



Project: Spillway Systems Reliability Project Modeling for USACE

Client: US Army Corps of Engineers Risk Management Center - Institute of Water Resources

Client Contact: Robert Patev

MSMM Services: Project Management; Development of Simulation Models

DESCRIPTION

Providing technical support for the **development of simulation modeling examples, and developing written guidance materials on spillway systems reliability analysis**. The focus of this project is on exercising a stochastic simulation approach to analyzing spillway systems reliability, and in writing a technical guidance document on analyzing spillway systems reliability using simulation.

Step 1: Tailor the simulation approach to specific example dams. The focus of Step 1 is river and **reservoir systems engineering analysis of multi-reservoir river basins** using simulation techniques. This endeavor integrates **hydrology, hydraulics, mechanical and electrical**, human factors, and other aspects of flow control into a systematic analysis model. This simulation studies the integrated set of processes controlling the performance of **multi-reservoir cascades**.

Step 2: Perform simulation studies of example dams. The focus of Step 2 is converting the conceptual systems engineering framework into experimental examples. This task will concentrate on component issues for the particular reservoir including reservoir design inflows, the reliability of flow control systems for the individual dam, hydraulic performance, mechanical-electrical- controls performance, human factors, and downstream impacts.

Step 3: Combine the developments of Steps 1 and 2 on systems simulation into a **written guide to the practical planning, design, and operation of flow control structures and systems**.