

DAMS

California Project Tests Removal Strategies

The 200 ft (60 m) high Matilija Dam, in Ventura County, California, was listed for demolition about two years ago, but efforts to determine the best way to take down the structure may be prolonged. The U.S. Bureau of Reclamation's Mid-Pacific Region, based in Sacramento, California, must contend with more than 6 million cu yd (4.6 million m³) of

Bureau of Reclamation. "Dams are not meant to be there forever. They are not monumental structures."

More tests are slated through the end of the year, including a hydraulic splitting method in which holes are drilled in the dam and high-pressure water jets are used to crack chunks of concrete between the holes. The thickness of the arch ranges from 8 ft (2.4 m) at the crest to 35 ft (10.7 m) at

retention capacity has been eliminated and it no longer provides any protection.

Additionally, an alkali-silica reaction has caused cracks to form in the dam, and in the 1960s and 1970s a 358 ft (110 m) wide, 30 ft (9 m) deep section was removed from the top of the dam to increase the stability of the structure. The notched section now acts as a spillway during high flows.

Nearly everyone agrees that the dam should be removed, but few know just how to do it. In contrast to construction projects, there are no established procedures for dam removal, Barajas says. Aside from developing an effective management plan for the massive amount of sediment behind the structure, the bureau must test demolition equipment. The west abutment in particular is very difficult to reach with any type of equipment, according to Barajas.

Alternatives for dealing with the built-up sediment range from gradual concrete removal, possibly over 20 years, which would allow high flows to wash sediment downstream, to a 16 mi (26 km) long slurry pipeline that would remove the sediment from the reservoir and transport it to replenish beaches in Ventura County. Cost estimates range from \$22 million for gradual removal to \$180 million for the slurry pipeline alternative.

The Bureau of Reclamation plans to continue testing methods of concrete removal through the end of 2000 and will then begin characterizing the sediment, which is 120 ft (37 m) deep in places. "We can't make a recommendation for removal of the dam without knowing what's behind it," Barajas says.

All the studies should be completed by September 2001, and then the environmental process will begin. Barajas predicts that the structure will not come down for at least another three years. ▼

—Brian Fortner



THE MATILAJA Dam, near Ventura, California, has already been notched to increase the stability of the structure, but sediment has nearly filled the reservoir and eliminated any flood protection potential.

sediment behind the structure.

The Bureau of Reclamation has been studying the variable-radius concrete arch dam for the past 18 months and in October removed an 8 ft (2.4 m) high by 30 ft (9 m) long chunk of concrete from the dam using a diamond wire-cutting tool. The demonstration project was conducted to test concrete removal methods. "We hope to pioneer a lot of techniques for subsequent removals," says Federico Barajas, the project manager for the

its base. The dam's removal would restore more than 20 mi (32 km) of endangered steelhead habitat to the Ventura River watershed.

The structure, which is owned by the Ventura County Flood Control District, has a crest length of 620 ft (190 m) and is among the largest of the dams in the country scheduled for demolition. It was built in 1948 to control floods, but the reservoir behind it is now so full of sediment that more than 90 percent of its flood