

## **Bischoff Reservoir**

Shortly after its original construction in 1960, the Bischoff Reservoir began to experience a small amount of leakage through limestone formations. The leak was evident near the toe of the dam and was estimated to be approximately 25 - 30 gallons per minute. A decision was made to monitor the leak for any changes. Over the years, the leak slowly continued to increase and in 2001 was estimated to be approximately 800 gallons per minute.

By 2002 the leak needed to be repaired. Cement grouting was attempted but failed due to the hydrostatic pressures pushing the cement grout out through the leak. The grouting contractor was successful in locating the leak vein and actually stopping the leak for a short period of time. However, the hydrostatic pressures pushed the cement grout out through the leak and the leak would return. The cement grouting operation was terminated.

In 2004, the City of Batesville contracted with Support Restoration Technologies to evaluate the leak and offer a solution. After reviewing the available information, Support Restoration Technologies recommended Chemical Grouting with Expanding Polyurethane Grout. This approach would involve drilling and casing.

Average hole depth was 45-feet throughout the 100-foot area. Drilling involved approximately 30-feet of overburden and approximately 15-feet of limestone. Voids as large as 5-feet deep were encountered in some locations of the limestone. Water tests with concentrated dye were used to confirm connection with the leak. Once connection to the leak was confirmed, the discharge time of the dye was recorded to calculate the required reaction time of the chemical grout. Once all holes were tested and the data recorded, the sequence of what order the holes were to be grouted was decided.

A decision was made to seal the known large voids on each side of the leak first and then work our way up the main vein of the leak. This approach was critical to prevent the leak from possibly migrating to another location and causing uncontrollable soil erosion and jeopardize the integrity of the dam.

Chemical grout was used over a 5-day period to seal off the leak. For the first time since its construction in 1960, the Bischoff reservoir was leak free.

For more information on this project, please contact Randall Brooks at 513-353-2544.