[DFIC] 10th Anniversary of the Failure of Tempe Town Lake Dam

Chris Kabala, P.E., City of Tempe
Stewart Vaghti, P.E., ENV SP, Gannett Fleming, Inc.
Gregory L. Richards, P.E., CFM, Gannett Fleming, Inc.

Tempe Town Lake is a refreshing gem tucked away in the unforgiving Arizona desert. Located on the ephemeral Salt River, the original rubber dams that formed the lake were designed to be deflated and allow flood water to pass through unabated, and then be re-inflated to capture the tail end of the flood. Tempe Town Lake became a centerpiece for economic development, community events and recreation. On the evening on July 20, 2010, however, one of the four downstream rubber bladders that made up Tempe Town Lake Dam burst, releasing approximately one billion gallons of water into the normally dry Salt River drainage. The cause of the failure was attributed to weakening and separation of the rubber bladder layers due to the intense heat and dry Arizona climate. In fact, workers had been preparing to replace the bladders prior to the failure due to integrity concerns. Ultimately, the rubber dam was replaced with a hydraulically operated steel gate dam located approximately 200 feet downstream of the original rubber dam structure. During and after this incident, many lessons were learned spanning a broad range of topics such as environmental impacts, system resiliency and emergency planning. This presentation will focus on the most significant lessons learned and their applicability to regulators, dam owners, engineers and emergency responders.