

**WATER & DROUGHT**  
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## Another giant California dam has downstream residents worried



*Diverted water flows from Trinity Lake to Lewiston Lake, where most of the water is diverted from the Trinity River through a 10.8 mile tunnel to Whiskeytown Lake, in 2002. **Brian Baer** Sacramento Bee file*

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### TRINITY DAM

Deep in the Trinity Alps, 130 miles northwest of the troubled Oroville Dam, local officials are raising alarms about another earthen dam with documented weaknesses and limited capacity for releasing the water that has poured in from storms and melting snow.

Trinity Lake, the state's third-largest reservoir, was filled to 97 percent of its storage capacity Tuesday, and a snowpack estimated at 150 percent of normal still looms over the watershed.

If the reservoir were to overtop the dam, the results would be catastrophic, said Keith Groves, a Trinity County supervisor representing the district that includes Trinity Dam.

"It would take out bridges ... and a big section of (Trinity County) would be wiped off the face of the planet," Groves said. He said 3,500 people live in the immediate pathway of potential flooding.

More than a month ago, on March 21, the Trinity County Board of Supervisors sent a letter to the U.S. Bureau of Reclamation asking for a public presentation about the safety of Trinity Dam, climate change and the possible need to build another spillway. This week, Groves said the bureau has agreed to make a presentation for the supervisors on June 6.

Bureau officials are aware of the accumulation of snow above the reservoir and the mounting water levels, but they are not concerned about water overtopping the structure, said Russell Grimes, acting public affairs officer for the Bureau's mid-pacific region in Sacramento.

"Even at 96 percent (of capacity) there's quite a lot of space for inflow," he said.

Completed in 1962 as part of the Central Valley Project, Trinity Dam was the largest earthen dam in the world until it was eclipsed by Oroville. It sits on the Trinity River, 45 miles northwest of Redding, and just above Lewiston Lake, which was formed by a second dam 8 miles downstream. A 3-mile tunnel diverts water from the Trinity River Basin to the Sacramento River Basin, providing water for hydroelectric production at four power plants and irrigation to the agricultural industry in the San Joaquin Valley.

Concerns about the dam's safety date to 1974, when an unseasonably warm storm, known as a "pineapple express," dropped heavy rain and snow in the Trinity Alps. The water level in the lake rose so high it nearly overwhelmed the dam, said Groves.

At that time, the Reclamation Bureau, which operates the dam, reduced the reservoir level it considers safe to 1.85 million acre feet, around 75 percent of the lake's total capacity. This week, the reservoir was holding more than 2.3 million acre feet of water.

Although Bureau officials say they aren't worried, some residents who live below the dam say they are. Glenn Burton, a contractor who owns several vacation rentals, has lived in Lewiston for over 30 years. He remembers the winter of 1996, when flows into Trinity reservoir were 10 times higher than its discharge capacity.

"A dam is not going to fail? Convince those below Oroville Dam of that," Burton said.

Despite documented hazards, neither Trinity County nor the state or federal government has developed evacuation notifications or procedures, a situation that Burton called "utterly inexcusable."

Trinity Dam has three ways to release water: an uncontrolled concrete-lined tunnel that starts flowing when the lake gets high enough, a type of spillway often called a glory hole; a concrete-lined outlet at the bottom of the dam, and an outlet associated with the dam's hydroelectric power plant. Together they can release about 35,000 cubic feet of water per second (cfs). By comparison, the damaged spillway on Oroville Dam was releasing 100,000 cfs in February as the state worked furiously to lower a dangerously high lake level.

Although Reclamation officials never expect any dam to face a maximum flood event, the bureau's 2000 report says the Trinity Dam could not withstand one should it occur. "The resulting breach would discharge in excess of 1,000,000 cfs," the report states.

The report also cites a landslide that could potentially block the exit of the glory hole spillway. If that were to happen when the spillway was discharging, the internal water pressures could damage the spillway and surrounding rock abutment, the 2000 bureau report states.

Engineers design spillways carefully to handle possible maximum floods – "the absolutely humungous events" that test dam structures, said Jay Lund, a professor of civil and environmental engineering at UC Davis. Spillways almost always work, he said. And while Lund expressed surprise at how small Trinity's spillways are, he said the size of the reservoir should be encouraging.

The number of facilities constructed for spilling water from a dam depends on the size of the watershed, said Grimes, the bureau spokesman. Trinity Lake, which drains a 3,000-square-mile watershed, can store nearly 2.5-million acre feet of water. Oroville, which drains a 6,000-square-mile watershed, can store 3.5-million acre feet of water.

Trinity's relatively large capacity increases the bureau's confidence in operating it safely, Grimes said. Although the Bureau of Reclamation has not done additional dam safety studies since its 2000 report, Trinity Dam falls within the current guidelines for operation and thus has triggered no new investigations, he said.

That is not comforting to Groves, the county supervisor. Residents of his district watched the crisis at Oroville unfold after damage to the main spillway prompted the state to allow water to flow over the dam's untested emergency spillway for the first time. The unlined hillside below the emergency spillway quickly eroded, raising fears it could collapse and prompting the evacuation of nearly 200,000 people.

"Our constituents are hyper-sensitive," said Groves. "They want to know exactly where the dangers are."

Following the crisis at Oroville Dam, it's reasonable to expect more inspections and attention to dams, said Lund: "I can understand why people below the dam are on edge after Oroville."

U.S. Congressman Jared Huffman, who represents the Trinity region, has asked for a new safety review of Trinity Dam that includes consideration of a new concrete emergency spillway. In a March 24 letter to Ryan Zinke, secretary of the Department of Interior which oversees the Bureau of Reclamation, Huffman noted that maximum uncontrolled releases from the dam are about 30,000 to 35,000 cfs. A maximum probable flood is 10 times that – about 400,000 cfs, according to the 2000 technical report.

His letter prompted agency officials to review the conditions at Trinity Dam for public safety, said Grimes. The Bureau remains confident that the facility is being operated safely despite the current high level of water in the reservoir, he said.

About a week ago, the bureau began taking some pressure off Trinity Dam with a series of scheduled water releases that are part of a federally mandated plan to help restore fish populations.