

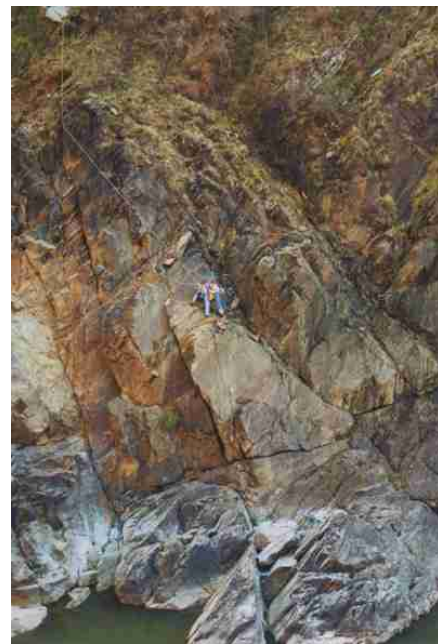


GEOLOGIC SITE CHARACTERIZATION

PARDEE RESERVOIR ENLARGEMENT PROJECT
AMADOR AND CALAVERAS COUNTIES, CALIFORNIA

PROJECT DESCRIPTION

Pardee Dam is a concrete gravity-arch structure built in 1929 across the Mokelumne River in the Sierra Nevada foothills in central California. The dam and reservoir are owned and operated by the East Bay Municipal Water District (EBMUD) for the primary purpose of providing municipal water to most of the communities on the east side of San Francisco Bay. Because of the growing population in its service area, EBMUD has embarked on a water supply enlargement program to meeting projected water supply needs. One of the surface storage options being considered is the Pardee Reservoir Enlargement Project, which could nearly double the existing reservoir storage of 200,000 acre-feet. In 1996 and 1997, Cotton, Shires and Associates, Inc. (CSA) was part of a team of consultants selected to develop preliminary design for a raised dam and replacement of other reservoir retention structures.



Because of adverse geologic discontinuities and structural concerns with the existing dam, the project team discovered early in the investigative program that the proposed dam raise was not feasible. Consequently, the concept of a replacement dam was pursued, and CSA played a major role in characterizing the geologic conditions of potential dam sites. The initial replacement dam site, located immediately downstream from the existing structure, was eventually rejected due to poor rock quality and adverse discontinuities. Three additional sites, located 1 to 1.5 miles further downstream were subsequently investigated to determine the feasibility of constructing roller-compacted dams and spillways.

The local geology consists of steeply foliated, metavolcanic and metasedimentary rock. Geologic site characterization played a major role in selection of the final recommended dam site. CSA geologists and geophysicists performed detailed rock discontinuity characterization (which involved surveying and measurements using rock climbing equipment), regional geologic mapping of critical rock strata, seismotectonic evaluation of nearby faults, logging of rock core and seismic refraction surveying. Because of the uncertain activity of the Foothills fault system, detailed geologic mapping of the river canyon was required to ensure that dam sites were not situated across potentially active faults. The results of the geologic work were presented to EBMUD and an Independent Review Board in a series of reports and presentations. The Pardee Reservoir Enlargement Project was determined to be a feasible option for increasing water storage and is currently undergoing an internal evaluation with other water supply options.