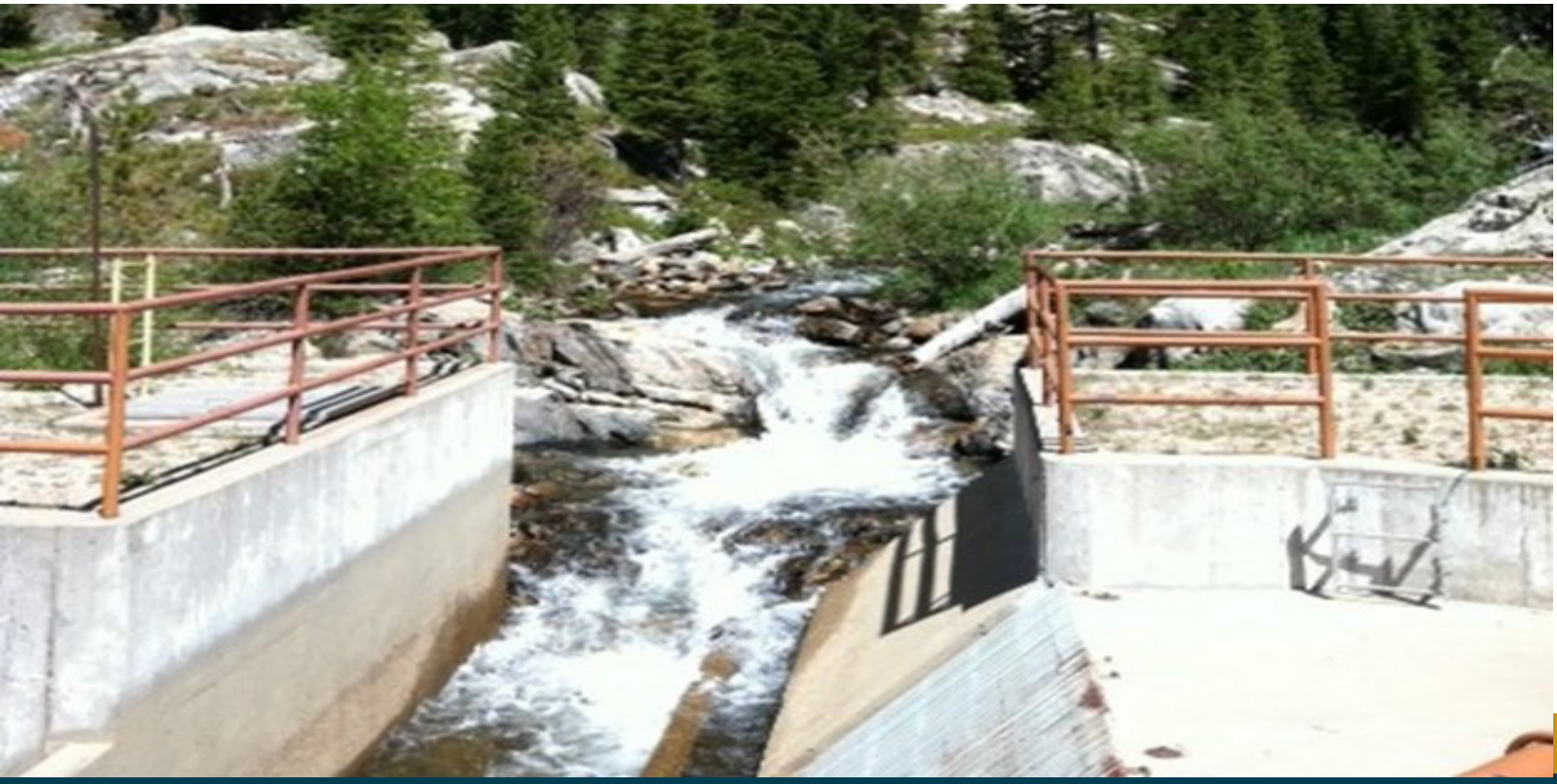
BUREAU OF RECLAMATION

Fryingpan-Arkansas Project

Summary of Actual Operations
Water Year 2024

Annual Operating Plans



Eastern Colorado Area Office
Missouri Basin Region

U.S. Department of the Interior

February 2025

Mission Statements

The U.S. Department of the Interior protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; honors its trust responsibilities or special commitments to American Indians, Alaska Natives, Native Hawaiians, and affiliated Island Communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

Cover Image – Carter Diversion Sluice, Lake County, Colorado (Photo credit: Terry Dawson/ Bureau of Reclamation).

Fryingpan-Arkansas Project

Summary of Annual Operating Plans
Water Year 2024

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Project Highlights

Date	Event
August 16, 1962	Project authorized under Public Law 87-590.
August 1964	Construction began on Ruedi Dam.
November 2, 1965	Started excavating Charles H. Boustead Tunnel.
December 1965	Construction began on Sugar Loaf Dam.
April 15, 1968	Breached old Sugar Loaf Dam.
May 1968	Began storing water in Ruedi Reservoir.
June 15, 1969	Charles H. Boustead Tunnel "holed through".
July 1970	Construction began on Pueblo Dam - first contract.
May 16, 1972	Initial Project diversion from Chapman, South Fork, and Fryingpan diversion sites.
June 7, 1972	Initial diversion from Sawyer Creek.
July 1972	Construction began on Pueblo Dam - second contract.
July 1972	First sale of Project trans-mountain water.
January 9, 1974	Began storing water in Pueblo Reservoir.
May 6, 1974	Initial diversion from Lily Pad Creek.
May 4, 1976	Initial diversion from Ivanhoe Creek.
May 1977	First replacement water released from Ruedi Reservoir.
June 1977	First sale of water from Ruedi Reservoir.
November 22, 1977	Adopted the recommended bypass flow of 15 ft^3/s or natural inflow, whichever is less on Lake Creek below Twin Lakes Dam.
June 1, 1979	Initial diversion from Middle Cunningham Creek.
June 4, 1979	Initial diversion from Mormon Creek.
June 14, 1979	Initial diversion from North Cunningham Creek.
May 8, 1980	Initial diversion from Hunter, Midway and No Name Creeks.
June 4, 1980	Initial diversion from North Fork and South Cunningham Creeks.

December 8, 1980	Federal Register notification of availability of water from Ruedi Reservoir.
April 28, 1981	Initial diversion from Carter Creek.
May 6, 1981	Initial diversion from Granite Creek.
June 1, 1981	Assume operation at Twin Lakes Dam.
June 23, 1981	Mt. Elbert Forebay filled.
September 29, 1981	Mt. Elbert Power Plant dedicated.
October 1, 1981	Mt. Elbert Unit #1 was made commercially available to Western Area Power Administration (WAPA) for their use.
May 5, 1982	Initial diversion from Halfmoon Creek.
July 29, 1982	Turquoise Lake filled for first time.
September 14, 1983	Initial diversion from south outlet works at Pueblo Dam for Pueblo West, CO.
August 9, 1984	Mt. Elbert Unit #2 was made commercially available to WAPA for their use.
May 24, 1985	Began storing water under Arkansas River Decree.
July 1, 1985	Initial diversion through Fountain Valley Conduit.
August 1985	Ruedi Hydroplant began operations.
November 27, 1985	Twin Lakes pipeline began operations.
May 7, 1986	Sugar Loaf Hydroplant began operations.
June 1986	Imports restricted due to high east slope storage.
November 10, 1987	Winter water storage decree approved and signed.
November 17, 1989	Initial release from Twin Lakes Reservoir for recreational benefits on the Arkansas River.
August 14, 1990	Initial release from Ruedi Reservoir for endangered fish (conservation flows pursuant to the biological opinion) in the Colorado River's "15-mile reach" for the U.S. Fish & Wildlife Service from water leased by the Colorado Water Conservation Board.
September 28, 1990	Dedication of Pueblo Fish Hatchery and the completion of construction on the Fryingpan-Arkansas Project ceremony.
November 1990	Final winter storage decree signed by court.
July 21, 1992	Dedication of Leadville Mine Drainage Tunnel Water Treatment Plant.
September 29, 1994	Transfer of Phase II of the Pueblo Fish Hatchery at Pueblo Reservoir to Colorado Division of Wildlife.
May 15, 1995	Final transfer of recreational facilities at Pueblo to the Department of Parks and Outdoor Recreation.
July 7, 1995	Began storing water under Arkansas River Decree.

July 18, 1995	All Project space filled with Project water. Imports curtailed.
July 1997	Reservoir level at Pueblo Reservoir restricted after a routine risk assessment of Pueblo Dam was completed and raised concern about the foundation below the spillway section of the dam.
May 1999	Pueblo Reservoir restriction lifted.
July 2000	Risk Analysis Study for Pueblo Dam completed.
July 11, 2000	Long-term contract between United States government and the Pueblo Board of Water Works executed.
September 11, 2001	As a result of the terrorist attacks on September 11, 2001, all Fryingpan- Arkansas Project facilities were closed to the public. The facilities remained closed until security measures to safeguard the federal investment were implemented. Reclamation has maintained a heightened level of security at Fry-Ark facilities since that time.
July 23, 2002	Initial release of water through Pueblo Board of Water Works South Outlet Works joint-use manifold.
September 12, 2007	Long-Term Contract between the United States Government and the city of Aurora executed.
May 2010	The upgrade to the control and monitoring system for the Fryingpan-Arkansas collection system was completed.
September 2012	Fiberoptic control of west slope systems from the east slope.
April 28, 2016	Southern Delivery System began water deliveries.
August 10, 2016	Lease of Power Privilege signed with SECWCD for the construction, operation, maintenance and replacement associated with hydropower at Pueblo Dam.
October 1, 2016	If and When Master Contract in effect.
May 14, 2019	Southeastern Colorado Conservancy District's James W. Broderick Hydropower Plant begins production of electricity at Pueblo Dam.

Annual Operating Plan Fryingpan-Arkansas Project Water Year 2024 Operation

General Overview

This is the fifty-sixth annual operating plan (AOP) for the Fryingpan-Arkansas Project. The first was published for water year 1969. The project, completed in 1990, imports spring snowmelt runoff from Colorado's west slope to the semi-arid Arkansas River basin on Colorado's east slope. The project consists of federally owned dams, reservoirs, stream diversion structures, conduits, tunnels, pumping plants, a pumped-storage power plant, electric transmission lines, substations, and recreation facilities. These features are located in the Fryingpan River and Hunter Creek watersheds of the upper Colorado River Basin, and in the Arkansas River Basin in central and southeastern Colorado. The project provides water for irrigation, municipal and industrial use, hydroelectric power generation, recreation, and wildlife habitat. The project also provides for flood control.

The project was authorized under Public Law 87-590 on August 16, 1962. This law provides that the project will be operated under the operating principles adopted by the state of Colorado on April 30, 1959, as amended on December 30, 1959, and on December 9, 1960. These operating principles were published as House Document 130 (Eighty-seventh Congress, First Session), and are included in appendix E.

This annual operating plan is a summary of the actual project operation in water year 2024 (WY2024), running from October 1, 2023 through September 30, 2024. All tables can be found in appendix A and all figures can be found in appendix B.

Project Features in Operation During Water Year 2024 (WY2024)

Ruedi Dam and Reservoir are located on the Fryingpan River, a tributary of the Roaring Fork River, on Colorado's west slope about 13 miles east of Basalt, Colorado. Ruedi Reservoir has a total capacity of 102,373 acre-feet (AF) at a water surface elevation of 7,766.0 feet (ft). The reservoir is operated on an annual cycle. Steady winter releases draft the reservoir such that it can be filled with the spring runoff while releases to the Fryingpan River are maintained below the safe channel capacity. The reservoir provides replacement water for out-of-priority depletions to the Colorado River by the project as well as water for west slope irrigation, municipal, and industrial uses on a contractual basis. The reservoir is also operated to provide for recreation and wildlife habitat.

The west slope collection system, located upstream of Ruedi Reservoir in the upper Fryingpan River and Hunter Creek watersheds, is a series of 16 stream diversion structures and eight

tunnels. The system collects spring snowmelt runoff for diversion, by gravity, to the inlet of the Charles H. Boustead Tunnel. The Boustead Tunnel conveys water collected by the west slope collection system under the continental divide and into Turquoise Lake on the east slope. The tunnel is five miles long and has a water conveyance capacity of 945 cubic feet per second (ft^3/s).

Sugarloaf Dam and Turquoise Lake are located on Lake Fork Creek, a tributary of the Arkansas River, about five miles west of Leadville, Colorado. The reservoir has a total capacity of 129,398 AF at a water surface elevation of 9,869.4 ft. The reservoir is operated to provide regulation of both project and non-project water imported from the west slope. Turquoise Lake is operated on an annual cycle. The lake is drafted through the Mt. Elbert Conduit during the winter to provide adequate space for the spring imports of west slope water. Most of the native inflow from Lake Fork Creek is impounded in the lake and returned to the Arkansas River via the Mt. Elbert Conduit, the Mt. Elbert Power Plant, and Twin Lakes. The reservoir is also operated to provide for recreation and wildlife habitat.

The Mt. Elbert Conduit conveys project, non-project, and native Lake Fork Creek water from Turquoise Lake to Twin Lakes. The conduit is 10.7 miles long and has a water conveyance capacity of 370 ft^3/s. Native water from Halfmoon Creek is also added to the conduit and returned to the Arkansas River from Twin Lakes Dam. The Sugarloaf Powerplant, a privately-operated electrical generation station, runs when water is being conveyed from Sugarloaf Dam to the Mt. Elbert Conduit. All conduit flow reaching the Mt. Elbert Forebay is used to generate electricity at the Mt. Elbert Power Plant as it is delivered to Twin Lakes.

The Mt. Elbert Powerplant is a pumped-storage facility located on the shore of Twin Lakes. It has two 100-megawatt turbine generators, that can be reversed and used as 340,000 horsepower pumps. In addition to being used to generate energy with the Mt. Elbert Conduit flow, the plant is used to follow daily peak power loads. This load following is accomplished by pumping water to the Mt. Elbert Forebay, an 11,143 AF regulating pool at the terminus of the Mt. Elbert Conduit, from Twin Lakes during off-peak load hours using surplus or low-cost energy. That water is then returned to Twin Lakes through the turbines during peak load hours, along with the Mt. Elbert Conduit flow. The energy generated at the plant is transmitted and marketed by the Western Area Power Administration (WAPA), with the revenues applied to the repayment of the project.

Twin Lakes Dam and Twin Lakes are located on Lake Creek, a tributary of the Arkansas River, about 13 miles south of Leadville, CO. Twin Lakes has a surveyed capacity of 140,855 AF at a maximum water surface elevation of 9,200 ft. Water surface elevations are measured with respect to mean sea level. The morning glory spillway is slightly tilted which reduces the active storage space by 498 AF. During construction, the dead pool (the elevation below which water cannot physically be released) was determined to be 9,157.5 ft (54,955 AF).

The reservoir is operated to regulate both project and non-project water imported from the west slope. The project water stored in the reservoir is released to Lake Creek for storage in Pueblo Reservoir during the winter months in anticipation of spring imports from the west slope. Native inflows into Turquoise Lake, native flows diverted from Halfmoon Creek, and native inflows

into Twin Lakes, are all released to Lake Creek from the Twin Lakes Dam. The cities of Colorado Springs and Aurora take direct delivery of water from the reservoir through their Otero Pipeline. The operation of Twin Lakes also provides for recreation and wildlife habitat.

Pueblo Dam and Reservoir are located on the Arkansas River six miles west of the city of Pueblo, CO. The reservoir is the terminal storage facility for the Fryingpan-Arkansas Project and has a total storage capacity of 338,374 AF at a water surface elevation of 4,898.7 ft. The upper 26,990 AF of storage space are reserved exclusively for flood control, while an additional 66,011 AF of space are reserved for flood control seasonally from April 15 through November 1. Pueblo Reservoir is also operated to provide for recreation, wildlife habitat, and flood control.

Non-project water may be stored in the reservoir under contract with Reclamation. Native inflow can be stored when the project storage right is in priority or under the winter water storage program (WWSP). Under the WWSP, irrigators are permitted to store native Arkansas River water in Pueblo Reservoir during the winter months for an additional supply of irrigation water, on the condition that the water is used before May 1 of the next water year.

Most water deliveries are made from the reservoir. The Fountain Valley Authority, the Pueblo West Metropolitan District, and the Pueblo Board of Water Works can take direct delivery of municipal water through the south outlet works and joint-use manifold. The Southern Delivery System (SDS) in the north outlet works delivers water to the Fountain Valley Authority and Pueblo West. A direct irrigation delivery is made to the Bessemer Ditch. Releases from the fish hatchery outlet at Pueblo Dam support the Pueblo Fish Hatchery. Other project and contract deliveries are made as releases to the Arkansas River for diversion downstream.

Southeastern Colorado Water Conservancy District (SECWCD) signed a Lease of Power Privilege contract with the Reclemation to construct, operate, maintain and replace the James W. Broderick Hydroelectric Power Plant below Pueblo Dam. The design uses an existing hydropower bifurcation at the North Outlet Works Southern Delivery System connection.

Hydrologic Conditions and Weather Events in WY2024

Annual precipitation in the Fryingpan River Basin was above average for nearly every month in WY2024. Precipitation started out the year above average in October and decreased to below average accumulation in November and December. October cumulative precipitation was 135 percent of average while December and November received 53 and 88 percent of average. January precipitation was above average at 129 percent of average for the month. In February precipitation continued to increase ending the month at 135 percent of average. The Basin received 136 percent of average during the month of March. April precipitation was normal at 97 percent of average. May precipitation increased significantly to 182 percent of average. For

June, July, and August precipitation in the basin remained above average at 116, 107, and 153 percent of average, respectively. September precipitation was below average at 79 percent of average. The total precipitation for the year was 117 percent of average.

Snowpack accumulation in the watershed above Ruedi Reservoir was above the median for most of season. Snow accumulation started out above median in October but declined in November and December. January saw modest increases in snow accumulation with some of the year's first major storms resulting in snowpack accumulation for the month at 139 percent of median. Snow accumulation for the months of February and March were also above normal at 134 and 156 percent of median. April saw the largest amounts of snowpack accumulation in the year, at 181 percent of median. In May the basin received 82 percent of median snowpack. In June snowpack continued to accumulate and was 152 percent of median for the month. The snowpack accumulation was measured in the Fryingpan River basin group of SNOTEL sites: Fremont Pass, Independence Pass, Brumley, and Kiln. The snowpack melt rate in June was faster than median rates, losing about 0.23 inches of snow water equivalent per day. On average, all the SNOTEL sites in the Fryingpan River basin group melted out by June 23, 4 days later than the normal melt out date for the basin.

The average monthly temperatures measured at the Fryingpan River Basin group of SNOTEL sites were below average for three quarters of the months in WY2024. The average temperature in October measured about a half degree below average. November and December warmed a little with December measuring 2 degrees above average. January was 1.5 degrees below average and February was near average. During March through May temperatures dropped below average again with May being 6.4 degrees below average. June and July warmed to about 1 degree above average and August and September were cooler than average with temperature deviations of 2.4 and 1.1 degrees below average, respectively. The seasons of the year averaged the following temperature deviations from average: autumn minus 0.2, winter 0.3, spring minus 3.3, and summer minus 0.8 degrees from average. Overall, the year averaged 1.1 degrees below average.

Report on Operations During Water Year (WY) 2024

Ruedi Reservoir

Ruedi Reservoir started out WY2024 with a storage content of 83,860 AF, 97 percent of average. Ruedi Reservoir was drafted to 67,808 AF, its lowest storage content for the year, on April 12. The release from Ruedi Reservoir was lowered to the winter flow target of 62 ft^3/s and held at this rate from late October until mid-December when it was increased to 77 ft^3/s until the Spring. All releases during the winter months were made through the city of Aspen's hydroelectric powerplant.

The January forecast of undepleted inflow to Ruedi Reservoir, computed by the Colorado Basin River Forecast Center (CBRFC), indicated that the April through July runoff volume resulting from melting snowpack would be 114 thousand acre-feet (KAF), 84 percent of average.

Reservoir storage was above average at the beginning of the month and modeling of reservoir futures based on the January inflow forecast indicated that, at the current release of 77 ft^3/s, the reservoir would fill by early July. Therefore, no release changes were made in January.

Reclamation's first statistical forecast of undepleted inflow in February increased slightly from the CBRFC's previous month's forecast to 117 KAF, 87 percent of average, for the April through July period. Reservoir storage remained above average and the release from the reservoir was increased to 100 ft^3/s on February 13. Modeling of reservoir futures based on the February undepleted inflow forecast again indicated that the reservoir would fill by early July.

Reclamations inflow forecast to Ruedi Reservoir calculated on March 1 increased to 133 KAF, 99 percent of average. On March 11, the reservoir release was increased to 129 ft^3/s and again on March 18 to 155 ft^3/s. With these flow increases, and the new inflow forecast, modeling of reservoir futures indicated that the reservoir would fill under the most probable assumptions and that inflow in July, after the reservoir filled, would be below the downstream safe channel capacity of 850 ft^3/s.

The April inflow forecast for the April through July period increased to 139 KAF, 103 percent of average. This forecast projected that Ruedi Reservoir would fill under all three scenarios: most probable, minimum reasonable and the maximum reasonable hydrologic conditions. The reservoir release was increased to 206 ft^3/s on April 26 and reservoir modeling using this forecast determined that there was no risk of exceeding the safe channel capacity once the reservoir filled in early July.

On April 12, Reclamation's annual meeting took place as required under stipulation 1.7.b of case numbers 02CW324 and 02CW365 between the following parties: Reclamation, Southeastern, Division 5, and the Colorado River District. A consensus was reached that Ruedi Reservoir would fill under all three operational modeling scenarios allowing Reclamation to divert the additional 45 ft^3/s of Fryingpan River basin water through the Boustead Tunnel in accordance with stipulation five of the above-mentioned case numbers. The representatives for each of the parties were Bureau of Reclamation (Reclamation): Michael Holmberg, Terry Dawson, and Tim Miller; Southeastern Colorado Water Conservancy District: Garrett Markus; Colorado Division of Water Resources: James Heath and Bill Blakeslee; Colorado River District: Brendon Langenhuizen and Don Meyer. Once consensus was reached, the Boustead Tunnel was allowed to divert up to the maximum rate of 945 ft^3/s from the Fryingpan and Hunter Diversions.

Inflow to Ruedi increased in May and releases from the reservoir were increased to 236 ft^3/s on May 13. The most probable forecast of undepleted inflow remained very close to average at 132 KAF for the April to July period, 98 percent of average. This forecast indicated that the reservoir would fill under all three modeling scenarios and would require releases above the City of Aspen's powerplant capacity. With the Reservoir inflow forecasts close to average and reservoir storage above average, it was decided that there would be enough water to make Coordinated Reservoir Operations (CROS) releases for the 15-Mile Reach of the Colorado River. These releases were scheduled for the first week of June. From June 5 to June 8 the

release from Ruedi was increased in 50 ft^3/s increments twice a day up to a total release of 650 ft^3/s, which was continued until June 15.

The June inflow forecast for the April through July period was 140 KAF, 104 percent of average. This forecast projected that Ruedi Reservoir would fill under all three modeling scenarios and that preemptive releases would be needed to remain within the safe channel capacity. From June 22 to July 7 releases were increased and decreased to pass inflow and manage reservoir fill.

Ruedi Reservoir was in priority and stored inflow from the first of the water year through September 2 and from October 23 through October 31. From September 3 to October 22, Ruedi Reservoir was required to release inflow, make scheduled contract releases, and provide Boustead Tunnel replacement releases to the Colorado River. Ruedi Reservoir released 181 AF of water for out-of-priority Boustead Tunnel diversions and 1,762 AF for regular scheduled contracts.

Ruedi Reservoir participated in the CROS operations for WY2024 and released 4,030 AF from June 5 through June 15. Beginning on July 25 contracted water was released to support endangered fish recovery efforts in the 15-Mile reach of the Colorado River. A total of 21,762.5 AF of water was released between July 25 and October 23 for endangered fish recovery efforts. This total includes the following: 6,000 AF water leased from Ute Water and 350 AF leased from Garfield County; 15,412.5 AF of water which includes 5,000 AF from the firm endangered fish pool, 5,412.5 AF from the mitigation fish pool, and 5,000 AF of the 4-out-of-5 fish pool.

Depleted inflow (inflow remaining after upstream diversions) to Ruedi Reservoir was below average for the first four months of WY2024 and then was above average for last eight months except May and July. The total depleted inflow volume for the April through July runoff period was 87,503 AF, 102 percent of average. Ruedi Reservoir storage reached a maximum physical content of 102,123 AF, 99 percent of reservoir capacity, on July 2. Ruedi Reservoir ended the water year at 78,480 AF of storage, 96 percent of average for October 31, at a water surface elevation of 7,739.96 ft.

Ruedi releases for contracts are shown in table A-2. Releases for endangered fish are shown in table A-3 through A-9. Monthly precipitation data and evaporation data for Ruedi can be found in figure B-2 and figure B-3 respectively.

West Slope Collection System and Project Diversions

The most probable forecasts for the first of each month are as follows:

- February 51,700 AF
- March 60,300 AF
- April 60,400 AF
- May 60,600 AF

A total of 69,324 AF of water was diverted through the Boustead Tunnel and 67,494 AF of water was stored during the WY2024. The imports were 119 percent of the unimpeded average for the period from WY1972 to WY2023 and 111 percent of the May 2024 forecast.

Importation of project water through the Boustead Tunnel began on April 24. The maximum mean daily import through Boustead Tunnel was 936 ft^3/s on June 8. The diversion system was shut down for maintenance of the Cunningham Tunnel beginning July 28. Boustead Tunnel seepage was recorded whenever the Fry-Ark Project water rights were in priority. There was 450 AF of Busk-Ivanhoe water conveyed through the Boustead Tunnel. The daily discharge record for the diversion structures is included as appendix D. An aggregated discharge record is shown in table A-10.

The flows through Boustead Tunnel can only be stored when the flow at the Fryingpan River near Thomasville gage is above a specified minimum flow. When flows are below the minimum, any imports from seepage are considered developed water and treated as native. Water is diverted from the collection system to the Fryingpan River to keep the flow above minimum. See figure 5 for flows at the Thomasville gage.

A plot of the Boustead Tunnel imports during WY2024 is shown in figure 6.

Since Ruedi Reservoir was forecast to fill this year, imports through the Boustead Tunnel were allowed to a maximum of 945 ft^3/s.

Twin Lakes Reservoir and Canal Company/Fryingpan-Arkansas Project Exchange

Twin Lakes Canal Company was repairing facilities on the west slope, so the exchange was satisfied by rejecting 3,000 AF diversions at No Name and Midway from June 13 to July 1. See appendix C for more information.

Turquoise Lake

On September 30, 2023 there was 83,864 AF of water (elevation 9842.4 ft) stored in Turquoise Lake, 80 percent of average.

Turquoise Lake was partially drafted in late Summer 2023 for Spring 2024 imports because:

- Mt. Elbert Powerplant had maintenance scheduled that would keep Sugarloaf Dam from passing flows through Mt. Elbert Conduit from December to February and;
- there was construction scheduled in the Fall in the Arkansas River channel.

Both generating units at the Mt. Elbert Powerplant were taken offline on December 4 for extensive maintenance. Unit 2 came back online on February 29, with Unit 1 still offline for shaft seal replacement. Unit 2 failed unexpectedly and catastrophically on April 26 with Unit 1 still unavailable. This meant neither unit was available so water released down the Conduit could not be released from the Forebay. Water that had been held in Turquoise Lake in anticipation of the availability of Mt. Elbert Conduit needed to be released down Lake Fork Creek instead. A Good Neighbor agreement with the county limits flows to below 400 ft^3/s under most circumstances. Internal Alerts for Sugarloaf Dam are declared at Lake Fork Creek flows above 300 ft^3/s. The EAP Level 1 Alerts are declared at 400 ft^3/s.

Releases down Lake Fork Creek began on April 26 at a rate of 350 ft^3/s. On May 4, Lake County officials requested a reduction in flows to allow them to put a berm around the culvert at the bridge on County Road 5A. The county had noted deficiencies to the bridge and repairs were scheduled for the Fall before the 350 ft^3/s flows down Lake Fork began, but damage to the roadbed from the flows caused the county to close the road in the Spring. The county believed flows at 450 ft^3/s would not cause more problems once the berm was in place.

The snowpack in the collection system peaked in April and the forecast was frequently refreshed after the May 1 forecast of 60.6 thousand AF. Estimates of total imports continued to increase through May, reaching as high as 72 KAF. Normally, drafting flows are released to Mt. Elbert Conduit with any necessary flows exceeding conduit capacity released down Lake Fork Creek. Since Lake Fork was now the only outlet, it was decided the flows should be increased to 450 ft^3/s to ensure that curtailing imports to keep Turquoise Lake from spilling would not be necessary.

Flows continued above 400 ft^3/s until June 10 at which time it was determined the final import would be less than 70 KAF and Lake Fork releases could be reduced. Releases were brought down slowly to avoid erosion and only one area of minor sloughing was noticed after flows were reduced. Flows were brought back to normal releases on September 28.

Releases made down Lake Fork Creek and to Mt Elbert Conduit drafted Turquoise Lake to 62,354 AF (elevation 9,827.95 ft), the lowest storage of the water year, on May 28. The high point for storage was 124,278 AF (elevation 9,866.52 ft) on July 21. On September 30, 2024 there was 117,255 AF of storage, 111 percent of average, at elevation 9,862.51 ft.

Figures 8 and 9 show the precipitation and pan evaporation at Turquoise Lake. Table A-12 and figure 10 depict the monthly operation of Turquoise Lake during WY2024.

There was 18,104 AF imported through Homestake Tunnel to the account in Turquoise Reservoir.

Of the 2,795 AF of Busk-Ivanhoe imports through the Carlton Tunnel that were stored, 2,457 AF was stored by Aurora, and 271 AF was stored by Pueblo Water. Pueblo Water imported 450 AF from Ivanhoe Reservoir through the Boustead Tunnel. Project water imports through the Boustead Tunnel totaled 67,494 AF.

Figure 6, figure 7, and figure 8 show the monthly imports through the Boustead, Homestake, and Busk- Ivanhoe Tunnels, respectively.

Mt. Elbert Conduit/Halfmoon Creek Diversion and Mt. Elbert Pumped-Storage Power Plant

During WY2024 there was 38,119 AF of water released from Sugarloaf Dam to Mt. Elbert Conduit. Sugarloaf Powerplant did not generate this year.

Mt Elbert Unit 1 generator was under maintenance from December 4 to February 29. Unit 2 was then brought down for extended maintenance which was expected to last several years. On April 26, Unit 1 failed, eliminating releases, which can only be made through the Mt. Elbert generating units. Unit 1 was brought back online in June but had to be taken offline again almost immediately due to problems with the new shaft seal and filtration system. Repairs to Unit 1 were finished by October 15 with sporadic availability of the conduit between April and October. Most water released from Turquoise to draft for Spring imports was released down Lake Fork Creek. Because the conduit was unavailable during runoff, no water was diverted from Halfmoon Creek. The curtailment of this diversion resulted in flooding of Halfmoon Creek bank-side properties.

During maintenance to the generation units, bypass water was released to the Conduit. There was 3,909 AF for use by the Leadville Federal Fish Hatchery. The water was diverted from the conduit and delivered to the hatchery. It was then returned to the Arkansas River and stored in Pueblo Reservoir. The remainder of the water was stored in Mt. Elbert Forebay until Unit 1 became available. The Conduit operations are shown in figure 11.

Twin Lakes/Mt. Elbert Forebay

On September 30, 2023 Twin Lakes had 126,018 AF of water stored (elevation 9,194.41 ft) and Mt. Elbert Forebay had 7,563 AF in storage (elevation 9,632.03 ft). The Twin Lakes/Mt. Elbert Forebay combined water storage reached a low point of 105,557 AF on April 3 and was at its high point of 144,796 on June 25. The storage in Twin Lakes was 118,386 AF and in Mt. Elbert Forebay was 9,122 AF (Twin Lakes elevation 9,191.28 ft and Mt. Elbert Forebay elevation 9,638.15 ft) on September 30, 2024, 103 percent of average.

Turquoise Lake was drafted early, and water was stored in Twin Lakes beginning in the late Summer in anticipation of maintenance at Mt. Elbert Powerplant. Since water can’t be conveyed from Turquoise Lake to Twin Lakes when the powerplant isn’t operational, water was stored in Twin Lakes to supply anticipated operations of the Homestake (Otero) Pipeline and other necessary releases during the winter.

After the failure of Unit 1, water was exchanged with native inflows to Twin Lakes being stored as Twin project water inflows and Turquoise project water released down Lake Fork Creek from Turquoise.

Twin Lakes releases to Lake Creek were made throughout the winter to pass the flow of the Mt. Elbert Conduit, and to transfer project water stored in Twin Lakes to Pueblo Reservoir.

The native inflow of 3,294 AF was stored in the Twin Lakes Canal Company (TLCC) storage space from November 15 through March 15 as winter water storage. A total of 10,354 AF of project water was released to Lake Creek during this time.

Figure 13 and figure 14 show the precipitation and pan evaporation at Twin Lakes. Table A-13 and figure 15 depict the monthly operation of Twin Lakes during WY2024.

A total of 10,000 AF of Fry-Ark Project water was made available at the beginning of the season to the Upper Arkansas Voluntary Flow Management Program (VFMP) to augment flows at the gage, Arkansas River at Wellsville. Colorado Parks and Wildlife called for 5,653 AF. While Reclamation is not a party to the agreement between Southeastern Colorado Water Conservancy District; Colorado Parks and Wildlife; Chafee County; the Arkansas River Outfitters Association; and Trout Unlimited, project water is made available when possible to support this agreement. Water may be called for year-round to support fishery flows at 250 ft^3/s. Recreational flows may be provided from July 1 to August 15 if the flow at Wellsville is below 700 ft^3/s. The flows may be ramped down to prevent streambank erosion after August 15.

A total of 20.9 megawatt hours of energy was generated at the power plant, with 90.1 AF of water; 61,795 AF came through the Mt. Elbert Conduit; and 49,934 AF were first pumped to the Mt. Elbert Forebay from Twin Lakes during off-peak electric demand hours. Table A-14 depicts the monthly power plant operation for WY2024.

Pueblo Reservoir

The storage content of Pueblo Reservoir was 217,847 AF (elevation 4,873.89 ft) on September 30, 2023. The reservoir reached a high point in storage of 256,143 AF (elevation 4,882.75 ft) on March 15 and a low point on September 30, 2024 of 196,157 AF (elevation 4,868.33 ft), 134 percent of average.

A total of 35,937 AF of native inflow was stored in the reservoir under the Pueblo Reservoir winter water storage program between November 15, 2023 and March 14, 2024. This program allows agricultural entities to store native flows during the winter to be used during irrigation season. On March 15, the stored water was distributed to agricultural entities.

Table A-15 and figure 19 depict Pueblo Reservoir monthly operations during WY2024. The 2023–2024 winter water storage is shown in figure 16, and the winter water releases are shown in figure 17. The precipitation and evaporation at the reservoir are shown in figures 15 and 18. Project water releases are shown in figure 20.

Storage Contracts

There were four long term storage contracts for a total of 57,416 AF of non-project storage in Turquoise Lake, one for 54,452 AF in Twin Lakes and eight for 61,724 AF in Pueblo Reservoir.

There were four short-term if-and-when contracts totaling 3,740 AF for one-year contracts in Pueblo Reservoir. Sixteen contracts totaling 7,585 AF under the Master Contract were used for “if-and- when” storage. Under "if and when" contracts, non-project water may be stored in project storage space if that space is not required for project water.

Project Water Sales and Deliveries

There was 46,494 AF of Fryingpan-Arkansas Project water made available for allocation to the SECWCD, during WY2024, based on an expected import of 60,600 AF. Municipal and industrial accounts received a total of 12,572 AF and agricultural accounts received 53,462 AF with a full allocation based on actual imports authorized. Agricultural entities called for 30,816 AF of project and 2,211 AF of project carryover water during the year. In the past, agricultural accounts were not allowed to carry over project allocations from a previous water year but had to release it back to SECWCD on May 1. This year a pilot project was instituted such that agricultural entities were allowed to use WY2024 project water during the WY2024 irrigation season. Municipal entities called for 54 AF of project water and 2,267 AF of project carryover.

Evaporation reduced the project carryover water in storage by 9,164 AF. By the end of the water year, there was 24,618 AF of WY2024 allocated water and 117,076 AF of carryover water remaining in storage. The monthly release of project water from Pueblo Reservoir is shown in figure 19.

Reservoir Storage Allocation Data

Table A-16 presents the reservoir storage allocations for the five project reservoirs.

Reservoir Evaporation and Precipitation

Table A-18 and table A-19 present the monthly average evaporation and precipitation at the four weather stations near project facilities. When an evaporation pan is not in service and a reservoir

is not completely ice-covered, the daily water surface evaporation is computed using seasonal evaporation factors. Those factors are listed in table A-17. The assumption is that there is no evaporation from a reservoir water surface when ice completely covers the reservoir.

Flood Control Benefits

The gauge at ARKAVOCO exceeded 6,000 ft^3/s June 10–11. It was determined reductions to the flow from Pueblo Reservoir would not reach Avondale before natural recessions took the flows at ARKAVOCO below 6,000 ft^3/s.

Table A-20 shows the historic flood control benefits provided by Pueblo and Ruedi Dams.

Appendix A

Tables

Table A-1.—Ruedi Reservoir operations WY2024 Fryingpan-Arkansas Project

Month	Inflow	Evaporation	Outflow	End of Month Content	Water Surface Elevation (ft)
Oct. 23	3.60	0.10	6.50	81.10	7,743.03
Nov. 23	1.80	0.00	2.80	80.10	7,741.92
Dec. 23	2.40	0.00	4.30	78.30	7,739.73
Jan. 24	2.40	0.00	4.70	75.90	7,736.88
Feb. 24	2.50	0.00	5.30	73.20	7,733.51
Mar. 24	3.70	0.00	7.80	69.10	7,728.32
Apr. 24	9.90	0.00	9.20	70.00	7,729.45
May 24	17.60	0.20	12.20	76.10	7,737.05
June 24	45.30	0.60	19.10	101.60	7,765.22
July 24	13.10	0.60	14.30	99.80	7,763.41
Aug. 24	8.30	0.40	15.50	92.20	7,755.50
Sep. 24	4.40	0.20	13.90	82.60	7,744.75
Total* (acre-feet)	**115,150**	**2,034**	**115,431**		

(Units = 1,000 AF, inflow, outflow, end of month content)
*Rounding may introduce discrepancies between monthly and yearly totals.

Table A-2.—Ruedi reservoir releases for contracts WY2024

Month	Round 1: Non-Fish	Round 1: Fish	Round 2: Non-fish	Round 2: Fish
Oct. 23				
Nov. 23				
Dec. 23				
Jan. 24				
Feb. 24				
Mar. 24				
Apr. 24				
May 24				
June 24				
July 24				1,459
Aug. 24		5,431		3,954
Sep. 24	420	4,569	650	3,417
Oct. 24	217		475	2,933
TOTAL	**637**	**10,000**	**1,125**	**11,763**

(Units = AF).

Table A-3.—Ruedi reservoir releases for endangered fish April WY2024

Date	Elevation (ft)	Storage (AF)	Inflow (ft^3/s)	Evap. (ft^3/s)	Release (ft^3/s)	Rocky Fork Creek (ft^3/s)	Fryingpan River Below Dam (ft^3/s)	Ruedi Called Out? (Y=Yes) (N=No)	Required Min Flow Below Ruedi (ft^3/s)	Required Fish Release (ft^3/s)	Cumulative Fish Release (AF)
4/1/2024	7,728.09	68,904.16	62.49		151.98		151.98	N	39		
4/2/2024	7,727.87	68,734.87	66.65		152.00		152.00	N	39		
4/3/2024	7,727.67	68,580.88	73.99		151.63		151.63	N	39		
4/4/2024	7,727.51	68,457.87	89.09		151.10		151.10	N	39		
4/5/2024	7,727.51	68,457.87	151.10		151.10		151.10	N	39		
4/6/2024	7,727.41	68,381.45	109.18		147.71	4.04	151.75	N	39		
4/7/2024	7,727.30	68,296.85	105.17		147.83	3.78	151.60	N	39		
4/8/2024	7,727.16	68,189.91	97.73		151.65		151.65	N	39		
4/9/2024	7,727.00	68,067.40	90.03		151.79		151.79	N	39		
4/10/2024	7,726.86	67,960.34	98.05		152.02		152.02	N	39		
4/11/2024	7,726.73	67,861.23	101.72		151.69		151.69	N	39		
4/12/2024	7,726.66	67,807.98	124.97		151.81		151.81	N	39		
4/13/2024	7,726.71	67,845.95	171.27		152.13		152.13	N	39		
4/14/2024	7,726.86	67,960.34	210.19		152.52		152.52	N	39		
4/15/2024	7,727.10	68,143.95	245.49		152.92		152.92	N	39		
4/16/2024	7,727.27	68,274.03	219.25		153.67		153.67	N	39		
4/17/2024	7,727.33	68,320.05	176.56		153.35		153.35	N	39		
4/18/2024	7,727.38	68,358.23	173.04		153.79		153.79	N	39		
4/19/2024	7,727.46	68,419.65	185.01		154.04		154.04	N	39		

Date	Elevation (ft)	Storage (AF)	Inflow (ft^3/s)	Evap. (ft^3/s)	Release (ft^3/s)	Rocky Fork Creek (ft^3/s)	Fryingpan River Below Dam (ft^3/s)	Ruedi Called Out? (Y=Yes) (N=No)	Required Min Flow Below Ruedi (ft^3/s)	Required Fish Release (ft^3/s)	Cumulative Fish Release (AF)
4/20/2024	7,727.53	68,473.23	181.01		154.00		154.00	N	39		
4/21/2024	7,727.61	68,534.73	185.01		154.00		154.00	N	39		
4/22/2024	7,727.79	68,673.24	223.56		153.73		153.73	N	39		
4/23/2024	7,728.02	68,850.33	243.49		154.21		154.21	N	39		
4/24/2024	7,728.37	69,120.54	290.94		154.71		154.71	N	39		
4/25/2024	7,728.83	69,476.70	334.75		155.19		155.19	N	39		
4/26/2024	7,729.14	69,717.52	298.16		176.75		176.75	N	39		
4/27/2024	7,729.31	69,849.75	258.51		191.84	12.03	203.88	N	39		
4/28/2024	7,729.39	69,912.13	223.45		192.00	12.07	204.06	N	39		
4/29/2024	7,729.43	69,943.34	208.20		192.46	11.38	203.84	N	39		
4/30/2024	7,729.45	69,958.94	199.98		192.12	10.45	202.56	N	39		
Total (AF)			**10,310.25**		**9,432.98**	**106.61**	**9,539.58**		**2,461.52**		

Table A-4.—Ruedi Reservoir Releases for Endangered Fish May WY2024

Date	Elevation (ft)	Storage (AF)	Inflow (ft^3/s)	Evap. (ft^3/s)	Release (ft^3/s)	Rocky Fork Creek (ft^3/s)	Fryingpan River Below Dam (ft^3/s)	Ruedi Called Out? (Y=Yes) (N=No)	Required Min Flow Below Ruedi (ft^3/s)	Required Fish Release (ft^3/s)	Cumulative Fish Release (AF)
5/1/2024	7,729.47	69,974.55	199.28	0.00	191.41	9.90	201.31	N	110		
5/2/2024	7,729.50	69,997.77	203.19	0.00	191.48	9.65	201.13	N	110		
5/3/2024	7,729.51	70,005.39	195.86	0.00	192.01	9.14	201.16	N	110		
5/4/2024	7,729.57	70,052.24	215.69	0.00	192.07	8.90	200.97	N	110		
5/5/2024	7,729.72	70,169.67	251.52	0.00	192.32	8.99	201.31	N	110		
5/6/2024	7,729.91	70,318.18	266.22	0.00	191.35	9.75	201.09	N	110		
5/7/2024	7,729.91	70,318.18	191.35	0.00	191.35	9.75	201.09	N	110		
5/8/2024	7,730.10	70,466.91	266.17	0.00	191.19	10.38	201.56	N	110		
5/9/2024	7,730.10	70,466.91	195.04	3.39	191.66	10.25	201.91	N	110		
5/10/2024	7,730.08	70,451.22	186.32	3.39	190.84	10.41	201.25	N	110		
5/11/2024	7,730.06	70,435.54	186.86	3.39	191.38	9.72	201.09	N	110		
5/12/2024	7,730.10	70,466.91	210.70	3.39	191.49	9.48	200.97	N	110		
5/13/2024	7,730.12	70,482.59	217.66	3.39	206.37	9.10	215.47	N	110		
5/14/2024	7,730.10	70,466.91	219.82	3.39	224.34	9.20	233.54	N	110		
5/15/2024	7,730.22	70,561.07	275.63	3.39	224.77	10.11	234.88	N	110		
5/16/2024	7,730.42	70,717.83	308.52	3.40	226.09	11.63	237.72	N	110		
5/17/2024	7,730.74	70,969.75	356.42	3.40	226.01	13.71	239.72	N	110		
5/18/2024	7,731.18	71,316.76	404.04	3.41	225.68	17.14	242.82	N	110		
5/19/2024	7,731.69	71,720.29	432.66	3.43	225.79	20.08	245.86	N	110		

Date	Elevation (ft)	Storage (AF)	Inflow (ft^3/s)	Evap. (ft^3/s)	Release (ft^3/s)	Rocky Fork Creek (ft^3/s)	Fryingpan River Below Dam (ft^3/s)	Ruedi Called Out? (Y=Yes) (N=No)	Required Min Flow Below Ruedi (ft^3/s)	Required Fish Release (ft^3/s)	Cumulative Fish Release (AF)
5/20/2024	7,732.22	72,141.72	441.64	3.44	225.73	21.94	247.67	N	110		
5/21/2024	7,732.87	72,660.52	490.95	3.46	225.94	24.56	250.50	N	110		
5/22/2024	7,733.26	72,972.77	387.42	3.47	226.53	22.06	248.59	N	110		
5/23/2024	7,733.59	73,238.01	363.97	3.48	226.77	20.31	247.08	N	110		
5/24/2024	7,733.92	73,503.90	364.65	3.49	227.11	18.91	246.02	N	110		
5/25/2024	7,734.20	73,730.18	344.90	3.49	227.32	18.13	245.46	N	110		
5/26/2024	7,734.50	73,972.75	353.65	3.50	227.85	17.65	245.50	N	110		
5/27/2024	7,734.74	74,167.52	329.61	3.51	227.91	17.70	245.60	N	110		
5/28/2024	7,735.09	74,451.56	373.92	3.52	227.20	20.51	247.71	N	110		
5/29/2024	7,735.61	74,875.36	444.87	3.53	227.68	24.75	252.43	N	110		
5/30/2024	7,736.28	75,423.55	508.26	3.54	228.34	28.19	256.53	N	110		
5/31/2024	7,737.05	76,056.76	551.31	3.56	228.51	30.49	259.00	N	110		
Total (AF)			**19,315.55**	**157.42**	**13,060.30**	**937.15**	**13,997.46**		**6,764**		

Table A-5.—Ruedi reservoir releases for endangered fish June WY2024

Date	Elevation (ft)	Storage (AF)	Inflow (ft^3/s)	Evap. (ft^3/s)	Release (ft^3/s)	Rocky Fork Creek (ft^3/s)	Fryingpan River Below Dam (ft^3/s)	Ruedi Called Out? (Y=Yes) (N=No)	Required Min Flow Below Ruedi (ft^3/s)	Required Fish Release (ft^3/s)	Cumulative Fish Release (AF)
6/1/2024	7,737.74	76,627.34	525.84	8.78	229.40	31.39	260.79	N	110		
6/2/2024	7,738.50	77,258.30	556.88	8.83	229.94	34.38	264.32	N	110		
6/3/2024	7,739.45	78,051.96	639.78	8.88	230.76	38.14	268.91	N	110		
6/4/2024	7,740.48	78,917.85	675.86	8.95	230.36	41.24	271.60	N	110		
6/5/2024	7,741.76	80,002.75	833.19	9.03	277.19	49.14	326.33	N	110		
6/6/2024	7,743.26	81,286.84	1,019.19	9.13	362.68	60.79	423.47	N	110		
6/7/2024	7,745.13	82,906.67	1,285.67	9.24	459.78	67.34	527.11	N	110		
6/8/2024	7,745.13	82,906.67	469.02	9.24	459.78	67.34	527.11	N	110		
6/9/2024	7,748.87	86,204.81	2,254.78	9.46	582.53	73.81	656.34	N	110		
6/10/2024	7,750.72	87,864.31	1,340.58	9.57	494.35	74.44	568.79	N	110		
6/11/2024	7,752.22	89,224.54	1,162.44	9.66	467.00	73.73	540.73	N	110		
6/12/2024	7,753.94	90,800.64	1,217.86	9.77	413.49	72.96	486.45	N	110		
6/13/2024	7,755.47	92,218.07	1,095.34	9.87	370.85	71.44	442.29	N	110		
6/14/2024	7,756.99	93,640.61	1,046.16	9.97	319.00	69.65	388.65	N	110		
6/15/2024	7,758.04	94,631.73	771.20	10.04	261.48	64.46	325.94	N	110		
6/16/2024	7,759.03	95,572.61	711.49	10.11	227.02	59.69	286.71	N	110		
6/17/2024	7,760.07	96,568.05	740.41	10.18	228.37	56.54	284.91	N	110		
6/18/2024	7,760.92	97,386.75	651.52	10.24	228.52	52.94	281.46	N	110		
6/19/2024	7,761.45	97,899.70	498.29	10.27	229.40	48.56	277.96	N	110		

Date	Elevation (ft)	Storage (AF)	Inflow (ft^3/s)	Evap. (ft^3/s)	Release (ft^3/s)	Rocky Fork Creek (ft^3/s)	Fryingpan River Below Dam (ft^3/s)	Ruedi Called Out? (Y=Yes) (N=No)	Required Min Flow Below Ruedi (ft^3/s)	Required Fish Release (ft^3/s)	Cumulative Fish Release (AF)
6/20/2024	7,761.93	98,365.52	476.43	10.31	231.28	44.97	276.25	N	110		
6/21/2024	7,762.73	99,144.88	636.05	10.36	232.77	45.10	277.88	N	110		
6/22/2024	7,763.64	100,036.61	773.53	10.42	313.54	45.97	359.51	N	110		
6/23/2024	7,763.81	100,203.66	554.12	10.43	459.47	40.70	500.17	N	110		
6/24/2024	7,763.82	100,213.27	421.35	10.43	406.08	37.67	443.75	N	110		
6/25/2024	7,763.94	100,331.47	395.21	10.44	325.18	35.14	360.32	N	110		
6/26/2024	7,764.14	100,528.66	364.80	10.45	254.93	32.87	287.80	N	110		
6/27/2024	7,764.47	100,854.35	410.29	10.47	235.62	31.05	266.67	N	110		
6/28/2024	7,764.75	101,130.95	386.09	10.49	236.15	29.56	265.71	N	110		
6/29/2024	7,765.00	101,378.50	371.27	10.51	235.96	27.21	263.17	N	110		
6/30/2024	7,765.22	101,596.89	358.28	10.52	237.66	25.17	262.83	N	110		
Total (AF)			**44,912.16**	**587.22**	**18,784.81**	**2,981.97**	**21,766.78**		**6,546**		

Table A-6.—Ruedi reservoir releases for endangered fish July WY2024

Date	Elevation (ft)	Storage (AF)	Inflow (ft^3/s)	Evap. (ft^3/s)	Release (ft^3/s)	Rocky Fork Creek (ft^3/s)	Fryingpan River Below Dam (ft^3/s)	Ruedi Called Out? (Y=Yes) (N=No)	Required Min Flow Below Ruedi (ft^3/s)	Required Fish Release (ft^3/s)	Cumulative Fish Release (AF)
7/1/2024	7,765.40	101,775.33	336.20	9.48	236.76	26.32	263.08	N	110		
7/2/2024	7,765.75	102,123.61	473.08	9.50	287.99	26.10	314.09	N	110		
7/3/2024	7,765.47	101,845.21	334.02	9.48	464.90	22.46	487.35	N	110		
7/4/2024	7,765.09	101,467.56	248.30	9.46	429.24	20.65	449.89	N	110		
7/5/2024	7,764.78	101,160.41	236.23	9.44	381.64	19.07	400.71	N	110		
7/6/2024	7,764.44	100,824.45	222.46	9.42	382.42	17.59	400.01	N	110		
7/7/2024	7,764.13	100,518.56	199.21	9.40	344.03	16.25	360.28	N	110		
7/8/2024	7,763.99	100,380.98	192.89	9.39	252.86	15.41	268.27	N	110		
7/9/2024	7,763.98	100,370.88	186.48	9.39	182.18	14.80	196.98	N	110		
7/10/2024	7,763.98	100,370.88	191.58	9.39	182.18	14.80	196.98	N	110		
7/11/2024	7,764.23	100,617.25	288.00	9.41	154.39	13.65	168.04	N	110		
7/12/2024	7,764.31	100,696.24	204.19	9.41	154.95	13.05	168.00	N	110		
7/13/2024	7,764.41	100,795.05	214.78	9.42	155.54	12.43	167.97	N	110		
7/14/2024	7,764.51	100,893.42	214.95	9.43	155.93	11.95	167.88	N	110		
7/15/2024	7,764.60	100,982.70	211.49	9.43	157.05	10.58	167.63	N	110		
7/16/2024	7,764.72	101,101.48	228.60	9.44	159.28	8.60	167.88	N	110		
7/17/2024	7,764.81	101,190.38	212.21	9.44	157.95	8.42	166.38	N	110		
7/18/2024	7,764.88	101,259.51	201.93	9.45	157.63	7.93	165.56	N	110		
7/19/2024	7,764.93	101,309.32	191.94	9.45	157.38	7.69	165.06	N	110		

Date	Elevation (ft)	Storage (AF)	Inflow (ft^3/s)	Evap. (ft^3/s)	Release (ft^3/s)	Rocky Fork Creek (ft^3/s)	Fryingpan River Below Dam (ft^3/s)	Ruedi Called Out? (Y=Yes) (N=No)	Required Min Flow Below Ruedi (ft^3/s)	Required Fish Release (ft^3/s)	Cumulative Fish Release (AF)
7/20/2024	7,764.99	101,368.82	197.04	9.45	157.59	7.44	165.03	N	110		
7/21/2024	7,765.03	101,408.02	187.00	9.46	157.78	7.22	165.00	N	110		
7/22/2024	7,765.08	101,457.88	194.06	9.46	159.47	7.10	166.56	N	110		
7/23/2024	7,765.10	101,477.73	178.62	9.46	159.15	6.91	166.06	N	110		
7/24/2024	7,765.07	101,447.71	172.81	9.46	178.49	6.58	185.06	N	110		
7/25/2024	7,764.93	101,309.32	167.46	9.45	227.79	6.40	234.19	N	110	22.92	45.46
7/26/2024	7,764.73	101,111.13	160.35	9.44	250.83	6.29	257.13	N	110	75.00	194.22
7/27/2024	7,764.63	101,012.14	210.50	9.43	250.98	6.55	257.53	N	110	100.00	392.57
7/28/2024	7,764.44	100,824.45	165.12	9.42	250.33	6.42	256.75	N	110	100.00	590.92
7/29/2024	7,764.13	100,518.56	151.28	9.40	296.10	6.19	302.28	N	110	137.50	863.65
7/30/2024	7,763.78	100,173.88	141.37	9.38	305.76	5.99	311.75	N	110	150.00	1,161.17
7/31/2024	7,763.41	99,810.80	131.45	9.36	305.14	5.86	311.00	N	110	150.00	1,458.70
Total (AF)			**13,181.59**	**580.03**	**14,387.65**	**727.36**	**15,115.01**		**6,764**	**1,458.70**	**9,335.70**

Table A-7.—Ruedi Reservoir releases for endangered fish August WY2024

Date	Elevation (ft)	Storage (AF)	Inflow (ft^3/s)	Evap (ft^3/s)	Release (ft^3/s)	Rocky Fork Creek (ft^3/s)	Fryingpan River Below Dam (ft^3/s)	Ruedi Called Out? (Y=Yes) (N=No)	Required Min Flow Below Ruedi (ft^3/s)	Required Fish Release (ft^3/s)	Cumulative Fish Release (AF)
8/1/2024	7,763.11	99,516.45	119.72	6.72	261.40	5.74	267.15	N	110	150	1,756.22
8/2/2024	7,762.83	99,242.70	119.06	6.71	250.37	5.57	255.94	N	110	150	2,053.75
8/3/2024	7,762.55	98,968.97	119.35	6.69	250.66	5.37	256.03	N	110	150	2,351.27
8/4/2024	7,762.27	98,696.20	119.93	6.68	250.77	5.26	256.03	N	110	150	2,648.80
8/5/2024	7,762.04	98,472.34	144.52	6.67	250.71	5.10	255.81	N	110	150	2,946.32
8/6/2024	7,761.82	98,258.30	149.56	6.66	250.81	5.10	255.91	N	110	150	3,243.85
8/7/2024	7,761.56	98,006.20	129.35	6.65	249.80	5.10	254.91	N	110	150	3,541.37
8/8/2024	7,761.31	97,763.98	134.05	6.64	249.53	5.10	254.63	N	110	150	3,838.90
8/9/2024	7,761.06	97,522.14	134.07	6.63	249.37	5.20	254.56	N	110	150	4,136.42
8/10/2024	7,760.81	97,280.69	134.59	6.62	249.70	5.27	254.97	N	110	150	4,433.95
8/11/2024	7,760.81	97,280.69	256.32	6.62	249.70	5.27	254.97	N	110	150	4,731.47
8/12/2024	7,760.59	97,068.33	149.88	6.61	250.33	5.38	255.72	N	110	150	5,029.00
8/13/2024	7,760.40	96,885.40	164.66	6.60	250.28	5.28	255.56	N	110	150	5,326.52
8/14/2024	7,760.19	96,683.45	155.46	6.59	250.68	5.22	255.91	N	110	150	5,624.05
8/15/2024	7,759.95	96,453.20	140.90	6.58	250.40	5.10	255.50	N	110	150	5,921.57
8/16/2024	7,759.69	96,203.65	134.06	6.57	253.30	5.11	258.41	N	110	150	6,219.10
8/17/2024	7,759.43	95,955.01	135.22	6.56	254.02	5.00	259.02	N	110	150	6,516.62
8/18/2024	7,759.12	95,658.79	107.73	6.54	250.53	4.79	255.31	N	110	150	6,814.15
8/19/2024	7,758.82	95,372.48	111.77	6.53	249.58	4.55	254.13	N	110	150	7,111.67

Date	Elevation (ft)	Storage (AF)	Inflow (ft^3/s)	Evap (ft^3/s)	Release (ft^3/s)	Rocky Fork Creek (ft^3/s)	Fryingpan River Below Dam (ft^3/s)	Ruedi Called Out? (Y=Yes) (N=No)	Required Min Flow Below Ruedi (ft^3/s)	Required Fish Release (ft^3/s)	Cumulative Fish Release (AF)
8/20/2024	7,758.50	95,068.20	101.96	6.52	248.85	4.42	253.27	N	106.38	150	7,409.20
8/21/2024	7,758.23	94,811.80	126.09	6.51	248.85	4.25	253.09	N	110	150	7,706.72
8/22/2024	7,758.12	94,707.63	203.06	6.50	249.08	4.24	253.31	N	110	150	8,004.25
8/23/2024	7,757.95	94,546.63	173.79	6.49	248.47	4.58	253.05	N	110	150	8,301.77
8/24/2024	7,757.72	94,329.04	144.59	6.48	247.81	5.10	252.91	N	110	150	8,599.30
8/25/2024	7,757.49	94,111.78	145.00	6.47	248.06	5.10	253.16	N	110	150	8,896.82
8/26/2024	7,757.24	93,876.00	140.39	6.46	252.80	5.10	257.90	N	110	156.25	9,206.75
8/27/2024	7,756.93	93,584.13	118.89	6.45	259.59	5.10	264.69	N	110	165	9,534.02
8/28/2024	7,756.60	93,274.09	112.60	6.43	262.47	5.09	267.56	N	110	165	9,861.30
8/29/2024	7,756.25	92,946.00	103.28	6.42	262.28	4.88	267.16	N	108.16	165	10,188.58
8/30/2024	7,755.88	92,600.01	94.02	6.40	262.05	4.69	266.74	N	98.71	165	10,515.86
8/31/2024	7,755.50	92,245.80	89.88	6.39	262.07	4.54	266.61	N	94.42	165	10,843.13
Total (AF)			**83,57.97**	**403.46**	**15,519.52**	**308.61**	**15,828.12**		**6,699.63**	**9,384.43**	**10,843.13**

Table A-8.—Ruedi Reservoir releases for endangered fish September WY2024

Date	Elevation (ft)	Storage (AF)	Inflow (ft^3/s)	Evap. (ft^3/s)	Release (ft^3/s)	Rocky Fork Creek (ft^3/s)	Fryingpan River Below Dam (ft^3/s)	Ruedi Called Out? (Y=Yes) (N=No)	Required Min Flow Below Ruedi (ft^3/s)	Required Fish Release (ft^3/s)	Cumulative Fish Release (AF)
9/1/2024	7,755.12	91,892.52	87.43	3.88	261.66	4.34	266.00	N	91.77	165	11,170.41
9/2/2024	7,754.74	91,540.14	87.87	3.87	261.66	4.22	265.88	N	92.09	165	11,497.69
9/3/2024	7,754.35	91,179.16	83.80	3.86	261.93	4.11	266.04	Y	87.91	165	11,824.97
9/4/2024	7,753.98	90,837.55	103.99	3.85	272.37	4.02	276.40	Y	108.02	165	12,152.24
9/5/2024	7,753.55	90,441.53	81.44	3.84	277.26	3.99	281.25	Y	85.43	165	12,479.52
9/6/2024	7,753.13	90,056.02	86.63	3.83	277.16	3.97	281.13	Y	90.59	165	12,806.80
9/7/2024	7,752.68	89,644.35	73.35	3.82	277.08	4.00	281.08	Y	77.35	165	13,134.08
9/8/2024	7,752.23	89,233.44	73.58	3.80	276.94	3.89	280.83	Y	77.47	165	13,461.35
9/9/2024	7,751.83	88,869.46	77.28	3.79	256.99	3.78	260.77	Y	81.06	156.25	13,771.28
9/10/2024	7,751.43	88,506.44	64.98	3.78	244.22	3.78	248.00	Y	68.76	150	14,068.80
9/11/2024	7,751.06	88,171.30	78.70	3.78	243.89	3.76	247.66	Y	82.47	150	14,366.33
9/12/2024	7,751.06	88,171.30	247.67	3.78	243.89	3.76	247.66	Y	251.43	150	14,663.85
9/13/2024	7,750.30	87,485.49	-97.82	3.76	244.18	3.56	247.74	Y	-94.26	150	14,961.38
9/14/2024	7,749.89	87,117.38	62.54	3.75	244.38	3.56	247.94	Y	66.10	150	15,258.90
9/15/2024	7,749.49	86,758.93	66.79	3.74	243.77	3.54	247.31	Y	70.33	150	15,556.43
9/16/2024	7,749.11	86,418.80	76.38	3.73	244.13	3.37	247.50	Y	79.75	150	15,853.95
9/17/2024	7,748.74	86,089.02	81.66	3.72	244.20	3.36	247.56	Y	85.02	150	16,151.48
9/18/2024	7,748.34	85,732.63	67.27	3.71	243.23	3.33	246.56	Y	70.60	150	16,449.00
9/19/2024	7,747.99	85,422.13	58.58	3.70	211.42	3.49	214.91	Y	62.07	100	16,647.35

Date	Elevation (ft)	Storage (AF)	Inflow (ft^3/s)	Evap. (ft^3/s)	Release (ft^3/s)	Rocky Fork Creek (ft^3/s)	Fryingpan River Below Dam (ft^3/s)	Ruedi Called Out? (Y=Yes) (N=No)	Required Min Flow Below Ruedi (ft^3/s)	Required Fish Release (ft^3/s)	Cumulative Fish Release (AF)
9/20/2024	7,747.69	85,155.98	65.83	3.70	196.32	3.56	199.88	Y	69.39	100	16,845.70
9/21/2024	7,747.43	84,926.13	83.64	3.69	195.84	3.63	199.47	Y	87.28	100	17,044.05
9/22/2024	7,747.17	84,696.22	83.59	3.69	195.82	3.56	199.38	Y	87.15	100	17,242.40
9/23/2024	7,746.81	84,378.91	39.36	3.68	195.66	3.56	199.22	Y	42.92	100	17,440.75
9/24/2024	7,746.61	84,202.69	110.59	3.67	195.77	3.77	199.53	Y	114.36	100	17,639.10
9/25/2024	7,746.35	83,974.36	84.11	3.67	195.56	3.78	199.34	Y	87.89	100	17,837.45
9/26/2024	7,746.04	83,702.30	61.90	3.66	195.40	3.69	199.09	Y	65.59	100	18,035.80
9/27/2024	7,745.73	83,430.75	61.97	3.65	195.22	3.56	198.78	Y	65.53	100	18,234.15
9/28/2024	7,745.42	83,159.73	62.76	3.65	195.75	3.56	199.31	Y	66.32	100	18,432.50
9/29/2024	7,745.11	82,889.23	62.63	3.64	195.37	3.41	198.78	Y	66.04	100	18,630.85
9/30/2024	7,744.75	82,575.94	41.45	3.63	195.76	3.33	199.09	Y	44.78	100	18,829.20
Total (AF)			**4,403.26**	**222.65**	**13,850.47**	**220.65**	**1,4071.11**		**4,623.91**	**7,986.07**	**18,829.20**

Table A-9.—Ruedi Reservoir releases for endangered fish October WY2024

Date	Elevation (ft)	Storage (AF)	Inflow (ft^3/s)	Evap. (ft^3/s)	Release (ft^3/s)	Rocky Fork Creek (ft^3/s)	Fryingpan River Below Dam (ft^3/s)	Ruedi Called Out? (Y=Yes) (N=No)	Required Min Flow Below Ruedi (ft^3/s)	Required Fish Release (ft^3/s)	Cumulative Fish Release (AF)
10/1/2024	7,744.43	82,298.16	57.16	1.35	195.86	3.33	199.19	Y	60.49	100	19,027.55
10/2/2024	7,744.12	82,029.45	54.93	1.35	189.06	3.33	192.39	Y	58.26	100	19,225.90
10/3/2024	7,743.83	81,778.60	55.36	1.35	180.49	3.33	183.81	Y	58.69	100	19,424.25
10/4/2024	7,743.54	81,528.27	55.76	1.35	180.62	3.18	183.79	Y	58.93	100	19,622.60
10/5/2024	7,743.24	81,270.03	51.73	1.34	180.59	3.11	183.70	Y	54.84	100	19,820.95
10/6/2024	7,742.95	81,020.73	55.84	1.34	180.19	3.11	183.30	Y	58.95	100	20,019.30
10/7/2024	7,742.69	80,797.45	50.37	1.34	161.60	3.11	164.71	Y	53.48	50	20,118.48
10/8/2024	7,742.50	80,634.75	56.32	1.34	137.02	3.11	140.13	Y	59.43	50	20,217.65
10/9/2024	7,742.31	80,472.27	56.57	1.33	137.15	3.12	140.27	Y	59.69	50	20,316.83
10/10/2024	7,742.13	80,318.34	61.12	1.33	137.39	2.80	140.19	Y	63.91	50	20,416.00
10/11/2024	7,741.96	80,173.35	57.02	1.33	128.79	2.68	131.47	Y	59.70	50	20,515.18
10/12/2024	7,741.80	80,036.85	54.50	1.33	121.99	2.61	124.60	Y	57.11	50	20,614.35
10/13/2024	7,741.65	79,909.23	58.89	1.33	121.91	2.53	124.44	Y	61.42	50	20,713.53
10/14/2024	7,741.65	79,909.23	123.23	1.33	121.91	2.53	124.44	Y	125.76	50	20,812.70
10/15/2024	7,741.33	79,637.41	-14.46	1.32	121.26	2.53	123.79	Y	-11.93	50	20,911.88
10/16/2024	7,741.19	79,518.49	62.32	1.32	120.95	2.53	123.48	Y	64.85	50	21,011.05
10/17/2024	7,741.05	79,399.70	62.15	1.32	120.72	2.53	123.25	Y	64.68	50	21,110.23
10/18/2024	7,740.91	79,281.43	62.29	1.32	120.60	2.53	123.13	Y	64.82	50	21,209.40
10/19/2024	7,740.76	79,154.20	57.85	1.32	120.68	2.53	123.21	Y	60.38	50	21,308.58

Date	Elevation (ft)	Storage (AF)	Inflow (ft^3/s)	Evap. (ft^3/s)	Release (ft^3/s)	Rocky Fork Creek (ft^3/s)	Fryingpan River Below Dam (ft^3/s)	Ruedi Called Out? (Y=Yes) (N=No)	Required Min Flow Below Ruedi (ft^3/s)	Required Fish Release (ft^3/s)	Cumulative Fish Release (AF)
10/20/2024	7,740.60	79,019.27	53.78	1.32	120.49	2.55	123.04	Y	56.33	50	21,407.75
10/21/2024	7,740.52	78,951.65	87.54	1.32	120.32	2.68	123.00	Y	90.22	50	21,506.93
10/22/2024	7,740.40	78,850.30	70.52	1.32	120.31	2.67	122.98	Y	73.20	50	21,606.10
10/23/2024	7,740.28	78,749.03	70.33	1.32	120.07	2.68	122.75	N	73.01	50	21,705.28
10/24/2024	7,740.14	78,631.41	61.66	1.31	119.65	2.68	122.33	N	64.34	28.87	21,762.54
10/25/2024	7,740.07	78,572.23	56.07	1.31	84.60	2.68	87.28	N	58.75	0	21,762.54
10/26/2024	7,740.05	78,555.39	56.32	1.31	63.50	2.68	66.18	N	59.00	0	21,762.54
10/27/2024	7,740.03	78,538.55	56.37	1.31	63.55	2.68	66.23	N	59.05	0	21,762.54
10/28/2024	7,739.99	78,505.29	47.94	1.31	63.40	2.81	66.22	N	50.76	0	21,762.54
10/29/2024	7,740.01	78,521.71	73.43	1.31	63.84	2.99	66.83	N	76.42	0	21,762.54
10/30/2024	7,739.99	78,505.29	56.53	1.31	63.50	2.96	66.46	N	59.49	0	21,762.54
10/31/2024	7,739.96	78,479.83	52.14	1.31	63.66	2.96	66.62	N	55.10	0	21,762.54
Total (AF)			**3,613.19**	**81.45**	**7,627.85**	**173.64**	**7,801.49**		**3,786.83**	**2,933.34**	**21,762.54**

Table A-10.—Fryingpan – Arkansas Project Transmountain Diversions WY2024

	Apr	May	Jun	Jul	Aug	Sep	Total
South Fork	69	1,231	8,275	1,897			**11,472**
No Name		305	848	121			**1,274**
Hunter		501	4,455	877			**5,833**
Midway		491	1,195	679			**2,365**
Sawyer	16	203	1,583	287			**2,089**
Chapman[1]	29	727	5,294	1,216			**7,266**
Subtotal	**131**	**4,955**	**29,733**	**7,036**			**30,296**
Carter	36	533	2,387	719			**3,676**
North Fork		105	1,008	122			**1,234**
Mormon	49	608	2,617	322			**3,596**
North Cunningham	21	297	1,322	140			**1,781**
Middle Cunningham		225	1,888	241			**2,354**
Ivanhoe[4]	76	677	5,609	2,104			**8,466**
Granite		204	1,726	415			**2,344**
Fryingpan	18	1,350	11,373	2,442			**15,183**
Lily Pad	33	381	511	47			**972**
Subtotal	**233**	**4,380**	**28,441**	**6,552**			**39,606**
Total	**363**	**8,540**	**56,131**	**12,790**			**69,903**
Boustead Tunnel[3]	Oct.-Apr. 1,122	8,067	49,436	10,699			**69,324**

(Units = AF)

[1] Does not include No Name, Hunter, Sawyer and Midway

[2] Includes South Cunningham

[3] The difference between the west slope diversion and Charles H. Boustead Tunnel diversion results from the accuracy limitations of the measurement, rounding, priority and seepage

[4] This includes 450 AF of water conveyed for Pueblo Water from Ivanhoe Lake

Table A-11.—Fryingpan-Arkansas Project Imports - Charles H. Boustead Tunnel Outlet

WY	Imports	Accumulated Imports	Twin Lakes Exchange	Available to SECWCD
1972	32.07	32.07	0	0
1973	36.58	68.65	0	16
1974	33.83	102.47	0	18.6
1975	36.87	139.34	0	25
1976	26.94	166.28	0	24
1977	11.41	177.69	0	25
1978	49.96	227.65	0	25
1979	54.02	281.68	0	25.6
1980	55.39	337.07	0	70
198[1]	34.19	371.25	0	25
1982	75.49	446.74	2.7	68
1983	87.44	534.18	0.3	125
1984	107.64	641.82	1.9	210
1985[1]	71.8	713.62	1.7	289.9
1986[1]	31.45	745.07	1.5	300.3
1987[1]	3.34	748.41	1.1	288
1988[1]	14.32	762.73	2	247.8
1989	37.24	799.97	1.7	197.6
1990	47.27	847.24	1.7	142.1
1991	61.13	908.37	1.5	58.7
1992	57.06	965.44	1.2	32.9
1993	88.74	1,054.18	2.3	70.1
1994	55.04	1,109.22	1.3	51.7
1995	91.26	1,200.48	2.3	55
1996[1]	38.54	1,239.02	1.8	110
1997	79.38	1,318.4	1.8	116
1998	54	1,372.4	2.6	102
1999[1]	43.14	1,415.54	2.1	127.5
2000	50.69	1,466.23	1.7	171.6
2001	50.53	1,516.76	2.1	67.5
2002	15.78	1,532.54	1.5	8.5
2003	57.99	1,590.53	2.4	37.5
2004	28.59	1,619.12	1.3	15.3
2005	55.81	1,674.93	3	40.8
2006	62.34	1,737.27	3	49.2

WY	Imports	Accumulated Imports	Twin Lakes Exchange	Available to SECWCD
2007	55.22	1,792.49	3	40.4
2008	90.79	1,883.28	3	83
2009	83.84	1,967.12	3	78
2010	56.66	2,023.78	3	44
2011	99.81	2,123.59	2.3	75
2012	13.96	2,137.55	1.5	9.9
2013	47.02	2,184.57	2.8	37.6
2014	80.86	2,265.42	3	56
2015	72.03	2,337.45	1.9	67.9
2016	59.74	2,397.19	2.5	39.1
2017	66.95	2,464.14	2	46.3
2018	39	2,503.14	3	41.3
2019	95.75	2,598.89	0.1	42.6
2020	52.44	2,651.33	2.7	62.9
2024	31.56	2,682.88	3	25.8
2022	46.95	2,729.83	3	32.8
2023	63.09	2,792.92	3	45.3
2024	67.49	2,860.41	0	46.5

(Units = 1,000 AF).

[1]Imports impeded

Restriction: Not to exceed 120 KAF in 1 year

Not to exceed 2,352.8 KAF acre-feet in 34 consecutive years.

The imports between 1990 and 2024 are 1,948.2 KAF

1983 includes 3,120 acre-feet imported through the Twin Lakes Tunnel

Table A-12.—Turquoise Lake operations WY2024

Month	Busk-Ivanhoe Imports through Carlton Tunnel	Busk-Ivanhoe Imports through Boustead Tunnel	Imports through Homestake Tunnel	Project Imports	Native Inflow	Total Inflow	Evap.	Total Outflow	End of Month Content	Water Surface Elevation (feet)
Oct. 2023	0.0	0	0.0	0.1		0.5	0.3	1.1	82.9	9,841.8
Nov. 2023	0.0	0	0.0	0.0		0.2	0.2	1.1	81.8	9,841.1
Dec. 2023	0.0	0	0.0	0.0		0.4	0.0	1.1	81.0	9,840.6
Jan. 2024	0.0	0	0.0	0.0		0.6	0.0	1.1	80.5	9,840.2
Feb. 2024	0.0	0	0.0	0.0		0.6	0.0	1.1	80.0	9,839.9
Mar. 2024	0.0	0	6.1	0.1		6.7	0.0	5.4	81.2	9,840.7
Apr. 2024	0.0	0	9.0	0.4		12.3	0.0	18.5	75.0	9,836.6
May 2024	0.7	0	0.0	7.8		14.1	0.1	25.1	63.8	9,829.0
June 2024	1.7	0	3.0	48.9		68.9	0.7	18.8	113.2	9,860.2
July 2024	0.2	0	0.0	10.6		14.5	0.8	2.9	124.1	9,866.4
Aug. 2024	0.0	0	0.0	0.0		0.9	0.5	2.1	122.5	9,865.5
Sep. 2024	0.0	0	0.0	0.0		0.8	0.5	5.5	117.3	9,862.5
Total* (acre-feet)	2,727.2	0	18,104.1	67,493.9		120,380.0	2,977.0	84,012.0		

(Units = 1,000 AF)
*Rounding may introduce discrepancies between monthly and yearly totals

Table A-13.—Twin Lakes/Mt. Elbert Forebay WY2024 Operations

	Twin Lakes Canal Company			Mt. Elbert Conduit				Twin Lakes					
Date	Imports	Winter Water	Priority / Native	Leadville Fish Hatchery 4	Halfmoon	Sugarloaf Bypass	Sugarloaf Powerplant / Sleeve Valve	Native Inflow	Total Inflow	Evap. 2	Total Outflow	End of Month Content[2]	Water Elevation[3] (ft)
Oct. 23	0.6	0.0	0.0	0.3	0.0	0.6	0.0	1.6	2.9	0.6	1.1	134.8	9,194.47
Nov. 23	0.7	0.3	0.0	0.3	0.0	0.6	0.0	0.6	1.9	0.3	8.1	128.3	9,192.47
Dec. 23	0.6	0.3	0.0	0.3	0.0	0.6	0.0	0.4	1.6	0.0	6.6	123.3	9,191.01
Jan. 24	0.4	0.8	0.0	0.3	0.0	0.6	0.0	0.8	1.8	0.0	9.7	115.3	9,187.55
Feb. 24	0.4	0.8	0.0	0.3	0.0	0.6	0.0	0.8	1.8	0.0	8.8	108.3	9,184.60
Mar. 24	0.4	0.8	0.0	0.3	0.0	4.9	0.0	1.8	7.1	0.0	9.1	106.3	9,181.68
Apr. 24	1.1	0.0	0.3	0.3	0.0	0.0	14.6	0.9	16.6	0.0	11.7	111.2	9,183.46
May 24	5.6	0.0	0.2	0.3	0.0	1.7	0.0	8.5	15.8	0.9	10.9	115.2	9,186.11
June 24	29.5	0.3	1.2	0.3	0.0	0.6	1.8	47.1	77.2	1.2	49.7	141.5	9,197.09
July 24	4.7	0.0	0.0	0.3	0.0	0.6		14.4	19.7	1.2	25.2	134.8	9,194.46
Aug. 24	0.8	0.0	0.2	0.3	0.0	0.6		4.8	6.2	0.6	13.5	126.8	9,192.17
Sep. 24	0.5	0.0	0.0	0.3	0.0	0.5	4.1	2.4	7.5	0.8	6.0	127.5	9,191.28
TOTAL[1] (acre-feet)	45,414	3,294	1,848	3,920	0	11,752	20,466	83,961	160,010	5,667	160,400		

(Units = 1,000 Acre-feet).

[1] Rounding may introduce discrepancies between monthly and yearly totals

[2] Both Twin Lakes and Mt. Elbert Forebay

[3] Elevation of Twin Lakes

[4] Leadville Fish Hatchery diverts from Mt Elbert Conduit

Table A-14.—Mt. Elbert Pumped-Storage Power Plant WY2024 operations

Month	Year	Net Generation (MWH)	Gross Generation (MWH)	Inflow to Mt. Elbert (KAF)	Water Through Generator (KAF)	Water Pumped from Twin Lakes to Forebay (KAF)
Oct.	2023	193,281	905,2000	9,245,281	529	25,568
Nov.	2023	274,122	207,000	481,122	512	636
Dec.	2023	27,764	-27,764	0	528	0
Jan.	2024	278,944	-278,944	0	528	0
Feb.	2024	265,908	-265,908	0	495	0
Mar.	2024	160,866	-67,866	93,000	8,215	136
Apr.	2024	204,061	11,775,000	119,79061	14,874	33,255
May	2024	206,627	-206,627	0	1,883	0
June	2024	110,950	-110,950	0	1,857	0
July	2024	141,488	-141,488	0	589	0
Aug.	2024	41,445	382,000	423,445	0	307
Sep.	2024	172,263	587,000	579,263	60,967	1,893
	TOTALS	**2,077,719**	**20,903,453**	**22,801,172**	**90,977**	**61,795**

Table A-15.—Pueblo Reservoir WY2024 operations

Month	Inflow				Evap	Total Outflow	End of Month Content	Water Surface Elevation (ft)
	Project	Contract	Native[2]	Total				
23-Oct.	1	1.3	19.8	22.1	1.6	22.8	215.5	4,873.31
23-Nov.	1	3.7	26.2	30.9	0.9	23.8	221.7	4,874.83
23-Dec.	1.3	1.8	22.3	25.4	0.6	13.2	233.3	4,877.62
24-Jan.	1.3	1.9	20.2	23.4	0.5	13.2	243	4,879.84
24-Feb.	1.2	1.8	19.5	22.5	0.8	12.4	252.2	4,881.90
24-Mar.	0.8	3.6	32.3	36.7	1.6	32.2	255.2	4,882.55
24-Apr.	2.4	2.5	53.3	58.2	2.1	76.6	234.7	4,877.93
24-May	13.2	3.2	92.8	109.2	2.7	102.3	238.9	4,878.90
24-June	1.2	8.5	259.1	268.8	3.4	261.7	242.5	4,879.74
24-July	1.2	9.9	109.3	120.4	3.6	134	225.3	4,875.72
24-Aug.	4.4	5.9	62	72.3	2.9	92.2	202.6	4,870.02
24-Sep.	0.3	6.4	33	39.7	2.2	43.9	196.2	4,868.33
Total[1] (acre-feet)	29,166	79,559	720,811	829,536	22,950	828,276		

(Units = 1,000 AF).

[1] Rounding may introduce discrepancies

[2] Native inflows are the total inflows less the account and project inflow. If the result is negative because of exchanges, 0 is recorded.

Table A-16.—Reservoir storage allocation data

Reservoir	Dead	Inactive	Active Conservation	Joint Use	Exclusive Flood Control	Total Capacity Storage
Ruedi [1]	63	1,095	101,278	0	0	102,373
Turquoise [1]	2,810	8,920	120,478	0	0	129,398
Twin Lakes [1]	63,324	72,938	67,917	0	0	140,855 [2]
Mt. Elbert Forebay [1]	561	3,825	3,493	0	0	11,143
Pueblo [3]	1,895	25,601	219,772	66,011	26,990	469,878

(Unit = Acre-feet).

[1] Area Capacity Table from 1984

[2] The top of the active conservation pool at Twin Lakes corresponds to 140,855 acre-feet. A tilted morning glory spillway reduces the actual storage available to 140,357 acre-feet

[3] Area Capacity Table from 2012 Note: Inactive includes dead storage

Table A-17.—Monthly evaporation factors

Month	Ruedi	Turquoise	Twin Lakes	Pueblo
Oct.	0.0530	0.1217	0.1217	0.1366
Nov.	0	0.0566	0.0566	0.0886
Dec.	0	0.0171	0.0171	0.0735
Jan.	0	0.0274	0.0274	0.07078
Feb.	0	0.0497	0.0497	0.10592
Mar.	0	0.0771	0.0771	0.1548
Apr.	0	0.1337	0.1337	0.1760
May	0.1470	0.2006	0.2006	
June	0.3605	0.2554	0.2554	
July	0.3244	0.2246	0.2246	
Aug.	0.2332	0.1766	0.1766	
Sep.	0.1419	0.1663	0.1663	

Note: These factors are used only when the pan is frozen or unavailable. Ruedi doesn't have a pan. Factor is derived from ((the average monthly evaporation volume*12)/0.7) / (# days in month) Evaporation in acre-feet=monthly factor*surface area of the lake*(1% ice cover).

Table A-18.—Monthly evaporation for Fryingpan-Arkansas Project

Month	Ruedi		Turquoise		Twin Lakes		Pueblo	
	AVG	WY2024	AVG	WY2024	AVG	WY2024	AVG	WY2024
Oct. 2023	58	83	363	341	527	543	1,162	1,648
Nov. 2023	0	0	161	155	229	245	596	940
Dec. 2023	0	0	15	20	26	31	459	556
Jan. 2024	0	0	0	0	2	0	424	530
Feb. 2024	0	0	0	0	3	0	631	806
Mar. 2024	0	0	0	0	21	0	1,277	1,553
Apr. 2024	5	0	9	0	180	7	1,793	2,127
May 2024	167	157	257	107	815	782	2,189	2,691
June 2024	484	587	700	654	1,168	1,124	2,736	3,402
July 2024	519	580	617	763	966	1,053	2,609	3,601
Aug. 2024	325	403	493	450	762	572	2,206	2,915
Sep. 2024	181	223	434	487	702	770	1,786	2,182

(Unit = Acre-feet).
Average between 1996 and 2024

Table A-19.—Monthly precipitation data for Fryingpan-Arkansas Project

Month	Chapman [1] Near Ruedi		Turquoise		Twin Lakes		Pueblo	
	AVG	WY2024	AVG	WY2024	AVG	WY2024	AVG	WY2024
23-Oct.	2.5	3.5	1.14	1.7	0.87	1.56	0.82	0.6
23-Nov.	2.2	1.7	1.21	0.19	0.48	0.24	0.3	0.11
23-Dec.	3.1	2.3	1.34	1.01	0.45	0.34	0.29	0.72
24-Jan.	3.0	3.8	1.7	2.79	0.54	1.48	0.35	0.42
24-Feb.	2.8	3.4	1.62	2.65	0.56	0.93	0.44	1.38
24-Mar.	3.0	4.5	1.47	1.44	0.62	0.8	0.92	2.9
24-Apr.	3.7	2.9	1.65	1.04	0.84	0.32	1.64	0.96
24-May	3.1	3.9	1.52	2.74	0.94	1.82	1.66	1.1
24-June	1.0	1.9	0.82	0.05	0.76	0.32	1.03	2.49
24-July	2.7	2.7	1.93	1.25	1.79	0.98	1.96	1.71
24-Aug.	2.5	3.6	2.1	2.18	1.57	1.48	2.06	4.95
24-Sep.	2.5	1.2	1.39	0.88	1.09	1.42	0.76	0.76
23-Oct.	2.5	3.5	1.14	1.7	0.87	1.56	0.82	0.6
Max. annual	**40.9**	**(2011)**	**25.95**	**(1957)**	**17.27**	**(1952)**	**20.32**	**(2007)**

(Unit = inches)

[1] The USGS weather station at Ruedi was out of service for WY2024. The precipitation averages and totals from the Chapman SNOTEL have been substituted. The SNOTEL has been in operation since 2008.

Table A-20.—Flood control benefits of the Fryingpan-Arkansas Project

WY	Ruedi Benefits	Ruedi Benefits Cumulative	Pueblo Benefits	Pueblo Benefits Cumulative
1976			$320,000	$320,000
1979			$90,000	$410,000
1980			$86,000	$496,000
1981			$111,000	$607,000
1982			$836,000	$1,443,000
1983	$80,000	$80,000	$47,000	$1,490,000
1984	$330,000	$410,000	$1,039,000	$2,529,000
1985	$91,000	$501,000	$234,000	$2,763,000
1986	$70,000	$571,000	$0	$2,763,000
1987	$0	$571,000	$90,000	$2,853,000
1988	$0	$571,000	$0	$2,853,000
1989	$0	$571,000	$0	$2,853,000
1990	$0	$571,000	$0	$2,853,000
1991	$0	$571,000	$482,000	$3,335,000
1992	$0	$571,000	$266,000	$3,601,000
1993	$4,000	$575,000	$496,000	$4,097,000
1994	$280,000	$855,000	$290,000	$4,387,000
1995	$1,770,000	$2,625,000	$832,000	$5,219,000
1996	$1,550,000	$4,175,000	$0	$5,219,000
1997	$1,207,000	$5,382,000	$320,200	$6,539,200
1998	$0	$5,382,000	$0	$6,539,200
1999	$116,000	$5,498,000	$4,778,000	$11,317,200
2000	$1,061,000	$6,559,000	$0	$11,317,200

WY	Ruedi Benefits	Ruedi Benefits Cumulative	Pueblo Benefits	Pueblo Benefits Cumulative
2001	$0	$6,559,000	$0	$11,317,200
2002	$0	$6,559,000	$0	$11,317,200
2003	$1,515,100	$8,074,100	$0	$11,317,200
2004	$0	$8,074,100	$0	$11,317,200
2005	$970,200	$9,044,300	$0	$11,317,200
2006	$799,000	$9,843,300	$20,159,000	$31,476,200
2007	$103,000	$9,946,300	$0	$31,476,200
2008	$1,635,000	$11,581,300	$0	$31,476,200
2009	$740,100	$12,321,400	$0	$31,476,200
2010	$2,993,000	$15,314,400	$0	$31,476,200
2011	$3,002,000	$18,316,400	$0	$31,476,200
2012	$0	$18,316,400	$0	$31,476,200
2013	$0	$18,316,400	$383,900	$31,860,100
2014	$0	$18,316,400	$431,900	$32,292,000
2015	$1,402,300	$19,718,700	$4,493,000	$36,785,000
2016	$0	$19,718,700	$0	$36,785,000
2017	$0	$19,718,700	$0	$36,785,000
2018	$0	$19,718,700	$0	$36,785,000
2019	$0	$19,718,700	$189,100	$36,974,100
2020	$0	$19,718,700	$0	$36,974,100
2024	$0	$19,718,700	$0	$36,974,100
2022	$0	$19,718,700	$0	$36,974,100
2023	$163,260	$19,881,960	$1,237,900	$38,212,000
2024	$167,490	$20,049,450	$0	$38,212,000

Appendix B

Figures

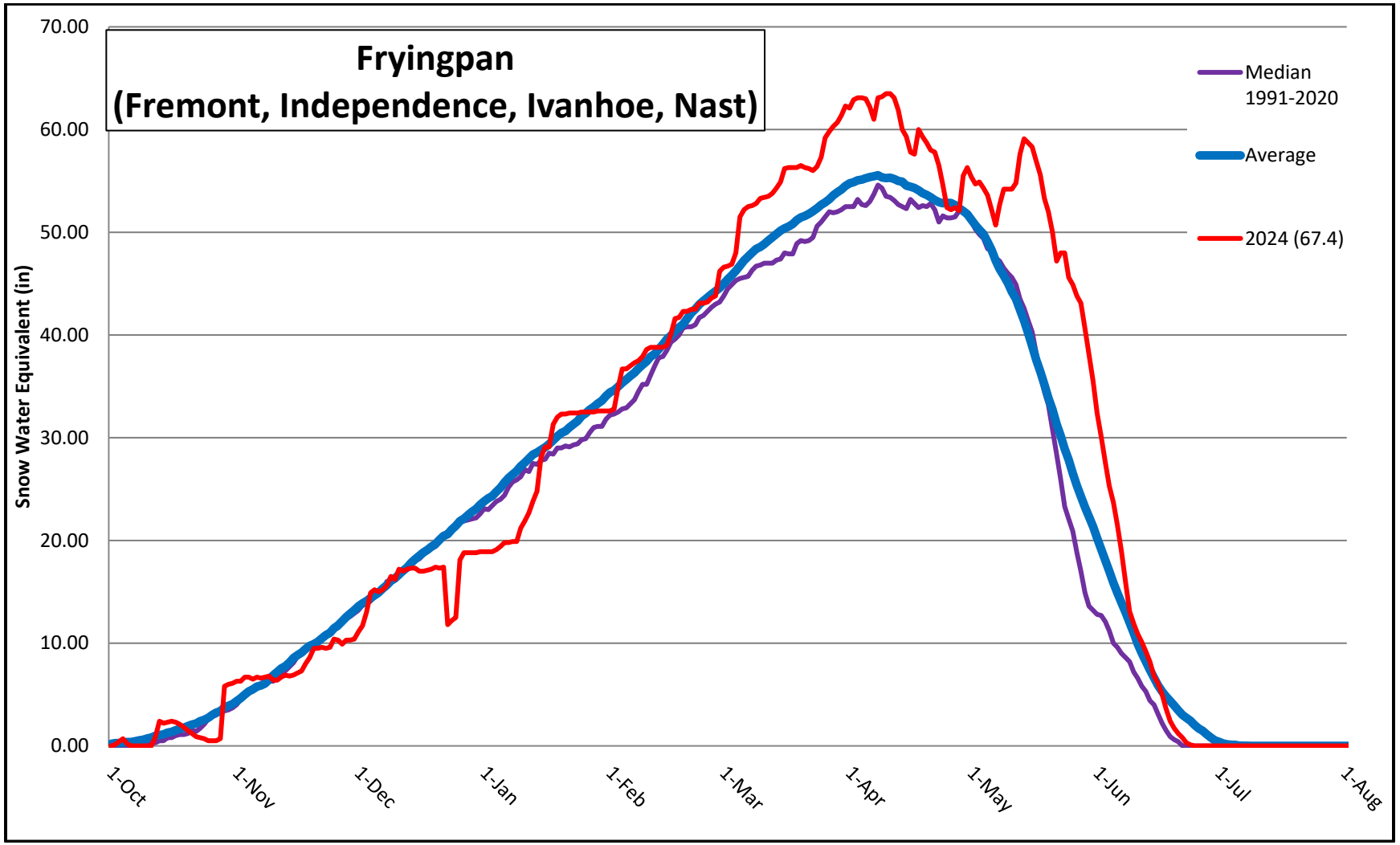


Figure B-1.—Combined snow water equivalent of Fremont Pass, Independence Pass, Ivanhoe Lake and Nast SNOTEL sites.

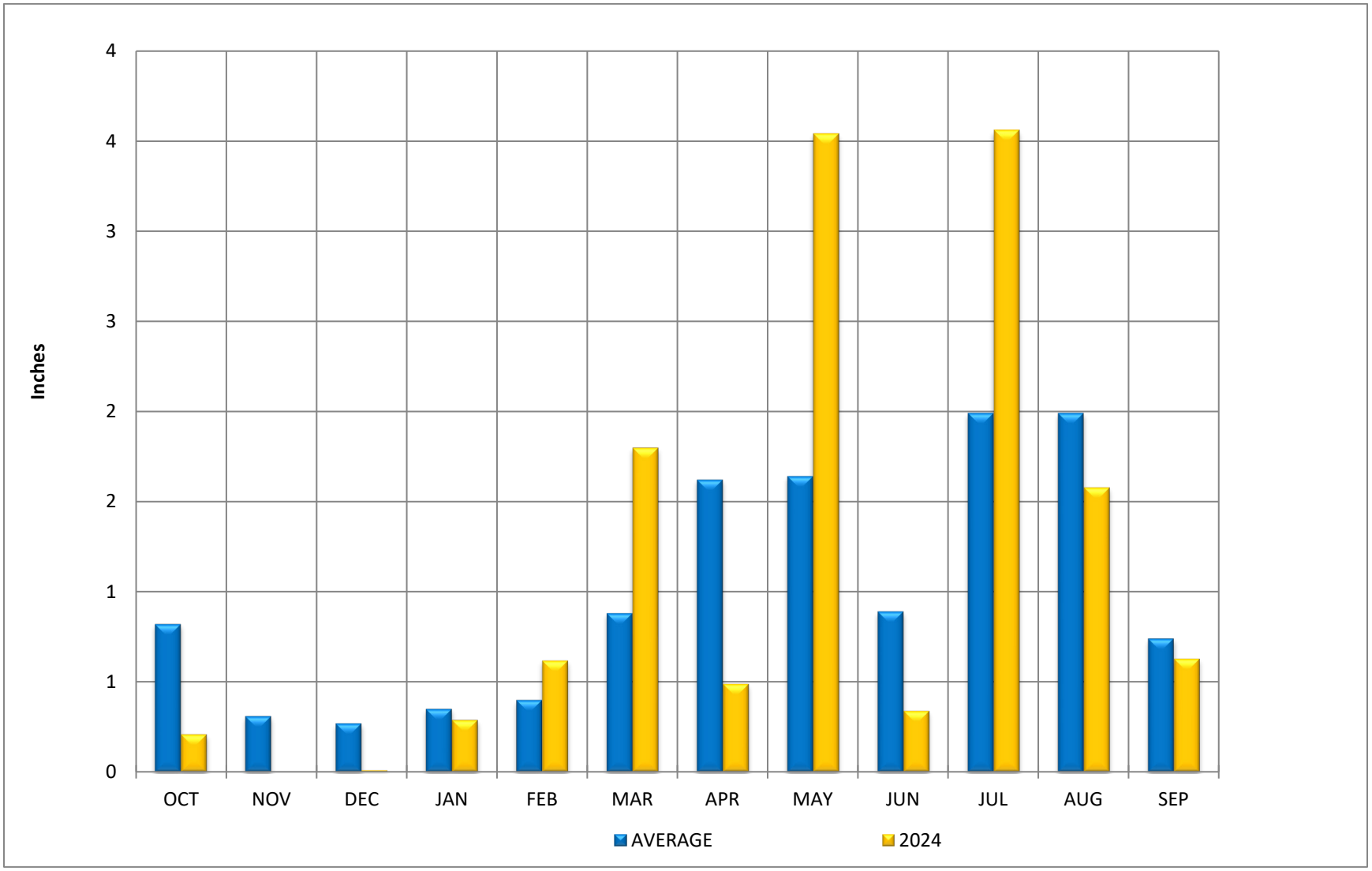


Figure B-2.—The weather station at Ruedi was out of service for the year. These precipitation values are from the Chapman SNOTEL gage.

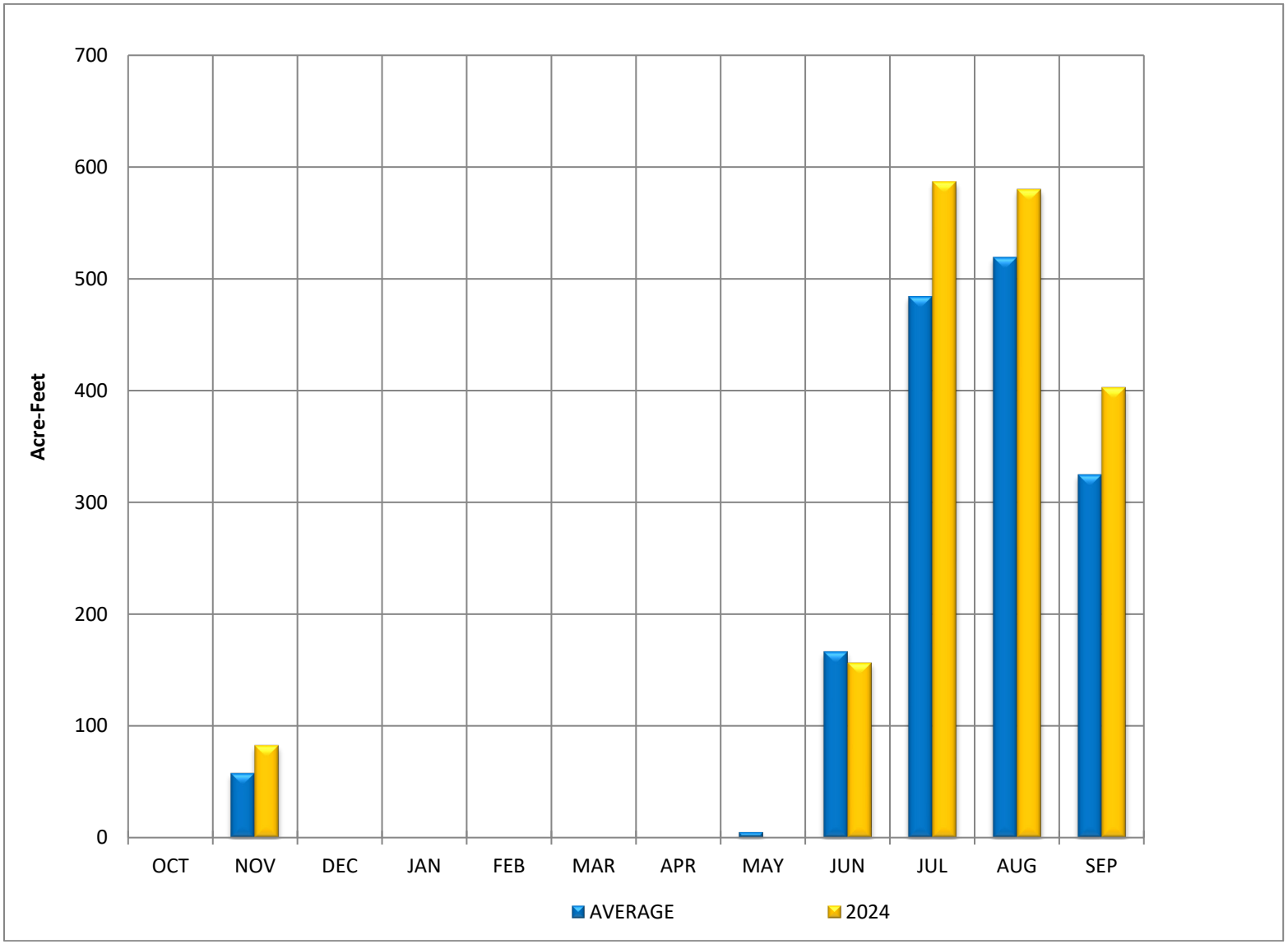


Figure B-3.—Ruedi Reservoir monthly evaporation WY2024.

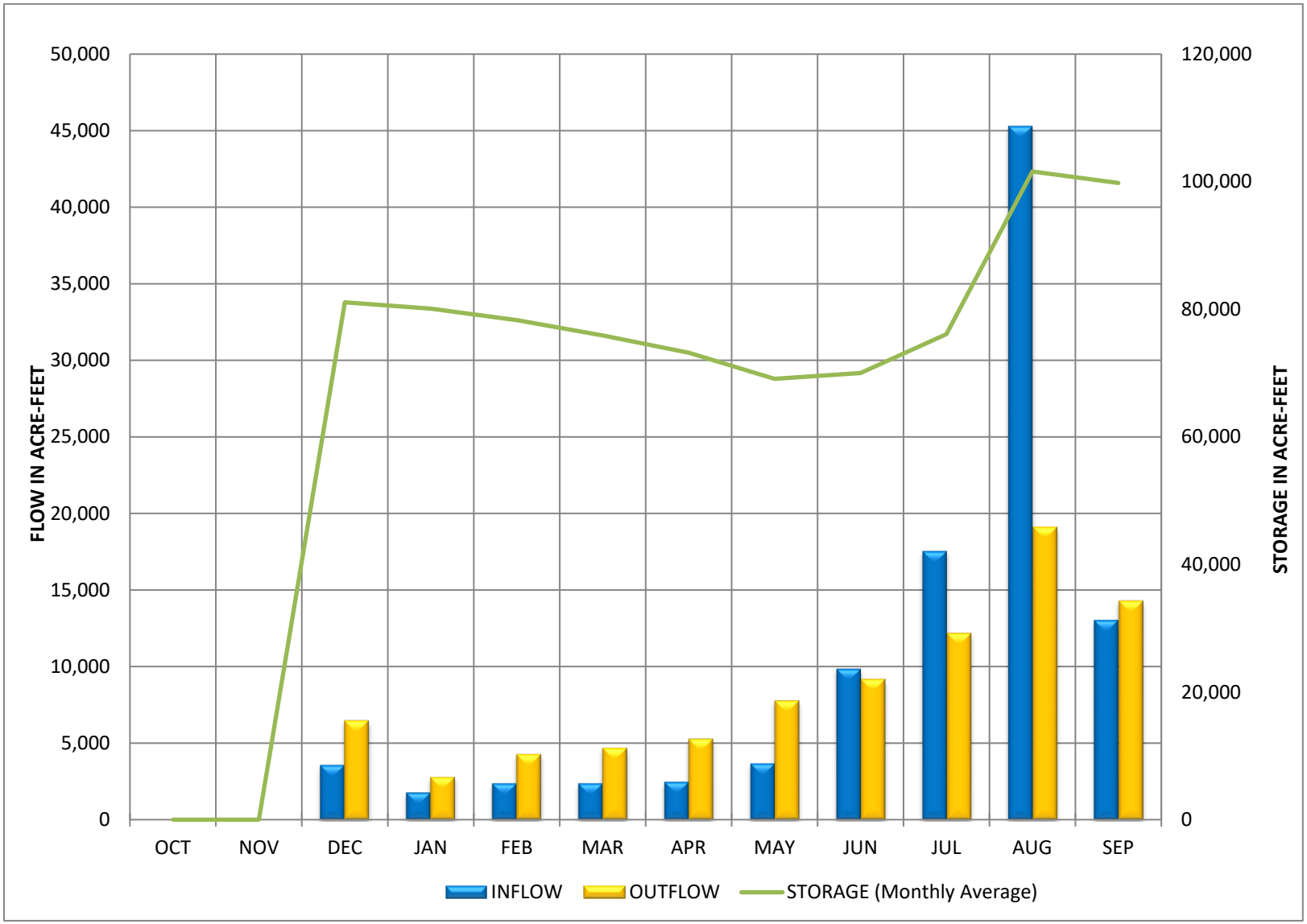


Figure B-4.—Ruedi Reservoir actual operations WY2024.

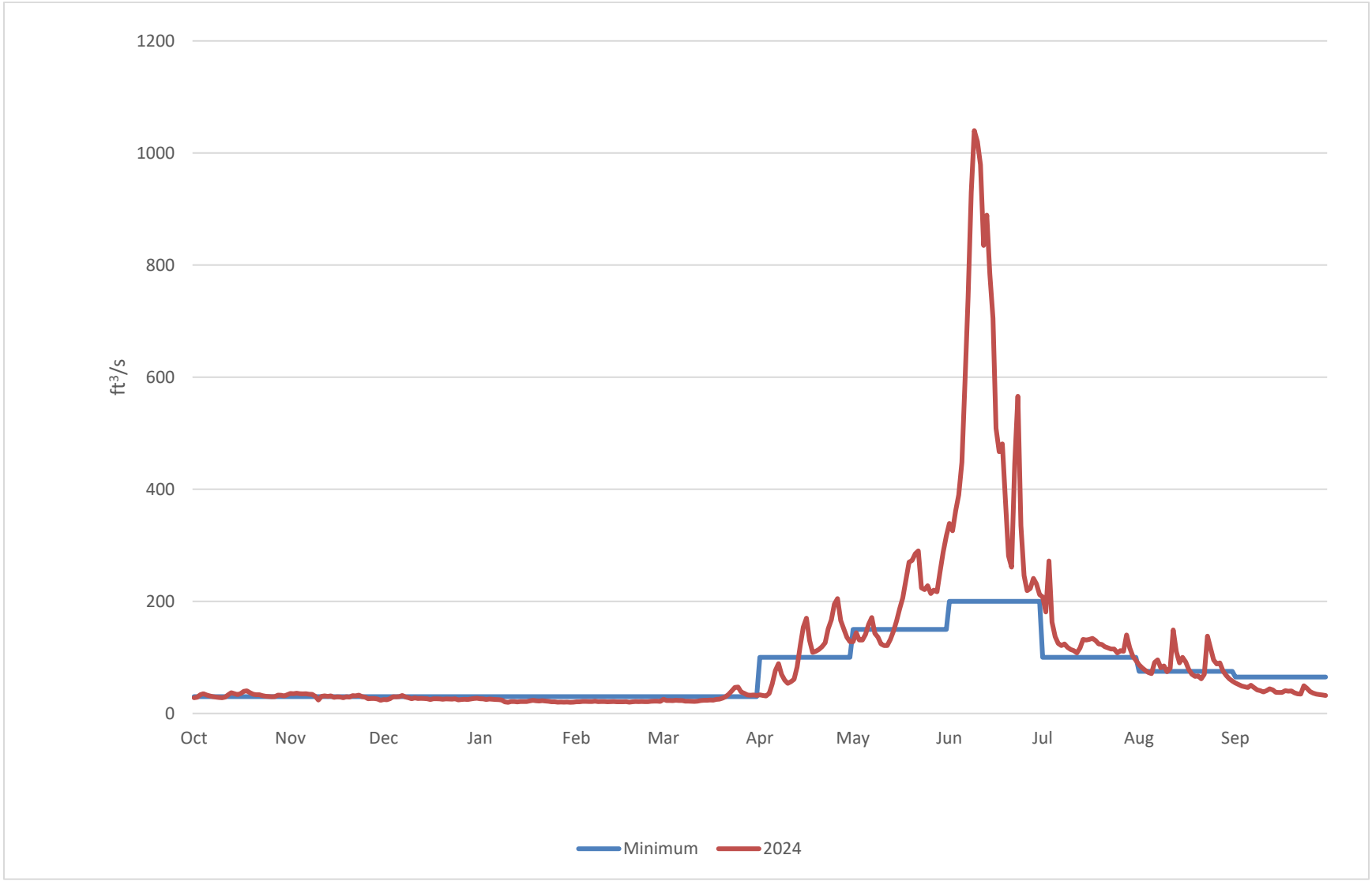


Figure B-5.—Fryingpan River near Thomasville daily discharge WY2024.

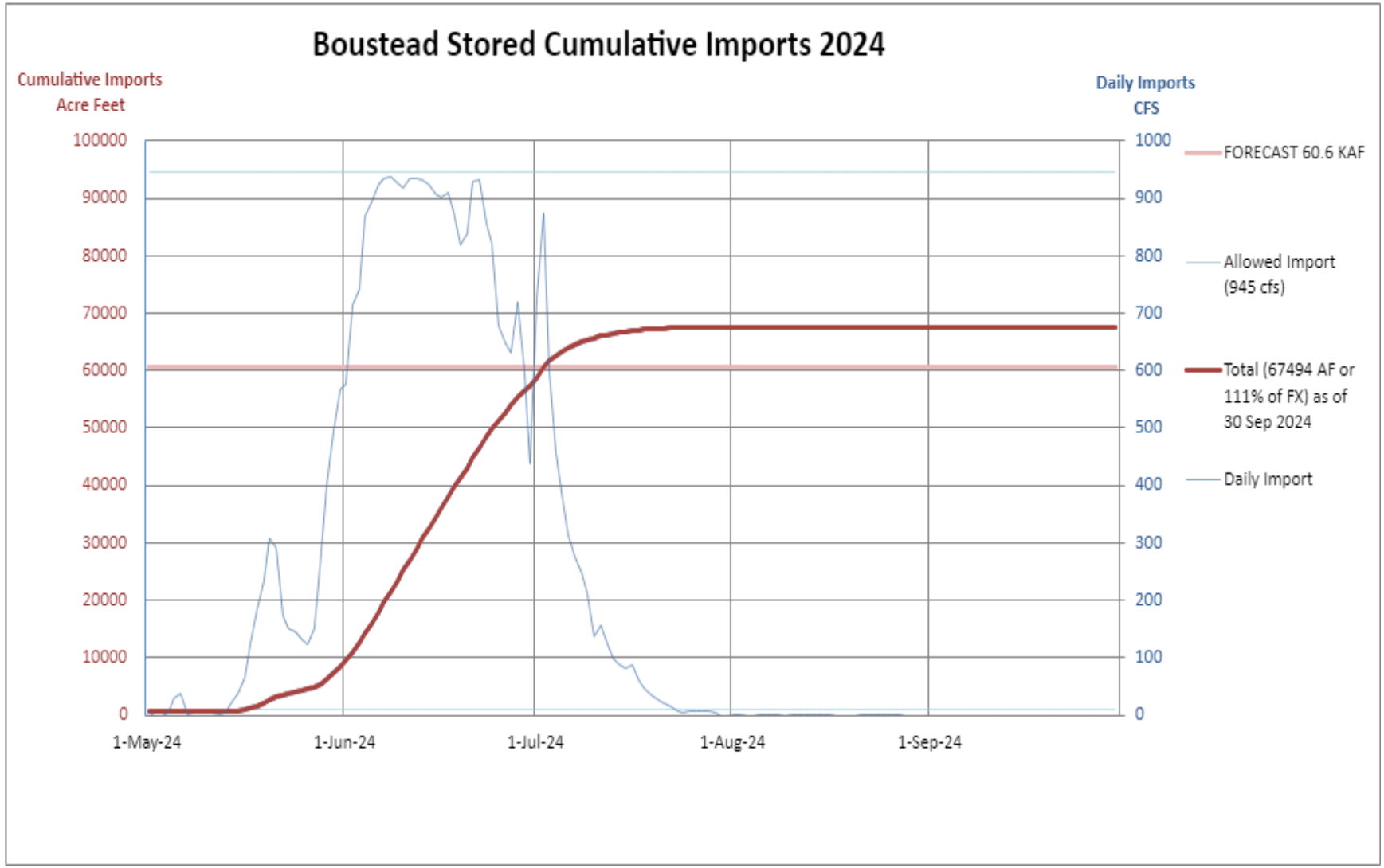


Figure B-6.—Boustead Tunnel actual operations WY2024.

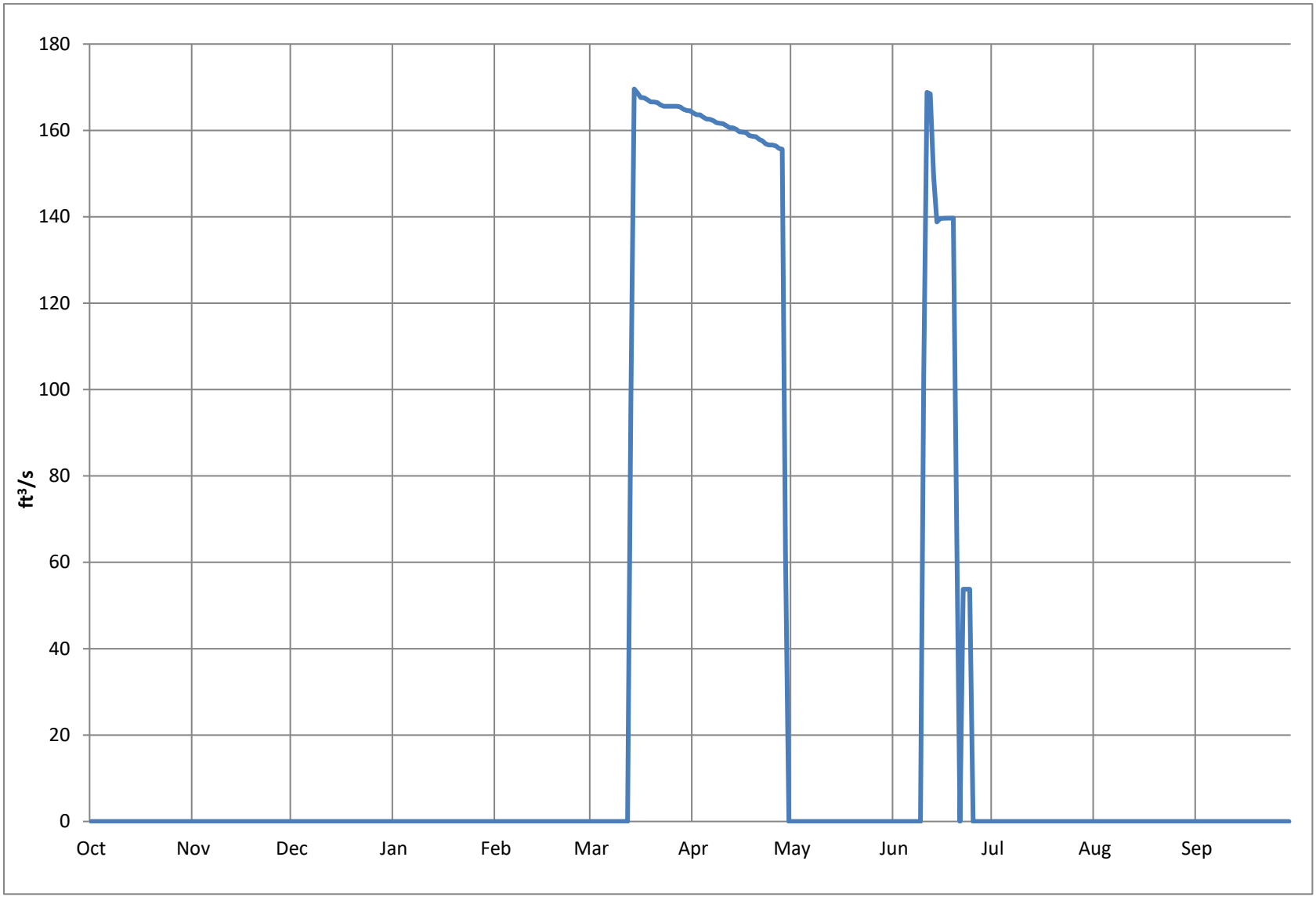


Figure B-7.—Homestake Tunnel Actual Operations WY2024.

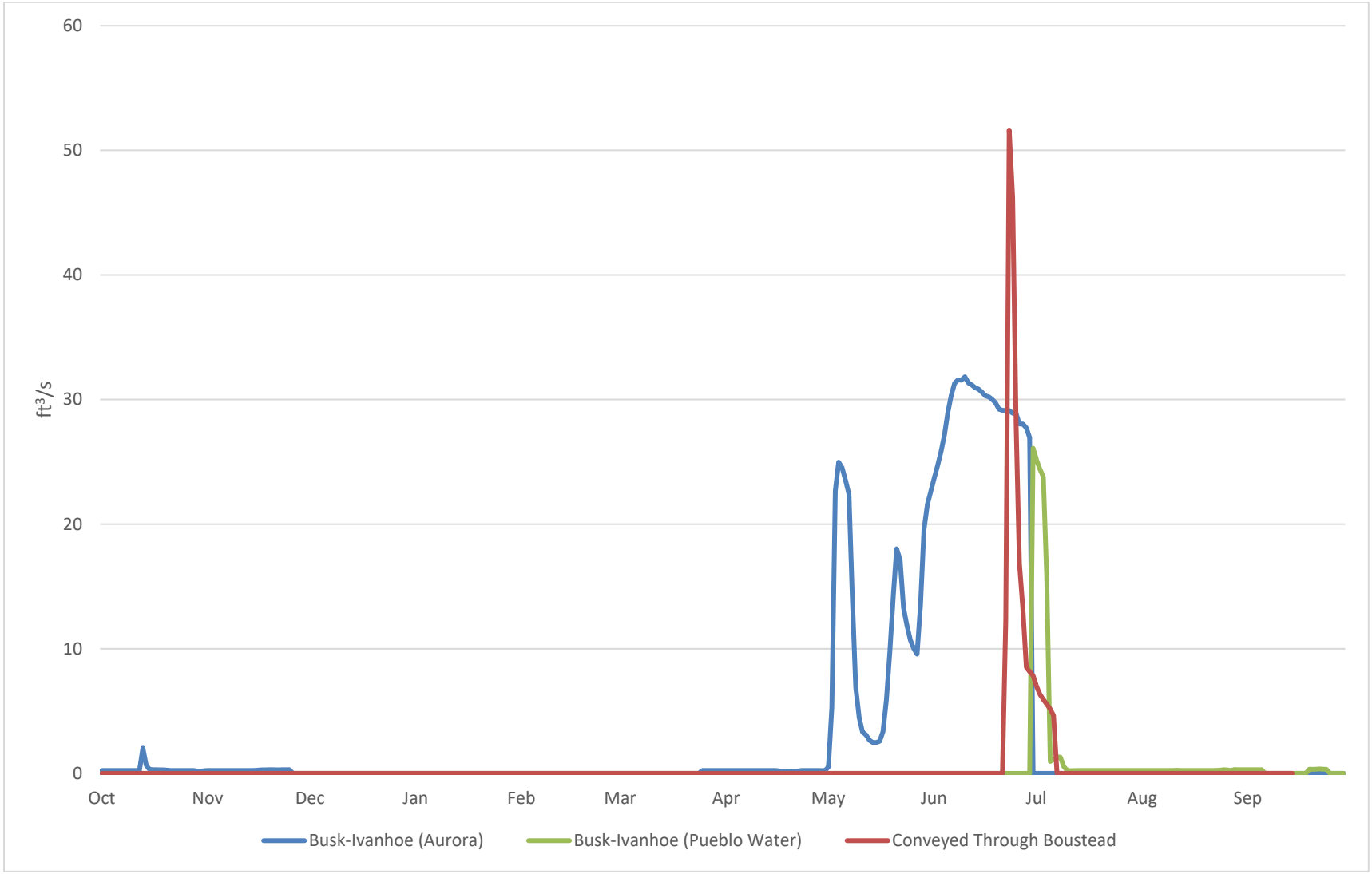


Figure B-8.—Busk-Ivanhoe Tunnel Actual Operations WY2024.

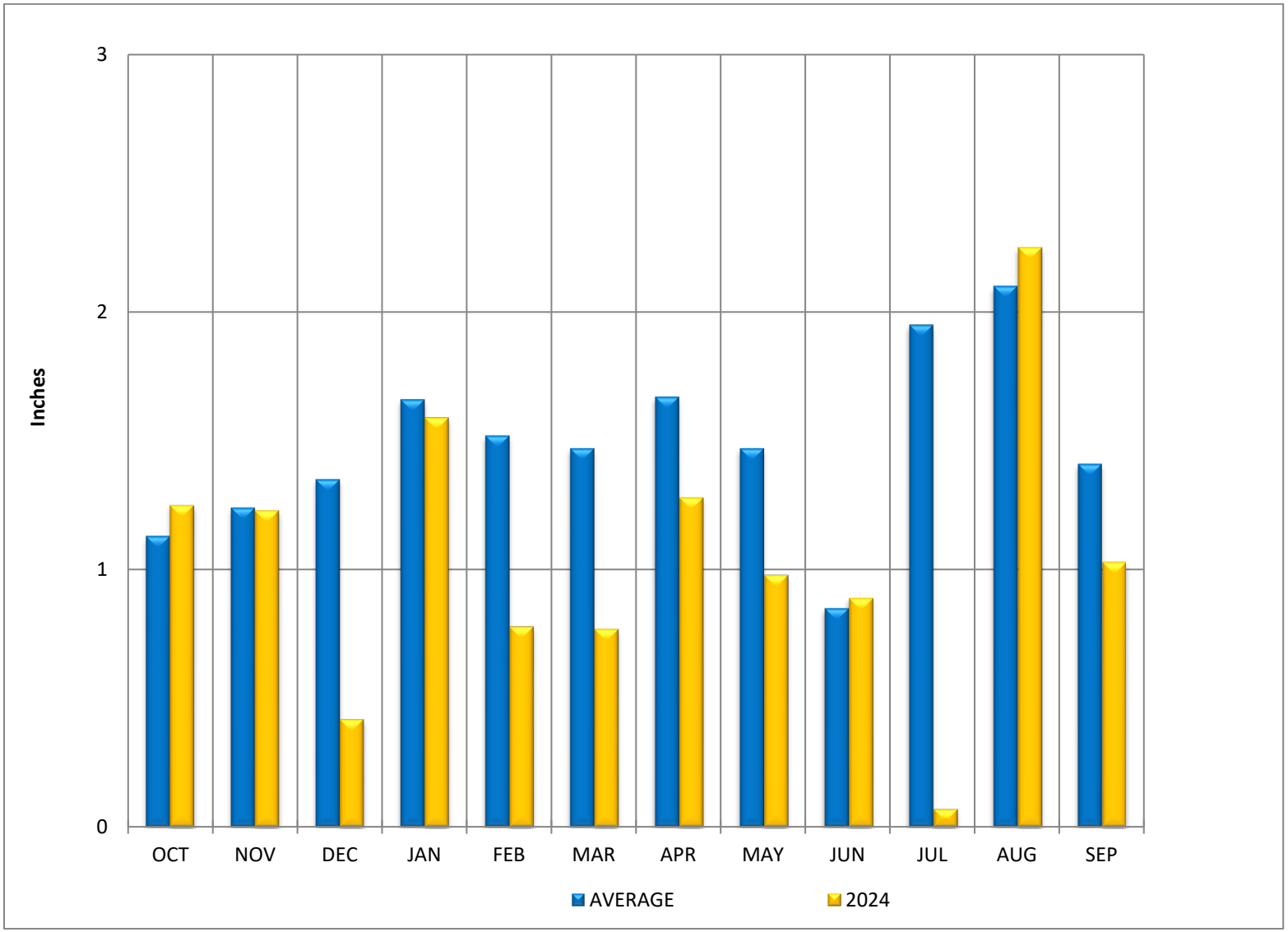


Figure B-9.—Turquoise Lake (Sugar Loaf Dam) Monthly Precipitation WY2024.

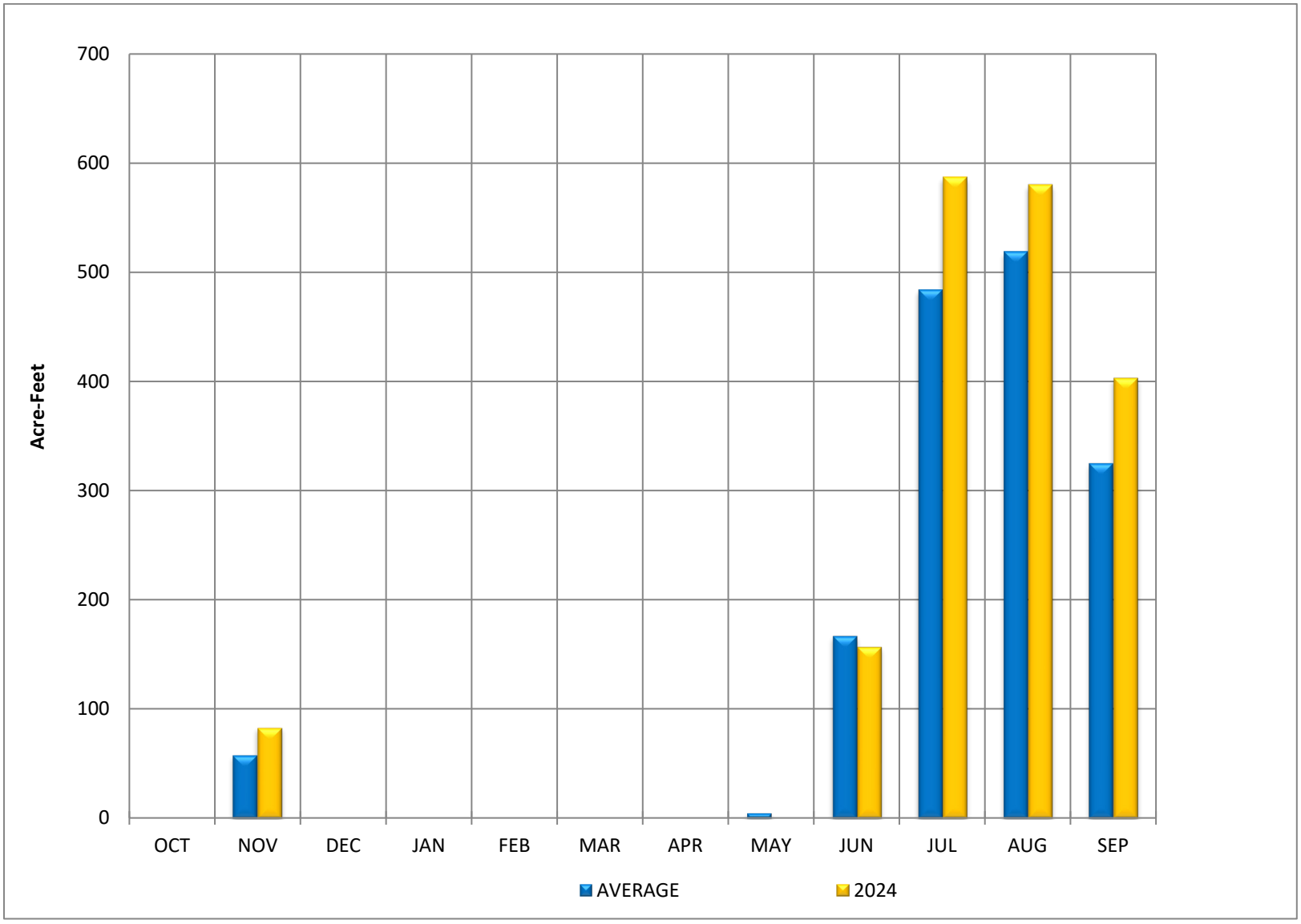


Figure B-10.—Turquoise Lake (Sugar Loaf Dam) monthly evaporation WY2024.

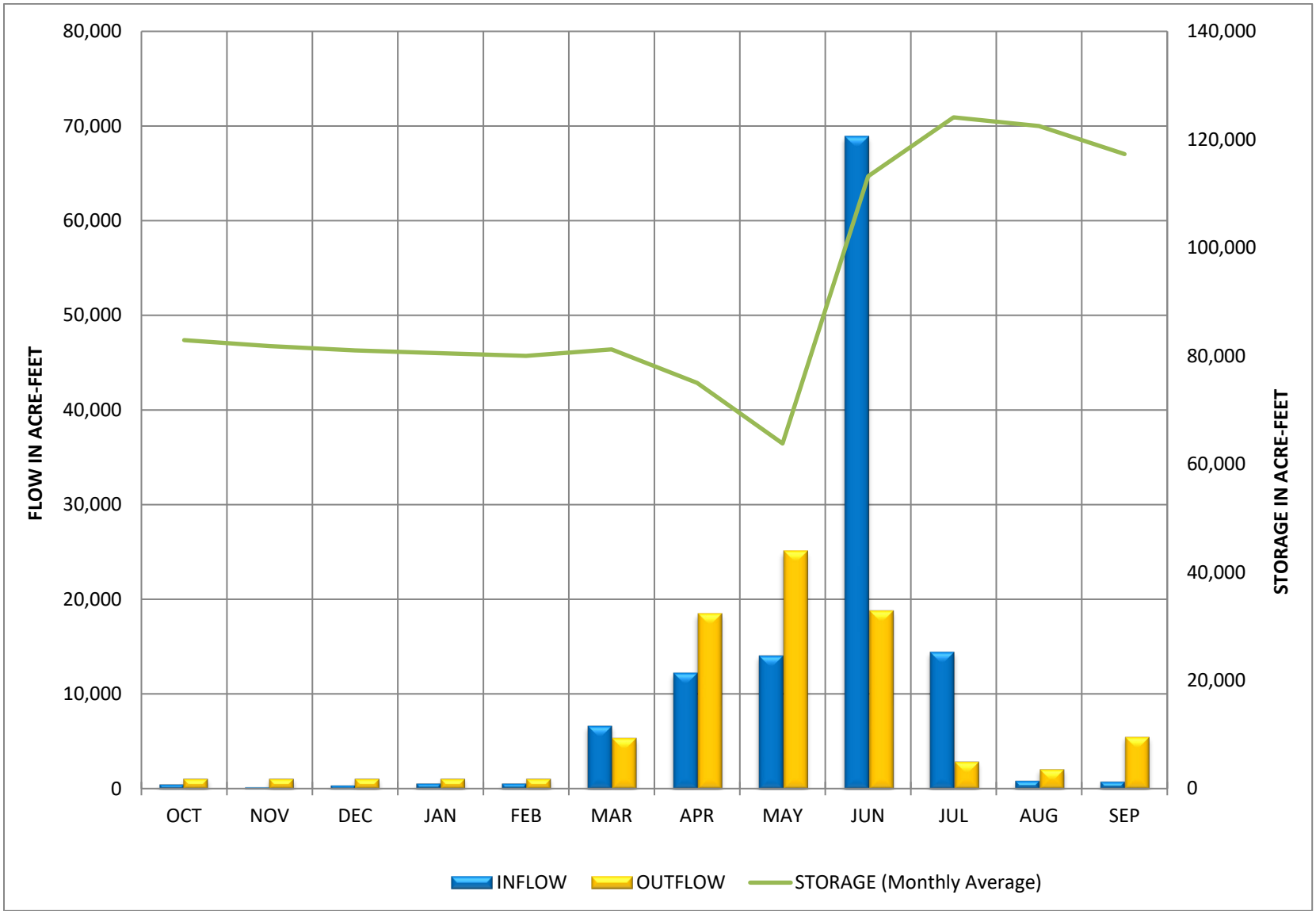


Figure B-11.—Turquoise Lake (Sugarloaf Dam) Actual Operations WY2024.

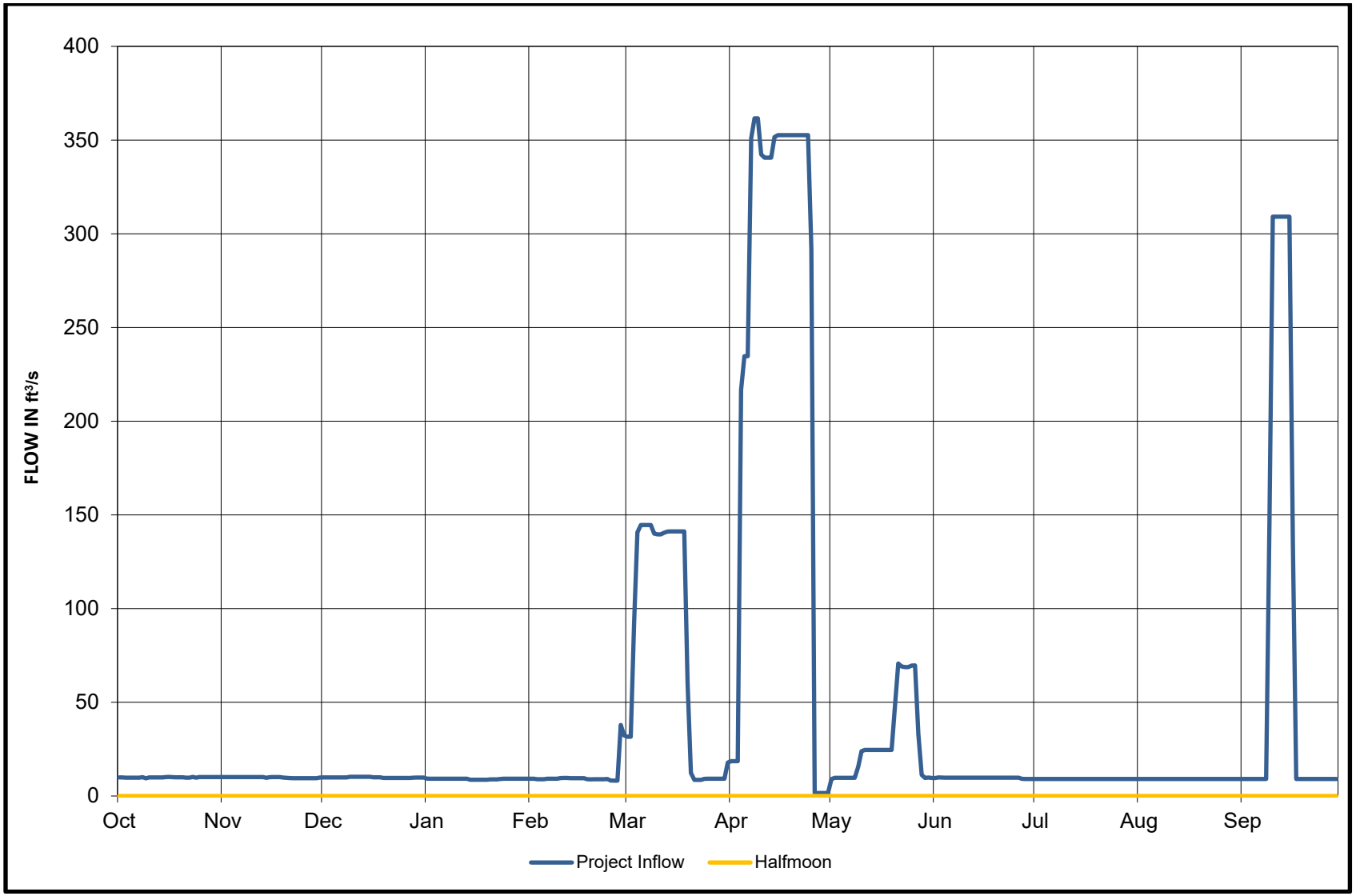


Figure B-12.—Mt. Elbert conduit inflow actual operations WY2024.

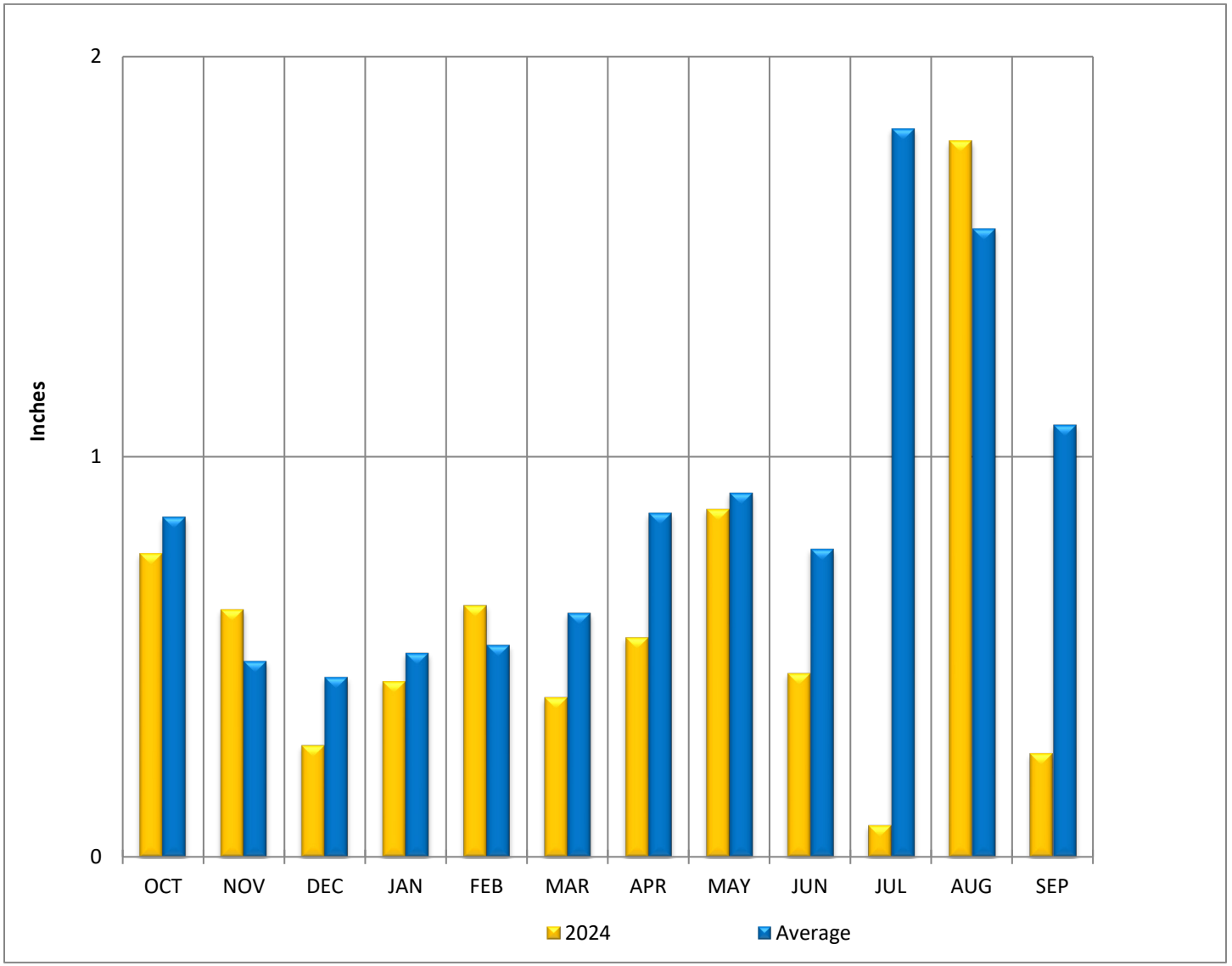


Figure B-13.—Twin Lakes monthly precipitation WY2024.

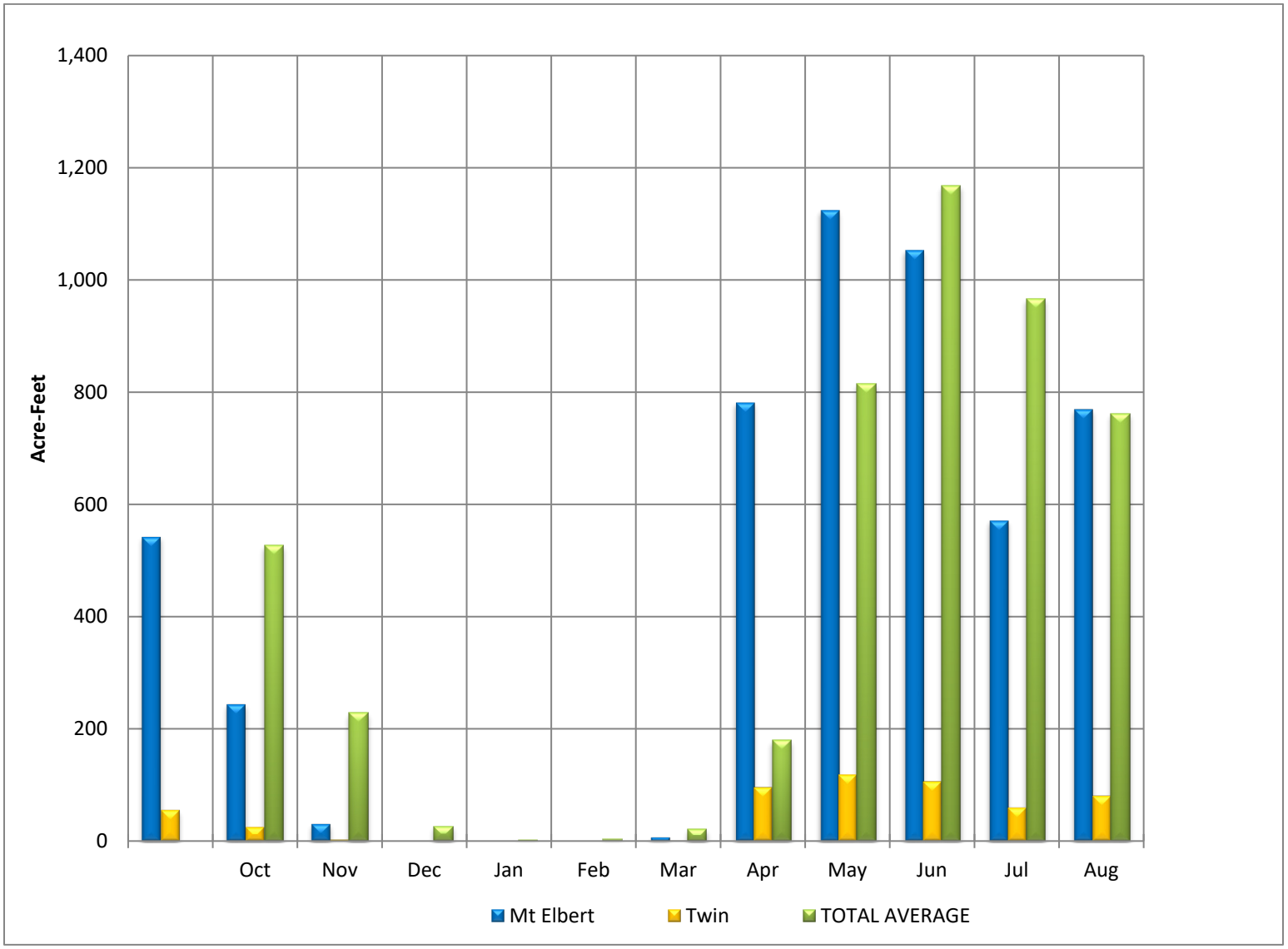


Figure B-14.—Twin Lakes Dam and Mt. Elbert Forebay monthly evaporation WY2024.

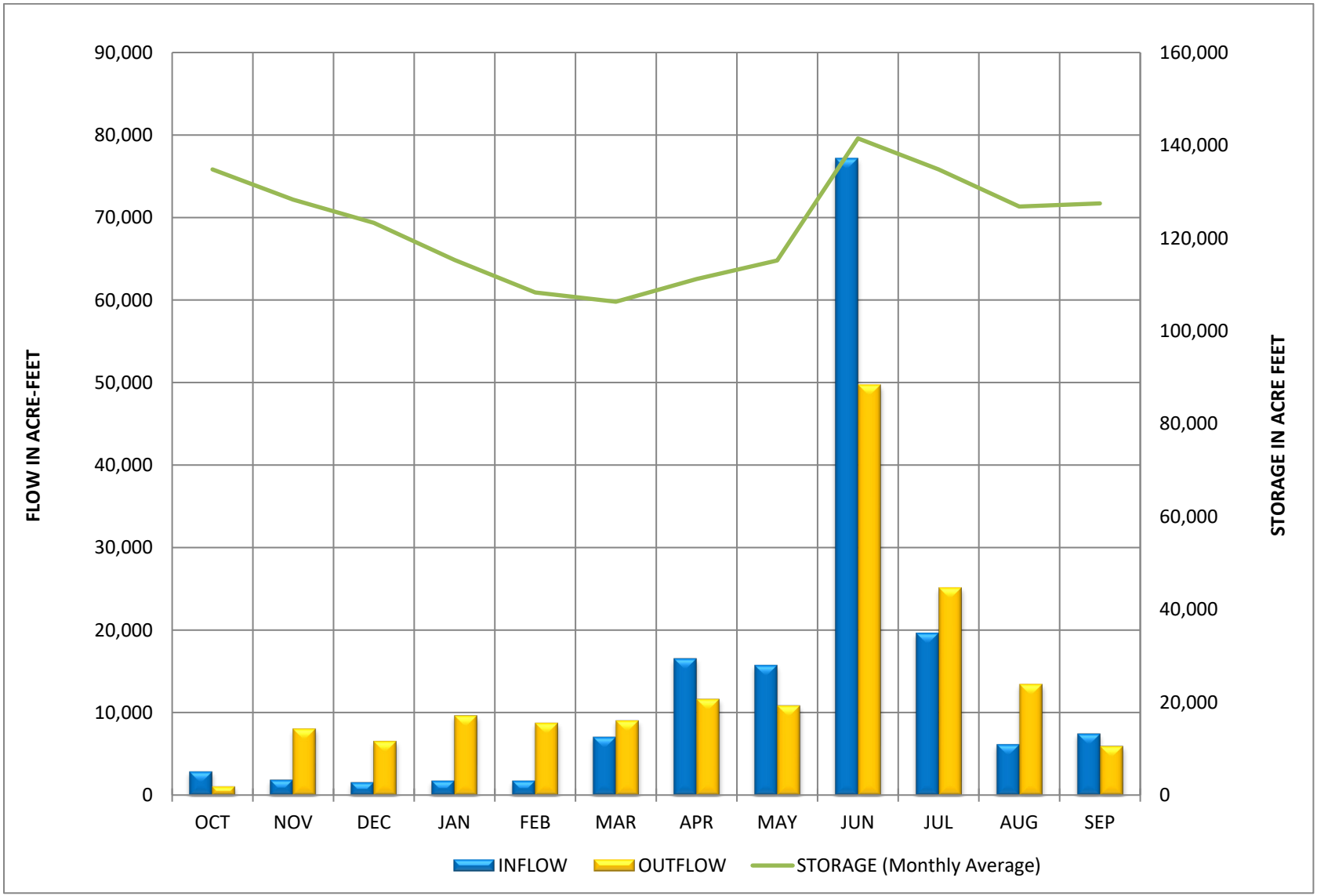


Figure B-15.—Twin Lakes/Mt. Elbert Forebay actual operations WY2024.

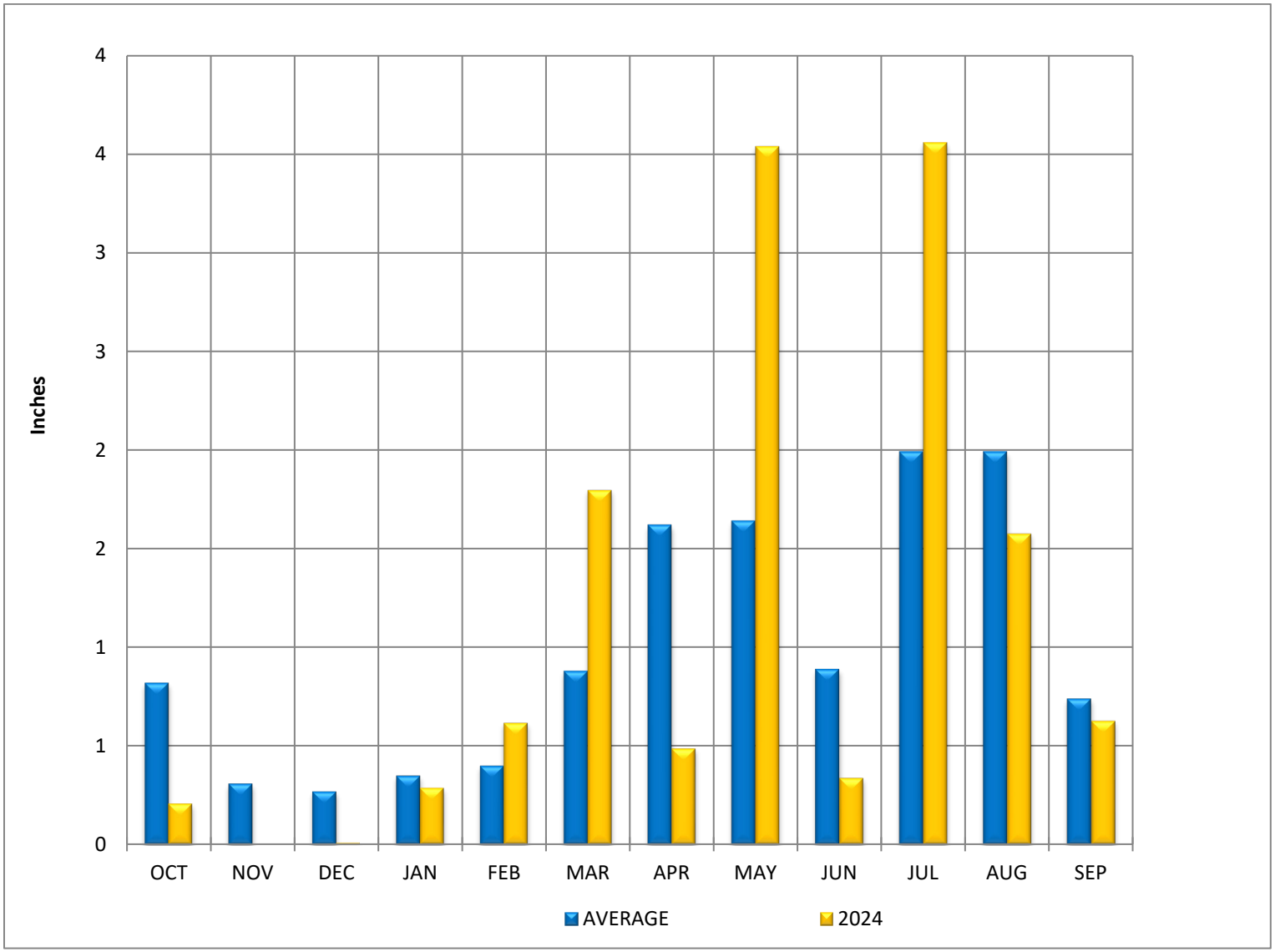


Figure B-16.—Pueblo Dam monthly precipitation WY2024.

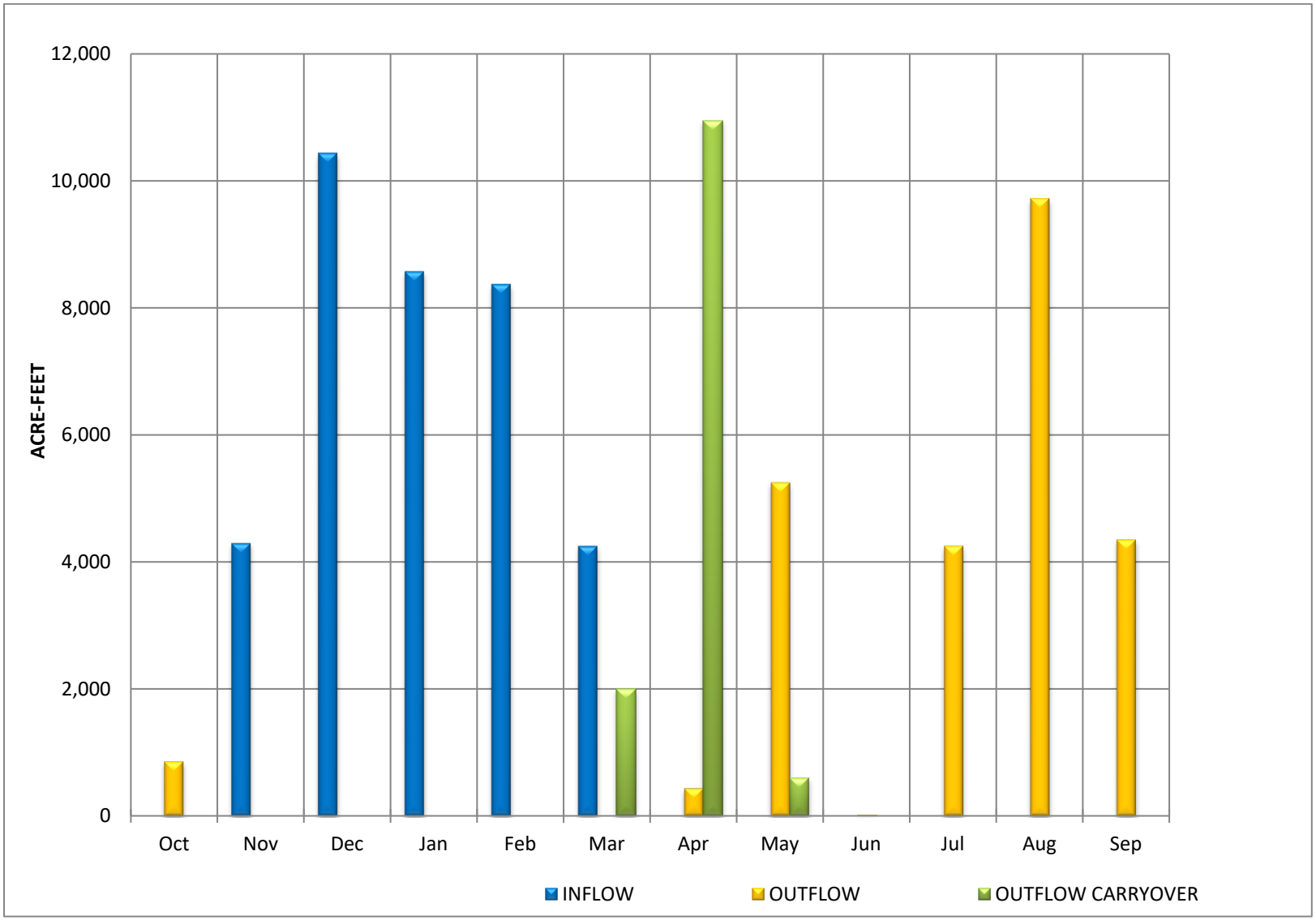


Figure B-17.—Pueblo Reservoir winter water WY2024.

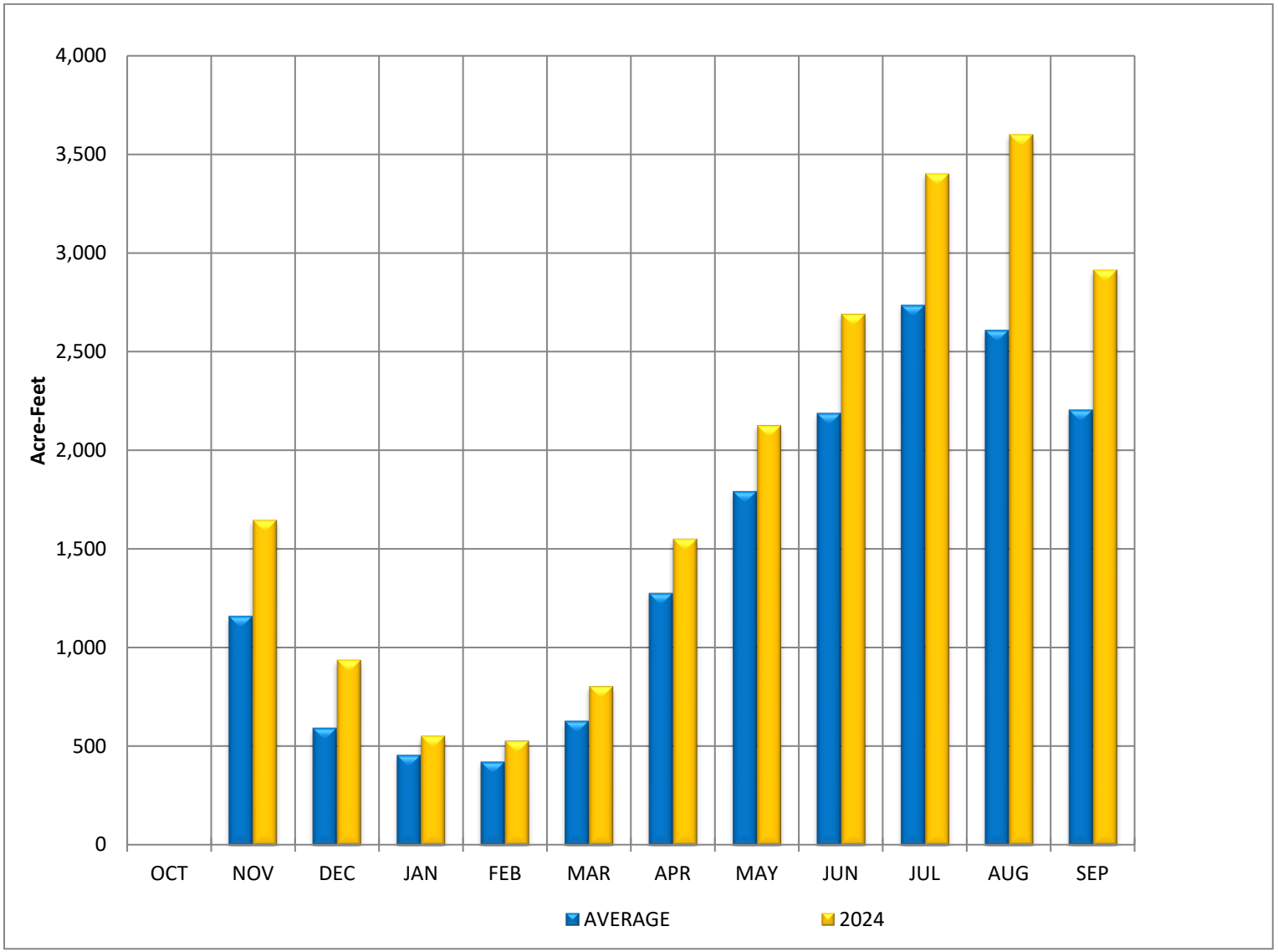


Figure B-18.—Pueblo Dam monthly evaporation WY2024.

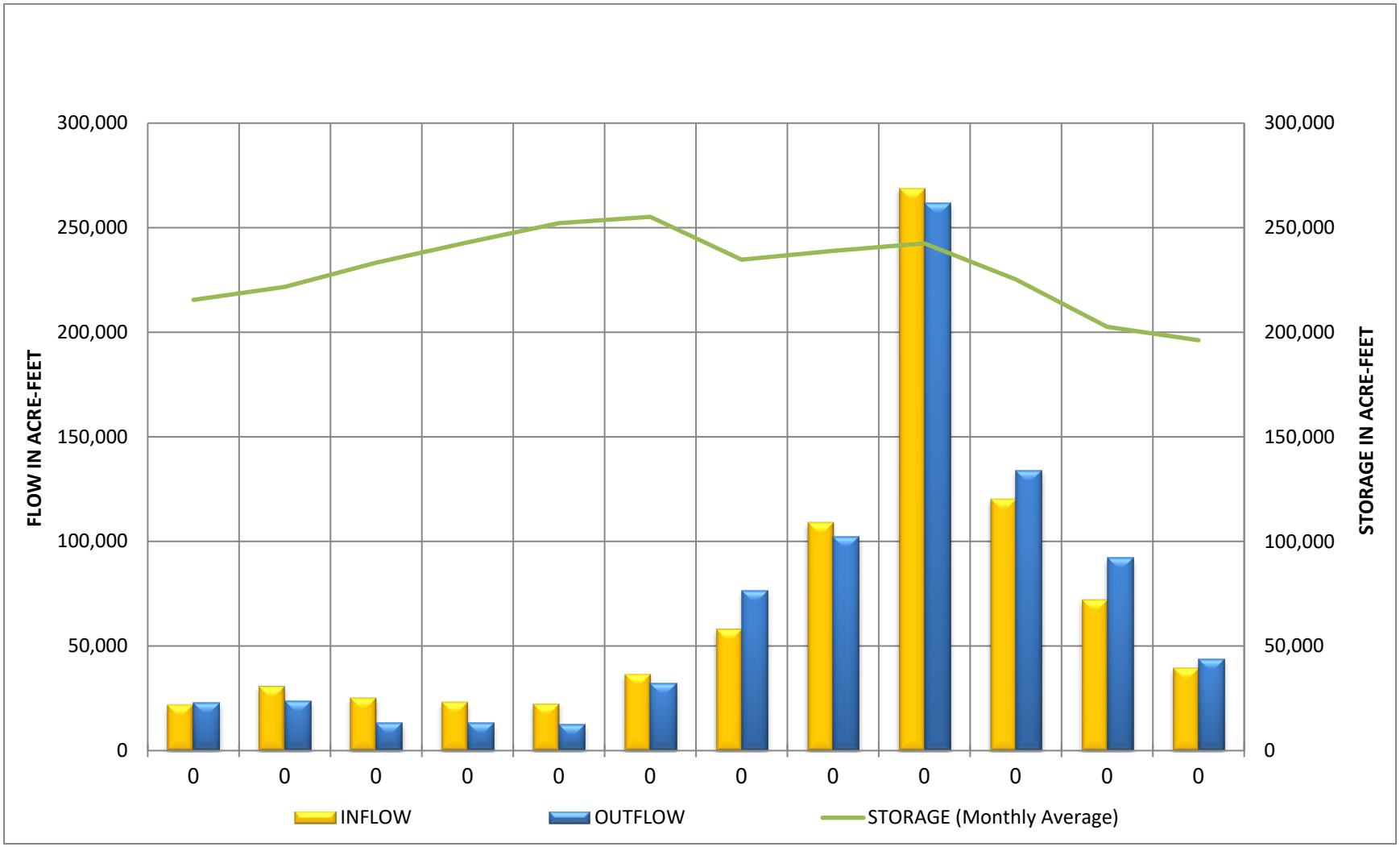


Figure B-19.—Pueblo Reservoir actual operations WY2024.

Appendix C

Twin Lakes Reservoir and Canal Company Exchange with Fryingpan-Arkansas Project Water

The Twin Lakes Reservoir & Canal Company
331 Main Street --- P.O. Box 8
Ordway, CO 81063
Phone: (719) 267-4411
Fax: (719) 267-4074

June 10, 2024

Garrett Markus
Southeastern Colorado Water Conservancy District
garrett@secwcd.com

Don Meyer
Colorado River Conservation District
dmeyer@crwcd.org

Mike Holmberg
Bureau of Reclamation
mholmberg@usbr.gov

Re: Twin Lakes Exchange

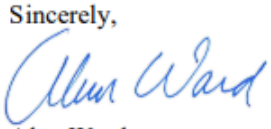
Dear Twin Lakes Exchange Partners:

I am writing to inform you that the Twin Lakes Reservoir & Canal Company (TLRCC) will not be able to operate the Twin Lakes Exchange this year due to a major maintenance project at Grizzly Reservoir. TLRCC anticipates that Grizzly Reservoir will be mostly empty from July through October so that a liner can be installed over the steel facing on the upstream side of the dam. There may be times during this project when it will be impossible to make releases from Grizzly Reservoir as contemplated in the exchange agreements.

I have consulted with Garrett Markus of the Southeastern Colorado Water Conservancy District and Laura Makar, the Deputy Pitkin County Attorney, and we have agreed that the dam maintenance project creates too many uncertainties in the operation of the exchange to feel confident that the goals and objectives of the exchange can be effectively achieved this year. TLRCC anticipates that it will forego significant diversions due to the maintenance project this year but because we will not have full control of the timing and rates of the foregone diversions and may not be able to reliably measure them, implementation of the exchange will not be possible.

TLRCC hopes to be back to normal operations next year and looks forward to implementing the exchange again when all our infrastructure is available for making the bypasses. Please feel free to contact me or TLRCC's General Manager, Stacey Sober, with any questions.

Sincerely,



Alan Ward
President, Twin Lakes Reservoir & Canal Company
award@pueblowater.org

cc: April Long, Laura Makar, James Heath, Stacey Sober

TMiller: 6/12/2024

EC-1860 (Mt. Elbert Powerplant)
Eastern Colorado Area Office

EC-1200
PRJ-13.00

Wednesday, June 12, 2024

Water Order FAP 24-16

Mount Elbert Powerplant, Attn: Facility Manager

Subject: Project Operations

GENERAL

Starting today at 1030 hrs Reclamation will cease FRY-ARK project diversions at both Midway and Noname diversions sites on Hunter Creek. This is for the Twin Lakes Exchange agreement. We plan to reject 3000 acre-feet of diversions at these sites from, today, 6/12/2024 until **approximately** 6/27/2024. The Hunter diversion site will still be diverting water at its maximum allowable rate based on the Fry-Ark Operating Principles.

Midway Diversion

Wednesday, June 12, 2024 at 1030 Hrs.
Stop all water diversion.

Noname Diversion

Wednesday, June 12, 2024 at 1030 Hrs.
Stop all water diversion.

TMiller: 6/12/24:Water.Mem:PRJ-13.00:j:\fap24-16.docx

Appendix D

Daily Discharge Records, Fryingpan-Arkansas Project Collection System

Carter Feeder Conduit near Norrie, CO

Table D-1.—WY2024 daily data for Carter Feeder Conduit near Norrie, CO (Units: cubic feet per second, Source: Bureau of Reclamation)

Day	Apr.	May	June	July	Aug.	Sep.
1		1.6	29.1	42.1		
2		1.0	36.4	51.5		
3		0.7	37.8	33.9		
4		0.9	51.4	26.4		
5		2.4	55.6	21.5		
6		3.3	54.2	18.7		
7		2.0	45.5	17.4		
8		1.2	40.0	15.3		
9		0.7	39.1	14.2		
10		0.6	35.7	12.4		
11		0.3	31.8	12.4		
12		0.3	36.6	12.7		
13		0.5	39.9	12.2		
14		2.7	39.2	11.5		
15		4.4	40.1	10.5		
16		8.2	43.3	11.7		
17		16.3	46.7	9.6		
18		19.8	42.9	8.2		
19		19.7	35.7	6.7		
20		20.4	32.9	5.8		
21		17.2	40.2	5.5		
22		10.3	39.6	2.7		
23		9.0	39.7			
24		8.5	38.2			
25	2.6	6.8	36.9			
26	6.5	5.8	37.1			
27	3.9	7.0	40.3			
28	2.4	14.6	45.7			
29	1.5	22.0	38.6			
30	1.2	27.7	33.8			
31		32.9				
Total	**18.2**	**268.9**	**1,203.6**	**362.7**		
Average	**3**	**8.7**	**40.1**	**16.5**		
Max	**6.5**	**32.9**	**55.6**	**51.5**		

WY2024 Total: 3,676.2 acre-feet
Maximum Instantaneous Peak: 78.1 ft^3/s on 05-JUN-24
Blank: Recorder not operated. No water diverted

North Fryingpan River Feeder Conduit near Norrie, CO

Table D-2.—WY2024 daily data for North Fryingpan River Feeder Conduit near Norrie, CO (units: cubic feet per second, Source: Bureau of Reclamation)

Day	Apr.	May	June	July	Aug.	Sep.
1			8.7	11.1		
2			11.0	12.9		
3			12.2	8.5		
4			16.8	6.1		
5			19.8	4.7		
6			22.7	3.6		
7			21.8	2.8		
8			20.1	2.3		
9			20.2	1.9		
10			20.0	1.6		
11			19.5	1.3		
12			19.9	1.1		
13			19.7	0.8		
14			19.7	0.6		
15			19.9	0.5		
16		0.5	19.5	0.7		
17		1.7	19.2	0.5		
18		2.9	17.7	0.3		
19		3.8	15.7	0.1		
20		4.4	15.3			
21		4.4	18.9			
22		3.1	19.7			
23		2.4	17.5			
24		2.2	15.5			
25		1.7	13.9			
26		1.5	12.6			
27		1.7	13.1			
28		3.0	14.9			
29		4.7	12.2			
30		6.7	10.3			
31		8.3				
Total		**53**	**508**	**61.3**		
Average		**3.3**	**16.9**	**3.2**		
Max		**8.3**	**22.7**	**12.9**		

WY2024 Total: 1,234.3 acre-feet
Maximum Instantaneous Peak: 25.6 ft^3/s on 06-JUN-24
Blank: Recorder not operated. No water diverted.

South Fork Fryingpan River Feeder Conduit near Norrie, CO

Table D-3.—WY2024 daily data for South Fork Fryingpan River Feeder Conduit near Norrie, CO (units: cubic feet per second, Source: Bureau of Reclamation)

Day	Apr.	May	June	July	Aug.	Sep.
1		1.8	85.2	124.5		
2		1.6	101.8	158.1		
3		1.8	104.4	106.4		
4		3.3	127.9	86.2		
5		7.0	137.8	72.6		
6		9.0	143.9	54.8		
7		3.7	149.0	43.9		
8		1.5	149.6	38.9		
9		1.5	139.6	33.9		
10		1.5	150.5	29.9		
11		1.5	156.4	29.1		
12		1.5	161.7	26.7		
13		1.5	172.9	23.2		
14		2.6	168.9	21.4		
15		5.7	157.5	20.3		
16		10.8	171.0	20.8		
17		19.4	104.8	16.7		
18		26.9	89.1	14.4		
19		34.4	143.8	13.4		
20		43.6	159.8	11.7		
21		42.4	190.8	10.3		
22		28.0	187.7			
23		24.0	152.6			
24	2.3	23.3	149.7			
25	6.8	22.0	136.8			
26	8.5	21.2	117.0			
27	7.2	23.4	115.9			
28	4.6	40.0	133.5			
29	3.1	58.1	108.9			
30	2.1	76.0	102.8			
31		82.0				
Total	**34.7**	**621**	**4,171.3**	**957**		
Average	**5**	**20**	**139**	**45.6**		
Max	**8.5**	**82**	**190.8**	**158.1**		

WY2024 Total: 11,472.6 acre-feet
Maximum Instantaneous Peak: 228.2 ft^3/s on 22-JUN-24
Blank: Recorder not operated. No water diverted

Mormon Creek Feeder Conduit near Norrie, CO

Table D-4.—WY2024 daily data for Mormon Creek Feeder Conduit near Norrie, CO (units: cubic feet per second, Source: Bureau of Reclamation)

Day	Apr.	May	June	July	Aug.	Sep.
1		2.0	32.8	30.4		
2		1.8	40.9	34.3		
3		1.8	40.5	19.8		
4		2.1	50.2	14.9		
5		3.0	53.7	11.8		
6		3.5	57.0	9.3		
7		2.8	54.7	7.6		
8		2.3	49.6	6.2		
9		1.9	46.5	5.0		
10		1.8	47.9	4.1		
11		1.8	56.6	3.5		
12		1.6	51.7	2.9		
13		1.8	49.0	2.5		
14		3.0	49.0	2.2		
15		4.8	49.5	1.9		
16		7.7	50.8	2.1		
17		11.8	50.2	1.4		
18		18.4	42.9	0.9		
19		20.4	35.6	0.7		
20		22.9	43.6	0.4		
21		19.9	53.1	0.1		
22		12.2	54.3			
23		11.0	43.8			
24	2.0	10.6	37.6			
25	7.6	9.2	34.5			
26	4.6	8.4	30.7			
27	3.4	10.9	32.4			
28	2.8	19.3	32.7			
29	2.3	25.7	25.2			
30	2.0	30.0	22.4			
31		32.2				
Total	**24.7**	**306.4**	**1,319.5**	**162.2**		
Average	**3.5**	**9.9**	**44**	**7.7**		
Max	**7.6**	**32.2**	**57**	**34.3**		

WY2024 Total: 3,595.9 acre-feet
Maximum Instantaneous Peak: 64.3 ft^3/s on 11-JUN-24
Blank: Recorder not operated. No water diverted

North Cunningham Feeder Conduit near Norrie, CO

Table D-5.—WY2024 daily data for North Cunningham Feeder Conduit near Norrie, CO (units: cubic feet per second, Source: Bureau of Reclamation)

Day	Apr.	May	June	July	Aug.	Sep.
1		0.3	19.0	16.3		
2		0.1	23.5	17.1		
3		0.1	22.4	9.4		
4		0.2	26.0	6.3		
5		0.9	27.2	4.7		
6		1.3	28.3	3.6		
7		0.8	24.5	2.9		
8		0.4	19.7	2.5		
9		0.1	20.7	2.0		
10		0.1	26.9	1.6		
11		0.2	27.3	1.4		
12		0.0	20.5	1.0		
13		0.2	21.5	0.8		
14		1.4	24.0	0.4		
15		2.9	21.3	0.4		
16		4.1	23.5	0.2		
17		3.5	25.7	0.2		
18		2.9	22.9	0.1		
19		6.9	19.1			
20		13.6	23.5			
21		11.3	27.0			
22		6.3	27.6			
23		5.6	23.2			
24	1.3	5.2	22.1			
25	3.7	4.4	20.1			
26	2.4	4.3	17.6			
27	1.5	7.6	17.7			
28	1.0	13.1	17.7			
29	0.6	15.9	13.7			
30	0.3	17.8	12.1			
31		18.5				
Total	**10.7**	**150**	**666.5**	**70.8**		
Average	**1.5**	**4.8**	**22.2**	**3.9**		
Max	**3.7**	**18.5**	**28.3**	**17.1**		

WY2024 Total: 1,781.1 acre-feet
Maximum Instantaneous Peak: 36.9 ft^3/s on 07-JUN-24
Blank: Recorder not operated. No water diverted

Middle Cunningham Feeder Conduit near Norrie, CO

Table D-6.—WY2024 daily data for Middle Cunningham Feeder Conduit near Norrie, CO (units: cubic feet per second, Source: Bureau of Reclamation)

Day	Apr.	May	June	July	Aug.	Sep.
1			20.3	19.4		
2			25.5	21.4		
3			26.6	13.6		
4			32.8	10.5		
5			38.2	8.5		
6			38.6	7.2		
7			39.0	6.3		
8			38.9	5.5		
9			32.4	4.7		
10			29.0	4.1		
11			31.7	3.6		
12			35.7	3.1		
13			39.3	2.6		
14			39.3	2.3		
15		0.2	37.8	2.1		
16		0.7	37.2	1.9		
17		2.0	37.2	1.5		
18		3.7	34.7	1.1		
19		5.4	29.9	0.9		
20		7.6	32.7	0.6		
21		7.9	38.6	0.5		
22		4.9	38.7	0.3		
23		4.1	33.5			
24		4.1	30.6			
25		3.7	28.3			
26		3.5	25.2			
27		5.0	23.7			
28		9.3	22.3			
29		13.9	18.0			
30		18.0	15.9			
31		19.3				
Total		**113.4**	**951.7**	**121.7**		
Average		**6.7**	**31.7**	**5.5**		
Max		**19.3**	**39.3**	**21.4**		

WY2024 Total: 2,354 acre-feet
Maximum Instantaneous Peak: 58.5 ft^3/s on 21-JUN-24
Blank: Recorder not operated. No water diverted

Ivanhoe Creek Feeder Conduit near Norrie, CO

Table D-7.—WY2024 daily data for Ivanhoe Creek Feeder Conduit near Norrie, CO (units: cubic feet per second, Source: Bureau of Reclamation)

Day	Apr.	May	June	July	Aug.	Sep.
1		4.2	39.2	68.7		
2		3.3	46.7	73.9		
3		2.9	47.1	44.4		
4		3.1	63.9	16.0		
5		4.3	73.4	7.1		
6		5.0	100.6	5.5		
7		2.6	108.9	4.4		
8		1.2	112.3	19.1		
9		1.2	106.8	54.9		
10		1.2	116.9	53.5		
11		1.2	132.1	57.7		
12		1.2	126.9	50.6		
13		2.0	120.5	56.2		
14		4.5	120.4	61.6		
15		6.3	122.1	65.3		
16		8.2	126.4	60.4		
17		11.9	122.6	61.3		
18		15.0	113.4	64.2		
19		18.5	103.6	60.7		
20		24.4	103.7	58.4		
21		22.5	112.6	60.0		
22		13.3	114.9	56.9		
23		13.0	102.4			
24	2.3	12.7	95.3			
25	6.6	10.1	84.9			
26	6.3	9.2	45.4			
27	6.4	12.3	39.3			
28	6.3	21.2	82.9			
29	5.4	28.7	74.8			
30	4.8	37.4	68.0			
31		38.5				
Total	**38.2**	**341.1**	**2,827.9**	**1,060.8**		
Average	**5.5**	**11**	**94.3**	**48.2**		
Max	**6.6**	**38.5**	**132.1**	**73.9**		

WY2024 Total: 8,465.6 acre-feet
Maximum Instantaneous Peak: 146.7 ft^3/s on 11-JUN-24
Blank: Recorder not operated. No water diverted
Includes 450 acre-feet Ivanhoe Lake releases conveyed through the Boustead Tunnel

Lily Pad Creek Feeder Conduit near Norrie, CO

Table D-8.—WY2024 daily data for Lily Pad Creek Feeder Conduit near Norrie, CO (units: cubic feet per second, Source: Bureau of Reclamation)

Day	Apr.	May	June	July	Aug.	Sep.
1		4.1	8.9	2.1		
2		4.1	9.0	3.4		
3		4.1	8.7	0.9		
4		4.0	8.7	0.3		
5		4.3	7.5	0.1		
6		4.6	7.6	0.1		
7		4.4	19.3	0.1		
8		4.4	19.3	0.1		
9		4.4	18.8	0.8		
10		4.2	18.7	1.4		
11		4.0	15.6	1.2		
12		3.8	14.9	1.1		
13		3.9	14.8	0.9		
14		4.1	10.7	0.9		
15		4.5	9.0	1.1		
16		5.3	9.8	1.3		
17		6.2	8.0	1.0		
18		7.2	6.4	0.8		
19		8.5	4.4	0.7		
20		10.0	4.7	0.7		
21		10.3	6.2	0.6		
22		9.2	6.4	0.6		
23		8.9	3.7	0.5		
24		8.8	3.3	0.5		
25		8.5	2.9	0.5		
26	1.4	8.3	2.7	0.5		
27	2.7	6.9	2.6	0.8		
28	4.5	6.1	2.5	0.5		
29	4.1	7.7	1.4			
30	4.1	8.4	1.1			
31		9.3				
Total	**16.7**	**192.1**	**257.8**	**23.5**		
Average	**3.3**	**6.2**	**8.6**	**.8**		
Max	**4.5**	**10.3**	**19.3**	**3.4**		

WY2024 Total: 972 acre-feet
Maximum Instantaneous Peak: 22.4 ft^3/s on 13-JUN-24
Blank: Recorder not operated. No water diverted

Granite Creek Feeder Conduit near Norrie, CO

Table D-9.—WY2024 daily data for Granite Creek Feeder Conduit near Norrie, CO (units: cubic feet per second, Source: Bureau of Reclamation)

Day	Apr.	May	June	July	Aug.	Sep.
1			18.1	19.0		
2			21.3	23.0		
3			22.8	15.3		
4			27.2	12.8		
5			30.4	11.2		
6		0.7	32.5	10.1		
7		0.7	36.4	9.2		
8		0.7	39.4	8.4		
9		0.7	39.4	7.7		
10		0.7	38.4	7.1		
11		0.7	37.6	6.9		
12		0.7	37.7	6.6		
13		0.7	37.8	6.1		
14		0.7	35.8	5.9		
15		0.8	32.5	5.8		
16		1.3	33.3	6.1		
17		2.0	33.0	5.1		
18		3.1	30.0	4.7		
19		4.1	27.4	4.8		
20		5.2	27.9	4.3		
21		5.4	31.2	4.1		
22		3.9	31.0	3.8		
23		3.7	25.7	3.5		
24		3.8	23.9	3.3		
25		3.7	22.1	3.2		
26		3.6	21.2	3.2		
27		4.6	21.0	4.5		
28		8.0	20.5	3.3		
29		11.4	17.7			
30		15.2	16.6			
31		16.9				
Total		**102.9**	**870**	**209**		
Average		**4**	**29**	**7.5**		
Max		**16.9**	**39.4**	**23**		

WY2024 Total: 2,344.3 acre-feet
Maximum Instantaneous Peak: 44.2 ft^3/s on 08-JUN-24
Blank: Recorder not operated. No water diverted

No Name Creek Feeder Conduit near Norrie, CO

Table D-10.—WY2024 daily data for No Name Creek Feeder Conduit near Norrie, CO (units: cubic feet per second, Source: Bureau of Reclamation)

Day	Apr.	May	June	Jule	Aug.	Sep.
1			31.6			
2			41.0	28.7		
3			39.7	12.0		
4			46.3	7.7		
5			34.6	5.3		
6			30.8	3.8		
7			38.2	2.6		
8			40.1	1.7		
9			40.1			
10			47.9			
11			37.5			
12						
13						
14						
15						
16						
17		1.4				
18		4.0				
19		6.4				
20		10.5				
21		9.0				
22		4.1				
23		3.5				
24		3.8				
25		3.8				
26		3.8				
27		7.1				
28		14.9				
29		21.5				
30		28.7				
31		30.2				
Total		**152.7**	**427.7**	**61.7**		
Average		**10.2**	**38.9**	**8.8**		
Max		**30.2**	**47.9**	**28.7**		

WY2024 Total: 1,273.7 acre-feet
Maximum Instantaneous Peak: 122.5 ft^3/s on 12-JUL-24
Blank: Recorder not operated. No water diverted because of TLCC exchange

Midway Creek Feeder Conduit near Norrie, CO

Table D-11.—WY2024 daily data for Midway Creek Feeder Conduit near Norrie, CO (units: cubic feet per second, Source: Bureau of Reclamation)

Day	Apr.	May	June	July	Aug.	Sep.
1			45.1			
2			57.2	69.4		
3			59.1	44.7		
4			65.9	34.2		
5			60.6	26.9		
6			31.0	23.0		
7			29.2	20.0		
8			45.8	17.4		
9			44.8	14.6		
10			60.6	12.4		
11			75.8	11.3		
12			27.4	10.4		
13			0.1	9.2		
14				8.3		
15		1.1		8.0		
16		3.0		7.9		
17		6.6		5.9		
18		10.2		4.9		
19		15.2		4.4		
20		20.6		3.4		
21		17.0		2.6		
22		8.9		1.9		
23		8.1				
24		7.5				
25		6.7				
26		6.8				
27		11.3				
28		19.2				
29		28.2				
30		37.6				
31		39.7				
Total		**247.7**	**602.6**	**341**		
Average		**14.6**	**37.7**	**16.2**		
Max		**39.7**	**75.8**	**69.4**		

WY2024 Total: 2,362.8 acre-feet
Maximum Instantaneous Peak: 84.1 ft^3/s on 10-JUN-24
Blank: Recorder not operated. No water diverted for imports because of TLCC exchange

Hunter Creek Feeder Conduit near Norrie, CO

Table D-12.—WY2024 daily data for Hunter Creek Feeder Conduit near Norrie, CO (units: cubic feet per second, Source: Bureau of Reclamation)

Day	Apr.	May	June	July	Aug.	Sep.
1			49.6	74.8		
2			63.0	90.5		
3			63.3	54.8		
4			71.2	40.9		
5			70.5	32.2		
6			76.5	27.5		
7			76.2	23.6		
8			74.3	19.9		
9			46.1	14.2		
10			30.1	11.5		
11			54.7	11.3		
12			84.4	9.4		
13			91.9	7.2		
14			84.7	7.1		
15			84.3	6.6		
16			88.3	7.4		
17		4.8	84.4	3.6		
18		11.1	84.1			
19		17.0	81.2			
20		24.4	87.6			
21		19.6	97.8			
22		5.5	96.6			
23		4.6	83.9			
24		3.5	82.6			
25		1.5	79.6			
26		0.7	73.7			
27		7.5	73.0			
28		22.4	76.2			
29		35.7	67.9			
30		48.0	69.1			
31		46.5				
Total		**252.9**	**2,246.7**	**442.4**		
Average		**16.9**	**74.9**	**26**		
Max		**48**	**97.8**	**90.5**		

WY2024 Total: 5,835.3 acre-feet
Maximum Instantaneous Peak: 117.8 ft^3/s on 12-JUN-24
Blank: Recorder not operated. No water diverted

Sawyer Creek Feeder Conduit near Norrie, CO

Table D-13.—WY2024 daily data for Sawyer Creek Feeder Conduit near Norrie, CO (units: cubic feet per second, Source: Bureau of Reclamation)

Day	Apr.	May	June	July	Aug.	Sep.
1		1.1	15.2	20.5		
2		1.1	19.4	22.6		
3		1.0	21.2	17.6		
4		1.1	25.6	14.4		
5		1.3	26.8	12.4		
6		1.4	27.1	11.0		
7		1.4	23.8	9.8		
8		1.3	23.5	9.0		
9		1.0	22.6	8.3		
10		1.0	22.8	7.5		
11		0.9	23.4	7.0		
12		1.0	23.7	3.4		
13		1.0	22.8			
14		1.1	30.1			
15		1.4	35.3			
16		1.7	36.9			
17		2.4	37.2			
18		3.2	34.6			
19		3.8	31.1			
20		4.9	31.5			
21		5.2	36.8			
22		4.6	35.1			
23		4.5	29.8			
24	1.4	4.4	26.6			
25	1.4	4.2	25.6			
26	1.2	4.0	23.8			
27	1.1	4.5	22.8			
28	1.2	6.1	23.1			
29	1.1	8.1	20.8			
30	1.0	10.7	18.6			
31		12.9				
Total	**8.3**	**102.1**	**797.8**	**143.5**		
Average	**1.2**	**3.3**	**26.6**	**12**		
Max	**1.4**	**12.9**	**37.2**	**22.6**		

WY2024 Total: 2,086 acre-feet
Maximum Instantaneous Peak: 45.6 ft^3/s on 21-JUN-24
Blank: Recorder not operated. No water diverted

Chapman Gulch Feeder Conduit near Norrie, CO

Table D-14.—WY2024 daily data for Chapman Gulch Feeder Conduit near Norrie, CO (units: cubic feet per second, Source: Bureau of Reclamation)

Day	Apr.	May	June	July	Aug.	Sep.
1		1.3	187.4	208.6		
2		1.3	242.8	283.7		
3		1.3	250.8	189.4		
4		1.7	286.7	146.0		
5		2.8	281.4	119.3		
6		4.4	264.8	103.1		
7		1.9	270.4	91.9		
8		1.3	289.1	81.0		
9		1.3	265.6	69.7		
10		1.3	240.9	61.8		
11		1.3	275.8	50.4		
12		1.3	270.9	37.9		
13		1.3	240.8	28.7		
14		1.6	225.4	27.5		
15		4.9	214.6	25.7		
16		10.0	217.8	28.2		
17		24.4	226.1	17.7		
18		44.1	210.5	12.2		
19		62.0	199.7	8.5		
20		85.6	209.7	5.7		
21		82.0	232.6	4.8		
22		41.4	237.0			
23		35.8	203.2			
24		34.5	197.8			
25	8.1	30.3	187.8			
26	8.3	28.3	167.4			
27	2.4	42.7	171.2			
28	1.6	88.3	181.8			
29	1.3	128.9	152.4			
30	1.3	171.5	141.9			
31		183.4				
Total	**22.8**	**1,121.9**	**6,743.9**	**1,601.6**		
Average	**3.8**	**36.2**	**224.8**	**76.3**		
Max	**8.3**	**183.4**	**289.1**	**283.7**		

WY2024 Total: 18,823.9 acre-feet
Maximum Instantaneous Peak: 315 ft^3/s on 02-JUN-24
Blank: Recorder not operated. No water diverted

Fryingpan River Feeder Conduit near Norrie, CO

Table D-15.—WY2024 daily data for Fryingpan River Feeder Conduit near Norrie, CO (units: cubic feet per second, Source: Bureau of Reclamation)

Day	Apr.	May	Jun	Jul	Aug.	Sep.
1		0.0	106.0	162.8		
2		0.0	126.1	194.4		
3		0.0	131.4	140.7		
4		1.4	163.5	114.7		
5		4.4	187.4	98.7		
6		4.8	209.6	87.1		
7		0.7	229.7	79.7		
8		0.0	242.2	72.6		
9		0.0	236.9	63.8		
10		0.0	231.5	55.4		
11		0.0	235.1	46.0		
12		0.0	241.4	34.2		
13		0.0	243.7	20.0		
14		0.6	232.4	16.3		
15		3.1	211.1	14.3		
16		7.2	213.8	14.5		
17		15.8	219.5	7.8		
18		25.4	200.0	4.8		
19		37.4	180.1	2.6		
20		54.6	190.7	0.9		
21		49.5	234.4			
22		30.9	234.8			
23		26.4	194.6			
24		25.8	188.6			
25	4.9	25.4	181.0			
26	3.3	23.4	149.9			
27	0.7	27.9	132.3			
28	0.0	48.8	138.9			
29	0.0	71.9	119.4			
30	0.0	93.3	127.6			
31		101.9				
Total	**8.8**	**680.6**	**5,733.7**	**1,231.4**		
Average	**1.5**	**22**	**191.1**	**61.6**		
Max	**4.9**	**101.9**	**243.7**	**194.4**		

WY2024 Total: 15,182.7 acre-feet
Maximum Instantaneous Peak: 296.5 ft^3/s on 22-JUN-24
Blank: Recorder not operated. No water diverted

Appendix E

Fryingpan-Arkansas Project Operating Principles

87th Congress, 1st Session---------- House Document No. 130

OPERATING PRINCIPLES

FRYINGPAN-ARKANSAS PROJECT

ADOPTED BY THE STATE OF COLORADO

APRIL 30, 1959

(As amended December 30, 1959,

and December 9, 1960)

MARCH 15, 1961 --- Ordered to be printed

U. S. GOVERNMENT PRINTING OFFICE

WASHINGTON: 1961

H. RES. 91

In the House of Representatives, U. S.,

March 15, 1961.

Resolved, That there be printed as a House document the publication entitled "Operating Principles, Fryingpan-Arkansas Project, Adopted by the State of Colorado, April 30, 1959 (as amended December 30, 1959, and December 9, 1960)", and that there be printed for the use of the Committee on Interior and Insular Affairs one thousand additional copies.

Attest:

Ralph R. Roberts, Clerk.

OPERATING PRINCIPLES, FRYINGPAN-ARKANSAS PROJECT

ADOPTED BY THE STATE OF COLORADO, APRIL 30, 1959

(As Amended December 30, 1959, and December 9, 1960)

The construction and operation of the project involve the diversion of water from the headwaters of the Fryingpan River and other tributaries of the Roaring Fork River to the Arkansas River Basin. The project contemplates—

(a) The maximum conservation and use of water;

(b) The protection of western Colorado water uses, both existing and potential, in accordance with the declared policy of the State of Colorado; and

(c) The preservation of recreational values.

In order to accomplish such purposes, the project shall be operated by the United States in compliance with the Federal reclamation laws, the laws of the State of Colorado relating to the appropriation, use, or distribution of water, and the following operating principles:

1. As used herein:

(a) "Project" means that certain enterprise planned and designed by the Bureau of Reclamation, Department of the Interior, for the transmountain diversion of water from the headwaters of the Fryingpan River and other tributaries of the Roaring

Fork River to the basin of the Arkansas River, together with all of its appurtenant works and facilities in both eastern and western Colorado.

(b) "Eastern Colorado" means that portion of the State of Colorado lying within the natural drainage basin of the Arkansas River.

(c) "Western Colorado" means that portion of the State of Colorado lying within the natural drainage basin of the Colorado River and served by diversions made from the Colorado River, or its tributaries, above its confluence with the Gunnison River.

(d) "Southeastern Colorado Water Conservancy District" means that entity created to contract for payment to the United States of an appropriate portion of project cost allocated to certain water uses in eastern Colorado.

(e) "Colorado River Water Conservation District" means that entity created by Colorado Revised Statutes 1953, 149-8, as amended.

(f) "Southwestern Water Conservation District" means that entity created by Colorado Revised Statutes 1953, 149-9, as amended.

(g) "Ruedi Reservoir" means the reservoir presently planned for construction on the Fryingpan River above the town of Basalt as part of the project.

(h) "Ashcroft Reservoir" means not only the reservoir contemplated for construction on Castle Creek, a tributary of the Roaring Fork River, but also, unless the context requires otherwise, any other reservoir that may be constructed in the Roaring Fork basin above the town of Aspen in lieu of that reservoir.

(i) "cfs" means cubic feet of water per second of time.

2. The Ruedi Reservoir shall be constructed and maintained on the Fryingpan River above the town of Basalt with an active capacity of not less than 100,000 acre-feet. In addition thereto and in order to offset adverse streamflow conditions on the Roaring Fork River above the town of Aspen which might occur as a result of the project enlargement of the Twin Lakes Reservoir, the Ashcroft Reservoir on Castle Creek, or some reservoir in lieu thereof, shall be constructed on the Roaring Fork drainage above Aspen to a capacity of approximately 5,000 acre-feet: Providing, however, that the Ashcroft Reservoir shall be constructed only if the Secretary of the Interior after appropriate study shall determine that its benefits exceed the costs: And providing further, that no part of the construction, operation, or maintenance of said Ashcroft Reservoir shall be chargeable to the Fryingpan-Arkansas project. All of such stored water shall be released under the conditions and limitations hereinafter set forth.

3. The receipts from the sale of water from Ruedi Reservoir, as permitted in paragraph 6(b) hereof, shall be applied solely to the operation and maintenance costs and to those reimbursable construction costs of said reservoir which exceed $7,600,000. The cost of

perpetual operation and maintenance of the Ruedi Reservoir shall be borne by users of project water and users of water stored in Ruedi Reservoir in such proportion as may be determined by the Secretary of the Interior.

4. The inclusion of the Ruedi Reservoir in the project shall not preclude the construction of any other replacement or regulatory reservoirs on the Colorado River or its tributaries above Cameo gaging station.The Ruedi Reservoir shall be completed and in operation before any water is diverted to eastern Colorado by means of the project.

5. (a) The replacement capacity of Ruedi Reservoir, and any reservoir constructed in addition thereto, is that portion of the total reservoir capacity required to permit project diversions at times when such diversions could not otherwise be made because of simultaneous demands of senior diversions in western Colorado existing at the time of the adoption of these operating principles, and shall be so operated to accomplish this purpose. Water stored in such capacity shall be released by the United States, upon the request of the Colorado State engineer, to the extent that water would have been available to said decreed rights except for stream depletion resulting from diversions by this project to the Arkansas Valley.

(b) The regulatory capacity of Ruedi Reservoir, and any reservoir constructed in addition thereto, is that portion of the total reservoir capacity not needed for replacement purposes. Water stored in such category may be sold or leased by the United States to water users in Colorado for any purpose recognized by the laws of the United States: Provided, That the sale of water for use outside the natural basin of the Colorado River can only be made with the consent of the Colorado River Water Conservation District. Charges for the use of such water shall be established by the Secretary of the Interior by appropriate contract in accordance with the payment ability of such water users.

6. The primary purpose of Ruedi Reservoir, and any reservoir constructed in addition thereto, is to furnish, to the extent of its capacity, in like manner as if the project were constructed by a water conservancy district organized pursuant to the laws of the State of Colorado, the water required for the protection of western Colorado water users by the provisions of Colorado Revised Statutes 1953, 149-6-13, reading as follows:

However, any works or facilities planned and designed for the exportation of water from the natural basin of the Colorado River and its tributaries in Colorado, by any district created under this article, shall be subject to the provisions of the Colorado River Compact and the Boulder Canyon Project Act. Any such works or facilities shall be designed, constructed and operated in such a manner that the present appropriations of water, and in addition thereto prospective uses of water for irrigation and other beneficial consumptive use purposes, including consumptive uses for domestic, mining, and industrial purposes, within the natural basin of the Colorado River in the State of Colorado, from which water is exported, will not be impaired nor increased in cost at the expense of the water users within the natural basin. The facilities and other means for the accomplishment of said purpose shall be incorporated in, and made a part of any project plans for the exportation of water from said natural basin in Colorado.

7. Project diversions from Lime Creek shall be made only in the months of May and June of each year, unless the Colorado River Water Conservation District shall, by written communication, advise the Colorado State engineer that additional diversions can be made.

8. The respective decrees which may be or have been awarded to the parties hereto as a part of the Fryingpan-Arkansas project and Basalt project shall be administered by the proper officials of the State of Colorado, in accordance with the applicable laws of the State of Colorado, and with the following principles and procedures, to wit:

(1) That the demand on the waters available under such decrees shall be allocated in the following sequence:

(a) For diversion to the Arkansas Valley through the collection system and the facilities of the Fryingpan-Arkansas project in an amount not exceeding an aggregate of 120,000 acre-feet of water in any year, but not to exceed a total aggregate of 2,352,800 acre-feet in any period of 34 consecutive years reckoned in continuing progressive series starting with the first full year of diversions, both limitations herein being exclusive of Roaring Fork exchanges as provided in (c) below, and exclusive of diversions for the Busk-Ivanhoe decree; and with the further and absolute limitation that in order to protect existing and future beneficial uses of water in Western Colorado, including recreational and fishing values, the State engineer shall so regulate the transmountain diversions above referred to, to the end that no diversions shall be made which will reduce the remaining aggregate stream flows to less than either of the following minimum standards:

(i) The Fryingpan collection system at the points of diversion collectively, exclusive of Lime Creek: 15 cfs October 1 through March 31; 30 cfs April 1 through September 30.

(ii) Near Norrie (immediately below the junction of North Fork and Fryingpan River): 30 cfs October 1 through March 31; 100 cfs April 1 through April 30; 150 cfs May 1 through May 31; 200 cfs June 1 through June 30; 100 cfs July 1 through July 31; 75 cfs August 1 through August 31; 65 cfs September 1 through September 30.

In maintaining the above minimum standards, the project diversions shall be regulated, so far as is practicable, in such a manner that the North Fork of the Fryingpan River, the Fryingpan River, and each of the tributaries of those streams, shall contribute to the residual stream flows required by those minimum standards quantities of water in proportion to their natural contributions.

(b) For storage in Ruedi Reservoir to the extent of its actual capacity, which is to be not less than 100,000 acre-feet.

(c) For 3,000 acre-feet annually, to the extent that it is available in excess of (a) and (b) above, or such part thereof as may be required, to be delivered to the Twin Lakes Reservoir and Canal Company in exchange for equivalent releases from the headwaters of the Roaring Fork River which would

otherwise be diverted through such Twin Lakes Reservoir and Canal Company collection and diversion system.

(d) For any other beneficial use in western Colorado in accordance with court decree, but not herein contemplated.

(2) The effectuation of the above principles requires concurrent Fryingpan-Arkansas project diversion and Ruedi Reservoir storage to be accomplished in the manner following: The State engineer annually shall collect pertinent data, including information pertaining to snowpack and all other available evidence, and shall thereafter so divide and apportion the surface runoff as to achieve, as nearly as possible, the foregoing division of water and the maximum of concurrent diversions and storage. The diversions herein contemplated shall be on the basis of a water year hereby defined as that interim of October 1 through the following September 30.

10. For the protection of recreational values, including fishing, on the Fryingpan River below Ruedi Reservoir, releases of water from said reservoir, not to exceed the stream inflow, shall be made so that the streamflow immediately below the junction of the Fryingpan River and Rocky Fork shall not be reduced below 39 cfs from November 1 to April 30, and 110 cfs from May 1 to October 30, or as actual experience or court decree hereafter dictate.

11. An appropriate written contract may be made whereby Twin Lakes Reservoir and Canal Company shall refrain from diverting water whenever the natural flow of the Roaring Fork River and its tributaries shall be only sufficient to maintain a flow equal to or less than that required to maintain the recommended average flows in the Roaring Fork River immediately above its confluence with Difficult Creek in a quantity proportionate to the respective natural flow of the Roaring Fork River. The recommended average flows above mentioned are flows in quantities equal to those recommended as a minimum immediately above its confluence with Difficult Creek according to the following schedule submitted by the United States Fish and Wildlife Service and the Colorado Game and Fish Commission:

Month	Average Second-feet	Acre-feet (thousands)	Month	Average Second-feet	Acre-feet (thousands)
October	44	2.7	May	100	6.2
November	35	2.1	June	120	7.1
December	29	1.8	July	100	6.2
January	26	1.6	August	63	3.9
February	25	1.4	September	44	2.6

March	24	1.5		
April	64	3.8	Total	40.9

In maintaining the above averages, at no time shall the flow be reduced below 15 cfs during the months of August to April, inclusive, or below 60 cfs during the months of May to July, inclusive, providing the natural flow during said period is not less than these amounts. The obligation to supply the minimum streamflow as set forth in the above table on the Roaring Fork River shall, to the extent of 3,000 acre-feet annually, be a project obligation to be supplied from any waters diverted from the south tributaries of Hunter Creek, Lime Creek, Last Chance Creek, or any of them.

The Twin Lakes Reservoir and Canal Company shall not be required to refrain from diverting water under its existing decrees from the Roaring Fork River except to the extent that a like quantity of replacement water is furnished to said company without charge therefore through and by means of project diversions and storage.

If by reason of storage capacity in the Ruedi Reservoir, or any reservoir constructed in addition thereto, the Twin Lakes Reservoir and Canal Company derives additional water or other benefits or advantages it would not have realized had this project not been constructed, then nothing herein contained shall prevent the project from making appropriate charges for such water or other benefits or advantages. All revenues derived from the use of water stored in Ashcroft Reservoir shall be used to assist in the repayment of the construction, operation, and maintenance costs of that reservoir, or any reservoir constructed in lieu thereof, as may be determined by the Secretary of the Interior.

12. All lands acquired and held for project construction and operation and water surfaces of project reservoirs will be open to the public for recreational purposes, excepting those areas reserved by the operating agency.

13. The project will be operated in such a manner that those in eastern Colorado using project water imported from the Colorado River Basin for domestic purposes shall have preference over those claiming or using water for any other purpose.

14. The project is to be operated in such a manner as to secure the greatest benefit from the use and reuse of imported project waters within project boundaries in the State of Colorado

15. Any and all benefits and rights of western Colorado water users in and to water stored in Green Mountain Reservoir, as described and defined in Senate Document 80, 75th Congress, 1st session, shall not be impaired or diminished by this project.

16. The project, its operation, maintenance, and use shall be subject to the provisions of the Upper Colorado River Basin Compact of October 11, 1948 (Public Law 37, 81st Congress, 1st session), and the Colorado River Compact of November 24, 1922 (House Document 605, 67th Congress, 4th session).

17. The Colorado River Water Conservation District of the State of Colorado shall acquire title to storage of water in Ruedi Reservoir and any reservoir constructed in addition thereto, by appropriate proceedings in the courts of the State of Colorado. The Southeastern Colorado Water Conservancy District of the State of Colorado shall likewise acquire title to the water required by the project for diversion to the Arkansas Valley. The Secretary of the Interior

shall at any time after the authorization of the project have the option to obtain or require the transfer to the United States of any and all rights initiated or acquired by appropriation as herein set forth: Provided, however, That the rights so taken shall be subject to a beneficial use of such water as may be provided in the repayment contract or contracts, and subject to all the operating principles herein set forth.

18. No transmountain diversion of water shall ever be made through the collection and diversion system of the Fryingpan-Arkansas Project in excess of the quantitative limitations and conditions established by this document: Provided, however, That when under the laws of the State of Colorado, there may be additional water available for such collection and diversion which is not at the time of diversion required for beneficial use in western Colorado or for filling interstate water compact agreements, then such water may be collected and diverted for beneficial use in the Arkansas Valley: Provided further, That such additional diversion shall only be made with the mutual consent of each of the following agencies of the State of Colorado, to wit: the Colorado Water Conservation Board, the Southwestern Water Conservation District, the Colorado River Water Conservation District, and the Southeastern Colorado Water Conservancy District.

19. To assure project operation in conformity with the operating principle heretofore stated, to provide a means for the collection and interchange of information, and to provide a method for the continued study of project operations to the end that, if the stated operating principles may be improved upon, recommendations for changes may be made to the contracting parties, a commission shall be created in an appropriate manner to be composed of one representative of the Southeastern Colorado Water Conservancy District, one representative of the Colorado River Water Conservation District, two representatives of the United States, and one representative of the State of Colorado appointed by the Colorado Water Conservation Board after consultation with the Colorado Game and Fish Commission. The powers of such commission shall be limited to the collection of data, the making of findings of fact, and the suggestion of changes in operating principles.

These operating principles shall be deemed to have amended and take the place of those operating principles signed and executed on April 30, 1959. These operating principles shall be and do constitute a contract between the signatory parties, and shall inure to the benefit of and shall be and remain binding upon said parties, their respective successors and assigns.

Executed as amended at Denver, Colorado, this 9th day of December 1960.

ve McNichols, Chairman;

Governor, State of Colorado

Attest:

Felix L. Sparks,

Director and Secretary

SOUTHEASTERN COLORADO WATER CONSERVANCY DISTRICT

By J. Selby Young, President

Attest:

J. G. Shoun,

Secretary

COLORADO RIVER WATER CONSERVATION DISTRICT

By A. Allen Brown, President

Attest:

Philip P. Smith,

Secretary

SOUTHWESTERN WATER CONSERVATION DISTRICT

By Ira E. Kelly, President

Attest:

Archie B. Toner,

Secretary

COLORADO WATER CONSERVATION BOARD

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