

OSAGE HYDROELECTRIC PROJECT LAKE OZARK, MISSOURI		YEAR COMPLETED
		PROFESSIONAL SERVICES 2006 – Present
PROJECT OWNER'S INFORMATION		
PROJECT OWNER Ameren Missouri	POINT OF CONTACT NAME Mr. Thomas Hollenkamp	TELEPHONE NUMBER (314) 957-3406

RIZZO Associates (RIZZO) performed a Part 12 Inspection for the Osage Hydroelectric Project owned by Ameren Missouri, a utility company headquartered in St. Louis, Missouri. RIZZO is also performing several follow-up projects as a result of the inspection. The Part 12 Inspection and each of the major follow-up projects are described below.



Part 12 Inspection

RIZZO performed the Federal Energy Regulatory Commission (FERC) Part 12 Inspection for the Osage Project including conducting a Potential Failure Modes Analysis (PFMA). The Osage Project consists of Bagnell Dam, a 2540 foot long, 150 foot high concrete gravity dam. The total watershed area is 14,000 square miles and includes 5 major US Army Corps flood storage reservoirs. Instrumentation at Bagnell Dam includes piezometers, crack movement gages, alignment surveys, and foundation drains.

The Part 12 inspection was a comprehensive evaluation of the project and included a review of the stability analyses, hydrologic and hydraulic information, instrumentation, and operation and maintenance. An inspection report was prepared for submittal to the FERC. The Supporting Technical Information Document (STID) and PFMA report were prepared concurrently with the Part 12 Inspection Report. RIZZO also has performed or is performing work recommended in the Part 12 Report. The major projects include installation of additional piezometers, a re-evaluation of the Probable Maximum Flood (PMF), and an updated stability analysis. Each of the major projects is described below.

Piezometer Installation

Uplift at the Project is critical for stability, so nine additional piezometers were installed to provide additional information on uplift pressures. RIZZO prepared a work plan for submittal to FERC, prepared design drawings and specifications, and provided on-site oversight during the piezometer installation. The number and locations of the piezometers was chosen to provide representative data on uplift pressures at the structure.

PMF Study

RIZZO is currently developing the revised PMF in accordance with current FERC methodologies. The PFMA identified that the methodologies used to derive the project's current Inflow Design Flood (IDF) may be deficient in comparison to modern-day PMF methodologies. The runoff model being developed considers the complex network of rivers, streams, lakes, and gated spillway controls of the six major flood storage dams in the network. RIZZO is also examining different scenarios by moving the storm center to various locations in the watershed area to determine the most critical combination of conditions that produces the PMF. An accurate estimate of the peak reservoir level under PMF conditions is critical to the stability of Bagnell Dam.

Stability Analysis

An updated stability analysis is being performed. The analysis will include updated foundation strength parameters that are being determined through testing performed on rock core samples taken from the foundation of the Dam. The analysis will also include updated PMF levels, uplift pressures, and anchor forces.

