SAN PABLO DAM CONSTRUCTION MANAGEMENT
East Bay Municipal Utility District
Contra Costa County, California

The project consists of the installation of a remote monitoring survey system, removal of a 140,000-cubic-yard buttress, installation of 137,000 cubic yards of cement deep soil mixing (CDSM) to maximum depths of 118 feet (average depth approximately 80 feet), and replacement of a new buttress (approximately 280,000 cubic yards). This is the largest CDSM project in North America.

THE CHALLENGE
A study commissioned by the East Bay Municipal Utility District (EBMUD), in coordination with the California Division of Safety of Dams (DSOD), confirmed that some of the soils and foundation that make up the dam are susceptible to liquefaction. If a magnitude 7.5 earthquake occurred on the Hayward Fault, the study predicted the dam would slump and decrease in height sufficiently to allow water to flow over the top, resulting in a breach of the dam and flooding downstream. Consequently, EBMUD lowered the water level behind the dam by 20 feet to protect downstream communities from flooding and explored alternatives for permanent retrofit of the dam. They’re now moving forward to improve the soil and construct a larger downstream buttress.

KLEINFELDER’S SOLUTION
Kleinfelder was selected to provide construction management services for this two-year-long project valued at $54.6 million and has been pivotal in achieving the milestones of the project and maintaining the working relationships between the owner, design engineer, contractors, and agencies. The project operated 5 days a week, 24 hours a day from mid-January, 2009 until mid-August, 2009. As is evident by frequent communication with the owner’s representative, Kleinfelder continues to receive complimentary feedback on schedule and budget control, and input on field design modifications. Kleinfelder is also providing EBMUD-associated project control support, quality assurance services, environmental/safety compliance monitoring, and is assisting EBMUD to address operational constraints working in and around an active earth embankment dam and recreation area.

CLIENT BENEFITS
The methods used have saved several million dollars in construction costs and avoided the significant environmental impacts associated with draining the dam’s reservoir and building a temporary pipeline. In addition, during times of drought, this approach saved water and eliminated the extra traffic that would have been necessary to bring in additional building materials. This unique method could revolutionize how larger historic dams are retrofitted to meet current seismic standards.

Kleinfelder is an employee-owned science, design, and engineering consulting firm providing solutions to meet our world’s complex infrastructure and natural resource challenges. Working as a team, our bright people will deliver the right solutions.