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Two Sides of the River:

Salt River Valley Canals, 1867-1902



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Storing the Salt: Locating a Reservoir Site

In October 1888, Congress appropriated a hundred thousand dollars for the U.S. Geological Survey to locate water storage reservoir sites in the western United States. The *Engineering and Mining Journal* said the Irrigation Reservation Act,

“establishes the principle that the government recognizes the question (of reclamation of arid lands) to be one of national importance, and worthy of an expenditure from the public purse.”¹

Passage of the legislation did not cause much excitement in the Salt River Valley. Farmers, businessmen and land speculators could agree that locating reservoir sites and building dams would improve prospects for everyone, but finding the capital to build them was seen as the main problem. Additionally, the full meaning or intent of the law was not understood, and no one could know how Washington officials would interpret or enforce it. Arizona Governor C. Meyer Zulick, addressing the legislature in January 1889, noted simply that,

“It is not proposed by the (federal) government to do more than show the area of land that can be reclaimed, and the cost of such reclamation, the building of the canals, dams, reservoirs, etc., being left to private capital and enterprise.”²

Until that time, private capital had done little in the way of dam and reservoir construction in Arizona, the exception being the Walnut Grove Dam on the Hassayampa River, about fifty-seven miles northwest of Phoenix in Yavapai County. Built primarily for placer gold mining, the possibility of a dam going up at Walnut Grove was mentioned in the *Phoenix Herald* in June 1884. Several years later, the dam was a reality, the newspaper saying it was “a huge success...and demonstrates beyond a doubt the practicability of constructing and operating great storage reservoirs in our mountains.”³

Valley residents were aware reservoir sites existed on the Verde and Salt rivers, but there was little factual data concerning them. The best information came from newspaper reports. For example, in June 1885, the *Arizona Gazette* printed stories about four men who traveled by boat on the Salt River from the Tonto Basin to the valley to test the feasibility of floating logs down the river. During the course of their exploration, the men passed "Through the box canon of the Salt River (where) the banks frequently towered above them over 1,000 feet." They went through a second canyon where the river bed narrowed to eleven feet. The newspaper called this the most important discovery of the trip, because the canyon was a suitable dam site. It said:

"...a dam may be placed across the river at that point, and at comparatively small expense, which would form a reservoir or lake of fully twenty miles in length."⁴

The *Gazette* editorialist was certain that reservoirs were in the valley's future, and thought it best that they should come "to us as a public work, free from the monopoly which private capital would exercise in the distribution of water and the absolute control of the lands." Before this could occur, though, the newspaper said, "a complete revolution in the laws" was necessary for the nation and territory.⁵

Shortly before the Maricopa and Phoenix railroad arrived in Phoenix in July 1887, resident Jerome B. Barton urged farmers and citizens on both sides of the river to form an association to take possession of the "most eligible (reservoir) sites now," and issue stock to build a dam. He worried that outsiders would use water stored behind a dam to open new lands, thereby leaving "the old locators and settlers...to take other and more expensive (reservoir) sites or be at the mercy of the first water storage companies." Barton said the railroad's arrival meant valley farmers would have to raise crops other than wheat, barley and alfalfa (which, of course, they were starting to do) if they were to compete.⁶

For the next couple of years, although there was repeated editorial and public comment, no positive steps were taken toward reservoir development. One difficulty was that the administration of President Benjamin Harrison interpreted the congressional act of 1888 as a mandate to withdraw from public entry all dam sites and all land that could be served by water from the reservoirs that might be created. The interpretation did not, however, stop would-be dam builders from filing notices for dam sites and making water claims. But it was not until the U.S. Senate in February 1889 created a Select Committee on Irrigation and Reclamation of Arid Lands, and the committee announced it would visit the arid region, that some real interest became evident in Phoenix.

Reportedly at the urging of W. J. Murphy, the Phoenix Chamber of Commerce met April 7 and directed its president, Henry E. Kemp, to invite the committee to visit. Kemp wrote to Senator William M. Stewart of Nevada, committee chair-

man, who promptly replied that the committee would reach Arizona sometime in September.⁷

Late in May 1889, Richard J. Hinton, irrigation engineer for the U.S. Geological Survey, sent letters to the Phoenix City Council and Arizona Governor Lewis Wolfley notifying them that the committee would probably pass through Arizona between September 10 and 17. However, the committee was not going to include Phoenix on its agenda. The committee would stop only along the line of the Southern Pacific Railroad at Yuma, Maricopa (about twenty-seven miles south of Phoenix) and Tucson. Hinton asked that the chamber and governor collect reclamation information to,

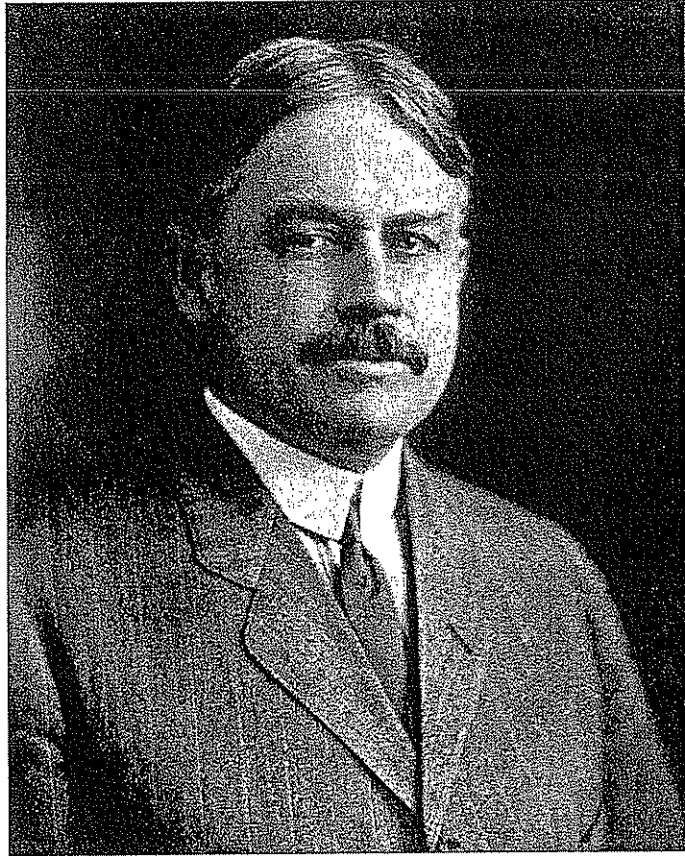
“at least cover area irrigated and irrigable, number of canals, main and lateral, cost of same, their length and capacity; source of supply and system of distribution, duty of water per acre; quantity, quality and character of water storage reservoirs, if any, etc.”

The city council passed its letter to the Phoenix Chamber of Commerce, while Wolfley sent copies of his to boards of supervisors in every county.⁸

Valley canal interests met to discuss water storage on June 29, and again July 6, 1889. At the second meeting, County Supervisor C. R. Hakes suggested the board of supervisors appropriate funds to gather information about the best reservoir sites. The other two supervisors agreed, and on July 12, the board approved spending five hundred dollars for that purpose. The supervisors directed County Surveyor William Breakenridge to lead the expedition. His companions were James H. McClintock, a sometimes newspaperman and publicist; John R. Norton, foreman of the Arizona Improvement Company; and L. E. Lamb, factotum. Murphy supposedly supplied equipment for the venture, which took the group on a 370-mile trek along the Salt and Verde rivers and over and through the adjacent mountains. The party departed the morning of July 18 and returned August 10, 1889.⁹

Upon their return, Breakenridge made a detailed report of their findings. He identified the most suitable place for a dam as about four hundred yards below the confluence of the Salt River and Tonto Creek. He reported that there,

“...the river runs through a box canyon the sides of which are nearly vertical for about one hundred feet and then slope back at about one to one slope. It is about 201 feet wide at the river edge and the bed rock is very near the surface. At this point a dam could be erected two hundred feet high that would back the water up Salt river to where the river cuts through the Sierra Ancha mountains, a distance of sixteen miles.”



James H. McClintock

He said the water would back up Tonto Creek a distance of ten miles. The reservoir would contain 103,058,040,800 cubic feet of water (almost 320,000 acre-feet), which would make it the largest in the nation. The surveyor said the cost of building the dam "would not exceed 1.5 million dollars," but his further statement that the reservoir "would supply water enough to irrigate all the land in the valley from the Arizona canal dam to Yuma" suggests he did not appreciate the distance of Yuma, the extent of the acreage, or the duty of water.¹⁰

McClintock, in a letter to the *Herald* about the expedition, estimated the canyon walls at the dam site rose about eight hundred feet high. The walls were "of both sandstone and limestone, as solid as cement. Bed rock can hardly be more than twelve feet in depth." Limestone, used in the manufacture of cement, was found in abundance, and lumber was about twenty miles away in the Sierra Ancha Mountains.¹¹

McClintock made these further observations:

"Surely the general government can find at no other place a more eligible site for water storage than this presents, and it should now be made the aim of our representative citizens to see that Congress is properly informed and to push matters so that, either by governmental aid or assisted by private enterprise, the necessary one-half million dollars shall be forthcoming for the construction of the dam, and that the prosperity of Central Arizona shall be established as firmly as the eternal rocks.

"A watertight bedrock dam just below the junction of the Salt and Verde, from which would be supplied all the canals of the valley, is a necessary concomitant to this enterprise, and would needs be effected before the full benefits of the summer storage flow could be enjoyed. This would be a costly undertaking to be entirely borne by the people of the valley, and yet would be the most economical move that could be made in canal circles. Besides the saving of the never ending expense of repairs to our brush dams, there would be saved from the underground flow fully seven thousand miners' inches."¹²

Meantime, the Phoenix Chamber of Commerce, after learning that Stewart's Senate committee was going to bypass Phoenix, began lobbying to have the committee change its schedule and come to the valley. One person who pushed to get a change was Marcus A. Smith, Arizona's delegate to Congress. Stewart later said that,

"The committee debated for hours as to the propriety of visiting any portion of Arizona, and particularly that section (the Salt River Valley), as it is forty miles off the main line of railroad. But we finally consented to make it a three hours' visit, and to say that we were astonished at what we saw upon our arrival, would not express it. I for one was dumbfounded. Mark Smith had told me of this beautiful valley and its resources...I thought Mark was 'stuffing,' but...it is a veritable garden spot, and we extended our three hour visit to nearly two days."¹³

Stewart exaggerated the length of the visit—the train carrying Stewart, Hinton, Senator John H. Reagan of Texas, John Wesley Powell, director of the U.S. Geological Survey, and several others—arrived in Phoenix about 5 p.m. September 4, 1889, and departed about 10 a.m. September 5. The group was escorted immediately to the east balcony of the office of the Arizona Improvement Company where testimony was heard from Thomas E. Farish, territorial immigration commissioner; James H. McMillan, secretary of the Arizona

Canal Company; Lincoln Fowler, a canal company director; Supervisor W. E. Platt of Apache County; attorney William A. Hancock; Breakenridge and Murphy.¹⁴

Breakenridge testified about the reservoir site at the Tonto Basin, proposing a dam 280 feet high. Hancock estimated the dam could be built for under a million dollars. When Stewart and Reagan finished taking testimony, the party dined at the Commercial Hotel. At eight p.m., Stewart spoke to about five hundred people assembled at the city plaza (today's First to Second streets between Washington and Jefferson). A short talk also was given by Smith, who, the *Herald* said, advocated changing the reservation act of 1888 "so that no hardship would be worked upon the honest settler, while land sharks were kept at a safe distance."¹⁵

With the departure of the Stewart party, talk about a reservoir diminished. The 1888 law, as noted earlier, crippled private planning, and was attacked by Governor Wolfley in correspondence to Secretary of the Interior John W. Noble. Wolfley was general manager of an irrigation project on the Gila River south-east of the valley.¹⁶

The month of February 1890, was very wet, with storms sending torrents of water down rivers and streams throughout Arizona. In fifteen hours February 21 and 22, the Salt River rose seventeen feet, carrying away a couple of hundred feet of the railroad trestle at Tempe, and bringing down poles carrying telegraph wires. Residents in Phoenix could clearly hear the roar of the river a mile and a half to the south of the city.¹⁷

Weather-related problems in the valley were minor compared to what happened on the Hassayampa River at Walnut Grove. Early on February 22, with water thirteen- to fifteen-feet deep plunging over top of the Walnut Grove Dam, the structure gave way. A wall of water from the reservoir's nine hundred acre lake, moving at twenty miles an hour, sped through the canyon below. The roaring, cascading flood submerged a construction camp and destroyed the headquarters of the Walnut Grove Water Storage Company. Sheriff William O. (Buckey) O'Neill of Yavapai County placed the number of dead and missing at fifty-two, but said lives lost might total sixty-five or seventy.¹⁸

Historian David B. Dill, Jr., said the Walnut Grove Dam was a rock-fill structure with masonry front and back walls. It was 124 feet thick at the base, 110 feet high and had a crest of 410 feet. Dill said that one of the dam's fatal defects was a spillway built too small.¹⁹ Thus, the water storage project the *Herald* had called a great success ended in disaster a few years after the dam's completion. For anyone who thought the disaster would threaten water storage plans in the territory, the *Herald* remarked,

"The bursting of the dam...was simply a benefit to capital that

will invest in like structures in the future. That dam was most carelessly constructed and much money was wasted on it, but good dams can be constructed in this country easier than almost anywhere else; the thing that was to be learned was the demands that would be made on such structures. We have just had one terrible lesson as to that."²⁰

Arizonans regarded the 1888 law as a far more serious threat to irrigation development than the Walnut Grove Dam collapse. Senator Stewart placed the blame for withdrawing irrigable lands from settlement on Powell of the Geological Survey. Stewart charged that Powell, who also wanted the Desert Land Act of 1877 repealed, was "making the agricultural lands of the arid region a stepping-stone for larger appropriations for scientific purposes." Stewart wanted the law amended to again allow entries to public land. Governor Wolfley strongly endorsed this position and was as adamantly opposed to repeal of the Desert Land Act. Unfortunately for Wolfley, Powell had the backing of Secretary of the Interior Noble, who, in the bureaucratic hierarchy, was superior to both men, and Noble asked Wolfley to resign in August 1890. While Wolfley was in Washington, D.C., turning in his letter of resignation, the part of the law withdrawing public lands from entry was repealed except for reservoir sites. The same law also limited to 320 acres the number that a person could acquire under federal land laws. The Desert Land Act was similarly amended March 3, 1891, reducing the number of acres that could be entered from 640 to 320, and imposing other proofs before a land patent could be issued.²¹

- ¹ *Engineering and Mining Journal* (undated), reprinted *Phoenix Herald*, November 14, 1888; *Herald*, May 23, 1890.
- ² *Herald*, January 22, 1889.
- ³ David B. Dill, Jr., "Terror on the Hassayampa, The Walnut Grove Dam Disaster of 1890" (*The Journal of Arizona History*, Autumn, 1987), pp. 283-306; *Herald*, June 4, 1884, October 7, 1887.
- ⁴ *Arizona Gazette* (Phoenix), June 5, 6, 1885.
- ⁵ *Ibid.*, April 20, 1886.
- ⁶ *Ibid.*, June 24, 1887.
- ⁷ F. H. Newell, *The History of the Irrigation Movement, First Annual Report of the U.S. Reclamation Service* (Washington: Government Printing Office, 1903), pp. 4-5, 21-22; *Herald*, July 9, 16, August 9, 1889; Merwin L. Murphy, "William John Murphy and the Building of the Arizona Canal" (unpublished manuscript), p. 74.
- ⁸ Richard J. Hinton to Lewis Wolfley, May 27, 1889, reprinted *Herald*, June 6, 1889; *Herald*, June 4, 1889.
- ⁹ Trip expenses paid by the Maricopa County Board of Supervisors totaled \$599.67. Of the sum, McClintock received \$386.67, Norton \$135, including for rental of a mule, and Lamb \$78. Maricopa County Board of Supervisors, Phoenix, Arizona, Book No. 3, 1884-1889, p. 564; *Herald*, July 2, 13, 19, August 10, 15, 20, 1889; Murphy, p. 74.
- ¹⁰ *Herald*, August 16, 1889.
- ¹¹ James E. McClintock to Editor *Herald*, August 12, 1889, published August 15, 1889.
- ¹² *Ibid.*
- ¹³ *Herald*, June 29, December 30, 1889.
- ¹⁴ *Ibid.*, September 4, 5, 1889; *Weekly Phoenix Herald*, September 12, 1889; Murphy, p. 75.
- ¹⁵ Murphy, pp. 77-78; *Weekly Herald*, September 12, 1889.
- ¹⁶ *Herald*, October 12, 1889.
- ¹⁷ *Ibid.*, February 22, 1890.
- ¹⁸ Dill, pp. 298-300.
- ¹⁹ *Ibid.*, pp. 290-292.
- ²⁰ *Herald*, March 5, 1889.
- ²¹ William N. Stewart to Samuel Purdy, June 24, 1890, reprinted *Herald*, July 3; *Herald*, September 2, 1890; Scot Wrighton and Earl Zarbin, "Lewis Wolfley, Territorial Politics, and the Founding of *The Arizona Republican*" (*The Journal of Arizona History*, Autumn, 1990), pp. 314-315; U.S. Statutes at Large (Government Printing Office: Washington, 1891), Vol. 26, pp. 1095-1103.