

Silt Project
Participating Project
Colorado River Storage Project

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Table of Contents

The Silt Project	2
Project Location	2
Historic Setting	3
Prehistoric Setting	3
Historic Setting	4
Project Authorization	8
Construction History	8
Post-Construction History	14
Settlement of the Project	19
Uses of Project Water	20
Conclusion	21
About the Author	21
Bibliography	22
Archival Collections	22
Government Documents	22
Books	22
Other Documents	22
Index	23

The Silt Project

When one thinks of Reclamation one tends to think of the big projects. While this may be the common perception of Reclamation, it is not necessarily the correct one. The little projects Reclamation constructed, like the Silt Project, may not be more than a blip on most people's mental map, but to the local water users they mean everything. The little projects promote and maintain the Jeffersonian ideal, that of the small family farmer with a plot of land to call his or her own, the foundation of the reasons for the creation of the Reclamation Service. Projects like Silt harken back to the roots of an organization that went on to build several of the engineering marvels of the twentieth century, including Hoover, Shasta, and Grand Coulee Dams.

Project Location

The Silt Project is located on the Western Slope of Colorado in Garfield County, near the towns of Rifle and Silt. Comprised of the Rifle Gap Dam, the resulting Rifle Gap Reservoir, a lateral system, and the Silt Pumping Plant, the project sits on Rifle Creek. Rifle Creek, formed by the confluence of the East, Middle, and West Rifle Creeks immediately north of the Grand Hogback, provides the principal source of Project water. Rifle Creek cuts through the Hogback at Rifle Gap and flows into the Colorado River near the town of Rifle.

The bulk of the Project lands occupy the area between the Colorado River and the Grand Hogback, a prominent ridge four to six miles north of the river in the vicinity of the Project, on Harvey and Davie Mesas. In addition, Dry Elk Valley, immediately north of the Grand Hogback, contains a smaller body of Project land.

Low precipitation, fairly long cold winters, and short moderately warm summers, characterize the climate in the vicinity of the Project. Due to the variation of temperature and

precipitation associated with elevation, the lower valleys and mesas are warmer and drier than the adjoining mountain areas. The average elevation is 5,760 feet on Harvey and Davie Mesas and 6,285 feet in Dry Elk Valley.¹

Historic Setting

Prehistoric Setting

Though no physical evidence remained archeologists believe, based on evidence left by later civilizations, that the first settlements on the Western Slope occurred between 10,000 to 5,500 B.C.; these Paleo-Indians left no trace of their existence and their presence in Garfield County is purely speculation. Had these civilization existed on the Western Slope they would have been characterized by a reliance on big game hunting. The first known settlements occurred after 5,500 B.C.

An apparent cultural shift occurred around 5,500 B.C., in response to changing climatic conditions. This shift was characterized by a gradual movement towards a more diversified economy. Population increased as did the use of floral and aquatic resources. The economic base shifted again after 1 A.D., this time turning towards agriculture. In addition, these adapting peoples left behind ceramics and habitation structures.

Archeologists speculate that the next major civilization, the Ute Indians, entered Colorado and the Western Slope between 1200 and 1400 A.D. The Utes depended on hunting and gathering for their livelihood; small groups traveled in a pattern based on seasonal use of natural resources. They relied on the bow and arrow to hunt as well as the use and manufacture of ceramics. The Utes inhabited the region until 1881 when they were relocated to reservations

1. Denver Colorado, National Archives and Records Administration: Rocky Mountain Region, Records of the Bureau of Reclamation, Record Group 115, "Annual Project History, Silt Project--Colorado," Volume I, 1936-64, 10; United States Department of Interior, Water and Power Resources Service, *Project Data*, Denver: U.S. Government Printing Office, 1981, 1147.

in northeastern Utah.²

Historic Setting

In 1776, two Franciscan friars, Francisco Garcés and Francisco Silvestre Velez de Escalante, set out from Santa Fe, New Mexico, in search of an overland route to Monterey, California. In the process they “discovered” the Colorado River, traveling as far north as the Gunnison River Valley and Elk Mountain Range in the north central reaches of Colorado’s Western Slope, just south and slightly east of the Project area.

The next major explorer to investigate the Western Slope was Major John Wesley Powell, from 1868-1869. While exploring the Colorado River, Powell spent the winter along the White River, which runs north of the Project. Ten years later, in 1879, Powell published his *Reports on the Lands West of the Arid Region of the United States*. The *Reports* outlined Powell’s observations about the lands west of the 100th Meridian, including his belief that without the development of irrigation works farming in the region remained an impossibility. Powell’s conclusions enticed few settlers to the region which remained scarcely populated.

George B. Chittenden, while exploring north of the town of Silt in the late 1800s, christened Cactus Valley, located between the Colorado and the Grand Hogback, because a “thick carpeting of prickly -pears and other low-growing cacti” characterized the area. It was to this valley that later farmers diverted water to irrigate their crops.

Unlike the nearby “boomtown” mining communities of Leadville and Aspen, the communities of Silt, Rifle, and Parachute were founded by homesteaders who became ranchers, farmers, and fruit growers.³ Oftentimes these settlers, former miners and prospectors, came from

2. Alan D. Reed, *West Central Colorado Prehistoric Context* (Denver: Colorado Historical Society, 1984), 3, 4, 17, 42, 43.

3. 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.

Leadville, Kokoma, and Aspen.⁴ Due to the scarcity of water, the early settlers cultivated only enough land to feed their families. Economic activities centered around raising cattle because of the ready availability of forage in the nearby timber and alpine meadows. The towns of New Castle and Rifle bracket Silt to the east and west. Silt developed in its present location because it was halfway between the two towns, seven miles in either direction. In spring a traveler could make it the seven miles between the towns in a day on muddy roads.⁵ The town of Rifle took its name from the nearby Rifle Creek. The Creek, and by extension the town, were named by Austin Corcoran while guiding a survey party in the area. After discovering a rusty “Henry” rifle while near the creek, Corcoran dubbed the tributary, Rifle Creek. Corcoran went on to become one of the first famous “cowboy poets.”⁶

Powell’s vision of irrigated farming in the arid west proved to be prophetic in the region around the Project. Beginning in 1887, with the Grass Valley Land & Water Corporation (Corporation), the history of the area became inextricably tied to the human construction and natural destruction of irrigation works.

The first organized efforts toward large scale irrigation works in the area began in 1887, with formation of the Grass Valley Land & Water Corporation financed by English investors. Closure of the Colorado silver mines in 1893, after the devastating panic of 1893, prompted many miners and their families to move to the valley situated between Silt and Rifle. The influx of settlers made the availability of water an even more pressing problem, thus enticing the Corporation to construct the Grass Valley Reservoir at Harvey Gap. Completed in 1894 the reservoir washed out in April 1895. Unable to fund reconstruction of the reservoir, the

4. “Annual Project History, Silt Project--Colorado,” Volume XIV, 1977, 7.

5. Gulliford, 31.

6. Abbott Fay, *Famous Coloradans: 124 People Who Have Gained Nationwide Fame* (Paonia, Colorado: Mountaintop Books, 1990), 67.

Corporation soon failed.

Failure of the Corporation did not signal the end of irrigation efforts in the valley. Prior to construction of a reservoir, in 1890, farmers began work on the Cactus Valley Ditch. They completed the Ditch in 1898 and would provide water to local farmers for decades to come. The Farmers Irrigation Company (Company), incorporated in 1903, for the purpose of rebuilding the reservoir. Though only able to make the reservoir 28-feet deep, the Company was off to a good beginning, which reflected in the farmer's production. New Castle became known as Peach Valley because of its prolific peach orchards. Farmers from the region made a spectacular showing at the St. Louis World's Fair in 1904. W. S. Parks, from Silt, won first prize with his peaches and apples. William Johnson won with his potatoes. The Coe and Fleming Ranch won prizes for its fruit while, John Hasley grew the largest sugar beet shown at the Fair.

In 1907, the Antlers Orchard and Development Company enlarged the Reservoir; in the meantime the Grass Valley Land & Water Corporation had been bought by other investors. Water releases from the newly enlarged reservoir allowed alfalfa to bloom in spots previously decorated by sagebrush.⁷

In 1920, The Midland Railroad Company brought forty families to the area to operate coal mines in the vicinity of Silt, Colorado. A short time later, the railroad failed, yet the families remained, turning to farming to support themselves.⁸

After farming, mining ranks as the major industry in the area; for a short time it even became the most important economic enterprise. Beginning with the original attempts to mine minerals in the area, a mining presence peacefully coexisted with the agricultural endeavors. Failed miners easily adapted themselves to the local economy and took up farming. Mining's

7. Gulliford, 40-1.

8. "Annual Project History, Silt Project-Colorado," Volume XIV, 1977, 7.

importance in the region shifted drastically in the early 1980s, when Exxon U.S.A. moved into the region and began developing the multibillion dollar oil shale industry. The greatest concentration of oil shale reserves in the free world lies in the Piceance Creek Basin, an area west of the Project.

Exxon's presence drastically impacted the local economy, turning the small towns of Silt, Rifle, and Parachute into typical western boomtowns overnight. The sleepy agricultural based communities overnight turned into mining meccas of the West. Just as quickly, the brief shining light that was oil shale development faded, leaving local residents to fend for themselves in the aftermath.⁹

For the most part, agriculture has been the mainstay of the region since the first Anglo settlements in the early 1880s. Furthermore, irrigation has been necessary to ensure economic success. Oftentimes irrigation demands exceeded stream flows in late summer allowing the sun to wither crops while the farmers stood helplessly by. In 1891, attempting to relieve the problem, the farmers built the Harvey Gap Dam and dug canals to the fields. The resulting Harvey Gap Reservoir, too small to accommodate all of the farmers in the vicinity, prompted the development of the Silt Project. It was not until development of the Colorado River Storage Project (CRSP) with its plan to share revenues from large hydroplants with irrigation projects that funding became available for the Project.¹⁰

Project Authorization

The Bureau of Reclamation began investigations of the Silt Project in 1936. Ten years later, in 1946, a report on the Colorado River briefly described a project plan similar to the present one. In 1951, a supplement to the 1950 report on CRSP including participating projects,

9. Gulliford, dust jacket, 193.

10. "Annual Project History, Silt Project–Colorado," Volume IV, 1967, 33.

located within the five adjacent states of Arizona, Colorado, New Mexico, Utah, and Wyoming, detailed plans for the Silt Project. A 1953, amendment to the CRSP report became the basis for authorization of the Silt Project. Congress authorized the Colorado River Storage Project with the Act of April 11, 1956--initial units included Glen Canyon, Flaming Gorge, Curecanti¹¹, Navajo, and eleven other projects. This act included authorization of the Silt Project, one of the initial group of participating projects in CRSP. Project purposes included the diversion, storage, and distribution of water of the Rifle Creek watershed and the Colorado River for irrigation, fish and wildlife, and recreation. The authorized Project included, the rehabilitation of the previously abandoned Davie Ditch, as well as the construction of the Rifle Gap Dam and Reservoir, the Silt Pumping Plant, and a lateral system.¹²

Construction History

Reclamation initiated construction on the Silt Project in March 1964, with the appointment of Frank D. Carlson as construction engineer; Carlson transferred from the Seedskaadee Project, Fontenelle, Wyoming. On March 16, Reclamation established a temporary construction office in house number seventeen, at Anvil Points, a Bureau of Mines housing area nine miles west of Rifle. A permanent office was established on May 4, 1964, at 125 West Third Street, in Rifle. Two days later, Reclamation issued an invitation for bids for the Rifle Gap Dam and road relocation.

Reclamation actually issued the first construction contract prior to establishment of the permanent project office. The initial construction contract was for a laboratory and field office building at Rifle Gap Dam. Reclamation opened bids on April 28, 1964. Lee Johnson Construction Company of Rifle submitted the low bid, and Reclamation awarded the contract on

11. The Curecanti Unit was renamed the Wayne N. Aspinall Unit in October of 1980.

12. *Project Data*, 1149.

May 8. The contractor erected a twenty-four foot by sixty foot prefabricated Armco building complete with plumbing, heating, and electrical systems on a concrete slab. Reclamation accepted the completed building on October 12, 1964. Prior to the start of construction, provisions were made with the Silt Water Conservancy District (SWCD) whereby they would assume title to the building when Reclamation finished construction.

In the meantime, on June 23, 1964, Reclamation opened bids for construction of Rifle Gap Dam and road relocation. Northwestern Engineering Company, located in Commerce City, Colorado, submitted the low bid; despite their claim that an error was made in the preparation of their bid making their bid too low, Reclamation awarded them the contract on August 1, 1964 at the original bid price. The contractor received notice to proceed on August 12.

Site construction activities began early in August 1964. An average crew of about twenty-five men worked steadily throughout the year. Prior to striping vegetation and unsuitable materials from the valley floor portion of the dam embankment, the contractor diverted East Rifle Creek into West Rifle Creek above the dam embankment area. Stripping of the vegetation proceeded simultaneously with excavation for the cutoff trench. Placement of the dam embankment began in October, however due to winter weather the contractor suspended operations in November. As equipment schedules and weather permitted, excavation for relocation of the highway proceeded intermittently.

Reclamation contracted with the Mountain States Telephone Company and Public Service Company of Colorado for removal of utility lines from the reservoir area. Mountain States completed relocation of the telephone lines during the year. In a contract executed July 8, 1964, Reclamation and Public Service agreed to delay moving the power lines until after the

contractor finished relocating the highway.¹³

In the first act of 1965, on the project, Reclamation opened bids for construction of the Silt Pump Canal. Western States Construction Company submitted the low bid and on February 11, 1965, Reclamation awarded them the contract. Reclamation awarded the contract for construction/ rehabilitation of Davie Ditch, on April 30, 1965, to Crown Construction Company of Hot Springs, South Dakota; bids were opened April 6.

Also in 1965, construction continued on Rifle Gap Dam. In April the contractor resumed work on the dam embankment and began excavation for the spillway as well as road relocation. In August, Lee Johnson, contractor for construction of the laboratory and field office, bid for and won the contract for construction of the Dry Elk Valley Lateral and rehabilitation of the Grass Valley Canal. Construction work began in September. Except for repeated flooding of excavation along the Silt Pump Canal by irrigators along the canal, work progressed steadily for the rest of the year.¹⁴

In January of 1966, the contractor placed first stage concrete for the Rifle Gap Dam Intake Structure. Construction on the remaining outlet works continued, as did work on all other phases of project construction, satisfactorily through spring and early summer. The contractor essentially completed work on the Dry Elk Valley Lateral in May, while work on the Grass Valley Canal Rehabilitation was delayed; allowing the Farmers Irrigation Company use of the canal during the irrigation season. A rock slide problem developed in August along the relocated State Highway at Rifle Gap Dam. Necessitating remedial action an estimated 110,000 cubic yards of unclassified material required removal.

The contractor essentially completed, except for some riprap, the dam embankment

13. "Annual Project History, Silt Project–Colorado," Volume I, 1936-64, 6, 9, 30-1.

14. "Annual Project History, Silt Project–Colorado," Volume II, 1965, 7, 24, 25.

during the remainder of 1966. In the Silt Pumping Plant, all masonry work was completed. In addition, four pumps were installed and electrical installation of control boards was completed. Reclamation accepted as complete, on November 1, 1966, all work on the Dry Elk Valley Lateral and the Grass Valley Canal.

The National Park Service (NPS) awarded a contract for construction of the Rifle Gap Reservoir boat ramp to GMCO Corporation of Grand Junction, Colorado, on August 1, 1966. Reclamation opened bids for the construction of Gaging Stations on Rifle Creek in December. They awarded the contract to Lee Johnson Construction Company on December 23.

In a letter signed by David Crandall, Director Upper Colorado Region, Reclamation notified the Silt Water Conservancy District on June 27, 1966, that project water would be available for the 1968 irrigation season. The SWCD and Reclamation executed a repayment contract on June 24, 1963, amended on July 9, 1968, and December 20, 1984. The letter went on to say that the development period would begin January 1, 1968. Beginning with commencement of the development period, Reclamation anticipated that the SWCD would operate and maintain project facilities.

An abandoned mine lease within the Rifle Gap Reservoir site caused considerable activity between June 24, 1966, and January 1, 1967. The Bureau of Land Management (BLM) began cancellation proceedings while the Bureau of Mines reported abandonment, during the latter part of 1966. These activities combined with construction of the relocated country road required for the Reservoir, led Henry Zieseniss, the lessee, to file suit for damages against Reclamation.¹⁵ On June 23, 1967, United States district Judge Hatfield Chilson entered judgement against the United States for the amount of \$1,200, at the same time declaring the

15. "Annual Project History, Silt Project–Colorado," Volume III, 1966, 15, 20, 22, 23, 49.

Coal Lease in question to be forfeited.

The relocated State Highway around Rifle Gap Dam and Reservoir opened in January of 1967, though paving operations were not complete until May. Also in January, Reclamation submitted the final contract summary and release to the contractor for the Silt Pump Canal. During the spring, contractors concentrated on electrical installation at Rifle Gap Dam as well as cleanup on Davie Ditch and the Silt Pumping Plant. The contractor completed work, in March, on the Rifle Creek Gaging Stations. Flash foods on two consecutive days in mid-July caused considerable damage to the East Rifle Creek Gaging Station, necessitating repairs which began immediately. In addition, in October, a sink hole developed on the Dry Elk Valley Lateral which required rehabilitation.

Reclamation closed the Silt Construction Office on May 25, 1967. The Grand Junction Projects Office assumed control of all future business at the same time. The Silt Water Conservancy District held dedication ceremonies on September 8, 1967. The SWCD prepared and served a barbeque lunch. Speakers included Senator Gordon Allott, Representative Wayne Aspinnall, Assistant Commissioner Newcomb Bennett, Felix Sparks, Governor Edwin Johnson, R. Eckles of the Colorado Department of Natural Resources, and M. Ryden, President, SWCD. Three months later on December 20, Dave Crandall, Director Upper Colorado Region, informed the District that they were to assume operational responsibility for the Project on January 1, 1968.

Prior to transfer of the Project from construction to operation and maintenance status, Reclamation conducted an examination of the Project facilities. Most of the immediate problems discovered occurred in conjunction with the relocated State Highway. Subsidence in the uppermost portion of the downstream rock fill on the dam caused lateral cracking along the

shoulder of the roadway pavement and misalignment of the guardrail. The contractor subsequently filled the cracks with crushed rock material. The Colorado Department of Highways, accepting all other portions of the relocated State Highway, agreed to make surface repairs and realign the guardrail the following spring.

The State Highway had caused problems previously. During construction an extensive slide occurred. To fix the problem the contractor raised the road grade, placed a 10-foot berm against the toe of the slope, and installed 20-foot rock bolts in the undisturbed material on the slope. The contractor then covered the rock bolted area with wire mesh and a 1-inch covering of gunite. The area appeared to be stable during Reclamation's inspection.¹⁶

Reclamation encountered no other problems during their inspection and the Project was turned over to the SWCD for operation and maintenance January 1, 1968. Frank Carlson, Construction Engineer on the Project, on January 14, subsequently transferred to the Central Utah Project, Duchense, Utah. Reclamation appointed Herbert Stwalley, contracting officer's representative, to oversee remaining work on the Silt Project and Rifle Substation. In addition to management of the Project, the SWCD also administers the exchange of water between the SWCD and the Farmers Irrigation Company.¹⁷

Rifle Gap Dam, a zoned earthfill structure with a height of 157 feet, contains 1,768,000 cubic yards of material with a crest length of 1,450 feet. The Dam sits on Rifle Creek about five and one-half miles north of Rifle, Colorado, at the point where the creek cuts through the Grand Hogback. The resulting reservoir, Rifle Gap Reservoir, has a total capacity of 13,602 acre-feet and an active capacity of 12,168 acre-feet. The surface area covers 359 acres.

The spillway structure consists of a short approach channel, concrete inlet walls, a

16. "Annual Project History, Silt Project–Colorado," Volume IV, 1967, 7, 8, 17, 22, 24, 36.

17. "Annual Project History, Silt Project–Colorado," Volume V, 1968, 4, 6.

concrete crest structure, and a concrete chute and stilling basin. The outlet works includes a concrete intake structure and a gate chamber with a six-foot long circular tunnel extending upstream and two 2.25-foot-square high pressure gates. The river outlet diverts the river to a six-foot-diameter flat-bottom free-flow tunnel downstream, which then discharges into the spillway stilling basin. Branching from the gate chamber a seven-foot diameter horseshoe tunnel contains a thirty-inch steel pipe which conveys water to a concrete pipe that in turn discharges into Davie Ditch. This Ditch, previously abandoned and rehabilitated by Reclamation as a part of the Silt Project, supplies irrigation water to Project lands on Davie Mesa.

With a capacity of thirty-six cubic feet per second (cfs), the Silt Pumping Plant is located near the Colorado River about two miles east of the town of Silt. Extending northwest from the pumping plant discharge line, the 7.6 miles long Silt Pump Canal carries irrigation water to land on the lower portion of Harvey Mesa.¹⁸

Post-Construction History

In 1967, Reclamation dismantled the laboratory and field office building used during construction and moved it to Silt, Colorado for use by the SWCD.¹⁹

On May 8, 1968, the Operation and Maintenance Branch, Grand Junction Project Office, was notified of the failure of the No. 4 pump unit at the Silt Pumping Plant. Reclamation ordered replacement parts and quickly corrected the problem.

In mid-July 1968, a Corpsman from the Collbran Civilian Conservation Center (CCCC) drowned at Rifle Gap Reservoir. After the drowning the CCCC, the Colorado Department of Game, Fish and Parks, and the Grand Junction Projects Office met to discuss safety at the Reservoir. They decided that the CCCC would in conjunction with the Department of Game,

18. "Annual Project History, Silt Project–Colorado," Volume I, 1936-64, 10; *Project Data*, 1147.

19. "Annual Project History, Silt Project–Colorado," Volume IV, 1967, 39.

Fish and Parks, construct warning signs and channel markers for swimmers and sportsmen. The signs were then placed at the Paonia, Rifle Gap, Crawford, and Vega Reservoirs.²⁰

Project Rulison, a nuclear-explosive fracturing, gas-stimulation experiment, in Garfield County, was the major occurrence on the Silt 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, 1969, to conduct the project. 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 Dam. No visible cracks or changes were discovered after the explosion.

Prior to the explosion the Chief Engineer's office requested pre-shot inspections, during which a survey crew discovered several large cracks in an old slide area above the cut slope of the relocated State Highway. The Grand Junction Projects Office personnel made an inspection of the slide area and reported their findings to the Regional Office and the Colorado State Highway Department. On October 31, 1969, Reclamation awarded a contract to Lee Johnson Construction Company, one of the original contractors on the Project, to stabilize the slide area. The contractor completed the work and on November 7 Reclamation signed the release of contract.²¹

On March 16, 1970, the Colorado State Highway Department requested temporary construction easements in the vicinity of the Silt Pumping Plant for construction of Interstate Highway 70. Reclamation granted temporary right on July 22.²²

20. "Annual Project History, Silt Project–Colorado," Volume V, 1968, 4, 11.

21. "Annual Project History, Silt Project–Colorado," Volume VI, 1969, 4, 5.

22. "Annual Project History, Silt Project–Colorado," Volume VII, 1970, 4, 34-5.

The Project Manager reported a slide at the Rifle Gap Reservoir in June of 1971. Personnel of the Grand Junction Projects Office checked the area and found a small sloping area on the cut slope above the relocated State Highway.²³

In May of 1971, the area took on a decidedly modern look when an artist named Christo Javacheff began construction on a project that became known as Christo's Curtain. On the north side of the gap, he extended huge cables from one side of the canyon to the other. He intended to use the cables to suspend a copper-orange curtain made of nylon polyamide across the gap. The curtain had a large semicircular opening which allowed cars to pass beneath the curtain on Colorado 325. Unfortunately, the project failed after five months of hard work. Just one day before the curtain was to be hung, strong, gusty winds shredded it into pieces.

Not admitting defeat, Christo decided to try again one year later. On August 10, 1972, he unfurled a new giant curtain. His victory was short lived, twenty-eight hours later gusty winds again ripped the curtain apart. Nevertheless, the badly damaged curtain drew curious visitors until its removal two weeks later.²⁴

In 1972, the District and Reclamation arranged for the construction of Antlers Valley Drain. The original Project plan provided for drainage, however the need, specific location, and design of the drains was undetermined. After application of project water to the land the drainage deficient areas became apparent. To alleviate the drainage problem Reclamation designed the Drain.

The Drain, located about three and one-half miles northwest of the town of Silt, straightened and realigned inefficient segments of an existing natural drainage channel which

23. "Annual Project History, Silt Project–Colorado," Volume VIII, 1971, 19.

24. Martin G. Kleinsorge, *Exploring Colorado State Parks*, (Niwot: University Press of Colorado, 1992), 203-4.

heads in the Grand Hogback area approximately three and one-half miles to the north. The Drain runs 1,840 feet in length with a four-foot bottom width. Excavated to a maximum depth, its side slopes extend one to one and one-half feet. Reclamation opened bids for construction of the drain on August 17, 1972, at the Montrose Construction Field Division Office. William D. Jewel of Rifle submitted the low bid and on September 1, 1972, received the contract. Work began September 18, and was completed and accepted a month later, on October 18, 1972.

In 1972, Reclamation preformed a Safety of Dams Evaluation on the Rifle Gap Dam and associated features. No major problems were encountered during the inspection. The report concluded that, “the dam is being well maintained and the reservoir operator is to be commended for the well-organized maintenance program that is being carried out.”²⁵

In 1973, Reclamation deepened the Silt Drain. They encountered problems in this work as portions of the drain sloughed off and became generally unstable under the flow of groundwater moving into the drain.

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. A May 24, follow-up visit to the landslide area adjacent to the relocated State Highway, found no indications of surface disturbance. Newspaper accounts reported that the tremor from the blast was lightly felt in the Rifle area. 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. During the inspection after the blast, Reclamation determined that the area which moved prior to the initial nuclear blast in 1969, remained

25. “Annual Project History, Silt Project--Colorado,” Volume IX, 1972, 6, 11, 28, 36, 40, 51.

unchanged in the three and one-half years since.²⁶

On August 5, 1974, a slide occurred on Davie Ditch. The slide occurred on a steep hillside along which the canal was built. Although the canal did not fail, only the canal prism and approximately two feet of the lower bank remained. To repair the damage, Reclamation installed 120 feet of smooth thirty-six-inch diameter pipe through the slide area. Over the years, the same type of movement and slides occurred along the same hillside, apparently caused by canal seepage into the shale layer below. After completion of repairs, around twelve cfs of water was flowing without evident difficulties.²⁷

In August of 1975, Reclamation and Mountain Bell Telephone Company began discussing the Telephone Company's plans to improve rural telephone lines. Plans called for a change from aerial lines to buried cables; problems arose because the relocated lines would cross the dam and project lands. In December, Reclamation approved plans for burying the cables.

Congress enacted and President Ronald Reagan signed into law the Reclamation Reform Act (RRA) in October of 1982. Subsequently, Reclamation issued final rules and regulations in the federal register to implement the provisions of the RRA. One of the provisions of the RRA was that each district that entered into a repayment contract or water service contract pursuant to Federal Reclamation law or the Water Supply Act of 1958, shall develop a water conservation plan containing definite goals, appropriate water conservation measures, and a time schedule for meeting water conservation objectives. On March 15, 1984, the SWCD requested Reclamation amend their repayment contract to conform to the provisions of the RRA. Reclamation and the District executed an amendatory contract on December 20, 1984.²⁸

26. "Annual Project History, Silt Project--Colorado," Volume X, 1973, 16, 23.

27. "Annual Project History, Silt Project--Colorado," Volume XI, 1974, 17, 21.

28. "Annual Project History, Silt Project--Colorado," Volume XXI, 1984, 14; "Annual Project History, Silt Project--Colorado," Volume XXIII, 1986-7, 97.

Settlement of the Project

The Silt Project provides water for 6,597 acres of land. Of these lands 2,118 acres receive a full irrigation supply while 4,479 acres receive supplemental water.²⁹ Irrigated Project lands are used chiefly for production of alfalfa, grass, hay, small grains, and as pasture for livestock feed. Some parts of the area support cash crops such as potatoes. The principal economic enterprise in the vicinity of the project is cattle and sheep raising. Livestock graze on nearby National Forest lands in the summer and on other public domain and privately owned rangelands during the fall and winter. Only minor processing of agricultural products can be done locally, as a result farmers must market livestock, dairy products, and potatoes outside the area. At one time project water supported local growth of sugar beets which were then transported to Delta, Colorado for processing.

Other economic activities in the region include mining and recreation. Vanadium and uranium can be found near the Project and in 1958, the Union Carbide Nuclear Company completed a now closed 1,000-ton per day capacity mill near Rifle for processing of these metals. Coal, oil shale, marble, oil, and natural gas comprise the primary non-metallic metals found in the vicinity of the project.

Recreation provides a substantial source of income for those living in the general vicinity of the Project. Internationally famous health and recreational resorts at Glenwood Springs and Aspen provide local revenue. In addition, nearby streams, lake and spectacular mountains provide excellent trout fishing, big game hunting, winter sports, and scenic beauty.³⁰

Development of the Project allowed for an increase in irrigated lands in the Rifle area.

29. *Project Data*, 1147; United States Department of the Interior, Bureau of Reclamation, *Repayment of Reclamation Projects* (Washington: U.S. Government Printing Office, 1972), 446.

30. "Annual Project History, Silt Project–Colorado," Volume I, 1936-64, 11.

The Reservoir provides a guaranteed water supply for nearby lands during the irrigation season. Prior to Project development, water had to be pumped from the Colorado River through the Cactus Valley Ditch at great cost to the irrigators. In addition, the Harvey Gap Reservoir, private facility of the Farmers Irrigation Company, now stores water for a longer irrigation season; previously the Company filled and emptied it each year.³¹

The Silt Water Conservancy District, organized in 1957, manages the Project. The District covers an area of about eighty-seven square miles.³²

Uses of Project Water

The primary purpose of water on the Project remains agriculture. The project does not provide any municipal and industrial use water. It does, however, provide recreational opportunities to visitors and local residents.

The Project provides irrigation water, mostly supplemental, to 7,044 acres of project lands located on Harvey and Davie Mesas and in Dry Elk Valley. In 1992, 5,735 acres were in actual production; primary crops included alfalfa, oats, and irrigated pasture.³³

In 1965, the National Park Service (NPS) and Reclamation began cooperation on development of recreation facilities at Rifle Gap Reservoir. The NPS prepared a Definite Plan report providing for the development and location of recreational facilities. At the same time, Reclamation began discussions with the Colorado Department of Game, Fish, and Parks, renamed the Colorado Department of Parks and Outdoor Recreation in 1972, concerning the agency's eventual takeover of recreational development and administration of the Silt Project

31. "Annual Project History, Silt Project–Colorado," Volume VIII, 1971, 2, 3; "Annual Project History, Silt Project–Colorado," Volume XVIII, 1981, 6.

32. "Annual Project History, Silt Project–Colorado," Volume IV, 1967, 2, 5.

33. United States Department of Interior, Bureau of Reclamation, *Summary Statistics*, (Washington, D.C.: U.S. Government Printing Office, 1992), 251.

facilities.³⁴ Reclamation executed a memorandum of agreement, for administration of recreational facilities and development, with the Colorado Department of Game, Fish and Parks on September 25, 1967.³⁵

Conclusion

The Silt Project is a good example of Reclamation building the facilities used to maintain successful irrigation efforts and then turning them over to the water users for continued operation and maintenance. Thanks to cooperation between the local water users and Reclamation, the annual irrigated acreage increased, benefitting the farmers. Though it does not irrigate a large area of land, the Silt Project made its presence felt in Western Colorado.

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34. "Annual Project History, Silt Project–Colorado," Volume II, 1965, 16.

35. "Annual Project History, Silt Project–Colorado," Volume IV, 1967, 22.

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Index

Allott, Gordon	12
Antlers Orchard and Development Company	6
Antlers Valley Drain	17
Anvil Points	8
Arizona	8
Army Corps of Engineers	15
Aspen	5
Aspinall, Wayne	12
Atomic Energy Commission	15
Austral Oil Company, Inc.	15
Bennett, Newcomb	12
Bureau of Land Management	11
Bureau of Mines	8, 11
Bureau of Reclamation	8-19, 21
Cactus Valley	4
Cactus Valley Ditch	6, 20
California	4
Monterey	4
Carlson, Frank D.	8, 13
Central Utah Project	13
CER Geonuclear Corporation	15
Chief Engineer	15
Chilson, Hatfield	12
Chittenden, George B.	4
Christo's Curtain	16
Coe and Fleming Ranch	6
Collbran Civilian Conservation Center	15
Colorado	2, 3, 6, 8, 9, 11
Aspen	5, 20
Commerce City	9
Delta	19
Garfield County	2, 3, 15
Glenwood Springs	20
Grand Junction	11
Kokoma	5
Leadville	5
New Castle	5, 6
Rifle	2, 5, 8, 9, 14, 17, 18, 20
Silt	2, 4-6, 14, 17
Colorado Department of Game, Fish and Parks	15, 21
Colorado Department of Highways	13, 15, 16
Colorado Department of Natural Resources	12
Colorado Department of Parks and Outdoor Recreation	21

Colorado River	2, 8, 14, 20
Monterey	4
Colorado River Storage Project	7, 8
Curecanti	8
Flaming Gorge	8
Glen Canyon	8
Navajo	8
Commerce City	9
Congress	8, 18
Contractors	
Crown Construction Company	10
GMCO Corporation	11
Lee Johnson Construction Company	9-11, 15
Northwestern Engineering Company	9
Western States Construction Company	10
William D. Jewel	17
Corcoran, Austin	5
Crandall, David	11, 12
Crawford Reservoir	15
Crown Construction Company	10
Curecanti	8
Davie Ditch	10, 12, 14, 18
Davie Mesa	2, 3, 14
Delta	19
Department of Energy	15
Dry Elk Valley	2, 3
Dry Elk Valley Lateral	10-12
Duchense	13
East Rifle Creek	9, 12
Eckles, R.	12
Elk Mountain Range	4
Escalante, Francisco Silvestre Velez de	4
Exxon U.S.A.	7
Farmers Irrigation Company	6, 11, 13, 20
Fawn Creek	17
Flaming Gorge	8
Fontenelle	8
Fort Union	18
Gaging Stations	11, 12
Garcés, Francisco	4
Garfield County	2, 3, 15
Glen Canyon	8
Glenwood Springs	20
GMCO Corporation	11
Grand Hogback	2, 4, 14, 17

Grand Junction	11
Grand Junction Projects Office	12, 15, 16
Grass Valley Canal	10, 11
Grass Valley Land & Water Corporation	5, 6
Grass Valley Reservoir	6
Gunnison River Valley	4
Harvey Gap	6
Harvey Gap Dam	7
Harvey Gap Reservoir	7, 20
Harvey Mesa	2, 3, 14
Hasley, John	6
Hot Springs	10
Interstate Highway 70	16
Javacheff, Christo	16
Johnson, Edwin	12
Johnson, William	6
Kokoma	5
Leadville	5
Lee Johnson Construction Company	9-11, 15
Mesa Verde	18
Midland Railroad Company	6
Monterey	4
Montrose Construction Field Division Office	17
Mountain Bell Telephone Company	18
Mountain States Telephone Company	10
National Park Service	11, 21
Navajo	8
New Castle	5, 6
New Mexico	8
Santa Fe	4
Northwestern Engineering Company	9
Paonia Reservoir	15
Parks, W. S.	6
Piceance Creek Basin	7
Powell, John Wesley	4, 5
Reports on the Lands West of the Arid Region of the United States	4
Project Rulison	15
Public Service Company of Colorado	10
Reagan, Ronald	18
Reclamation Act	19
Reclamation Reform Act	18
Reports on the Lands West of the Arid Region of the United States	4
Rifle	2, 5, 8, 9, 14, 17, 18, 20
Rifle Creek	2, 5, 11, 12, 14
Rifle Gap	2, 15

Rifle Gap Dam	2, 8-12, 14, 15, 17
Rifle Gap Reservoir	11, 12, 14-16, 20, 21
Rifle Substation	13
Rio Blanco	17, 18
Ryden, M.	12
Safety of Dams Evaluation	17
Santa Fe	4
Seedskaadee Project	8
Silt	2, 4-6, 14, 17
Silt Construction Office	12
Silt Drain	17
Silt Project	2, 4, 5, 7, 8, 13-17, 19-21
Antlers Valley Drain	17
Davie Ditch	10, 12, 14, 18
Dry Elk Valley Lateral	10-12
Gaging Stations	11, 12
Grass Valley Canal	10, 11
Rifle Gap Dam	2, 8-12, 14, 15, 17
Rifle Gap Reservoir	2, 11, 12, 14-16, 20, 21
Silt Construction Office	12
Silt Drain	17
Silt Pump Canal	10, 12, 14
Silt Pumping Plant	2, 11, 12, 14-16
Silt Project Manager	16
Silt Pump Canal	10, 12, 14
Silt Pumping Plant	2, 11, 12, 14-16
Silt Water Conservancy District	9, 11-14, 17, 19, 20
South Dakota	10
Hot Springs	10
Spanish Exploration	
Escalante, Francisco Silvestre Velez de	4
Garcés, Francisco	4
Sparks, Felix	12
St. Louis	6
Stwalley, Herbert	13
Union Carbide Nuclear Company	19
United States	12
Upper Colorado Region	11, 12
Uranium	19
Utah	4, 8
Duchense	13
Ute Indians	3
Vanadium	19
Vega Reservoir	15
Water Supply Act of 1958	19

West Rifle Creek	9
Western States Construction Company	10
White River	4
William D. Jewel	17
World's Fair	6
Wyoming	8
Fontenelle	8
Zieseniss, Henry	12