

# POWER LAKE PROJECT

## DAM REHABILITATION

Power Lake Dam was constructed in the early 1920s to store water for the Pend Oreille PUD's 500 kW Calispell Hydroelectric Project. The dam is a 50-foot-high rockfill embankment and has a crest length of approximately 150 feet. The dam is flanked by steep rock abutments. The rockfill crest of the dam is 5 to 8 feet wide. The top of the concrete facing (parapet wall) is approximately 3 to 4 feet higher than the rockfill crest. The dam's spillway, located on the right rock abutment, is formed in a steep rock chute, which narrows to about 26 feet in width downstream from the crest.



Washington State Department of Ecology Dam Safety Section (DSS) calculated the design flood for Power Lake Dam and concluded that the spillway was inadequate for the flood, and that the flood would overtop the dam. DDS was also concerned that spillway flows were causing erosion at the toe of the dam. Two members of EES Consulting's staff participated in the Power Lake Dam Rehabilitation Project to bring the dam into compliance with Washington State Dam Safety criteria. The design objectives were to increase the spillway capacity; raise the dam height to prevent overtopping during flooding conditions; and protect the dam toe against erosion from spillway discharges. Work completed ranged from design and project management to permitting and construction oversight review.

Jack Snyder was the engineering project manager for this project. The design was submitted and approved for construction by DSS. Erosion and sedimentation controls, and spill prevention measures to protect the lake from concrete spills were also designed. Lisa Fortney was responsible for obtaining permit approval from federal, state, and local agencies for the construction work.

Construction at Power Lake Dam began in June 1995 and was completed in 3 months. The work involved difficult excavation of approximately 1,000 cubic yards of rock to widen and deepen the spillway. Shotcrete was applied to the rock side walls to provide additional reinforcement. The dam was raised approximately 5 feet by anchoring a new concrete wall to the existing concrete dam facing. Riprap from the excavation was placed and grouted at the dam toe for erosion protection. All construction work was completed on schedule and within budget with no environmental problems.