# Building Morena Dam

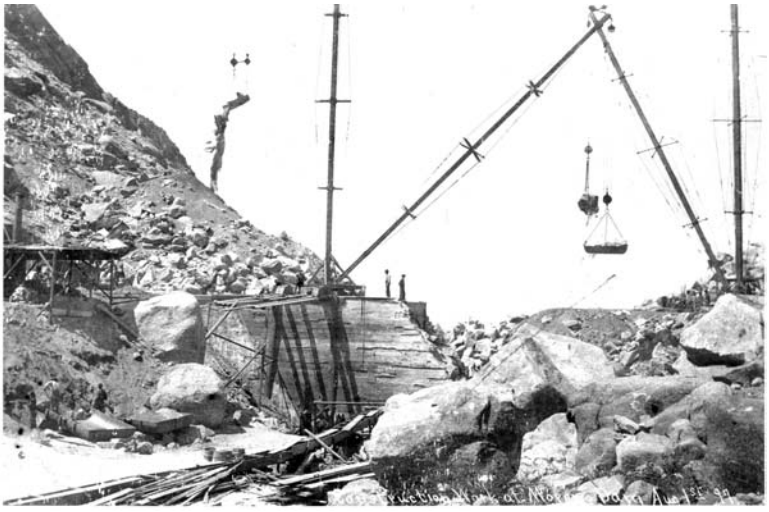
*When the Brooklyn bridge was built it was pronounced the "eighth wonder of the world," and now California has another "wonder" to add to the list. This "wonder" is the biggest dam in America, and so far as I have been able to learn from mining and civil engineers, it is the largest in the world.*

--Harper's Weekly, January 8, 1898.

With unabashed exaggeration, a *Harper's Weekly* reporter gushed over the construction of San Diego's new dam at Morena, sixty miles east of the city. While hardly a wonder of the world, the mountain site was certainly impressive and the new reservoir promised to end—for a while, anyway—the region's insatiable demand for water.

Following San Diego's remarkable population boom of the 1880s, nearly fifty private water companies vied for development rights in the county. The most successful venture was the Southern California Mountain Water Company, which planned an ambitious water system that would begin at Morena, and followed downstream by dams planned for Barrett and Lower Otay, from where water would be piped throughout the region for people and agriculture.

On June 27, 1896, voters in the city of San Diego approved $1,500,000 in bonds to pay for construction of Morena Dam and the distribution of water to the city. The project would be led by S.C.M.W.C. President Elisha S. Babcock. With exuberant faith in the enterprise, the *San Diego Union* (owned by principal investor John D. Spreckels) declared the dam would be completed within one year.



Construction at Morena Dam, August 1897.

Morena would be a 150-foot tall, rock-fill dam, with concrete layered over the rocks on the upstream side of the dam. The design was spelled out in a contract written by the City Engineer Edwin Capps. The plan was simple but the project began with a serious flaw: the S.C.M.W.C. chose to not hire an experienced civil engineer. Morena Dam would be built by amateurs.

Construction started in the fall of 1896. In a narrow gorge of Cottonwood Creek, workers excavated the stream bed and began building a foundation "toe" wall designed to rise thirty feet above the creek bed. In the granite canyon walls high above, workers drilled tunnels and planted them with tons of dynamite. From the "big shots" that followed, huge boulders rained down to provide the rubble fill for the dam. As the work progressed, a

cable system that stretched 1200 feet across canyon and 300 feet above the dam site was used to lift the blown-out rocks and drop them into place.

The ambitious plans ran into trouble in early December. Inspecting the site, City Engineer Capps found stream water running through "scores of little holes all through the dam" with one crack big enough to thrust his arm through. Capps was stunned to find that some of the leaks had been plugged with gunny sacks to slow the flow of water. In a report to the City Council, Capps noted that the construction foreman—a former railroad contractor--"had no engineering education, and displayed no evidence of experience in such work."

When the "Capps Sensation" threatened to halt construction, Babcock vigorously defended his rising dam, declaring "It was as perfect a piece of work as ever was done in Southern California." The *Union* dismissed the "absurd reports" of leakage but admitted that some problems had occurred from the rapid pace of construction, which was intended to finish the dam in time to benefit from winter rains.

As mutterings over the "gunny sack dam" gradually died down, Babcock's men ramped up the public relations. City councilmen and other officials were given carefully orchestrated tours of the site and their praise of the great work was dutifully reported in the *Union*.

Morena was also promoted as a tourist destination. A stagecoach line brought the curious to the site for a fare $1.50. Overnight visitors paid 50 cents to stay at an oak-shaded grove at "Posada Morena" where they were provided with a floored tent, a spring mattress with sheets and quilts, and a water basin and towels. Meals were 25 cents. One impressed visitor described the pleasure of "lying in your tent of an evening, the flaps drawn back, the stars shining in the distance, lulled to sleep by the sound of running water."

Visit of the City Council to Morena, August 1897.

For Morena sightseers the most exciting experience was witnessing one of the mammoth explosions that blasted rock from the mountain sides to the dam foundations below. In August 1897, the San Diego Mayor and City Council watched transfixed as a blast began with "an ominous rumble in the bowels of the mountain."

*An instant later, with a mighty puff the shoulder of the mountain was thrown outwardly and, poised against the sky and with a thousand jets of dust piercing the air, made a picture that held the spectators spellbound. Then began the terrific bombarding in the bed of the creek, hundreds of feet below. The giant missiles followed one another fast, their awful roar and crashing supplemented by the sharp rattling of pebbles that fairly rained.*

As the year 1897 came to a close, construction of Morena Dam appeared far from finished. The glowing article in *Harper's Weekly* brought national attention to the "biggest dam in America" but the project was out of money and questions persisted about suspected defects in the partially-built dam. Work was suspended in April 1898.

The site would lay dormant for nearly a decade. In May 1909 construction resumed under the direction of professional civil engineer Michael M. O'Shaughnessy. Best known for his later work building a dam across Hetch Hetchy in Yosemite, O'Shaughnessy spent three years at Morena, finally finishing the job in 1912.

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Originally published in shorter form as "SAN DIEGO DAM IN EAST COUNTY WAS TOUTED AS A 'WONDER' : But there were setbacks along the way project finally completed after 16 years," by Richard Crawford, in the San Diego Union-Tribune, June 9, 2011.

Morena Dam, June 19, 2011. The hills above still show the scars of blasting more than one hundred years ago. The reservoir is at low, 25% capacity. Photo taken by Rick Crawford.