

New Bullards Bar Dam Planned Second Spillway

Reducing Flood Risk, Enhancing Dam Safety



Introduction

In one of its most significant flood risk reduction efforts since building New Bullards Bar Dam and Reservoir, Yuba Water Agency is designing a new second spillway at the dam. The new spillway will significantly reduce flood risk to communities and agriculture along the Yuba and Feather rivers, improve levee resilience, enhance dam safety and bring new jobs and economic benefits to the region.

A Second Spillway at New Bullards Bar

The new spillway gates will be 31.5 feet lower than the existing spillway gates, allowing for the release of 35,000 cubic feet of water per second. The lower elevation will make it possible to release water from the reservoir *before* large, threatening storms hit, while there is still plenty of capacity downstream.

The improved control of water releases enabled by the second spillway could be used to reduce water levels on levees protecting Marysville and Yuba City by as much as two to three feet during a storm like the 1997 New Year's flood – the largest on record. The second spillway will also be able to independently handle flows like those recorded in 1997, providing a redundant dam release option and enhancing dam safety.

Yuba Water considered several alternative designs and determined an open-channel second spillway to be the best public safety option at the lowest cost, with the fewest environmental impacts.

Second Spillway Key Benefits

- Enhances flood protection for more than 100,000 residents
- Reduces risk to property in Yuba and Sutter counties valued at nearly \$12 billion
- Enables earlier reservoir releases to lower water levels on levees protecting Marysville and Yuba City during high flow events, reducing risk of levee breaks
- Increases flexibility in reservoir storage and releases
- Climate resiliency tool that enhances the agency's ability to manage increasingly volatile weather events, including more frequent and stronger atmospheric rivers

"...the New Bullards Bar project is a rare example of a local water agency undertaking costly dam modifications in response to changing hydrology."

Matt Weiser, Water Deeply

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Estimated Project Cost

The anticipated cost of the second spillway is approximately \$225 million, which is far less than the calculated \$353 to \$406 million in economic benefits the project is projected to provide. This project will significantly reduce flood risk, enhance public safety and provide a foundation for additional social and economic opportunities throughout Yuba County and across the region.

Forecast-Informed Reservoir Operations (FIRO) and Water Control Manual Updates

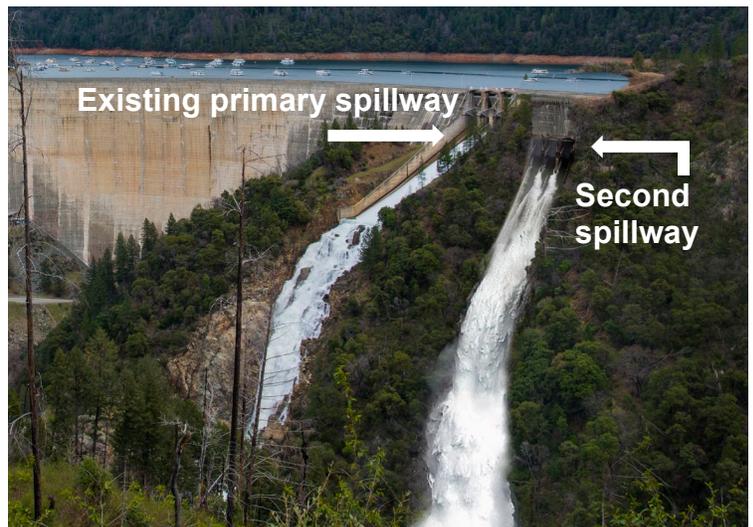
Current and historical trends suggest that the strength, duration and frequency of atmospheric rivers – large, wet storms – is increasing in Northern California. To maximize the benefit of the second spillway, Yuba Water is working with Scripps Institution of Oceanography and others on atmospheric river research to improve forecasting. Implementing FIRO for both New Bullards Bar Reservoir and the California Department of Water Resources' nearby Oroville Reservoir will allow for the coordinated, early releases of water on the Yuba and Feather rivers in advance of large storms, creating more capacity to manage flows from incoming storms. From this research, Yuba Water is also working with the U.S. Army Corps of Engineers to develop new operational procedures (a water control manual) for managing flood flows. Together, the second spillway, the new water control manual and implementation of FIRO will improve climatic resilience and reduce flood risk to Yuba and Sutter counties and other downstream communities.

Next Steps

In 2018, Yuba Water committed \$11 million to begin detailed design and planning on the project. The design is expected to be about 60 percent complete by summer of 2021.

Utah State is currently designing a physical model of the planned open channel spillway that complements computer-based models for a detailed analysis of the design performance.

The agency is currently exploring additional funding partners for this critical project.



Conceptual rendering of the planned second spillway

