

# Finding the right fix for Isabella dam

**Cathy Perfect, Lake Isabella Kern Valley Sun, 5-25-11**

It's been five years since engineers have identified major deficiencies in the condition of the Isabella and Auxiliary Dams. Problems of internal erosion, the active Kern River earthquake fault directly beneath the auxiliary dam, and a spillway on the main dam that is too small to handle a disastrous once-in-10,000-years storm.

The U.S. Army Corps of Engineers uncovered the problem areas, in 2006, during a routine check of the Corps' national inventory of dams.

With evidence of internal erosion, "seepage" or "piping," the aging dams were soon ranked among the most "at-risk" dams operated by the Corps across the entire nation. Seepage has long been identified as the primary cause of dam failure in the United States, according to studies by structural engineers Matthys Levy and Mario Salvadori. Their research shows that for dams built in the United States before 1959, on the average one in fifty failed.

Lead civil engineer David Serafini said the Isabella dams are now ranked as "level one." That's the most at-risk, and the Corps has only 14 dams at that level, Serafini said.

On May 17, 18, 19, the Corps of Engineers and the U.S. Forest Service held three scoping meetings – in Kernville, Lake Isabella, and Bakersfield, respectively – seeking public input on Corps' list of fixes, alternative plans to address the dams' seismic, seepage and hydrologic deficiencies.

The presentation of Isabella Lake Dam Safety Modification Study's draft Environmental Impact Statement put forth three proposed alternative fixes. The "robust alternative" includes a number of improvements, including raising the crest of both dams by three to four feet. Also featured is massive improvements to the weaker, more vulnerable auxiliary dam, that could a 200-foot buttress downstream, an upstream rock buttress and treatments to strengthen the foundation.

"The primary solutions are going to include an auxiliary spillway," Serafini said. The additional spillway would be large enough to safely handle maximum amounts of water would address the concerns about "over topping" of water over the dam, he said.

The dam has "done its job" since it was finished in 1953, said Veronica Petrovsky, senior manager for the project, by preventing a number of floods downstream in the Bakersfield area. But it's outdated and needs improvement. "I like to call this a 'retrofit'," she said.

The Corps has spent about \$24 million just to determine the scope of the dams' problems. "It simply takes time to make sure they have all the needed information and the best proposals," Petrovsky said. "We have to have measures in place that drive down the risk of all three of these factors, and that's what's taking the time," she said.

Experts say that with seepage and over-topping, there would be ample warning that the dam was in jeopardy, allowing Lake Isabella and Bakersfield residents time to evacuate.

In a worst case scenario, a catastrophic failure could send as much as 180 billion gallons of water, as well as

debris, mud, trees and boulders, roaring down the canyon.

According to flood maps, if the dams failed when the reservoir was full, water could reach Bakersfield in seven to nine hours. Water could end up 30 feet deep near the river, and some five feet deep in many areas around town.

The Corps engineers said they hope to have a final decision on designs by this November or January 2012. It's expected construction could start in 2014, and take three years to complete.