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Oroville Dam repair is huge, but so is residents' mistrust

By Kurtis Alexander

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The upper 1,000 feet of the main 3,000-foot-long chute at the Oroville [Dam] is being patched and waterproofed, then rebuilt next summer because there just isn't time to do it this year. Photo: Mason Trinca, Special To The Chronicle

OROVILLE, Butte County — The rush of workers and heavy machinery to the shore of Lake Oroville is so vast and unfamiliar it's fanning rumors across this rural region that the ruckus couldn't just be for a historic dam repair.

Some say the around-the-clock clamor high above town must be a secret effort to mine undiscovered metal from the once-booming Gold Country outpost. Others suspect a missile silo is taking shape, not a new spillway to send water down the Feather River.

At the least, many residents are skeptical that the unprecedented, deadline-driven project will restore their shaken faith in the nation's tallest dam.

Memories are still fresh from February when 180,000 people were forced to evacuate their homes after both of the lake's spillways — the main chute and an emergency one — were severely damaged. Authorities worried the whole dam might collapse.



Rebuilding begins at the Oroville Dam after weeks of demolishing 2,000 feet of the compromised main spillway with explosives. Photo: Mason Trinca, Special To The Chronicle

“I’m moving as soon as I get the chance,” said Charles Hunter, 47, a handyman who lives and works below the lake, as he painted the interior of a new downtown Oroville cafe on a recent morning. “I worry that it’s just a patch job going on up there.”

But as state officials gave The Chronicle a tour last week of the construction site, they said the effort was both extensive and relatively straightforward. The two damaged spillways, they said, are being rebuilt to maximize safety and strength — and, once again, reliably discharge water.

It’s difficult to fathom the size of the job, which is critical for flood protection and the state’s water supply. As many as 800,000 cubic yards of cement — about twice what was used for the new Bay Bridge skyway — will be poured. Two concrete plants are being fired up at the lake to supply the material. The workforce will soon grow from about 200 to 500.

The challenge, officials say, will be finishing the work before the rainy season returns. Officials want both spillways to be operational by Nov. 1 in case the lake fills up by then and water needs to be released. Final touches, they say, can wait until the following summer.

Complicating matters, the state had little choice but to move forward before it figured out exactly what caused the spillways to erode. A team of independent dam experts investigating the debacle has offered a preliminary list of about two dozen structural deficiencies that may have been to blame — and wants the repairs to account for all of these.

State consultant and former Department of Water Resources manager Dave Gutierrez, who is advising on the project, said many of the shortcomings are the result of the dam’s age.

“Just by doing a modern design,” he said, “you’re going to take care of most issues.”

During last week’s tour, behind several road checkpoints that keep residents far from the construction site, Gutierrez pointed out the many problems with the old spillways.

The 3,000-foot-long main chute — where the crisis began Feb. 7 when a crater opened up amid heavy releases from the lake — didn’t have water stops to seal joints and prevent leaks from weakening it. Also, there is too little steel reinforcement in the structure, and the pipes that drain water beneath it are made of clay instead of superior PVC.

“You can’t even find clay pipes anymore,” Gutierrez said, as he looked down from the top of the 770-foot earthen dam that was completed in 1968.

After weeks of blasting with explosives, the state’s main contractor, Kiewit Corp. of Omaha, Neb., finished demolishing 2,000 feet of the compromised main spillway, including the part that initially gave way. Over the next 4½ months, the company will rebuild the section as well as fill in the 300-foot-long hole that opened up.

The upper 1,000 feet of the chute will be patched and waterproofed, as needed, then rebuilt next summer. There simply isn’t time to do it this year.

The emergency spillway was essentially a barren hillside below a concrete apron at the lake’s edge, and it was supposed to handle overflow if the lake got too high. But when it was thrust into action this year for the first time, the hill quickly eroded. That’s what prompted authorities to evacuate downstream communities, in case the land gave way.

State officials say they don’t plan to use the emergency spillway ever again. However, they’re building a 1,700-foot cutoff wall, similar to a retaining wall, within the hillside to prevent future erosion, should the spillway be needed. Next year, they plan to pave the spillway’s upper stretch.

Kiewit, which has set up a sprawling operations yard at the lake’s main boat launch, with more than a dozen trailers and countless construction vehicles, is being paid \$275 million for two years of work.

The expense follows an estimated \$200 million price tag for the emergency response to the crisis and is expected to be paid largely with federal emergency funds.

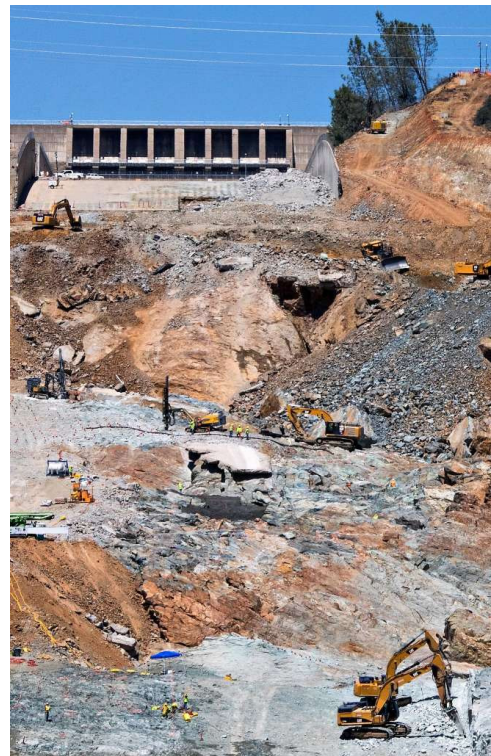
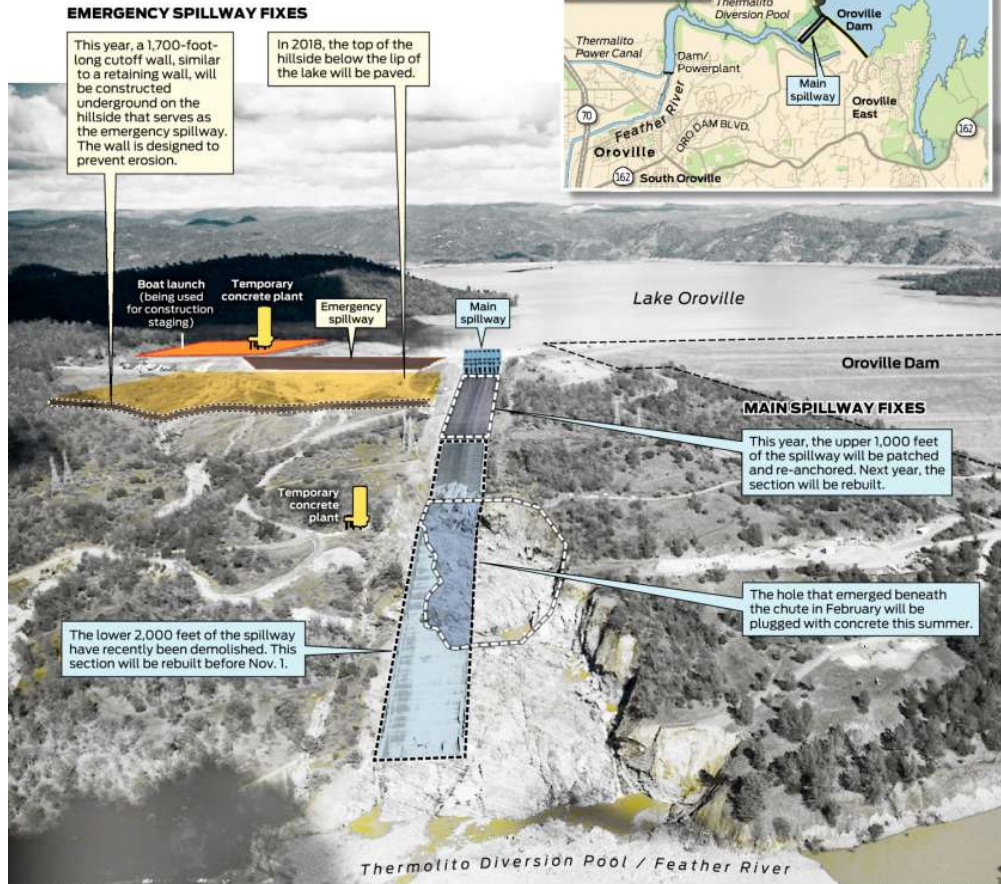


Photo: Mason Trinca, Special To The Chronicle
As many as 800,000 cubic yards of concrete will be poured to repair the main spillway of the Oroville Dam.

Lake Oroville spillway reconstruction

California officials have begun an ambitious two-year plan to rebuild the two spillways that were severely damaged at Lake Oroville in February. Construction will be limited to the dry months, mostly summer.



Source: California Department of Water Resources

John Blanchard / The Chronicle

Critics of the Department of Water Resources say deficiencies in the spillways should have been addressed — if not when the dam was built in the 1960s, then in ensuing decades as dam safety science evolved.

While state officials insist they've done all they can to keep the dam safe, the team investigating the spillways said it's looking into the possibility of poor management.

"I'm not sure that we're going to be pointing blame on any particular person or organization," said John France, an independent engineering consultant who is leading the investigation. "We're more trying to focus on what lessons we can learn on how the process may have let us down in terms of not having the proper training or not responding to things the way they should have."

France said he expects the team's findings to have implications for other dams in California and beyond.

“There will be some changes in the way the dam safety industry does its work,” he said.

This month, at the direction of Gov. Jerry Brown, the state Division of Safety of Dams sent letters to at least 100 dam operators directing them to re-evaluate their spillways for potential problems.

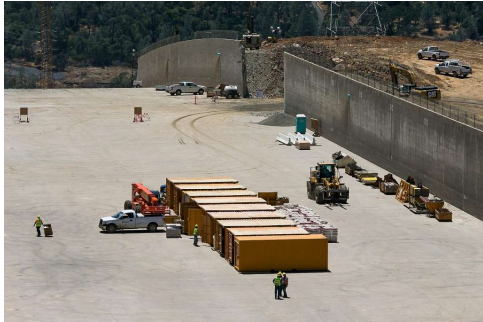


Photo: Mason Trinca, Special To The Chronicle
Reconstruction continues on the upper chute of the main spillway at the Oroville Dam. Two concrete plants will be set up for the huge project.

Downstream in Oroville, construction at the lake has manifest as a small economic boom.

“The workers are all over the place,” said an employee at the Sunset Inn on Feather River Boulevard. “It’s helpful.”

For Tayler Rash, an employee at a downtown boutique called Pardon My French, the gains are yet to come, but she’s hopeful the spotlight on Lake Oroville — even though it came via crisis — will translate to more business.

“I was out of town last weekend, and I told someone I was from Oroville,” she said. “They said, ‘Oh, yeah, the dam place,’ and I said, ‘Oh yeah, the dam place.’”

If there are benefits, many say they pale in comparison to everything else the city has had to put up with, from closed roads and truck traffic to lingering concerns about the dam’s integrity.

Some still carry a grudge from the dam’s original construction, when the state put forth plans that never materialized, including a proposed amphitheater and restaurant and a tourist train to the lake, which submerged thousands of valuable acres.

“We gave up a lot to have this facility here, and we don’t gain from it,” said Butte County Supervisor Bill Connelly, a longtime critic of the Department of Water Resources.

Connelly sees renewed attention on the dam as an opportunity to revisit past inequities. But he knows that’s an uphill battle.

“Hopefully,” he said, “we can just be reassured that we’ll be safe.”



Photo: Mason Trinca, Special To The Chronicle
Reconstruction continues on the upper chute of the main spillway at the Oroville Dam, where the workforce is expected to rise from 200 to 500 on the huge project



Photo: Mason Trinca, Special To The Chronicle

Concrete covers the ground near the emergency spillway. State officials want to see both the Oroville Dam spillway and the auxiliary spillway repaired by Nov. 1, ahead of the rainy season.



Photo: Mason Trinca, Special To The Chronicle

Concrete begins to cover the ground near the emergency spillway at the Oroville Dam.

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<http://www.sfchronicle.com/bayarea/article/Oroville-Dam-repair-is-huge-but-so-is-11227869.php>