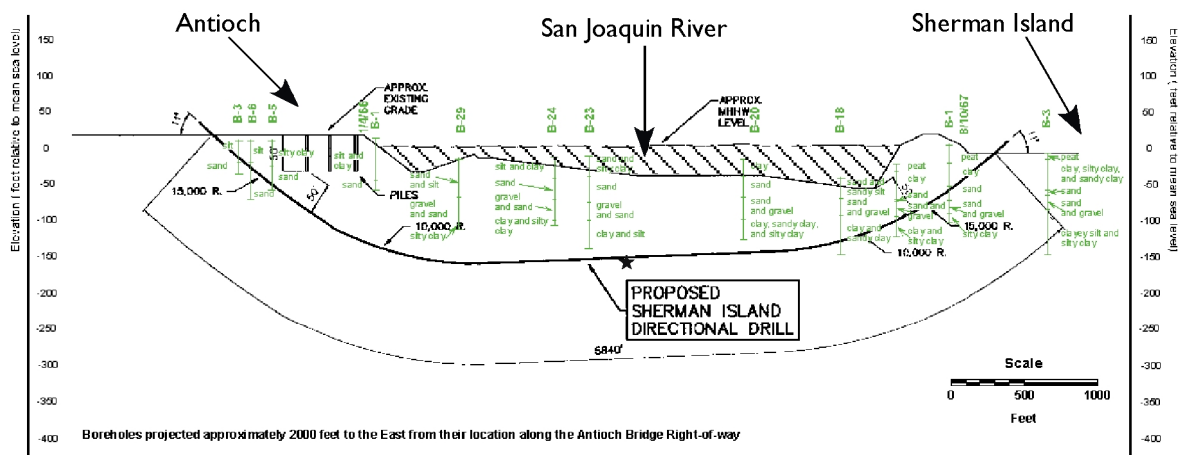




# GEOLOGIC ASSESSMENT FOR FEASIBILITY OF DIRECTIONAL DRILLING OPERATIONS for Calpine's Proposed Sherman Island Pipeline, Contra Costa County, California

## PROJECT DESCRIPTION

Calpine proposed to directionally drill a 1.1-mile (1.8-km) long, 24-inch (61-cm) diameter natural gas pipeline across and below the San Joaquin River between the town of Antioch and Sherman Island. When completed, the pipeline would deliver to a new power plant enough natural gas to generate 9,000 megawatts of power. The site is near the confluence of the San Joaquin and Sacramento Rivers, in the southern reaches of the Sacramento Valley. This area is generally level, with surface elevations ranging from approximately 10 feet above mean sea level near the drill site on the south side of the pipeline right-of-way, to nearly 15 feet near the drill-exit site in Sherman Island. *Earth Consultants International* was asked to perform a geologic assessment for the profile of Calpine's proposed pipeline.



Geologic Cross Section Prepared for the Sherman Island Pipeline Profile



Photo showing the town of Antioch, Sherman Island, and the San Joaquin River in between. The proposed natural gas pipeline would be drilled across and below the river.

## SOLUTION

*Earth Consultants International* reviewed geologic data, including boreholes, to assess the geologic sediments to be encountered at the pipeline depth below the river crossing. We then constructed a geologic cross section for the pipeline. The geologic review indicates that the pipeline would be drilled through primarily fine-grained sediments, such as sandy and silty clay, which are easier to drill than saturated sand and gravels with the potential for loss of circulation. The geologic assessment was used in the selection of the appropriate tunnel boring equipment and in the construction bidding.

