

**[DFIC] The Walnut Grove Dam 1890 Failure: The Worst and Most Forgotten Disaster in Arizona History**

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California was not the only state that experienced gold fever in the mid and late 1800's. In Arizona near the town of Wickenburg, gold was discovered in 1863 and a gold rush ensued. However, by the late 1800's gold mining was not limited to prospectors manually mining with pans and sieves. Big money, from New York stock brokers and lawyers, funded hydraulic mining to process thousands of cubic yards of river and alluvial sediments and strip it of its gold and everything else. This type of mining requires tremendous hydrodynamic force, the kind of force necessitating the damming of water. Thus, Walnut Grove Dam was envisioned to be constructed at a site approximately 20 miles northeast of Wickenburg. Managing a dam construction project from over 2,000 miles away presented many challenges. During the construction there were frequent complaints about low pay, a poor work force, and high construction and design costs -this led to there being 5 different chief engineers on the job, each serving as superintendent (one would go on to become Governor of Arizona). Walnut Grove Dam, a 110-foot-high rockfill dam with a wood and tar paper face, was completed in 1888. Less than two years later, a rain-on-snow flood event caused the dam to overtop leading to failure on February 22, 1890. The flood wave destroyed homes, farms, mines and took with it approximately 100 lives. While the ultimate cause was overtopping, many factors led to the dam failure: - Remote management from New York  
- Frequent succession of construction superintendents - Periods of time without construction oversight - Spillway under-designed (i.e. limited capacity) to save money  
- Poor overall design due to the view it was a temporary dam - Limited understanding of hydrology in the area. This presentation explores what we do and don't know about the failure and to what extent each of these factors played a role. It also explores why so many lives were lost despite warning being sent many hours before the failure. Spoiler alert, alcohol is involved.