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Oroville Dam: Water flows slow, reducing likelihood emergency spillway will be used

*By Paul Rogers | progers@bayareanewsgroup.com and Jason Green | jason.green@bayareanewsgroup.com
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State water engineers struggling with a massive hole in the spillway at Lake Oroville, California's second largest reservoir, that was limiting their ability to release water, finally had some better news to announce Friday.

The end of a storm system that had soaked the Northern Sierra Nevada this week now means that less water is flowing into the lake, slowing its rise, and reducing the chances that water will flow uncontrollably over Oroville Dam's emergency spillway.

"The sun is coming out. The rain has stopped" said Eric See, an official with the state Department of Resources Oroville Division on Friday. "The inflow has peaked

Late Thursday night, water was flowing into the huge reservoir in Butte County at an astounding 190,000 cubic feet per second — roughly the flow of the Mississippi River at St. Louis. By 1 p.m. Friday, however, it had slowed to 125,000 cfs, and was projected to drop to 60,000 cfs by Saturday.

Because of the hole that opened in the concrete spillway on Tuesday, water engineers could not drain Oroville — now 98 percent full and four feet from the top — fast enough to avoid the water flowing for the first time in the dam's 49-year life over its emergency spillway. That spillway is not a concrete channel, but rather is a hillside with trees and rocks that would have caused massive erosion into the Feather River, possibly triggering flooding in communities downstream.



The California Department of Water Resources and host of collaborating agencies continue to monitor the Lake Oroville spillway flows late Thursday afternoon as 35,000 cubic feet per second (cfs) of water was released over the damaged spillway. More erosion is expected, but the releases will help operators absorb the inflow of the storm waters expected Thursday evening and Friday. DWR first noticed erosion on the spillway Tuesday morning and shut off flows to investigate. (Courtesy of the California Department of Water Resources)

But by mid-day Friday, engineers were releasing 65,000 cfs down the damaged regular spillway, slowing the lake's rise just enough to prevent that. The torrent of water — roughly 486,000 gallons a second, or the volume of an Olympic swimming pool every two seconds — turned the broken spillway into a raging waterfall.

See said, however, that even though it was causing erosion on the hillside adjacent to the damaged spillway, the 770-foot-tall dam, the tallest in the United States, and built into solid bedrock, is not in danger of failure.

“The problem is the spillway. It is not with Oroville dam,” he said. “The dam is not in jeopardy.”

Kevin Dossey, a senior engineer with the Department of Water Resources, said that officials are closely monitoring the flows down the damaged spillway, and will stop them if the erosion on the side of the spillway gets too extreme.

“It's continuing to erode at a slow rate,” he said. “It is being monitored by some of the best engineers in the state and the nation. They are not seeing anything that they feel is threatening the integrity of the dam.”

On Tuesday, after the hole opened, flows were halted so that engineers could assess the damage and determine how much the spillway could handle going forward.

Following tests of 20,000 cubic feet per second, discharges were ramped up to 35,000 cubic feet per second.

Officials said they expected the cavity to widen as a result — and it did. One photo circulated online showed water crashing into the now 45-foot deep hole, leaving the spillway and flowing down the hillside. The dramatic scene spurred speculation the structure had failed.

“Despite rumors, Oroville Dam spillway has not collapsed,” the Department of Water Resources said in a tweet. “Additional damage to the spillway has occurred due to the increased flows.”

If conditions change, and the reservoir exceeds its maximum capacity of 3.5 million acre-feet, water will pour down the emergency spillway. In recent days, Cal Fire crews have been tapped to clear up to 100 acres of trees and brush between the concrete lip of the emergency spillway and the river. The Department of Water Resources is also taking measures to protect young salmon and



The California Department of Water Resources is preparing a contingency plan for the potential use of the Lake Oroville emergency spillway, as DWR clears trees, rocks and other debris from the hillside near the dam where water would flow. Approximately 50 to 100 acres of trees and brushes could be affected by water releases. The removal would reduce the potential debris flow into the diversion pool and Feather River in Butte County. (Courtesy of the California Department of Water Resources)

steelhead from an increase in sediment. Another concern: several electric transmission lines run through the area that could be affected if the water went down the emergency spillway.

The cause of the cavity is under investigation and a plan to fix the spillway is being developed.

Oroville Dam is a key part of the State Water Project, which provides drinking water to 23 million people. Like all reservoirs, during wet winters, operators release water to leave some space so they can reduce the amount of water flowing into the river below, minimizing flood risk.

USING THE EMERGENCY SPILLWAY

Because of the damaged concrete spillway at Oroville Dam, excess water may be released via an emergency spillway. This spillway is a last resort, because water rushing down its unprotected hillside would send rocks, trees and debris into the Feather River.



Source: News reports, Google Earth

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