

**American Society of Civil Engineers, San Diego Section**  
**Historic Civil Engineering Landmark**  
**ESCONDIDO CANAL**

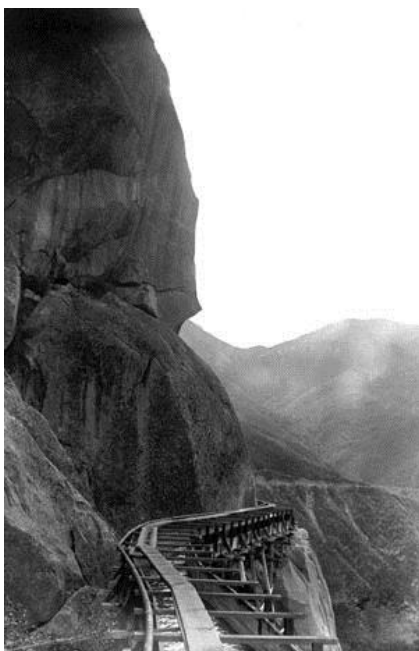


*Story by Greg Farrand, Photos courtesy City of Escondido Utilities Department*

In the late 1800's population growth was on the rise in the Escondido (meaning "Hidden") Valley and so was the demand for water. Water wells and local creek water provided early settlers with a sufficient supply of water. However, increased agriculture and drought rendered the existing water system inadequate. The City of Escondido incorporated in 1888 and soon thereafter the Escondido Irrigation District (EID) was formed to provide water to the Valley. The EID sold water bonds and began to break ground on the



construction of a new water system. The system included the construction of the Bear Valley Reservoir Dam, later renamed Lake Wohlford Dam after A.W. Wohlford, a prominent leader of water development in the Valley. In addition, a ditch line (canal) roughly 15 miles long would bring much needed water from the San Luis Rey River to Bear Valley. The dam was originally constructed of rock and redwood facing and was approximately 76 feet high. The canal consisted of wooden flumes and unlined ditches excavated by hand with an occasional dynamite blast. Laborers are believed to have consisted of local inhabitants and possible Chinese workers which were in the area and responsible for constructing many buildings. The capacity of the new water conveyance system was roughly 35 cfs.



On July 5, 1895 the gate of the reservoir was opened and the new system was in operation. It wasn't long before problems with the somewhat crude system were realized. Water loss from leaky flumes, gopher holes, and percolation resulted in only about 60 percent of the diverted river water reaching the dam. In 1897 the unlined portions of the canal was either lined with cement plaster or replaced with pipe in an effort to improve deliverance. In addition, repairs to leaky flumes were made.

Problems persisted. A mountain fire in 1904 destroyed a large section of flume. Portions of the conveyance system were deteriorating, and obtaining funds for needed repairs and maintenance was a heated issue. In about 1910 the Escondido Land and Town Company, which owned a



large amount of Escondido Mutual Water Company stock (Escondido Mutual Water Company was formed to replace the EID) approved taxes to finance upgrades to the system. Flumes were replaced with concrete-lined canals, and tunnels were added including a large 1,900-foot long tunnel constructed through a portion of Rodriguez Mountain. Near disaster struck, however, when a portion of the redwood faced dam was damaged with dynamite by saboteurs after the United States had entered World War I. Despite the attack, the dam remained structurally intact. In 1924 a new larger dam, approximately 100 feet high, was constructed with an Outlet Tower structure. Construction of the canal was difficult due to the steep, nearly vertical terrain; geologic hazards such as fractured granitic rock,

mudslides, rock falls and slope instability; and the site's remote location.

Since the construction of the Lake Wohlford Dam and Escondido Canal, water demands have continued to increase, and fires, mudslides, rock falls, erosion, and material deterioration continue to plague the system. In the last 100 years the system has undergone improvements and repairs in order to sustain water delivery to the Valley. Today the canal consists of six tunnels (one up to ½ mile long), steel flumes, a 2,000-foot long siphon, miles of covered and uncovered open concrete lined channel and reinforced concrete pipe which have doubled its capacity and improved its efficiency. From its origin in the San Luis Rey River (8-miles below Lake Henshaw), the canal discharges into Lake Wohlford. The Lake Wohlford Penstock extends from Lake Wohlford Dam to the Bear Valley Hydroelectric Plant. The Rincon Penstock (located between Horsethief Canyon and Bee Canyon) was constructed to deliver water from the canal to the Rincon Indian Reservation and power a small power plant on the reservation. Today the canal is jointly owned by the City of Escondido and Vista Irrigation District (VID).



Recent studies have shown that portions of the existing dam are seismically unsafe and plans for a new dam are underway. The new dam will raise water levels 15 feet and is expected to be completed in 2017.