.

Over the last three years, Commissioners have helped shape discussions and raise topics to be addressed. The breadth of presentations has enabled commissioners, stakeholders, and the general public to become more familiar with not only the Oroville Dam and related facilities, but also Oroville's role in the SWP and regional flood protection. Presentations touched on all aspects of Oroville's operation including risk assessment and reduction, facility regulation and maintenance, and the impact of growing wildfire risk and the ongoing drought.

The 2017 spillway incident and downstream public safety remains at the forefront of the Oroville community. Commissioners, stakeholders and members of the public have asked important questions during each meeting. Commissioners, expert presenters, DWR staff, stakeholders and the public have consistently approached the proceedings as an opportunity to tackle difficult and complex topics thoughtfully. This positive, respectful tenor begins with Senator Nielsen and Assembly Member Gallagher, who were on the ground helping the community during the 2017 spillway incident and continue to represent the concerns of area residents.

During the inaugural meeting on September 19, 2019, Senator Nielsen urged commissioners to come together for a common purpose.

"This is a place to problem solve, to be aware, and for the public then to gain comfort that our State Water Project is working well. And we're very appreciative of the Governor for signing the legislation and its agency, the Resources Agency that Mr. Crowfoot heads, and the Department of Water Resources for their very expert, continued help and support for this project now that we're embarking on today."

The Oroville Dam Citizens Advisory Commission in its first three years has met the requirements and guidance established in Senate Bill 955 and this report serves as the record of this accomplishment. More work remains and the Commission will continue to meet regularly, learn from experts, discuss complex issues, and provide a

public forum to address topics related to the safety, operations and maintenance of the Oroville Dam and facilities.

## **Appendix**

|                                   |       |
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| Register of Communications .....  | 35-69 |
| Draft Report Public Comment ..... | 70-87 |



**From:** Matt Mentink <[mentinkmatt@gmail.com](mailto:mentinkmatt@gmail.com)>

**Sent:** Monday, May 24, 2021 12:07 PM

**To:** Rob Olmstead Deputy Chief Of Staff <[rob.olmstead@sen.ca.gov](mailto:rob.olmstead@sen.ca.gov)>; Whitmore, Elizabeth (Liza)@DWR <[Elizabeth.Whitmore@water.ca.gov](mailto:Elizabeth.Whitmore@water.ca.gov)>; Williamson, Elizabeth@CNRA <[Elizabeth.Williamson@resources.ca.gov](mailto:Elizabeth.Williamson@resources.ca.gov)>

**Cc:** Crowfoot, Wade@CNRA <[Wade.Crowfoot@resources.ca.gov](mailto:Wade.Crowfoot@resources.ca.gov)>; Curtis Grima <[curtis.grima@asm.ca.gov](mailto:curtis.grima@asm.ca.gov)>; Connelly, Bill <[BConnelly@buttecounty.net](mailto:BConnelly@buttecounty.net)>; Mat Conant <[mconant@co.sutter.ca.us](mailto:mconant@co.sutter.ca.us)>; Genoa Widener <[notjustaspillway@yahoo.com](mailto:notjustaspillway@yahoo.com)>; Ron Stork <[rstork@friendsoftheriver.org](mailto:rstork@friendsoftheriver.org)>; Rune Storesund <[rune@storesundconsulting.com](mailto:rune@storesundconsulting.com)>; Matt Mentink <[mentinkmatt@gmail.com](mailto:mentinkmatt@gmail.com)>

**Subject:** Oroville Citizen Advisory Commission meetings

In effort to ensure the Oroville CAC meetings continue to be informative and productive so as to develop DWR / Citizen trust, I would like to offer the following suggestions for the next two meetings; this week on safety and the August meeting on O&M Asset Management.

First during this week's meeting it's important to bring the commissioners up to speed regarding what has been already identified as safety concerns for each of the components at the Oroville facility. This should be done by creating a single document. Currently these issues are scattered across various reports including the; CNA summary, FERC 2019 Part 12 report, Level 2 report, DSOD inspection report, and the 2016 5 year capitalization plan already scheduled.

Additionally it's important to share with the commission what safety issues are not yet known, and the requested investigative studies requested by O&M, FERC and DSOD to remove these uncertainties. These requested studies should also be encapsulated into the above document by facility component for ease of understanding, reference and follow up.

Recently the CAC commission chose to follow the lead of the CNA Independent Review Board (IRB) and created a Recommendation Log to track the status of concerns raised during the CAC meetings. Likewise the above document could easily serve the same purpose in tracking the status of the various oversight agencies requests and recommendations within this all-encompassing document.

A similar format of requested safety projects and studies must currently exist within O&M for the purpose of scheduling and prioritizing. Using O&M's collective data, and formatting it into a public version for the CAC Commissioners would be invaluable in developing the trust with the downstream communities, which the Citizen Advisory Commission was designed to achieve.

Additionally, providing links to these various government oversight agencies reports, as advance material ahead of the meeting, would allow participants to come better informed, thus allowing more meeting time for relevant and meaningful questions to be answered. As recommended at the previous meeting, the CAC facilitator should create an avenue for advance questions to be submitted for the presenters to address during the meeting, and also for follow up questions to be submitted the week following the meeting.

Following these recommendations would ensure future meetings would be substantially worthy of our time, and develop the DWR / citizen partnerships that we can all be proud of.

Respectfully, Matt Mentink

Former CNA Ad Hoc member.

**From:** KEVIN DOSSEY <[kdossey@comcast.net](mailto:kdossey@comcast.net)>

**Sent:** Friday, August 27, 2021 6:20 PM

**To:** Crowfoot, Wade@CNRA <[Wade.Crowfoot@resources.ca.gov](mailto:Wade.Crowfoot@resources.ca.gov)>

**Cc:** Williamson, Elizabeth@CNRA <[Elizabeth.Williamson@resources.ca.gov](mailto:Elizabeth.Williamson@resources.ca.gov)>; Nemeth, Karla@DWR <[Karla.Nemeth@water.ca.gov](mailto:Karla.Nemeth@water.ca.gov)>; Yarbrough, John@DWR <[John.Yarbrough@water.ca.gov](mailto:John.Yarbrough@water.ca.gov)>; Teague, Matt@Parks <[Matt.Teague@parks.ca.gov](mailto:Matt.Teague@parks.ca.gov)>; Wright, Aaron@Parks <[Aaron.Wright@parks.ca.gov](mailto:Aaron.Wright@parks.ca.gov)>; [dpittman@cityoforoville.org](mailto:dpittman@cityoforoville.org); Connelly, Bill <[BConnelly@buttecounty.net](mailto:BConnelly@buttecounty.net)>

**Subject:** Bidwell Boat Ramp Extension - Lake Oroville

Dear Honorable Secretary Wade Crowfoot, California Natural Resources Agency,

Thank you for the opportunity to provide input during today's Oroville Dam Citizens Advisory Commission Public Meeting. As mentioned, I was going to run past the 3-minute time limit, so I truncated my discussion and committed to follow up with a written description of the Bidwell Canyon boat ramp issue at Lake Oroville. It was really a 4-part discussion with questions and assertions as follows:

- 1) Why is the Bidwell Canyon Stage 3 Boat Ramp Extension project not planned for this year?
- 2) The Bidwell Canyon project is a previously-approved Public Safety project and independent of the Loafer Point project.
- 3) It is not too late to get started on the Bidwell project and construct it this year.
- 4) Can project funds be obtained quickly from one or more of three potential funding sources?

For the more detailed discussion I had planned, please see the notes below that I prepared ahead of the meeting, with slight modifications for clarity.

\*\*\*\*\*

I'm Kevin Dossey and live in Oroville, less than a mile from the lake.

My discussion is regarding a question many North State boaters have - "Why is the Bidwell Canyon Stage 3 Boat Ramp not planned for extension this year?"

After 34 years as a Civil Engineer with DWR, I retired a year-and-a-half ago. I worked 16 years at Oroville Field Division, mostly in the Recreation and Land Use Section. I was also OFD's unofficial PIO for a few years, so I have the pulse on Lake Oroville recreation and safety issues.

There is great public concern regarding a Recreation/Safety issue, which has arisen due to lack of access to Lake Oroville. The low lake level creates a recreation hardship and also a public safety issue because no launching is available at the lake. Currently, emergency response on the lake and at the marinas would be limited to already-on-water State Parks boats.

At full pool, with 34 concrete boat ramp lanes at the 5 developed ramp facilities, Lake Oroville has more developed launch lanes than any other lake in California. With no boat ramps available at the lake right now, it is obvious that Lake Oroville needs longer (deeper) concrete boat ramps. I see in the May 2021 ODCAC Meeting minutes that DWR Director Nemeth acknowledged the need and mentioned extending the Bidwell ramp.

This historic low lake level – currently at 631' and projected to go lower – has presented the perfect opportunity to extend launch ramps and finish already-started projects like the Bidwell Stage 3 Boat Ramp, the Loafer Point boat ramps, and the Lime Saddle Marina pedestrian access path. I understand contracting actions are underway on the two latter projects, but no equipment is on-site yet. I became aware last month that completion of the Bidwell Stage 3 BR was not funded for this year. Rather, Loafer Point ramp would be the focus.

The plan to build the Loafer Point boat ramp to about elevation 640' was a result of the loss of the Spillway ramp (the largest boat ramp facility on the lake) for nearly 3 years because of the Spillways emergency - and during any future major work on the dam. And it was needed to make the lake accessible from Loafer Creek Recreation Area at all lake levels, thus reducing congestion at the Bidwell ramp and providing an alternative for boaters that would otherwise not be able to launch when Bidwell parking lots are full on Holiday weekends and visitors are turned away.

One could argue that the Loafer Point ramp will fulfill the needs of emergency access to the lake. However, on-water emergency response would be delayed because of the longer drive around to - and through - Loafer Creek Recreation Area to get to the Loafer Point ramp. If the emergency was at Bidwell Marina (the busiest area on the lake during low water conditions), the delay in boating around the point to get to the marina would further delay emergency response.

The Bidwell boat ramp is independent of the Loafer Point project. A major component of the 2006 FERC Settlement Agreement Recreation Management Plan (SARMP) was providing improved access to the lake between elevations 900' and 640' (implying 640' would be the lowest lake elevation). In this spirit, it was agreed to in the SARMP that the Bidwell ramp would be extended to elevation 640'. The ramp was targeted because it is the busiest boat ramp at the lake, near the largest marina, and provides the best lake access for local and visiting boaters and emergency responders.

By signing the New FERC License Settlement Agreement in 2006, DWR committed to doing what is right for the people and the environment. DWR was to make good on a lot of alleged "broken promises" regarding recreation.

In 2008, when it appeared the FERC license would be delayed because of pending revisions to the Biological Opinion, DWR's then-Deputy Director Ralph Torres wrote a memo specifying which New License projects would be authorized for early implementation (or pre-license construction). He agreed that the Bidwell boat ramp extension to 640' met the criteria for early implementation, primarily because of public safety. In early 2008, with the lake elevation projected to drop well below the bottom of the existing Bidwell Stage 2 ramp, Deputy Torres signed a Project Charter that authorized funding for construction of the ramp – which included construction to 675' or lower in 2008. And DWR committed to continuing opportunistic, future construction of the Bidwell ramp in 100-foot-minimum increments (15-foot vertical drops) until the concrete ramp extended down to 640' or lower.

The first portion of the Bidwell Stage 3 Boat Ramp project was completed in 2008. It included an access road, new concrete parking lot, and a 3-lane boat ramp down to elevation 675'. And in December 2015, another 100 feet of the ramp was added, down to elevation 660'.

Fast-forward to this year:

I had heard in early 2021 that – with severe drought conditions and the lake level forecasted to reach about 620' – the Bidwell Stage 3 ramp would be extended this summer/fall to 640'. In late-July, I was shocked to hear that funding for the project was not authorized and this prime construction opportunity would be foregone.

I have heard that environmental permits for construction were extended and current. I know that an archeological review is needed prior to construction. But that supplemental archaeological survey should be quick and easy, as the lake is now well below the elevation of the proposed boat ramp construction area.

Based on my intimate knowledge of the Bidwell Boat Ramp project, I think that extending the current ramp 133' (to elevation 640') could still be accomplished this year. Engineering drawing modifications (cutting-and-pasting prior plans) could be done in a couple of days, updated environmental surveys and notifications could be completed in a week, and contract documents could be revised in another week. The normal 6-month timeframe by the USACE for 404 Permit processing could be cut to a day – as demonstrated by the streamlined Spillways Emergency project permitting approvals, sometimes taking only a few hours. If the project work could be done using a Memorandum Directive or Change Order to the Loafer Point boat ramp project, construction could start by October 1<sup>st</sup>. The construction time frame - based on history - should be less than four weeks. Thus, the project could be completed by the end of October.

Even if the normal bidding and contracting process is used, which would add another 6 weeks to the timeline, construction could be completed by mid-December. Coincidentally, the average lake “turnaround” (or transition from dropping to rising) occurs in mid-December. Thus, it's not too late to get started on the project.

With a California budget surplus in the \$40-billion range, I would hope money could be made available for this approximately \$1/2-million public safety project. Knowing DWR project funding is atypical for public agencies, I would suggest tapping into DWR 4<sup>th</sup> Priority funds, State Parks' Division of Boating and Waterways capital outlay funds, and/or State Water Contractor funds.

In the spirit of improving recreation user and first responder access at Lake Oroville, enhancing public safety, and following through with prior commitments, I and many

other Lake users implore you to endeavor to make funds available for completion of the highly visible and important Bidwell Canyon Stage 3 Boat Ramp Extension project this year.

\*\*\*\*\*

Again, thank you for your time and consideration of my input regarding the Bidwell Stage 3 Boat Ramp Extension project. Please forward or post as appropriate for responses and hopefully action.

Sincerely,

Kevin Dossey, P.E.

Concerned Oroville Citizen

[kdossey@comcast.net](mailto:kdossey@comcast.net)

On 08/30/2021 8:54 AM Nemeth, Karla@DWR <[karla.nemeth@water.ca.gov](mailto:karla.nemeth@water.ca.gov)> wrote:

Thank you Mr. Dossey. I'll speak with my team and see what we can get done.



From: **Robert Bateman** <[groberttbateman@gmail.com](mailto:groberttbateman@gmail.com)>  
Date: Tue, Aug 31, 2021 at 11:11 AM  
Subject: Question for Oroville Dam Citizens' Advisory Commission  
To: Williamson, Elizabeth@CNRA <[elizabeth.williamson@resources.ca.gov](mailto:elizabeth.williamson@resources.ca.gov)>  
Cc: Connelly, Bill <[bconnelly@buttecounty.net](mailto:bconnelly@buttecounty.net)>, Genoa Widener <[notjustaspillway@yahoo.com](mailto:notjustaspillway@yahoo.com)>, <[james.gallagher@asm.ca.gov](mailto:james.gallagher@asm.ca.gov)>, <[jim.nielsen@sen.ca.gov](mailto:jim.nielsen@sen.ca.gov)>, Richard Thompson <[iamcynic1@gmail.com](mailto:iamcynic1@gmail.com)>, Rune Storesund <[rune@storesundconsulting.com](mailto:rune@storesundconsulting.com)>

Question for Commissioners  
Impacts to Public Safety from Oroville Dam Releases

At the May meeting, Dr. Rune Storesund suggested that Commissioners should have information about the impact of expected dangerous events such as releases from the Dam between 150,000 cfs and 650,000 cfs. Since then, he has developed a proposal for a study of higher releases from the Dam. This study is moving forward.

Will the Citizens' Advisory Commission endorse this study and then ask the DWR, which referred him to the Commission, to assist, particularly in sharing their modelling?

There is no record of such a study having been completed although this information is normally required before a large dam is licensed. The information provided is critical to the operation of the reservoir as well as levee design and evacuation planning in at least 6 counties. With climate change driving extreme storms, releases in this range can be anticipated in future unless there is careful planning.

Dr. Storesund has provided the following brief summary of the project design. It is expected that the study will be completed by mid 2022. He has also provided the attached description of the statewide ARkStorm 2.0 project originally led by the USGS with which the high release study will be co-ordinated.

Robert Bateman  
Secretary Feather River Recovery Alliance  
8/31/2021

**Impacts to Public Safety and Evacuation Planning in Butte,  
Glenn, Colusa, Yuba, and Sutter Counties, California  
Draft**

**Principal Investigator: Dr. Rune Storesund, D.Eng., P.E., G.E., Director, SafeR<sup>3</sup>([rune@safer3.world](mailto:rune@safer3.world))**

Emergency Action Plans are required to be developed and submitted to FERC as part of licensing requirements established in the [Code of Federal Regulations Title 18, Chapter 12 "Safety of Water Power Projects and Project Works."](#) These plans must be "[Designed to provide early warning to upstream and downstream inhabitants, property owners, operators of water-related facilities, recreational users, and other persons in the vicinity who might be affected by a project emergency.](#)" An emergency is defined as: [Project emergency means an impending or actual sudden release of water at the project caused by natural disaster, accident, or failure of project works.](#)

Oroville Dam was designed to release a maximum of approximately 650,000 cfs through the primary spillway (capacity of about 300,000 cfs) as well as additional releases through the emergency spillway (capacity of about 350,000 cfs). No emergency response information currently exists to inform first responders within the impacted areas for discharges greater than the routine discharge of 150,000 cfs.

This study, in collaboration with the Department of Water Resources (DWR), will leverage existing modeling completed for the full-breach of Oroville Dam to calculate and map inundation associated with discharges between 150,000 cfs and 650,000 cfs (at 50,000 cfs increments and at hourly timesteps) to inform emergency response personnel as to vulnerable areas (based on discharge) and serve as the foundation to develop release-specific emergency warning and evacuation plans to ensure public safety.

This study will coordinate with ArkStorm II, which considers a plausible extreme precipitation event

Hello Nancy,

I understand that you have taken on Lizzy Williamson's responsibilities with respect to the Oroville Dam Citizens' Advisory Commission.

Following the last virtual meeting I submitted the attached question and did not receive any response although previous to this meeting Lizzy said that the support for Dr. Storesund's study of the impact of high releases from the Dam would be included on the Agenda for the November/December meeting. I gather that this meeting will be held on December 3rd and request that support for Dr. Storesund's study be included on the agenda for this meeting.

Thank you,

Robert  
530 370 3347

## Recommendations following the August 27th 2021 CAC meeting

### Recommendation # 16 - Public Asset Management (regulatory) Tracking Log

(reference page 90-91 of the transcripts from 5/28/2021 CAC Meeting)

SB 955 was enacted to ensure the downstream communities obtain the much needed cooperation from DWR regarding the asset management of the Oroville facilities. This intent is clearly stated in the CAC charter;

#### G. Cooperation from California State Agencies -

2. Provide all information reasonably requested by the commission regarding the construction, rehabilitation or reconstruction, operation, maintenance, and management of the dam, including:

- A) Asset management plans regarding facilities and equipment of the dam,
- B) Scheduled or anticipated repairs, restoration, or replacement of facilities or major equipment;
- C) Changes in flood management rules; and
- D) Provide updates of Feather River flood management activities,

The creation and implementation of a suggested public Tracking Log seems the most reasonable approach to satisfy the CAC charter. Easily designed and maintained, it can simplify enormous amounts of requests, from various sources into a single document for both CAC participants and internal leadership to monitor. The sources of recommended studies, and projects should include;

FERC Part 12 inspections, 2014 and later, (plus other relevant correspondence)  
DSOS recommendations and concerns that are still open  
Level 2 independent consultants recommendations (following the 2021 Spillway Event)  
CNA task team recommendations (remedies for resilience and redundancy next 50 years)  
Internal finding from the Oroville Dam Safety Division (self discovery)  
2016 extraordinary fund / current 5 year capitalization projects (pre 2017 urgency)

Aside from the need for transparency regarding the above mentioned projects is the ongoing concern for the length of time it has taken to complete safety recommendations, in comparison to delivery projects. To help remedy these concerns, DWR's Asset Management now assigns risk metric scores to all SWP work for the purpose of prioritizing their budget and schedule. By having both the public tracking log and the Two year budget list: 1) the date project was first requested, 2) who made the request, and 3) the risk metric score / value assigned, all parties can compare the information on both documents to ensure that equalable scheduling is being done.

As a former CNA Ad Hoc member, I see the selection and quick completion of one of the ten alternative CNA plans as the utmost importance to the downstream communities. Therefor I suggest that all items within the public tracking log be categorized by the six tasks in the CNA, regardless of who made the request:

- 1) Spillway Capacity / PMF
- 2) Operations, New water control manual
- 3) FCO enhancement / reliability
- 4) Low Level Outlet, River Valve, Hyat
- 5) Embankment reliability and improvements
- 6) Instrumentation and Monitoring
- 7) Other

With three major flood events occurring within the 31 year period; 1986 1997, 2017, the long standing concerns, distrust and feeling of inequality by those living downstream are very real. Given historical weather patterns there is the potential for significant events every ten years. The length of time it takes to choose and complete the facility improvements contained in the CNA alternative plans will be an ongoing debate between the CAC, DWR and presumably the SWC's. The recommended public tracking log can be the foundation of those future conversations

## 1) **Recommendation: High Level SWC member at future CAC asset management meetings**

Having an open discussion with a regional general manager of the SWC at the last meeting was insightful to the workings within a particular geographic area, and a good place to start. Going forward it would be helpful to have a high level representative, or member of the finance committee present, when asset management is the lead item on the agenda.

Under the original state water contract, the DWR leadership Team had the authority to manage the assets of the SWP as they saw fit. Studies, repair or replacement projects were completed as needed, and SWC reserved the right to protest any such financial charges they didn't see fit.

Under the new water contract extension, the SWC enjoys a 50/50 membership in a newly created Financial Committee, where recommendations are made for any project that would require the approval of the Director of DWR. This equal power sharing within a committee that makes project recommendations, by the very party responsible to pay for those projects could create undue influence towards prioritizing delivery projects over safety when there is limited funding or human resources.

The minutes of the financial committee meeting, where decisions are made regarding the safety and reliability of the SWP should be public record and therefore provided as advance material to the CAC prior to future asset management meetings. For the CAC participants to better understand the justification for the recommendations coming out of the finance committee, it would be helpful to invite a SWC member of the committee to present their explanation and take questions at future CAC meetings, when asset management is the lead topic on the agenda.

## 2) **Citizen Advisory Commission Report to the Legislators**

A Lot of great information has been provided to the Citizen Advisory Commission during the first two years of its existence, and the DWR team should be commended for this effort. The downstream communities that once only knew of the problems at the Oroville Facility, are quickly learning all the work to ensure its resilience and redundancy for the next 50 Years of operation. With this transparency, trust and respect is beginning to develop.

The CAC report to the Legislators should reflect this groundbreaking accomplishment, and serve as evidence that similar citizen commissions should be used within the state. With the help of the CAC meeting facilitator, DWR should take the lead in writing this report, but not without caution.

The success of the commission should not blind us to any shortcoming the process might have had, and those opportunities should be equally represented within the report. The inclusion of shortcoming should include an explanation and possible resolution that would inform further commissioner and staff on the need for such continuous improvement . It's this part of the report that DWR may not be the best qualified lead author. Thus we will need to rely on accurate records of the CAC meetings to recall areas of disappointment or needed improvement, so commissioner co-authors can include as they see fit

Its recommended that such records as the transcripts, presentations, and recommendation log be preserved and used when writing the report. Were presentations geared towards high level concerns as requested, were questions answered fully and directly, and were the recommendations provided to DWR completed to the satisfaction of the CAC participants.

**From:** KEVIN DOSSEY <[kdossey@comcast.net](mailto:kdossey@comcast.net)>

Sent: Friday, October 8, 2021 12:16 PM

**To:** Nemeth, Karla@DWR <[Karla.Nemeth@water.ca.gov](mailto:Karla.Nemeth@water.ca.gov)>; Crowfoot, Wade@CNRA <[Wade.Crowfoot@resources.ca.gov](mailto:Wade.Crowfoot@resources.ca.gov)>

**Cc:** Williamson, Elizabeth@CNRA <[Elizabeth.Williamson@resources.ca.gov](mailto:Elizabeth.Williamson@resources.ca.gov)>; Yarbrough, John@DWR <[John.Yarbrough@water.ca.gov](mailto:John.Yarbrough@water.ca.gov)>; Teague, Matt@Parks <[Matt.Teague@parks.ca.gov](mailto:Matt.Teague@parks.ca.gov)>; Wright, Aaron@Parks <[Aaron.Wright@parks.ca.gov](mailto:Aaron.Wright@parks.ca.gov)>; [dpittman@cityoforoville.org](mailto:dpittman@cityoforoville.org); Connelly, Bill <[BConnelly@buttecounty.net](mailto:BConnelly@buttecounty.net)>

**Subject:** RE: Bidwell Boat Ramp Extension - Lake Oroville

Director Nemeth,

I see that the Loafer Point Boat Ramp project is underway - and that's great!

Has there been any progress on extending the Bidwell Stage 3 ramp? There is a lot of room to complete the project to elevation 640' or lower. Please see attached photos of the ramp area from 4 weeks ago. (the lake was at the same elevation as it is today)

Thanks,  
Kevin Dossey

On 11/05/2021 9:07 AM Yarbrough, John@DWR <[john.yarbrough@water.ca.gov](mailto:john.yarbrough@water.ca.gov)> wrote:

Mr. Dossey,

Thank you for asking about the Bidwell Canyon Stage 3 Boat Ramp Extension project. DWR has extended this boat ramp multiple times in the past. The ramp was first extended down to elevation 675 feet in 2008 and then further to elevation 660 feet in 2015. DWR plans to eventually extend the ramp an additional 20 feet to elevation 640 feet. The timing of that project is uncertain, as it depends upon extremely low lake levels, resources, staffing, and other priorities.

Following the 2017 spillway incident, a key recreation facility, the Spillway Boat Ramp, was closed to allow for the reconstruction of the spillway. To offset any resulting recreation impact from this major reconstruction work, DWR elected to pursue early implementation of new recreation projects at Lake Oroville. Construction on one of these projects, the extension of the Loafer Point Boat Ramp, has been underway this last year.

The Loafer Point Boat Ramp project is planned to extend down to elevation 640 ft. DWR has been intending to take advantage of the unprecedentedly low lake levels that are occurring this year to extend the ramp further. DWR has focused its efforts on extending the Loafer boat ramp instead of the Bidwell Canyon Boat Ramp this year because a construction contractor was already mobilized and on site, and a full package of environmental permits had just been completed for this location. However, those plans are now being revisited after the recent storm resulted in an earlier than usual increase in reservoir elevation.

Thank you again for your interest in these recreation improvement projects.

Sincerely,  
John Yarbrough

---

**John Yarbrough** | Department of Water Resources

Assistant Deputy Director

State Water Project

(916) 803-9203

On 12/01/2021 3:19 PM KEVIN DOSSEY <[kdossey@comcast.net](mailto:kdossey@comcast.net)> wrote:

Mr. Yarbrough,

Thank you for your response. As you may know, I am intimately familiar with the previous work at the Bidwell Canyon Stage 3 Boat Ramp and DWR's commitment to improve the Loafer Point ramp, which is why I am recounting a brief history of DWR's decisions and commitments and attempting to offer a constructive path forward related to the Bidwell Ramp.

The Loafer Point Boat Ramp extension work is commendable and greatly appreciated. It will allow for an expanded recreation season at Loafer Creek Recreation Area during low water years and also reduce pressure on Bidwell Canyon Recreation Area during high visitation weekends. Further, it will provide an alternate launch ramp when the Bidwell Canyon Boat Ramp is occasionally closed on Holiday weekends because the parking lot reaches capacity.

However, the pending FERC P-2100 (Oroville Facilities) License's *Settlement Agreement Recreation Management Plan* describes the proposed Loafer Point project as a car-top launch area. The project underway is not really "early implementation" of the Loafer Point project, but is a completely re-designed and expanded project to offset the temporary loss (and potential future loss) of Spillway Ramp, which was reopened more than two years ago. Thus, the Loafer and Bidwell projects are independent and should be viewed as such when determining recreation project priorities.

The one boat ramp project that was authorized by DWR Management for "early implementation" more than 13 years ago is the Bidwell Canyon Stage 3 Boat Ramp. When DWR completed the first portion of that project to elevation 675' in 2008, there was a ribbon-cutting ceremony that was attended by local boaters, bass tournament organizers, Management from several State Agencies, and media. The Grand Opening of the deepest boat ramp at Lake Oroville was very well-received by the Public and helped improve DWR's reputation locally. The DWR Deputy Director conveyed to the public that the ramp would be further extended at each opportunity when lake levels were projected to drop at least 15 feet below the end of the existing new concrete ramp or latest ramp extension. (At a 15% design slope, the corresponding minimum 100-linear-foot extensions of the ramp were deemed a reasonable ramp length and scope-of-work worthy of initiating a new contract.)

In 2015 when the low-water opportunity arose, DWR made good on the 2008 commitment and extended the ramp 100 linear feet - to elevation 675'. Again, the project was well received by the Public and First Responders. And DWR continued to gain public confidence and support.

DWR Director Nemeth recognized at the May 28, 2021 Oroville Dam Citizens Advisory Commission meeting that the Bidwell Canyon boat ramp would only be open through early July 2021. She stated (per the Meeting #7 Transcript) that "...these really dry

*conditions is an opportunity for the Department to extend boat launch deeper into the fluctuation zone of the reservoir. (and) ...an opportunity for us to build facilities that enable those boat launch ramps to be functional even during drought periods." She went on, "...this is a way in which the Department is looking to maintain all the benefits of this facility, particularly the important recreation benefits to this community, even as we have a deeper fluctuation..."*

Then suddenly the Bidwell project, which would have cost less than 25% of the 2021 Loafer Point ramp extension cost estimate, was dropped. The reason for cancelling the 100%-designed, mostly-permitted, and relatively cheap Bidwell project is still a mystery.

Further, it was disturbing to hear DWR staff say at the November 5, 2021 Oroville Recreation Advisory Committee meeting that the Bidwell Stage 3 ramp would not be extended until a new FERC License is issued. The P-2100 License issuance has been pending for 15 years, so reviving the promised Bidwell project could be many years out if it is truly on hold until new License issuance. Meanwhile, the public recreation opportunities and response times of Emergency Responders will continue to suffer during low water conditions.

Since Bidwell Canyon receives the most visitors of all the recreation areas within the Oroville Facilities, I encourage DWR to uphold its 2008 commitment to extend the Bidwell Stage 3 Boat Ramp by putting it at the top of the list of project priorities for the next low water year, plan and budget appropriately, and acquire new or extended environmental permits so that the much-needed work can proceed at the earliest available opportunity.

Thank you,  
Kevin Dossey



**From:** Matt Mentink <[mentinkmatt@gmail.com](mailto:mentinkmatt@gmail.com)>

**Sent:** Sunday, December 5, 2021 12:08 PM

**To:** Crowfoot, Wade@CNRA <[Wade.Crowfoot@resources.ca.gov](mailto:Wade.Crowfoot@resources.ca.gov)>

**Cc:** Yarbrough, John@DWR <[John.Yarbrough@water.ca.gov](mailto:John.Yarbrough@water.ca.gov)>; Rob Olmstead Deputy Chief Of Staff <[rob.olmstead@sen.ca.gov](mailto:rob.olmstead@sen.ca.gov)>; James Gallagher <[James.Gallagher@asm.ca.gov](mailto:James.Gallagher@asm.ca.gov)>; Vogel, Nancy@CNRA <[Nancy.Vogel@resources.ca.gov](mailto:Nancy.Vogel@resources.ca.gov)>; Connelly, Bill <[BConnelly@buttecounty.net](mailto:BConnelly@buttecounty.net)>; Mat Conant <[mconant@co.sutter.ca.us](mailto:mconant@co.sutter.ca.us)>; Genoa Widener <[notjustaspillway@yahoo.com](mailto:notjustaspillway@yahoo.com)>; Ron Stork <[rstork@friendsoftheriver.org](mailto:rstork@friendsoftheriver.org)>

**Subject:** CAC Meeting Apology

Secretary Crowfoot,

For the last 4 ½ years I've chosen to give countless hours of my invaluable time to help protect the safety and prosperity of the Feather River Basin. I've acquired the flood protection knowledge, the understanding of government to navigate the system, and continue to work on the personal demeanor to present and ask questions to achieve mutual goals.

Just because too many of my fellow citizens lack the time, skills or knowledge to join me, it doesn't mean they are not with me in these efforts. Being a lifelong resident, I know my concerns are their concerns, my questions are their questions, and my hopes are their hopes.

Following the phone call with John, I thought we had a mutual understanding on a future course of action:

- The Oroville CAC was here to stay and we should play the long game
- We would have repeating agenda topics for the quarterly meetings
- We do heavy foundational work now for those repeating topics
- Develop modified tracking logs, fault tree analysis, and other tools to streamline
- Introduce these tools at the appropriate 2022 meeting scheduled for those particular topics
- Once created, enjoy easy non-time consuming annual maintenance of the above tracking logs, fault analysis and other tools
- John would publicly propose this Road Map during 12/3/21 meeting

The "Welcome and Introduction" part of that meeting lasted 35 minutes without mention of the proposed course of action we discussed on the phone. The presentations and commissioner comment portion lasted 80 minutes, and the citizen portion was left with 5 minutes. By then, I felt dismissed. Unfortunately this dismissal was evident in my abrupt and direct delivery.

I was told by a former Director that you are a passionate and results oriented man. And the best way to work with you is to ask direct questions that are relevant to the agenda in a respectful manner. I will continue to strive to do just that.

Committed to mutual goals, Matt Mentink

**From:** Yarbrough, John@DWR <John.Yarbrough@water.ca.gov>  
**Sent:** Tuesday, December 7, 2021 10:55 AM  
**To:** Matt Mentink <mentinkmatt@gmail.com>  
**Cc:** Nick Saffold <nsaffold@kearnswest.com>  
**Subject:** RE: CAC Meeting Apology

Matt,

The agendas continue to be a challenge as we try to balance covering the areas that Commissioners are asking for information while leaving time for public participation. We are making adjustments to the next meeting to try to create more time for public discussion.

Thank you for recapping our discussion- I hadn't left that discussion knowing that you were expecting that I was going to report out to the commission. If you are available, I think it would be productive for us to get on the phone for another short discussion where I would like to include Nick. Nick can help make sure you and I are picturing the same forward path. Let us know if this works for you and I'll look for some potential times.

Thanks,

John

**From:** Matt Mentink <mentinkmatt@gmail.com>

**Sent:** Thursday, December 9, 2021 9:37 AM

**To:** Yarbrough, John@DWR <John.Yarbrough@water.ca.gov>

**Cc:** Nick Saffold <nsaffold@kearnswest.com>; Vogel, Nancy@CNRA <Nancy.Vogel@resources.ca.gov>; Rob Olmstead Deputy Chief Of Staff <rob.olmstead@sen.ca.gov>; James Gallagher <James.Gallagher@asm.ca.gov>; Curtis Grima <curtis.grima@asm.ca.gov>; Connelly, Bill <BConnelly@buttecounty.net>; Mat Conant <mconant@co.sutter.ca.us>; Genoa Widener <notjustaspillway@yahoo.com>; TKimmelshue@buttecounty.net; avasqeze@co.yuba.ca.us; Ron Stork <Rstork@friendsoftheriver.org>; Rune Storesund <rune@storesundconsulting.com>

**Subject:** Re: CAC Meeting Apology

John

Thanks for reaching back following the last meeting. I know your time is valuable, so it is truly appreciated. I hope you understand, that's why I've been attempting to streamline the CAC meetings, while still getting to the core questions in need of discussion.

The Idea of using 'Lessons Learned from the 1986 Flood' was not to shame or hold liable. It's an opportunity to reverse engineer an actual event. To examine all the points/ gates of possible human intervention within the fault tree. To ask ourselves what could we and should we do differently in the future.

From the last meeting, I'm feeling that FIRO will not yield an equalbe solution for both delivery and flood protection, without active CAC oversight. DWR has been forthright in keeping the CAC informed of the physical features at Oroville. It's now time we do the same with "Operations and Human Decisions" as it relates to the development of FIRO.

This is the reason I've requested a Fault Tree Analysis on the 1986 Flood. It will clearly show the 30 some points/ gates of possible human intervention. It will streamline these broad topics into a single document for future reference. I feel so strongly about this that I'll offer to hire a 3rd party consultant, and work with them to create this (FTA) prior to the next 2022 meeting where FIRO is on the agenda.

Let's have this next phone call. Since I'm not a current commissioner, I took the liberty to offer others a chance to add their insight and desires to help shape and streamline the future course of the Citizen Advisory Commission.

Respectfully, Matt Mentink,  
1986 Flood vltim, Oroville CNA Citizen Ad Hoc Member

**From:** Matt Mentink <[mentinkmatt@gmail.com](mailto:mentinkmatt@gmail.com)>

**Sent:** Tuesday, January 11, 2022 2:17 PM

**To:** Yarbrough, John@DWR <[John.Yarbrough@water.ca.gov](mailto:John.Yarbrough@water.ca.gov)>; Saffold, Nick@KearnsWest <[nsaffold@kearnswest.com](mailto:nsaffold@kearnswest.com)>

**Cc:** Rob Olmstead Deputy Chief Of Staff <[rob.olmstead@sen.ca.gov](mailto:rob.olmstead@sen.ca.gov)>; Vogel, Nancy@CNRA <[Nancy.Vogel@resources.ca.gov](mailto:Nancy.Vogel@resources.ca.gov)>; Grima, Curtis <[Curtis.Grima@asm.ca.gov](mailto:Curtis.Grima@asm.ca.gov)>

**Subject:** Re: Oroville CAC meeting follow up call

John / Nick

Attached are copies of the requests made following the August 27th meeting and the advance questions for the December 3rd meeting that didn't make the recommendation log. These can be addressed when the topics are on the 2022 agenda

**\*\*Attachment\*\***

### **December 3rd Oroville Citizen Advisory Commission Meeting**

Scheduled for this upcoming meeting is CAC Action Tracker #13 - "Lessons learned from 1986 and 1997 flood events". The request made 10 months ago at the 2-19-21 meeting talked of a reverse engineering approach, that goes beyond the simple conclusion of levee failure. It should break down all contributing factors in the event chain that could be reengineered to minimize the likelihood of recurrence. We are not looking for individuals to blame or liabilities to settle. Instead it should provide DWR and levee agencies the opportunity to highlight what was learned, improvements made, and vulnerabilities that still need to be addressed.

When reverse engineering the past events, four major contributing factors stand out; Rain Event, Facility Limitations, Dam Operations, and Levee Vulnerabilities. Drilling down further within those are numerous points for possible human intervention or "gates" within a Fault Tree Analysis (FTA). It's time we understand the effect each of the lesser gates, within the four contributing factors, has on the whole system.

We are currently at a unique opportunity to greatly reduce the risk of High Water Events - Levee Failures. DWR is finalizing it's Comprehensive Needs Assessment, and probable Low-level outlet. While ACOE is undertaking a new Water Control Manual to include Forecast Informed decision making. To a lesser effect, the State water contractors are renewing contracts and FERC is trying to wrap up relicensing

**Thus it's being Recommended that a Fault Tree Analysis be created.** It would be a great visual tool for senior management and the Finance Committee during the CNA plan selection process. A roadmap during the development of the new FIRO water control manual. Act as a quick reference guide for those in Oroville's operation center during an event. And it would provide the Citizen Advisory Commission the means to monitor the "Who, When and How" these intervention points were managed in the future.

Following are some of the points of intervention that may have been missed in 1986, 1997 and 2017. These questions could either be incorporated into our December 3rd

presentations, or answered later within the official meeting summary report. But more importantly, these and others need to be included in the creation of the Fault Tree Analysis.

### **Rain Event / Reservoir Inflows**

The 1986 event was said to be a 1/70 year event, yet we have had 4-5 similar storms in a 70 year period, indicating that improved forecast modeling was needed. Q 1) - What does Atlas 14 tell us to prepare for in amounts, frequency and duration potential of future storms? How is that being utilized in future facility design and operations updates?

Has accelerating climate change and recent historical storms already made the guidance of Atlas 14 outdated. Q 2) - How frequently should Atlas 14 guidance change, and how will the revisions continuously change the joint water control manual for Oroville/ Bullards

Real time reservoir inflows at lake-level were used in the past to dictate and trigger spillway outflows in the original operations manual. Q 3) - How has inflow forecasting improved in regards to; upstream reservoir coordination, watershed rain monitors and river gauges, and how will the additional 24 hour lead time of inflows be utilized in the future?

Pre-event lake levels were guided by the Moisture Index of the watershed on a scale of 1 -11 in ground saturation. There wasn't any additional requirement to adjust for heavy snowpacks. Q 4 - How will the snowpack affect pre-event lake levels going forward?

In the past we didn't know the moisture content of the snowpack at different elevations within the watershed to accurately forecast runoff associated with warm atmospheric rivers. Q 5) - How will the water content of the snowpack at different elevations be measured and used to trigger early releases in the future?

### **Water Control Manual / Human Factors**

Marysville Reservoir was to provide an additional 150,000 AF of flood storage for the Feather/ Yuba watershed when the first water control manual was created. Instead of increasing the hard storage at Oroville or Bullards, surcharge flows of 11 feet were to overtop the emergency spillway at Oroville as the FCO would throttle back to maintain a maximum of 3000,000 cf river flows at Marysville. Q 6) - How will the lack of hard flood storage Marysville Reservoir was to provide, be accounted for in the new FIRO water control manual?

The objective for creating a FIRO Water Control Manual is to customize the reservoir operations to the current rainy season and real time weather conditions. If managed properly it should reduce the water pressure on vulnerable levees associated with relying on the use of maximum outflows of 300,000 cf at Marysville. But it will also increase water supply by allowing more water to be stored in the current flood pool during drought conditions.

Q 7) - Please provide all the various; weather, watershed and reservoir data points, such as those mentioned above, that FIRO plans to use, in calculating the need for proactive human intervention.

Q 8) - Who is gathering all this various real-time data, and where is it transmitted to?

Q 9) - Is there a software application being developed to process the modeling for projected reservoir inflows / durations that will guide the proactive outflows.

Q 10) - Will the FIRO manual be "cut and dry" once modeling is created, that will dictate specific actions by the operators for the given conditions.

Q 11) - Please include all the possible FIRO "gates of human intervention" in the Fault Tree Analysis (FTA) being requested within the Citizen Advisory Commission.

### **Facility Limitations / Understanding**

As we all witnessed during the 2017 Spillway Event, use of surcharge flows over the emergency spillway was not within the facility's capabilities, It was the last resort, and as such we operated without the 150,000 AF of flood storage Marysville Reservoir was to provide. Q 12) - Will further improvements be made to the Auxiliary spillway for surcharge operations, or will

FIRO account for the lack of storage with early releases

Due to the current elevation of the Flood Control Outlets (FCO), and lack of capacity and dependability of the River Outlet, early releases needed for FIRO are very limited. Most of the proposed CNA plans include a low-level outlet, but could be 10 years before its operational.

Q 13) Will this delay switching to FIRO, or can FIRO be continually modified as facility improvements are completed

The Independent Forensic Team went in depth on the decision making within the operational center and the lack of available information to make critical decisions, such as the geology report for the Auxiliary Spillway. Q 14) Are we confident that all such reports are readily available. Are those in operations aware of the known and unknown facility vulnerabilities per the various internal and Part 12 safety inspections, Is that pertinent material also available for those in the operation center. Are the vulnerability of downstream levee also known, and available for the decision makers?

### **Levee Vulnerability**

Levee failure has occurred 3 of 4 (75%) of the time the Feather River channel reached its maximum carrying capacity. 1956, 1986, 1997. Yet 300,000 cf flows at Marysville are still considered standard operating procedures for the water control manual. Q 15) - *How will this risk factor be incorporated into FIRO to make it a last option, similar to how surcharge flows (150,000 AF) over the emergency spillway was considered to be the last option.*

The 1986 levee failure was thought to be from underground head pressure seeping through a gravel pit or old river bed. Old river beds have been mapped under our levee system in numerous places. Q 16) - What mitigating actions such as relief wells or extended levee toes have been completed at these locations?

Another cause of levee failure the slouching of the saturated levee crest that occurs during rapid downramping of the river flows (1997?) This process was evident in 2117 when 100 year old river banks slouched during downramping. Oroville's current operation manual regulates spillway down ramp rates to 10,000 cf every 2 hours. But since the Middle and South Fork of the Yuba is largely unregulated the actual down ramping of the saturated levee is much greater than measured at the actual river gages. Q 17) - What is considered safe down ramping rates for the levee following 150,000 cf or 300,000 cf outflows and shouldn't the rate be measured by the actual river gages.

Levees have been greatly improved since the last failure, and downstream communities are grateful for the role DWR, and ACOE have played in that effort. Yet the near levee failure in Yuba City during the 2117 event with less than 50% of allowed outflows is evidence that levee certification isn't equivalent to dependability. Most levee districts look to this expert guidance for planning work projects and maintenance. Q 18) - What recent changes have been made to levee certification and cost sharing that will increase dependability.

**From:** KEVIN DOSSEY <[kdossey@comcast.net](mailto:kdossey@comcast.net)>

**Sent:** Tuesday, February 8, 2022 12:45 PM

**To:** Yarbrough, John@DWR <[John.Yarbrough@water.ca.gov](mailto:John.Yarbrough@water.ca.gov)>

**Cc:** Teague, Matt@Parks <[Matt.Teague@parks.ca.gov](mailto:Matt.Teague@parks.ca.gov)>; Wright, Aaron@Parks <[Aaron.Wright@parks.ca.gov](mailto:Aaron.Wright@parks.ca.gov)>; [dpittman@cityoforoville.org](mailto:dpittman@cityoforoville.org); Connelly, Bill <[BConnelly@buttecounty.net](mailto:BConnelly@buttecounty.net)>; Vogel, Nancy@CNRA <[Nancy.Vogel@resources.ca.gov](mailto:Nancy.Vogel@resources.ca.gov)>; Crowfoot, Wade@CNRA <[Wade.Crowfoot@resources.ca.gov](mailto:Wade.Crowfoot@resources.ca.gov)>; Nemeth, Karla@DWR <[Karla.Nemeth@water.ca.gov](mailto:Karla.Nemeth@water.ca.gov)>; Craddock, Ted@DWR <[Ted.Craddock@water.ca.gov](mailto:Ted.Craddock@water.ca.gov)>; Hafner, Mark@DWR <[Mark.Hafner@water.ca.gov](mailto:Mark.Hafner@water.ca.gov)>; See, Eric@DWR <[Eric.See@water.ca.gov](mailto:Eric.See@water.ca.gov)>; Zeitler, Kevin <[zeitlerk@stifel.com](mailto:zeitlerk@stifel.com)>; Knaus, Claudia <[claudiaknaus@gmail.com](mailto:claudiaknaus@gmail.com)>

**Subject:** Bidwell Boat Ramp Extension Obligation - Lake Oroville

Hello John,

I am writing you to supplement the information I provided in my 12/1/2021 email (below) to you and several Oroville Dam Citizens Advisory Commission Members. I am cc'ing some Oroville Field Division staff and Oroville Recreation Advisory Committee members, as this issue was discussed at the ORAC meeting on Friday, 2/4/2022.

During the ORAC meeting on Friday, DWR stated that the remaining segment of the Bidwell Canyon Stage 3 Boat Ramp project at Lake Oroville would not be completed until after a New FERC License is issued. However, a September 2008 FERC Order amended the Project No. 2100 1994 Amended Recreation Plan (still current) to include the Bidwell Stage 3 project, thus making it a current FERC License requirement. Further, in an April 2016 DWR letter to FERC, DWR describes the second phase of the Bidwell ramp extension project, constructed in 2015, as "partial completion" of the ramp and commits to completing the project when the lake's water surface elevation is low enough.

In a search of the Federal Energy Regulatory Commission's eLibrary, I discovered several documents related to the 2008 Bidwell Canyon Stage 3 Boat Ramp project and the 2015 extension of that ramp. I listed the dates of the relevant filings (in FERC's year-month-day format) and FERC's eLibrary Description of the documents below.

For your convenience, I attached the two documents (**bold dates below**) supporting my belief that DWR is obligated to extend the ramp now - under the current FERC License and 1994 Amended Recreation Plan - rather than waiting for the new FERC License, which has been pending for 15 years.

#### FERC Document List:

20080730

California Department of Water Resources requests approval to amend the existing Recreation Plan to incorporate an extension of the Bidwell Canyon Boat Ramp etc under P-2100.

20080815

California Department of Water Resources submits Additional Documents Supporting the Proposed Bidwell Canyon Boat Ramp Extension under P-2100. (Permit Package)

**20080910**

Order approving amendment to Recreation Plan re California Department of Water Resources under P-2100. (attached)

**(FERC ORDER APPROVING AMENDMENT TO RECREATION PLAN - Bidwell Ramp Extension, Issued September 10, 2008)**

20150930

Department of Water Resources submits Notification of Bidwell Canyon Stage 3 Boat Ramp Extension Project under P-2100.

**20160419**

Department of Water Resources submits **Notification of Partial Completion of Bidwell Canyon Stage 3 Boat Ramp Extension Project** and As-built Drawings.

**\*\*Note that within this DWR letter to FERC (attached), at the end of Paragraph 3, DWR states, "The *Recreation Management Plan* calls for this ramp to be extended to elevation 640 feet; *the final segment of the project is expected to be constructed when Lake Oroville's water surface elevation is low enough to allow for it.*"**

Currently, Bidwell Canyon Boat Ramp Stages 1, 2, and 3 range in elevation from 900' (full pool) down to elevation 660'. Per existing final design plans, the last portion of the low-water Bidwell Stage 3 ramp would extend 20' vertically, down to elevation 640', the published "dead pool" elevation of Lake Oroville. The approximately \$1/2-million project would extend 133 feet on-slope from the bottom of the existing 380-foot-long Stage 3 ramp.

Finally, thousands of public recreation users at Lake Oroville would be grateful if DWR takes advantage of the next extreme low-water occurrence (potentially this year) to construct the remaining portion of the boat ramp. Please review the two attached documents and reconsider DWR's position on postponing the last segment of the Bidwell Boat Ramp project.

Thank you,  
Kevin Dossey  
Concerned Oroville Citizen



From: Yarbrough, John@DWR

Sent: Friday, February 11, 2022 2:24 PM

To: KEVIN DOSSEY [kdossey@comcast.net](mailto:kdossey@comcast.net)

Cc: Teague, Matt@Parks <Matt.Teague@parks.ca.gov>; Wright, Aaron@Parks<Aaron.Wright@parks.ca.gov>; dpittman@cityoforoville.org; Connelly, Bill<BConnelly@buttecounty.net>; Vogel, Nancy@CNRA <Nancy.Vogel@resources.ca.gov>; Crowfoot,Wade@CNRA <Wade.Crowfoot@resources.ca.gov>; Nemeth, Karla@DWR<Karla.Nemeth@water.ca.gov>; Craddock, Ted@DWR <Ted.Craddock@water.ca.gov>; Hafner,Mark@DWR <Mark.Hafner@water.ca.gov>; See, Eric@DWR <Eric.See@water.ca.gov>; Zeitler, Kevin<zeitlerk@stifel.com>; Knaus, Claudia [claudiaknaus@gmail.com](mailto:claudiaknaus@gmail.com)

Subject: RE: Bidwell Boat Ramp Extension Obligation - Lake Oroville

Kevin,

Thank you for providing these documents. I have shared them with the DWR team and we will be giving them a look.

-John

**From:** Robert Bateman <groberttbateman@gmail.com>  
**Sent:** Monday, March 28, 2022 3:05 PM  
**To:** Crowfoot, Wade@CNRA <Wade.Crowfoot@resources.ca.gov>  
**Cc:** Connelly, Bill <BConnelly@buttecounty.net>; Genoa Widener <notjustaspillway@yahoo.com>; jim.nielson@sen.ca.gov; Vogel, Nancy@CNRA <Nancy.Vogel@resources.ca.gov>; Olmstead, Rob <rob.olmstead@sen.ca.gov>; Richard Thompson <iamcynic1@gmail.com>; Erik Johansen <Erik.Johansen@prezero.us>; Nemeth, Karla@DWR <Karla.Nemeth@water.ca.gov>  
**Subject:** Oroville Dam Citizens Advisory Committee Meeting March 25 2022

Secretary Crowfoot/ Wade,

The proceedings of Citizens Advisory Commission meeting on Friday represented a positive step forward in establishing trust in the DWR among the local community. Thank you for overseeing this and for supporting Dr. Storesund's much needed study which will throw light into a number of dark corners and thus help establish the underlying truth about risks associated with the Dam.

As David Sarkisian noted, the DWR has only, at best, taken the first steps in developing inundation plans for releases from the Oroville Dam in excess of 150,000 cfs. Unless the management of the reservoir changes, so that downstream safety is given precedence over water supply, such high releases are inevitable in future.

The inundation map for Oroville shown in David Sarkisian's presentation could not have been meant to represent the effect of releases of 225,000cfs from the dam, as appeared to be the case. The inundation shown seemed to be equivalent to little more than the floods in 1985 and 1997/8 when releases were reported as being in the 160,000-180,000cfs range, although reported numbers are not necessarily accurate. At 225,000 cfs, it is difficult to believe that Oroville City would not be under 20 ft of water unless the levees are raised.

I tried to ask a follow up to my question as to the reason for FERC issuing, year after year, one-year unconditional operating licenses to the DWR, but the system did not allow this. Would it not encourage constructive dialogue to allow any member of the public 3 minutes to ask a question and follow ups rather than restrict comments and questions to one 3 minute period?

The answer given to my question, that FERC has its own procedures, was superficial. FERC has long made its requirements clear to DWR. For instance, in recent letters to the DWR questioning the CNA process and the methodology behind the DWR's plans, such as those for fixing the decrepit spillway head gates. DWR has not satisfied these requirements. In addition, the issues resulting from both the problematic 2005 Settlement Agreement and the inappropriate Alternative Licensing Process have not been addressed. Among other things, such unresolved issues have resulted in Butte County intervening in the licensing process and the FRRA submitting an intervention after the spillway incident which was denied on the basis that the deadline for interventions was some 10 years ago.

So, it is the DWR's inaction that is holding up the relicensing process. My follow up question is: **Will the DWR provide the CAC with a list of their understanding of the outstanding issues on which FERC's refusal to issue a long-term license are based?**

The continued issuing of one-year licenses without conditions may suit the DWR, which can then ignore the requirements of obtaining a license and the State Water Contractors, who can avoid their obligations to maintain the Dam properly, but it makes a farce of regulation. As long as the Dam continues to be operated on the basis of a one-year unconditional license, it cannot be expected that those whose lives and livelihoods are regularly threatened by uncontrolled releases will trust the Dam operator.

Dr. Storesund made several recommendations relating to maintenance in his report to the CAC a year ago, among them conducting design assumption audits and implementing life-cycle based management. These were consistent with the recommendations of the Independent Forensic Team. If the DWR were to include procedures such as these in their approach to maintenance, they would go some way towards addressing the concerns of FERC. Unfortunately, apart from the final endorsement of the High Level release study after a year of procrastination, the CAC has not dealt with Dr. Storesund's report or its recommendations.

The April 22nd Technical Workshop is an encouraging step and may address Dam maintenance which is critical to flood control. It is important that the agenda and operation are not tightly controlled by the DWR as is the case with ORAC, the FERC mandated Community/DWR Committee that tries to deal with Recreation issues. In the documents issued prior to the CAC meeting last week, the brief for the Stakeholders Workshop included Dam facilities annual maintenance and asset management. If the workshop process is to be effective, these matters should be included in its scope.

The principal objective of the Feather River Recovery Alliance is to assist in the establishment of trust in the DWR. I finally believe that progress is being made towards this objective.

Respectfully,

Robert Bateman,  
Secretary of the Feather River Recovery Alliance

**From:** Vogel, Nancy@CNRA <Nancy.Vogel@resources.ca.gov>

**Sent on:** Wednesday, April 20, 2022 5:35:52 PM

**To:** Robert Bateman <groberttbateman@gmail.com>; Crowfoot, Wade@CNRA <Wade.Crowfoot@resources.ca.gov>

**CC:** Connelly, Bill <BConnelly@buttecounty.net>; Genoa Widener <notjustaspillway@yahoo.com>; jim.nielson@sen.ca.gov; Olmstead, Rob <rob.olmstead@sen.ca.gov>; Richard Thompson <iamcynic1@gmail.com>; Erik Johansen <Erik.Johansen@prezero.us>; Nemeth, Karla@DWR <Karla.Nemeth@water.ca.gov>

**Subject:** RE: Oroville Dam Citizens Advisory Committee Meeting March 25 2022

Hi, Mr. Bateman –

Thank you for your continued involvement in the Oroville Citizen's Advisory Commission. We hope that the OCAC helps government officials and citizens to develop a common understanding around critically important issues. To further this common understanding, I'm responding on behalf of the Secretary and DWR, and I'd like to clarify several important points within your e-mail.

First, safety is not negotiated in a FERC relicensing proceeding. The safety responsibilities of a dam owner, as required not only by FERC but also by the State's Division of Safety of Dams and industry best practice, do not change from license to license and remain in effect regardless of the status of any particular relicensing proceeding. The safety requirements continue within FERC's annual renewals of the current Oroville license and will continue with a new license. Importantly, these requirements are modified by FERC as needed without waiting for a relicensing proceeding to start or finish.

Second, the Natural Resources Agency wants FERC to issue the new license. DWR wants FERC to issue the new license and has written to FERC asking them to do so. In response to your specific question -- DWR is not aware of any remaining actions by DWR required by FERC for the license to be issued. I'll note that the pace of issuing new licenses is an expressed area of concern by dam operators across the nation.

I hope these clarifications are useful and I suggest you join DWR in asking FERC to issue the new license. The community and DWR have waited long enough.

Also, I hope you can join the OCAC-sponsored technical workshop this Friday on flood safety issues.

Sincerely,

Nancy Vogel

**Nancy Vogel**

Deputy Secretary for Water

California Natural Resources Agency

c: 916-296-2311

**From:** Robert Bateman <groberttbateman@gmail.com>  
**Sent on:** Friday, April 29, 2022 6:58:57 PM  
**To:** Nick Saffold <nsaffold@kearnswest.com>  
**CC:** Richard Thompson <iamcynic1@gmail.com>; Connelly, Bill <bconnelly@buttecounty.net>; Genoa Widener <notjustaspillway@yahoo.com>; Erik Johansen <Erik.Johansen@prezero.us>; Rune Storesund <rune@storesundconsulting.com>  
**Subject:** OCAC Follow up from workshop questions

Hello Nick,

The workshop was informative and a good step forward in providing information to help us all understand the issues relating to the Dam, river and the relevant environmental factors. Thank you for facilitating it.

During the workshop, I asked several questions to which, apart from the one about opening up the levees at the Oroville Wildlife Area, the answers needed elaboration. This may well have been because I did not myself clear or that the information is not readily available and/or complicated. The questions are relevant to our understanding of the information we are given by the DWR and thus to establishing trust in the DWR. So, I am putting them in writing and hope that the answers can be clarified.

1. How are the inflows and outflows at the Dam measured? As I understood the answer it was that estimates are made at several points and that these had been carefully checked in 2017 when the flow was reported as 100,000 cfs and found to be accurate. Would it be possible to provide information about where measurements or estimates are made, what instruments are used and what is the level of accuracy ? There are several numbers that have been reported for the maximum releases at the Dam during the 1997/8 flood ranging from 160,000cfs to 180,000cfs. It may be thought that we are being pedantic to ask for these details but court proceedings covering previous floods have shown that some estimates were initially recorded in pencil and then altered. Transparency is necessary for trust.
2. Why did the hypothetical map, shown at the March CAC meeting, of flooding around Oroville with a flow of 225,000 cfs show floods covering about the same area as was covered in the 1997/8 actual flood when the reported outflow from the Dam was reported as 160,000cfs? The answer, as I understood it, implied that the maps shown at the CAC meeting were illustrative rather than based on detailed studies. Is this correct? If so, the

- study of the impact of high releases proposed by Dr. Storesund, with our strong support, is absolutely necessary. If there was a scientific basis for the flood map shown at the CAC meeting, is this data available?
3. What outflows from the Dam are used to assess the adequacy of the levees, in Oroville and elsewhere? From all I heard at both the March and April meetings, this is 150,000cfs. Is this correct? I understand that this was the maximum flow used in the original design. Climate change and the aging dam suggest that the appropriate maximum flow is likely to have increased. What steps are being taken to address this point? Apparently, the ArkStorm 2 study group which would provide critical data for forecasting likely rain and snow falls in future has not secured adequate funding. Is the DWR considering supporting this study?
  4. In the workshop discussions, climate change was the focus for forecasting future maximum outflows from the Dam. In the past, these have been affected by failures in physical parts of the Dam due to inadequate maintenance or, as Ron Stork pointed out, poor original design and construction. As the Dam ages, the likelihood of such failures grows. The answer given that the DWR was satisfied with the present state of the Dam was not convincing, given the spillway failure which was totally unexpected. The robustness of the Dam was the subject of the Comprehensive Needs Assessment carried out by the DWR after the spillway incident. Despite the limitations of the CNA process, as pointed out by Dr. Storesund and members of the Ad Hoc Committee, the DWR is using the CNA conclusions to estimate risks, plan maintenance and improvements. Can any future workshop on flood control include an open and frank discussion of the adequacy of the CNA process?

While the workshop was really helpful, Matt Mentinck's suggestion that workshops should encourage dialogue on particular points so that there is clarity and any areas of agreement and uncertainty are understood would seem to make sense.

Robert  
530 370 3347

**From:** Robert Bateman <groberttbateman@gmail.com>  
**Sent:** Tuesday, May 3, 2022 7:01 AM  
**To:** Vogel, Nancy@CNRA <Nancy.Vogel@resources.ca.gov>  
**Cc:** Crowfoot, Wade@CNRA <Wade.Crowfoot@resources.ca.gov>; Connelly, Bill <BConnelly@buttecounty.net>; Genoa Widener <notjustaspillway@yahoo.com>; Olmstead, Rob <rob.olmstead@sen.ca.gov>; Richard Thompson <iamcynic1@gmail.com>; Erik Johansen <Erik.Johansen@prezero.us>; Nemeth, Karla@DWR <Karla.Nemeth@water.ca.gov>; jim.nielsen@sen.ca.gov; james.gallagher@asm.ca.gov  
**Subject:** Re: Oroville Dam Citizens Advisory Committee Meeting March 25 2022

Good morning Nancy,

We appreciate your thoughtful reply to our comments following the March OCAC meeting. The OCAC meetings are doing a lot to improve understanding of the issues with the Dam. Since the prime purpose of the Feather River Recovery Alliance (FRRA) is to make sure that the DWR is trusted by the local community, we fully support the OCAC and do our best to contribute constructively.

To address your points, we understand the safety is not specifically involved in relicensing and the DOSOD is the prime regulator of risks. However, FERC has certain requirements for licensing dams and should not issue licenses or relicense dams that do not meet these requirements. Our contention is that the DWR has not satisfied several of these requirements. The FRRA has documented this in filings with FERC. One of these filings about the requirement to monitor the impact of levels of water flowing downstream is attached.

With respect to the DOSOD, the fact that it is part of the DWR does not increase our confidence in it as an independent regulator. Unfortunately, the DWR seems to advertise the connection rather than stress the DOSOD independence.

We are disappointed that the Department of Natural Resources and DWR think that it is appropriate for FERC to issue a license at this stage before the issues raised by the spillway incident and the limitations of the decade old Settlement Agreement have been properly addressed.

There are outstanding safety and design issues, including no low-level release, an unfinished emergency spillway, and decrepit spillway head gates. There is talk about resolving these but no plans and little action. FERC has informed the DWR of their dissatisfaction with the plans to upgrade the spillway gates. Also, the DWR does not appear to have adopted some of the more important recommendations of the Independent Forensic Teams Report or the FERC After Action Report.

FERC was deceived, and made a fool of, by the DWR's handling of the petition by an environmental group, including Friends of the River, warning FERC of the inadequacies of the emergency spillway a few years before it eroded during the spillway incident in 2017. The DWR, presumably speaking for the DOSOD, told FERC that this was not a problem despite the fact that the limited capacity of the emergency spillway, which was

basically designed as an overflow, had been known from the time the Dam was built. The DWR has work to do to establish Community trust and it would not be surprising if the distrust were shared by the FERC staff.

FERC also has a requirement, or at least a strong desire, that a Dam project has the support of the host Communities before a long-term license is issued.

Support for the DWR was damaged lastingly by the fact that local citizens and companies received no compensation or recognition for their costs amounting to several millions resulting from the evacuations in 1997/8 and 2017. The 2017 evacuation was the direct result of DWR inadequacies.

Butte County, the main host of Oroville Dam, has not agreed to the 2005 Relicensing Settlement Agreement which was the result of an egregious Alternative Licensing Procedure which alienated many organizations. This followed 50 years during which there was never a serious attempt to complete many of the recreation facilities offered to the Community when the authorities were seeking support for the original dam. Indeed, from the perspective of a resident of Oroville the maneuvers of the DWR continue to limit the sensible, systematic development of recreation.

The FRRRA submission to FERC dated 11/19/2019, repeated in a Protest in Opposition to the Application for a New license dated 9/10 2021, spells out the recreation shortfall in detail. The Oroville Recreation Advisory Committee (ORAC) has withdrawn from the Settlement Agreement despite threats by DWR representatives to sue Board members if they voted to withdraw. Other organizations are considering withdrawal.

This dissatisfaction with the Settlement Agreement is caused primarily by the Recreation Provisions which many believe condemn Oroville to stagnation, quite unlike the outlook spelt out at the time of the original license. Money is of course needed, but the terms of the Settlement Agreement continue to treat local citizens as supplicants with little opportunity to use initiative or react to market forces.

Much as we would like to support the DWR's request for a new license, the proper conditions for a new long-term license have not been met and will not be until:

1. The information necessary to assure the downstream communities that the risks of inundation are minimized, and understood, with reasonable plans made for dealing with the potential impacts. The study proposed by Dr. Storesund is a good step towards satisfying this condition. Full co-operation of the DWR with this study would be evidence that the DWR is now taking a different approach to risk than that which led to the spillway fiasco. A Supplemental Environmental Impact Statement, as proposed by Butte County, and supported by the FRRRA in its Protest of September 2021, would seem necessary unless other appropriate steps are taken.



2. The outdated Settlement Agreement, particularly the provisions for Recreation, has been revisited and renegotiated in good faith. Apart from organizations and individuals who benefit financially from the largesse of the DWR, there are very few who believe that these provisions are fair or will lead to a significant improvement in Oroville's attractiveness for recreation. Maybe the OCAC could play a role in reconciling the differing views on recreation to the benefit of all parties.

These conditions are consistent with the Petition we organized and sent to FERC 'To Hold the DWR Accountable' (Attached) signed in 2017 by 6,500 citizens.

Why should we support a relicensing agreement negotiated over 10 years ago under an irregular procedure? The only reason we have heard is that money, under the sole supervision of the DWR (ORAC would be abolished), would be provided when the new license is issued. This money, though, is significantly less than that promised when the Dam was built. The Community is entitled to it as long as the Dam operates whether a long-term license is issued or not, as the DWR has implicitly accepted by paying a portion of it during the license hiatus.

Sincerely,

Robert Bateman  
Secretary, Feather River Recovery Alliance

**To:** Fellow Oroville Citizen Advisory Commissioners, CNA Ad Hoc & ORAC members  
**Subject:** Formation of OCAC (Oroville Citizens Advisory Commission)

The Yuba-Feather watersheds have a long history of catastrophic floods. Since 1950, five major floods have resulted in 41 deaths, significant property damage, and devastating social and economic impacts. Following the 2017 spillway event, the Independent Forensic Team (IFT) Report, and the Oroville Comprehensive Needs Assessment (CNA) helped inform the legislatures that additional oversight was needed. SB955 (Nielsen) created The Oroville Citizen Advisory Commission, giving downstream Stakeholders the statue authority within the charter to inform decision-making at Oroville Dam.

*“designed to ensure that multiple stakeholder perspectives and interests are informing decision-making at Oroville Dam”.*

*“While the Citizens Advisory Commission is an independent entity and will operate based on its own unique goals and the directions set forth in the law, the commission is not functioning in a vacuum.*

*The Oroville Dam Safety Comprehensive Needs Assessment (CNA) is evaluating options for increasing long-term infrastructural and operational resilience of the Oroville facilities ... The Citizens Advisory Commission will coordinate with these and other advisory bodies, including the Oroville Recreation Advisory Committee (ORAC), as needed to meet its objectives”.*

*“The commission will act as a unified voice from the communities surrounding Oroville Dam to provide public feedback and advice on best practices to the dam operator”*

But for the first three years of this ongoing commission, the citizen commissioners have not been; informing decision-making at Oroville Dam, operating on its own unique goals, coordinating with CNA Ad Hoc Group / ORAC members, or acting as a unified voice.

The preselected agenda topics have been a steady diet of top-down presentations full of general concept or preliminary knowledge that eat up the 2-hour clock, and leave little time for direct questioning, detailed answers, or documented evidence. It is the direct line of questioning that should be the main body of the Advisory meetings.

**Citizen** - an inhabitant of a particular town or city.

**Advisory** - having or exercising power to advise

**Commission** - a group of people who have been formally chosen to discover information about a problem or examine the reasons why the problem exists:  
(Cambridge Dictionary)

To fulfill our legal and moral responsibilities granted within the charter, the Downstream Commissioner Group should:

Organize with Ad Hoc / ORAC members and act as a unified voice from the communities

Format the meetings to emphasize the importance of gathering stakeholders input on upcoming decisions at Oroville Dam. "If we do this, what does that look like at your end?"

Agendas should switch from a top-down DWR narrative to bottom-up direct questioning

Submit in-depth advance questions ahead of the Quarterly meetings to provide DWR adequate time to prepare their documented evidence, that these concerns are being resolved as quickly and efficiently as possible,

Use group messaging to protect individuals from personal consequences, thus freeing all commissioners to initiate those tough questions that DWR has been avoiding.

As a CAC commissioner, CNA Ad Hoc Group or ORAC please join us in the formation of the OCAC Downstream Commissioners Group to restore the safety and prosperity of the Feather River Basin.

We are not trying to turn the OCAC into a burdensome, time consuming process, but just the opposite. Simply spending the time going through the motions of the commission is where time is wasted. Addressing generational downstream concerns openly and honestly is time well spent.

Bill Connelly-Commissioner/CAN Ad Hoc Committee Member/17-year member of ORAC

Robert Bateman-Commissioner

Matt Mentink-CNA Ad Hoc Committee Member

## **Bill Connelly email - Oct 27, 2022**

I have to speak out, the issue of the spillway failure is not in anyway because of historically high flows. Higher flows into the lake historically accrued. The spillway incident happened as it wasn't built right, it wasn't maintained in a way to find out a pending failure, the flood pool wasn't great enough to handle the flows coming in, the emergency spillway was used as an axillary spillway when it was an emergency spillway meant to fail if necessary to save the dam and there was a loss of institutional knowledge on all these matters by DWR. It was never the inflows.

Bill

## Bill Connelly email - Nov 17, 2022

Nancy,

I have been working with Robert Bateman and Matt Mentink. I truly appreciate the great efforts and thoughts put into the Oroville Dam Citizens Advisory Commission including comments on the first tri-annual report. Generally agree with the points both have raised so after reading through this three times. I will comment on an issue raised about recreation.

The May 21, 2021 meeting 7 the problem I raised was the forced removal of the houseboats many of which are owned by people that do not have the means to do this. The question was passed down twice and ended up with Superintendent Teague who stated there will be a reduction of houseboats on the lake. I should of responded this is totally a wrong answer. The answer is to provide more moorings for low water usage. The houseboat removal is a reduction to recreation opportunities for all citizens and an economic hit on the Oroville Lake area. This is not how locals want to be treated. Would it cost yes but that cost needs to be passed on not to locals but to those using the water out of the lake.

Again a great effort in writing this report and I will let all other comments be covered by others.

---

How come it started underlining is beyond me secretary is out so edit at will LOL

Kind Regards

Bill

Bill Connelly  
District 1 Supervisor  
530-538-6834

## Robert Bateman email - Nov 1, 2022

Hi Eva,

It was a pleasure meeting you the other day.

I am in the process of finalizing some comments on the Report. These comments do not fit into the form which you are proposing to use for public comments. The comments are complementary to the my emails which were published in the Appendix to the report. As a Commissioner am I required to comply with the rather restrictive form for public comments?

I did raise the question as to how comments would be treated at the Commission meeting and, as I understood it, was told that comments would be considered for inclusion in the final report. There was no mention of them having to comply to a specific form.

Would it make sense for my comments and those of Matt Mentink, who has also been an active participant in the Commission proceedings, to be combined and possibly endorsed by the other Commissioners if that is possible?

Thank you,

Robert

# **Robert Bateman - Final Comments on 3 Year Report**

## **Comments on the Oroville Dam Citizens Advisory Commission Report**

(November 15<sup>th</sup>, 2022)

Robert Bateman

### **1. Introduction**

One of prime purposes of a Commission, particularly one like the OCAC which is established in response to a dangerous incident, such as the spillway collapse and the unexpected erosion of the emergency spillway, is to explore and bring to light the fundamental reasons that make such a failure possible.

The 3 year Report provides a comprehensive description of the proceedings of the Commission but does not cover adequately the treatment of several more fundamental recommendations and issues which were 'delved into' but not translated into advice on which the DWR could be expected either to act upon or provide reasons for setting aside.

This meant that many of the basic reasons behind weaknesses and failures in the Dam and its operation were touched on but not explored or openly acknowledged. The comments here, which are based on 5 years reading about the Dam and on the information available from the CNA and OCAC meetings, are intended to point out the superficiality of the handling of several important topics. The suggestions and recommendations, if adopted, would provide Commissioners with information necessary for them to have a better understanding of the strengths and weaknesses in the management of the Dam and to offer constructive advice.

The presentation given by Dr. Rune Storesund, Director of the UC Berkeley Center for Catastrophic Risk Management and a CNA Ad Hoc Committee member, on 'Community Safety Following Comprehensive Study' was the only paper covering the safety (risks), operation and infrastructure of the Dam which was not given by someone from the DWR or representing an organization with either direct or indirect relationships with the DWR. Therefore, the recommendations that Dr. Storesund made deserved to be discussed and the DWR asked for detailed responses. This did not happen.

### **2. Summary of Suggestions and Recommendations**

- The Commission should continue to emphasize the need for comprehensive, accurate inundation maps, particularly for high level releases from the Dam. These should be commissioned immediately and circulated as soon as possible. This may take at least a year.
- The limitations of the Comprehensive Needs Assessment (CNA) should be acknowledged and the DWR be asked to explain whether risk assessment methods such as design assumption audits and implementing life cycle analysis have been adopted and if not, why not.

- The conflicts and incentives that result from the original agreements governing the Dam should be openly acknowledged and steps taken to monitor and minimize any dangerous consequences.
- It should be realized that the State Water Contractors (SWC) are important participants in financing the Dam maintenance and renovation and thus in its operation. The SWC should be included in the Commission meetings so that they are available to explain their decisions and policies, as is the DWR.
- The Commission should have access to the information on which the State Water Project Finance Committee develops maintenance budgets and policies for maintenance and renovation as they affect Oroville Dam.
- The Commission should have the opportunity of reviewing the DWR's responses to the Independent Forensic Team's recommendations.
- The Commission should continue to encourage developments which allow Commissioners and CNA Committee Members to play a greater role in the Commission proceedings.

### **3. Inundation Maps**

One recommendation of Dr. Storesund's that was acted on, although so far to a limited extent, was his recognition that the Comprehensive Needs Assessment (CNA) had not addressed the likely impact of high releases from the Dam particularly in the 180,000 cfs to 200,000cfs range. In 1997, the DWR's Chief Hydrologist forecast that the lake would fill and spill perhaps 250,000 cfs within 24 hours but the rain stopped sooner than he expected. Dr. Storesund offered to prepare a study of the impact of high releases. This was presented to DWR and submitted for a government grant. There was no opportunity for the Commission to endorse this study formally and the DWR, while supporting it in principle did not put much weight behind their support, unlike the local community which, through the Feather River Recovery Alliance, offered the requested financial community support.

The Commission has taken up the question of inundation maps as is noted in the Report. It has become clear that the inundation maps shown to the Commission were based on assumptions which resulted in them being quite unrealistic, certainly as far as those for the river around Oroville are concerned. The fact that, apparently, these were maps submitted to FERC, after the spillway incident, to illustrate the impact if the emergency spillway were to be undermined, does not give confidence that the DWR/Department of Safety of Dams could, at least in 2018, be trusted to give FERC accurate information necessary for FERC to act as an informed regulator. The information given by the DWR to FERC before the spillway incident was woefully misleading.

It has also become clear that there are a number of more realistic inundation maps prepared by other government agencies, such as FEMA, including ones for releases of 175,000cfs and 300,000cfs. The ones we have been shown were created at least 20 years ago and did not reflect improvements in the levees. But, we still do not know whether up to date accurate



inundation maps for releases up to at least 200,000cfs will be developed even though I asked a direct question at the October Commission meeting.

It is essential for physical protection of vital infrastructure, for evacuation planning, and for providing data for the cost/benefit of improvements that such maps be available. It was encouraging that the Chairman of the Commission requested that inundation maps remain on the agenda for the Commission's future meetings. There is a lot that still needs to be done in this area before we know how safe we are and to provide accurate information to those responsible for minimizing damage when releases are above 150,000cfs.

#### **4. Governance, Maintenance and the SWC**

Dr. Storesund also recommended that the DWR adopt maintenance procedures that are standard in well run Dams. These include performing design assumption audits and implementing life cycle based management. The Commission has not heard whether the DWR has considered adopting these straightforward risk management tools which were sadly lacking prior to the spillway incident. If they have not, what is the reason?

At present, at least from the viewpoint of an outside observer, the maintenance budgeting procedure seems to be that the SWP Project Finance Committee (PFC) develops a maintenance budget, perhaps based on the volume of water that is, or is forecast to be, available and the DWR then attempts to match the requirements to this budget. The SWC and DWR share control of the PFC but the powerful SWC holds the whip handle, not unreasonably since the SWC covers the cost of maintaining the Dam in return for getting free water. It is, however, inappropriate for customers with little or no accountability to be in control of the maintenance of a facility that involves significant risks to downstream communities.

This situation arose from the agreements made at the time the Dam was built which govern the financing of the Dam. The assumptions behind these agreements turned out to be unrealistic. The SWC does not receive the agreed volume of water nor did the Oroville Community receive the recreation enhancements that were promised. Mutual distrust is understandable and will remain until the situation is discussed and understood. The Commission has not broached this subject although it has influenced presentations.

Dangerous incentives result from the original governance. First, the DWR is under continual pressure to minimize maintenance costs which seem only to be justified as far as the SWC is concerned when they are required by regulation. This does not encourage a relationship between the DWR and FERC that puts safety first. Second, if lack of proper maintenance and improvements cause a crisis, as they did with the spillway incident, governments rather than the SWC will cover a large part of the costs which are a multiple of the cost of proper planned maintenance. Third, the problem of financing maintenance contributes to the reluctance of the DWR to discuss openly, and possibly to investigate closely, issues where the problems might be expensive to fix such as the need for a low-level release, the green spots and gates. Fourth, because of the strength and control of the SWC coupled with its reluctance to finance major

projects, the DWR is discouraged from adopting methods for assessing maintenance that are comprehensive and independent or from seeking genuinely independent advice from Dam professionals.

The DWR has stated that they have addressed many of the recommendations of the Independent Forensic Team, but as Dr. Storesund pointed out in his presentation there is little evidence that some of the more important ones, particularly those relating to culture which results from the governance, have been adopted. The Commission has not been given details of the DWR's response. A review of the DWR's response to the important IFT recommendations would build trust in the DWR.

The approaches recommended by Dr. Storesund for assessing maintenance needs would likely indicate that there is a substantial backlog in maintenance. Even if this is not the case, they would provide a scientific basis for forecasting what is needed to maintain a safe dam.

Given this background, it is not surprising that the DWR adopted the flawed CNA process after the spillway incident. The CNA conclusions are frequently mentioned in the Commission hearings with the assumption that these are actionable. FERC generally does not consider them to be. Quite rightly, because they are based on the collective opinions of DWR employees reviewed by an independent panel (IRB), who were presumably paid by the DWR. Many of the recommendations of the CNA Ad Hoc Citizens Committee that was a precursor of the Commission were ignored. The CNA was a valuable survey by those best in a position to assess the probable risks, but it was not comprehensive, as noted by the IRB, nor independent, as misleadingly claimed by the DWR. Until the conclusions are supported by scientific verifiable data, which could be developed using the methods proposed by Dr. Storesund, they are not actionable. The Commission has implicitly accepted the CNA conclusions as sound. This is doubtful. The Commission should be informed about the limitations of these conclusions. The Commission did not have the opportunity to question the CNA process adequately.

The Commission, which represents downstream communities and thus has safety as its main priority, should have access to the information on which the PFC makes asset management plans and on the decision-making process relating to maintenance and renovation. This is consistent with Section G2 in the Commission Charter. At present, the Commission just receives information on the DWR plans without any insight into the background or what alternatives were considered.

The involvement of the SWC in the Commission, which is not mentioned in the report, was brought up at an early Commission meeting. A representative from the SWC gave a presentation and a SWC representative sometimes attends the meeting but has no formal role. Consideration should be given to asking a representative of the SWC to be present at Commission meetings to answer questions about their decisions and decision-making process. The SWC involvement in developing the budget for maintenance of the Dam suggest that they should play a formal, public role in the Commissions proceedings along with the community and the DWR.

It is not likely that the governance of the Dam will be changed because of anything the Commission advises but the Commission can make sure the basic governance issues are recognized and keep a spotlight on risky DWR policies and actions that are an unforeseen consequence of the flaws in the governance. Transparency is essential for trust.

## **5. Steering Committee**

The Commission is showing signs of becoming a needed, and previously missing, voice advocating for the minimization of risk to balance the other powerful interests. Recently, several of the Commissioners and CNA Ad Hoc Committee members have formed what we, with some presumption, called the OCAC Steering Committee. If this becomes a way for all Commissioners to get topics of interest to the local communities onto the Commission agenda, thus providing an opportunity for Commissioners to formulate well informed advice to the DWR, and allows for intelligent discussion of the DWR's responses, trust in the DWR will grow. Decisions relating to the Dam will have the benefit of a community perspective and the probability of further dangerous surprises resulting from the Dam will be reduced.

## **6. Conclusion**

The Legislature was wise to adopt the initiative of Assembly Member Gallagher and Senator Nielsen to establish an independent advisory commission within the Department of Natural Resources. What has been missing is Commissioners playing their role by participating fully in Commission's process.

We have come a long way from the Legislative Hearing on the Dam and the spillway incident in early 2018, co-chaired by Assembly Member Gallagher, at which the then Secretary of Natural Resources and the Director of the DWR left the room as Professor Bob Bea started to comment on the fundamental problems with the Dam about which he published over 10 papers supported by detailed analysis. Professor Bea concluded that the governance of the Dam was dysfunctional and that as a result it had been operated incompetently - his actual words were harsher. The OCAC provides a forum for the Director of the DWR and the Secretary of the Department of Natural Resources to listen to constructive criticism and for the downstream communities to bring attention to their concerns. The Commission is already throwing light on dark corners and has the potential to do much more. It will be interesting to look back in 3 years' time and learn whether this potential has been realized.

## Matt Mentink email - Nov 17, 2022

Nancy,

Thanks for the flexibility in how comments to the 3-yr report can be submitted. I don't see these comments as how the DWR draft should be edited, but used as a supplement to their report. Stakeholder comments could simply be included in the report as a closing chapter, or at the very least, a permanent appendix to the report, a tool for continuous improvement.

As we discussed following the October meeting, stakeholders are very concerned that DWR is continuing their narrative that no additional Comprehensive Needs Assessment (CNA) safety projects are needed. “ It may be that no further risk-reduction projects beyond the Interim Implementation Project and Other Interim Measures will be warranted for the near future, or even foreseeable future, particularly if there are major safety or operational needs elsewhere in the SWP. This is because the risks in this study for the Oroville facilities were not found to be unacceptable ” (CNA Final Report) In other words, dam safety only needs to be so-called “tolerable” or only the lowest the regulators will allow.

The OCAC Charter references the need for the OCAC commissioners to coordinate with the CNA Ad Hoc members to further their objectives, and continuously follow up on the recommended safety projects within the CNA alternatives plans, and advocate for “As Low As Reasonably Possible (ALARP) public safety risks. “ *the Oroville Dam Safety Comprehensive Needs Assessment (CNA) is evaluating options for increasing long-term infrastructural and operational resilience of the Oroville facilities. Two organizing bodies participate and offer feedback in that process: Independent Review Board (IRB) and a community-based Ad*

*Hoc Group (AHG) ..... The Citizens Advisory Commission will coordinate with these and other advisory bodies, including the Oroville Recreation Advisory Committee (ORAC), as needed to meet its objectives. (OCAC Charter)*

Thanks for your contributions to the commission and equitable results for all parties involved

Matt Mentink CNA Ad Hoc Member

## **Matt Mentink - 3 Year Report to State Legislature**

### **Oroville Citizen Advisory Commission 3-Yr Report to State Legislatures**

Comments on the Commission Performance over the first three years

The Oroville Citizen Advisory Commission (OCAC) acting within the Nature Resource Agency, has provided the commissioners a good fountain of knowledge to better understand the more complex discussions yet to come. Many of the public's questions have been answered to a satisfactory level and DWR should be recognized for this preliminary knowledge and their time invested in the commission. The OCAC three year report clearly reflects these basic accomplishments.

Yet in the early stages of this ongoing commission there were many missed opportunities, and that should also be included in the report. Most notably was the downstream commissioners inability to fully exercise their advisory authority granted them in the Charter.

**Citizen** - an inhabitant of a particular town or city.

**Advisory** - having or exercising power to advise

**Commission** - a group of people who have been formally chosen to discover information about a problem or examine the reasons why the problem exists:

For the citizens living in the City of Oroville and the Feather River Basin, the OCAC objectives are to “ discover information about a problem and examine the reasons why the problem exists”. They want to see the documenting evidence that the issues plaguing the 50 year Oroville Dam, 50 year old Water Control Manual, Fisheries/Recreation and local economies are being addressed timely, and its progress trackable.

It appears that DWR's objective and narrative is geared more at “see what we have done, everything is fine”. The meeting agenda has been a steady diet of top-down presentations full of general concept or preliminary knowledge that eat up the 2-hour clock, and leave little time for direct questioning, detailed answers, or documented evidence.

It is the direct line of Citizen questioning that should be the main body of the Advisory meetings. Advance questions would provide DWR adequate time to prepare their response and gather documents for commissioner's review. They should create tracking logs or flow charts so that the Oroville Comprehensive Needs Assessment (CNA) safety projects can be identified, commissioner verified and scheduled as quickly as possible.

The Independent Forensic Team Report documented the past history of DWR's organizational culture, and that helped to convince the legislature to adopt SB 955 (Nielsen). Therefore when the downstream stakeholders pursue an uncomfortable line of questioning, they are not being disrespectful, but aware of the past DWR decisions that have plagued their communities. The Oroville Citizens Advisory Commissioners simply need to conduct their legal and moral responsibilities as defined within the OCAC Charter.

By structuring the OCAC meetings into an efficient, transparent and respectful process, we can bring home a unified voice of DWR trust, and partnerships that will be needed as we move in FIRO operations and the next 50 years of operations at Oroville dam.

## Examples of Missed Informational Opportunities

- 1) Oroville Dam's Design Comparisons to Current Dam Industry Standards**

What is not in compliance with current standards at the 50-yr old Oroville Dam?  
(example - inability to timely evacuate reservoir water during an emergency event)  
What was the original design life-expectancy for the different facility components  
What mitigating factors are being done to compensate for the various lack of compliances?
- 2) Probable Maximum Flood (PMF) calculations -**

Updated as the science improves and used to size spillway capacity.  
FERC questions current calculations and it's infringement on the freeboard space  
New science on ARkStorm could increase future calculations to overtop the dam
- 3) Regulatory (FERC, DSOD) Recommendations and Tracking Log**

Citizen's concern for the length of time it takes to complete regulatory requests.  
Tracking Log should include; date requested, objective, annual status updates
- 4) Oroville Dam's Comprehensive Needs Assessment (CNA) Risk Analysis Results**

Risk Metrics Discrepancies between between the independent L2RA and DWR's  
Review studies and Stakeholder perspective prior to the CNA safety plan selection.

  - 1) Restore Spillways Design Capacity to Pass the Probable Maximum Flood
  - 2) Support Development of Alternative Reservoir Outflow Enhancements
  - 3) Flood ControlOutlet (FCO) Enhanced Reliability
  - 4) Alternatives Evaluation for Low-Level Outlet
  - 5) Oroville Dam Embankment Reliability and Improvements
  - 6) Instrumentation and Monitoring for the Oroville Dam Complex
- 5) Asset Management's Risk Metrics Scheduling Priorities and Acceptable Risks**

The risk metric values assigned to both safety and delivery projects  
Prioritizes the scheduling of projects within the whole SWP based on risk values  
Difference between tolerable risks and "As Low As Possible" (ALAP) risk goals
- 6) Budgeting, SWC Finance and Adequate Water Delivery**

Financial agreements within the current SWC's contract extensions  
Other methods for financing facility projects; SWC 50yr bonds, State bonds, annual budget  
Obtaining adequate water deliveries needed to justify capital expenditures at Oroville Dam
- 7) Lessons Learned by reverse engineering or fault tree analysis of the 1986 /1997 flood events**

Lacks 260,000 acre feet ( 28%) of additional flood pool storage at Marysville Reservoir  
Outdated hydrology analysis, lacks flood pool adjustment for accurate rain on snow inflows  
Levee failures during rapid down-ramping of uncontrolled flows on the saturated levees
- 8) Yuba-Feather FIRO Viability Assessment - Section 10 Recommendations**

How FIRO operations can create the functional equivalent of 260,000 AF of storage?  
How skillful are current weather and water forecasts to establish baselines for;  
Atmospheric rivers, precipitation, snow-level, surface air temperature, steam inflow ...
- 9) Inundation Maps and Downstream Consequences Report (Ford)**

Commissioners review and verification of direct and indirect effects
- 10) Independent Forensic Team Report Recommendations**

Owners of Dam Safety Program (ODSP),  
Organizational Behavior

## **Charter Governance - Oroville Dam Citizen Advisory Commission**

### Excerpts and justification for Commissioner's Recommendations

#### **B. Background**

- **The current effort is intended to be cooperative in nature and designed to ensure that multiple stakeholder perspectives and interests are informing decision-making at Oroville Dam.**

Currently the commissioners have not been brought into, or asked for advice on any decision-making issues. At best, they are being informed after the fact, instead of helping to inform the decisions

**(R1)** - OCAC meeting format should be structured to emphasize the importance of gathering stakeholder input on upcoming decisions at Oroville Dam. "If we do this, what does that look like at your end? ". Stakeholder's perspective includes the methodology and analysis used by DWR attempting to justify their "no safety project needed" positions. Thus the documented evidence and studies for these DWR decisions should be presented to commissioners for review.

**The Oroville Dam Safety Comprehensive Needs Assessment (CNA) is evaluating options for increasing long-term infrastructural and operational resilience of the Oroville facilities. Two organizing bodies participate and offer feedback in that process: Independent Review Board (IRB) and a community-based Ad Hoc Group (AHG)**

**The Citizens Advisory Commission will coordinate with these and other advisory bodies, including the Oroville Recreation Advisory Committee (ORAC), as needed to meet its objectives.**

The current interpretation of the charter treats the Comprehensive Needs Assessment Ad Hoc members and the Oroville Recreation Advisory Committee as simple citizen and limit their involvement to 3 minutes, during the Public Comment period, when time permits

**(R2)** - Coordination with the Ad Hoc Group (AHG), and Oroville Recreation Advisory Committee (ORAC) adds years of knowledge and expertise to the commission. These individuals should help inform commissioners of upcoming decisions, provide bottom-up meeting presentations, and advise on organization and commission procedures. They should not be reduced to 3 minutes of public comment time but have the same ability to interject as the commissioners.

#### **C. Funding**

**The commission is being run through the California Natural Resources Agency. The commission may, as directed by the legislation, receive in-kind assistance or funds, or both, from public and private sources. These funds are available to the commission upon appropriation by the Legislature.**

Except for one citizen commissioner, all others are elected officials, sitting on numerous other local committees, having other time consuming commitments, with minimal staff at their disposal.

**(R3)** - Strong consideration should be given to seek funding for a paid assistant for the purpose of organizing the commissioners, communicating with the public preparing bottom-up presentations, auditing facilitator's meeting summaries, tracking logs and assisting in the 3-year reports.

#### **D. Commission Membership**

**Members representing city or county perspectives will be selected to reflect the interests of the communities they represent.**

**(R4)** - The charter does not require representatives to be elected officials, but simply appointed by. Thus the designated commissioner could be the best qualified, having the most time and knowledge required to be an active and contributing member..

Currently only one non- elected Citizen sits on the twenty member Citizen commission.

#### **F. Commission and Commissioner Responsibilities**

**1) Each commissioner serves as a representative to the public for the purposes of providing public input to and receiving information from the dam operator.**

**(R5)** - Suggest setting up a formal line of communication between the general public and the commissioners group, similar to the unique Email established by the CNA Ad Hoc Group

**2) The commission will act as a unified voice from the communities surrounding Oroville Dam to provide public feedback and advice on best practices to the dam operator.**

Advantages to group messaging is consistency of outbound messages to the public and media. And when there is an uncomfortable line of questioning to DWR, it would be a united group question, and not coming from a single individual.

**(R6)** - To speak as an unified voice requires downstream stakeholders to organize and a paid or volunteer assistant for the downstream steering committee should help coordinate this effort.

**3) The commission will publish a report at least once every three years that provides the following:**

DWR with its paid staffers assumed the lead role to draft the very report used to measure the success and failures of the DWR lead commission's first three years.

The commissioner subcommittee tasked to audit and amend the DWR's report currently comprises Supervisor Connelly, Lieutenant Collins, and the office of Senator Nielsen which received the draft report only after it was written.



**(R7)** - There needs to be an equitable and just process for inserting amendments from commissioners and citizens into the final report. This should be a separate Chapter within the report itself, therefore remaining part of the OCAC Commission's permanent record.

**b) A register of communications received from State Agencies and other parties to the commission**

Dismissive or evasive responses to uncomfortable lines of questioning usually indicates areas where commissioners need to step in and perform deeper discovery and follow up.

**(R8)** - Including a register of topics and questions requested but not properly addressed.

**c) Notice of upcoming plans made by State Agencies for the dam and dam complex;**

It was recommended at several meetings that a Regulatory Tracking Log be created to inform the commission of the recommendations made by Oroville's oversight agencies

**(R9)** - The Tracking Log should include recommendations made by both state and federal regulators, such as FERC, USACE, DSOD and 5 year capitalization plan, and should include: regulator, date first recommended, description & reason, and annual status updates.

**4) The commission may reasonably request, from the Department of Water Resources Division of Flood Management; visits, briefings, or information regarding Feather River levees and levee-related flood risk.**

Various studies requested by commissioners have only been mentioned as existing but not provided This includes; Inundation Maps, Downstream Consequence (Ford), Post 2017 Feather River sedimentation measurements, levee conditions/ vulnerabilities and current channel capacity ratings.

**(R10)** - Studies requested by commissioners should be provided for review

**5) The commission is advisory only and has no authority to make regulations or rules to bind operations at the dam.**

**(R11)** - But Commissioners should be making the rules for the operation and transparency of the Oroville Citizen Advisory Commission meetings

**6) The commission shall have volunteers responsible for reviewing and approving commission meeting summaries.**

**(R12)** - Given there has been noticeable omissions and deletions in the meetings summaries, there should be a more robust review process. This might include citizen volunteers or a paid commissioner assistant.

**G.2) Provide all information reasonably requested by the commission regarding the construction, rehabilitation or reconstruction, operation, maintenance, and management of the dam, including, but not limited to, and as permitted by law, any of the following:**

## **b) Scheduled or anticipated repairs, restoration, or replacement of facilities or major equipment**

Of particular concerns to downstream citizens is the perception of long delays and inequitable scheduling between safety and water delivery projects. Asset Management has assigned risk values and created a tracking log to prioritize the scheduling for both types of projects. It has only been talked about in concept form and never shared publicly when requested, therefore skepticism remains.

**(R13)** - The commission should be able to review the Asset Management Risk Metric report that's used to prioritize the scheduling of delivery versus safety projects

## **c) Changes in flood management rules;**

The 50 year old Water Control Manual is being updated to a Forecast Informed Reservoir Operation (FIRO) that relies heavily on human skill and decision making. As of yet the commission has been kept out of this process.

Several requests were made for a reverse engineering kind of tool to identify the 20 some points of human intervention that contributed to the 1986 and 1997 floods. These "Lessons Learned" are at the very heart of the commission's objectives. As of yet DWR is being very evasive, even dismissive to this request.

**(R14)** - "Lessons Learned" from the 1986 and 1997 floods, should be identified and organized into a checklist during the development of the new Water Control Manual and CNA plan selection

**(R15)** - The recommendations within Section 10 of the Yuba-Feather FIRO Viability Work Plan, and its suggested metric tracking tools, for evaluating human forecasting skills be shared with the commission.

## **H.3 - Meeting summaries will be posted online for public access and will include:**

### **The meeting coordinator will track action items identified at each meeting**

All recommended actions, are a legitimate part of the meeting record and should not simply disappear from existence.

**(R16)** - The facilitator needs to accurately capture the public recommendations and ensure they become part of the Action Item Tracking Log. If it is determined a recommendation is not appropriate, that ruling should be noted in the status column of the log, and not simply omitted from the public record.

### **Questions and comments put forth by the commission**

**(R17)** - Capturing all questions accurately, tracking responses and creating the format within the summary requires continual improvement.

**(R18)** - With limited meeting time for public questions, the ability to submit followup questions within 7 days after the meeting should continue to be a function of the facilitator.

### **Responses to commission questions from previous meetings**

**(R19)** - Care should be taken by the Facilitator to accurately capture all questions, and ensure responses are satisfactorily answered . Difficult questions to DWR should not go unanswered or disappear from the meeting summary. Instead they should be recorded with post meeting questions, and answered at a later time by a subject matter expert.

### **Actions and decisions**

**(R20)** - Currently the Actions and decisions are lost within the lengthy summary and not easily found. These important notes could be formatted separately, similar to, or within the Action Item Tracker for quick reference and follow up.

### **Conclusion**

We are not trying to turn the OCAC into a burdensome and time consuming process for either side. It should become a more organized, time efficient and transparent process to address the generational downstream concerns openly and honestly. Only then will we build the trust and the partnerships needed.

Extending the idea of the “Action” Tracking Log to create both Regulatory and FIRO Recommendations Tracking Logs would greatly increase time efficiency. Improving meeting summaries for questions and answers would eliminate redundancy. Organizationing information and creating timeline/ flow charts around the six CNA Tasks would clarify if and when these recommended safety projects would be approved. Downstream stakeholders want to ensure the CNA alternative plan ultimately selected, archives the “As Low As Reasonably Possible” (ALARP) versus so-called “Tolerable” risk levels for the next 50 years of Dam operation.

The 20 recommendations listed above should be part of an action tracker log to monitor the progress and reshape the commission into the efficient and transparent process envisioned in the OCAC Charter. The first 3 year report to the legislators should include this and other tracking logs to demonstrate early accomplishments and monitor our progress into the future.

**Erin Huang email - Oct 21, 2022**

Dear Sir/Madam,

Thank you for publishing the Draft Report- Oroville Dam Citizens Advisory Commission Report, transparent communication, and the efforts to engage the public with the updated Advisory Commission envision.

Attached please see comments in the Comment Form requested. Looking forward to the Final Report and other pertinent updates regarding the Oroville Dam.

Thank you.  
Respectfully,  
Erin

# Erin Huang - Public Comment Form

| FULL NAME:                             |  | Erin Huang  |                     |  |  |
|--|--|---|---------------------|--|--|
| EMAIL:                                 |  | erincai0123@gmail.com   |                     |  |  |
| ORGANIZATION AFFILIATION OR COMMUNITY: |  | Yuba County   |                     |  |  |
| Comment #                              | Page #                                 | Paragraph or Figure #   | Comment: Importance | Comment: Issue   | Comment: Solution  |
| 1                                      | PDF p.26 of 77 (Report footnumber 24)  | Section 8.2 paragraph 5: "Mr. Forbis was asked whether the \$4 million in federal funding for the Oroville and New Bullards Bar Water Control Manual updates was adequate. He explained that it will likely cost more and that it is reasonable to expect the process to be completed within five years if there are no Forecast-Informed Reservoir Operation (FIRO)-related delays." | Major               | It is also important to fund the project with FEMA and/or other federal, regional, as well as local grants with phases. It is not clearly defined how the funding schedule will be implemented/received through out the project life cycle. Lack of funding schedule will pose the project to significant delay risks.   | Define and implement a clear funding schedule. Allocate resources to support funding mechanisms.   |
| 2                                      | PDF p. 31 of 77 (Report footnumber 29) | Meeting 10, March 25, 2022. Paragraph 1   | Major               | There are numerous inundation maps out there. The Dam Breach Inundation Map Web Publisher is a fantastic tool and it was highly appreciated for the development of the interactive platform. FEMA FIRM maps, which most insurance policies are based on, however, did not look identical or include the dam breach information as approved by DSOD/USACE. A lot of the times the FEMA maps were outdated. It is quite confusing that each jurisdiction has its own inundation map when it speaks to which maps the public should follow. | A guideline/standard or comprehensive inundation maps comparison/development. This solution will allow the public with more consistent access to the inundation policies, maps, evacuation strategies and insurance. |