SITUATION:
The Taum Sauk Upper Reservoir is a pumped storage generation facility owned and operated by AmerenUE. It is located on the top of Mount Proffit in Reynolds County, MO. A section of the original reservoir, built in 1963 as a concrete faced rock-fill dike, collapsed on December 14, 2005, releasing over 1.5 billion gallons of water down the mountain. Following an extensive forensic analysis, the Engineer of Record determined that repairing the breach would not solve the underlying problems that had partly contributed to the failure: poor design and outdated construction practices.

The new 54-acre reservoir, rebuilt on the original footprint, is 120 feet tall, 150 feet wide at the base, and measures over 6,000 feet in circumference. It is the largest roller-compacted concrete (RCC) dam ever constructed in the United States.

SOLUTION:
The geologic profile consisted of fractured rhyolite with deep weathering features, intrusive granites and weathered diorite dikes. The new facility design featured a 6,700 foot single-line (in some areas double) grout curtain, which Layne installed, with depths ranging from 60 feet to 95 feet around the inner periphery of the RCC dam. Layne performed the drilling and grouting operations in bedrock beneath the new dam to minimize potential seepage.

State of the art grouting software based on the Grout Intensity Number (GIN) method was specifically designed for this project and was used for monitoring and recording of grout volumes and pressures in real-time during each grouting operation.

SERVICES EMPLOYED:
+ Real Time Monitoring
+ High Mobility Grouting
+ Bedrock Drilling