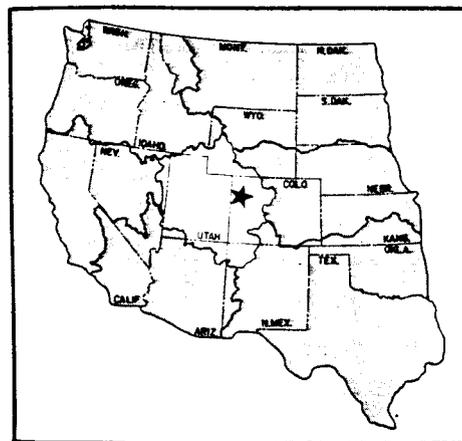


Collbran Project

Colorado: Mesa County

Upper Colorado Region
Water and Power Resources Service



The Collbran Project, in west-central Colorado, has developed, for multiple purposes, a major part of the unused water in Plateau Creek and its principal tributaries. Supplemental irrigation water can be furnished to 19,710 acres and full irrigation service can be supplied to 2,500 acres of land. Electrical energy is generated for use in west-central Colorado. Major project works include Vega Dam and Reservoir, two powerplants, two major diversion dams, about 37 miles of canal, and about 18 miles of pipeline and penstock. East Fork Diversion Dam and Feeder Canal, along with the Bonham-Cottonwood Collection System, carry water into the 1,000-acre-foot capacity Bonham Reservoir, which in turn supplies the major portion of the water to operate the Molina powerplants. The project also has rehabilitated and modified the operation of 17 small privately owned storage reservoirs on the Grand Mesa situated in the Cottonwood Creek and Big Creek watersheds. Fifteen of the 17 reservoirs provide water for power generation through the exchange of storage water on Grand Mesa for irrigation water from Vega Reservoir. The other reservoirs also are reserved for irrigation exchanges.

PLAN

Vega Dam was constructed across the channel of Plateau Creek, forming a reservoir with a total capacity of 33,800 acre-feet and an active capacity of 32,980 acre-feet. The reservoir stores surplus flows of Plateau, Leon, and Park Creeks. The Leon and Park Creek flows are brought to the reservoir through the 2.7-mile-long Leon-Park Feeder Canal. The Southside Canal extends west from Vega Reservoir 32.8 miles to a terminal drop structure on Mesa Creek about 3.25 miles south of the town of Mesa, Colo. The canal crosses several north-flowing tributaries of Plateau Creek to which releases are made but does not intercept their flow. Most project water from Plateau, Leon, and Park Creeks, including both storage and direct flow, is released from Vega Reservoir and delivered by the Southside Canal. Some water is released at Vega Reservoir into Plateau Creek for diversion by downstream ditches.

Water used for the generation of power is collected from the Big and Cottonwood Creek drainage areas at elevations of more than 9800 feet above sea level. These waters are stored by the 17 previously existing reservoirs on Grand Mesa or collected by the Bonham-Cottonwood pipeline and piped down the mesa slopes through two hydroelectric powerplants and released into Plateau Creek. The two powerplants have a combined capacity of 13,500 kilowatts.

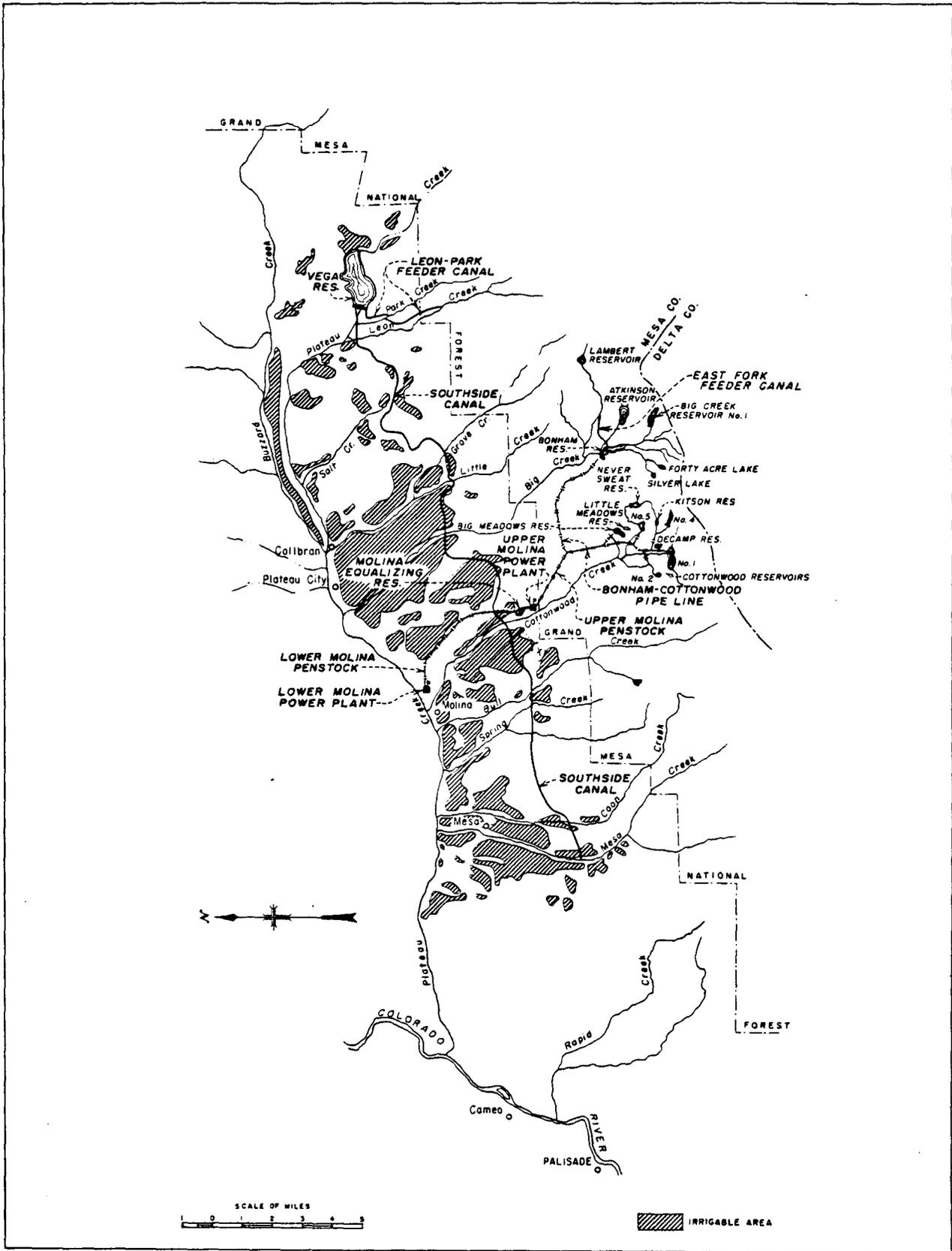
Vega Dam and Reservoir

Vega Dam is near the Grand Mesa in western Colorado, about 10 miles east of the town of Collbran. The dam is a zoned, rolled earth and rockfill structure with a maximum height above foundation of 162 feet, a crest length of 2,100 feet, and a volume of 981,825 cubic yards of material. The outlet works is near the left abutment and consists of an intake structure, 5-foot-diameter concrete pressure conduit, concrete gate chamber for a 3.5-foot-square high-pressure emergency gate, 8-foot-diameter concrete horseshoe conduit containing a 51-inch-diameter steel pipe, control house containing two 2.25-foot-square high-pressure control gates, concrete stilling basin, and an outlet channel which discharges into the Southside Canal.

Vega Reservoir has a surface area of about 900 acres, with a capacity of 33,800 acre-feet, and a shoreline of approximately 7 miles.

Leon-Park Feeder Canal

The Leon-Park Feeder Canal conveys water from Leon and Park Creeks to Vega Reservoir. The 350-cubic-foot-per-second-capacity canal begins at the Leon Creek Diversion Dam on Leon Creek and extends about 2 miles to a siphon under Park Creek. Water diverted from Park Creek by the Park Creek Diversion Dam, about 1,000 feet above the siphon outlet, then combines with the Leon Creek diversions, and flows about 0.7 mile to Vega Reservoir.



Collbran Project



Vega Dam and Reservoir

Southside Canal

Southside Canal heads at the outlet works of Vega Reservoir and conveys irrigation water westward from the reservoir to project lands. The 32.8-mile-long canal has an initial capacity of 240 cubic feet per second and a terminal capacity of 50 cubic feet per second at Mesa Creek. Thirteen siphons carry the canal across major streams of the area, and seven concrete chutes are used to drop the canal in elevation. A 2,389-foot-long, 6.25-foot-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.

Bonham Dam and Reservoir

Bonham Dam is located on Grand Mesa, 12 miles south of Collbran. The dam consists of two embankments separated by an intervening knoll. Reclamation rehabilitation in 1962 added earth and rockfill material to the crest and downstream face, raising the crest 2 feet. This allows a 4-foot freeboard above the normal reservoir water surface. The completed structure is 1,500 feet in length, has a 25-foot-wide crest, and is 38 feet high. The spillway was rehabilitated and now has a capacity of 1,830 cubic feet per second.

Bonham Reservoir has a total capacity of 1,222 acre-feet. It has been in operation for more than 50 years. The Bonham power water outlet works consists of a 750-foot inlet channel, intake structure to a 36-inch-inside-diameter, steel-lined conduit, and a gate structure with a 36-inch cast-iron slide gate. The 36-inch steel-lined conduit is reduced to a 33-inch-inside-diameter, steel-lined pipe where it becomes the Bonham pipeline at a manhole structure about 100 feet downstream from the gate structure.

East Fork Diversion Dam and Feeder Canal

The East Fork Diversion Dam and Feeder Canal divert the natural flow of the East Fork of Big Creek and releases from Atkinson and Lambert Reservoirs to Bonham Reservoir. The East Fork Diversion Dam is a concrete ogee, gravity-type structure with overflow section and wingwalls of concrete and embankments of compacted earth at each end of the dam. The concrete headworks are controlled by one 3-foot-square slide gate, feeding the canal. The sluiceway is controlled by a 6-foot-square radial gate.

The East Fork Feeder Canal, with a capacity of 30 cubic feet per second, has a length of 1.3 miles. The first mile conveys water from East Fork to Atkinson Creek; the



Collbran Project farmlands

water is then carried by the stream channel for approximately 600 feet, where it is redirected into the feeder canal. The water is then carried by the feeder canal to its terminal drop structure, located at the east end of Bonham Dam, for storage in Bonham Reservoir.

Bonham-Cottonwood Pipeline

The Bonham-Cottonwood pipeline collects water from small streams and reservoirs in the watersheds of Big and Cottonwood Creeks and delivers it to the Upper Molina penstock. The pipeline, consisting of two main branches and several smaller feeder lines, delivers a maximum of 50 cubic feet per second to the Upper Molina penstock.

The Bonham section, about 5.4 miles long, extends from Bonham Reservoir to the Upper Molina penstock. It consists of a 33-inch pretensioned concrete pipe with a maximum capacity of 50 cubic feet per second. A feeder line delivers water into this section from an unnamed stream inlet west of Bonham Reservoir.

Extending about 3.7 miles from Cottonwood Reservoir No. 1 to the Upper Molina penstock is the Cottonwood section of the pipeline. It receives water directly from Cottonwood No. 1, DeCamp, and Big Meadows Reservoirs, as well as from three uncontrolled stream inlets which also take releases from six other reservoirs. This section has a maximum capacity of 28.3 cubic feet per second. The pipe ranges from a minimum of 18-inch inside diameter to a 36-inch maximum.

Upper Molina Penstock and Powerplant

The Upper Molina penstock extends from the junction of the Bonham and Cottonwood pipelines, then continues approximately 2.4 miles down the north slope of Grand

Mesa, and terminates at the Upper Molina Powerplant. The penstock consists of welded steel pipe with a capacity of 50 cubic feet per second, ranging in diameter from 36 inches at the junction with the Bonham-Cottonwood collection system to 33 inches at the lower section.

Bonham Reservoir acts as a forebay for the Upper Molina Powerplant, which controls releases up to a maximum capacity of 50 cubic feet per second from the reservoir. Upper Molina Powerplant consists of a single 8,640-kilowatt generating unit constructed on the east bank of Cottonwood Creek, operating at a design head of 2,490 feet with power tailwater discharges up to 50 cubic feet per second into the Molina Equalizing Reservoir.

Lower Molina Penstock and Powerplant

The Lower Molina penstock extends 4.7 miles from the Molina Equalizing Reservoir to the Lower Molina Powerplant. The penstock consists of steel pipe ranging in diameter from 36 inches at its upper end to 30 inches at the lower section. It has a maximum capacity of 50 cubic feet per second.

The single-unit Lower Molina Powerplant is located on the south bank of Plateau Creek near Molina, Colo. It has an installed capacity of 4,860 kilowatts at a design head of 1,400 feet and a maximum water discharge of 50 cubic feet per second. Both plants are operated in conjunction with Colorado River Storage Project power operations.

Substations and Transmission Lines

Power generated at the powerplants is transformed to a transmission voltage of 115 kilovolts at two substations constructed adjacent to the plants. A 5.5-mile transmission line leads from the substation at the Upper Molina Powerplant, delivers energy produced at the plant to the substation at Lower Molina Powerplant, and then connects to the Colorado-Ute Electrical Association system for distribution.

DEVELOPMENT

Early History

Numerous small private reservoirs were constructed on Grand Mesa to regulate the runoff of Big, Cottonwood, Mesa, and Bull Creeks. These reservoirs are filled with water during the spring runoff, and the stored water is released on demand of the irrigators in Plateau Valley to supplement the low natural streamflows of late summer. Individual water users or small cooperative associations built most of the reservoirs in basins formed by glacial action.

Privately constructed canals and ditches are also operated intermittently throughout the winter months to supply the communities of Collbran and Mesa and the rural area with domestic and stock water.

Investigations

Investigations were initiated in 1937 to study the needs of the area for proper development of its abundant resources. Included in the plans for developing the necessary supplemental irrigation water for arable lands was the plan to generate additional power for industrial and domestic use.

Authorization

Authorized July 3, 1952, by act of Congress (Public Law 445, 82nd Congress, 2nd session).

Construction

The contract for construction of Vega Dam was awarded in 1957 and the dam was completed in 1960. Other con-

struction and rehabilitation contracts were awarded beginning in 1959. All work was completed in 1962.

Operating Agencies

The Bureau of Reclamation operates the 17 small Grand Mesa reservoirs, Bonham-Cottonwood pipeline, and the Molina Powerplants and penstocks. Since January 1, 1963, the Collbran Conservancy District has operated Vega Dam and Reservoir, the Leon-Park Diversion Dams and Feeder Canal, and the Southside Canal.

BENEFITS

Irrigation

Vega Dam and Southside Canal provide water for the irrigation of 22,210 acres of full and supplemental service project lands. Principal crops are alfalfa, hay, small grains, and pasture. These crops are used primarily to support beef cattle and sheep production.



Vega Reservoir recreation

Hydroelectric Power

Two hydroelectric powerplants are in operation, with a combined installed capacity of 13,500 kilowatts.

Recreation and Fish and Wildlife

Construction and operation of the reservoirs have improved lake fisheries and wildlife values. Some minor damage to stream fisheries and wildlife values resulted from the reduction of flows downstream from storage or diversion structures and from inundation of some stream habitat in the Vega reservoir area. However, the net effect is an increase in fish and wildlife. The Vega recreation areas are administered by the Colorado Division of Parks and Outdoor Recreation. Fishing, camping, boating, picnicking, and sightseeing are the principal activities. In 1977, visitation totaled 62,871.

PROJECT DATA

Land Areas (1977)

| | |
|---------------------------------------|--------------|
| Irrigable area: | |
| Full irrigation service | 2,500 acres |
| Supplemental irrigation service | 19,710 acres |
| Total | 22,210 acres |

Area Irrigated and Crop Value

| Year | Area irrigated, acres | Crop value, dollars |
|------|-----------------------|---------------------|
| 1968 | 19,542 | 982,967 |
| 1969 | 19,888 | 1,105,788 |
| 1970 | 19,397 | 1,119,246 |
| 1971 | 19,878 | 1,356,611 |
| 1972 | 19,880 | 1,322,321 |
| 1973 | 20,063 | 1,700,052 |
| 1974 | 20,110 | 1,749,042 |
| 1975 | 19,769 | 1,884,004 |
| 1976 | 19,909 | 1,684,799 |
| 1977 | 19,843 | 1,684,877 |

¹Colorado River runoff in 1977 was the lowest in 61 years of record. In most areas of Colorado, precipitation for the year was considerably below average resulting in lower yields because of the extreme drought.

Facilities in Operation

| | |
|--|-------|
| Storage dams (main storage and rehabilitation) | 18 |
| Diversion dams | 3 |
| Canals | 37 mi |
| Powerplants | 2 |
| Pipelines and penstocks | 18 mi |

Climatic Conditions

| | |
|-----------------------------------|----------------|
| Annual precipitation | 15.5 in |
| Temperature: | |
| Maximum | 100 °F |
| Minimum | -30 °F |
| Mean | 46 °F |
| Growing season | 155 days |
| Elevation of irrigable area | 5500-7000.0 ft |

ENGINEERING DATA

Water Supply

PLATEAU CREEK

| | |
|---|--------------------|
| Drainage area near Collbran, Colo. | 88 mi ² |
| Annual discharge: | |
| Maximum (1922) | 118,500 acre-ft |
| Minimum (1934) | 21,300 acre-ft |
| Average | 68,400 acre-ft |

BIG CREEK

| | |
|--|--------------------|
| Drainage area at Upper Station near Collbran, Colo. | 20 mi ² |
| Annual discharge: | |
| Maximum (1952) | 27,000 acre-ft |
| Minimum (1951) | 13,700 acre-ft |
| Average | 20,200 acre-ft |

COTTONWOOD CREEK

| | |
|--|--------------------|
| Drainage area at Upper Station near Collbran, Colo. | 20 mi ² |
| Annual discharge: | |
| Maximum (1929) | 20,900 acre-ft |
| Minimum (1934) | 6,800 acre-ft |
| Average | 13,200 acre-ft |

Storage Facilities

VEGA DAM

Type: Zoned, rolled earth and rockfill
Location: On Plateau Creek, about 10 mi east of Collbran, Colo.

Construction period: 1957-59

| | |
|------------------------------------|-------------------------|
| Reservoir, Vega: | |
| Total capacity to El. 7984 | 33,800 acre-ft |
| Active capacity | 32,980 acre-ft |
| Surface area, El. 7984 | 897.5 acres |
| Dimensions: | |
| Structural height | 162 ft |
| Top width | 30 ft |
| Maximum base width (approx.) | 880 ft |
| Crest length | 2,100 ft |
| Crest elevation | 7997.0 ft |
| Volume | 981,825 yd ³ |

Spillway: Uncontrolled ogee crest, concrete lined chute and stilling basin on the right abutment.

Outlet works: Concrete pressure conduit from the intake structure to the gate emergency chamber, then an 8-ft horseshoe conduit, containing a 51-in steel pipe through the dam, where the discharge to Southgate Canal is controlled by two 2.5-ft-square, high-pressure gates.

BONHAM DAM

Type: Earthfill
Location: On Big Creek, about 12 mi south of Collbran, Colo.

Construction period: Rehabilitation 1962

| | |
|----------------------------------|---------------|
| Reservoir, Bonham: | |
| Total capacity to El. 9796 | 1,124 acre-ft |
| Active capacity | 1,000 acre-ft |
| Surface area, El. 9796 | 88 acres |

| | |
|--|------------------------|
| Dimensions: | |
| Structural height | 38 ft |
| Top width | 25 ft |
| Maximum base width | 180 ft |
| Crest length | 1,500 ft |
| Crest elevation | 9800.7 ft |
| Volume | 15,000 yd ³ |
| Spillway: Open crest with a concrete sill 250 ft wide, 1,830 ft ³ /s capacity. | |
| Power outlet works: 36-in welded steel conduit encased in concrete and 36-in cast-iron slide gates with a capacity of 50 ft ³ /s. | |

Diversion Facilities

EAST FORK DIVERSION DAM

Type: Concrete weir, embankment wings
Location: East Fork of Big Creek.
Year completed: 1962

| | |
|-------------------------------------|-----------------------|
| Dimensions: | |
| Height above streambed | 8 ft |
| Weir crest length | 29 ft |
| Total crest length | 120 ft |
| Weir crest elevation | 9863.2 ft |
| Volume (concrete) | 144 yd ³ |
| Volume (total) | 1,000 yd ³ |
| Sluiceway: 6-ft-square radial gate. | |
| Headworks: 3-ft-square slide gate. | |
| Diversion capacity | 30 ft ³ /s |

LEON CREEK DIVERSION DAM

Type: Concrete ogee
Location: Leon Creek about 8 mi east of Collbran, Colo.
Year completed: 1960

| | |
|---|--------------------------|
| Dimensions: | |
| Height above streambed | 10 ft |
| Weir crest length | 51 ft |
| Crest length | 230 ft |
| Crest elevation | 8026.0 ft |
| Volume | 2,000 yd ³ |
| Overflow weir capacity | 2,000 ft ³ /s |
| Headworks: Concrete with three 5-ft-square control gates. | |
| Diversion capacity | 350 ft ³ /s |

PARK CREEK DIVERSION DAM

Type: Concrete ogee
Location: Park Creek, about 8 mi east of Collbran, Colo.
Year completed: 1960

| | |
|---|------------------------|
| Dimensions: | |
| Height above streambed | 8 ft |
| Weir crest length | 16 ft |
| Crest length | 140 ft |
| Crest elevation | 8020.2 ft |
| Volume | 1,000 yd ³ |
| Overflow weir capacity | 700 ft ³ /s |
| Headworks: Concrete with three 4-ft-square control gates. | |
| Diversion capacity | 150 ft ³ /s |

Carriage Facilities

LEON-PARK FEEDER CANAL

Location: From Leon Creek Diversion Dam to Park Creek and from Park Creek Diversion Dam to Vega Reservoir.
Construction period: 1960-61

| | |
|---|------------------------|
| Length | 2.7 mi |
| Final capacity | 350 ft ³ /s |
| Typical maximum section (unlined): | |
| Bottom width | 12 ft |
| Side slopes | 1.5:1 |
| Water depth | 5.8 ft |

SOUTHSIDE CANAL

Location: From Vega Dam westerly to a point on Mesa Creek 3.25 mi south of Mesa, Colo.

| | |
|---|------------------------|
| Construction period: 1959-60 | |
| Length | 32.8 mi |
| Initial capacity | 240 ft ³ /s |
| Typical maximum section (unlined): | |
| Bottom width | 16 ft |
| Side slopes | 1.5:1 |
| Water depth | 4.4 ft |

SOUTHSIDE TUNNEL

Location: In divide between Salt and Tea Creeks on alignment of Southside Canal.

| | |
|-----------------------------------|------------------------|
| Construction period: 1958-60 | |
| Length | 2,389 ft |
| Capacity | 240 ft ³ /s |
| Cross section: Horseshoe | |
| Height | 6.25 ft |
| Width | 6.25 ft |
| Lining: Concrete, thickness | 3.5-7 in |

EAST FORK FEEDER CANAL

Location: From East Fork westerly to Bonham Reservoir.

| | |
|--|-----------------------|
| Construction period: 1961-62 | |
| Length | 1.3 mi |
| Final capacity | 35 ft ³ /s |
| Typical maximum section (unlined) | |
| Bottom width | 4 ft |
| Side slopes | 1.5:1 |
| Water depth | 2.4 ft |

BONHAM-COTTONWOOD PIPELINE

Type: Pretensioned reinforced concrete pressure pipe

Location: From Bonham Reservoir northwest and from Cottonwood Reservoirs No. 1, 2, 4, and 5, and DeCamp, Kitson, Little Meadows, and Big Meadows Reservoirs north to a junction with Upper Molina penstock.

| | |
|---------------------------------|-------------------------|
| Construction period: 1959-62 | |
| Diversion capacity (max.) | 50 ft ³ /s |
| Bonham section: | |
| Maximum capacity | 50 ft ³ /s |
| Length | 5.4 mi |
| Diameter: | |
| (Min. inside) | 31 in |
| (Max. inside) | 33 in |
| Cottonwood section: | |
| Maximum capacity | 28.3 ft ³ /s |
| Length | 4.2 mi |
| Diameter: | |
| (Min.) | 18 in |
| (Max.) | 36 in |

UPPER MOLINA PENSTOCK

Location: From Bonham-Cottonwood pipeline northwest to Upper Molina Powerplant (southwest of Collbran, Colo.).

Type: Steel plate
 Construction period: 1959-61
 Diameter (outside) 36 in
 Length 2.4 mi
 Capacity 50 ft³/s

LOWER MOLINA PENSTOCK

Location: From Upper Molina Powerplant to Lower Molina Powerplant (southwest of Collbran, Colo.).

Type: Steel plate
 Construction period: 1959-61
 Diameter (outside) 36 in
 Length 4.7 mi
 Capacity 50 ft³/s

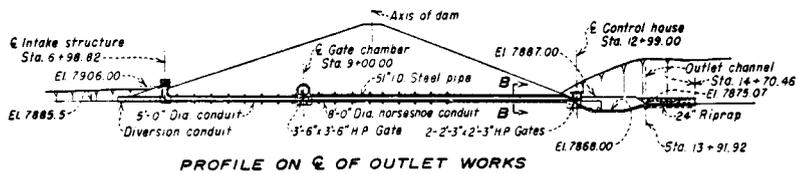
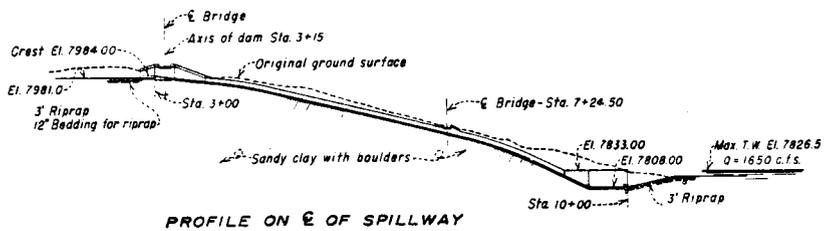
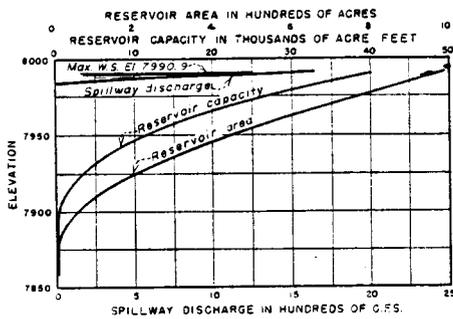
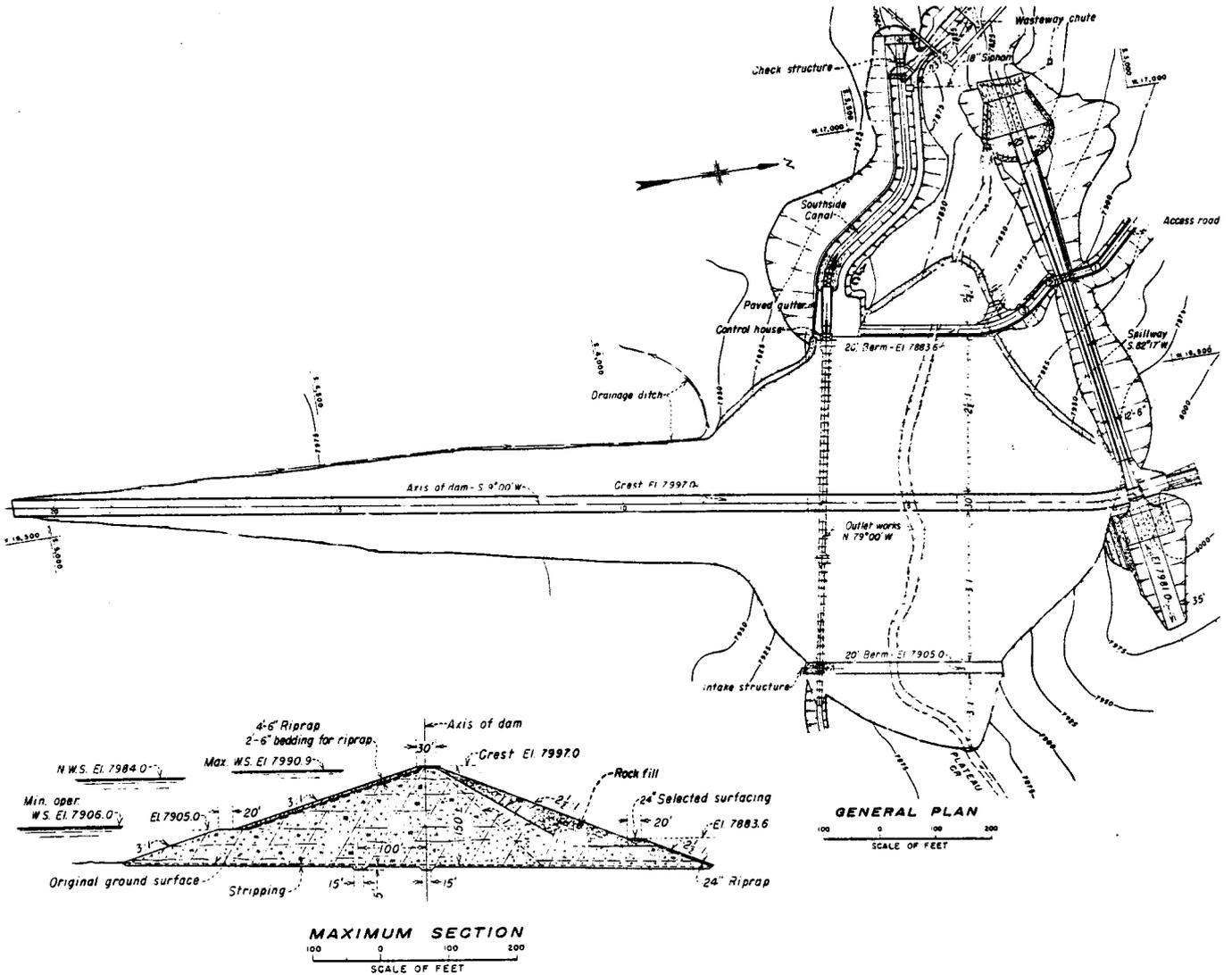
Power Facilities

UPPER MOLINA POWERPLANT

Location: East bank of Cottonwood Creek about 7 mi southeast of Molina, Colo., and about 23 mi northeast of Palisade, Colo.
 Year of initial operation: 1962
 Nameplate capacity 8,640 kW
 Number and capacity of generators (1) 8,640 kW
 Maximum static head 2,688 ft

LOWER MOLINA POWERPLANT

Location: On the south bank of Plateau Creek, near Molina, Colo.
 Year of initial operation: 1962
 Nameplate capacity 4,860 kW
 Number and capacity of generators (1) 4,860 kW
 Maximum static head 1,614 ft

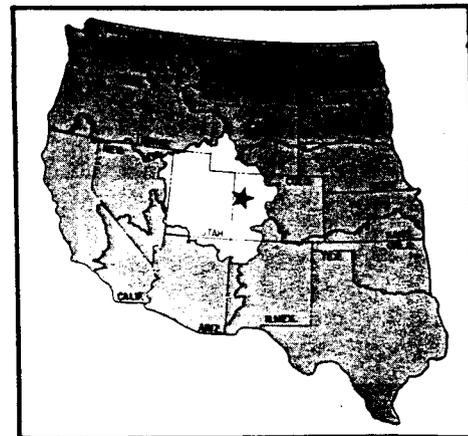


Vega Dam, Plan and Sections

Grand Valley Project

Colorado: Mesa County

Upper Colorado Region
Water and Power Resources Service

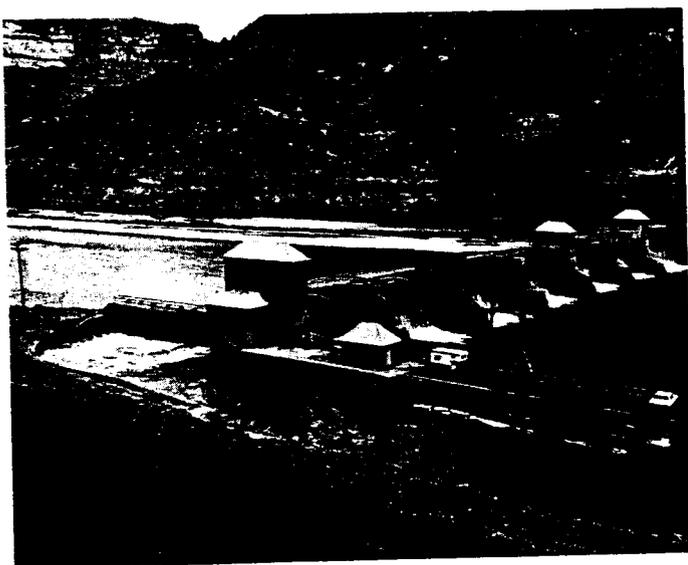


Grand Valley Project is in west-central Colorado in the Colorado River Basin. Water is furnished to about 42,000 acres of land along the Colorado River in the vicinity of Grand Junction, Colo. The project works include a diversion dam, a powerplant, two pumping plants, two canal systems totaling 90.1 miles, 166 miles of laterals, and 112 miles of drains.

PLAN

Water for project use is diverted into the Government High Line Canal at Grand Valley Diversion Dam, about 23 miles northeast of Grand Junction. About 4.6 miles below the main diversion, water for the Orchard Mesa Division is diverted from the canal. This water passes through the Orchard Mesa Siphon across the Colorado River, through the Orchard Mesa Power Canal to the Grand Valley Powerplant, or to the Orchard Mesa Pumping Plant, where it is pumped into Orchard Mesa Canals No. 1 and 2 for distribution to the water users.

From the Orchard Mesa diversion, the Government High Line Canal continues westward, approximately parallel-



Grand Valley Dam and Canal

ing the river, distributing water to laterals of the Garfield Gravity Division. Water also is furnished to 8,580 acres in the Mesa County and Palisade Irrigation Districts which were served by private facilities prior to project construction.

Grand Valley Diversion Dam

The diversion dam is on the Colorado River about 8 miles northeast of Palisade, Colo. This concrete weir is 14 feet high. Flow over its 546-foot crest is controlled by six roller gates. These gates were the first of their type designed in the United States.

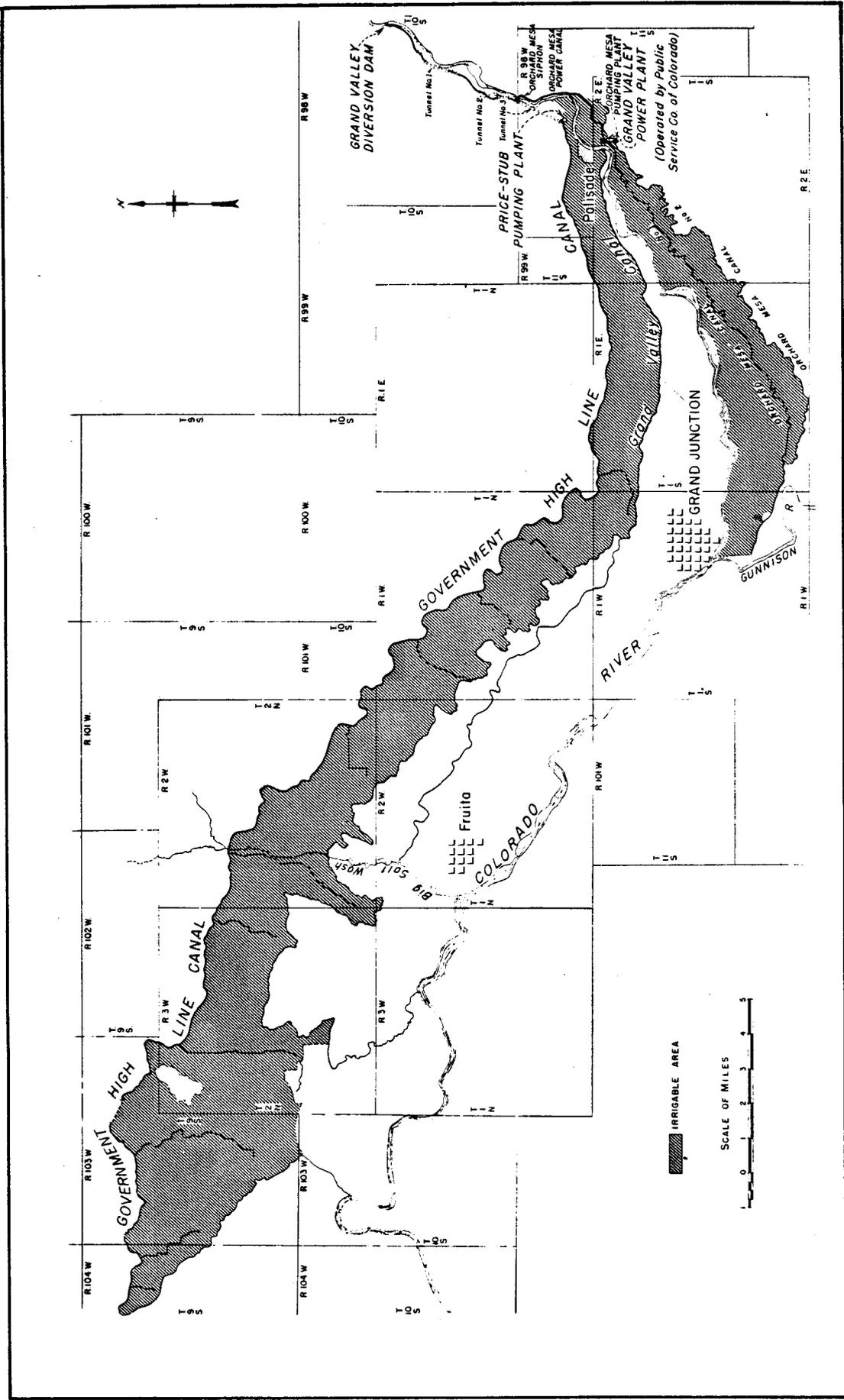
Government High Line Canal System

The canal is on the west and north side of the river and extends from the Grand Valley Diversion Dam south and west a distance of 55 miles. It has a diversion capacity of 1,675 cubic feet per second, which includes 800 cubic feet per second for the Orchard Mesa Power Canal. The remaining flows are distributed through the Government High Line Canal and Price-Stub Pumping Plant. The distribution system for the Garfield Gravity Division consists of 166 miles of laterals. The drainage system consists of 2 miles of closed drains and 110.5 miles of deep open drains.

The Price-Stub Pumping Plant is on the canal near Tunnel No. 3 Outlet at the east end of Grand Valley. It lifts 25 cubic feet per second of water 31 feet to the Stub Ditch to serve land of the Mesa County Irrigation District. Power is provided to the hydraulic pump by water delivered to the Price Ditch for the Palisade Irrigation District.

Orchard Mesa Canal System

Orchard Mesa Siphon conveys water from the Government High Line Canal to the head of the 3.5-mile-long Orchard Mesa Power Canal on the east side of the river. The siphon is reinforced concrete with a capacity of 800 cubic feet per second. Orchard Mesa Pumping Plant lifts



Grand Valley Project

water from the Orchard Mesa Power Canal to the distribution system. The plant contains four pump units: Two have a combined capacity of 80 cubic feet per second and a lift of 41 feet to Canal No. 1; two have a combined capacity of 60 cubic feet per second with a lift of 130 feet to Canal No. 2. Water is conveyed to privately owned and operated laterals by Orchard Mesa Canals No. 1 and 2. The canals have capacities of 85 and 65 cubic feet per second, respectively, and a combined length of 31.6 miles.

Grand Valley Powerplant

The plant is about 1 mile south of Palisade at the lower end of the Orchard Mesa Power Canal adjacent to the Orchard Mesa Pumping Plant. It operates under a maximum head of 79 feet and has a capacity of 3,000 kilowatts. The plant was constructed by the United States with funds advanced by Public Service Company of Colorado. The company operates and maintains the plant under a rental agreement with the United States and the Grand Valley Water Users Association. Power generation averages approximately 19,350,600 kilowatt-hours annually.

DEVELOPMENT

Early History

Soon after their arrival in Grand Valley in 1881, settlers began work on ditches to irrigate lowlands adjacent to the north side of the Colorado River. By 1886, the Grand Valley Canal (not part of the Grand Valley Project) was completed and the canal system expanded to serve approximately 45,000 acres of land. From 1886 to 1902, several attempts were made by private interests to construct a canal to higher lands in the valley but because of initial technical difficulties private investors were unwilling to back the project.

Investigations

After passage of the Reclamation Act in 1902, an evaluation of the proposed Government High Line Canal, now a part of the Grand Valley Project, was requested by the local citizens. In 1905, the Grand Valley Water Users Association was organized to cooperate with the Reclamation Service in developing a project. After investigation, the Reclamation Service proposed a project consisting of a diversion dam and distribution canal to irrigate lands at higher valley levels than those being operated by private interests. A board of engineers approved feasibility of the project December 15, 1908.

Authorization

The Grand Valley Project was one of the projects examined and reported upon favorably by a board of



Grand Valley Diversion Dam

Army Engineers in accordance with the act of June 25, 1910 (36 Stat. 835), and approved by the President on January 5, 1911.

Construction

The Reclamation Service was authorized by the Secretary of the Interior on September 23, 1912, to begin construction on one of the smaller tunnels. First irrigation was provided June 29, 1915, at which time the entire project was less than 60 percent completed. Cooperative drainage work in the Grand Valley Drainage District was begun in March 1918.

The Price-Stub Pumping Plant was completed and water supplied through Government-constructed facilities to Palisade and Mesa County Irrigation Districts in April 1919. A powerplant was constructed in 1932-33 using funds advanced by Public Service Company of Colorado. One of the tunnels on the Government High Line Canal collapsed in March 1950 because of ground slides. In a dramatic effort to open the canal before the start of the irrigation season, a contract to construct a section of new tunnel to bypass the slide area was negotiated and the contractor broke all records in finishing the tunnel in time for the irrigation season.

Operating Agencies

On January 1, 1949, the Grand Valley Water Users Association assumed the care, operation, and maintenance of project facilities except those of the Orchard Mesa Division and the powerplant. Previously, operation was by the Bureau of Reclamation with funds advanced by the association. The powerplant is operated and maintained by the Public Service Company of Colorado. The



Grand Valley Irrigation Canal

Orchard Mesa Division of the project is operated by the Orchard Mesa Irrigation District under cooperative agreements with the Grand Valley Water Users Association.

BENEFITS

Irrigation

Since it first delivered water in 1917, the Grand Valley Project has furnished a full supply of irrigation water to

approximately 33,368 acres and supplemental water to about 8,600 acres of fertile land. The project has made possible diversified and intensified farming in the area, regularly bringing to maturity such late-season crops as fruit, alfalfa, beans, seed, corn, oats, barley, potatoes, and wheat. Favorable climate, cheap winter forage, and proximity to good range combine to make the area desirable for profitable raising of livestock. Dairying and poultry raising are also important to the project area.

PROJECT DATA

Land Areas (1977)

| | | |
|---|--------|-------|
| Irrigable area: | | |
| Full irrigation service | 33,368 | acres |
| Supplemental irrigation service | 8,580 | acres |
| Total | 41,948 | acres |
| Number of irrigated farms/parcels (5 acres or more) | 1,089 | |

Area Irrigated and Crop Value

| Year | Area irrigated, acres | Crop value, dollars |
|------|-----------------------|---------------------|
| 1968 | 33,735 | 7,845,019 |
| 1969 | 32,871 | 7,622,438 |
| 1970 | 31,511 | 6,932,635 |
| 1971 | 31,505 | 7,618,315 |
| 1972 | 31,628 | 7,067,877 |
| 1973 | 31,875 | 11,952,125 |
| 1974 | 31,300 | 15,048,138 |
| 1975 | 32,569 | 13,115,629 |
| 1976 | 31,961 | 11,660,152 |
| 1977 | 31,666 | 11,733,366 |

Facilities in Operation

| | |
|--------------------------------|---------|
| Diversion dams | 1 |
| Canals | 90.1 mi |
| Laterals | 166 mi |
| Pumping plants | 2 |
| Drains | 112 mi |
| Powerplants ¹ | 1 |

¹Leased to Public Service Co. of Colorado for operation.

Climatic Conditions

| | |
|-----------------------------------|-----------|
| Annual precipitation | 8.8 in |
| Temperature: | |
| Maximum | 108 °F |
| Minimum | -21 °F |
| Mean | 53 °F |
| Growing season | 190 days |
| Elevation of irrigable area | 4700.0 ft |

Settlement

| | |
|---|--------|
| Number of persons served with project water (1977): | |
| Farm irrigation service | 5,600 |
| Other water service ² | 21,782 |
| Total | 27,442 |

²Urban and suburban, residential, commercial, and industrial lands.

ENGINEERING DATA

Water Supply

COLORADO RIVER

| | | |
|--|-----------|-----------------|
| Drainage area above Grand Valley Diversion Dam | 8,055 | mi ² |
| Annual discharge at Cameo, Colo.: | | |
| Maximum (1914) | 5,475,000 | acre-ft |
| Minimum (1963) | 1,749,000 | acre-ft |
| Average | 3,132,000 | acre-ft |
| Average annual diversion (all purposes) | 777,000 | acre-ft |

Diversion Facilities

GRAND VALLEY DIVERSION DAM

Type: Concrete, ogee (gated) weir

Location: Colorado River, about 8 mi north-east of Palisade, Colo.

Year completed: 1916

Dimensions:

| | | |
|----------------------------|--------|-----------------|
| Hydraulic height | 14 | ft |
| Crest length | 546 | ft |
| Weir crest elevation | 4782.0 | ft |
| Volume | 25,700 | yd ³ |

Spillway: Weir surmounted by six roller gates 70 ft long by 10.25 ft in diameter, and one sluiceway 60 ft wide with roller gate 15.33 ft high.

Capacity

Headworks: Nine gates, each 7-ft-square, adjacent to west dam abutment.

Diversion capacity

Carriage Facilities

GOVERNMENT HIGH LINE CANAL

Location: From Grand Valley Diversion Dam southwest about 20 mi along the Colorado River to vicinity of Grand Junction, Colo., then generally northwest about 35 mi.

Construction period: 1912-17

Length

Diversion capacity

Typical maximum section in earth:

Bottom width

Side slopes

Water depth

Typical maximum section, concrete lined:

Bottom width

Side slopes

Water depth

Lining thickness

TUNNEL NO. 1 (GOVERNMENT HIGH LINE CANAL)

Location: Near the Colorado River 2 mi south of Grand Valley Diversion Dam.

Construction period: 1912-14

Length

Capacity

Cross section: Horseshoe

Height

Width

Lining: Concrete

TUNNEL NO. 2 (GOVERNMENT HIGH LINE CANAL)

Location: Near the Colorado River about 4 mi south of Grand Valley Diversion Dam.

Construction period: 1913-14

Length

Capacity

Cross section: Horseshoe

Height

Width

Lining: Concrete

TUNNEL NO. 3 (GOVERNMENT HIGH LINE CANAL)

Location: Near the Colorado River, about 5 mi south of Grand Valley Diversion Dam.

Construction period: 1913-15. Bypass bore constructed around collapsed section in 1950.

| | |
|--|------------------------|
| Length | 7,486 ft |
| Diversion capacity | 730 ft ³ /s |
| Cross section: Horseshoe (original tunnel) | |
| Height | 11 ft |
| Width | 11.5 ft |
| Lining: Concrete, thickness | 4 in |

ORCHARD MESA POWER CANAL

Location: From Government High Line Canal between Tunnels No. 2 and 3 across river through Orchard Mesa Siphon and generally south to Grand Valley Powerplant and Orchard Mesa Pumping Plant.

Construction period: 1922-24

| | |
|--|------------------------|
| Length | 3.5 mi |
| Diversion capacity | 800 ft ³ /s |
| Typical maximum section—open canal: | |
| Bottom width | 20 ft |
| Side slopes | 1:1 |
| Water depth | 9.8 ft |
| Lining thickness | 4 in |
| Typical maximum section—bench flume: | |
| Bottom width | 17 ft |
| Side slopes: Vertical | |
| Water depth | 6.6 ft |
| Wall thickness: | |
| Top | 6 in |
| Bottom | 9 in |
| Typical maximum section—cut and cover conduit: | |
| Bottom width | 11 ft |
| Height | 11.4 ft |
| Side slopes: Vertical | |
| Water depth | 10.3 ft |
| Concrete thickness: | |
| Bottom | 10 in |
| Sidewall | 9 in |

MANN'S GULCH SIPHON (ORCHARD MESA POWER CANAL)

Location: Station 57+87 on the canal, about 1.5 miles east of Palisade, Colo.

Type: Reinforced monolithic concrete

| | |
|-------------------------|------------------------|
| Length | 193 ft |
| Capacity | 800 ft ³ /s |
| Cross section: Circular | |
| Diameter | 12 ft |

APPLIGATE DRAW SIPHON AND WASTEWAY (ORCHARD MESA POWER CANAL)

Location: Station 139+14 on the canal, about 0.5 mile southeast of Palisade, Colo.

Type: Twin-barrel reinforced monolithic concrete

| | |
|--|------------------------|
| Length | 140 ft |
| Capacity | 800 ft ³ /s |
| Cross section: Two 8-ft-square barrels | |

ORCHARD MESA CANAL No. 1

Location: From Orchard Mesa Pumping Plant, about 0.5 mile south of Palisade, Colo., southwesterly to a point about 1 mile south of Grand Junction, Colo.

| | |
|--------------------------|-----------------------|
| Length | 15.5 mi |
| Diversion capacity | 85 ft ³ /s |
| Typical maximum section: | |
| Bottom width | 8 ft |

| | |
|-------------------|--------|
| Side slopes | 1.5:1 |
| Water depth | 3.1 ft |

BIG WASH SIPHON (ORCHARD MESA CANAL No. 1)

Location: Station 3+18.4 on the canal.

Type: Precast concrete pipe

| | |
|-------------------------|-----------------------|
| Length | 780.6 ft |
| Capacity | 80 ft ³ /s |
| Cross section: Circular | |
| Diameter | 4.5 ft |

STEEL SIPHON (ORCHARD MESA CANAL No. 1)

Location: Station 4+50 on the canal.

Type: Riveted plate steel

| | |
|-------------------------|-----------------------|
| Length | 1,321.5 ft |
| Capacity | 80 ft ³ /s |
| Cross section: Circular | |
| Diameter | 4.5 ft |

DOUBLE WASH SIPHON No. 1 (ORCHARD MESA CANAL No. 1)

Location: Station 346+62 on the canal.

Type: Precast concrete pipe

| | |
|-------------------------|-----------------------|
| Length | 375.5 ft |
| Capacity | 80 ft ³ /s |
| Cross section: Circular | |
| Diameter | 4.5 ft |

DOUBLE WASH SIPHON No. 2 (ORCHARD MESA CANAL No. 1)

Location: Station 356+44 on the canal.

Type: Precast concrete pipe

| | |
|-------------------------|-----------------------|
| Length | 503 ft |
| Capacity | 80 ft ³ /s |
| Cross section: Circular | |
| Diameter | 4.5 ft |

CONCRETE SIPHON (ORCHARD MESA CANAL No. 1)

Location: Station 8+16 on the canal.

Type: Precast concrete pipe

| | |
|-------------------------|-------------------------|
| Length | 737.8 ft |
| Capacity | 14.3 ft ³ /s |
| Cross section: Circular | |
| Diameter | 1.75 ft |

ORCHARD MESA CANAL No. 2

Location: From Orchard Mesa Pumping Plant, about 0.5 mi south of Palisade, Colo., southwesterly to a point about 2.5 mi southeast of Grand Junction, Colo.

| | |
|--------------------------|-----------------------|
| Length | 16.1 mi |
| Diversion capacity | 65 ft ³ /s |
| Typical maximum section: | |
| Bottom width | 7 ft |
| Side slopes | 1.5:1 |
| Water depth | 2.8 ft |

STEEL SIPHON (ORCHARD MESA CANAL No. 2)

Location: Station 13+24 on the canal.

Type: Riveted plate steel pipe

| | |
|-------------------------|-----------------------|
| Length | 426.5 ft |
| Capacity | 60 ft ³ /s |
| Cross section: Circular | |
| Diameter | 4 ft |

STEEL SIPHON (ORCHARD MESA CANAL No. 2)

Location: Station 21+29 on the canal.

Type: Riveted plate steel pipe

Length 319 ft
 Capacity 60 ft³/s
 Cross section: Circular
 Diameter 4 ft

BIG WASH SIPHON NO. 1 (ORCHARD MESA CANAL NO. 2)

Location: Station 357+95 on the canal.
 Type: Precast concrete pipe
 Length 491.7 ft
 Capacity 50 ft³/s
 Cross section: Circular
 Diameter 3.75 ft

BIG WASH SIPHON NO. 2 (ORCHARD MESA CANAL NO. 2)

Location: Station 419+41 on the canal.
 Type: Precast concrete pipe
 Length 2,817.1 ft
 Capacity 50 ft³/s
 Cross section: Circular
 Diameter 3.75 ft

DOUBLE WASH SIPHON (ORCHARD MESA CANAL NO. 2)

Location: Station 501+23 on the canal.
 Type: Reinforced monolithic concrete pipe
 Length 180 ft
 Capacity 50 ft³/s
 Cross section: Circular
 Diameter 3.75 ft

CONCRETE SIPHON (ORCHARD MESA CANAL NO. 2)

Type: Reinforced monolithic concrete pipe
 Length 500 ft
 Capacity 60 ft³/s
 Cross section: Circular
 Diameter 4 ft

PUMPING PLANTS³

| Designation | Number of units | Total capacity, ft ³ /s | Total dynamic head, ft | Total horsepower |
|--------------------|-----------------|------------------------------------|------------------------|------------------|
| Price-Stub | 1 | 25 | 31 | 125 |
| Orchard Mesa | 4 | 140 | 41-130 | 1,500 |

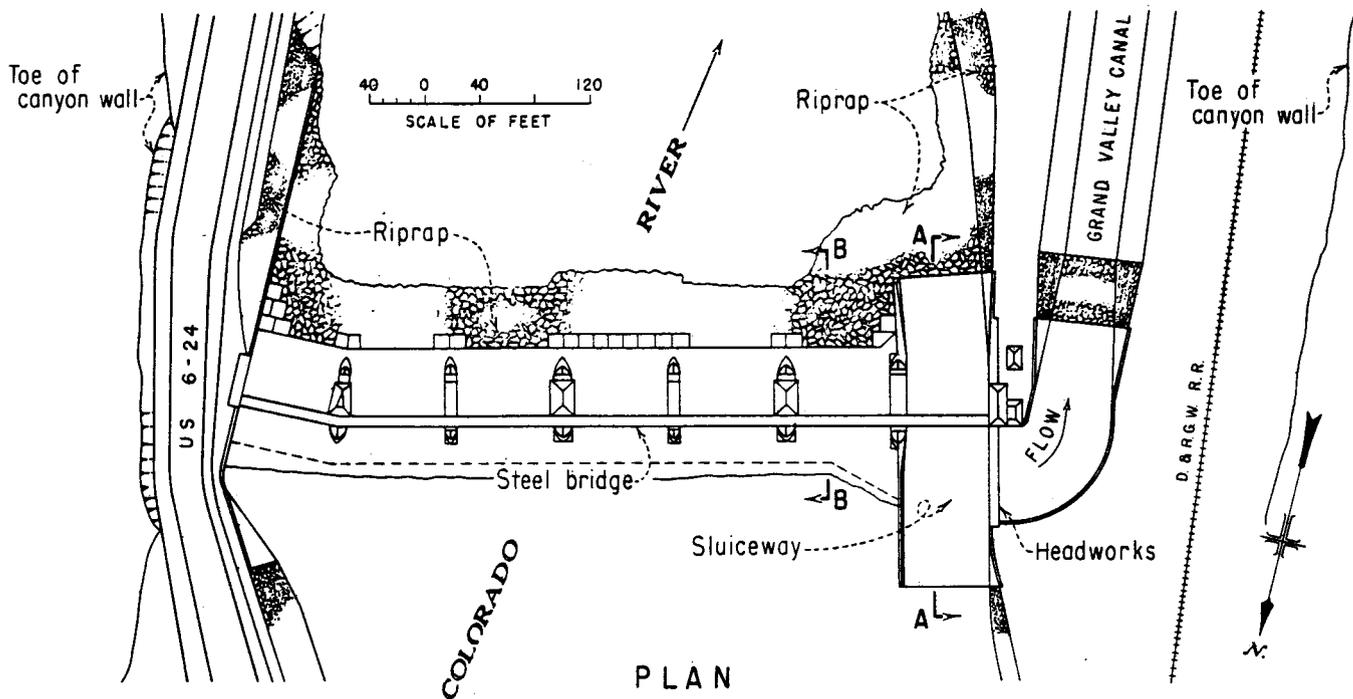
³These plants have direct-connected turbine-driven pumps. The Orchard Mesa Plant has two high-lift units pumping a total of 60 ft³/s against a total maximum head of 130 ft, and two low-lift units pumping a total of 80 ft³/s against a total maximum head of 41 ft.

Power Facilities

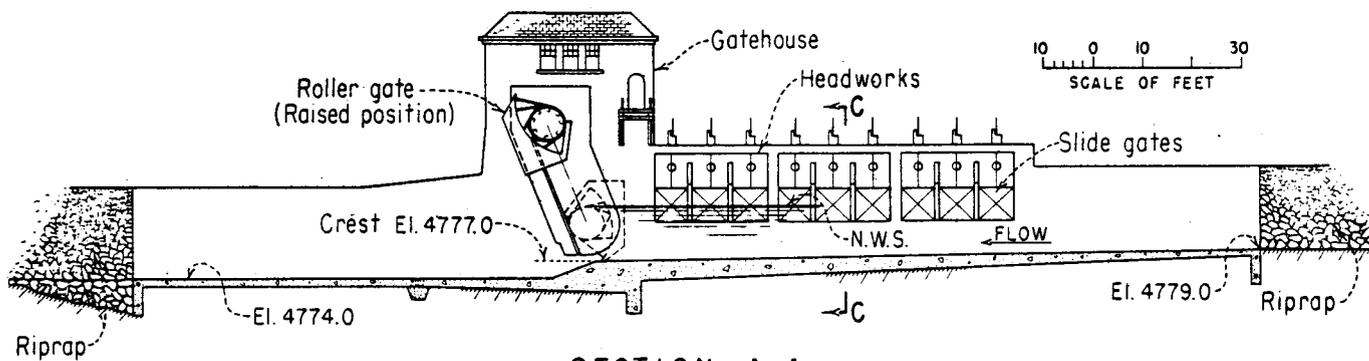
GRAND VALLEY POWERPLANT⁴

Location: 1 mi south of Palisade, Colo.
 Year of initial operation: 1933
 Year last generator placed in operation: 1933
 Nameplate capacity 3,000 kW
 Number and capacity of generators (2) 1,500 kW
 Maximum head 79 ft

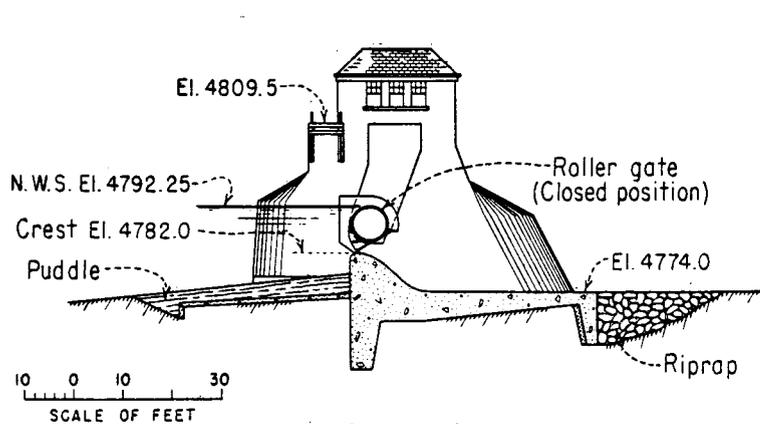
⁴Power marketed by the Public Service Co. of Colorado.



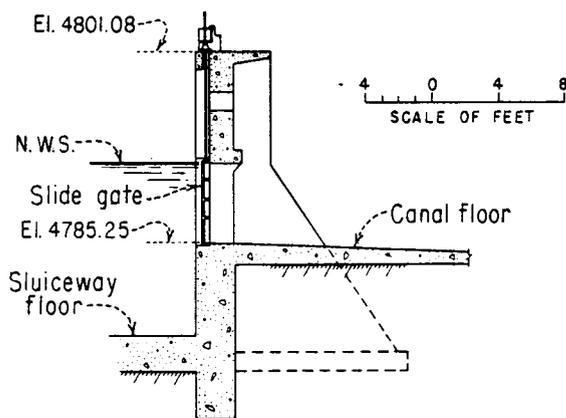
PLAN



SECTION A-A



SECTION B-B



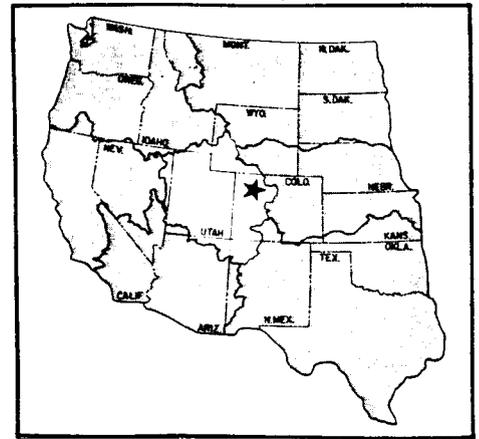
SECTION C-C

Grand Valley Diversion Dam, Plan and Sections

Silt Project

Colorado: Garfield County

Upper Colorado Region Water and Power Resources Service



The Silt Project is in the west-central section of Colorado near the towns of Rifle and Silt. The project provides for storing the flows of Rifle Creek and pumping water from the Colorado River to increase the irrigation water for 6,591 acres of land. Principal features of the project are Rifle Gap Dam and Reservoir, a pumping plant, and a lateral system. Existing canals and laterals have been used and rehabilitated where necessary. Recreation facilities have been constructed at Rifle Gap Reservoir.

PLAN

Project storage is in Rifle Gap Reservoir, formed by Rifle Gap Dam on Rifle Creek. Reservoir exchange releases are made from Rifle Creek to existing ditches to meet downstream irrigation needs. Project water is released directly into Davie Ditch, which had been abandoned but has been rehabilitated to supply irrigation water to project lands on Davie Mesa.

Reservoir releases are made from Rifle Gap Reservoir to meet downstream diversion rights of nonproject lands. These releases allow additional diversions from East Rifle Creek upstream from Rifle Gap Reservoir for project use. Delivered through the Grass Valley Canal, this exchange water provides a full irrigation supply for new project lands and a supplemental supply to project lands previously irrigated with Harvey Gap Reservoir water and Grass Valley Canal diversions.

The Dry Elk Valley lateral carries water from the Grass Valley Canal to both full and supplemental service lands in Dry Elk Valley. Under project operation, Harvey Gap Reservoir, which previously filled and emptied each year, now stores and regulates water for a longer irrigation season.

The Silt Pumping Plant, with a capacity of 36 cubic feet per second, is located near the Colorado River about 2 miles east of the town of Silt. The 7.6-mile-long Silt Pump Canal extends northwest from the pumping plant discharge line, carrying irrigation water to land on the lower portion of Harvey Mesa. The pumped water is used as a supplemental supply, or as a replacement sup-

ply, for project land formerly irrigated with Colorado River water pumped at high cost from the Cactus Valley Ditch. It also is used as an exchange for nonproject water to replace Harvey Gap Reservoir water for project lands above the Silt Pump Canal.

Rifle Gap Dam and Reservoir

Rifle Gap Dam is constructed on Rifle Creek about 5.5 miles north of Rifle, Colo., at a point where the creek cuts through the Grand Hogback. The dam is a zoned earthfill structure with a height of 157 feet, a crest length of 1,450 feet, and a volume of 1,768,000 cubic yards of material.

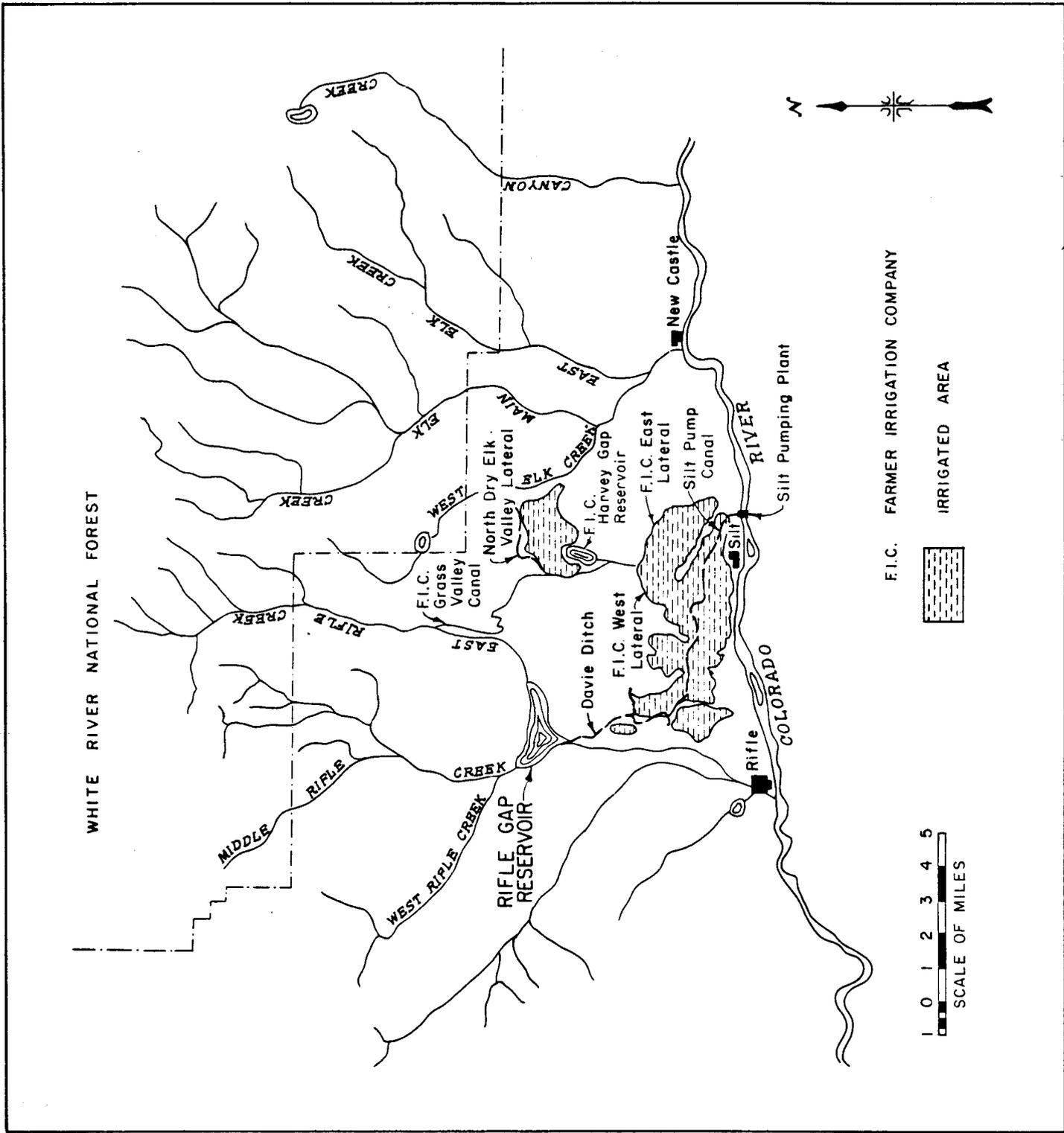
The spillway consists of a short approach channel, concrete inlet walls, concrete crest structure, and concrete chute and stilling basin. The outlet works consists of a concrete intake structure, a 6-foot upstream circular tunnel at the gate chamber with two 2.25-foot-square high-pressure gates. The river outlet diverts to a downstream 6-foot-diameter flat-bottom free-flow tunnel, which discharges into the spillway stilling basin. A 7-foot-diameter horseshoe tunnel branches from the gate chamber and contains a 30-inch steel pipe that conveys water to a concrete pipe that in turn discharges into Davie Ditch.

Rifle Gap Reservoir has a total capacity of 13,602 acre-feet and an active capacity of 12,168 acre-feet, with a surface area of 359 acres.

DEVELOPMENT

Early History

Most early settlers were miners and prospectors who turned to irrigated agriculture after being unsuccessful in mining attempts. In 1920, 40 families were brought from New York by the Midland Railroad Company to operate coal mines in the Silt area. When the railroad failed a short time later, the families remained and turned to farming in the vicinity.



WHITE RIVER NATIONAL FOREST

F.I.C. FARMER IRRIGATION COMPANY

SCALE OF MILES
0 1 2 3 4 5

IRRIGATED AREA

Agriculture is the region's basic industry. Several thousand acres of rangeland and National Forest reserves surround the cultivated areas and are used for summer grazing. Most irrigated farmland is devoted to the production of alfalfa, grain, and native hay for livestock feed; a small acreage is used for production of fruit and truck crops.

Investigations

Investigations of the Silt Project by the Bureau of Reclamation began in 1936. A report on the Colorado River dated March 1946 briefly described a project plan that was similar to the present plan. The plan was described in greater detail in a January 1951 report on the Silt Project, which served as a supplement to the 1950 report on the Colorado River Storage Project and participating projects. The 1950 report was amended in 1953 and was the basis for authorization of the Silt Project. The December 1961 definite plan report presented the results of studies which generally confirmed the 1951 feasibility plan.

Authorization

The project is one of the initial participating projects authorized with the Colorado River Storage Project by the act of April 11, 1956 (70 Stat. 105).

Construction

The construction contract for Rifle Gap Dam was awarded in August 1964. The project was completed in 1967.

Operating Agency

Operation and maintenance of the project was turned over to the Silt Water Conservancy District on January 1, 1968. The district also operates the private Farmers Irrigation Company facilities as part of the Silt Project.

BENEFITS

Irrigation

Major crops are alfalfa, small grain, and hay for livestock feed.

Fish and Wildlife and Recreation

Recreation is administered by the Colorado Division of Parks and Outdoor Recreation and consists of camping, picnicking, swimming, boating, and fishing. There were approximately 106,000 visitor days during 1977.



Rifle Gap Dam and Reservoir

PROJECT DATA

Land Areas (1977)

| | |
|---------------------------------|-------------|
| Irrigable area | 6,591 acres |
| Number of irrigated farms | 124 |

Area Irrigated and Crop Value

| Year | Area irrigated, acres | Crop value, dollars |
|------|--------------------------|------------------------|
| 1968 | 4,784 | 413,764 |
| 1969 | 5,062 | 600,750 |
| 1970 | 5,395 | 405,675 |
| 1971 | 5,422 | 645,521 |
| 1972 | 5,436 | 836,823 |
| 1973 | 5,483 | 914,693 |
| 1974 | 5,493 | 1,015,606 |
| 1975 | 5,513 | 862,717 |
| 1976 | 5,728 | 790,899 |
| 1977 | 5,962 | 781,868 |

Facilities in Operation

| | |
|---|---------|
| Storage dams | 1 |
| Canals | 12.5 mi |
| Grass Valley Canal (farmer owned, preproject) | 13.5 mi |
| Laterals | 1.98 mi |
| Pumping plants | 1 |

Climatic Conditions

| | | |
|-----------------------------------|-------------|------|
| Annual precipitation | 11.1 | in |
| Temperature: | | |
| Maximum | 104 | °F |
| Minimum | -33 | °F |
| Mean | 48 | °F |
| Growing season | 160-165 | days |
| Elevation of irrigable area | 5500-6000.0 | ft |

ENGINEERING DATA**Water Supply****RIFLE CREEK**

| | | |
|--------------------------------------|--------|-----------------|
| Drainage area at Rifle Gap Dam | 142 | mi ² |
| Annual discharge: | | |
| Maximum (1958) | 26,000 | acre-ft |
| Minimum (1956) | 14,800 | acre-ft |
| Average | 18,600 | acre-ft |

Storage Facilities**RIFLE GAP DAM**

| | | |
|---|-----------|--------------------|
| Type: Zoned earthfill | | |
| Location: On Rifle Creek, 5.5 miles north of Rifle, Colo. | | |
| Construction period: 1964-67 | | |
| Reservoir, Rifle Gap: | | |
| Total capacity to El. 5960 | 13,602 | acre-ft |
| Active capacity | 12,168 | acre-ft |
| Surface area | 359 | acres |
| Dimensions: | | |
| Structural height | 157 | ft |
| Hydraulic height | 120 | ft |
| Top width | 30 | ft |
| Maximum base width | 800 | ft |
| Crest length | 1,450 | ft |
| Crest elevation | 5978.0 | ft |
| Volume | 1,768,000 | yd ³ |
| Spillway: Ungated ogee crest with concrete chute at left abutment. | | |
| Capacity at El. 5971.8 | 3,645 | ft ³ /s |
| Outlet works: Concrete tunnel through left abutment and gate chamber. | | |
| River: 6-ft-diameter tunnel discharging into spillway stilling basin, controlled by two 2.25-ft-square high-pressure gates. | | |
| Capacity at El. 5971.8 | 326 | ft ³ /s |

| | | |
|---|----|--------------------|
| Davie Ditch: 30-in steel pipe branching from gate chamber, controlled by one 2.25-ft-square high-pressure gate. | | |
| Capacity | 18 | ft ³ /s |

Carriage Facilities**DAVIE DITCH CANAL**

| | | |
|---|-----|--------------------|
| Location: From Rifle Gap Reservoir, extending south 4.9 mi. | | |
| Construction period: Rehabilitated by Reclamation, 1965-66 | | |
| Length | 4.9 | mi |
| Initial capacity | 18 | ft ³ /s |
| Bottom width | 5 | ft |
| Side slopes | 2:1 | |
| Water depth | 1.4 | ft |

GRASS VALLEY CANAL

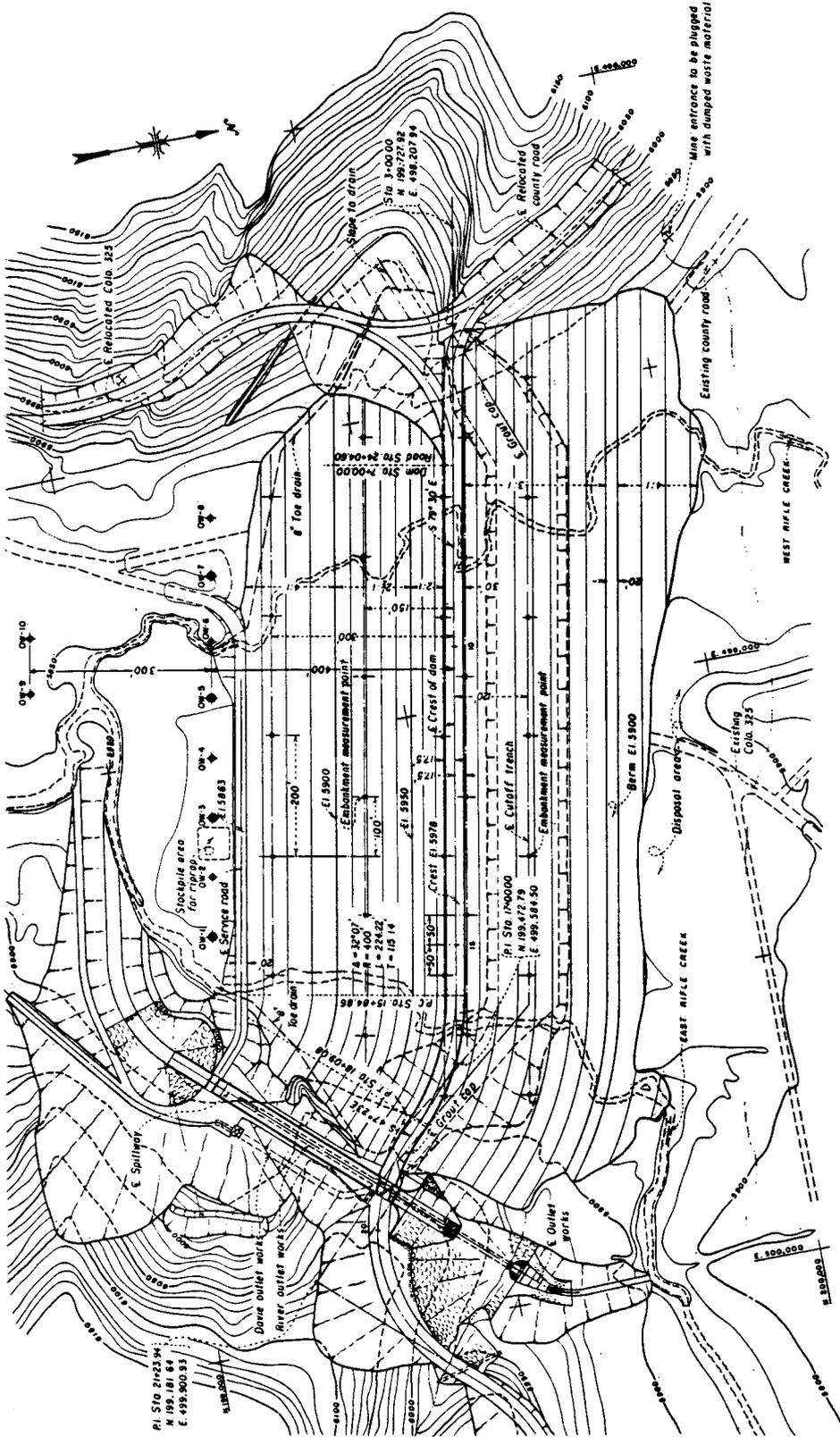
| | | |
|--|-----|--------------------|
| Location: From East Rifle Creek above Rifle Gap Reservoir, extending generally south and east to existing Harvey Gap Reservoir | | |
| Construction period: Rehabilitated by Reclamation, 1965-66 | | |
| Length | 1 | mi |
| Initial capacity | 60 | ft ³ /s |
| Bottom width | 8 | ft |
| Side slopes | 2:1 | |
| Water depth | 3.5 | ft |

SILT PUMP CANAL

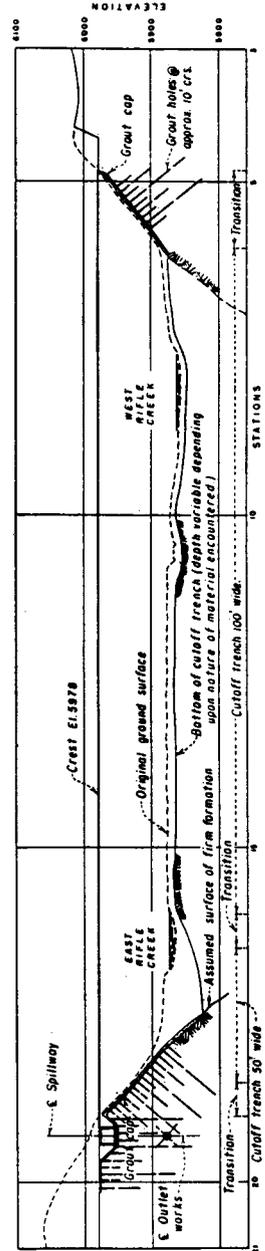
| | | |
|--|-----|--------------------|
| Location: At end of an inlet canal from the Colorado River about 2 mi east of Silt, Colo., extends to the northwest. | | |
| Construction period: 1965-66 | | |
| Length | 7.6 | mi |
| Initial capacity | 32 | ft ³ /s |
| Bottom width | 6 | ft |
| Side slopes | 2:1 | |
| Water depth | 1.4 | ft |

SILT PUMPING PLANT

| | | |
|--|-------|--------------------|
| Location: Near the Colorado River about 2 mi east of the town of Silt, Colo. | | |
| Number of units | 4 | |
| Total capacity | 36 | ft ³ /s |
| Total dynamic head | 225 | ft |
| Total horsepower | 1,275 | |



GENERAL PLAN



PROFILE ON E CREST OF DAM

Rifle Gap Dam, Plan and Profile