San Luis Valley Project

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The San Luis Valley Project

The high mountain desert known as the San Luis Valley has been home to farmers and ranchers since the mid 1800's. Recognizing the need for control of the waters that flowed from the high peaks that surround the valley, early farmers devised ways of controlling the flow for their own use. As early as the 1850's farmers were constructing canals for irrigation of crop lands. Later, the need for storage of water resulted in the construction of several storage facilities. In 1936, the Bureau of Reclamation began to study the water needs of the San Luis Valley, and the results of that research led to the initiation of the San Luis Valley Project.[1]

Project Location

The San Luis Valley is located in south-central Colorado and northern New Mexico, and provides drainage to an area of approximately 8000 square miles. The valley extends south from Poncha Pass to beyond the Colorado-New Mexico state line, and is bordered on the east by the Sangre de Cristo Mountains, and by the San Juan Mountains and the Continental Divide to the west. The high, treeless, plain that makes up the valley floor has an average elevation of about 7500 feet above sea level. Many of the mountains that surround the valley reach in excess of 14,000 feet and feed numerous streams that flow into the valley, the largest two being the Rio Grande River and the Conejos River. The Rio Grande flows across the middle of the valley from west to east before turning south near Alamosa, while the Conejos River flows along the southern border of the valley until it meets with the Rio Grande near La Sauses.

The San Luis Valley is a high mountain desert with an average annual precipitation of about 7 inches. The mountains that surround the valley receive about 30 inches annually. Summer days are usually very warm, while at night temperature may drop as much as 35 degrees from the daytime high. In the winter, temperatures as low as -30 degrees are not uncommon. The growing season in the valley is short, usually about 120 days. The primary crops are

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1. U.S. Department of, Interior, Water and Power Resources Service, *Project Data, 1981*, Denver: U.S. Government Printing Office, 1981, 1123; Denver. National Archives and Records Administration: Rocky Mountain Region. "Annual Project Histories: San Luis Valley Project." 1948-50, 2 (Annual Project Histories hereafter cited as Project History, followed by year and date).

potatoes, peas, lettuce, and cabbage. Forage and grain crops are raised to support the livestock industry in the valley.

One unique feature of the valley is the Closed Basin. This large area in the northern part of the valley drains about 2900 square miles and is separated from the rest of the valley by a low alluvial fan. There is no drainage from the basin and much of the water that flows into it is lost through evapotranspiration. Water which is not lost flows into San Luis Lakes on the periphery of the valley.

The San Luis Valley Project is separated into two divisions, the Closed Basin Division and the Conejos Division. The Closed Basin Division is located north and east of Alamosa in Alamosa and Saguache Counties, with the Conejos Division south and west of Alamosa in Conejos County.

The primary feature of the project is the Platoro Dam and Reservoir, located on the Conejos River about 1 mile west of the small town of Platoro. The dam was built to control floodwater, and provide supplemental water to irrigate approximately 73,890 acres of land in the Conejos Water Conservancy District, 40 miles away. In the Closed Basin Division, the Closed Basin Drain salvages water from the basin via wells, pumps, laterals and canals, and transports that water to the Rio Grande River for use elsewhere.[2]

Historic Setting

Pre-History

The San Luis Valley was formed as the result of several geologic events that spanned hundreds of millions of years. The basic complex of igneous and metamorphic rocks was laid down over 570 million years ago during the pre-Cambrian period. This was overlaid with deposits of limestone, sandstone, and shale from the Paleozoic and Mesozoic Eras, 65 to 570 million years ago. About 65 million years ago, at the end of the Cretaceous period, a large, broad dome swelled up. After several periods of erosion and elevation, this dome became the

2. "Project History," 1986-9, vi; U.S. Department of Interior, Bureau of Reclamation. *Designers Operating Criteria: Platoro Dam*. Denver: U.S. Government Printing Office, 1975, 1; *Project Data*, 1123-4; U.S., Congress, House, *A Report on the Closed Basin Division, San Luis Valley, Colorado*. House Document 91-369, 91st Congress, 2nd Session, 1970, 55-7.

San Juan Mountains. The materials that eroded from the San Juan Mountains flowed into a large outwash that became known as the Blanco Basin formation. During the Miocene Age, 5 to 24 million years ago, large amounts of volcanic rock were extruded over this region. This area was subject to several cycles of erosion and volcanic extrusion that continued through the Tertiary Period and finally culminated in the creation of the San Luis Valley.[3]

It seems likely that throughout the history of mankind, the San Luis Valley has looked much the same as it does today. The marshes and ponds formed due to the poor drainage of the Closed Basin Region seemed particularly attractive to early hunter/gatherers. These wet, marshy areas supported a large variety of food resources including fish, water fowl, and edible plants. The surrounding grassland contained small herds of deer, elk, and antelope, as well as rabbits and birds. Given the crops available, the valley's high elevation, long cold winters, and short growing season eliminated the possibility of aboriginal agriculture.[4]

A 1979 archeological survey of the Closed Basin revealed artifacts dating to the Early-Archaic period, about 6500 to 3500 years B.C. Other artifacts from the Paleo-Indian period are over 10,000 years old, but it has been postulated these artifacts were carried into the region Archaic Period peoples. The most abundantly represented specimens date from the Late Archaic Period, 1000 B.C. to 500 A.D. The lack of permanent structures, the scattering of finds, and the small size of the discoveries indicate numerous short visits to the area rather than an extended period of occupation.[5]

A 1949 archeological survey of the Platoro Dam site and surrounding area identified no significant artifacts or sites. Local history identifies Ute, Kiowa, and Comanche Indian use of the valley, and numerous trails throughout the area have been attributed to those groups.[6]

History

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3. U.S. Department of Interior, Bureau of Reclamation. *Technical Record of Design and Construction: Platoro Dam*. Denver U.S. Government Printing Office, 1954, 1-3.
4. U.S., Department of Interior, Bureau of Reclamation, *Archeological Investigation in the Closed Basin of Colorado's San Luis Valley: 1979 Field Work*, by Van Tries Button, Report No. BR-SLV-CRI-001 (Amarillo: Government Printing Office, 1982), 2.
5. *Ibid*., 8-9.
6. Harry C. Meyers, "Preliminary Appraisal of the Archeological Resources of the Platoro Reservoir Site, Platoro, Colorado." Prepared for the River Basin Surveys, Smithsonian Institution, October, 1950. (Copy.)

The existence of the San Luis Valley has been known to European settlers since the Spanish settled New Mexico in the 1590's, but it was largely ignored due to its isolation and inhospitable environment. It was a land frequented by various nomadic Indian groups and of little obvious benefit to European settlers. Among the first explorers into the valley was Diego de Vargas, who entered the region as a show of force following his defeat of the Indians at Santa Fe in 1692. But the Indians, mostly Comanche, were not impressed and the valley became a major staging area for raids down the Rio Grande Valley. Several Spanish military expeditions into the area sought to subdue the Indians, but no Spaniards stayed. The Comanche problem was solved when, in 1783, Juan Bautista de Anza, Governor of New Mexico, defeated the Comanche, under Chief Cuerno Verde, in a battle near present day Pueblo, Colorado. Following the defeat of the Comanche, the valley was once again forgotten.[7]

In the early 1800's, fur trappers began passing through the valley on the way west to the San Juan Mountains. Since Taos was nearby and a major trading center in the region, the valley was not used as a rendezvous and no trading posts were built there. Its isolated location, difficulty in reaching it from the east, and the threat of Indians discouraged permanent settlement by Europeans in the valley.[8]

In 1803, the Louisiana Purchase gave the United States control over vast areas of the west including parts of Colorado. In 1806, under order of President Thomas Jefferson, Lieutenant Zebulon Pike left Fort Belle Fontaine, near St. Louis, to explore the Rocky Mountains near Spanish territory. In late 1806, Pike and his men entered the valley where they set up camp for the winter. In February of 1807 Pike and his men were arrested by the Spaniards for trespassing and moved to Mexico. They were released in 1810, and returned to the United States.[9]

Pike was the last recorded explorer into the valley until 1848, when John C. Frémont

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7. Frederic J. Athearn, "A Brief History of the San Luis Valley, Colorado," Prepared for the San Luis Grazing Environmental Impact Statement 1975, November, 1975. (Copy.) 1-3.
8. *Ibid*., 4.
9. *Ibid*., 5.; Mehls, Steven F., *Colorado Plains Historic Context*, (Denver: Colorado Historical Society, 1984), p.7.

entered the valley in search of a rail route through the Rockies. Frémont was followed in 1853 by John Gunnison, also in search of a rail route. In the 1870's, explorer and surveyor, Ferdinand V. Hayden came to Colorado to map the unexplored regions of the territory. His journey took him into the San Luis Valley, but like the others before him, he passed through without stopping.[10]

The first permanent settlements in the valley came in the 1840's. Eager to solidify its claim to the region, Mexico began giving land grants in the valley in the 1820's. A number of early grants were allowed to lapse due to non-use, but several settlements were established by the 1840's. Early settlers found life difficult. The land was arid, and there were only a few major rivers and streams. By the late 1840's, there were a few settlements along the rivers and streams of the southern valley.[11]

The Treaty of Guadalupe-Hidalgo that ended the U.S./Mexican War in 1848 had a dramatic effect on the settlements in the San Luis Valley. The treaty, which awarded the United States much of the west including parts of Colorado and New Mexico, raised questions about the validity of the land grants in the valley and other areas. In 1854, the courts upheld the validity of many grants and denied several others. Only one Colorado grant was affected, and the case was settled when the affected party was allowed to choose another site in the valley.[12]

In 1851, New Mexican settlers founded the first town in Colorado, San Luis. by 1852, these farmers realized irrigation was necessary, and they constructed the San Luis People's Ditch. Several other ditches soon followed, and the era of irrigation in the San Luis Valley began.[13]

The New Mexican farmers used a method of irrigation known as subirrigation. This involved raising the water table by diverting water from rivers and streams and flooding the area. This flooding caused the water table to rise up to the roots of growing plants.[14]

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10. *Ibid*., 6.
11. *Ibid*., 6-7.
12. *Ibid*., 8.
13. *Ibid*., 8-9.
14. Frank A. Brookshier, "Getting the Sub Up," *The Reclamation Era*, November 1947, 245-8.

The Civil War brought the conflict between North and South to the valley. In 1852, Fort Massachusetts was built to protect settlers in the valley from the Ute Indians. In 1857, it was moved to a new site and became known as Fort Garland. Fort Garland became the base for Union Army activities in New Mexico where the Union and Confederacy were struggling for control. The Battle of Glorieta Pass, just east of Santa Fe in 1863, marked the end of the Confederate threat in the region.[15]

The Colorado gold rush of 1859 passed the valley by, and agriculture remained the primary economic activity in the valley. Primary crops were alfalfa, wheat, and corn. The livestock industry, which had begun with the introduction of sheep and cattle by early settlers in 1842, continued to grow. By 1879 there were 145,000 sheep and 35,000 head of cattle in the valley, and grazing was prominent throughout the region.[16]

The mining boom finally reached the valley; in the late 1870's, gold was discovered in the valley, and thousands of gold seekers moved to the area. The primary activity was in the San Juan Mountains. This presented a problem as there were no roads into the mountains. Throughout the 1860's, roads had been built to link the communities of the valley, but none had been built into the mountains. To solve the problem, a German immigrant named Otto Mears, a freight hauler in the valley, built a toll road across the mountains. This venture was so successful that Mears sold his freight company and began to build a series of toll roads throughout the region.[17]

While Mears was developing his toll road empire, the southern valley was getting its first railroad. The Denver and Rio Grande Western Railroad reached La Veta Pass in 1874, and began to move into the valley. In 1874, the railroad reached Alamosa, and agricultural goods from the valley began to move toward Denver and the east. In the years prior to the turn of the century, the mining industry in the north end of the valley was booming, while agriculture industry in the south continued to grow. By 1900, the rail system in the valley was complete,

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15. "A Brief History," 9-10.
16. *Ibid*., 10.
17. *Ibid*., 11.

and almost no area was left without transportation.[18]

The arrival of the railroad in the valley signaled an increase in economic development and new settlement. Among the first "Anglos" to settle in the valley were the Mormons, who established the towns of Manassa and Sanford in the late 1870's and early 1880's. A number of other groups attempted to settle in the valley, but met with little success. A group of Dutch settlers arrived in late 1892, but broke up after an diphtheria epidemic killed 13 children.[19]

One of the major reasons for the economic success of the valley was the "ditch boom" of the 1880's. Irrigation canals were a popular investment of eastern interests investing in the west. The largest investments came from the Travelers Insurance Company of Connecticut, which built the Monte Vista and Travelers Canals. Several other large canals were built, and by the 1890's, the valley had begun to reap the benefits of the eastern investments.[20]

Following the turn of the century, the mining industry began to shrink, and several rail lines that had served the mining communities were abandoned. Tourism began to be a major economic activity, replacing part of the income that had come from the mineral industry. The introduction of the automobile impacted on the valley by providing easy access to and from the area. Transportation continued to play an important role in the life of the region, bringing in tourist dollars and shipping out agricultural goods. By 1950, the valley was served by the Denver and Rio Grande Western Railroad, Frontier Airlines, several bus lines, and a number of truck lines both scheduled and unscheduled.[21]

Project Authorization

The San Luis Valley Project, as described in House Document 693, 76th Congress, third session, was authorized following a report of Secretary of the Interior Harold L. Ickes. His report confirmed the feasibility of the proposed project. Approval came in the provisions of section 9 of the Reclamation Project Act of 1939, and funds for the project were appropriated by the Interior Appropriation Act of 1941. The original project authorization called for the

18. *Ibid*., 12-3.
19. *Ibid*., 14.
20. *Ibid*., 14-5.
21. *Ibid*., 17; *Project History*, 1948-51, 3.

development of four divisions. In addition to the Conejos and Closed Basin Divisions, there were the Rio Grande and Weminuche Pass Divisions. The proposed Rio Grande Division involved the construction of a dam at Wagon Wheel Gap for flood control, irrigation, and hydro-power generation, while the Weminuche Pass Division involved the diversion of 20,000 acre-feet of water from the San Juan River Basin to the Rio Grande River above Wagon Wheel Gap. Additionally, the Conejos Division was to be made up of two dams, one at Platoro, and one down river at Mogote. Economic and political concerns eventually allowed only the Platoro Dam and Closed Basin Drain to be constructed.[22]

In November of 1948, the Board of Directors of the Conejos Water Conservancy District approved the plan and repayment contract for the construction of the Platoro Dam and submitted it for approval by district electors. A special election was held the following January and the contract was approved. In March of that same year, a district judge decreed the election to be legal and valid, and the contract for the construction of Platoro Dam and Reservoir was approved. On March 31, 1949, Acting Secretary of the Interior Oscar L. Chapman signed the contract between the District and the United States.[23]

As the entire dam and reservoir site is located within the boundaries of the Rio Grande National Forest, land acquisition was not a problem. Several mining claims were condemned and all suits involving the condemnations were settled out of court. Provisions were made for access to those claims that were not part of the condemnation proceedings.[24]

Construction History

All operations of the San Luis Valley Project are subject to the provisions of the Rio Grande Compact of 1938 regulating the development of the waters of the Rio Grande River north of Fort Quitman, Texas. The compact establishes regulations concerning the quantity and quality of water delivered to the New Mexico state line. This is done through a schedule of delivery based upon the inflow and outflow of water in the San Luis Valley for the years 1928

22. *A Report on the Closed Basin Division*, 59-60.
23. "Project History," 1987-9, 23; 1948-51, vi-vii.
24. *Ibid*., 1948-51, vii, x.

through 1937. Under the compact, storage projects in Colorado may only store water in excess of the amount required for delivery to the New Mexico state line. If the schedule is not met, it results in a debit that must be repaid in subsequent years.[25]

Following the adoption of the Rio Grande Compact on March 18, 1938, the United States Army Corps of Engineers, and later the Bureau of Reclamation, began to investigate sites for flood control and irrigation dams on the Conejos River. They investigated a total of twelve sites and explored alternative approaches to the project. Plans investigated the advantages of a single large reservoir to those of two smaller reservoirs. The Bureau of Reclamation project report of April 1947, concluded that the two reservoir plan was preferable to the single reservoir plan. The report also concluded that a 60,000 acre-foot reservoir at Platoro would provide 90 percent of the benefits of the two reservoir plan. The Reclamation report recommended construction of Platoro Dam and deferral of construction on the second dam. Based upon these recommendations, Reclamation began to build Platoro Dam in 1948 with a schedule for completion in 1953.[26]

In the summer of 1948, Reclamation did field work for construction of Platoro Dam. Reclamation laid out the dam, spillway, and outlet conduit axis; marked the 10,047 foot-high contour line for clearing; set stakes; and dug test pits. Several contractors visited the site preparatory to submitting bids for construction of the project.[27]

In late 1948, Reclamation published the project specifications and called for bids. Included in the specifications were the hourly rates to be paid to workers of various classifications. The rates varied from $1.10 per hour for laborers to $2.25 per hour for crane operators. Asbestos workers were to be paid $2.125 per hour, and bricklayers were to receive $1.875 per hour. The specification further stated that there would be no discrimination in hiring based upon race, creed, color, or national origin.[28] Seven bids were received and opened at

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25. *A Report on the Closed Basin Division*, 58.
26. *Technical Record*, 1; *A Report on the Closed Basin Division*, 60.
27. "Project History," 1948, 2.
28. U.S. Department of Interior, Bureau of Reclamation, *Schedule, Specifications, and Drawings: Platoro Dam, San Luis Valley Project, Colorado*, Specification No. 2594. (1948), 2-4.

Monte Vista on April 12, 1949. The low bidder was Hinman Brothers Construction Company of Denver, Colorado at $2,727,792, which received the contract award on May 5, 1949. On May 18, 1949, the County of Conejos awarded to Hinman Bros. the contract for the completion of the last four miles of road from Antonito to Platoro.[29]

In addition to the primary contract for construction of the dam, Reclamation issued a number of smaller contracts for related work. A contract for construction of quonset huts at the government camp at Platoro was issued to Ward E. Mathias of Monte Vista, Colorado, on June 24, 1949, at a cost of $26,512.57. Welch Industries, Inc, of Colorado Springs received the contract for clearing the Platoro Reservoir site on August 11, 1949 at $33,769. The Superior Manufacturing of Amarillo, Texas, won the bid to construct a liquid petroleum system for the Platoro camp at a cost of $4,778.24, and Herbert F. Winner of Alamosa, Colorado, won the contract to build a two bedroom gatekeeper's residence.

Two equipment contracts went to the Lang Company of Salt Lake City, and the Albina Engine and Manufacturing Works of Portland, Oregon. The Lang Company contracted to supply the 56-inch outlet pipe at a cost of $10,334. The Albina Engine and Manufacturing Works provided the high-pressure gate for the outlet works for $14,224.[30]

On June 13, 1949, Hinman Bros. received notice to proceed and began excavations on the outlet tunnel on June 20. On June 23, the firm began stripping the foundation at the left abutment, and on July 7, excavations for the grout cap trench in the bottom of the cutoff trench began. The cutoff trench and grout cap were designed to provide a watertight seal between the bottom of the dam and the bedrock. The maximum width of the trench was 200 feet ranged in depth between 3 and 10 feet. Suitable materials excavated from the trench and foundation areas were stockpiled for use as fill in the main structure of the dam.[31]

During excavations, Hinman Bros. experienced a number of problems. On the right abutment, an abandoned mine tunnel was discovered. Although it did not present a threat to the

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29. *Ibid*., 1948-51, viii; *Technical Record*, 29.
30. "Project History," 1987-9, 23; *Technical Record*, 30.
31. "Project History," 1948-51, viii-ix; *Technical Record*, 7,39.

project, it was necessary to clear the tunnel and fill it with concrete before proceeding. During excavations for the dike section adjacent to the left abutment, a large pothole was uncovered. The hole, 25 by 75 feet and 18 feet deep, was part of an old river channel that had been filled with alluvial material. Work on the dike section had to be delayed until the hole was cleaned out and filled with suitable materials. The general condition and type of materials encountered during the excavations made it necessary to excavate the entire foundation area down to bedrock, and the irregularity of the foundation required the use of a significant amount of hand stripping.[32]

Work on the outlet tunnel began on June 20, 1949, with preparations for "holing in" the tunnel at the downstream outlet. Tunneling continued three shifts per day, six days per week, until the tunnel was "holed out" on August 19, 44 days later. On September 6, concrete and steel placement began in the tunnel. During the excavation of the tunnel, no major problems or delays were encountered, and by the end of the construction season in December 1949, all concrete work within the tunnel had been completed.[33]

Clearing operations at the dam site were initiated by the prime contractor in May of 1949, and clearing operations for the reservoir site was initiated by Welch Industries on August 30. Two portable saw mills were used during the clearing operations and the timber was used at the construction site. Surplus timber was sold on site and hauled by private individuals and logging firms.[34]

Construction was halted on December 15 due to winter weather conditions. During the 1949 construction season Hinman Bros. cleared all dam and dike foundation areas except the spillway and completed 60 percent of all stripping. The aggregate separating unit was 85 percent complete, and the grout cap trench was completed. All excavation for the outlet works except the valve house was completed and only the concrete for the valve house was left to be poured. Most of the north side of the reservoir site was cleared up to the 10,047 foot contour line and work on the government camp at Platoro was completed in late September. The liquified

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32. *Technical Record*, 39.
33. *Ibid*., 40; "Project History," 1948-51, 31.
34. *Technical Record*, 37.

petroleum gas storage and distribution system was completed by the end of June.[35]

Construction resumed on May 15, 1950, when Hinman Bros. began placing material in the dam embankments. It had been anticipated that the 56-inch outlet pipe downstream from the high-pressure gate would not be installed prior to the diversion of the Conejos River through the outlet tunnel. But at the contractor's request, the installation of the outlet pipe was subcontracted to Rocky Mountain Welding and Engineering and was completed July 10. The installation of the 4-foot by 5-foot high-pressure emergency gate was tested on July 15, and July 17, at 11:25 am, the river was diverted through the completed outflow system.[36]

Cleared materials were burned off, and by the end of the 1950 construction season 85 percent of the reservoir site had been stripped.[37]

Construction for the 1950 season was halted by the end of November. At the end of the season; 60 percent of the fill had been placed; all drilling and grout placement was complete; the outlet pipe was placed and the high-pressure gate completed and tested; the spillway excavation was 85% complete, the crestwall placed, and foundation grouted; and the gatekeeper's house in Platoro was finished. Fortunately, there were no major delays or problems.[38]

The 1951 construction season began on May 7, and work by Hinman Bros. was completed on September 29, over 400 days ahead of schedule.

Clearing of the reservoir site continued through the summer of 1951. In July, burning was halted due to extreme fire danger. It was resumed on July 23, and clearing continued. There was only one fire associated with clearing activities. This occurred on May 28, 1951, and was quickly brought under control and extinguished. Clearing was completed on August 13, and notice of acceptance was given to Welch Industries on that date. During the clearing activities, the company cleared over 120 acres and employed an average of 43 workers with only 45 worker days lost due to injury.[39]

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35. "Project History," 1948-51, 31-40.
36. *Ibid*., 1948-51, 20; *Technical Record*, 33, 37, 59.
37. "Project History," 1948-51, 28.
38. *Ibid*., 1948-51, 20-8.
39. *Technical Record*, 34, 37.

The butterfly valves were delivered to Platoro on November 9, and installation was completed on December 9. The valves were placed into operation in May 1952. The valves were installed by government workers.[40]

During construction, Hinman Brothers excavated and moved over 1.9 million cubic yards of material, poured and placed almost 3100 cubic yards of concrete, and drilled and filled over 12,300 feet of grout holes. The construction project employed an average of 120 employees and paid wages that ranged from $1.30 per hour to $2.50 per hour. There were six orders for change approved during the construction process. Two involved changes in concrete placement, two for where materials would be obtained, one for construction of an access road, and one that deleted the installation of the two 48-inch butterfly valves due to delays in their delivery. The total cost of labor and materials supplied by Hinman Bros. was $2,447,755.02.[41]

The Platoro Dam, at 10,000 feet above sea level, is the highest dam ever built by the Bureau of Reclamation. The dam is an earth-filled structure 1,540 feet long with a maximum height of 165 feet and a total volume of almost 910,000 cubic feet of material. There is an unlined, open cut spillway on the left abutment of the dam with a flow capacity of 3,000 cubic feet per second (cf/s) when the reservoir is at full capacity. The maximum width of the base of the dam is 1100 feet with the width of the crest 35 feet. The outlet works are on the right abutment and consist of a trashrack structure, concrete lined high-pressure tunnel, gate chamber, a horse-shoe shaped tunnel housing a 56 inch diameter steel pipe, and a valve house structure. The flow is regulated via two 48-inch butterfly valves in the valve house and a 4-foot by 5-foot high-pressure emergency gate in the gate chamber. The maximum out-flow rate through the two butterfly valves is 710 cf/s.

The reservoir formed by the dam has a total capacity of slightly less than 57,500 acre-feet when filled to it's maximum elevation of 10,034 feet above sea level. The surface area of the reservoir at maximum capacity is just under 950 acres. The annual discharge of water from the

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40. "Project History," 1987-9, 24; *Technical Record*, 62.
41. "Project History," 1948-51, 16-9; *Technical Record*, 29-30, 34, 668.

reservoir is slightly more than 64,500 acre feet.[42]

Post Construction History

Operations at the reservoir began in May 1952. Almost immediately upon the start of operations, problems were experienced with the two 48-inch butterfly valves. Under certain conditions, the valves became extremely difficult to operate, and problems with the motor control relays prevented reliable operation. The problem was traced to inadequately designed operating mechanisms and new valves and mechanisms were ordered from the manufacturer, the S. Morgan Smith Company. Until delivery of the new valves, special operating procedures had to be followed. The new valves were received in early 1954, and installation was completed on September 30.[43]

On May 18, 1951, Welch Industries, Inc., filed a claim with the Comptroller General contending that the firm had cleared 60 to 70 acres more than the contract requirement. The claim was initially refused on the basis that the contract clearly stated that the areas to be cleared were approximate, and that the contractor would not be entitled to additional compensation for work over and above that stated in the contract. Even so, Welch Industries continued to pursue the claim and a settlement for $18,303.74 was reached in July 1954. This was the only claim pertaining to the Platoro Dam project filed against the Government by a contractor.[44]

Under the terms of the Rio Grande Compact, Colorado is to deliver a certain amount of water to the New Mexico state line each year. During the construction of the Platoro Dam, Colorado accumulated a large water debt that had to be paid off before water could be diverted for irrigation purposes. By 1958, the debt had grown to over 500,000 acre/feet. The winter of 1957-58 was a season of heavy snows, and as a result the spring runoff was very high. On June 6, 1958, the reservoir drained over the spillway for the first time since construction was completed. During the late summer of the same year, 20,000 acre/feet of water became available

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42. *Technical Record*, 1; *Project Data*, 1123.
43. "Project History," 1987-9, 27; *Technical Record*, 62.
44. "Project history," 1954, 5; *Technical Report*, 31.

for irrigation use, and Colorado had an annual credit of water for the first time in several years.[45]

The following growing season was hot and dry, and the Rio Grande Compact commissioners allowed 30,000 acre/feet to be diverted for irrigation in the Conejos District. The release of water eliminated the 10,000 acre/foot credit from the previous year and increased the overall debt by 20,000 acre/feet. Colorado's debit status under the compact continued until the mid-1980's when the debt was finally wiped out and water could be stored in the Platoro Reservoir for irrigation use.[46]

Numerous improvements have been made to the dam since its completion. Most of the modifications have been made to the outflow system. These changes include modifications to the drain system, changes in the motor relay systems, and installation of a remotely operated valve control system. This addition eliminated the need for an on-site gatekeeper, and 1985 marked the last year that a gatekeeper lived at the reservoir during the operating season.[47]

In 1987, the Conejos Water Conservancy District offered to purchase the dam and all associated facilities from the government. In 1988, the Bureau agreed in principle to their offer, and it was forwarded for approval. On June 2, 1989, two bills were introduced, one in the House (H.R.1462), and one in the Senate (S.1118), to authorize transfer of the reservoir to the district.[48] Although authorized, the transfer of title for the land and facilities did not take place. The water conservancy district paid off its debt for its share of the construction costs and assumed the maintenance and operation of the dam and reservoir.[49]

Settlement of the Project

Agriculture and livestock raising have been the primary economic activities in the San Luis Valley since the mid-1800's. Prior to construction of the Platoro Dam and Reservoir, numerous canals and water storage facilities existed in the area. The addition of the Platoro Dam did not significantly alter the quality of life in the valley, nor did it affect the population growth

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45. "Project History," 1955, 7C; 1956, 12; 1987-9, 28.
46. *Ibid*., 1959, 8; 1987-9, 30-1.
47. *Ibid*., 1984-6, 12; 1989, 17, 30.
48. *Ibid*., 1987-9, 31-2.
49. *Ibid*., 1987-9.

of the area. The anticipated benefit to the growers in the valley has not been realized due to the requirements of the Rio Grande Compact . Although the yields and values of crops in the valley may have increased over the years, this is more likely due to advances in agricultural technology rather than the addition of the Platoro Dam. If the situation under the Rio Grande Compact improves in the future, the San Luis Valley Project may yet have a significant impact on life in the valley.

Uses of Project Water

The purpose of the Platoro project was divided between flood control, and capture and storage of water for irrigation uses. Due to the nature of the water debt incurred by Colorado under the Rio Grande Compact, the project was used almost exclusively for flood control well into the 1980's. Following the retirement of the water debt, water became available for use in the Conejos Water Conservancy District. The principal crops grown in the district are alfalfa, wheat, barley oats, vegetables, and potatoes. Currently, nearly 81,000 acres of land benefit from the storage of water in the Platoro Reservoir. Water from the reservoir is released when normal flows fall below irrigation requirements. In 1989, the district received over 14,000 acre/feet of water from the reservoir, and the total crop value for the district that year was over $8,190,000.00. In addition to the flood control and irrigation benefits, the dam and reservoir also provide many recreational benefits including fishing, boating, hiking, and camping. 1986 saw 6170 visitor days at the Platoro Dam with the total climbing to 8400 in 1989.[50]

Conclusion

Although the reservoir has yet to realize it's full potential as a dual-use project, the benefits as a flood control unit have been great. The Army Corps of Engineers estimate the total amount of damage prevented by flood control operations from 1950 through 1989 to be over $4,500,000.[51] It is hopeful that in the future the water situation under the terms of the Rio Grande Compact will allow irrigators in the San Luis Valley to benefit more fully from the project. Some of the water shortages may be reduced as the benefits of the Closed Basin Drain

50. *Ibid*., 1984-6, 5; 1987-9, vi, 7, 17.
51. *Ibid*., 1987-9, 4.

are realized. The Closed Basin Project, begun in 1980 and completed in the early 1990's, salvages water from the Closed Basin that would otherwise be lost through evaporation, and delivers it to the Rio Grande River for use elsewhere. Once fully operational, it should begin to provide supplemental water to the Rio Grande River, and thus free up more water from the Platoro Reservoir for irrigation.

About the Author

William Joe Simonds was born and raised in Colorado and has a clear understanding of the importance of water in the American West and its influence on the development of that region. He attended Colorado State University where he received a BA in History in 1992 and a Masters in Public History in 1995. He lives with his wife and two children in Fort Collins, Colorado.

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