



Project 2100 Lake Oroville (Feather River) Dam

Motion to Intervene
Safety Concerns
California Department of Water Resources
Application for Relicensing

To:

Ms. Kimberly Bose
Secretary, Federal Energy Regulatory Commission
88 First Street NE
Washington, DC 20426



Ms. Kimberley Bose
Secretary, FERC
888, First Street, N.E.,
Washington, DC 20426

November 19th, 2019

**MOTION TO INTERVENE – SAFETY CONCERNS – PROJECT 2100 LAKE OROVILLE (FEATHER RIVER) DAM
CALIFORNIA DEPARTMENT OF WATER RESOURCES (DWR) APPLICATION FOR RELICENSING**

The Feather River Recovery Alliance (FRRA) filed a notice on March 30th, 2019 advising The Federal Regulatory Commission of its intention to intervene in the DWR's Application for Relicensing the Oroville Dam (The Dam).

The FRRA is herewith filing its intervention.

After the failure of the main spillway and the erosion of the emergency spillway in February 2017, six thousand four hundred sixty-nine residents signed the attached petition. This petition was sponsored by the organization that became the FRRA to 'Hold the DWR Accountable'. The petition sought a comprehensive, independent forensic study of the dam. There has not been such a study and, as is explained in the attached document, the steps towards mitigating the risks associated with the Dam have not adequately addressed the problems with the aging dam and management of the reservoir.

The FRRA is supported by the owners of privately held local businesses and local residents. After the spillway incident and the evacuation of 180,000 people, the potentially catastrophic damages which would result from the failure of the Dam are well understood. Our reservations concerning the planning processes and action being taken by the DWR to assess and address the risk of failure are set out in the attached document. The unexpected failure of the main spillway and the lack of awareness of the inadequacy of the emergency spillway, despite the warnings and professional advice, are powerful evidence that a complete reform of the management of the dam is required. The Independent Forensic Team (IFT) Spillway Report and the FERC After Action Panel Report support the need for fundamental reform. The actions taken by the DWR since the incident fall short of this.

The concern for the DWR's approach to safety is shared by other organizations downstream and those whose activities involve the lake, Dam and its surrounds, including the Equestrian Association which has petitioned FERC.

To redress this situation, we are seeking:

- Reopening the licensing process and replacing the Alternative Licensing Process, inappropriately used in 2000, with a formal relicensing process;
- Requiring that the Comprehensive Needs Assessment (CNA) /Part 12 Potential Failure Mode (PFM) Process that is being managed by the DWR is extended to cover reservoir management and all the recommendations in the IFT Report including the weaknesses in the governance of the DWR or, alternatively requiring a comprehensive independent forensic study of the whole Dam system and the river down to the Bay;
- Requiring that, until the Dam studies are completed and the resulting flaws fixed, decisions on lake level planning are subject to the agreement of an independent team of qualified engineers including one appointed by Butte County and the Citizens' Advisory Commission.

- Requiring a surcharge on the water delivered to the State Water Contractors (SWC) to be held in a fund to pay for damages caused by the negligence of the DWR in managing the Dam – in 1985 and 1997 these damages were paid out of the State General Funds.
- Requiring the DWR to provide adequate funding automatically without conditions so that organizations mandated by any Settlement Agreement, such as the ORAC, can employ staff and qualified professional engineers to assess the information provided by the DWR and handle their dealings with the DWR.
- Requiring that minutes of meetings between the DWR and the SWC concerning maintenance of the Dam and reservoir management are published.

The arguments and information supporting these recommendations are set out in the attached documents. Further references are available if required.


If you have any questions or would like further information, please feel free to contact Robert Bateman on notjustaspillway@gmail.com or 530 403 0998. The FRRR mailing address is PO Box 2702, Oroville, CA, 95965

These recommendations will help ensure the safety and reliability promised to the public at the onset of the project in 1957.

Respectfully,


Richard Thompson, President


Genoa Widener, Treasurer


Robert Bateman, Secretary

Directors,
Feather River Recovery Alliance

HOLD DWR ACCOUNTABLE

We, the undersigned, with respect to the Oroville Dam-Project 2100, located in Butte County, CA urge the Federal Energy Commission, to:

- 1) Order for the safety of the public, a comprehensive and totally independent, free from Licensee influence, forensic study of the Project and all its appurtenances, including all auxiliary levees, impounds, power houses as well as CA Department of Water Resources operating and maintenance procedures;**
- 2) Order an opening of the relicensing process to provide just compensation to the local governments and communities that host the Oroville Dam-Project 2100 and provide it with services;**
- 3) Order that recreation facilities be provided on a timely basis that are at least as beneficial as those existing before the spillway debacle with future enhancements guaranteed, especially as regards lower lake level boating, swimming and dam access, and**
- 4) Order DWR to fully underwrite all local outreach efforts of the three downstream County communities that were stigmatized by the Spillway failures and emergency evacuation to help them reverse the negative public impressions the incident created.**

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FEATHER RIVER RECOVERY ALLIANCE (FRRA)

OROVILLE DAM (THE DAM) RISKS – FERC INTERVENTION

(November 2019)

1. BACKGROUND AND SUMMARY

A serious breach of the Dam would result in one of the worst disasters in the history of the United States.

In the past, the Dam has not been operated to minimize the risk of a serious breach. As the Dam ages it becomes more vulnerable in many ways and requires renovation and more maintenance. For decades the maintenance has not been satisfactory. The present way in which maintenance is financed makes it unlikely that there will be the necessary funding for maintenance in future. Failures at the Dam, like the break of the spillway in 2017, tend to reduce the cost of maintenance on those responsible. The DWR has failed to operate the Dam flood control facilities and downstream levee structures in compliance with State and Federally mandated flood control rules and regulations during the 1980, 1986, 1998 and 2017 flood events and probably at other times. Neither of the regulators has acted independently of DWR. The primary regulator of the Dam, the Division of Safety of Dams (DSOD) is part of DWR while FERC has often followed the advice of DWR.

The FERC relicensing process which started in 2000, which was inappropriately handled as an Alternative Licensing Process (ALP), impeded federal fishery agencies from carrying out their prescriptive and authoritative duties and remains disputed by local agencies and ALP participants. The annual license issued by FERC leaves issues with the Dam and its operation unaddressed with planning taking the place of action.

For these fundamental reasons the FRRRA is intervening in the relicensing process. Unless both actions and attitudes by those responsible change, the risk of a serious inundation like those threatened in 1998 and 2017 will continue to be unacceptable to those living and working downstream whose lives and/or livelihoods are threatened.

Tighter regulation by FERC and a proper relicensing process will be insufficient to achieve effective control of the Dam risks.

Besides intervening in the relicensing process, the FRRRA will continue to work with the authorities and encourage the other changes required to assure safety.

2. CAUSES OF UNACCEPTABLE RISK (Exhibits 1 and 2)

a. Governance

When large organizations turn out to be chronically unable to handle their responsibilities effectively, flawed governance is often the cause: PG&E, Boeing and Vale, the owner of the mine tailings dam in Brazil which failed in 2018, are well documented examples recently in the news. (Exhibit 3). The DWR is no different.

The State Water Contractors (SWC) receive the water free with the commitment that they pay for maintenance and other related costs. All the evidence indicates that the maintenance of the Dam has been inadequate for decades. The SWC is a powerful, lobbying organization. Staff leaving the DWR are often employed by members of the SWC and vice versa. The highly organized and rich SWC have much more influence on the DWR, the legislatures, the governments and the regulators than the easily manipulated, relatively poor, dis-organized and fragmented downstream communities.

Regulators, overseen ultimately by the elected politicians, are supposed to act as independent protectors of society from the power and influence of large organizations, particularly those with responsibility for the safety of the public. In the case of the Dam, the checks and balances have not been working. The local DWR public relations person often speaks and appears to represent the DSOD. When rebuilding the spillway was being planned in 2017, the DWR proudly spoke (at the Assembly Hearing on May 11, 2017) of 'embedding the regulators

in the organization'. When FERC was told in a petition in 2008 that the emergency spillway was not fit for use, they chose to ask the DWR whether there was a problem and when the answer was no, they ignored the petition.(Exhibit 2) Over the years, FERC has made many recommendations to the DWR relating to inadequacies highlighted by the Part 12 inspections on which no action has been taken (FERC After Action Panel Report FAAPR). For instance, the replacement of piezometers was recommended by FERC 20 years ago and is only now, after the spillway debacle, being planned. **In general, the DWR deals with FERC recommendations by planning rather than effective action.**

The local Assemblyman and Senator have promoted bills to take the DSOD out of the DWR. These were blocked in the legislature. This would be an obvious improvement in governance. No reasons have been given for its rejection. Indeed, as far as safety is concerned, it is hard to conceive a theoretical reason for not separating the regulator from the operator.

Nobody in the DWR ever seems to be held accountable or to accept responsibility for the failures at the Dam. After the spillway incident no one appears to have been reprimanded, demoted or fired. It is unclear who made the decision to use the emergency spillway in February 2017 against the advice of geologists and engineers present at the large meeting overseeing the response to the crisis. Study of the handwritten notes of this meeting suggests that there was a small committee with unnamed members in Sacramento calling the shots. If the names of these decision makers are withheld, how can any one in the organizations be held accountable? The IFT Report and the FAAPR on the spillway incident focus on the weakness of DWR management. Poor DWR governance is the subject of other studies (Exhibit 2). But, there are few signs of the DWR making changes in the way it is run.

Establishing and maintaining a culture designed to understand and control risks should be the prime objective of an organization responsible for avoiding the possibility of an immensely damaging catastrophe. While the DWR pays lip service to 'safety', there is little evidence that minimizing risks is engrained in its thinking and actions. The IFT report noted that the DWR focuses on compliance with regulation rather than risk mitigation or safety – and of course the DWR has influenced regulation (Exhibit 3). The Comprehensive Needs Assessment (CNA) initiated after the IFT Spillway Report does include risk assessment within its scope. To date the CNA has involved planning and replanning risks that have been apparent for decades. This delays action and It is unclear whether it will ultimately result in timely effective action. The information released about its progress is limited by the claim of CEII restrictions.

The DWR gives low priority to research and development. This limits the ability to anticipate problems and keep abreast of relevant technology. While experts are retained to review and comment on the DWR's assessments, actions and performance, we question whether recommendations are solicited from internationally recognized Dam experts on how to fix seemingly intractable problems such as fixing the spillway gates.

The asymmetric power between those seeking safety and those seeking to maximize the provision of water coupled with the weakness of regulation warps decisions relating to maintenance and flood control.

b. Aging Dam

The main Potential Failure Modes (PFM) of the physical dam are well known and are comprehensively discussed in the FERC After Action Panel Report (FAAPR). These include:

- the decrepit spillway gates,
- the unfinished emergency spillway,
- the potential seepage coupled with the tunnels through the dam,
- the broken river tunnel valve,
- the lack of a low-level release.
- the aging powerhouse.

For years, these PFMs have been referred to in the DWR correspondence with FERC and the DWR has managed to avoid fixing the problems as recommended by FERC by initiating further planning exercises.

The latest of these exercises is the CNA coupled with the Part 12 FERC mandated safety inspection. The process involves an assessment of PFMs in the physical dam structures. The DWR team developing the CNA is advised by three independent experts who are reporting on progress to an Ad Hoc Committee of local representatives and informed citizens. The CNA team is currently evaluating and ranking the identified PFMs. Also, they are discussing valuable new tools: the installation of piezometers (as specifically recommended in the FAAPR) and modern weather forecasting techniques as used at Folsom Dam.

The CNA/Part 12 process as it is currently structured is a limited, though encouraging, initiative. The limitations are:

- the narrowness of the scope, which is restricted to the physical structures and does not include Governance nor Reservoir Operation although the latter appears to have been accepted as a logical development;
- the lack of reference to best practices at other dams worldwide;
- the use solely of data from records rather than collection of necessary new data – the installation of the piezometers should logically have preceded the CNA;
- transparency is limited by the CEII restrictions which seem disproportionate;
- the delay in dealing with the obvious problems for example the spillway gates;
- the low likelihood that the concerns of the members of the Ad Hoc Committee will have much influence.

This process does not address all the concerns about the Dam and its operation raised in the IFT or the FAAPR.

Despite these limitations, the CNA process coupled with the Citizen's Advisory Commission, the first meeting of which was encouraging, indicate that the DWR is taking the problems revealed by the 2017 debacle seriously, something that did not happen after the more dangerous event in 1998. There are also recent indications that the concerns of the committee members may be taken into account to a greater extent in future.

There has been some discussion about the involvement of the community in the assessment and ranking of the PFMs. This is common practice at other dams but there is some doubt about whether it will happen with Oroville. If it does, it would be a positive change from historic practice.

If there is data relating to the risk of the Dam being damaged by an earthquake, this is not readily available. The risk increases with the age of the dam. The ability of the decrepit spillway gate structure to withstand even a moderate earthquake like the one in 1975 is particularly of concern to the public (Exhibit 5). Also, data, if it exists, related to the risk of an upstream dam failing during a storm event is not well known.

The Dam is not the only one of the 700 high hazard dams in California in poor condition, but it is by far the largest and the one most critical to the SWP. Therefore, its maintenance should have the highest priority.

c. Reservoir Management (Exhibit 1)

The DWR has never followed the prescribed State and Federal flood control rules, for instance the rule that restricts increasing or decreasing releases to 10,000cfs within a two-hour period. This resulted in unnecessary damage in 1980, 1986, 1998 and 2017. DWR accepted responsibility and damaged parties were eventually paid \$464 million after the 1986 flood and \$45 million after that of 1998. This came from General Funds of the State not the DWR or SWC.

The DWR finally prepared the long-required Emergency Action Plan in 2015 but this has not been published and it was not available for preparation before or during the 2017 debacle.

It may be that those managing the releases were unable to follow the rules because of inflows or the situation at other dams in the Sacramento basin. But the fundamental cause is inadequate storage space in the lake – that is to say, the lake turned out to have been held at a level that was neither safe nor prudent.

The ability of the Dam system to handle the Probable Standard Project Flood (440,000 cfs with a 72-hour volume of 1.5 million-acre feet), let alone a Probable Maximum Project Flood, depends on the lake level being held well below current practice. In 1998, the downstream communities were evacuated when the lake topped out during an inflow of 301,000 cfs with a 72-hour volume of 1.2 million-acre feet. If the rain had continued for another 12 hours, the emergency spillway would have been brought into play and failed. Also, the downstream levees would have failed.

The lake level is meant to be managed in accordance with the US Corps of Engineers 1958 Handbook which even as updated does not allow for the more extreme weather events resulting from climate change (Exhibit 8). It is difficult to be sure if the Handbook rules are being followed because the measurement of inflow and outflow is not scientific and the monthly and daily logs on which reports provided are based have, at least on occasions, been shown to include whited out and rewritten numbers and alterations. DWR officials under oath have not been able to give any explanation for such changes. In any event, the DWR should be governed by safe operation not rules. In March and April this year, the lake was filled, despite the poor state of the Dam. This is equivalent to playing Russian Roulette with the downstream communities, including parts of Sacramento.

There are encouraging reports that the DWR is looking closely at modern weather and snowpack forecasting methods and that these will be trialed this year. Also, the Corps of Engineers rule book will be revised in the foreseeable future.

Unless the general attitude to safety and minimizing risk changes, updating the regulations on which the lake level is managed may result in more water for the SWC with no reduction in risk.

3. ALTERNATIVE RELICENSING PROCESS (ALP)

The ALP was adopted in 2000 on the initiative of the DWR to simplify the extension of the original 50-year license at a time when it was possible to assume the Dam as being well managed and safe. The 2017 incident illustrated that this assumption was unrealistic.

By 2004, after raising concerns about the process and the DWR's co-operation/collaboration, trustworthiness and transparency on numerous occasions, several participants withdrew from the Settlement Agreement, including Butte County (Exhibit 4). In recent years the Equestrian Association and ORAC have withdrawn from the Settlement Agreement and others including Feather River Recreation and Parks Department are in the process of withdrawing. Members and Boards of other organizations which signed the Settlement Agreement, such as the Oroville Chamber of Commerce, would be inclined to withdraw also if the DWR was not providing a significant part of their funding. Many other participants, including the City of Oroville, do not send representatives to meetings provided for in the Settlement Agreement. The well-funded DWR controls these meetings and prepares and edits reports to FERC. These reports were intended to include independent comments from the Community but, without resources and staff, it is difficult for community organizations to influence the DWR.

The ALP was adopted on false premises. It has resulted in a divided community. The support for the Settlement Agreement, which did little to address the shortcomings in recreation, is eroding. The ALP did not result in a reduction of the risk or cost of failures at the Dam.

4. COMMUNICATIONS

For many years, perhaps from the time the Dam was conceived and built, what information is provided to the community by the DWR has been shallow and often inaccurate. The widely held view is that the DWR spokespeople are told not to trust the community with the facts. The motive may be to prevent the community having sufficient information to be fearful or to demand necessary expenditure on maintenance and renovation and changes in reservoir management. There are signs that this policy has survived the totally misleading, simplistic, and strongly asserted information put out by the DWR right up to the collapse of the spillway and the erosion of the emergency spillway.

There are bound to be vulnerabilities with the Dam, and, after the spillway debacle, this is widely understood. The CNA process, so long as it is transparent and its present limitations are addressed, and the Citizens' Committee have the potential to be forums for an honest exchange of concerns and solutions. This will not happen if the Community continues to be treated as the equivalent of 'colonial subjects' (Exhibit 6).

In the analysis of information, communications and public relations, there is a wide disparity of resources available to the DWR and those available to community organizations. This is apparent with the operation of Oroville Recreation Advisory Committee (ORAC) but will also affect the value of the Citizens Committee. The lack of resources is already affecting the CNA where engineering professionals representing the Community are expected to work 'pro bono' in contrast to the many paid professionals working for the DWR. This allows the DWR to control the agendas and reports without effective challenge.

5. CONCLUSIONS AND RECOMMENDATIONS

The hope of the FRRRA is that the DWR recognizes and appreciates the potential seriousness of the remaining defects in the Dam, will move to remediate them swiftly and will control the lake level to minimize the risk of serious consequences from any failures until the defects can be fixed.

To realize this hope, the FRRRA is intervening in the licensing process with FERC to seek support for mitigating the risks associated with the Dam. The measures requested are:

- Requiring that the scope of the CNA/Part 12 process includes reservoir control and DWR governance - an alternative is for FERC to require an independent study of the Dam and its operation equivalent to the IFT report on the spillway incident;
- The full publication of the results of the CNA;
- Requiring action with firm deadlines following the CNA report;
- An assessment of the earthquake risk and the installation of instrumentation to continuously monitor changes in the robustness of the dam;
- The requirement of commitment of resources for the implementation of the results of the IFT Report and the CNA, including resources so that the results can be monitored by the community supported by independent professionals able to conduct the necessary research, development, testing and action.

If the risks related to the Dam are to be minimized and the downstream communities are to feel safe, changes outside the authority of FERC will be required. These include:

- Steps to achieve some balance between the resources of the DWR/SWC and the community that are directed at influencing the operation of the Dam;
- The provision of an independent regulator. Either the DSOD must be moved out of the DWR or FERC must start to act genuinely independently, or both. **Will it take the ultimate catastrophe to make this obvious step happen?**
- Recognition of the need for transparency, including a realistic review of the CEII restrictions.
- Implementing measures of downstream flood control such as improving the levees to handle the foreseeable releases and opening up the Oroville Wildlife Area to act as the flood plain that it once was (Exhibit 7).

The FRRRA will be pressing for reforms in these areas alongside the intervention at FERC.

It is within the power of the DWR to initiate and implement many of these necessary changes. The result might be some cost or lower water delivery for three to five years, but after that when the risks of failures are mitigated the costs would be lower and the water supply more certain. The history of damaging flood events and crises in most high rainfall years suggest that sustainable operation of the Dam depends on changes along these lines. And, the Feather River Basin has not experienced rainfall like that in 1862 since the Dam was built.

EXHIBITS

1. Flood Control FERC Testimony: Patrick Porgans and Associates Inc. October 2019
Provides answers to many of the questions concerning the operation of the Dam.
Detailed references available on request.
2. Oroville Dam Complex Sagas: Ron Stork, Friends of the River 5.3.2017
California River Day Legislative Briefing
Miscues, Regulator Mistakes,.....
3. FRRRA letter to the Mercury Register 2.25.2019
Deals with failure of the tailings dam in Brazil and the lessons learned in contrast to what happened after the spillway failure.
4. Notice to FERC of Porgans and Association withdrawal from the Settlement Agreement
Negotiations February 2004
5. Oroville Dam Makes its own Earthquakes: Seismo Blog 2.17.2017
6. FRRRA e-mail to the DWR: 10.14.2019
Deals with misleading information provided by DWR representatives.
7. Oroville Wildlife Area Flood Plain Project – Report for DWR: Summer 2017
Sets out benefits of restoring the Oroville Wildlife Area to its condition before it was dredged and abandoned when the Dam was built.
8. An Era of Extreme Weather, Concerns over Dam Safety – PBS 1.10.19
Inadequate maintenance, inspection and regulation

