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COMMENTARY THOMAS SWETNAM

Saving Soda Dam, a marvel of the Jemez area

By Thomas Swetnam
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Visitors view the naturally formed Soda Dam. The Forest Service has made little progress on infrastructure at the site in the decades since it took ownership.

Courtesy photo

In June 1886, Mr. J.K. Livingston and his family vacationed by horseback from Santa Fe to the Jemez Mountains. On their return, the editors of *The Santa Fe New Mexican* prevailed upon him to write a description of their adventures.

In glowing prose, he extolled the natural wonders of New Mexico — especially Soda Dam, where they camped for nearly three weeks. Viewing the rounded travertine domes over the Jemez River, Livingston recalled a line from Ralph Waldo Emerson: “He builded better than he knew; — / The conscious stone to beauty grew.”

Countless visitors to Jemez Springs and the mountains beyond have stopped at Soda Dam and marveled at this strangely beautiful landmark. The oddity of a natural dam formed by hot springs in a narrow box canyon even made it into a Ripley’s “Believe it or Not” cartoon strip. It is, in fact, both a roadside curiosity and a world-class geological wonder. Beyond the novelty and charm of the hot spring formation, few people are aware of the layers of natural and cultural history embedded in the rocks and caves of Soda Dam.

The geological story here involves large lakes, hot springs, limestones and floods. Very hot water rising from the depths of the Valles Caldera mixes with cold snow and rain from above. The water flows downslope from the Caldera through limestones in San Diego Canyon and then emerges through fissures where the Jemez Fault crosses at Soda Dam. The dissolved calcium carbonates from the ancient marine limestone precipitate out of the hot waters there, forming travertine, a young terrestrial limestone.

The modern Soda Dam is about 5,000 years old; remnants of three older and larger travertine dams perch on the canyon sides above. The oldest formed 500,000 years ago and is about 100 times the volume of the modern Soda Dam. Geologists theorize that the largest dams formed here after volcanic flows impounded huge lakes in the Valles Caldera.

Massive spring flows and travertine deposits occurred then in San Diego Canyon, followed by catastrophic floods ripping out the travertine dams and draining the lakes, most recently about 50,000 years ago. The modern Soda Dam is one of many smaller dams formed during relatively modest spring flows.

The human history of Soda Dam is also intricate and deep. The Hemish (Jemez) people have ancient historical and cultural ties to Soda Dam. Legends and early 20th-century stories tell of underwater passages and a cave on the north side of the dam, which is now buried. Today’s Jemez Cave is located within the largest and oldest travertine dam immediately above Soda Dam on the west side.

Archaeological excavations of Jemez Cave in 1934-35 unearthed hundreds of corncob fragments, carbon-14 dated at up to 3,000 years old, making Soda Dam one of the two oldest agricultural sites in Northern New Mexico. Hemish black-on-white pottery was found in upper layers of the sediments

along with many other artifacts and a very special human burial — a small child clutching ears of corn in her or his tiny hands. The child's body was lovingly wrapped in two deerskins and two blankets made from thousands of turkey feathers individually tied with yucca fiber string.
Future studies of Soda Dam may uncover much more environmental and human history. Learning opportunities are excellent because the travertine rock is laid down in layers like tree rings, due to seasonal and longer-term fluctuations in hot spring flows. All sorts of natural objects and artifacts are preserved within the travertine. Radiometric dating using isotopes provides timelines, and paleoenvironmental analyses can help reconstruct climatic, hydrologic and possibly human history from the chemical composition of the travertine layers and fossils within them.

The New Mexico Department of Transportation apparently did not grasp Soda Dam's environmental and cultural significance when, in early 1961, they dynamited the west end of the dam to improve State Road 4.

Before the blasting, the dirt road ascending the dam was steep and rocky. Today, the level, paved road traverses the blasted gap in the dam. Hot spring waters flow out of the gap and run down the side of the road rather than adding to the travertine growth on the eastern end. The domes over the river there have a precarious connection to the bedrock, and someday they may tumble down.

The Department of Transportation, then the Highway Department, obtained right-of-way permission for the road from private landowners of Soda Dam. After the blasting, Jemez Valley residents lamented the damage that had been done to a precious landmark. They posed a question that remains unanswered: Can the hot waters arising in the blasted west end be restored to the main dam?

They also began a campaign to acquire the property in public ownership for protection and possible restoration. By 1977, all the private lands had been donated to the U.S. Forest Service, which promised to develop and enact a plan to preserve and interpret it for the public. Sadly, that promise was not fully kept.

To this day, there are no interpretive signs or protective walkways and few effective barriers around or on Soda Dam. On typical weekends, dozens to hundreds of people walk and clamber around the dam, including on the precarious domes over the Jemez River. I recently witnessed idiots in a four-wheel-drive vehicle attempting to drive on top of the dam. Some years ago, thoughtless rock climbers drove steel bolts into the roof of Jemez Cave, which then had to be closed to all public access.

The Forest Service is interested in developing interpretive programs and protective infrastructure at Soda Dam, but has made no progress because of a lack of funds and personnel. It is long past time for state and federal agencies to invest in protecting and interpreting the historic and cultural significance of this fabulous New Mexico landmark. The feasibility of restoring hot water flows from the west end also should be investigated.

Soda Dam would benefit from a transfer to either the Valles Caldera National Preserve, or the New Mexico Department of Cultural Affairs, Jemez Historic Site. Both agencies have primary missions in preserving and interpreting historic and scientific sites. Close coordination or co-management with the Jemez Tribe would also be highly appropriate.

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