

The Collbran Project

Toni Rae Linenberger
Bureau of Reclamation
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The Collbran Project

The Bureau of Reclamation has spent some time developing the Western Slope of Colorado. The Silt, Grand Valley, Collbran, Dallas Creek, Fruitgrowers, Paonia, Smith Fork, Uncompahgre, and Bostwick Park Projects, major parts of the Colorado-Big Thompson Project and the Wayne N. Aspinall Unit of the Colorado River Storage Project, all lie west of the continental divide. With the support of local residents, Reclamation helped develop the west-central portion of Colorado for irrigation and municipal purposes. The Collbran Project fulfills only one of these tasks, providing only irrigation water to local farmers and ranchers.

Project Location

Located in west-central Colorado, the Collbran project includes Vega Dam and Reservoir, Upper and Lower Molina powerplants, East Fork Diversion Dam, Bonham Dam and Reservoir, about thirty-seven miles of canal, and about eighteen miles of pipeline and penstock.¹

Grand Mesa, the principal landmark of the region, juts from the western slope of the Continental Divide. Rising to an elevation of about 11,000 feet, many small, natural lakes, drained by numerous streams, dot its northern slope. Several of these water sources contribute directly to the project water supply.

Plateau Creek the largest of these streams draining the northern slopes of Grand Mesa, flows generally westward from its headwaters on the mesa to its confluence with the Colorado River near Cameo, Colorado. Though it is fed primarily by the Grand Mesa watershed, the creek also receives some water from Battlement Mesa. Along its course Plateau Creek formed the Plateau Valley, location of project lands. Approximately twenty miles long the Valley ranges in

1. United States Department of Interior, Water and Power Resources Service, *Project Data*, (Denver: U.S. Government Printing Office, 1981), 241, 243.

width from less than a mile to eight miles across, with an elevation from 5,500 feet to 7,000 feet above sea level. Project lands lie south of the creek, extending in a narrow discontinuous strip the full length of the Valley. The principal towns in the Valley are Collbran, Molina, and Mesa. The main line of the Denver and Rio Grande Railroad (D&RG) which operated between Denver and Pueblo, Colorado and Salt Lake City, Utah, one ran through the valley. General William Jackson Palmer began construction of the D&RG in 1871. The line, in one form or another, continues to operate. In addition, the portion of the Valley immediately south and west of Grand Junction, near the project area, contains one of the world's largest deposits of carnotite (uranium and vanadium rich ore).²

Historic Setting

Prehistoric Setting

The first known humans on the Western Slope date back 7,500 years ago. Occupation prior to then remains purely speculative. Charcoal samples from fire pits, some of the oldest evidence of human occupation, date back to between 6,100 and 5,100 B.C. These samples offer the first conclusive evidence of human settlement. Numerous other artifacts and physical evidence, including additional charcoal samples and tree ring analysis, suggest an almost constant human occupation dating from around 300 B.C.

Archeologists speculate that the Ute Indians, arrived sometime between 1000 and 1400 A.D. Spanish documents dating from the seventeenth-century provide the earliest references to the Ute presence in western Colorado. Records from the Dominguez-Escalante Expedition in 1776, furnish additional documentary proof of the Ute inhabitation of the Western Slope. The

2. Denver Colorado, National Archives and Records Administration: Rocky Mountain Region, Records of the Bureau of Reclamation, Record Group 115, "Annual Project History, Collbran Project-Colorado," Volume I, 1937-57, 14-5.

Ute inhabited the region until 1881 when they were relocated to reservations in Utah.³

Historic Setting

After the Dominguez-Escalante Expedition in 1776, the next major explorer to traverse the Western Slope was Major John Wesley Powell from 1868-1869. Ten years later, in 1879, Powell published his famous *Report on the Lands of the Arid Region of the United States*. The *Report* detailed Powell's observations about the lands west of the 100th Meridian, including the Western Slope. Powell's book also included his belief that without the development of irrigation works farming in the region remained an impossibility. After publication of Powell's *Reports*, except for the Ute, the region remained scarcely populated.

After the government removed the Ute inhabitants of the area to the Uintah Reservation in August of 1881, the land opened to homesteaders. Before long settlers founded the city of Grand Junction and claimed all of the lands north of the river. The new inhabitants claimed the lands most easily irrigated first.⁴ Settlers who ended up with the less desirable lands soon discovered that they required irrigation works to survive.

Residents of Plateau Valley and Grand Mesa soon began constructing irrigation works to ensure successful farms. To regulate the flows of the larger creeks landowners constructed seventeen small private reservoirs on Grand Mesa between 1893 and 1911. These reservoirs were: Cottonwood Lakes Reservoirs Nos. 1, 2, 4 and 5; Neversweat Reservoir; Little Meadows Reservoir; Big Meadows Reservoir; Lambert Reservoir; Bonham Reservoir; Big Creek Reservoir No. 1; Atkinson Reservoir; Forty Acre Reservoir; Silver Lake Reservoir; De Camp Reservoir; Kitson Reservoir; Currier Reservoir; and Blackman Reservoir. These reservoirs fill

3. Alan D. Reed, *West Central Colorado Prehistoric Context*, (Denver: Colorado Historical Society, 1984), 14, 25, 43, 52-6.

4. Andrew Gulliford, *Boomtown Blues: Colorado Oil Shale, 1885-1985*, with a forward by Richard D. Lamm (Niwot: University Press of Colorado, 1989), 17-8, 19, 22, 26.

with water during the spring runoff allowing irrigators to use the stored water to supplement the low natural streamflows of late summer. Most of the reservoirs, built by individuals, water users, or small cooperative associations, lie in basins formed by glacial action.⁵ These reservoirs would fill with water during the spring runoff allowing irrigators in the Plateau Valley to supplement on demand the low natural stream flows of later summer. In addition, privately constructed canals and ditches were also operated intermittently throughout the winter months to supply the communities of Collbran, and Mesa, as well as the rural areas with domestic and stock water.

5. "Annual Project History, Collbran Project–Colorado," Volume XXIII, 1983, 8.

Project Authorization

Initial Investigations

Investigations into the feasibility of a project in Plateau Valley began in 1936. On September 15, 1936, a Plateau Valley attorney and landowner, S. D. Lieurance wrote to Reclamation's Denver office requesting an investigation into possible irrigation expansion into the Valley, including the Sunnyside lands north of Plateau Creek; an area on which an irrigation canal financed and constructed by private interests previously failed. In a letter of September 21, 1936, Acting Chief Engineer, Sinclair Harper responded to Lieurance stating that F. C. Merriell had already begun investigations of irrigation developments in western Colorado. Subsequently, the landowners of Plateau Valley formally petitioned Reclamation to study new potential irrigation development. Merriell promised, in a letter dated March 12, 1937, that Reclamation would study the area. Reclamation conducted investigations between 1937 and 1943.

In December 1944, the scope of the Collbran investigations changed when the city of Grand Junction requested that the project be extended to include consideration of a municipal water supply for the city. In March 1945, the Grand Valley Domestic Water Committee also requested consideration of a domestic water supply for Grand Valley. After discovering that the Grand Valley municipal aspects of the project would be too costly, Reclamation abandoned plans to include municipal water supplies for the city in the project plan. Though the plans to include a municipal water supply for Grand Junction remained in the project plan, the city later requested their removal on the basis that they opted to divert municipal water from another source.

Project Authorization

After almost twenty years of investigations, Congress authorized the Collbran Project on

July 3, 1952. The subsequent Definite Plan Report of November 1952, outlined the project features which included construction of the Vega Dam and Reservoir, Upper and Lower Molina powerplants, and canals, as well as development of supplemental irrigation water for arable lands and additional power generation for industrial and domestic use.⁶

The project proposed to use the existing private dams located on Grand Mesa to regulate the flow and delivery of water to the Upper and Lower Molina Powerplants. The Leon-Park Feeder Canal channeled the surplus flows of Leon and Park Creeks into Vega Reservoir. The water would then be delivered to farmers for irrigation through the Southside Canal. The project was to provide supplemental irrigation water to project lands and additional hydroelectric generation.

Construction History

Pre-construction History

Congress authorized the Collbran Project in July of 1952, however, they did not appropriate funds for construction of the project features at that time. Consequently, in October of 1953, over a year later, Reclamation discontinued work on the Collbran Project awaiting indications that the project would actually proceed to the construction phase. Work already accomplished included water right studies and topographic mapping of the existing private reservoirs in the Big Creek and Cottonwood Creek drainages.

In March of 1954, the town of Grand Junction informed Reclamation that it had initiated investigations into alternate sources for a domestic water supply. Reclamation then began analyzing the feasibility of modifying the Collbran project to exclude municipal and domestic water supply features. Reclamation completed preliminary studies in August and found that a

6. "Annual Project History, Collbran Project–Colorado," Volume I, 1937-57, 1, 2, 3; *Project Data*, 245.

very desirable project plan was possible if the municipal features were omitted. Reclamation spent the next eight months formulating the best plan for development of irrigation and power on the project. In May 1955, Reclamation presented the revised project plan to the Plateau Valley Water Committee. The Committee accepted the modifications and expressed their desire to move forward with project development.

On August 26, 1955, Plateau Valley water users filed a petition with the District Court to form the Collbran Conservancy District (CCD). In late October of 1955, after holding a hearing in the Mesa County District Court, Judge Charles Blaine created the District with a court decree. Reclamation completed the field draft of the revised Definite Plan Report and forwarded it to the Upper Colorado Regional Office for final review, processing, and circulation. The CCD entered their Statement of Claim for project Water Rights December 12, 1955.

Nearly two years passed before Reclamation made any more progress on the Collbran project. Finally, on January 2, 1957, Upper Colorado Region Director Ernest Larson received a letter from Commissioner Wilbur Dexheimer authorizing him to proceed with work on the project. From this point on, work on the project progressed fairly steadily. On January 12, the CCD Board approved the repayment contract. Reclamation approved the repayment contract, the water allotment petitions, and water exchange agreements in April. Officials of the District signed the repayment contract on May 27, 1957. Larson signed the contract on June 11, 1957, the same day that Reclamation opened bids for construction of Vega Dam and county road relocation.⁷

Construction History

On July 12, 1957, Reclamation awarded the contract for construction of Vega Dam and

7. "Annual Project History, Collbran Project–Colorado," Volume I, 1937-57, 3-8.

county road relocation to C. F. Lytle Company of Sioux City, Iowa, marking the start of actual construction work on the Collbran Project after twenty years of investigations and planning. The contractor initiated construction on July 16, 1957, with the clearing of brush for the county road relocation. Work accomplished in July consisted primarily of clearing, for both the dam foundation and the road relocation. The contractor completed and Reclamation accepted the county road relocation in August of 1958.

The U.S. Forest Service and Reclamation signed a contract on July 30, 1957, for construction of an access road between the existing Bonham and Cottonwood Reservoirs. The lands surrounding the reservoirs belonged to the Forest Service, making their cooperation on the project necessary. Reclamation planned to incorporate the existing reservoirs into the project plan, making access for rehabilitation and maintenance a necessity.

In September of 1957, Reclamation appointed H. F. Bahmeier Project Manager and E. H. Jefferies Resident Engineer. Both men were assigned to work out of the Grand Junction Projects Office.

Excavation for the dam foundation and the outlet works began August 10, 1957, most of which ended in September; excavation for the dam foundation continued until December. Also in September, the contractor completed work on the initial phase of construction, including diversion and care of the stream during construction. Care of the stream was accomplished by constructing a coffer dam and doing a small amount of work in the unlined earth diversion ditch on the right abutment of the embankment foundation. On September 11, concrete construction began with the placement of concrete in the outlet works cutoff collars. The contractor completed the majority of the work on the outlet works in November. Muddy conditions caused by rain and snow forced the contractor to halt earth work in October, however concrete work

continued on schedule.

Reclamation began work on the government housing camp on November 4, 1957. Located on a small tract of land approximately one-half mile west of the town of Collbran, the initial camp consisted of fifteen Transa-homes, five trailers, a laboratory, warehouse and office. Adverse weather conditions plagued construction of the camp. During the winter months temperatures dropped as low as twenty-degrees below zero.⁸ Reclamation completed work on the housing camp in July of 1958.

In 1958, while work on the primary contract for construction of Vega Dam and county road relocation continued, Reclamation issued and awarded several small supporting contracts; including construction of an access road for the power features on Grand Mesa, clearing the reservoir area, and fencing Vega Reservoir. The contractors completed their contracts during the year.

Brasier Brothers Construction Company of Norwood, Colorado, received the bid for construction of the access roads on August 15. Carlson and Fast Construction Company, of Strausburg, Colorado, received the bid for clearing the Vega Reservoir site. They completed the job on October 1, 1958. A. F. Burkhard Company of Hotchkiss, Colorado, received the bid for construction of 4.1 miles of right-of-way fence. They began work on June 17 and completed the project September 12.

Construction of the canal system began in November of 1958, when Reclamation awarded a contract to Theo Wood Construction Company for construction of the Southside tunnel. The contractor subsequently sublet the contract to three smaller contractors who

8. "Annual Project History, Collbran Project–Colorado," Volume I, 1937-57, 8-9, 20-1, 59-62.

commenced work on November 24, 1958.⁹ Concrete work on the tunnel began July 8, 1959. The tunnel, a 2,300 feet long, concrete lined, horseshoe shaped, structure with a six-foot three-inch diameter, was holed through on August 22, 1959, and proved to be two feet shorter than originally computed.¹⁰ Reclamation accepted all work on the Southside Tunnel as complete on May 5, 1960.¹¹

Work on the Vega Dam and road relocation contract progressed steadily during 1958. Just after the first of the year, the contractor began excavation for the spillway. Work on the spillway continued through to its completion in September. Placement of embankment materials began August 27. In September the contractor completed all first stage concrete work. They completed the remaining concrete work, except for a diversion plug in the outlet works intake structure, in October.

Administrative occurrences in 1958, ranged from the simple expansion of the CCD to negotiations with the State of Colorado for administration of the Vega recreation area. The Collbran Conservancy District expanded in 1958, to include 776 more acres of privately owned lands. Reclamation withdrew an additional 9,188 acres of public lands for project purposes. Also in 1958, Reclamation began negotiations with the Colorado State Parks and Recreation Board. Reclamation requested that the State Board become the administering agency for the recreation area created at Vega Dam.¹² The two agencies signed an agreement the following year in August of 1959, transferring management of the recreation area to the State.

On May 31, 1959, H. F. Bahmeier, Project Manager at the Grand Junctions Projects Office, retired. R. W. Jennings was appointed as his replacement. The change in Project

9. "Annual Project History, Collbran Project–Colorado," Volume II, 1958, 4, 7, 24.

10. "Annual Project History, Collbran Project–Colorado," Volume III, 1959, 19-20.

11. "Annual Project History, Collbran Project–Colorado," Volume IV, 1960, 5.

12. "Annual Project History, Collbran Project–Colorado," Volume II, 1958, 4-5, 7, 25, 61.

Managers did not adversely affect progress on the project.

Work on the first section of Southside Canal began in April of 1959, after Reclamation awarded the contract to Vitro Corporation of America (the Refinery Engineering Division). Vitro also received the bid for construction of the Upper and Lower Molina powerplants in June. The contractor began clearing right-of-way for 15.2 miles of Southside Canal on April 29, 1959. Earth moving operations began May 15. Construction of the powerplants began June 30, when the contractor began clearing the right-of-way. Excavation started in August on the Upper powerplant and ended in October. Excavation on the Lower powerplant began September 23. The contractor then placed the first concrete in the Upper plant October 6.¹³ Two years later on October 10, 1961, the contractor completed the Upper and Lower Molina powerplants, penstocks and equalizing reservoir.¹⁴

Also in June of 1959, Reclamation awarded the contract for construction of the Bonham-Cottonwood Pipeline to Davis and Butler Construction Company. Construction of the 11.1 miles of pipeline began June 22, 1959, with clearing of right-of-way. Fashioned of pretensioned concrete pipe, plans called for the pipeline to be built in two separate sections—the Bonham line, 5.6 miles in length and the 5.5 mile Cottonwood line—and then joined together to furnish water to the powerplants.¹⁵

Plans developed in 1959, to connect the Collbran project power transmission lines with the Public Service Company of Colorado's system at its plant in Cameo, Colorado. The Cameo location would permit integration of the Molina and Grand Valley powerplants; it would also provide for easier coordination with pending Colorado River Storage Project (CRSP) units.

13. "Annual Project History, Collbran Project–Colorado," Volume III, 1959, 4-5, 7-8, 20-2.

14. "Annual Project History, Collbran Project–Colorado," Volume V, 1961, 20.

15. "Annual Project History, Collbran Project–Colorado," Volume III, 1959, 22-3.

In early September of 1959, C. F. Lytle Construction Company finished work on Vega Dam. Reclamation accepted the contract as complete on September 10.

Though the dam had been completed in 1959, a few project features awaited construction. Reclamation awarded the contract for construction of the second section of the Southside Canal to A. S. Horner Construction Company on December 9, 1959. Work on this portion of the project did not commence until after the first of the year 1960.¹⁶ On January 21, 1960, the contractor began construction operations. Reclamation accepted all work on both portions of the Canal as complete on November 23, 1960.

On April 26, 1960, Reclamation awarded the contract for construction of the Leon-Park Feeder Canal to Cherf Brothers, Inc. and Sandkay Contractors, Inc.¹⁷ The contractor completed all work on the contract January 25, 1961.¹⁸

On June 24, 1960, Reclamation issued a notice to the Collbran Conservancy District informing them that the Collbran Project development period would begin on January 1, 1962. The District requested more time and after consultations with officials of the District, their attorney, and Congressman Wayne Aspinall, Reclamation decided to consider extending the start of the development period to January 1, 1963. Reclamation granted the Districts request later in the year. This was important because repayment obligations begin at the same time as the development period.

Reclamation drafted a letter to the CCD on August 5, 1960, advising the water users that some project irrigation water would be available on a rental basis during the balance of the 1960 irrigation season.¹⁹

16. "Annual Project History, Collbran Project–Colorado," Volume III, 1959, 8-9, 26.

17. "Annual Project History, Collbran Project–Colorado," Volume IV, 1960, 5-6.

18. "Annual Project History, Collbran Project–Colorado," Volume V, 1961, 19.

19. "Annual Project History, Collbran Project–Colorado," Volume IV, 1960, 9.

On January 11, 1962, the Ute Water Conservancy District (UWCD), formed in April of 1956, contracted with Reclamation to provide water for municipal and industrial use. The contract allowed UWCD, comprised of the towns of Collbran, Plateau Valley, Molina, and Mesa, to divert water from the tailrace of the Lower Molina Powerplant. The UWCD has a priority right in Plateau Creek however the water quality of the tailrace was significantly higher than in the Creek; water from the tailrace flows into Plateau Creek a short distance below the Powerplant. By 1998, Reclamation had begun negotiations with the UWCD to extend the contract past its original expiration date of 2002.²⁰

Contractors completed all remaining construction in 1962, and on May 26, 1962, Vega Reservoir filled and then spilled for the first time. Initial commercial power production began December 16, 1962.²¹ Additional construction activities on the power collection system were completed in 1963. Limited power production continued during 1963 on a testing basis.

On January 1, 1963, the CCD assumed administration of the Collbran irrigation facilities for operation and maintenance. At the same time, Project Manager Everett Collins left Reclamation to become facilities manager for the CCD. Reclamation retained operation of the power features under the jurisdiction of the Grand Junction Projects Office.²²

Soon after construction began on the Collbran Project in 1957, Reclamation contracted with the private entities responsible for the individual reservoirs, to operate the seventeen small private reservoirs located on Grand Mesa in conjunction with the project. The owners pay Reclamation an O&M assessment based on an index of previous operating costs. Reclamation uses the storage water in the Grand Mesa reservoirs for power generation and then provides

20. United States Department of the Interior, Bureau of Reclamation, *Repayment of Reclamation Projects*, (Washington: U.S. Government Printing Office, 1972), 96.

21. "Annual Project History, Collbran Project–Colorado," Volume VI, 1962, 13, 28.

22. "Annual Project History, Collbran Project–Colorado," Volume VII, 1963-7, 1, 2, 5.

irrigation water from Vega Reservoir. The exchange of water between the various reservoirs allows Reclamation to optimize power generation at the Upper and Lower Molina Powerplants. Over the years, Reclamation has continuously maintained and rehabilitated the Grand Mesa dams.²³

Based on SEED inspections conducted in 1979, 1981, and 1982, Reclamation began considerable rehabilitation and maintenance operations on the Grand Mesa dams. In 1982 and 1983, Reclamation breached Blackman and Currier Dams, reducing to fifteen the total number of privately constructed dams operated by Reclamation. Rehabilitation of additional structures began in 1980; Reclamation scheduled the additional work through the year 2004. Much of the rehabilitation consisted of actually reconstructing the existing structure and making modification to the original designs when necessary, though the magnitude of the reconstruction depended on the current condition of the individual reservoir.²⁴

Vega Dam, a zoned, rolled earth, and rockfill structure, contains 981,825 cubic yards of material with a crest length of 2,100 feet and a maximum height above foundation of 162 feet. The dam lies near the Grand Mesa in western Colorado, about ten miles east of the town of Collbran. The outlet works, near the left abutment, consists of an intake structure, a five-foot-diameter concrete pressure conduit, a concrete gate chamber, a concrete horseshoe conduit, a control house, concrete stilling basin, and an outlet channel which discharges into the Southside Canal. The resulting Vega Reservoir, has a capacity of 33,800 acre-feet and with a shoreline of approximately seven miles and covers a surface area of about 900 acres.

The Leon-Park Feeder Canal conveys water from Leon and Park Creeks to Vega

23. "Annual Project History, Collbran Project–Colorado," Volume XI, 1971, 16, 28-9.

24. United States Department of the Interior, Bureau of Reclamation, Western Colorado Area Office, "Brief History of Collbran Project Reconstruction Activities" (1992), 1-4.

Reservoir. Beginning at the Leon Creek Diversion Dam on Leon Creek the 450-cfs capacity canal extends about two miles to a siphon under Park Creek. The Park Creek Diversion Dam, about 1,000 feet above the siphon outlet, diverts water from Park Creek into the canal. The combined creek flows then travel the .7 mile to the reservoir.

The Southside Canal conveys irrigation water westward from the reservoir to project lands. The 32.8 mile long canal heads at the outlet works of the reservoir and has an initial capacity of 240 cfs and a terminal capacity of fifty cfs at Mesa Creek. Thirteen siphons carry the canal across major streams of the area while seven concrete chutes drop the canal in elevation. A 2, 389 foot long, 6.25 diameter horseshoe tunnel carries the canal water through a ridge on the divide between Salt and Tea Creeks, eliminating canal construction through a badly eroded area.

The Bonham-Cottonwood pipeline collects water from small streams and reservoirs in the watersheds of Big and Cottonwood Creeks on Grand Mesa and delivers it to the Upper Molina penstock. Consisting of two main branches, and several smaller feeder lines, the pipeline delivers a maximum of fifty cfs to the Upper Molina penstock. The Bonham section, about five and a half miles long, extends from Bonham Reservoir to the Upper Molina penstock. A thirty-three inch pretensioned concrete pipe this portion of the pipeline, with a maximum capacity of fifty cfs, delivers water from an unnamed stream inlet west of Bonham Reservoir. The Cottonwood section of the pipeline extends over three and a half miles from Cottonwood Reservoir No. 1 to the Molina Penstock. This portion of the pipeline receives water from Cottonwood No. 1, De Camp, and Big Meadows Reservoirs, as well as from three uncontrolled stream inlets which take releases from six other reservoirs. With a maximum capacity of just over twenty-eight cfs, the diameter of the pipe ranges from eighteen to thirty-six inches.

Located on Grand Mesa twelve miles south of Collbran, Bonham Dam, an embankment

structure, is 1,500 feet in length, with a twenty-five foot wide crest, and a maximum height of thirty-eight feet. The resulting Bonham Reservoir, with an active capacity of 1,222 acre-feet, acts as a forebay supplying the major portion of the water to operate the Molina powerplants. The East Fork Diversion Dam and Feeder Canal, along with the Bonham-Cottonwood Collection System, carry water from the East Fork of Big Creek and Atkinson and Lambert Reservoirs into the 1,000 acre-foot capacity reservoir. After being deposited in the reservoir, water travels through the outlet works to the powerplants.

The Upper Molina Powerplant, located on the east bank of Cottonwood Creek, contains a single 8,640 KW generating unit. The Lower Molina Powerplant, located on the south bank of Plateau Creek near Molina, Colorado, contains a single unit with an installed capacity of 4,850 kW. Originally part of Reclamation's Colorado River Storage Project (CRSP)²⁵ power operations, the Western Area Power Administration (Western) now manages the power produced by the powerplants.²⁶

Post-Construction History

During the latter part of January 1963, just after Reclamation transferred operation of the project irrigation facilities to the District, the gate located near where the Bonham conduit becomes the Bonham Pipeline ceased operating; the Bonham Pipeline delivers water from Bonham Reservoir to the Upper and Lower Molina Powerplants. Reclamation shut down the emergency gates and began transferring the power water from the Bonham system.

25. Congress authorized the Colorado River Storage Project on April 11, 1956. The initial authorization provided for construction of four units (Glen Canyon Unit, Flaming Gorge Unit, Navajo Unit, and the Curecanti Unit), and eleven participating projects (Central Utah, initial phase, Emery County, Florida, Hammond, La Barge, Lyman, Paonia, Pine River Extension, Seedskadee, Silt and Smith Fork). The La Barge Project was later deleted from the plan due to infeasibility.

26. "Annual Project History, Collbran Project–Colorado," Volume XVII, 1977, 2-7; *Project Data*, 241, 243-4; "Collbran Project, Colorado, Draft Special Report/ IEP Report" (United States Bureau of Reclamation, Upper Colorado Region, Grand Junction Projects Office, February 1994. Working Paper, for Internal Use Only), 7-11.

Representatives from Butler Construction Company and the gate manufacturer arrived and inspected the gate. Reclamation shut down the powerplants on February 11, to reserve the remaining power water. By this time the remaining water in the Bonham system would only allow for an additional three days of power generation.

Reclamation officials used this opportunity to inspect all of the penstock structures. They discovered that excessive pressure surges in the Lower Molina penstock caused a collapsed float in the relief valve. The Chief Engineer's office suggested a visual inspection of the interior of the penstock to determine if there were any obstructions in the line. In order to conduct their inspection, the Lower Molina penstock and the equalizing reservoir had to be drained. On the evening of February 18, Reclamation put the powerplant back on line. Engineers found no obstructions in their visual examination. Repair work on both the gate and the collapsed float were completed in a timely manner.

After the problems experienced in January and February, on March 29, Reclamation altered the power generation schedule. After consulting with the Colorado-Ute Electric Association, contractor for all the power generated at Collbran, Reclamation changed the powerplants to a sixteen-hour per day generation pattern from a continuous generation pattern.

The second major problem of 1963, occurred on April 13, when the Southside Canal developed a slide and a leak. Reclamation contracted Earl Troop of Cory, Colorado, to do the repairs. He completed all repairs on April 30.

In January 1964, the State of Colorado established the Colorado Department of Game, Fish, and Parks. The State Park and Recreation Board became a part of the new organization. A supplemental contract transferred management of the Vega Recreation Area from the old State Parks and Recreation Board to the new Colorado Department of Game, Fish and Parks.

Reclamation and the Department of Game, Fish and Parks drafted a new Memorandum of Agreement May 15, 1967, extending State management of the recreational area from twenty-five to fifty years. The extension made the area eligible for additional Federal funds from the Land and Water Conservation Fund Act.

In July of 1964, the lower bank of the Leon-Park Feeder Canal cracked and settled. District personnel excavated and recompactd into place the lower bank of the canal, eliminating the problem.

Reclamation transferred operations and maintenance of the Upper Molina Powerplant, penstock and equalizing reservoir, the Lower Molina Powerplant, and various transmission lines to the CRSP Power Operations Center in Montrose, Colorado, in March of 1965. The Grand Junction Projects Office continued operation and maintenance duties on the Bonham-Cottonwood collection system, the Grand Mesa Reservoirs, and related project features.²⁷

Despite earlier corrective work, problems on the Southside Canal persisted. On August 2, 1968, the stilling basin of the Parker Basin Drop failed. Reclamation and the District conducted an investigation of the area on August 3. Both agencies agreed that the District could carry out the repair work. On August 6, District employees jacked the stilling basin back into place.²⁸ The following year, on Sunday, September 21, 1969, Parker Basin Drop failed again, this time at the outlet transition. The District carried out repair work on the slide area and apparently halted movement in the slide area.²⁹

Additional problems on the Southside Canal occurred at Bull Basin Drop. The District completed necessary corrective work in November of 1969.³⁰ In July of 1970, continued earth

27. "Annual Project History, Collbran Project–Colorado," Volume VII, 1963-7, 2, 5, 8, 15, 17, 24-5.

28. "Annual Project History, Collbran Project–Colorado," Volume VIII, 1968, 18-20.

29. "Annual Project History, Collbran Project–Colorado," Volume IX, 1969, 33.

30. "Annual Project History, Collbran Project–Colorado," Volume IX, 1969, 5.

movement around the Bull Basin Chute caused cracks to develop across the Southside Canal immediately above the chute structure. The CCD made temporary repairs consisting of placing polyethylene sheeting in the canal prism.³¹ In 1972, the District replaced the plastic sheeting with more durable PVC lining. Some movement of the hillside persisted.³²

On May 1, 1973, the District entered into an agreement with the United States to participate in the Soil and Moisture Conservation program. The District focused their conservation efforts on the Bull Basin Drop area on the Southside Canal. Work included relocation of an irrigation ditch, closing of the surface cracks, and grading and reseeding the area involved. Additionally, the District paid affected landowners to stop irrigating approximately twenty acres of adjacent lands for one of two years to evaluate the effects of irrigation on the slide area.³³ The conservation program continued for the next several years.

In mid-July 1968, a Civilian Conservation Center Corpsman drowned at Rifle Gap Reservoir, part of the Silt Project. After the drowning the Collbran Civilian Conservation Center, the Colorado Department of Game, Fish and Parks, and the Grand Junction Projects Office met to discuss safety at the reservoir and others in the vicinity. They decided that the Collbran Civilian Conservation Center would in conjunction with the Department of Game, Fish and Parks, construct warning signs and channel markers for swimmers and sportsmen. The signs were then placed at Paonia, Rifle Gap, Crawford, and Vega Reservoirs.³⁴

Project Rulison was the major occurrence in the vicinity of the Collbran Project during 1969. The executive personnel of the Department of Energy, the Atomic Energy Commission, Austral Oil Company, Inc., and CER Geonuclear Corporation signed a contract on March 26,

31. "Annual Project History, Collbran Project–Colorado," Volume X, 1970, 5.

32. "Annual Project History, Collbran Project–Colorado," Volume XII, 1972, 23-4.

33. "Annual Project History, Collbran Project–Colorado," Volume XIII, 1973, 16, 47.

34. "Annual Project History, Silt Project–Colorado," Volume VIII, 1968, 4, 11.

1969, to conduct the project, an experimental nuclear-explosion to fracture and stimulate natural gas production, in Garfield County. The explosion, with a yield of about forty-two kilotons, took place about seventeen miles southwest of Rifle Gap on September 10, 1969. As the explosion took place in the vicinity of the project, Army Corps of Engineers personnel monitored and measured the effects of the blast on the dams in the area.³⁵ Reclamation found no apparent damage or cracking of the concrete structures at Vega Dam.³⁶

A second nuclear explosion, the Rio Blanco underground nuclear test, was detonated in the vicinity of Rifle Gap Dam on May 17, 1972. The blast took place on Fawn Creek, approximately thirty-four miles northwest of the dam. The Rio Blanco event, an experimental ninety kiloton nuclear explosion at a depth of over one-mile, attempted to fracture beds of the Fort Union and Mesa Verde formations in order to free natural gas trapped beneath.³⁷ Afterwards, Reclamation requested that the District inspect Vega Dam and appurtenant features. They found nothing of concern.³⁸

Additional repairs to the Bonham Pipeline were necessitated in the summer of 1976. Reclamation discovered the need for repairs July 20. Maintenance crews on Grand Mesa completed the repairs on September 30.³⁹

Settlement of the Project

For the most part, project lands existed as small farms prior to development of the project. Reclamation merely provided additional water to supplement the struggling farmers in the area. The Collbran Project provides irrigation water for 22,210 acres. Of these lands 2,500 acres receive a full irrigation supply while 19,710 acres receive supplemental water. Irrigated

35. "Annual Project History, Silt Project–Colorado," Volume IX, 1969, 4, 5.

36. "Annual Project History, Silt Project–Colorado," Volume IX, 1969, 110.

37. "Annual Project History, Silt Project–Colorado," Volume XIII, 1973, 16, 23.

38. "Annual Project History, Collbran Project–Colorado," Volume XIII, 1973, 99-100.

39. "Annual Project History, Collbran Project–Colorado," Volume XVI, 1976, 3, 7.

project lands are used chiefly for production of alfalfa, grass, hay, small grains, and as pasture for livestock feed. The principal economic enterprise in the vicinity of the project is cattle and sheep raising.⁴⁰

Uses of Project Water

Reclamation built the Collbran Project primarily to supplement existing irrigation efforts in Plateau Valley. Supplemental benefits include recreation, fish and wildlife, and hydropower generation. Vega Dam and Southside Canal provide water for the irrigation of 22,210 acres of full and supplemental service project lands. The principal crops grown in the area include, alfalfa, hay, small grains, and pasture. Crops are used primarily for the support of beef cattle and sheep production.

Recreational opportunities available at Vega Dam and Reservoir include, fishing, camping, boating, picnicking, and general sightseeing. Construction of the project features did not adversely affect the local fish and wildlife.

The project contains two hydroelectric plants, Upper and Lower Molina Powerplant, which provide a combined capacity of 13,500 kW. Colorado-Ute Electric Association contracted with Reclamation for all power generated on the project. The plants eventually interconnected with the CRSP power generation system.⁴¹ On October 1, 1977, responsibilities for distribution and marketing of Reclamation power were transferred to the Western Area Power Administration.

Conclusion

The Collbran Project impacted the local residents in a positive way. Though it took five years after Congress authorized the project to actually begin construction, the wait appeared to

40. *Project Data*, 241.

41. *Project Data*, 245-6.

be worth it to the local residents. The project took several existing reservoirs and incorporated them into the final project plans, allowing for easier water management and use. Overall, Reclamation made the entire area more economically productive.

About the Author

Toni Rae Linenberger, a Colorado native, received her B.A. in History from The Colorado College in Colorado Springs, Colorado in 1996. She is currently working on her Masters degree in Western American History at Utah State University in Logan, Utah, with an anticipated graduation date of June 1998.

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