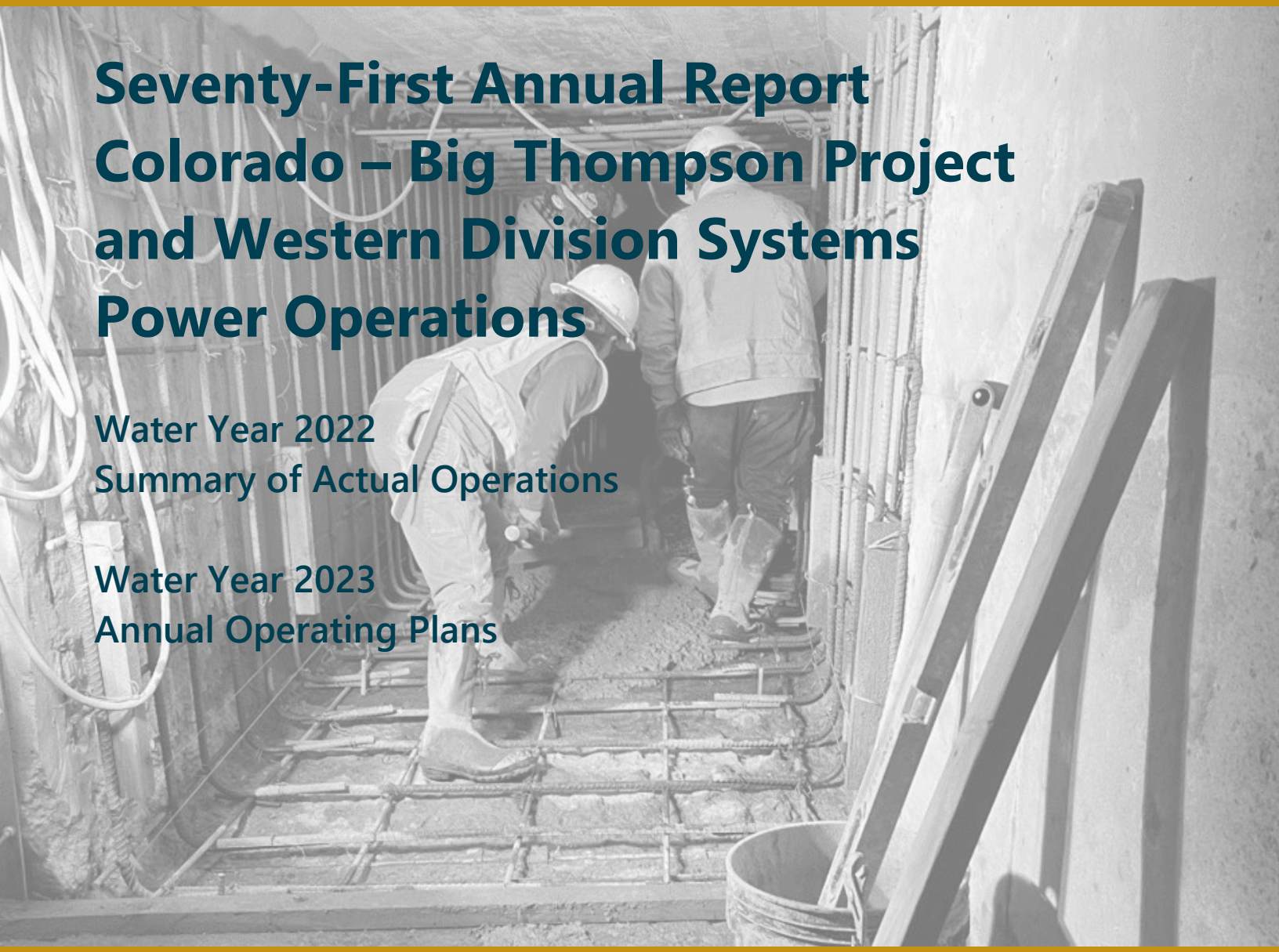
BUREAU OF RECLAMATION

Annual Operating Plans

Seventy-First Annual Report Colorado – Big Thompson Project and Western Division Systems Power Operations

Water Year 2022
Summary of Actual Operations

Water Year 2023
Annual Operating Plans



December 2022: East Portal Spillway Repair

Eastern Colorado Area Office
Missouri Basin Region

U.S. Department of the Interior

May 2023

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; and honors its trust responsibilities or special commitments to American Indians, Alaska Natives, 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 Photo: In early September 2022, Colorado – Big Thompson Project diversions through Adams Tunnel ceased for the water year to allow repairs to East Portal spillway. Photo shows slab pour Spillway wall and ceiling were subsequently poured, and Adams Tunnel diversions resumed in mid-December 2022.

Preface

The purpose of the Annual Report for the Colorado – Big Thompson Project (C-BT) is to inform interested parties of the coordinated operation of the project. The report has two main parts. The first describes the actual operation of the project during the previous water year and the plan of operation for the upcoming water year. The second presents the hydropower operations for the previously completed water year and the forecast for the next.

This report in part fulfills requirements included within decree stipulations. These include the Stipulation dated October 5, 1955, as amended October 12, 1955, and filed with the United States District Court for the District of Colorado in Civil Action Nos. 2782, 5016, and 5017 for an annual report of the Green Mountain Reservoir Operations and the Agreements in the Stipulation and Agreement of the Orchard Mesa Check Case (Colo. Water Div. 5, 91CW247) dated September 6, 1996, to produce a Historic Users Pool (HUP) Annual Operating Plan (AOP).

Executive Summary

Collection system reservoirs started Water Year 2022 (WY 2022) with slightly less than average storage and ended WY 2022 with substantially greater than average storage. East slope reservoirs, in the case of Horsetooth Reservoir, started with substantially greater than average storage and ended with mildly greater than average storage, while Carter Lake Reservoir started and ended WY 2022 with mildly greater than average storage. On the west slope, snowpack was generally less than average for the water year and runoff mirrored snowpack. On the east slope, snowpack was near average, and runoff was also near average. West slope peak runoff was less than normal in magnitude, and typical in terms of peak runoff timing. East slope runoff was normal in magnitude and typical in terms of timing. Daily air temperatures were slightly higher than average throughout the growing season and precipitation was near average by end the water year.

C-BT diversions totaled 211,628 AF through Adams Tunnel for WY 2022. Deliveries of C-BT water totaled 202,888 AF. Green Mountain Reservoir delivered a total of 84,865 AF from storage in WY 2022. Green Mountain Reservoir delivery included 24,419 AF released from Wolford Reservoir, Williams Fork Reservoir, Homestake Reservoir, Upper Blue Reservoir, and Ruedi Reservoir to fulfill substitution replacement obligations by the City of Denver and City of Colorado Springs.

The natural inflow to Lake Estes reached its WY 2022 peak flow with a daily average flow of 991 cubic feet per second (cfs) on June 12. The maximum mean daily release from Olympus Dam to the Big Thompson River was 504 cfs, also occurring on June 12.

Green Mountain Reservoir did not achieve a physical fill in WY 2022. Granby Reservoir was 9,000 AF short a fill in WY 2022. Carter Lake Reservoir was filled once in WY 2022 and Horsetooth Reservoir was 6,000 AF short a fill in WY 2022. Sufficient storage in Carter Lake and Horsetooth Reservoirs existed to satisfy all demands for WY 2022.

For the Grand Lake clarity season, the seasonal running average clarity goal qualifier of 3.8 meters Secchi depth was not met (2022 clarity season running average was 3.25 meters). The minimum goal qualifier of 2.5 meters Secchi depth was achieved. A few short excursions of surface pH exceeding the water quality indicator were noted during the first three weeks of July, after which time Shadow Mountain Reservoir surface pH exceeded the water quality indicator threshold from July 27 through September 11, 2022, generally oscillating above and below the threshold daily during the period. The Shadow Mountain Reservoir bottom dissolved oxygen threshold was not met on July 7 and part of July 8, 2022, until pumping started at Farr Pumping Plant for the clarity season on that same day.

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Acronyms and Abbreviations

’	feet/foot
”	inches
%	percent
Accum	Accumulated
AF	Acre-Feet (Foot)
AOP	Annual Operating Plan
Avg	average
C-BT	Colorado – Big Thompson Project
cfs	cubic feet per second
CHFC	Charles Hansen Feeder Canal
CROs	Coordinated Reservoir Operations
ECAO	Eastern Colorado Area Office
Fry-Ark	Fryingpan Arkansas River Project
Gwh	gigawatt-hours
HP	horsepower
HUP	Historic Users Pool (Green Mountain Reservoir)
KAF	thousand acre-feet
Kwh	kilowatt-hours
Kwh/AF	kilowatt-hours per acre-foot
LAP	Loveland Area Power
Lat	latitude
long	longitude
m	meters
mid	middle
m.s.l.	mean sea level
Northern Water	Northern Colorado Water Conservancy District
Reclamation	Bureau of Reclamation
ShOP	Shoshone Outage Protocol (Green Mountain Reservoir)
SNOTEL	Snow Telemetry
SOP	Standard Operating Procedures
SWE	Snow Water Equivalent
U.S.	United States
WAPA	Western Area Power Administration
WD System	Western Division System
WY	Water Year

General Description of the Colorado-Big Thompson Project

The Colorado-Big Thompson (C-BT) Project is one of the largest and most complex natural resource developments undertaken by the Bureau of Reclamation (Reclamation). It consists of over 100 structures integrated into a trans-mountain water diversion and delivery system that provides water and power benefits across the State of Colorado from the Nebraska to the Utah State lines. The project was authorized for construction in the 1930's and completed in the 1950's.

C-BT facilities span over approximately 100 miles within north-central Colorado. The project stores, regulates, and diverts water from the Colorado River west of the Continental Divide to provide supplemental irrigation water for 615,000 acres of land east of the Rocky Mountains. It supplements municipal and industrial water supply while providing water-oriented recreation for a growing population of more than 1 million residents in northeastern Colorado. Approximately 3,000 feet of elevation drop allows for hydroelectric generation of the electricity required for project pumping and produces enough surplus electricity for nearly 68,000 households. Additionally, the project provides water storage within the upper Colorado River Basin for agricultural, municipal, industrial, recreation, and environmental uses. Major features of the C-BT include dams, dikes, reservoirs, powerplants, pumping plants, pipelines, tunnels, transmission lines, substations, and other associated structures.

Historically, the C-BT diverts approximately 230,000 acre-feet (AF) of water, annually, (310,000 AF maximum) from the Colorado River headwaters on the western slope to the South Platte River Basin on the eastern slope, for distribution to project lands and communities. The Northern Colorado Water Conservancy District (Northern Water) apportions the water used for irrigation to more than 120 ditches and 60 reservoirs. Thirty-three communities receive municipal and industrial water from the C-BT. The Western Area Power Administration (WAPA) markets and transmits the electric power produced at the six powerplants associated with the project.

Collection System and East Slope Colorado-Big Thompson Project

Overview[1]

The C-BT is often grouped by which side of the Continental Divide a sub-system is located. Facilities within the Colorado River Basin (on the west slope) include a replacement and compensatory storage reservoir and a water collection and diversion system. East slope facilities are located within the South Platte River Basin and include a power and delivery system and a water distribution system.

Green Mountain Reservoir provides replacement water for out-of-priority collection system diversion and storage water for other beneficial uses. Green Mountain Reservoir is located on the Blue River, a tributary of the Colorado River approximately 30 miles southwest and downstream of the collection system. This reservoir allows for year-round diversion at the collection system by providing

[1] A diagram and map of the C-BT system can be found in Appendix C, C-1 and C-2.

replacement water during periods when senior downstream water users would otherwise require the collection system to bypass inflow. Green Mountain Reservoir also provides water storage for the benefit of water users within the Colorado River Basin. Green Mountain Dam includes a powerplant for hydropower generation. The Green Mountain Reservoir spillway is shown in Figure 1.

Figure 1.—A summer release through the spillway at Green Mountain Dam and Reservoir. Green Mountain Powerplant, located just below the dam, also generates power.

The Colorado River collection and diversion system captures snowmelt runoff from the high mountains and diverts water to the eastern slope. The system stores, regulates, and conveys Colorado River water through Grand Lake to a trans-mountain diversion tunnel for delivery to the east slope. This system includes three reservoirs, two pumping stations, conveyance canals and the trans-mountain diversion tunnel.

Authorization of the project included improvements and operational requirements to mitigate anticipated lower flows downstream of the collection system. The project included installation of pumping systems for existing irrigators upstream of the Blue River confluence. The project also required a release schedule downstream of the collection system to maintain the Colorado River fishery, downstream of Granby Dam.

The west slope water collection system for the project is comprised of three reservoirs (Granby, Willow Creek, and Shadow Mountain Reservoirs), one natural lake (Grand Lake) and two pumping plants (Farr and Willow Creek Pumping Plants). Granby Reservoir is located on the Colorado River and is the largest reservoir within the C-BT. Granby provides multi-year storage of Colorado River water. The Farr Pumping Plant lifts water from Granby to Shadow Mountain Reservoir. Shadow Mountain Reservoir impounds the Colorado River upstream of Granby and allows for gravity conveyance of Colorado River water through Grand Lake to the Adams Tunnel. The largest natural lake in Colorado, Grand Lake, is hydraulically connected to Shadow Mountain Reservoir. The two are

operated as a single regulatory reservoir. Willow Creek Reservoir is used to regulate and divert water from Willow Creek, a tributary of the Colorado River. Willow Creek Pumping Plant lifts water diverted from Willow Creek Reservoir for storage in Granby Reservoir.

Completed in 1950, Granby Dam is located on the upper Colorado River. The dam's river outlet is comprised of a 30-inch jet valve and a 12-inch gate; and has a combined capacity of 430 cubic feet per second (cfs). Northern Water installed two 600 kilowatt turbines under a Lease of Power Privilege contract in 2016. The Granby Hydropower Plant can divert a maximum of 70 cubic feet per second from the outlet works. The dam spillway is controlled by two radial gates with a combined total release capacity of 11,500 cfs. The reservoir stores the flow of the Colorado River and water pumped from Willow Creek Reservoir. The reservoir has a total storage capacity of 539,800 AF.

Farr Pumping Plant lifts water from Granby Reservoir to Granby Pump Canal for conveyance to Shadow Mountain Reservoir. The Farr Pump Plant has three 6,000 horsepower units with a combined installed capacity of 600 cfs when lifting the maximum head of 186 feet. The lifting head depends upon the storage level in Granby Reservoir and ranges between 88 feet to 186 feet. The combined lifting capacity for the 88 feet head differential is 1,200 cfs. The Granby Pump Canal conveys pumped water 1.8 miles to Shadow Mountain Reservoir and has a maximum capacity of 1,100 cfs.

Completed in 1953, Willow Creek Dam is located on Willow Creek, a tributary to the Colorado River below Granby Reservoir. Willow Creek Dam stores and diverts water to Granby Reservoir. The dam has a river outlet with a capacity of 2,080 cfs, a diversion outlet capacity of 400 cfs, and an uncontrolled spillway located on the left abutment with a maximum flow capacity of 3,200 cfs. The reservoir has a total storage capacity of 10,600 AF. The Willow Creek Pumping Plant has two 5,000 horsepower units that lift water 175 feet with a combined capacity of 400 cfs.

Completed in 1946, Shadow Mountain Dam impounds the Colorado River upstream of Granby Reservoir. The dam has an outlet with 50 cfs capacity and a radial gate-controlled spillway with a capacity of 10,000 cfs. The reservoir provides regulatory storage and the hydraulic head necessary for gravity conveyance to the Adams Tunnel. The reservoir has a total storage capacity of 18,400 AF including 1 foot of regulatory storage in Grand Lake. The dam maintains the reservoir water surface elevation well within the historic water surface elevation of Grand Lake as required under the project authorization.

Completed in 1947, the Adams Tunnel was constructed to divert water from the Colorado River watershed to the Big Thompson River watershed. The 13.1-mile, 9.75-foot diameter tunnel is concrete lined with a capacity of 550 cfs. Tunnel flow is control by a radial gate inlet at a diversion structure called Adams Tunnel West Portal on the east end of Grand Lake. The tunnel passes under the Continental Divide and Rocky Mountain National Park and daylights at East Portal Reservoir approximately 4.5 miles southwest of the town of Estes Park.

The east slope power and delivery system includes four regulatory reservoirs, five powerplants, one pumping station, multiple conveyance, diversions structures, and two terminal storage reservoirs[2]. The system is typically divided into three components including an Upper Power Arm above Olympus Dam, a Lower Power Arm above Flatiron Dam, and the terminal storage reservoirs. Water delivery

[2] Significant delivery occurs from these terminal storage reservoirs through various C-BT Project transferred works. These transferred works are operated and cared for by Northern Water and are not a focus of this operational report.

may occur at multiple delivery points between Adams Tunnel and the two terminal storage reservoirs. Primary delivery to the terminal reservoirs occurs through the power arms.

The Upper Power Arm begins at the Adams Tunnel East Portal and ends at Olympus Dam. East Portal Dam is constructed on the Wind River. It directs a portion of the natural runoff from Wind River and C-BT water exiting Adams Tunnel into a siphon under Aspen Creek and a tunnel under Rams Horn Mountain. Continuing from Rams Horn Tunnel, a penstock conducts pressurized flow to Marys Lake Powerplant and Marys Lake.

Marys Lake Powerplant and Marys Lake are the first powerplant and regulatory reservoir on the Upper Power Arm. The powerplant has a single generator with a nameplate capacity of 8.1 megawatts at 210 feet of head. The powerplant is a "run-of-the-river" type generator that follows flow diverted at East Portal Dam between 200 cfs and 550 cfs. All flow bypasses the powerplant over a flip-bucket spillway when generation is not available or when flows are below generation capacity of Marys Lake Powerplant. Marys Lake is a natural lake that was enhanced by construction of dikes. Marys Lake has a storage of 927 AF and regulatory capacity of 593 AF. The outlet has a capacity of 1,300 cfs and no spillway. The reservoir serves as the afterbay for Marys Lake Powerplant and the forebay for Estes Powerplant. Prospect Mountain Conduit and Tunnel convey water from Marys Lake to Estes Powerplant. Marys Lake penstock is shown in Figure 2.

Figure 2.—Marys Lake Penstock (left), Powerplant (center) and Marys Lake (background).

Estes Powerplant and Lake Estes are the second powerplant and regulatory reservoir on the Upper Power Arm. The powerplant has three generators with a combined nameplate capacity of 45 megawatts at 572 feet of head. The powerplant is a "peaking plant" which allows load demand following by balancing storage contents between Marys Lake and Lake Estes. Olympus Dam impounds the Big Thompson River east of the town of Estes Park to form Lake Estes. Olympus Dam

includes a gated river outlet, a gated diversion outlet, and radial-gated spillway. Lake Estes has a total capacity of 3,100 AF and a regulatory capacity of 740 AF. The reservoir regulates discharge from Estes Powerplant and natural runoff from the Big Thompson River and Fish Creek. Olympus Dam diverts up to 550 cfs to the Lower Power Arm via Olympus Tunnel and controls release to the Big Thompson River. Olympus Dam is shown in Figure 3.

Figure 3.—Olympus Dam and Lake Estes, along with the Big Thompson River gage below Olympus Dam. Parts of the town of Estes Park and Rocky Mountain National Park can be seen in the background.

The Lower Power Arm begins at Olympus Dam and ends at Flatiron Reservoir. Water from Lake Estes and the Big Thompson River is conveyed by Olympus Siphon and Tunnel to Pole Hill Tunnel and Canal and on to the Pole Hill Powerplant forebay.

The Pole Hill Powerplant is the first powerplant in the Lower Power Arm. The powerplant is a single unit with a net head of 815 feet. The unit nameplate generation is 33.25 megawatts. The powerplant discharges into a small afterbay that diverts water into Rattlesnake Siphon and Tunnel in to Pinewood Reservoir. The powerplant forebay has no storage, and generation follows release from Olympus Dam to Olympus Tunnel. When required, flow from the Pole Hill forebay can bypass the powerplant by falling into Little Hell Creek Canyon where it flows until it is re-diverted to the Pole Hill afterbay.

Rattlesnake Tunnel conveys water from the Pole Hill afterbay to Pinewood Reservoir. Rattlesnake Dam impounds water from Rattlesnake Tunnel in to Pinewood Reservoir. The reservoir has a storage capacity of 2,180 AF with regulatory capacity of 1,422 AF and provides regulatory storage for Flatiron Powerplant. Rattlesnake Dam has an outlet for releasing native flow to Cottonwood Creek and an uncontrolled spillway. The Bald Mountain Pressure Tunnel inlet supplies water from Pinewood Reservoir to the Flatiron Penstocks and Flatiron Powerplant.

Flatiron Powerplant is the second powerplant on the Lower Power Arm. The powerplant includes three units. Two units have nameplates of 31.5 megawatts with a maximum head of 1,118 feet. They

receive water from Pinewood Reservoir. The two turbines discharge into Flatiron Reservoir. Flatiron Powerplant Unit 1 and 2 are operated as load-following generators. Unit 3 is a pump-generator connected to Carter Lake Reservoir and has a 13,000 horsepower motor with a maximum lift of 297 feet. When generating, Unit 3 is rated at 8.5 megawatts.

Flatiron Reservoir is a regulatory reservoir that controls flow to the Charles Hansen Feeder Canal (CHFC) and maintains head as an afterbay for Flatiron Powerplant generation and a forebay for Unit 3 pumping to Carter Lake Reservoir. Flatiron Dam impounds Chimney Hollow and the ephemeral tributary of Dry Creek. The reservoir stores 760 AF of water with 399 AF of regulatory storage. The dam has an uncontrolled spillway with 23,600 cfs capacity and an outlet to the CHFC with a design capacity of 930 cfs.

The terminal storage and delivery component of the C-BT conveys water for user delivery and provides water storage for high demand periods. The two terminal reservoirs that are not transferred to Northern Water are Carter Lake and Horsetooth Reservoirs. Under typical operation they receive water from Flatiron Reservoir. Carter Lake Reservoir supplies water to the project service area south of the Big Thompson River. Horsetooth Reservoir supplies water to the Cache La Poudre River project service area. The CHFC conveys water to Horsetooth Reservoir and delivers water to the Big Thompson River at the mouth of the Big Thompson Canyon and to water users along the canal.

The Dille Diversion Dam and Tunnel, located one mile upstream from the Big Thompson Canyon mouth, provides a redundant feature for rediverting project water from the Big Thompson River when the Lower Power Arm is unavailable. Additionally, non-project water from the Big Thompson River can be diverted into the tunnel. Tunnel water is conveyed to the CHFC and used for power generation at Big Thompson Powerplant or conveyed by the CHFC toward Horsetooth Reservoir.

Carter Lake Reservoir is impounded by three dams on ephemeral streams. Carter Lake Reservoir has a storage capacity of 112,200 AF with an active capacity of 108,900 AF. Carter Lake Reservoir receives water either from Flatiron Powerplant Unit 3 or a bypass gravity conduit. Deliveries are made through outlet works located in Dam Number 1 to the Saint Vrain Supply Canal or to Flatiron Reservoir through the Flatiron Powerplant.

The CHFC transports water from Flatiron Reservoir to the Big Thompson River and Horsetooth Reservoir. CHFC has a nominal capacity of 930 cfs from Flatiron Reservoir to the Big Thompson River (930 section). The CHFC can make water deliveries at the Big Thompson River and several turnouts along the canal. Deliveries from the canal to the river are made through a controlled wasteway or the Big Thompson Powerplant. The CHFC has a nominal capacity of 550 cfs from the Big Thompson River to Horsetooth Reservoir (550 section).

Big Thompson Powerplant is the last Federal powerplant in the C-BT system. The powerplant is used to make deliveries from the CHFC or to return non-project Big Thompson River water, obligated to users downstream of the Big Thompson Powerplant and used for non-consumptive power generation known as "skim" power operations, to the river. The powerplant's nameplate is 4.5 megawatts with an operational head of 183 feet. The powerplant has a maximum flow rate of about 400 cfs. The CHFC wasteway makes river deliveries when demand exceeds 400 cfs or when the powerplant is unavailable. It has a maximum flow rate of 600 cfs and is also used to deliver water to users between the wasteway outfall and powerplant tailrace. Big Thompson Powerplant is typically operated only during the snowmelt runoff and delivery season.

Horsetooth Reservoir is located west of Fort Collins, Colorado. The reservoir includes four dams and a dike with a storage capacity of 151,800 AF and an active capacity of 143,500 AF. Outlet works are located in two of the dams, Horsetooth Dam and Soldier Canyon Dam. Dixon and Spring Canyon Dams and Satanka Dike do not have outlet works. The reservoir has no spillway. The Soldier Canyon Dam outlet supplies water to the city of Fort Collins, three rural water districts, Colorado State University, and the Dixon Feeder Canal for irrigation. Horsetooth Dam outlet discharges to the Charles Hansen Supply Canal for water delivery to the Cache la Poudre River and water users north of the Cache la Poudre River.

Additional water delivery and power transmission features were constructed under the project authorization. These features include supply canals, diversion structures, transmission lines and substations. All water delivery features below Horsetooth Reservoir and Carter Lake Reservoir were transferred to Northern Water upon repayment. Northern Water maintains and operates these features. Power transmission features are maintained and operated by WAPA. These features are not further described in this document.

Planning and Control

The C-BT was authorized, constructed, and is operated to provide supplemental municipal and industrial water supply, irrigation water supply, and hydroelectric power production.

The integrated operation of the C-BT is planned and coordinated by the Water Resources Group at Reclamation's Eastern Colorado Area Office (ECAO) in Loveland, Colorado. Staff collects and analyzes information daily and makes the decisions necessary for successful operation of the C-BT. This continuous water management function involves coordination between the Colorado Division of Water Resources, Northern Water, WAPA, Reclamation's Upper Colorado and Missouri Basin Regions, other Reclamation groups, and many other local, State, and Federal agencies.

Experience has proven that proper use of the available water resource in a multi-purpose project, such as the C-BT, can be achieved only through careful budgeting and management of the anticipated water supply. One product of this budgeting and management process is an Annual Operating Plan (AOP).

The C-BT water operations are routinely planned on a 12-month basis. The first AOP of the new Water Year (WY) is prepared in early October and covers the October 1 to September 30 period. AOPs are prepared for reasonable maximum, most probable and reasonable minimum runoff conditions of water supply and associated requirements. The C-BT is operated to optimize the most probable water supply, without jeopardizing the operational position should either the reasonable maximum or the reasonable minimum water supply conditions occur. The plan is reviewed and revised monthly, or as needed during the year as new information becomes available or conditions change. Computer programs and models are used by ECAO to develop the AOPs and water supply forecasts. Tables B-5, B-6, and B-7 include the first AOP for the upcoming WY for the most probable, minimum

reasonable and maximum reasonable plans, respectively. Table B-8 also provides a summary view of features of interest within the project for the planned C-BT operations in the upcoming WY.

Irrigation Requirements

The amount of C-BT water made available each water year for irrigation is determined by Northern Water. This determination is subject to change by agreement throughout the remainder of the irrigation season. Adaptations may occur because of substantial changes in the prevailing climatic demand or operational conditions. Irrigation requirements for the three runoff conditions: 1) most probable, 2) reasonable maximum, and 3) reasonable minimum, are estimated by analyzing actual use under a variety of actual runoff conditions.

Estimated supplemental irrigation deliveries from Green Mountain Reservoir to irrigators in the Colorado River Basin are included in the release from Green Mountain Reservoir, according to the "Operating Criteria for Green Mountain Reservoir".

Figure 4.—North Inlet near Grand Lake. The stream gaging house is shown on the left side of photo.

East Slope Diversion Operations

Olympus Dam, East Portal Dam and the Dille Diversion Dam can divert Big Thompson River watershed flows for beneficial use. These operations include carriage contracts for decreed water, diversion and storage of decreed east slope project water and non-consumptive diversion for power generation. Carriage contracts allow for the project to divert and deliver decreed water for water users

when unused capacity within the system is available. The C-BT will divert and store Big Thompson water rights when those rights are in priority as long as doing so does not adversely impact attainment of the project's objectives. The project also diverts Big Thompson River watershed flow that is obligated downstream of the Big Thompson Powerplant for non-consumptive power generation. This diversion operation is referred to as a "skim" operation. Big Thompson River water availability for diversion depends on the flow in the Big Thompson River and its tributaries above Lake Estes, C-BT water diverted through the Adams Tunnel, and its power arm capacity. Skim operations and determination of unused system capacity is managed according to the AOP and as prescribed by the ECAO Water Resources Group staff.

Flow Requirements Below Project Facilities

Many of the C-BT dams include downstream flow recommendations or requirements. Release of water from project dams for maintaining downstream river flow was one of the primary purposes included within the project authorization and a stipulation of the project's water rights. This obligation for instream flow requirements preceded recognition of instream flow as a beneficial use within the State of Colorado. Granby Dam, Green Mountain Dam, Willow Creek Dam, Shadow Mountain Dam, East Portal Dam and Olympus Dam operations include some guidance or actual obligations for meeting stream flow targets.

The Secretary of the Department of the Interior (Interior) issued a release schedule for Granby and Willow Creek Dams to define monthly flows for the time of the year, location, and hydrology. This schedule, titled "Principles to Govern the Release of Water at Granby Dam to Provide Fishery Flows Immediately Downstream in the Colorado River," was signed on January 19, 1961, by the Secretary of the Interior as directed by the project authorization. During the irrigation season, a Colorado River target flow is maintained downstream of senior irrigation diversions below Granby Dam. During the remainder of the year, the target flow is maintained immediately below Granby Dam. Scheduled flows for the Colorado River range between 20 cfs and 75 cfs. Willow Creek Dam only releases water for this purpose during the non-irrigation season, between October and April. Willow Creek Dam release is limited to the lesser of 7 cfs or reservoir inflow. The schedule also allows for flow adjustments based on revised forecasts and consideration of actual flows during May through July. A copy of the document is included in the Standard Operating Procedures (SOP) for Granby Dams and Reservoir, (see Appendix A, Exhibit 4).

In accordance with the SOP for Shadow Mountain Reservoir, Chapter 4 Section D, minimum releases from Shadow Mountain Reservoir are to be whichever is less between inflow and the following seasonal flows: September through October – 35 cfs; November through December -- 45 cfs; January through May – 20 cfs; June through July – 50 cfs; and August – 40 cfs. The purpose of these flows is to maintain the fishery within the Colorado River above Granby Reservoir.

The Green Mountain Reservoir minimum release is determined by senior adjudicated water rights downstream from the reservoir. Inflow to Green Mountain Reservoir is released, as required, to meet these downstream rights. The State of Colorado has established instream flow rights for the Blue River downstream of Green Mountain Dam including a 60 cfs flow from May 1 through July 15 and an 85 cfs flow from July 16 through April 30. Instream flow rights are junior to the project. The State of

Colorado Engineer has determined that Green Mountain Reservoir must bypass 60 cfs to meet downstream senior irrigation water rights during the irrigation season from May 1 through October 31.

The United States (U.S.) Fish and Wildlife Service and the State of Colorado Department of Natural Resources, Parks and Wildlife Division have recommended a minimum release schedule for Lake Estes, shown in Table 1 below. Although no official decision record (i.e., contract, memorandum of understanding, intergovernmental agreement) is available, Reclamation has cooperatively adopted the recommendations when inflow to Lake Estes meets or exceeds these values. Releases in excess of inflows are not required. When the minimum release objective conflicts with service of carriage contracts, recent practice has prioritized meeting the minimum release flows over diverting water into Olympus Tunnel in service of the contracts. Likewise, diversion of flows from the Big Thompson River at Olympus Dam for power production (skim operation) is of lower priority than meeting the recommended minimum flows.

The State of Colorado decreed a direct flow water right for power generation at Olympus Dam with a water rights priority date of December 29, 2016. A minimum instream flow decreed to the State of Colorado is senior to this direct flow water right and require Olympus Dam to bypass the lesser of reservoir inflow or 40 cfs between May 1 and October 31 and 15 cfs between November 1 and April 30.

Table 1.—Recommended minimum release schedule for Lake Estes

Period	Minimum Releases (cfs)
November 1 - April 15	25
April 16 - April 30	50
May 1 - May 15	100
May 16 - August 15	125
August 16 - August 31	100
September 1 - September 15	75
September 16 - October 31	50

Minimum release schedule for Lake Estes is shown in Table 1 and is recommended by the Fish and Wildlife Service and the Colorado Department of Natural Resources, Parks, and Wildlife Division.

Annual Operating Plan

Beginning each WY, the C-BT Most Probable AOP is developed considering the effects of historical average runoff values, the expected demands and depletions of Northern Water and Denver Water, the project's initial states (e.g., pool levels/reservoir storages), other average values, special operations such as previously planned system outages and maintenance schedules, and an assumed Northern Water quota for their water users of 70 percent.

The operations at Granby Reservoir are highly dependent on the runoff conditions on both sides of the Continental Divide. The conditions on the east slope have a direct effect on the diversions through the Adams Tunnel. The diversions through the Adams Tunnel affect the pumping operations at the Farr Pump Plant, and consequently the reservoir levels at Granby.

The Green Mountain Reservoir operational plan was developed considering the effects of upstream operations at Dillon Reservoir, forecasted depletions provided by Denver Water and Colorado Springs Utilities, average runoff values, anticipated system outages, and planned special operations.

Green Mountain Reservoir

Green Mountain Reservoir Operation References

1984 Operating Policy for Green Mountain Reservoir, Colorado - Big Thompson River Project. (1983, December 22). Federal Register, Vol 48, No. 247.

Consolidated Cases 2782, 5016 and 5017 (commonly referred to as the "Blue River Decrees"). 955, 1964, 1978).

Consolidated Cases: Stipulation and Decree (October 12, 1955).

Consolidated Cases: Stipulation and Decree (April 16, 1964).

Consolidated Cases: Supplemental Judgement and Decree (February 9, 1978).

Director, Secretary of Interior. (1964, December 15). Certain Green Mountain Reservoir Storage, Colorado - Big Thompson Project. *Reservation for Silt Project, Colorado Storage Project*. Federal Register Document 64-12867, Filed.

Green Mountain Administrative Protocol. (2013, February 22).

Manner of Operation of Project Facilities and Auziliary Features (Senate Document 80). (1937, June 15). *Senate Document No. 80, 75th Congress, 1st Session* .

Recovery Implementation Program. (1996, October 15). *Recovery Action Plan, Colorado Endangered Fish Recovery Program*.

Shoshone Outage Protocol (ShOP). (2016, June 27). *Agreement Number 13XX6C0129*.

Stipulation and Agreement, 91CW247 (Orchard Mesa Check Case) and attached Historic Users Pool Operating Criteria (Colorado Water Division 5 September 4, 1996).

Reservoir Administration

Provisions guiding Green Mountain Reservoir operations are contained within multiple contractual and legally binding documents (referenced cited above). Paragraph 6 of the October 1955 Decree (Consolidated Cases: Stipulation and Decree, 1955) stipulates that Reclamation periodically develop operational plans for Green Mountain Reservoir. This report partially fulfills this requirement.

Colorado Springs Utilities and Denver Water Board (cities) have water projects upstream of Green Mountain Reservoir that substantially influence the timing and volume of reservoir filling and water available for power generation. The Denver Water Board's water project includes the 255 KAF Dillon Reservoir and a trans-basin diversion tunnel. Colorado Springs Utilities Project includes a direct-flow collection system, small regulatory reservoirs, and a trans-basin diversion tunnel. Combined, the cities divert approximately 80 KAF annually from the basin above Green Mountain Reservoir which would otherwise be available for Green Mountain Reservoir storage and power generation. The right for these water projects to divert against Green Mountain Reservoir's Senior Water Rights and how the cities compensate the C-BT Project for diversions junior to the Project is stipulated within the Project's and cities water rights ((Consolidated Cases 2782, 5016 and 5017 (commonly referred to as the "Blue River Decrees"), 1955, 1964, 1978). The cities and the Project have established agreements to fulfill these stipulations. The stipulated agreement to how the cities delivers water owed by Green Mountain Reservoir is included within the Green Mountain Administrative Protocol (Green Mountain Administrative Protocol, 2013).

Green Mountain Reservoir was authorized and constructed to store and deliver two pools of water. Senate Document 80 (Manner of Operation of Project Facilities and Auziliary Features (Senate Document 80), 1937) identified a 52,000-acre-foot pool designated for the singular purpose of replacement of water diverted or stored out-of-priority by the Colorado River Collection System. The remainder of reservoir storage and refill storage are designated as the "100,000-acre-foot power pool". This pool is primarily for power generation and can be delivered for the beneficial use of water users located within the Upper Colorado River basin above the confluence with the Gunnison River in Grand Junction. The C-BT Project water rights include these two pools within the decree (Consolidated Cases 2782, 5016 and 5017 (commonly referred to as the "Blue River Decrees"), 1955, 1964, 1978).

Additional agreements and directives have further sub-divided the "100,000-acre-foot power pool". The sub-divisions include, replacement losses for Green Mountain Reservoir (Manner of Operation of Project Facilities and Auziliary Features (Senate Document 80), 1937), a 5,000 acre-foot allocation for the Silt Project replacement (Director, Secretary of Interior, 1964), the Historic Users Pool (Green Mountain Reservoir (HUP) and water contract allocations (1984 Operating Policy for Green Mountain Reservoir, Colorado - Big Thompson River Project, 1983), and storage available for Shoshone Powerplant outage operations (Shoshone Outage Protocol (ShOP), 2016).

The Colorado State Engineer has administered Green Mountain Reservoir water rights in accordance with the Green Mountain Administrative Protocol since 2014 (Green Mountain Administrative Protocol, 2013). This protocol is currently under review by the Colorado State Water Court.

Green Mountain Historic Users Pool and the Orchard Mesa Check Case Settlement

Green Mountain Reservoir's largest single purpose allocation is the Historic User Pool (HUP) and is designated for Upper Colorado River Basin beneficiary use. The HUP allocation is composed of 66,000 AF of the "100 KAF Power Pool". This allocation is defined within the 1984 Operating Policy (1984 Operating Policy for Green Mountain Reservoir, Colorado - Big Thompson River Project, 1983). The intent is that the HUP allocation is delivered in most years.

The HUP operating criteria is stipulated under the 1996 Orchard Mesa Check Case Decree (Stipulation and Agreement, 1996). The stipulations include a variety of criteria for how and when Green Mountain Reservoir can deliver HUP. The operating criteria also identifies a group of irrigation State, and Federal stakeholders responsible for cooperative management of the HUP allocation. The HUP managing entities include Orchard Mesa Irrigation District, Grand Valley Irrigation Company, Grand Valley Water Users Association, the Colorado Water Conservation Board, the Colorado State Engineer, the U.S. Fish and Wildlife Service and Reclamation. Regular meetings for cooperatively managing the HUP are a requirement of the operating criteria.

A primary purpose of the HUP allocation is to provide replacement water and irrigation water for HUP beneficiaries. This water is provided at no cost to the water users from the HUP allocation.— In dryer years nearly the entire HUP allocation is delivered during the irrigation season. This delivery may include both replacement water for consumptive use by a beneficiary or delivered directly to Grand Valley irrigators. 500 AF of the HUP allocation is reserved for consumptive use replacement during the non-irrigation season.

Providing water for supporting the recovery of Colorado River endangered fish is a secondary beneficial use of the HUP allocation.— In most years the entire HUP allocation is not required for irrigation and replacement. In these years the HUP managing entities can declare that surplus HUP allocation is available (Recovery Implementation Program, 1996). The managing entities will collaboratively determine the timing and volume of water for delivery to the 15-mile Colorado River reach between the Grand Valley Irrigation Company diversion dam and the confluence with the Gunnison River.

The HUP managing entities have established standing weekly conference call meetings for coordination of Colorado River operations. These meeting are open to the public and provide a forum for coordination of reservoir and diversion operations within the Colorado River Basin. Regular participants on the call include: the HUP managing entities, Denver Water, Northern Water, Colorado River Water Conservation District, the National Weather Service, Colorado Basin River Forecast Center, and others.

Reservoir Operation

Green Mountain operations are controlled by water rights administration, authorizing documentation, litigation stipulations, agreements, facility limitations, and safety of dam directives. Normal reservoir operations generally focus on three goals: not harming downstream senior water rights, maximizing power generation, and conserving and enhancing the beneficial use of the waters of the Colorado River.

Reservoir operations frequently occur in response to calls from senior downstream water rights administrators. Reservoir storage is largely allocated for replacement water for consumptive use of junior water right users. Junior water diversion operations would be curtailed without this replacement water. Reservoir replacement releases cover out-of-priority diversion of the Colorado River Collection System, HUP beneficiaries, Silt Project, Green Mountain Reservoir evaporative losses, and most contract release. The storage release flow rate is dependent upon the priority and location of the calling right. In addition, Green Mountain Reservoir is obligated to bypass reservoir inflow as needed as to not harm the senior calling right.

Reclamation operates the reservoir in a manner to maximize the power generation through Green Mountain Powerplant. The powerplant is the principal mechanism for release of all stored water and bypass of inflow. Generation of storage releases often provide other beneficial uses including Shoshone Outage Protocol operations, direct delivery of HUP water for irrigation, and HUP surplus delivery to the 15-Mile Reach for the benefit of Colorado River Endangered Fish recovery efforts. Reclamation schedules powerplant release to control reservoir fill rate and minimize the volume of water that will bypass the powerplant. Coordinated Reservoir Operations (CROs) are designed to reshape powerplant release to help enhance river peak flow for the benefit of Colorado River Endangered Fish recovery efforts. The Green Mountain Powerplant direct-flow water right places an administrative call on upstream water users for most of the year.

Conserving and making use of Colorado River water to create the greatest benefit is one of the primary purposes of the C-BT Project. Reclamation plans reservoir operations to increase the probability that Green Mountain Reservoir's first-fill storage water right will refill each year. In drier years this may require reduction of reservoir release below the powerplant capacity. In addition, operation plans avoid reservoir release exclusive for power generation.

Administration of water rights dictates reservoir operations throughout most of the year. This results in three typical operational seasons: Winter Delivery (November through April), Spring Runoff/Fill (April through August), and Irrigation Delivery (August through October).

During the Winter Delivery Season, Green Mountain Reservoir storage decreases as releases are made to avoid harming downstream senior water rights. Native winter flow within the Colorado River is typically less than the Shoshone Powerplant Senior Water Right of 1,250 cfs. During this period, reservoir storage releases replace water for the Project, HUP beneficiaries, and most Green Mountain Reservoir contractors. On average, Green Mountain Reservoir delivers 23 KAF from storage during the winter season while passing all reservoir inflow. Storage release for Colorado River Collection System Replacement constitutes the largest portion of winter storage delivery.

The spring runoff/fill season normally begins when river flow exceeds plant capacity at the Shoshone Powerplant. Colorado River flow typically exceeds 1,250 cfs between the last week of March and the second week of April. On average, Green Mountain reaches a minimum fill of 64 KAF in mid-April. Green Mountain Reservoir will exercise storage rights and adjust operation to maximize stored water while optimizing power generation once the Project water rights come into priority. Green Mountain Reservoir normally reaches its maximum fill during the first two weeks of July. After satisfying Green Mountain Reservoirs Senior Storage Water Right, refill storage rights and power generation direct flow rights will be used to maintain reservoir storage until an administrative call is placed on the Colorado River. A Colorado River administrative call typically occurs between the third week of August and the second week of September. Colorado River administrative calls may occur in June during drier years. The Colorado State Engineers placement of a senior administrative water rights call ends the Spring Runoff/Fill Season.

Irrigation Delivery Season begins once Colorado River flows decrease below water rights administrative levels. The calling right may be at the Shoshone Powerplant, a Grand Junction area irrigation water right, or both. During Irrigation Delivery Season, Green Mountain Reservoir delivers approximately 20 KAF per month. HUP deliveries constitute the largest portion of the storage releases during the Irrigation Delivery Season. Irrigation Delivery Season ends with the ceasing of irrigation operations around October 31.

Operational Summary: Water Year (Wy) 2022

Summary of System-Wide Conditions

Last water year's AOP was summarized in the previous AOP report of the C-BT Project[3]. The following four sub-sections summarize *actual* operational results for WY 2022.

Weather and Inflow Hydrology

Generally, precipitation was near average to slightly less than average over the mountains for October and November 2021 and January of 2022. It was less than average for February through April. June 2022 was also slightly less than average. Precipitation was greater than average in December 2021 and May 2022. The monsoonal season in the Northern Colorado Mountains near Granby Reservoir and the east slope of the Project area was normal for the first time in years. The monsoonal season for Green Mountain Reservoir was slightly greater than normal for 2022. Total precipitation for the WY ended slightly greater than average.

On the east slope, snow accumulation at the start of WY 2022 was well below normal until mid-December 2021 at which point accumulation increased rapidly, becoming greater than average, through early January 2022. By the middle of March snow accumulation was near average and below normal by the end of the month with little addition accumulation for the last half of the month. The first half of April 2022 saw greater than normal accumulation. By the end of April snow accumulation was approaching near normal once again. On the west slope, Granby Reservoir drainage generally followed east slope accumulation through January 2022. By early February 2022, it fell behind normal accumulation and remained mildly below normal the rest of the of snow accumulation season. Willow Creek Reservoir drainage was well below normal until mid-December 2021. However, after that point accumulation was well above average until mid-February when snow accumulation returned to normal. It remained normal to slightly below normal in the Willow Creek drainage for the remainder of the snow accumulation period of WY 2022. The Green Mountain Reservoir drainage generally followed the Granby path of snow accumulation for the season. By February 2022 Green Mountain Reservoir snow was normal and then fell behind normal accumulation for the remainder the season. Snow melt was slightly earlier than typical on the west slope in WY 2022 with all drainage's snow accumulation reporting less than the long-term average throughout May. On the east slope, snow melt timing was average for the season. Generally, peak snowpack was near the average for the east slope, and slightly less than the average from February through melt on the west slope.

Table 2 provides an overview of the snowpack condition on April 1, 2022, for some of the contributing watersheds within the C-BT Project system. The first column in Table 2 is the average Snow Water Equivalent (SWE) of the snow telemetry (SNOTEL) sites contributing to each reservoir on April 1, 2022. For a historical comparison to the April 1, 2022, condition, the average April 1 SWE of the same SNOTEL sites for the 1992-2021 period was calculated to create a combined site average for those locations. The west slope runoff forecast for April 1, 2022, was mildly below the typical

[3] Available online at https://www.usbr.gov/gp/aop/C-BT/21C-BT_22forecast.pdf (accessed December 19, 2022).

condition over the last thirty years for locations within the C-BT region; the exception was Green Mountain runoff forecast which was well below average. The east slope runoff forecast was only marginally below the typical condition. Table 2 shows 2022 snowpack data for watersheds above various reservoirs.

Table 2.—Snow-Water Content for April 1, 2022

Watershed	Snow-water content 2022 (In.)	Snow-water content 30-yr. avg. (In.)	Snow-Water content percent of avg.
Green Mountain Reservoir	12.5	14.9	84
Willow Creek Reservoir	8.9	9.7	92
Granby Reservoir	11.3	13.2	86
Lake Estes Reservoir	15.4	16.6	93

Table 3 (below) displays the April 1, 2022, runoff forecasts for several C-BT facilities across intervals of predicted probabilities of occurrence.

Table 3.—Reclamation runoff forecast for C-BT locations. April 1, 2022, Forecast of April-July volume (KAF)

Forecast Point	Chance of Exceeding 90 percent Reasonable Min[1]	Chance of Exceeding 75 percent	Chance of Exceeding 50 percent Most Probable	Chance of Exceeding 25 percent	Chance of Exceeding 10 percent Reasonable Max[1]	Chance of Exceeding 50 percent Most Probable (as percent of avg runoff)
Green Mtn. Res.	164	188	220	242	266	78
Willow Creek. Res.	29.7	36.6	43.7	51.5	58.3	89
Granby Res.	151	170	195	213	233	93
Big Thompson River Above Lake Estes	49.6	57.6	66.5	75.1	83.1	92
Big Thompson River at Canyon Mouth	57.8	68.3	80.7	91.1	102	91

[1] The probability is *estimated* to be 8 chances in 10 that the actual runoff volume will fall between the reasonable minimum and reasonable maximum forecast.

The coldest temperatures in the Project area were recorded during the middle of February 2022 (see Figure 5). Temperatures, when compared to the thirty-year average, saw October 2021 through January 2022 well above normal. Temperatures were slightly below normal in February and March and slightly above normal the remainder of the water year. By mid-April the area temperatures began to rise rapidly, and snow at lower elevations began to melt. The northern mountains of Colorado showed signs that runoff had begun slightly earlier than normal. Most locations began to experience

rising inflows by May. By mid-May 2022, the snowpack at higher elevations began to melt. Willow Creek Reservoir, with near average snowpack, reached peak runoff near mid-May, while inflows to Lake Estes, Granby, and Green Mountain reached their peaks during the second week of June. West slope peaks were generally less than average in magnitude. East slope peak flow was near average. The runoff season for 2022 was only slightly shorter in duration than typical on the west slope and about average duration on the east slope.

Precipitation was less than average over the mountains from October through mid-December 2021. From mid-December through mid-April precipitation was greater than average and the remainder of the water year was near normal. The monsoonal moisture season in the northern Colorado mountains near Granby, Green Mountain, and the east slope of the project area was slightly above normal. Precipitation events boosted summer streamflow from the end of June to mid-September 2022. Total precipitation for the water year was slightly above average.

Most northern Colorado reservoirs throughout the spring season were near average in storage content. By the end of June many approached fill. Even though irrigation season precipitation was mildly above average, warmer than average weather from mid-June through September put pressure on those reserves, reducing storages down to 45 percent of capacity by the end of the irrigation season. Most reservoirs in the area ended WY 2022 with less storage than they started the WY. Figure 5 shows daily temperatures compared to average for WY 2022.

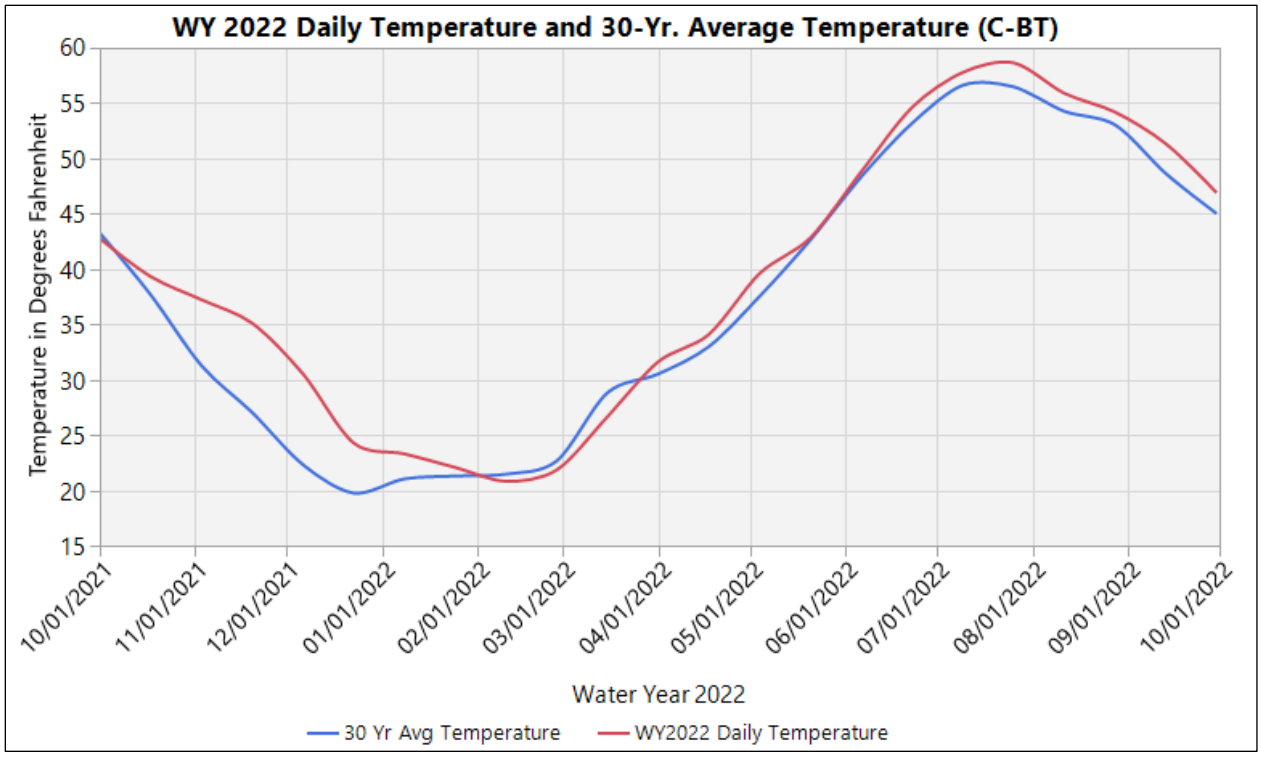


Figure 5.—WY 2022 air temperature and 30-year average air temperature (Daily data have been smoothed for display purposes).

System Demands and Deliveries

Northern Water established a quota of 50 percent in October 2021, and then revisited that quota in April 2022, increasing it by 20 percent. In May of 2022, the Northern Water board increased the quota again by an additional 10 percent. No further quota adjustments were made by Northern Water for the remainder of the WY. The quota assumed for the AOP 2022 prepared in October 2021 was 70 percent. Starting with the June AOP update, the quota was adjusted to 80 percent and remained at that level for the remaining monthly updates to the AOP 2022.

A pair of major wildfires occurred in late WY 2020 into early WY 2021 within portions of the C-BT project area. The East Troublesome Creek wildfire, mostly on the west slope, burned substantial portions of Willow Creek Reservoir, and smaller portions of Shadow Mountain Reservoir and Grand Lake drainages. In WY 2022, the burn scars from the East Troublesome Creek fire did little to directly impact operations. On the east slope, the Cameron Peak fire burned a portion of the North Fork Big Thompson drainage area. Precipitation events that occurred on the burn scar caused the turbidity of the Big Thompson River to increase to very high levels. Dille skim operations were typically halted during these events to reduce delivery of this poor-quality water to the Big Thompson Powerplant and the Hanson Feeder Canal, which reduced the volume of Dille skim compared to previous years.

An accounting summary of the C-BT west slope collection system in WY 2022 shows there were 211,125 AF made available for diversion to the east slope. Adams Tunnel diversions were 211,628 AF, a difference of -0.24 percent when comparing available collection system diversions versus reported diversions. That percent difference was well within the errors associated with the various measurements for the data used to create the accounting terms summarized in Table 4. The formula for determining the collection system volume available for diversion to the east slope is shown below:

$$\begin{aligned} &West\ Slope\ Collection\ Made\ Available\ for\ Diversion \\ &\quad = Natural\ Inflow\ (Granby, Shadow\ Mountain\ and\ Grand\ Lake) + Windy\ Gap\ Pumping \\ &\quad + Willow\ Creek\ Pumping - Change\ in\ Storage\ (Granby, Shadow\ Mountain, Grand\ Lake) \\ &\quad - Granby\ Spill - Granby\ Releases \\ &\quad - Net\ Evaporation\ (Granby, Shadow\ Mountain, Grand\ Lake) - Granby\ Seepage \end{aligned}$$

The Granby release term (above) includes both scheduled releases plus any over-releases reported, as operations attempted to meet downstream flow targets. C-BT west slope collection system water balance is shown in Table 4.

Table 4.—C-BT west slope collection system water balance. Volume available for diversion from west slope collection system and reported diversions through Adams Tunnel for WY 2022

	WY 2022 (AF)
Combined 3 Lakes Natural Inflow	239,975
Willow Creek Pumping	57,366
Windy Gap Pumping	40,171
Combined 3 Lakes Change in Storage	78,309
Granby Spill	0

Table 4.—C-BT west slope collection system water balance. Volume available for diversion from west slope collection system and reported diversions through Adams Tunnel for WY 2022

	WY 2022 (AF)
Granby Releases	33,561
Combined 3 Lakes Net Evaporation	11,348
Granby Seepage	3,170
Volume Available for Diversion	211,125
Reported Adams Tunnel Diversion	**211,628**
Percent Difference	**-0.24%**

On the east slope, total supplies were compared to total deliveries for WY 2022. Total supplies were calculated to be 246,353 AF and total deliveries were calculated to be 228,319 AF (Table 5). The percent difference was 7.6 percent. That is about two percent larger than previous years and can still be explained by delivery system transit losses and measurement error of the terms that went into the calculations. The formula for determining total east slope supplies is shown below:

$$\begin{aligned} &East\ Slope\ Supplies \\ &\quad = Adams\ Tunnel\ diversions + East\ Slope\ Priority\ Water \\ &\quad - Net\ Evaporation\ (Carter\ and\ Horsetooth\ Reservoir) \\ &\quad - End\ of\ WY\ East\ Slope\ Reservoirs'\ Change\ in\ Storage \\ &\quad - Tridistrict\ Excess\ Capacity\ Account\ Change\ in\ Storage\ at\ Horsetooth \\ &\quad - Predetermined\ CBT\ River\ Delivery\ Losses \end{aligned}$$

During CHFC 550 and 930 Section outage, project demands were met via a release to the Big Thompson River from Olympus Dam. A predetermined delivery loss is applied when that method of delivery occurs. The 'Predetermined C-BT River Delivery Losses' term in the supplies equation (Table 5) includes any assigned delivery losses in the east slope system. For WY 2022, a 2.1 percent delivery loss was established for those Big Thompson River deliveries of C-BT water. Supply releases had to be greater than the requested deliveries by 2.1 percent to offset the loss and that known difference was subtracted from the supply term in Table 5.

The formula for determining total deliveries is as follows:

$$\begin{aligned} &Total\ Deliveries \\ &\quad = Total\ CBT\ Deliveries + Total\ Windy\ Gap\ Deliveries\ (east\ slope) \\ &\quad + Eureka\ Replacement\ Delivery \end{aligned}$$

The results of the supplies versus east slope deliveries are shown in Table 5 below.

Table 5.—C-BT east slope water balance. Volume available for supply vs. reported east slope deliveries for WY 2022	
Supply	**WY 2022 (AF)**
Adams Tunnel Diversion	211,628
East Slope Priority Water	0
Carter Lake + Horsetooth Reservoir Net Evap.	5,914
Total East Slope Reservoir Change in Storage	-41,460
Tridistrict Excess Capacity Change in Storage	-6.6
Predetermined C-BT River Delivery Loss	17
Total Supply	**247,198**
Delivery	
Total C-BT Deliveries[1]	202,888
Total Windy Gap Deliveries (east slope)	25,252
Eureka Replacement Delivery	180
Total Deliveries	**228,319**
Percent Difference (of Total Supply)	**7.6%**

[1] Includes non-charge water delivered, which was zero AF in WY 2022.

Maintenance and System Outages

One major maintenance project in the C-BT impacted the typical operations during the WY. The East Portal Spillway repair project began on September 18, 2022, near the end of the WY. Diversions ceased through Adams Tunnel in support of the repair work and did not resume until December 2022. From early November through early December 2021, many normally scheduled inspections took place at different facilities during the fall maintenance outage period. Water diversions from the west slope were greatly reduced or suspended for about four and a half weeks, from early November through early December 2021, to accommodate these activities. West slope diversion through Adams Tunnel began a few days earlier than typical in 2021, starting on December 8. Full capacity diversions began on December 14, 2021, thanks to the speed and efficiency of the fall maintenance work in WY 2022.

Estes Powerplant personnel conducted annual maintenance for Marys Powerplant for the upcoming WY 2022 season during the fall outage. Estes Powerplant Units #1, #2, and #3 had their annual maintenance performed in succession from January 4 through April 29, 2022. Two units were always available for generation during the Estes Powerplant annual maintenance period.

The Flatiron Powerplant staff completed the annual maintenance of the Pole Hill Powerplant Units during November 2021 through early December 2021. Annual maintenance of Flatiron Powerplant Unit #3 was completed by mid-October 2021 and a shortened maintenance period occurred again during WY 2022 in mid-September 2022. The annual maintenance of Flatiron Powerplant Units #1 and #2 occurred in succession starting in mid-February 2022 and ending in mid-May 2022. The CHFC Trifurcation Wasteway and Big Thompson Powerplant were winterized during the first week of November 2021. Maintenance of the CHFC 550 Section occurred during the first two weeks of

October 2021. A second maintenance occurred for both the CHFC 930 and 550 Sections in April 2022 ending with a final maintenance of the CHFC 550 Section in September of 2022.

C-BT water deliveries were met throughout WY 2022 in coordination with outage work. Fall 2021 deliveries to the CHFC continued as planned; water from Carter Lake Reservoir was used once during the four and a half weeks fall maintenance season to refill Flatiron Reservoir to meet canal demands during the outage. Annual maintenance outages at Flatiron and Estes Powerplants did not impact planned water operations. Big Thompson Powerplant maintenance, which occurred in January 2022, had no impact on water or power operations for the season.

Operations and Outcomes

Typically, starting around the middle of December after fall annual outages are lifted, the project begins to divert water through Adams Tunnel at full capacity to refill Carter Lake and Horsetooth Reservoirs for the upcoming season. The first refill is planned prior to when skim and priority water typically become available in mid- to late May through late June to maximize use of east slope skim and priority water by the project. In most cases, a small amount of space is left open in Horsetooth Reservoir to store unanticipated priority water that may become available at Dille Diversion on the Big Thompsons River. This operation was implemented as planned in WY 2022. Carter Lake Reservoir was first filled in March 2022 and came within about 5,000 AF of a second fill in late May 2022. Pumping to Carter resumed the second week of July 2022 in support of Grand Lake clarity seasonal operation plan. Horsetooth Reservoir approached fill in late March 2022, but a June fill was not planned in WY2022 due to lower than average west slope runoff for the collection system and excess available storage capacity in Granby throughout the month.

Both April 1 and May 1 west slope runoff forecasts had relatively stable predicted runoff volumes for the season. The June 1 forecast for Willow Creek Reservoir's runoff volume increased substantially from the May 1 forecast; Granby's forecasted runoff increased mildly from May to June. By mid-June, with slightly lower than average carryover storage at Granby Reservoir, it was evident that the potential for a spill of project water at Granby Reservoir was rapidly declining. By the end of the first week of July, it was evident a spill would not occur at Granby in WY2022.

Carter Lake Reservoir was initially filled on March 24, 2022. Pumping to Carter Lake resumed on May 2 and continued until May 31 to partially refill the lake prior to the bulk of spring runoff. The final pumping period to Carter Lake started on July 11 in support of Grand Lake clarity operations and ended on September 6, 2022, as clarity operations wound down for the season. Adams Tunnel diversions were reduced with the first fill and May partial refill of Carter Lake Reservoir to maximize east slope skim throughout runoff. No east slope priority water became available during WY 2022. Throughout the 2022 runoff season sufficient space remained available in Olympus Tunnel to take advantage of skim water. At the end of the fall maintenance period in mid-December 2021, Horsetooth Reservoir had only 29,000 AF of free space. It was within 6,000 AF of full at the beginning of March 2022. From that point, Horsetooth Reservoir storage was generally maintained within 6,000 to 10,000 AF of full through the end of May in anticipation of east slope priority that never materialized for the project. Throughout the growing season of WY2022, Horsetooth demands were lower than projected mainly due to timely east slope rains during the irrigation season. Horsetooth Reservoir ended WY 2022 with over 94,000 AF in storage.

C-BT operations and the skimming of water from the Big Thompson River inflows to Lake Estes through Olympus Tunnel kept daily mean releases from Olympus Dam to the Big Thompson River at or below 500 cfs during runoff. Figure 6 illustrates how the Olympus Dam instantaneous releases were managed during the runoff of late April through August 2022. The peak instantaneous release from Olympus Dam was 506 cfs and occurred on June 12, 2022.

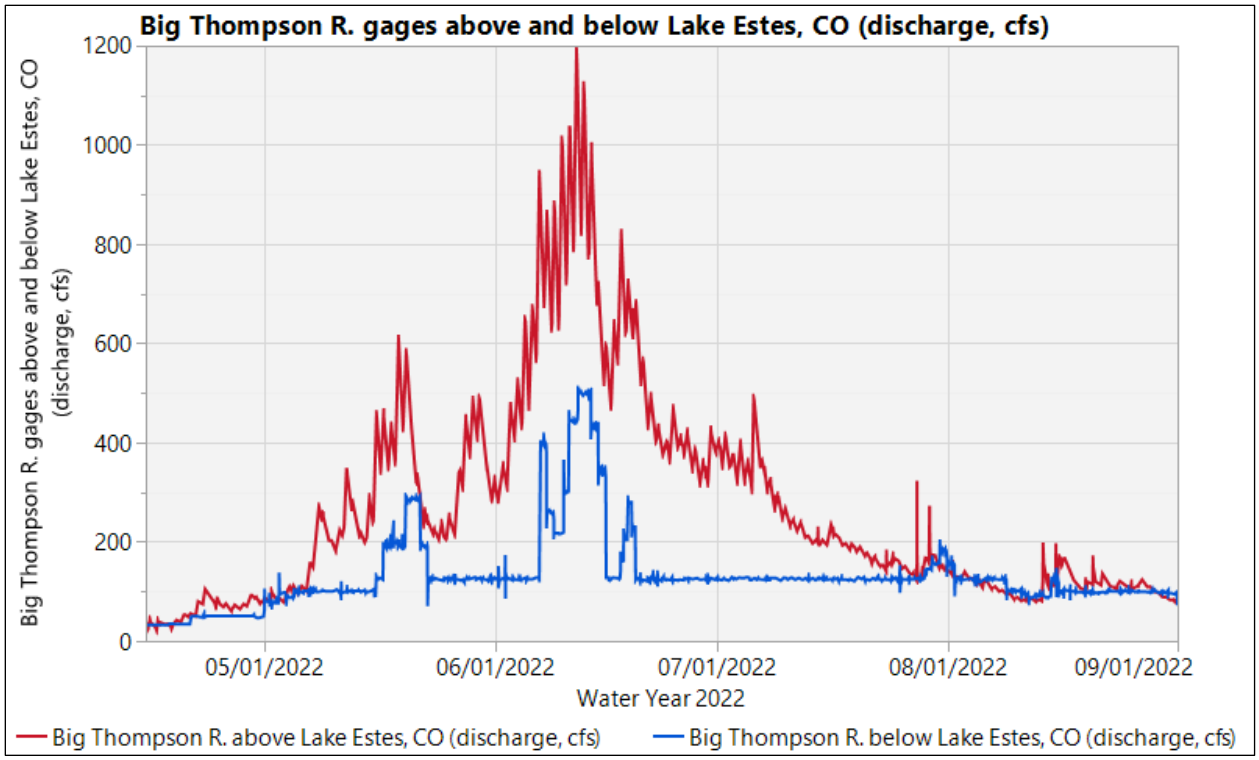


Figure 6.—Big Thompson River gages above and below Lake Estes: Late April through August 2022.

C-BT Operations by Facility

Collection System

Willow Creek Reservoir

October through March: Figure 7 shows snow accumulation in the Willow Creek Reservoir Basin was below average starting in November 2021. From late December 2021 through early February accumulation was above average and remained near average to slightly below throughout the snow accumulation season of the WY.

The East Troublesome Creek Fire started in October 2020 and burned approximately eighty-nine percent of the Willow Creek Reservoir watershed. Throughout WY 2022, Willow Creek Reservoir elevations were maintained slightly lower within the operational pool than years prior to the fire. WY 2022 daily average elevation was 8122.17; prior to the fire the five years' daily average elevation during typical reservoir operations was 8123.0. This operational adjustment was made due to concerns

regarding runoff of snowmelt and rainfall runoff events being enhanced by the large portion of the watershed that was burned.

Willow Creek Reservoir release operations followed standing operating procedures. The winter reservoir release was maintained near 7 cfs for the Colorado River Fishery maintenance as directed by the Secretary of the Interior schedule of release.

April: The very first signs of runoff in the Willow Creek watershed began in late March 2022 (Figure 8). Pumping to Granby Reservoir also began in earnest April 2021. The pump ran three times in April for a monthly total volume of 14,497 AF.

May: The WY 2022 computed daily peak inflow of 935 cfs was reached on May 8, 2021 (Figure 8). Between May 8 and 10, one of the two Willow Creek pumps was nonfunctional. Some project water was lost due to the pump failure; however, a repair was made quickly and both pumps were functioning again by May 11. At least one Willow Creek pump ran daily from April 19 to June 17. During the month of May, 24,611 AF was pumped from Willow Creek Reservoir to Granby Reservoir.

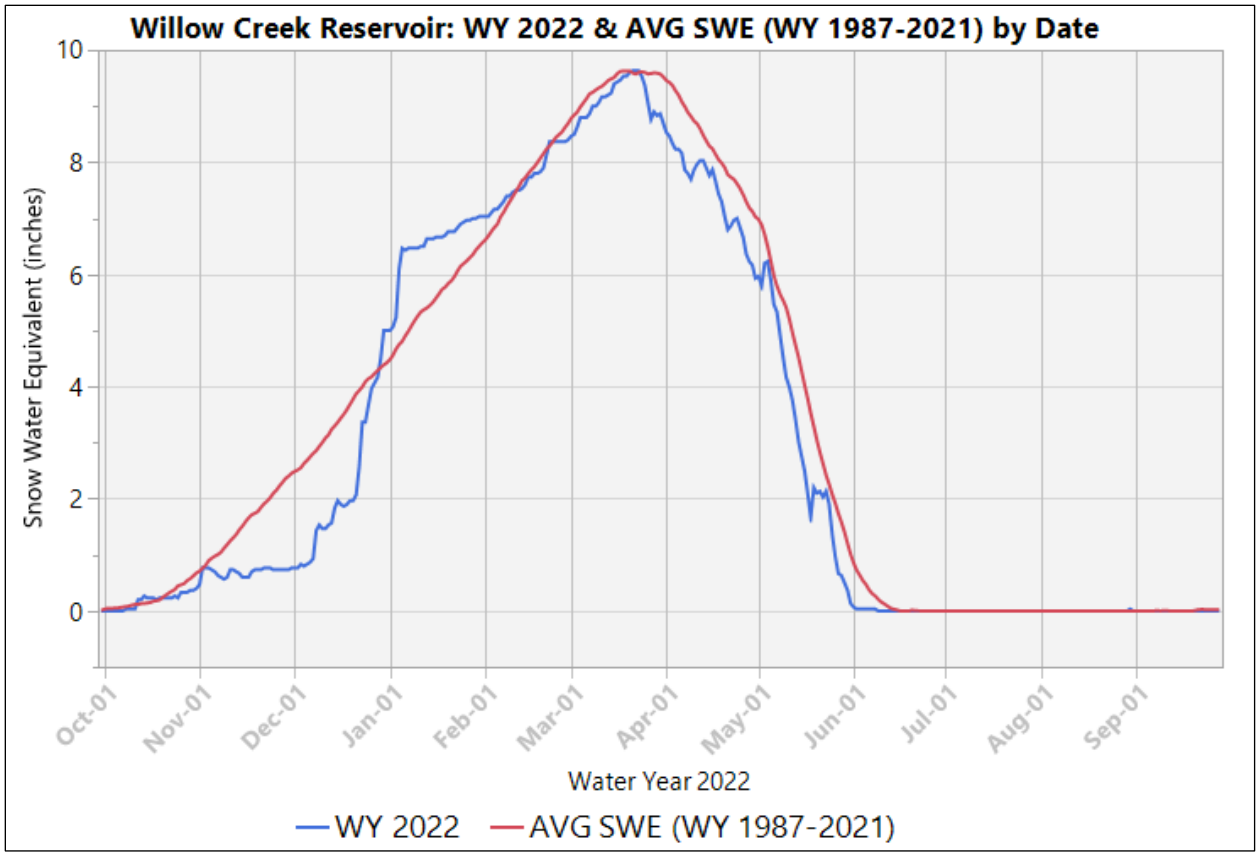


Figure 7.—WY 2022 and 35-year average SWE for the Willow Creek Reservoir drainage area.

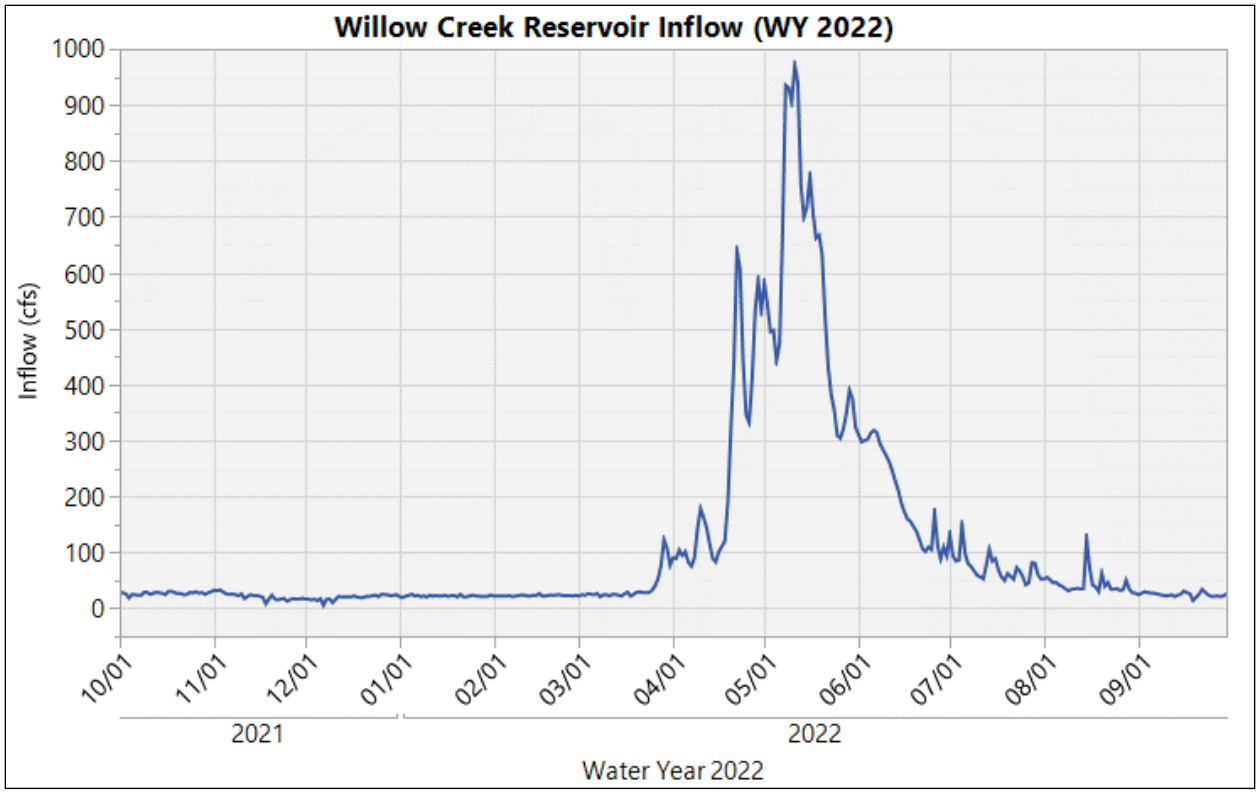


Figure 8.—Computed Inflow to Willow Creek Reservoir during WY 2022.

June: Willow Creek Reservoir pumping continued through June 17 and then with only a day or two of rest between pumping periods, it was pumped twice more in the month for a monthly total volume of nearly 10,796 AF. Early runoff and near average snow accumulation throughout the snow season created an average of total volume of water pumped to Granby Reservoir for WY 2022 compared to previous years.

July: In support of the slightly lower operational elevation target at Willow Creek Reservoir, three additional short pumping periods occurred in July. An additional 2,912 AF was pumped to Granby Reservoir in July.

August and September: Two more short pumping operations occurred during the last two months of the WY for an additional 2,495 AF pumped to Granby.

The observed April-July runoff to Willow Creek Reservoir was approximately 67 KAF. The April 1 most probable forecast (forecasts are from Table 3, presented earlier in this report) was 43.7 KAF. May 1 most probable forecast was 46.7.4 KAF and June 1 most probable forecast was 64 KAF very close to the observed April-July runoff.

Granby Reservoir and Shadow Mountain Reservoir/Grand Lake

Granby Reservoir, Shadow Mountain Reservoir, and Grand Lake are located on the Upper Colorado River. Grand Lake and Shadow Mountain Reservoir are hydraulically connected and function as a single body of water operationally with the water surface elevation controlled by Shadow Mountain Dam. Operations maintain water surface elevation between 8366 and 8367. The two water bodies provide approximately 1,700 AF of regulatory storage and function as the forebay for Adams Tunnel and an afterbay for the Farr Pump Plant. The Farr Pump Plant moves water from Granby to Shadow Mountain Reservoir as needed to augment Adams Tunnel diversion of Shadow Mountain Reservoir and Grand Lake native flow. During spring runoff, native flow usually exceeds Adams Tunnel diversion and excess water is released from Shadow Mountain Reservoir to the Colorado River for storage within Granby Reservoir. During WY 2022, Shadow Mountain Dam maintained minimum flows to the Colorado River and maintained water surface elevation as described within the Standing Operating Procedures.

Unless otherwise noted, the balance of this section emphasizes Granby Reservoir operations that are considerably more variable, and therefore, of more operational interest than that of Shadow Mountain Reservoir and Grand Lake.

October through February: The carryover content from WY 2021 for Granby Reservoir was 402,704 AF or 97 percent of the thirty-year average start of WY content (416,750 AF). At full capacity Granby storage is 539,758 AF. The reservoir content remained below the thirty-year average content until April 2022. As diversions through the Adams Tunnel resumed in December 2021, Granby content began to fall steadily. Figure 9 shows snow accumulation in the Granby Basin was below average starting in early November, increased to above average accumulation at the end of December, and stayed above average until early February 2022. Afterward, snow accumulation was below average for remainder of the season.

March through April: Snow accumulation reached its peak just after mid-March and was less than average. Adams Tunnel diversions continued from mid-December until the first fill of Carter Lake Reservoir on March 24, 2022. Full Adams Tunnel diversions were not needed after that time during the winter months of WY 2022 because Horsetooth Reservoir storage content was also nearing its target storage prior to runoff. Mean Adams Tunnel diversion from late March through the end of April were only 38 cfs and used to maintain the Horsetooth elevation achieved in late March.

April/May through early July: Throughout April, snow conditions on the west slope indicated that the potential for a project spill at Granby Reservoir was unlikely. Snow accumulation remained below average through the end of April. There was very little additional snow added in May. By June 1 Granby, Horsetooth and Carter Lake Reservoirs' combined storage was 676 KAF, still more than 84 KAF greater than the average combined storage for the preceding thirty years, however, Granby Reservoir storage was only 425 KAF by that point in time. This storage condition for Granby continued to indicate a project spill was unlikely. Warmer than average temperatures for the start of June coupled with the below average snowpack in May created an average runoff peak in terms of timing whose magnitude was mildly less than average. Computed mean daily natural inflow to Granby, that peaked on June 12, was 882 cfs. Adams Tunnel diversions were about 325 cfs during May as pumping to Carter Lake Reservoir occurred during most of the month.

Throughout the runoff forecast season there was strong indication that the probably of a spill was fairly low at Granby Reservoir for WY 2022.

Below average snowpack created below average peak runoff and inflows at Granby Reservoir. By June 19, the daily marginal rate of Granby fill began to slow, pointing toward little chance of a project spill at Granby in WY 2022. Granby reached its WY maximum storage of 530,071 AF on July 8, 2022. That storage was about 9.9 KAF short of fill but did include 40.2 KAF of Windy Gap water pumped to Granby by Northern Water.

The observed April-July runoff to Granby and Shadow Mountain Reservoirs and Grand Lake was approximately 202.6.4 KAF. The April 1 most probable forecast (displayed previously in Table 3) was 195 KAF. May 1 was 187 KAF and June 1 was 205 KAF.

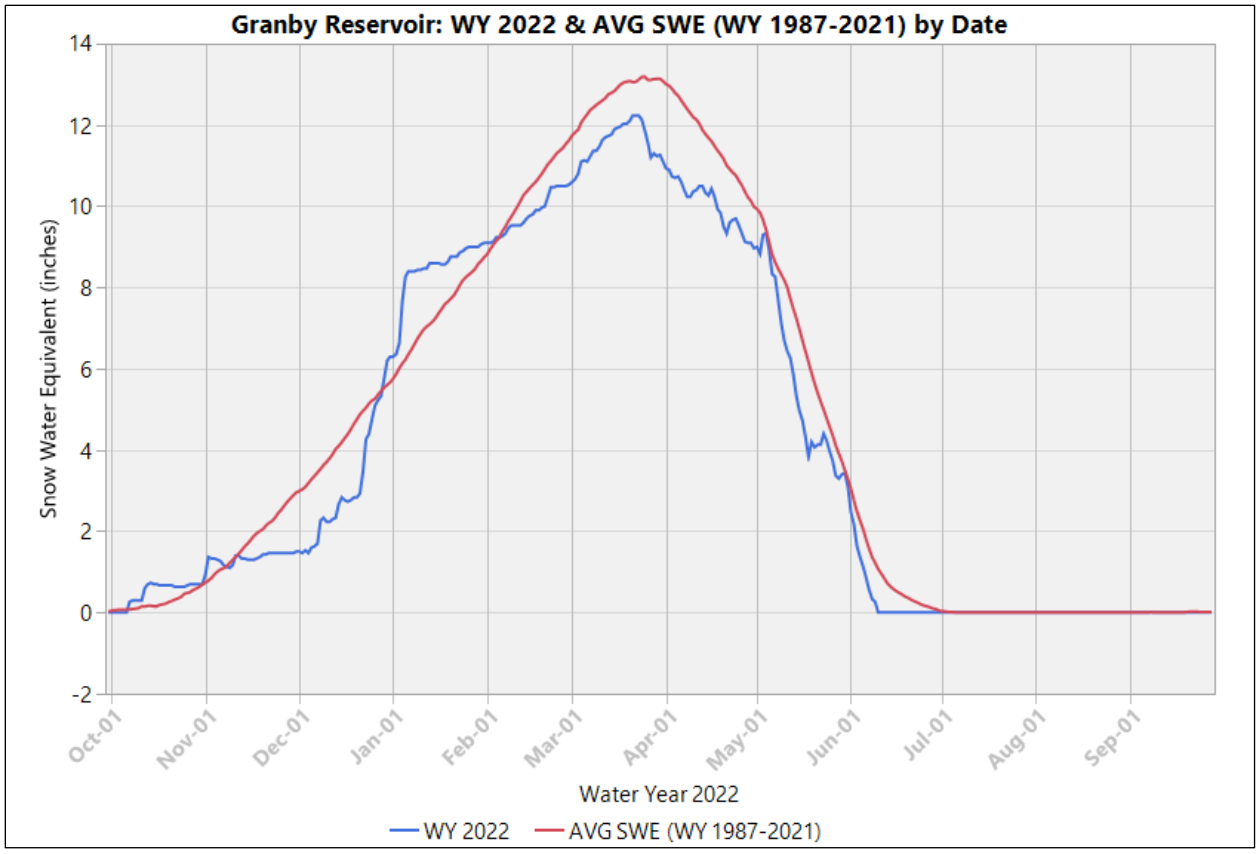


Figure 9.—WY 2022 versus 35-year average SWE for the Granby Reservoir drainage area.

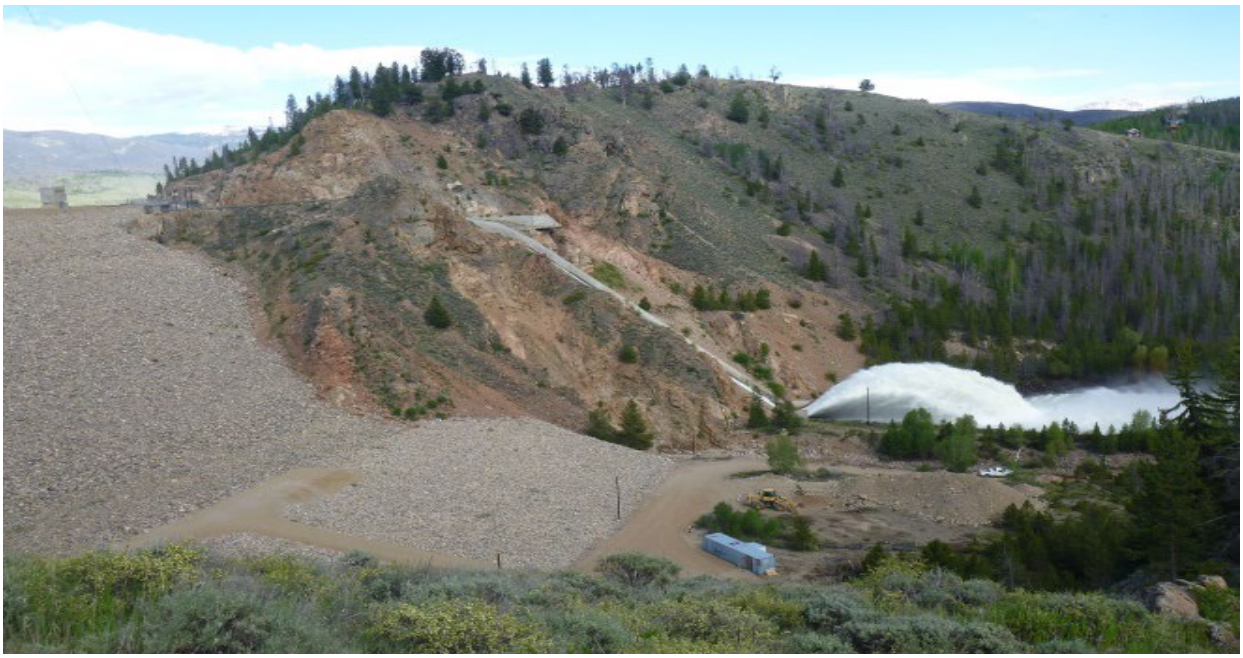


Figure 10.—Granby Reservoir spill; approximately 2,400 cfs, June 13 through June 21, 2015.

Early July through September: Adams Tunnel diversions were increased in the second week of July to match Big Thompson River demands and pumping to Carter Lake Reservoir resumed on July 11 and continued until September 6, 2022.

Grand Lake Water Clarity Operational Plan for WY 2022 was fashioned after the successful 2018 and 2019 plans. The plan included a pre-clarity operation in June into early July to reduce Adams Tunnel diversions to slightly less than Grand Lake natural inflow in an attempt to enhance total suspended solids settling and minimize introduction of Shadow Mountain Reservoir water into Grand Lake. As is typically observed, Grand Lake Secchi depth was better than Shadow Mountain clarity at the end of the pre-settling period of Grand Lake Clarity Operations. Based upon the recommendation of the Grand Lake Advisement Committee, Adams Tunnel diversions and Farr Pumping Plant began pumping on July 8, slightly earlier than the planned date of July 11, 2022. The daily average Farr Plant pumping rate on July 9, the first full day of pumping, was approximately 366 cfs. The average Grand Lake Secchi depth declined sharply with the start of pumping (4.3 m to 3.2 m) and continued to decline at a slower pace until mid-August (3.2 m to 2.6 m). The average Grand Lake Secchi depth then slightly improved the rest of the season (2.6 m to 2.8 m), synchronizing with Shadow Mountain Reservoir clarity, as is typically observed. Once Adams Tunnel diversion commenced on July 8, during the workweek the tunnel diversions were generally maintained at system capacity. During the weekend, diversions decreased to approximately 400 cfs. This cycling operation was also similar to the successful operation executed during the 2018 and 2019 clarity season. The weekday/weekend diversion difference in Adams Tunnel was designed to increase the power generation benefit and create a destabilized environment theorized to be less conducive for blue-green algae growth in Shadow Mountain Reservoir and Grand Lake. For the season, the minimum clarity of 2.5 meters was met, but the seasonal running average clarity goal qualifier of 3.8 meter was not met during Grand Lake Clarity operations in WY 2022. The running average was 3.25 meters for the season. Grand Lake clarity measurements for WY 2022 are shown in Figure 11.

A full description of the planned clarity operations and actual operations for the WY 2022 clarity period can be found in the 2022 Grand Lake Clarity Adaptive Management Final Report.

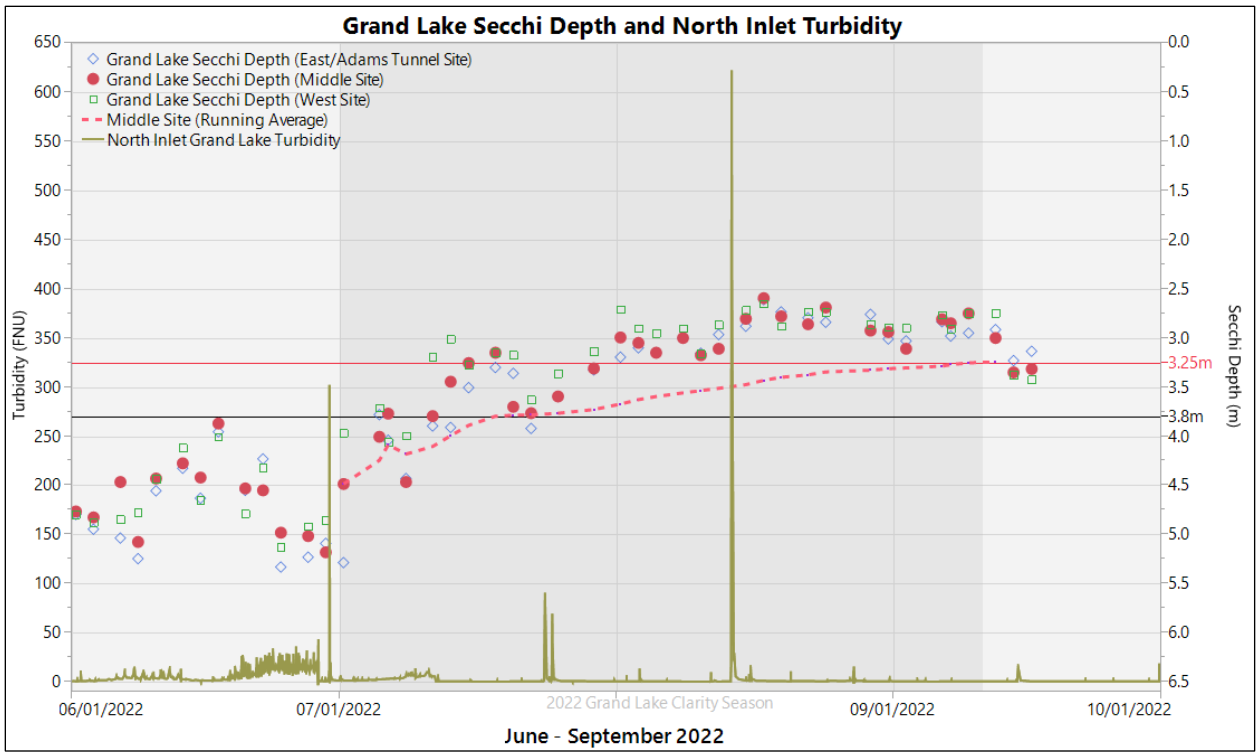


Figure 11.—North Inlet turbidity and seasonal clarity in Grand Lake for 2022 clarity season.

September: As the end of clarity season approached, pumping to Carter Lake Reservoir ceased while diversions through Adams Tunnel were gradually reduced to zero for the East Portal Spillway outage that started on September 18. Granby Reservoir finished WY 2022 with 481,116 AF of water in storage. Granby storage remained above the end of month thirty-year average storage from April 2022 through the end of the WY (Figure 12).

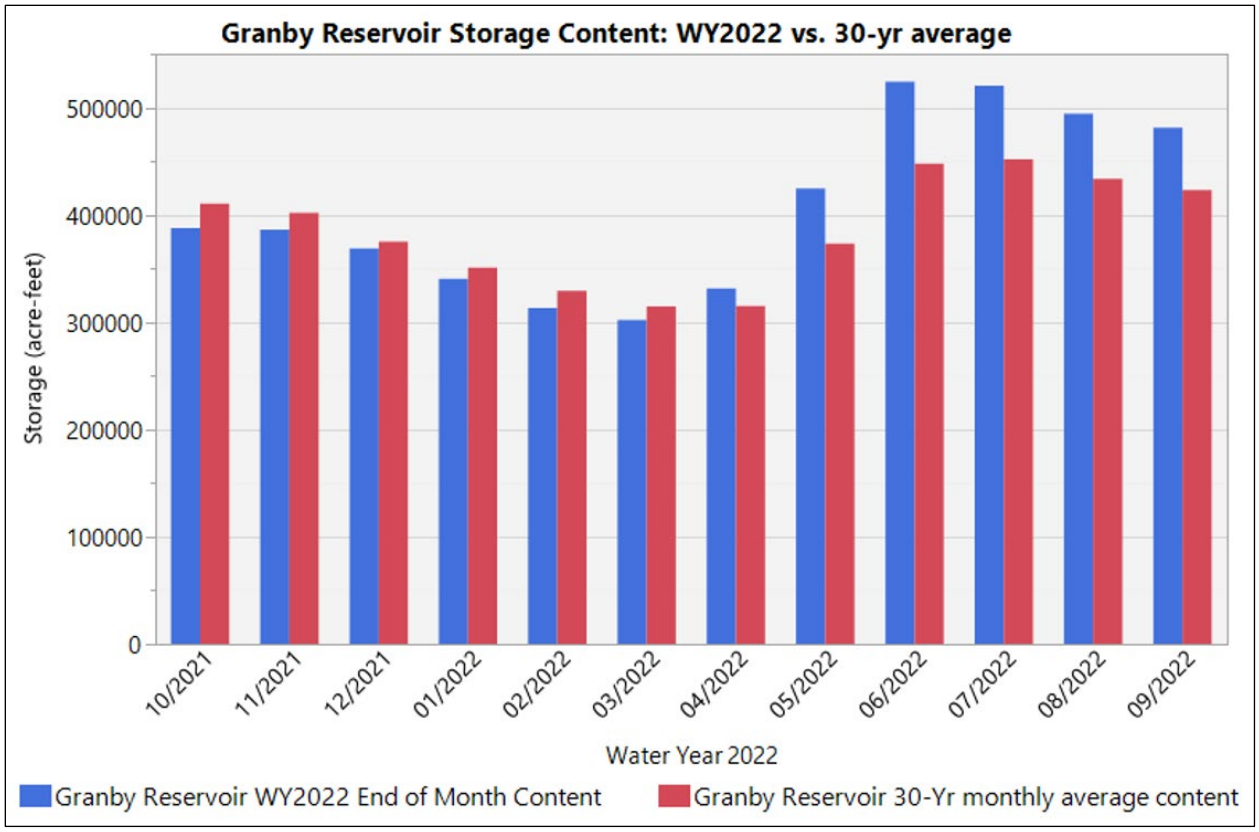


Figure 12.—Granby Reservoir storage content, WY 2022 versus the 30-year average storage content.

East Slope

Adams Tunnel, Marys Lake, and Lake Estes

November-December 2021: Like previous years, the months of November and December 2021 brought multiple inspections and maintenance projects for the C-BT. All maintenance and inspection work were completed within the outage time requested. Marys Lake Powerplant Unit #1 underwent its annual maintenance and Adams Tunnel had its annual inspection.

December 8: Water began to flow through the Adams Tunnel as storages in the power arm reservoirs were adjusted prior to pumping to Carter Lake Reservoir.

December 14: The C-BT maintenance season came to an end as Adams Tunnel flows reached 511 cfs and winter fill of east slope terminal reservoirs began. Flatiron Unit #3 pumping to Carter Lake Reservoir began at 900 hours. Diversions through the Adams Tunnel were near capacity through the end of February as Horsetooth Reservoir rapidly approached its planned target elevation for winter. Diversions were mildly reduced until March 24, 2022, as the first fill of Carter Lake Reservoir was achieved for the season.

December 16: Generation at Marys Powerplant began for the season.

January-March 2022: The snowpack above Olympus Dam started the water year near average then fell to below average by mid-November 2021. Snow accumulation was low in the first half of December 2021. Accumulation in late December and into early January 2022 was much higher, pushing totals much larger than average for the season. The snowpack fell back to average accumulation by mid-February and dropped to slightly below average by the end of March (Figure 12). Estes Powerplant Units #1, #2, and #3 annual maintanence started in early January and ended on April 29. Two units were always available for generation during the period. An emergency fiber optic line repair in Adams Tunnel was performed in mid-March. Adams Tunnel flows ceased during the repair.

January 4: The annual maintenance of Estes Powerplant Unit #1 began.

February 4: Annual maintenance of Estes Powerplant Unit #1 was completed.

February 14: Annual maintenance of Estes Powerplant Unit #2 began.

March 14-18: Adams Tunnel flows ceased for fiber optic line repair work in the tunnel on March 14. Normal diversions returned on March 18.

March 18: Annual maintenance of Estes Powerplant Unit #2 was completed.

March 28: Annual maintenance of Estes Powerplant Unit #3 began.

April: A mild warming trend in the last half of April 2022 (Figure 4, above) began to melt some of the snow at lower elevations. The inflow to Lake Estes gradually increased during the same period. Horsetooth Reservoir had achieved its target elevation in late March and Carter Lake Reservoir was filled at about the same time, so Adams Tunnel diversions were reduced throughout April to maintain Horsetooth elevation. The average Adams Tunnel diversion was 50 cfs in April. By the middle of April, snowpack had increased to slightly above normal and by end of the month snowpack was near normal.

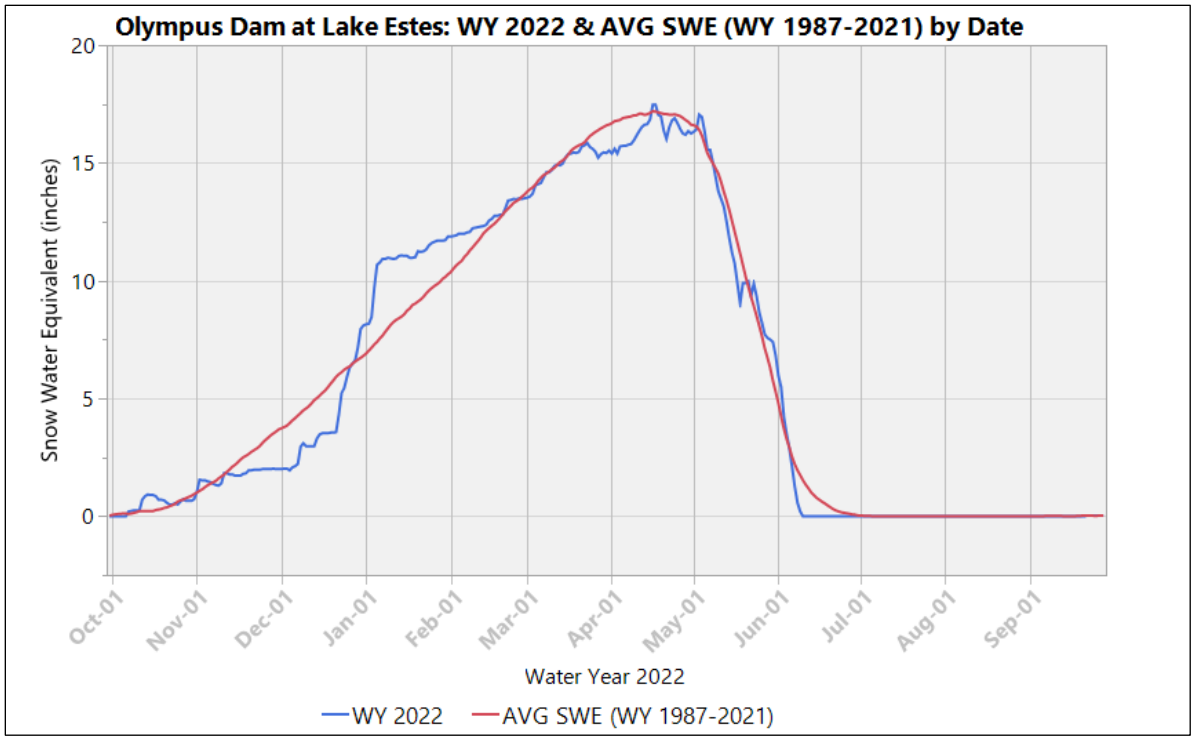


Figure 13.—WY 2022 and 35-year average SWE for the Olympus Dam drainage area.

May: Mean daily temperatures over the Front Range were three to four degrees above normal during the first half May. The natural inflow to Lake Estes continued to increase. However, temperatures for the last half of May cooled and inflows slowed. For the water year the cumulative natural inflow to Lake Estes was slightly less than the thirty-year average until June when cumulative inflow became greater than the thirty-year average (Figure 13). This tendency continued until September of 2022 when cumulative inflows for the water year ended slightly less than the thirty-year average.

May 2: Pumping to Carter Lake Reservoir resumed on May 2 and continued through May 30 as Carter Lake Reservoir was refilled to within 6,000 AF of capacity prior to the spring runoff peak. Adam Tunnel diversions averaged 326 cfs in May, while pumping to Carter Lake Reservoir averaged 285 cfs during its May pumping period.

May 10: Wind River skim operations began for the water year. A total of 660 AF for the water year was skimmed for power generation at Marys and Estes Powerplants between May 10 and July 20, 2022.

June: Mean daily temperatures over the Front Range increased from normal to above normal by the end of June 2022 with monthly precipitation near to slightly below normal. Big Thompson River, above Lake Estes, flows peaked near the fifteen-year average date. Even with near average runoff for the season the C-BT never came into priority on the east slope in WY 2022. Adams Tunnel diversion remained well below capacity as the project took full advantage of available east slope skim water. Adams Tunnel diversions averaged 92 cfs in June.

June 12: Mean daily flow for the Big Thompson River, above Lake Estes, peaked at 991 cfs. The instantaneous peak flow, also recorded on June 12, was 1,190 cfs. The maximum mean daily release to the Big Thompson River, below Lake Estes, was 504 cfs and occurred on the same day.

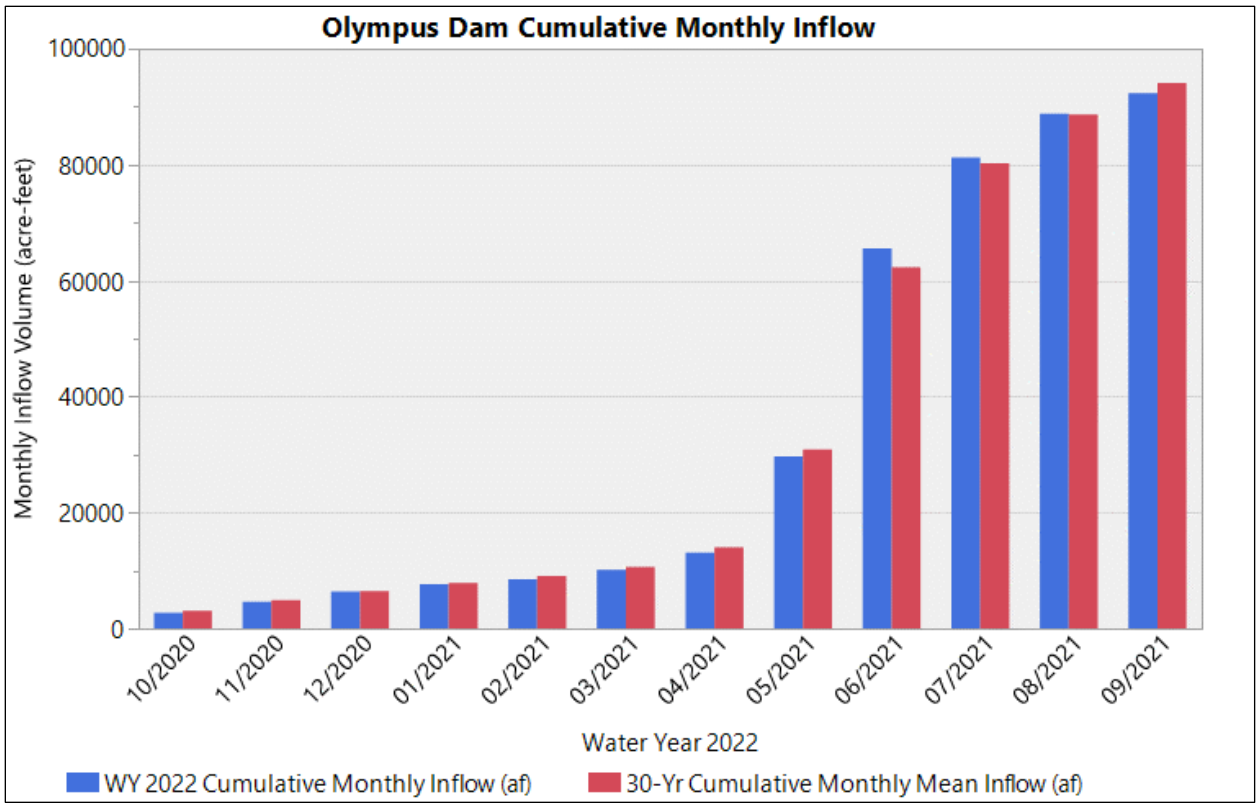


Figure 14.—Computed cumulative native inflow for Lake Estes during WY 2022 versus 30-year average.

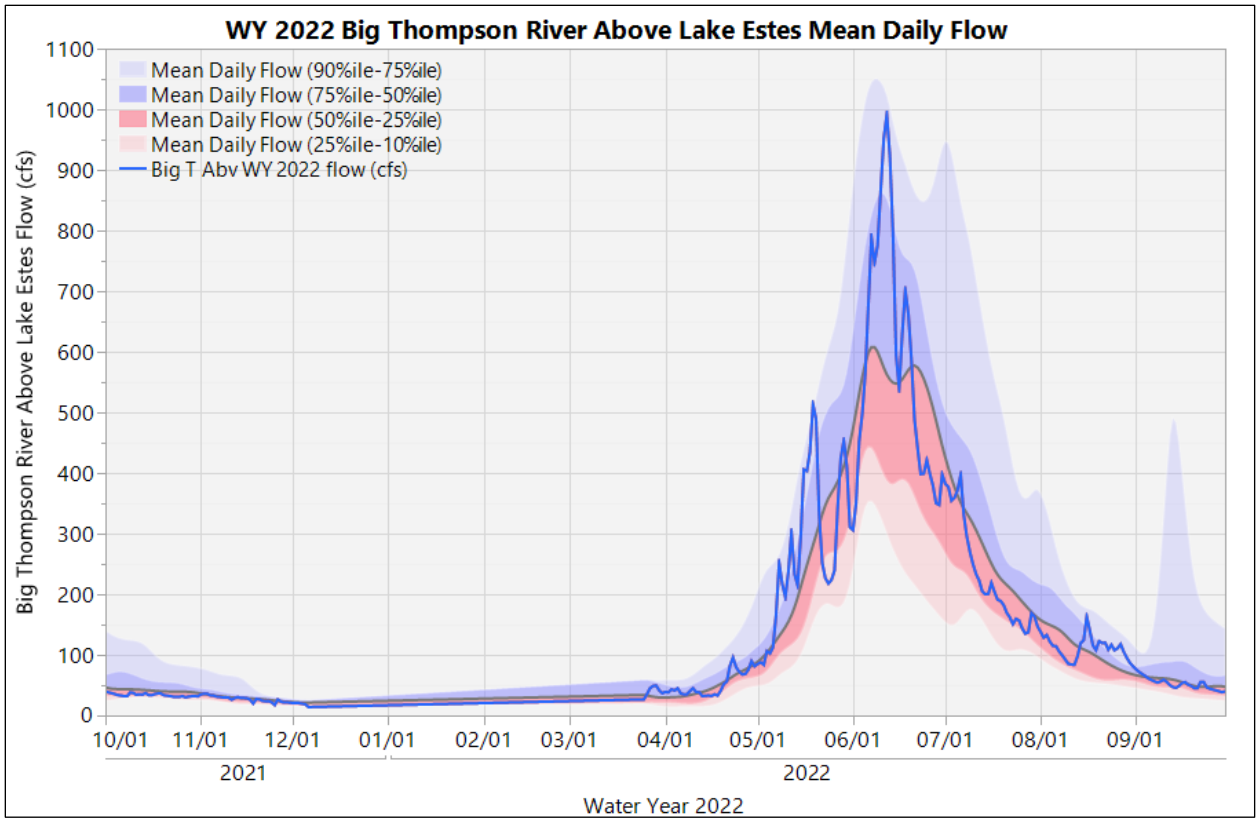


Figure 15.—Big Thompson River, above Lake Estes, WY 2022 gage flow vs. distribution of 15-year daily flows.

July-September: Adams Tunnel diversions averaged 486 cfs from July 9 through September 6 as pumping to Carter Lake Reservoir resumed on July 11. Big Thompson inflows to Lake Estes dropped and generally stayed below the 15-year median inflows (Figure 15). The exception was a short series of mid-August precipitation events during the monsoon season that drove runoff to Lake Estes higher than the 15-year median flows for the second half of August.

The observed April - July runoff to Lake Estes was approximately 71 KAF. The April 1 most probable forecast (Table 3, above) was 66.5 KAF. May 1 most probable forecast was 68.9 KAF and June 1 most probable forecast was 69.5 KAF.

Lower Power Arm, Carter Lake, and Horsetooth Reservoirs

November 2021: The Big Thompson Powerplant and Trifurcation Wasteway were winterized in early November 2021, as the annual maintenance season started for the Lower Power Arm. Pole Hill Powerplant underwent its annual maintenance in November through early December. Flatiron Unit #3 was not needed to refill Flatiron Reservoir, to meet C-BT demands. Adams Tunnel annual inspections only took ten days in November, so Adams Tunnel diversions were available to meet C-BT demands and maintain sufficient flows to address any canal freezing concerns during the outage season.

December 2021: The Pole Hill Powerplant annual maintenance was completed on schedule. Generation at Pole Hill Powerplant began for the water year at 10:00 on December 9.

December 15: Pumping to Carter Lake Reservoir from Flatiron Powerplant Unit #3 commenced at 9:00. Both Adams Tunnel diversions and Olympus Tunnel were set to about 500 cfs on the same day following the planned fill rate of Horsetooth Reservoir for the month.

January and February 2022: Both Adams and Olympus Tunnels diversions increased to near capacity throughout January and February as pumping to Carter Lake Reservoir continued. Horsetooth Reservoir fill remained on, to slightly above, the target fill rate. Flatiron Unit #1 annual maintenance began as scheduled in mid-February.

February 14: Flatiron Unit #1 annual maintenance began.

March and April: Horsetooth Reservoir target elevation was achieved in early March. Carter Lake Reservoir was filled for the first time of the season later in March. Diversions from the west slope and Olympus Tunnel (Figure 15) were gradually reduced to 10 cfs and zero flow, respectively, for an outage related to a fitment test of the Pinewood Bald Mountain inlet bulkhead. Pinewood Reservoir was drained to the inlet's invert for the fitment test. The test was needed for an extended outage starting September 2022 related to the Chimney Hollow conduit interconnect to Bald Mountain Tunnel. The flows in the CHFC 550 Section, supplied by Carter Lake Reservoir via generation mode of Flatiron Unit #3, were set to meet project demands and provide push water in the canal. Generation at Flatiron Unit #3 was used two times during the fitment outage to refill Flatiron Reservoir so project demands could be met and target flows in the canal maintained. Those flows generally maintained Horsetooth elevations throughout the remainder of the month. During early April, a nine-day CHFC canal outage occurred and Western Electricity Coordinating Council testing on Flatiron Unit #3 took place. After the fitment test of the Bald Mountain inlet bulkhead was complete, Pinewood Reservoir storage was returned to operational elevation.

March 4: Horsetooth Reservoir storage achieved its fill target of about 150,500 AF (within 6,000 AF of fill). Storage was generally maintained at this level throughout spring runoff in anticipation of east slope priority becoming available.

March 14-18: An emergency repair of fiber optic cable in Adams Tunnel was necessary. Diversions in Adams and Olympus Tunnel ceased during the repair period and Flatiron Unit #3 ceased pumping to Carter Lake Reservoir during the same period. The repair was completed and by March 18, diversions from the west slope resumed as did pumping to Carter Lake Reservoir.

March 24: Carter Lake Reservoir filled for the first time of the season and pumping to the reservoir ceased. Functional testing, following the annual maintenance of Flatiron Powerplant Unit #1, was completed and the unit was brought back into service.

March 27: Diversions in Adams Tunnel were reduced to flows less than 20 cfs and Olympus Tunnels ceased as the elevation in Pinewood Reservoir was lowered to the Bald Mountain Tunnel Inlet invert over the next seven days.

April 4: Outage for Bald Mountain tunnel bulkhead fitment and outage on CHFC begins.

April 6-8: Pinewood Reservoir refilled to operational level following outage.

April 11: Flatiron Unit #1 annual maintenance began.

April 15-18: CHFC outage ends (April 15) and flows in Adams Tunnel diversions increased to 50 cfs (April 18) to meeting project demands and provide push water flows in the CHFC 550 Section. Adams Tunnel diversions maintained near 50 cfs through the remainder of month.

April 23: Olympus Tunnel Lower Power Arm skim operations began for the season.

May: Olympus Tunnel skim of excess Big Thompson River flows continued through May. Dille Diversion was brought online in early May. Dille Diversion Dam and Tunnel power skim and Big Thompson Powerplant began in mid-May. Pumping to Carter Lake Reservoir resumed near the start of May and continued through late May.

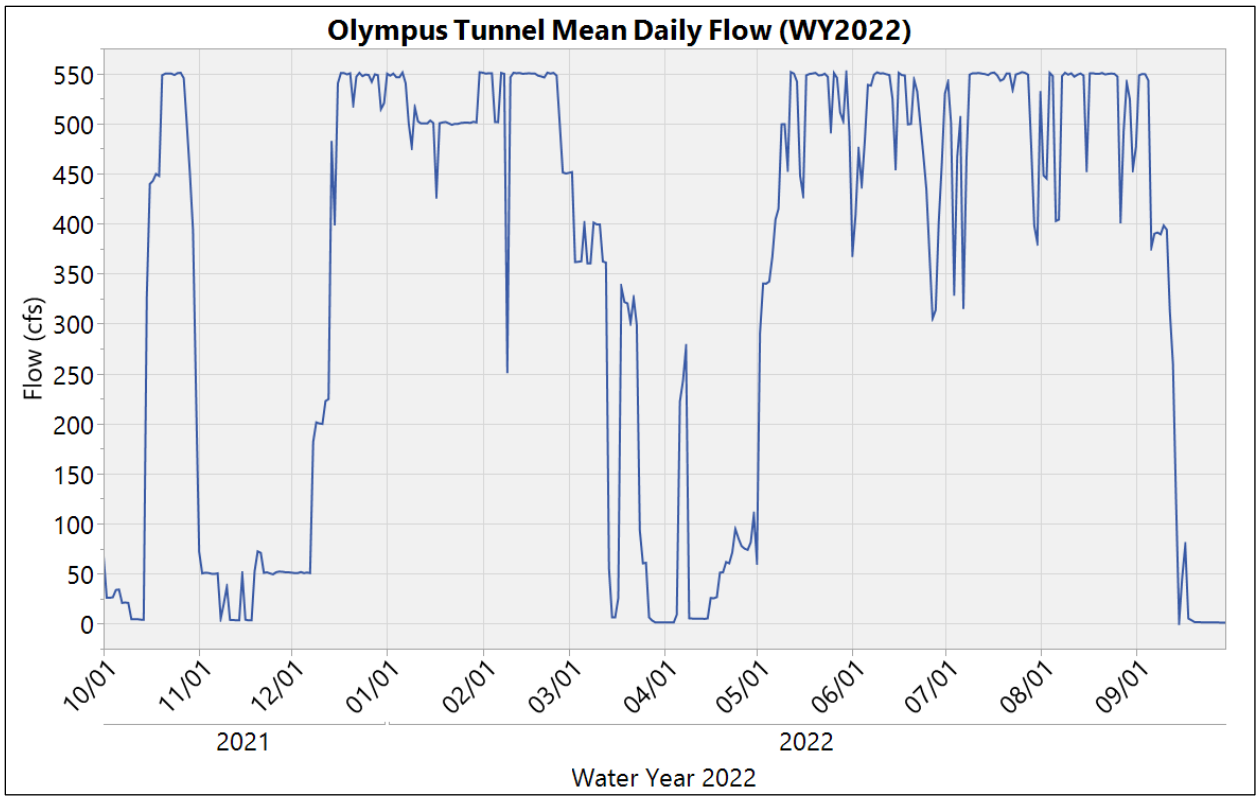


Figure 16.—Olympus Tunnel mean daily flow during WY 2022.

May 2: Pumping to Carter Lake Reservoir resumed. Adams Tunnel diversions were increased to supply pumping. In addition, by May 9 ample skim water was available to keep Olympus Tunnel near capacity throughout the remainder of May (Figure 16).

May 16: Diversions in Adams Tunnel were shut down for thirteen hours to allow inspection of East Portal Dam and Spillway. This inspection was necessary prior to the East Portal Spillway repair outage scheduled in September 2022.

May 31: Pumping to Carter Lake Reservoir ceased. A second complete fill of Carter was not planned as the intent of the May pumping period was to enhance Carter storage until pumping resumed once again in July in support of Grand Lake clarity operations. With the Flatiron Unit #3 shut down of pumping to Carter Lake, project operations moved to power skim, to take full advantage of east slope runoff. For May, Olympus Tunnel power skim totaled of 7,829 AF.

June: Power skim operations dominated the month as a total of 23,036 AF of skim was diverted to Olympus Tunnel. Adams Tunnel diversions were reduced, averaging 92 cfs for the month. Demands from Horsetooth Reservoir exceeded available inflows from the CHFC in the first week of June and Horsetooth storage declined throughout the remainder of the WY. The project never came into priority on the east slope during WY 2022.

July-September: Pumping to Carter Lake Reservoir resumed in mid-July. The snowmelt driven Olympus Tunnel skim operations ended in late July, although there were some rainfall runoff events the second half of August, a result of monsoonal moisture that allowed additional skim during that time. Dille Dam and Tunnel skim for the season was intermittent, once again hampered throughout the skim season by poor water quality issues in the Big Thompson River from runoff events originating from the North Fork of the Big Thompson River drainage area on the burn scar left by the Cameron Peak Fire in 2020.

July 11: Pumping to Carter Lake Reservoir resumed for the third time during the season in support of Grand Lake clarity objectives. Pumping to Carter would continue throughout most the clarity season and ended in early September.

September 6: Pumping to Carter Lake Reservoir ended for the WY as the Grand Lake clarity season wound down. On the same day, Flatiron Unit #3 started annual maintenance for the season. Between September 6 and 19, Adams Tunnel diversion were gradually reduced to zero flow in preparation for the tunnel outage needed for the East Portal Spillway repairwork starting on September 19.

September 15: Dille Dam and Tunnel skim operations ended for the WY. Only 1,628 AF were skimmed into Dille Tunnel for the season, much less than average, and was due to continuing water quality issues in the Big Thomspon River associated with rainfall events over the burn scar in the North Fork of the Big Thompson River. By comparison, Olympus Tunnel skim operations totaled 38,621 AF for the season as the project took full advantage of the water available for skim orignating upstream of the North Fork of the Big Thompson River burn scar.

September 18: A three month outage began for the East Portal Spillway repair work. No Adams Tunnel diversion occured until after the spillway repair was complete.

September 19: A two month outage on the Lower Power Arm of the project began for the Chimney Hollow conduit interconnect to Bald Mountain Tunnel. Between September 6 and 19, Pinewood Reservoirs elevation was lowered to the Bald Mountain Inlet invert so a bulkhead could be placed on the inlet to allow the interconnect work. Flow in Olympus Tunnel ceased for the remainder of the month.

Throughout WY 2022: Carter Lake and Horsetooth Reservoirs elevations supported all boat ramps during the recreation season. Sufficient supplies met all water deliveries for the WY. A total of 108,314 AF was delivered to Carter Lake Reservoir during the WY; 87,450 AF were provided to

Horsetooth Reservoir and customers along the CHFC 550 Section. Carter Lake Reservoir ended the WY with 74,766 AF in storage, greater than average and about 8,700 AF less than it started the WY. Horsetooth Reservoir had 94,442 AF in storage at the end of the WY, also above average yet much lower than it started the WY.

Carter Lake and Horsetooth Reservoirs demands were lower than projected. Timely rainfall events occurred during the beneficial monsoon season from the end of June through mid- to late August that served to reduce demands. Carter Lake Reservoir end of month content remained above the thirty-year average for all months except June during WY (Figure 17). Horsetooth Reservoir content remained above its thirty-year average and was substantially above the average content from October 2021 through May 2022 during WY (Figure 18).

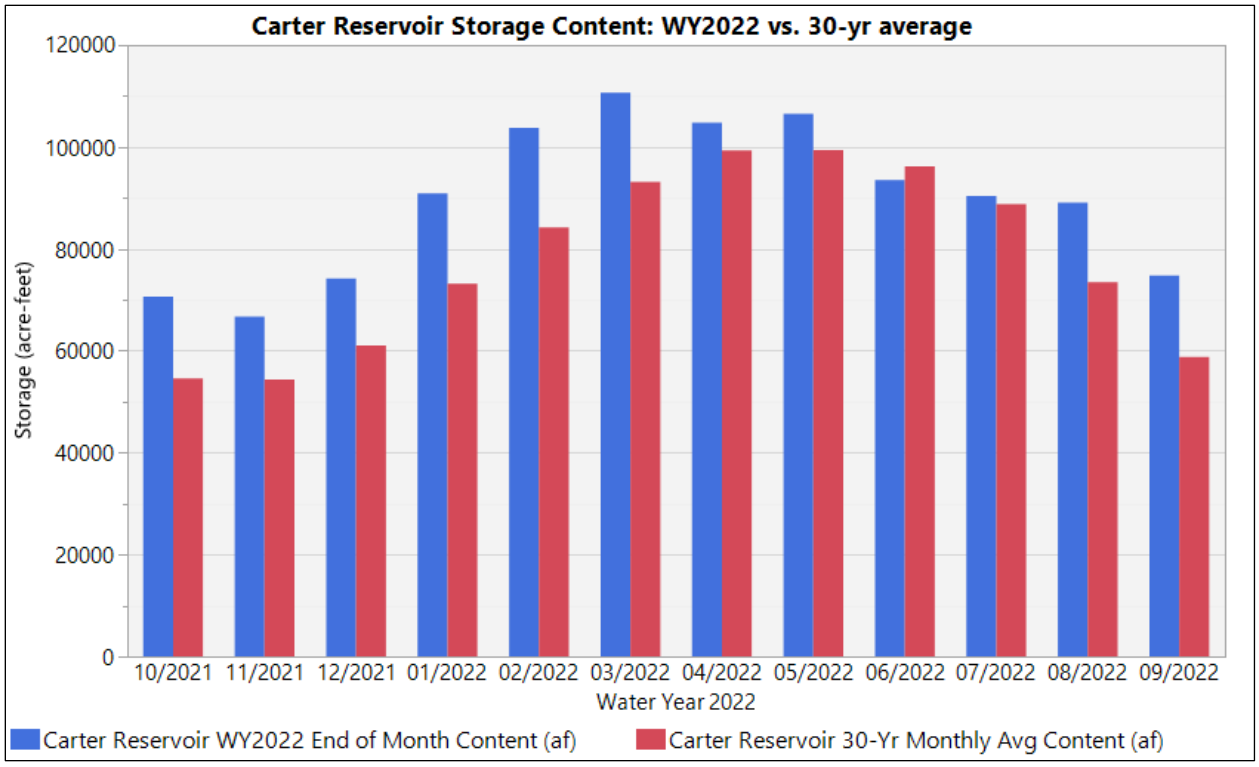


Figure 17.—Carter Lake Reservoir storage content during WY 2022 versus its 30-year average.

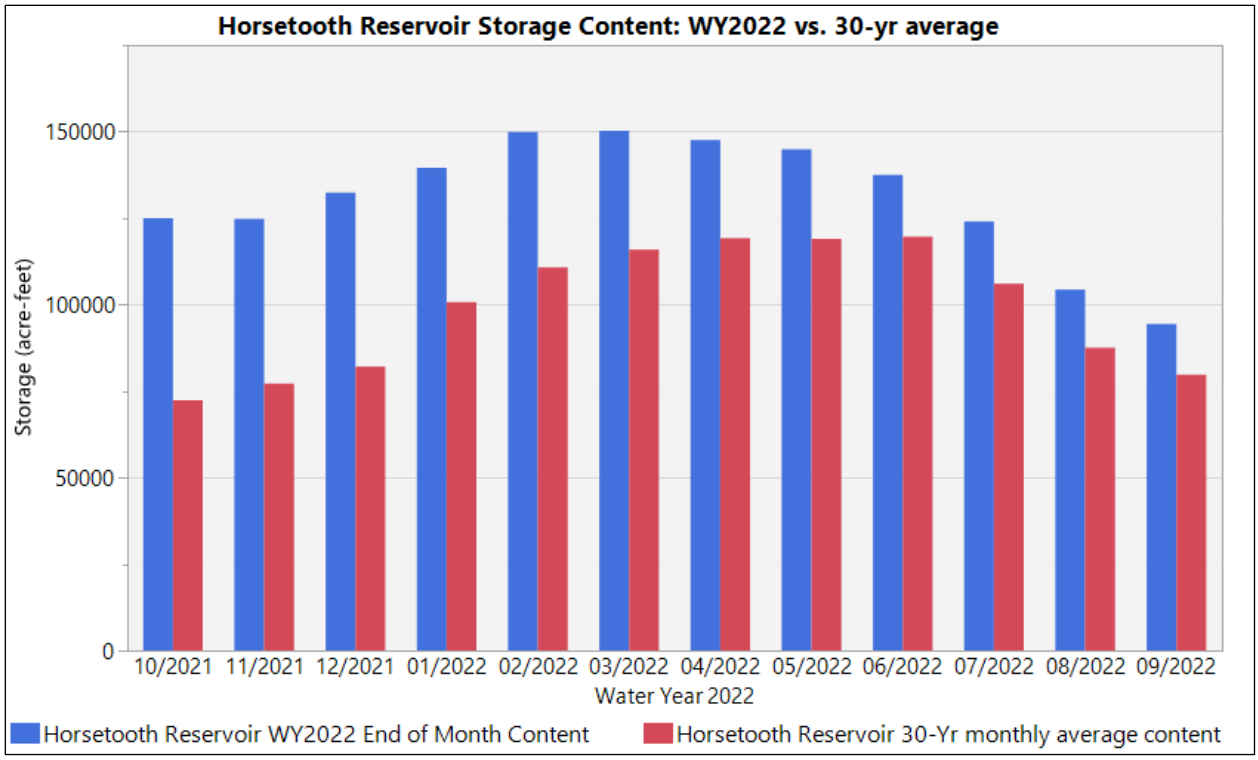


Figure 18.—Horsetooth Reservoir storage content during WY 2022 versus its 30-year average.

Green Mountain Reservoir

Climate and Hydrology WY 2022: Hydrologic conditions within the Upper Colorado River Basin were mildly below normal for Green Mountain Reservoir operations during the winter delivery season. Average snow accumulation was observed from October 2021 to the end of November. Snow accumulation was below normal until the end of December and then above normal through most of January 2022. For February through the end of the season snowpack remained below normal (Figure 19). Mainstem Colorado River flow was below normal from October through March. By the time of the average peak snow accumulation date of April 27, the observed accumulation was only 91 precent of the seasonal average. The April 1 runoff forecast projected an un-depleted runoff volume to Green Mountain Reservoir of 220 KAF, approximately 78 percent of normal (Table 3, shown previously). The May 1 runoff forecast was again 220 KAF and the June 1 forecast was 227 KAF. The observed April through July runoff for the WY was 218 KAF.

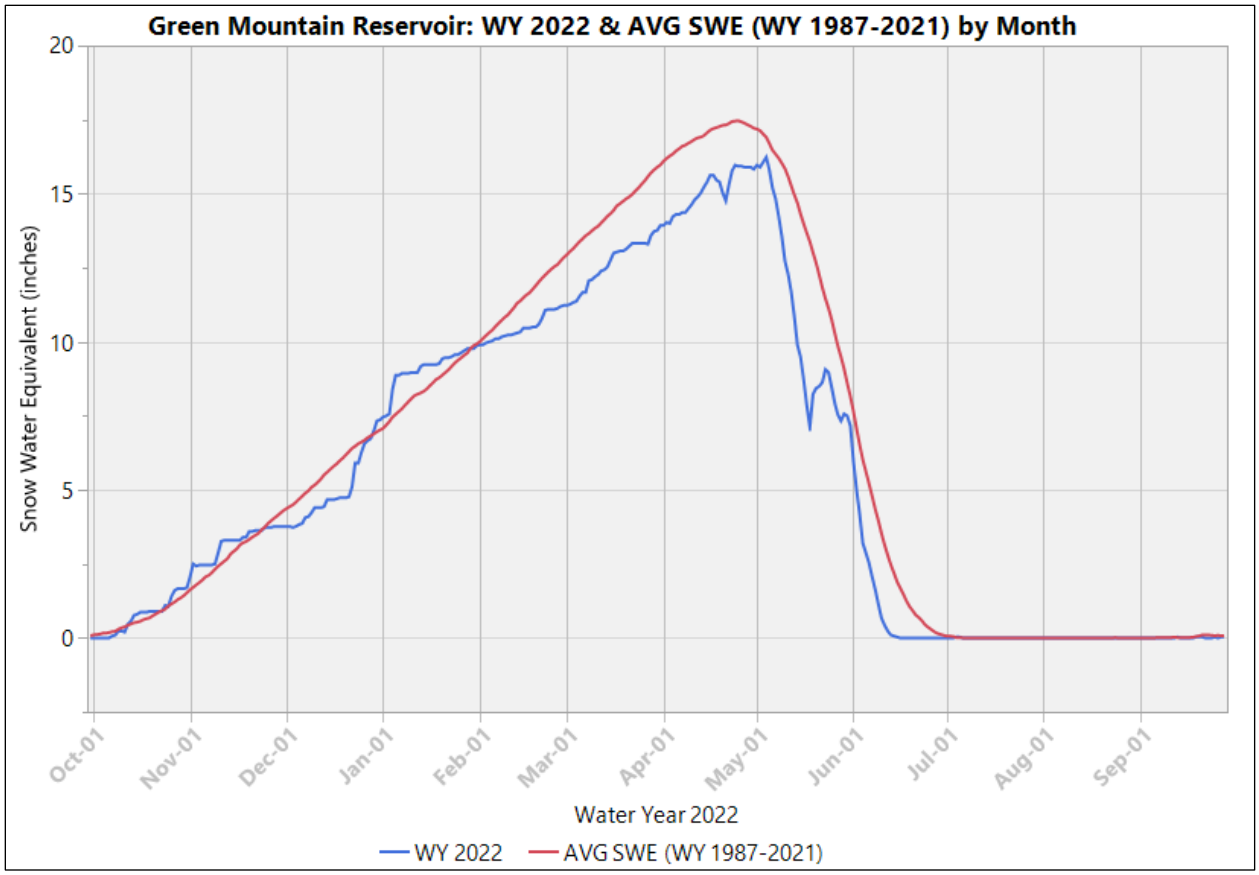


Figure 19.—WY 2022 and 30-year average SWE for the Green Mountain Reservoir drainage area.

Blue River Basin's, above Green Mountain Reservoir, 2022 snow-accumulation and melt resulted in the lowest April-July runoff volume since the 2018 runoff year and produced the third year in a row of below average runoff. Snow accumulation tracked with the below average runoff years of 1998, 2001, and 2005 on April 1. Average daily inflow to Green Mountain Reservoir peaked at 2,626 cfs on June 11, 2022, with substantial upstream diversion by the cities of Denver and Colorado Springs. The total observed April-July runoff was 218 KAF, only 1 percent less than the April 1 forecast for the most probable plan. Total April-July runoff volume was 81 percent of the forty-year median April-July runoff volume.

The low runoff and substantial upstream diversion operations by the cities of Colorado Springs and Denver precluded Green Mountain Reservoir from reaching a physical fill. South Platte Basin's peak snow accumulation was slightly above normal for seasonal average accumulation. Dillon Reservoir's April 1 carry over storage was at the fifteenth percentile, did not fill, and stored 47 KAF between April 1 and July 31. During this period, Roberts Tunnel Diversion was 53.5 KAF, 325% of normal, due in part to higher demands for Blue River sources. This was because of storage restrictions created by the Gross Reservoir Expansion Project, by Colorado Spring Utilities. April-July east slope diversion was 10.2 KAF, which included approximately 2 KAF storage of water owed to Green Mountain Reservoir in Upper Blue Reservoir.

The upper Colorado River Basin's was at 85 percent of normal April 1 with SWE contributing to a drier than normal April through June and resulted in an April-July runoff of hydrology, well below average. Like the previous year, main-stem Colorado River flow remained well below average leading into snow-melt runoff. River flow at the Shoshone Powerplant did allow relaxation of the Shoshone direct flow water right with the C-BT partially in priority starting March 30, 2022. The Division 5 Engineer did not implement a senior Grand Valley irrigation call during the April irrigation startup. The Colorado River at Cameo reached a runoff peak on June 12, 2022, of 10,800 cfs within the lower quarter of runoff recorded peak in eighty-eight years.

Colorado River streamflow mostly remained below average during runoff. Except for brief melt peaks in April and May, Colorado River at Dotsero flows remained below average. Mainstem flow decreased below Shoshone Powerplant Senior water Rights administrative levels on July 10, 2022. The Shoshone Outage Protocol became effective since the Shoshone Powerplant was not fully operational. The Colorado State Engineer placed a Shoshone Junior Administrative Water Right Call on July 22, 2022. A Cameo Call became effective on July 30, 2022, which remained mostly in place with various priorities until October 24, 2022.

October through April WY 2022 Delivery Operations: Green Mountain Reservoir continued stored water delivery through the end of the irrigation season and throughout the winter delivery season. The Colorado River remained under administration from October 1, 2021, until April 4, 2022. ShOP operations were in effect from April 4, 2022, to April 18, 2022, due to unavailability of the Shoshone Powerplant.

HUP water delivery operations continued through October 2021. During the end of the irrigation season Green Mountain Reservoir delivered 9,718 AF of HUP water. Delivery included 1,903 AF for HUP beneficiaries' replacement. This replacement release included 543 AF of HUP water release to fulfill ShOP obligations. Direct delivery for Grand Valley irrigation included 848 AF for Grand Valley Irrigation Company. The HUP entities declared HUP surplus for the 2021 fill year on October 12, 2021, then began surplus delivery. A total HUP surplus delivery of 2,385 AF between October 14 and October 26 in support of the Colorado River Endangered Fish Recovery Program occurred. HUP storage was 11,688 AF at the end of the irrigation season.

Green Mountain Reservoir delivered HUP stored water for winter replacement and irrigation season startup from November 1, 2021, through April 29, 2022. A total of 1,673 AF of HUP replacement was delivered during this period that included 1,062 AF for ShOP operations. This exceeded the 500 AF of HUP water that is typically reserved for winter HUP beneficiary replacement. The HUP Management Entities elected to deliver additional HUP surplus water in April 2022. Colorado River stream flow was inadequate to meet irrigation demand without substantially impacting flow within the 15 Mile Reach. Green Mountain Reservoir delivered 1,010 AF of HUP surplus in April. Surplus release rates averaged 72 cfs over 7 days and with delivery rates between 50 and 130 cfs.

Green Mountain Reservoir provided stored replacement water between October 1, 2021, and "Declaration of Start-of-Fill" for the 2022 fill year on May 2, 2022. The Silt Project continued to divert out of priority in October 2021 while exchanging 229 AF of replacement water from Green Mountain Reservoir. The C-BT project remained out-of-priority for 186 days from October 1, 2021, through May 2, 2022. Not including the 14 days that ShOP was in effect, Green Mountain Reservoir delivered 20,450 AF of C-BT stored collection system replacement water. During this period Green Mountain

Reservoir delivered 3,081 AF for contract deliveries, 672 AF for Green Mountain Reservoir evaporative losses, and 3,480 AF for ShOP.

The Shoshone Outage Protocol Agreement parties arranged to implement ShOP for 11 days during the October-April delivery season. This included the period between April 7, 2022, and April 18. Green Mountain Dam exercised the direct flow power right during this period and released reservoir inflow plus 3,840 AF from storage for discretionary power generation.

On April 18, 2022, Green Mountain Reservoir reached the water year's minimum storage at 48,719 AF, with a water surface elevation of 7879.14. Green Mountain Reservoir was not impacted by any operating restrictions during the winter delivery season. The Heeney Slide operating restriction applies below elevation 7865 (36,957 AF) where drawdown cannot exceed 0.5 feet per day. End of month storage contents for the reservoir during WY 2022 are compared to the thirty-year average below (Figure 20). There were no other operating restrictions for Green Mountain Reservoir in WY 2022.

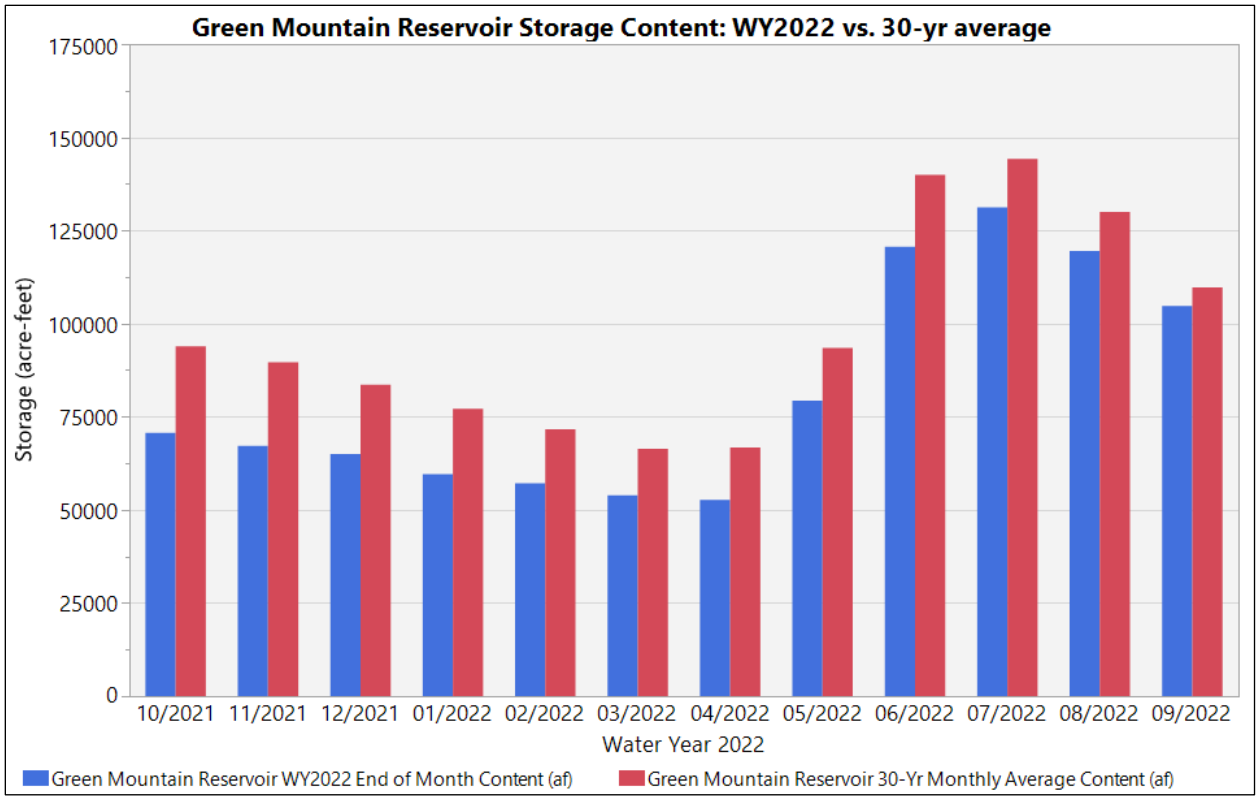


Figure 20.—Green Mountain Reservoir monthly content during WY 2022 and 30-year average content.

March 09, 2022: The HUP managing entities held the 2021 HUP Operations Wrap Up meeting. The agenda included reports on total HUP deliveries and Green Mountain Reservoir operations for the 2021 Irrigation Year and the Colorado River Endangered Fish Recovery Program 2021 operations. Reclamation informed the entities that Green Mountain Reservoir was forecast to have an administrative fill with a high probability of substitution operations due to a below average forecasted runoff, and that the HUP allocation was expected to refill the full 66,000 AF. The status of the Heeney

Slide operation restriction was also discussed including the expectation that it would not apply during the 2022 irrigation season.

April through July Fill Operations: Green Mountain Reservoir exercised refill storage rights on April 18, 2022, until declaration of fill. Under the 1935 refill storage right, Green Mountain Reservoir stored 338 AF. The Start-of-Fill was declared on May 2, 2021. On May 2, reservoir storage was 52,972 AF, within the bottom tenth percentile of the historical average storage for that date.

Reclamation forecasted that Green Mountain Reservoir would obtain an administrative fill in WY 2022 with a substantial substitution replacement volume owed by the Cities for out of priority diversion. The below-average May 1, 2022, runoff projections indicated a reservoir physical fill in less than 20 percent of possible hydrologic scenarios. The Denver Water Board and Colorado Springs Utilities were permitted to divert out of priority since the most probable forecasts projected a volume of runoff available for power generation.

The Colorado State Engineer office administered Green Mountain Reservoir operations under the Green Mountain Administrative Protocol (Protocol) for the 2022 fill season. Green Mountain Reservoir discontinued power generation from May 2 through July 9 to increase the runoff volume for storage and upstream diversion.

May 2: The Start-of-Fill for Green Mountain Senior Refill Right was declared for WY 2022. Re-allocation of the carry over storage replenished the 52,000 AF collection system replacement pool, and a portion 100 KAF power pool. The runoff forecast provided adequate confidence in refill of contract water for the 2022 fill season. Reclamation placed no limitation on water contract release during the fill season.

May 15: Forecasted runoff did not support conducting the Colorado River Endangered Fish Recovery Program CROs for 2022.

May 26: Runoff volume allocated for power exhausted with the city's depletions.

June 19: Green Mountain Reservoir obtains an administrative fill using the 1935 First Fill Storage Right. administration with a 1955 priority date to facilitate exchange of cities out-of-priority diversions.

June 22: The HUP Managing Entities held their initial meeting remotely to consider hydrologic conditions and to plan for Irrigation Year 2022 operations. A total of 15 weekly conference calls were held between July 13 and October 19, 2022, to manage releases from Green Mountain, Ruedi, Granby, Wolford Mountain, and Williams Fork Reservoirs; to coordinate irrigation diversions in the Grand Valley; and to attempt to maintain the mean monthly target flows in the 15-Mile Reach. The U.S. Fish and Wildlife Service proposed an average year target flow of 810 cfs due to hot and dry forecast. The Colorado River Endangered Fish Recovery Program stated that due to the limited chance for HUP surplus and reduced pools within Ruedi Reservoir that scheduling of endangered fish flow would attempt to maintain release of the recovery program stored water at closer to 200 and 250 cfs for the season. This release rate would likely result in extended periods of flow with 15-Mile Reach below the 810 cfs target.

July 10: Shoshone Outage Protocol participants began ShOP operations including voluntary releases from Wolford and Williams Fork Reservoirs. Aurora Water partially participated by using Green Mountain Reservoir contracted water to fulfill their ShOP obligation.

July 21: Colorado River Water Rights administration became effective with the Shoshone Powerplant Junior direct flow right. ShOP continued to be in effect to maintain the 1,250 cfs ShOP Colorado River flow target.

July 25: Green Mountain Reservoir obtained maximum fill level of 7,939.47 feet for the 2022 fill year.

August 9: The end of the 1935 Storage Water Right fill as per the Green Mountain Administrative Protocol Section per II.A.3. b. Green Mountain Reservoir fill included a cities replacement obligation of 20,230 AF.

September 4: HUP managing entities declare HUP Surplus for the 2022 Fill Year.

September 6: The Cities began substitution replacement operations with releases from Wolford, Williams Fork, Dillon, and Upper Blue Reservoirs. Transit losses were calculated for releases from Upper Blue and Dillon. In addition, Ruedi Reservoir Insurance Pool water contract released water to mitigate injury from the use of the Redtop Ditch for the 5,412.5 AF Colorado River Endangered Fish Recovery Program allocation in Granby Reservoir.

May-September: Green Mountain Reservoir made storage releases from May 2 through the end of the water year. During the 2022 fill and delivery period, Green Mountain Reservoir delivered 45,704 AF from reservoir storage including 14,549 AF from the city's replacement obligations and the Ruedi Reservoir Insurance Pool. Delivered storage included: 9,848 AF for Colorado River Collection System replacement, 28,634 AF for HUP beneficiary replacement, irrigation direct delivery, and surplus, 1,800 AF for Silt Project replacement, 2,706 AF for contracts, 1,012 AF for Green Mountain Reservoir evaporation losses, and 1,631 AF for ShOP operations. Since Green Mountain Reservoir did not physically fill in 2022, the reservoir stored and delivered 73 AF for the Colorado River District Moser Ditch Excess Capacity contract.

2023 Annual Operation Plan

Collection System and East Slope Colorado-Big Thompson Project

The 2023 C-BT Most-Probable Annual Operating Plan (AOP 2023)[4] is developed considering the effects of historical average runoff values, the expected demands, and depletions of Northern Water (including an assumed Northern Water quota of 70 percent) and Denver Water, the C-BT Project's initial states (e.g., pool levels, storage), other average values, special operations such as previously planned system outages, and maintenance schedules. Included in the 2023 AOP are two significant C-BT outages. One is for East Portal concrete spillway repairs that started in September 2022 and

[4] Graphs summarizing C-BT Most-Probable, Minimum Reasonable and Maximum Reasonable AOPs are provided in Appendix B-8. Only the Most-Probable AOP is summarized in the text of this section.

scheduled to end in December 2022. Adams Tunnel diversions will cease for three months to accommodate that work. The second is for Chimney Hollow Reservoir, a Northern Water outage for installation of a wye connection to Flatiron Unit #3 pressure conduit[5]. The outage is scheduled to start in mid-February 2023 and end in mid-May 2023. Pumping to Carter Lake Reservoir is not available during the outage.

The 2023 AOP uses a projected 226,900 AF total inflow to the west slope collection system during WY 2023. It simulates pumping 47,500 AF of water from Willow Creek Reservoir and no spill at Granby Reservoir for the water year. Windy Gap Reservoir is expected to pump 35,000 AF of water to Granby in WY 2023.

The 2023 AOP projects diversions totaling 260,500 AF through the Adams Tunnel during the water year. Slightly less than half of the projected diversions were planned between December 2022 and April 2023. Sufficient capacity remained and is simulated to convey 18,800 AF of Big Thompson River skim water at Olympus Tunnel and 41,400 AF of skim at Dille Tunnel for power generation. The 2023 AOP includes zero priority water from the Big Thompson River.

The 2023 AOP simulates a fill of Horsetooth Reservoir, but a fill of Carter Lake Reservoir was not attainable due to the mid-February through mid-May 2023 scheduled outage on Flatiron Unit #3 pressure conduit for Northern Water's wye connection to Chimney Hollow Reservoir. Carter Lake Reservoir is expected to reach its peak storage in late June of 2023 of 89,700 AF or about 22,500 AF short of fill. Demands are projected to exceed supplies starting in August, with an associated reservoir drawdown through the end of the water year to an ending elevation of about 5733. Horsetooth Reservoir maximum content will be achieved by the end of June 2023 after which time, demands are expected to exceed supplies and the reservoir elevation will decline to a minimum 5407.5 at the end of the water year. Total deliveries from Carter Lake and Horsetooth Reservoirs are simulated as 123,300 and 128,100 AF, respectively. Initial water year storage content of Carter Lake Reservoir is 74,800 AF and simulated ending content is 83,700 AF. Horsetooth Reservoir's initial content is 94,400 AF and the simulated ending content is 114,500 AF.

Green Mountain Reservoir

The Green Mountain Reservoir Most-Probable 2023 AOP[6] used a projected 241,000 AF Green Mountain Reservoir total (depleted) inflow. With that inflow, plans provide for Green Mountain to fill in 2023, achieving maximum content in the toward the middle of July. Total Green Mountain Reservoir releases are simulated as 235,600 AF, all through the powerplant. The most probable scenario requires no substitution obligation for Denver and Colorado Springs because the reservoir obtained a physical fill. The Green Mountain 2023 AOP included refill of all Green Mountain Reservoir allocations for delivery during the 2022-2023 delivery season. The simulated minimum

[5] This second outage was cancelled in mid-January 2023 due to greater than average snow accumulation on the west slope for the time of year. The snowpack created concern about Granby Reservoir spill with storage space available in Carter Lake Reservoir (as simulated in the October 2022 AOP model). The outage was rescheduled for September through December 2023. The February 2023 AOP was updated to include the outage schedule adjustment which significantly altered simulated storage of Carter Lake Reservoir for the remaining WY.

[6] Graphs summarizing Green Mountain Reservoir Most Probable, Minimum Reasonable and Maximum Reasonable AOPs are provided in Appendix B-8. Only the Most-Probable AOP is summarized in the text of this section.

reservoir water surface elevation was about 7891 in mid-April before refill begins, which is twenty-six feet above the Heeney Slide operational restriction of elevation 7865.0.

The Green Mountain 2023 AOP assume that Denver and Colorado Springs would deplete a total of 119,800 AF. Per the Blue River decree, the cities would be required to replace water obligated toward the senior storage right should a fill shortage occur in Green Mountain Reservoir due to the cities' out-of-priority depletions.

Appendix A

Daily Records for WY 2022

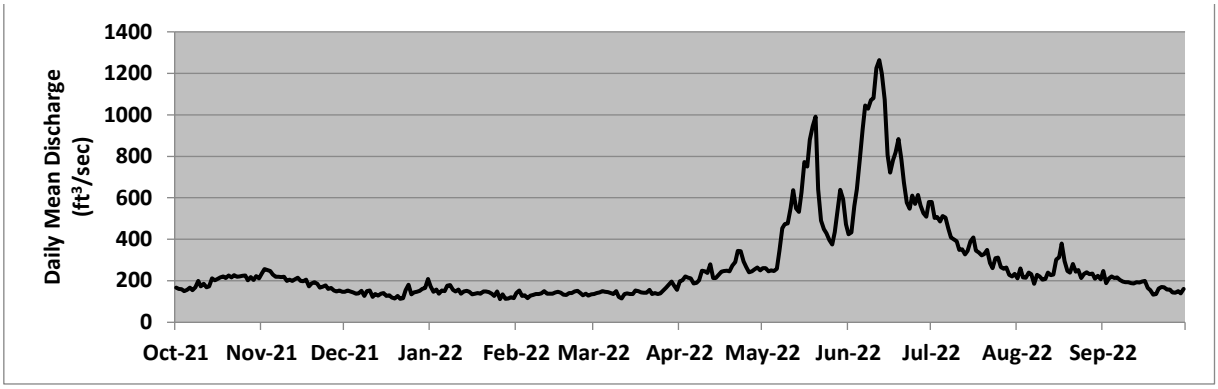
Appendix A summarize the daily operations by primary feature of Green Mountain Reservoir and the Colorado-Big Thompson Project for Water Year 2022.

Appendix A – Daily Records for WY2022
Appendix A (1 of 38)
Green Mountain Reservoir, CO

Location.—Lat 39°52'42", long 106°19'42", Summit County, Hydrologic Unit 14010002, on Green Mountain Dam, 13 miles southeast of Kremmling, Colorado, on the Blue River.
Gage.—Water level recorder with satellite telemetry. Elevation of gage is 7960 feet (m.s.l.) from topographic map.
Remarks.—Inflow computed daily based on change in content from midnight to midnight, and on the 24-hour average releases from Green Mountain Reservoir. Recorders were operated from 01-Oct-2021 to 30-Sep-2022. Records are complete and fair. This record consists of operational data which could be subject to future revisions and changes.

Inflow, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	167	236	148	172	141	136	197	260	425	580	212	248
2	161	256	152	146	153	140	202	260	433	502	259	189
3	159	251	149	157	126	143	220	245	560	507	216	210
4	150	247	144	138	130	150	214	250	641	486	215	221
5	156	231	138	152	115	146	211	246	781	512	239	212
6	166	219	140	150	128	145	187	258	930	504	231	216
7	154	219	151	176	132	141	190	344	1046	451	185	204
8	169	217	127	179	135	136	203	454	1029	409	228	196
9	199	219	149	155	136	150	248	473	1071	399	221	193
10	173	198	153	148	139	122	245	477	1080	390	206	193
11	185	205	123	158	150	115	237	550	1225	348	209	188
12	168	199	135	138	137	136	280	637	1265	351	239	186
13	173	207	128	149	137	140	213	548	1200	327	227	193
14	212	215	138	151	137	136	213	532	1074	344	230	191
15	202	200	141	147	143	135	229	626	806	390	302	197
16	208	197	126	134	147	152	244	772	722	409	314	199
17	216	205	130	138	142	149	248	750	781	346	379	166
18	221	173	118	140	133	144	248	880	818	336	295	155
19	213	187	114	137	132	142	245	945	884	323	248	133
20	225	192	127	148	141	142	273	992	786	329	240	137
21	216	185	113	148	141	156	290	641	673	348	280	162
22	227	167	116	145	149	137	344	490	576	286	244	170
23	220	171	154	138	152	140	343	449	548	261	251	168
24	220	177	181	127	142	136	292	429	610	309	212	158
25	223	160	134	149	129	139	266	396	570	312	233	157
26	226	165	143	112	137	153	241	375	613	265	241	143
27	201	153	147	134	128	168	246	434	563	258	231	141
28	218	148	151	112	135	181	254	542	526	263	234	150
29	204	152	161	114		197	264	638	509	228	210	139
30	222	146	165	120		175	250	594	579	221	223	161
31	211		209	116		157		472		233	207	
Min	**150**	**146**	**113**	**112**	**115**	**115**	**187**	**245**	**425**	**221**	**185**	**133**
Max	**227**	**256**	**209**	**179**	**153**	**197**	**344**	**992**	**1265**	**580**	**379**	**248**
Mean	**196**	**197**	**142**	**143**	**137**	**146**	**245**	**515**	**777**	**362**	**241**	**179**
ac-ft	**12026**	**11701**	**8737**	**8783**	**7631**	**9002**	**14552**	**31658**	**46262**	**22269**	**14799**	**10663**

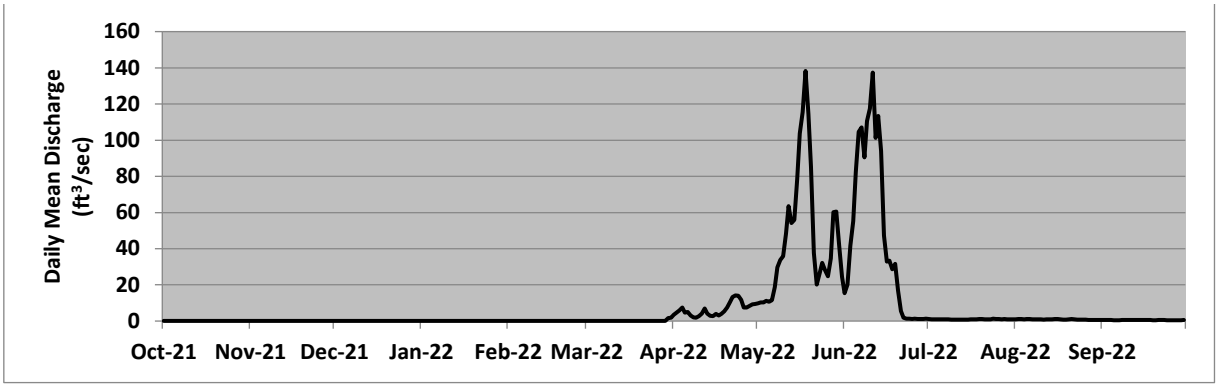


Appendix A (2 of 38)
Elliot Creek Canal near Green Mountain Reservoir, CO

Location.—Lat 39°52'25", long 106°19'49", Summit County, Hydrologic Unit 14010002, on left bank at concrete flume structure, and 1.1 mi west of Heeney.
Gage.—Water-stage recorder with satellite telemetry. Elevation of gage is 8050 ft (m.s.l.) from topographic map.
Remarks.—This is a diversion from Elliot Creek in the Blue River Basin to Green Mountain Reservoir. Recorder was winterized on 01-Oct-2021. The station was put back into service from 30-Mar-2022 to 30-Sep-2021. Values for the off-season were set to zero. Records are reliable while recorder is operated. This record contains operational data which could be subject to future revisions and changes. Official data is published by the United States Geological Survey as site #09056500.

Discharge, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	0	0	0	0	0	0	4	10	15	1	1	1
2	0	0	0	0	0	0	5	10	20	1	1	1
3	0	0	0	0	0	0	6	10	42	1	1	1
4	0	0	0	0	0	0	8	11	55	1	1	1
5	0	0	0	0	0	0	5	11	82	1	1	1
6	0	0	0	0	0	0	5	12	105	1	1	1
7	0	0	0	0	0	0	3	19	107	1	1	1
8	0	0	0	0	0	0	2	30	90	1	1	1
9	0	0	0	0	0	0	2	34	111	1	1	1
10	0	0	0	0	0	0	3	36	118	1	1	1
11	0	0	0	0	0	0	4	48	137	1	1	1
12	0	0	0	0	0	0	7	63	101	1	1	1
13	0	0	0	0	0	0	4	54	113	1	1	1
14	0	0	0	0	0	0	3	56	94	1	1	1
15	0	0	0	0	0	0	3	79	47	1	1	1
16	0	0	0	0	0	0	4	104	33	1	1	1
17	0	0	0	0	0	0	3	116	33	1	1	1
18	0	0	0	0	0	0	4	138	29	1	1	1
19	0	0	0	0	0	0	5	114	32	1	1	1
20	0	0	0	0	0	0	8	85	17	1	1	1
21	0	0	0	0	0	0	11	38	6	1	1	1
22	0	0	0	0	0	0	13	20	2	1	1	1
23	0	0	0	0	0	0	14	26	1	1	1	1
24	0	0	0	0	0	0	14	32	1	1	1	1
25	0	0	0	0	0	0	12	28	1	1	1	0
26	0	0	0	0	0	0	8	25	1	1	1	0
27	0	0	0	0	0	0	8	35	1	1	1	1
28	0	0	0	0	0	0	8	60	1	1	1	0
29	0	0	0	0		0	9	61	1	1	1	0
30	0	0	0	0		2	9	42	1	1	1	1
31	0		0	0		2		24		1	1	
Min	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**10**	**1**	**1**	**1**	**0**
Max	**0**	**0**	**0**	**0**	**0**	**2**	**14**	**138**	**137**	**1**	**1**	**1**
Mean	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**46**	**47**	**1**	**1**	**1**
ac-ft	**0**	**0**	**0**	**0**	**0**	**7**	**380**	**2838**	**2775**	**61**	**55**	**32**

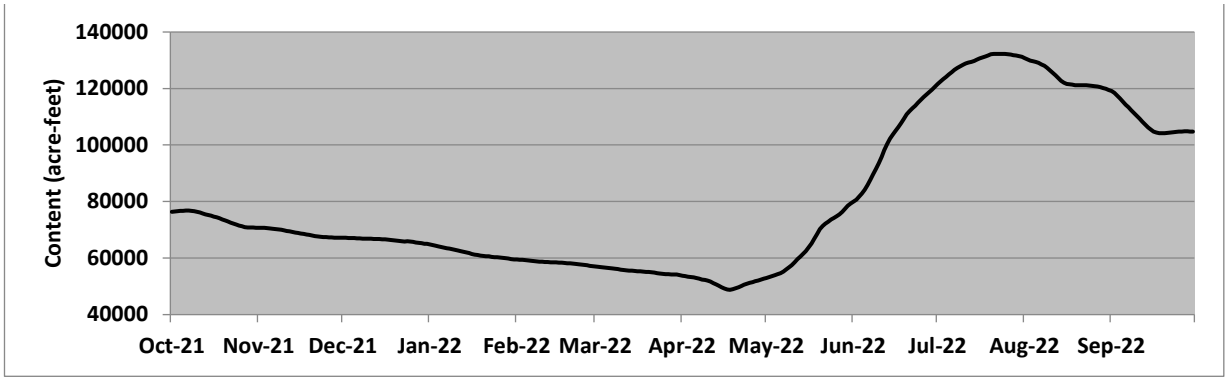


Appendix A (3 of 38)
Green Mountain Reservoir, CO

Location.— --Lat 39°52'42", long 106°19'42", Summit County, Hydrologic Unit 14010002, on Green Mountain Dam, 13 miles southeast of Kremmling, Colorado, on the Blue River.
Gage.—--Water level recorder with satellite telemetry. Elevation of gage is 7960 ft (m.s.l.) from topographic map.
Remarks.—--Reservoir is formed by an earth-fill dam. Construction completed in 1943. Impoundment began on 16-Nov-1942. Green Mountain Reservoir provides storage used for replacement water of the C-BT diversions. Recorder was operated from 01-Oct-2021 to 30-Sep-2022. Maximum capacity is 153,639 AF at elevation 7950.00 ft, with 146,779 AF of active capacity. Records are complete and fair, but the data has not been revised. This record consists of operational data which could be subject to future revisions and changes.

Storage, AF, 2400-hour Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	76383	70721	67169	64870	59492	57001	53791	52972	80014	121617	130724	119114
2	76486	70733	67157	64632	59450	56888	53585	53311	80696	122459	130303	118465
3	76576	70672	67134	64417	59355	56776	53419	53644	81638	123306	129865	117519
4	76654	70599	67099	64169	59270	56673	53321	53987	82751	124118	129597	116521
5	76744	70491	67052	63898	59155	56560	53204	54322	84136	124971	129388	115391
6	76860	70369	67006	63672	59050	56448	52963	54679	85817	125827	129028	114304
7	76847	70248	66971	63494	58955	56326	52672	55207	87733	126577	128535	113309
8	76654	70114	66890	63327	58850	56194	52411	55952	89608	127233	128025	112341
9	76550	69993	66867	63114	58755	56093	52276	56735	91570	127855	127345	111341
10	76344	69823	66867	62881	58681	55932	52076	57525	93546	128403	126483	110318
11	76086	69617	66808	62669	58639	55761	51703	58461	95800	128820	125584	109284
12	75789	69413	66773	62416	58587	55670	51181	59567	98138	129160	124656	108241
13	75508	69222	66726	62185	58534	55589	50672	60497	100337	129425	123655	107224
14	75278	69054	66703	61965	58471	55498	50186	61385	102286	129730	122698	106246
15	74972	68875	66680	61735	58440	55407	49722	62460	103716	130170	122000	105376
16	74666	68719	66622	61483	58419	55347	49204	63819	104983	130648	121581	104737
17	74387	68576	66541	61234	58366	55287	48837	65145	106361	130991	121508	104429
18	74047	68361	66412	61038	58272	55217	48736	66726	107822	131336	121362	104219
19	73657	68172	66273	60909	58179	55137	48948	68433	109419	131721	121180	104138
20	73292	67995	66157	60800	58106	55057	49287	70235	110813	132067	121107	104187
21	72918	67806	66018	60692	58034	54978	49657	71359	111978	132260	121180	104283
22	72557	67617	65903	60584	57951	54829	50130	72171	112961	132222	121180	104396
23	72184	67523	65880	60465	57847	54689	50597	72905	113885	132183	121125	104510
24	71813	67475	65903	60347	57722	54540	50964	73594	114933	132241	120979	104607
25	71493	67393	65800	60305	57567	54401	51275	74224	115903	132260	120870	104704
26	71236	67334	65685	60187	57432	54302	51532	74806	116948	132125	120797	104770
27	70953	67287	65547	60112	57277	54252	51798	75495	117894	131971	120651	104835
28	70831	67251	65398	59963	57134	54223	52085	76395	118772	131798	120433	104852
29	70770	67228	65249	59803		54223	52392	77497	119620	131663	120178	104770
30	70770	67192	65088	59674		54144	52672	78531	120615	131470	119907	104753
31	70721		65019	59557		53948		79324		131163	119493	
Min	**70721**	**67192**	**65019**	**59557**	**57134**	**53948**	**48736**	**52972**	**80014**	**121617**	**119493**	**104138**
Max	**76860**	**70733**	**67169**	**64870**	**59492**	**57001**	**53791**	**79324**	**120615**	**132260**	**130724**	**119114**
Mean	**74194**	**68862**	**66368**	**61826**	**58428**	**55400**	**51377**	**64883**	**102023**	**129284**	**123917**	**108439**
ac-ft	**70721**	**67192**	**65019**	**59557**	**0**	**53948**	**52672**	**79324**	**120615**	**131163**	**119493**	**104753**

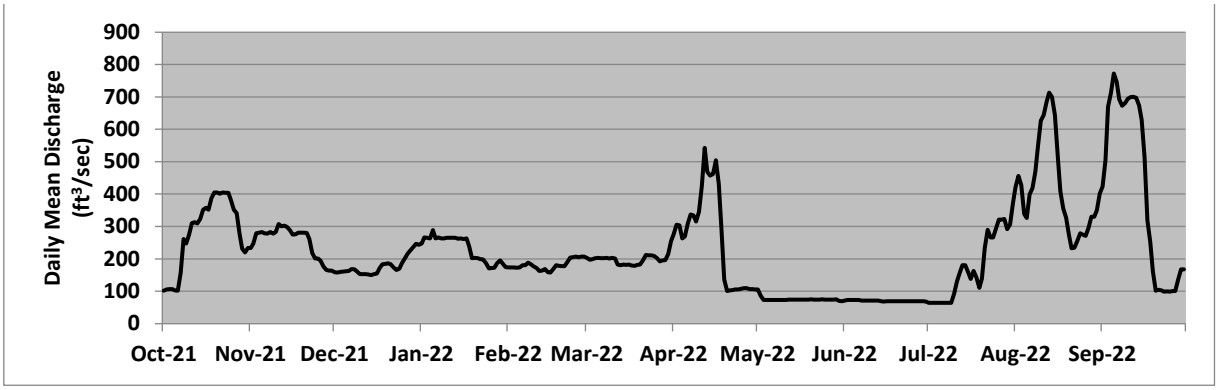


Appendix A (4 of 38)
Blue River below Green Mountain Reservoir, CO

Location.— --Lat 39°52'49", long 106°20'00", Summit County, Hydrologic Unit 14010002, on left bank 0.3 miles upstream from Elliot Creek, 0.3 miles downstream from Green Mountain Reservoir and 13 miles southeast of Kremmling.
Gage.—-- Water-stage recorder with satellite telemetry. Datum of gage is 7682.66 feet (levels by Bureau of Reclamation).
Remarks.—--Drainage area is 599 sq. mi. including 15.3 sq. mi. of Elliot Creek above the diversion for Elliot Creek feeder canal. Flow regulated by Green Mountain Reservoir since 1942. Diversions for irrigation of 5,000 acres upstream from station. Trans-mountain diversions upstream from station. Recorder was operated from 01-Oct-2021 to 30-Sep-2022. Recorded values are complete and reliable. This record consists of operational data which could be subject to future revisions and changes. Official record is published by the United States Geological Survey.

Discharge, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	102	234	159	247	174	203	276	106	71	64	421	423
2	106	248	158	266	174	197	306	86	73	64	456	504
3	107	279	160	265	174	199	304	73	74	64	427	670
4	107	281	161	263	173	202	263	74	74	64	338	712
5	102	283	161	289	173	203	270	74	74	64	326	772
6	101	279	163	263	181	202	308	74	73	64	399	747
7	156	278	169	266	180	202	337	74	71	64	419	692
8	261	283	168	263	188	203	334	74	71	64	469	673
9	247	278	161	263	184	201	315	74	71	64	546	680
10	274	283	153	265	177	203	345	73	71	92	627	694
11	310	307	152	265	171	201	425	73	71	130	644	699
12	313	301	153	265	163	182	542	74	71	155	685	700
13	309	302	152	265	164	181	469	74	71	181	713	698
14	323	298	150	262	169	182	457	74	70	181	699	674
15	352	289	153	263	159	181	462	74	69	159	644	629
16	358	275	155	261	158	183	504	74	69	138	516	515
17	352	276	171	263	169	179	432	74	69	163	408	318
18	388	281	183	239	180	179	298	74	69	142	356	252
19	405	281	184	202	178	182	137	75	69	111	327	162
20	405	281	186	203	178	183	101	75	69	139	273	102
21	401	280	183	202	178	196	102	75	69	234	233	104
22	405	261	174	200	191	212	104	75	69	289	235	103
23	404	218	166	198	204	211	106	75	69	266	255	99
24	404	201	170	187	205	211	105	75	70	266	279	99
25	381	201	186	170	207	209	107	75	69	294	275	99
26	352	194	201	172	205	203	109	75	70	322	271	101
27	341	177	216	172	207	193	109	75	69	321	295	101
28	277	166	226	187	207	195	107	75	69	323	330	136
29	232	164	236	195		196	106	75	70	291	330	167
30	220	164	246	185		215	106	70	68	307	349	167
31	233		244	175		255		70		372	401	
Min	**101**	**164**	**150**	**170**	**158**	**179**	**101**	**70**	**68**	**64**	**233**	**99**
Max	**405**	**307**	**246**	**289**	**207**	**255**	**542**	**106**	**74**	**372**	**713**	**772**
Mean	**281**	**255**	**177**	**232**	**181**	**198**	**265**	**75**	**70**	**176**	**418**	**416**
ac-ft	**17305**	**15158**	**10907**	**14245**	**10054**	**12186**	**15757**	**4623**	**4193**	**10818**	**25680**	**24774**

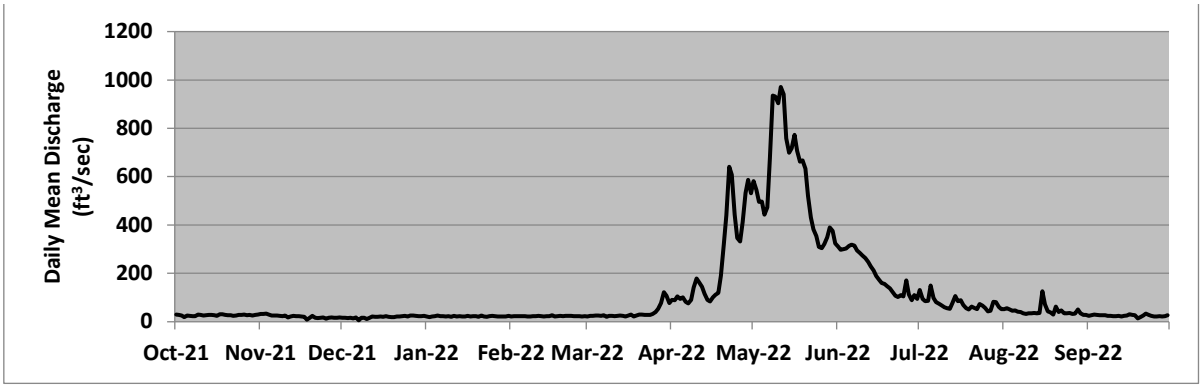


Appendix A (5 of 38)
Willow Creek Reservoir, CO

Location.— –– Lat 40°08'52", long 105°56'28", Grand County, Hydrologic Unit 14010001, at Willow Creek Dam, 4 miles north of Granby, Colorado, on Willow Creek, a tributary of the Colorado River.
Gage.—— Water level recorder with satellite telemetry. Elevation of gage is 8130 ft (m.s.l.) from topographic map.
Remarks.——Inflow computed daily using change in content from midnight to midnight, plus the 24-hour average releases through the Willow Creek Pump Canal and the reservoir outlet works. Recorders were operated from 01-Oct-2021 to 30-Sep-2022. Records are complete. Negative values are based on accounting procedures and mass balances. This record consists of operational data which could be subject to future revisions and changes.

Inflow, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	29	32	17	21	22	22	90	582	311	132	52	24
2	28	32	16	19	22	24	89	544	298	94	55	27
3	26	33	15	22	22	23	104	495	300	85	51	30
4	19	29	16	23	22	26	95	497	302	86	46	29
5	25	26	14	25	22	25	101	443	313	149	46	27
6	24	25	17	22	23	24	82	474	318	98	42	27
7	23	26	5	23	21	27	76	676	314	81	39	26
8	23	25	16	21	22	21	90	935	295	75	35	24
9	29	23	17	22	23	24	141	931	284	67	32	24
10	29	26	10	20	23	25	179	904	274	59	34	22
11	25	18	16	24	24	22	162	971	263	56	35	23
12	27	21	22	22	22	25	145	941	247	53	36	24
13	29	24	21	23	22	25	116	758	228	77	35	21
14	28	23	20	22	23	24	90	699	212	106	36	24
15	27	23	21	22	23	22	83	718	190	84	126	25
16	24	22	20	23	27	26	101	773	173	89	72	31
17	31	20	22	21	22	29	111	707	160	69	42	28
18	30	8	20	23	22	22	120	662	156	56	38	26
19	29	16	19	23	24	25	190	667	147	50	30	14
20	26	23	19	20	23	29	319	633	138	62	63	19
21	27	17	21	25	24	30	440	521	123	57	40	26
22	24	15	21	21	24	28	640	431	107	52	46	34
23	25	17	23	21	24	28	607	382	102	73	34	29
24	29	18	24	22	23	28	443	354	109	67	34	24
25	28	13	21	24	23	32	346	309	105	57	35	22
26	30	16	25	22	23	40	332	304	171	42	32	21
27	27	18	25	22	22	53	412	321	113	46	33	22
28	28	17	24	21	23	76	533	349	89	82	50	21
29	25	17	23	21		122	587	390	110	81	35	22
30	28	18	23	22		107	531	375	94	61	28	26
31	30		24	24		77		323		52	27	
Min	**19**	**8**	**5**	**19**	**21**	**21**	**76**	**304**	**89**	**42**	**27**	**14**
Max	**31**	**33**	**25**	**25**	**27**	**122**	**640**	**971**	**318**	**149**	**126**	**34**
Mean	**27**	**21**	**19**	**22**	**23**	**36**	**245**	**583**	**202**	**74**	**43**	**25**
ac-ft	**1647**	**1267**	**1190**	**1364**	**1273**	**2204**	**14588**	**35841**	**11995**	**4555**	**2656**	**1475**

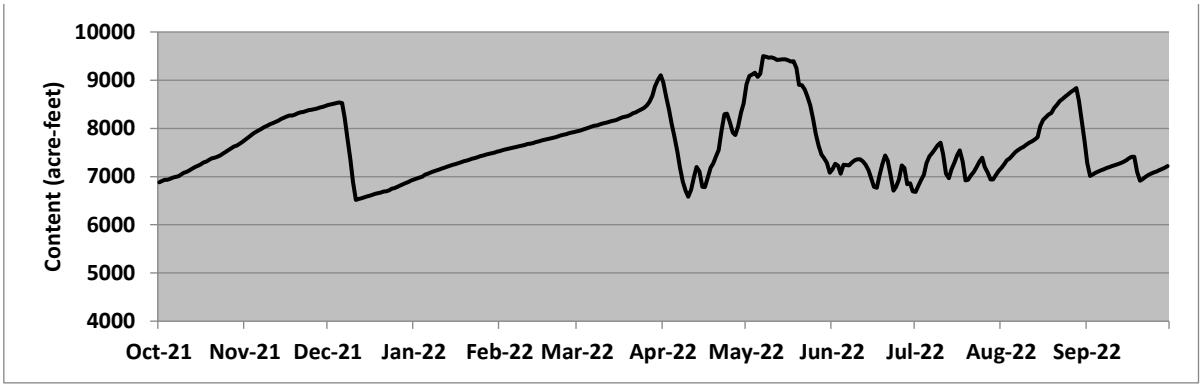


Appendix A (6 of 38)
Willow Creek Reservoir, CO

Location.— —-Lat 40° 08'52", long 105° 56'28", Grand County, Hydrologic Unit 14010001, at Willow Creek Dam, 4 miles north of Granby, Colorado, on Willow Creek, a tributary of the Colorado River.
Gage.—— Water level recorder with satellite telemetry. Elevation of gage is 8130 ft (m.s.l.) from topographic map.
Remarks.——Reservoir is formed by an earth-fill dam. Construction completed in 1953. Impoundment began on April 2, 1953. Willow Creek Reservoir stores water from Willow Creek for diversion to Granby Reservoir via the Willow Creek Canal. Maximum capacity is 10,600 AF at elevation 8,130.00 ft, with 9,100 AF of active capacity between elevations 8077.00 and 8130.00 feet. Recorder was operated from 01-Oct 2021 to 30-Sep-2022. Record is complete and fair. This record consists of operational data which could be subject to future revisions and changes.

Storage, AF, 2400-hour Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	6879	7766	8484	6945	7533	7942	8956	8916	7149	6685	7180	7285
2	6911	7801	8498	6961	7550	7958	8658	9094	7268	6815	7263	7018
3	6936	7852	8512	6981	7565	7973	8389	9117	7227	6927	7338	7048
4	6933	7896	8528	7004	7580	7994	8101	9154	7064	7041	7381	7078
5	6956	7932	8539	7041	7593	8015	7824	9073	7246	7280	7445	7107
6	6979	7966	8526	7064	7608	8033	7516	9134	7242	7423	7503	7132
7	6995	7997	8223	7088	7620	8054	7194	9503	7232	7491	7555	7156
8	7009	8028	7776	7107	7632	8065	6897	9491	7297	7568	7590	7180
9	7046	8057	7350	7128	7647	8083	6704	9467	7340	7652	7620	7201
10	7081	8091	6891	7144	7660	8101	6586	9473	7362	7708	7662	7220
11	7100	8109	6520	7165	7675	8114	6729	9458	7357	7467	7705	7242
12	7132	8133	6536	7184	7688	8130	6995	9422	7321	7062	7733	7263
13	7165	8165	6553	7206	7700	8149	7201	9428	7244	6965	7773	7282
14	7199	8194	6569	7225	7715	8165	7107	9434	7132	7147	7819	7306
15	7230	8223	6590	7244	7728	8178	6792	9437	6977	7287	8041	7338
16	7256	8250	6607	7263	7751	8199	6781	9413	6789	7445	8175	7381
17	7294	8271	6626	7280	7763	8226	6979	9390	6768	7548	8236	7415
18	7313	8271	6642	7299	7776	8239	7184	9396	7018	7311	8287	7413
19	7350	8287	6657	7318	7791	8258	7270	9248	7253	6922	8325	7097
20	7381	8316	6672	7333	7804	8284	7427	8905	7440	6938	8427	6915
21	7393	8333	6687	7355	7819	8314	7555	8896	7335	7025	8490	6947
22	7413	8343	6699	7371	7837	8338	7955	8809	7027	7100	8564	6997
23	7442	8360	6718	7386	7858	8365	8298	8666	6710	7192	8611	7034
24	7479	8378	6748	7403	7873	8392	8308	8479	6792	7304	8658	7062
25	7513	8387	6766	7425	7886	8427	8128	8196	6945	7393	8705	7085
26	7553	8400	6792	7440	7901	8479	7917	7899	7232	7199	8750	7109
27	7588	8416	6815	7457	7914	8556	7863	7645	7180	7085	8795	7135
28	7622	8433	6842	7472	7929	8683	8046	7462	6842	6945	8840	7158
29	7642	8449	6866	7486		8874	8338	7384	6864	6940	8583	7184
30	7678	8468	6891	7501		9005	8520	7287	6695	7034	8154	7220
31	7718		6922	7518		9102		7081		7111	7723	
Min	**6879**	**7766**	**6520**	**6945**	**7533**	**7942**	**6586**	**7081**	**6695**	**6685**	**7180**	**6915**
Max	**7718**	**8468**	**8539**	**7518**	**7929**	**9102**	**8956**	**9503**	**7440**	**7708**	**8840**	**7415**
Mean	**7264**	**8186**	**7163**	**7251**	**7728**	**8280**	**7607**	**8831**	**7112**	**7194**	**8030**	**7167**
ac-ft	**7718**	**8468**	**6922**	**7518**	**0**	**9102**	**8520**	**7081**	**6695**	**7111**	**7723**	**7220**



Appendix A (7 of 38)

Willow Creek below Willow Creek Reservoir, CO

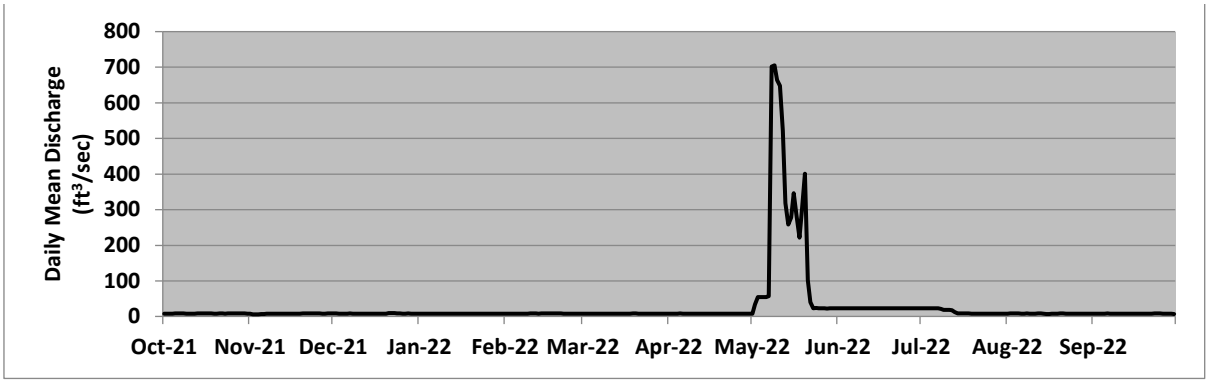
Location.— --Lat 40°08′50", long 105°56′16", Grand County, Hydrologic Unit 14010001, at Willow Creek Dam, 4 miles north of Granby, Colorado, on Willow Creek, a tributary of the Colorado River.

Gage.—--Water-stage recorder with satellite telemetry. Elevation of gage is 8040 feet (m.s.l.) from topographic map.

Remarks.—-- Drainage area is 127 square miles. Recorder was operated from 01-Oct-2021 to 30-Sep-2022. Records are complete and reliable. The official record is published by the Division of Water Resources, State of Colorado. This record contains operational data which could be subject to future revisions and changes.

Discharge, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	8	8	8	8	8	8	8	8	23	23	8	8
2	8	6	9	8	8	8	8	34	23	23	9	8
3	8	6	8	8	8	8	8	55	23	23	9	8
4	8	6	8	8	8	8	8	55	23	23	9	8
5	9	7	8	8	8	8	8	55	23	23	9	8
6	9	7	8	8	8	8	8	55	23	23	8	8
7	9	8	8	8	8	8	8	57	23	23	8	8
8	9	8	8	8	8	8	8	702	23	21	8	8
9	8	8	8	8	8	8	8	705	23	18	8	8
10	8	8	8	8	9	8	8	664	23	18	8	8
11	8	8	8	8	9	8	8	648	23	18	8	8
12	8	8	8	8	9	8	8	521	23	18	8	8
13	8	8	8	8	8	8	8	318	23	12	9	8
14	8	8	8	8	8	8	8	258	23	9	8	8
15	9	8	8	8	8	8	8	278	23	9	7	8
16	9	8	8	8	8	8	8	346	23	9	7	8
17	9	8	8	8	8	8	8	282	23	9	8	8
18	8	8	8	8	8	8	8	222	23	9	8	8
19	8	8	8	8	8	8	8	303	23	8	8	8
20	8	8	8	8	9	8	8	401	23	8	8	8
21	8	8	10	8	9	8	8	102	23	8	9	8
22	8	8	10	8	8	8	8	41	23	8	8	8
23	8	8	10	8	8	8	8	24	23	8	8	8
24	8	8	9	8	8	8	8	24	23	8	8	8
25	9	9	9	8	8	8	8	23	23	8	8	9
26	8	9	8	8	8	8	8	23	23	8	8	8
27	8	8	8	8	8	8	8	23	23	8	8	8
28	8	8	8	8	8	8	8	23	23	8	8	8
29	9	8	8	8		8	8	23	23	8	8	8
30	9	8	8	8		8	8	23	23	8	8	7
31	8		8	8		8		23		8	8	
Min	**8**	**6**	**8**	**8**	**8**	**8**	**8**	**8**	**23**	**8**	**7**	**7**
Max	**9**	**9**	**10**	**8**	**9**	**8**	**8**	**705**	**23**	**23**	**9**	**9**
Mean	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**204**	**23**	**13**	**8**	**8**
ac-ft	**520**	**474**	**515**	**487**	**460**	**503**	**483**	**12529**	**1378**	**827**	**508**	**489**

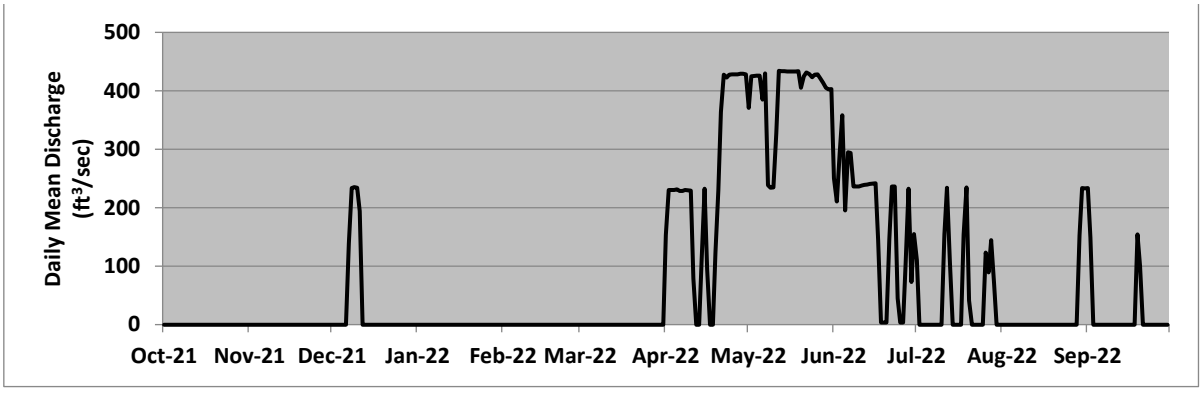


Appendix A (8 of 38)
Willow Creek Pump Canal, CO

Location.— —-Lat 40°08'39", long 105°54'10", Grand County, Hydrologic Unit 14010001, at Willow Creek Pump Canal, 4 miles north of Granby, Colorado, on Willow Creek, a tributary of the Colorado River.
Gage.—— Water-stage recorder with satellite telemetry at 15-foot Parshall Flume. Elevation of gage is 8300 feet (m.s.l.) from topographic map.
Remarks.——Canal is used to divert water from Willow Creek Reservoir to Granby Reservoir. Diversions are seasonal, mainly during late spring and early summer. Construction completed in 1953. Length of the canal is 3.4 miles. Recorder was operated from 01-Oct-2021 to 30-Sep-2022. Records are complete and reliable. This record consists of operational data which could be subject to future revisions and changes.

Discharge, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	0	0	0	0	0	0	153	371	251	111	0	234
2	0	0	0	0	0	0	230	425	211	0	0	149
3	0	0	0	0	0	0	231	425	294	0	0	0
4	0	0	0	0	0	0	231	426	358	0	0	0
5	0	0	0	0	0	0	231	426	196	0	0	0
6	0	0	0	0	0	0	229	385	295	0	0	0
7	0	0	139	0	0	0	229	430	294	0	0	0
8	0	0	233	0	0	0	231	238	237	0	0	0
9	0	0	236	0	0	0	230	234	236	0	0	0
10	0	0	234	0	0	0	229	235	237	0	0	0
11	0	0	194	0	0	0	79	328	238	154	0	0
12	0	0	0	0	0	0	0	434	239	234	0	0
13	0	0	0	0	0	0	0	434	240	109	0	0
14	0	0	0	0	0	0	113	433	241	0	0	0
15	0	0	0	0	0	0	233	433	241	0	0	0
16	0	0	0	0	0	0	95	433	242	0	0	0
17	0	0	0	0	0	0	0	433	145	0	0	0
18	0	0	0	0	0	0	0	433	4	154	0	0
19	0	0	0	0	0	0	124	434	4	235	0	155
20	0	0	0	0	0	0	230	405	4	42	0	100
21	0	0	0	0	0	0	364	425	146	0	0	0
22	0	0	0	0	0	0	428	431	236	0	0	0
23	0	0	0	0	0	0	423	429	236	0	0	0
24	0	0	0	0	0	0	428	423	45	0	0	0
25	0	0	0	0	0	0	428	428	4	0	0	0
26	0	0	0	0	0	0	428	428	4	123	0	0
27	0	0	0	0	0	0	428	422	106	90	0	0
28	0	0	0	0	0	0	429	414	233	144	0	0
29	0	0	0	0		0	429	406	73	71	153	0
30	0	0	0	0		0	428	403	155	0	234	0
31	0		0	0		0		403		0	233	
Min	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**234**	**4**	**0**	**0**	**0**
Max	**0**	**0**	**236**	**0**	**0**	**0**	**429**	**434**	**358**	**235**	**234**	**234**
Mean	**0**	**0**	**33**	**0**	**0**	**0**	**244**	**400**	**181**	**47**	**20**	**21**
ac-ft	**0**	**0**	**2055**	**0**	**0**	**0**	**14497**	**24611**	**10795**	**2912**	**1230**	**1265**

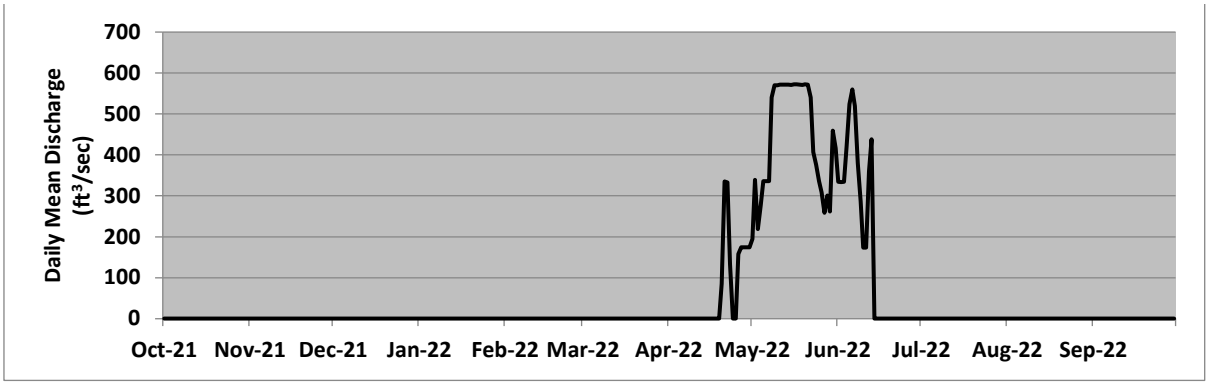


Appendix A (9 of 38)
Windy Gap Pumping Plant, CO

Location.— --Lat 40°06'24", long 105°58'48", Grand County, Hydrologic Unit 14010001, 5.5 miles northeast of Granby, Colorado, on the Colorado River.
Gage.—-- Reading taken directly from the pumps. Elevation of the pumping plant is 7823 (m.s.l.) from topographic map.
Remarks.—-- Water is pumped from Windy Gap Reservoir to Granby Reservoir. Water is stored at Granby Reservoir before delivery through Adams Tunnel. Data was provided by Farr Pumping Plant operators each morning. Data was collected from 01-Oct-2021 to 30-Sep-2022. Records are complete and reliable, but the data has not been reviewed. This record consists of operational data which could be subject to future revisions and changes. Readings were provided by the Northern Water.

Windy Gap Pump Discharge, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	0	0	0	0	0	0	0	195	334	0	0	0
2	0	0	0	0	0	0	0	339	333	0	0	0
3	0	0	0	0	0	0	0	219	334	0	0	0
4	0	0	0	0	0	0	0	277	420	0	0	0
5	0	0	0	0	0	0	0	336	525	0	0	0
6	0	0	0	0	0	0	0	336	560	0	0	0
7	0	0	0	0	0	0	0	336	520	0	0	0
8	0	0	0	0	0	0	0	541	381	0	0	0
9	0	0	0	0	0	0	0	570	287	0	0	0
10	0	0	0	0	0	0	0	571	173	0	0	0
11	0	0	0	0	0	0	0	572	174	0	0	0
12	0	0	0	0	0	0	0	572	360	0	0	0
13	0	0	0	0	0	0	0	572	438	0	0	0
14	0	0	0	0	0	0	0	571	0	0	0	0
15	0	0	0	0	0	0	0	571	0	0	0	0
16	0	0	0	0	0	0	0	572	0	0	0	0
17	0	0	0	0	0	0	0	572	0	0	0	0
18	0	0	0	0	0	0	0	572	0	0	0	0
19	0	0	0	0	0	0	0	571	0	0	0	0
20	0	0	0	0	0	0	85	573	0	0	0	0
21	0	0	0	0	0	0	335	572	0	0	0	0
22	0	0	0	0	0	0	333	540	0	0	0	0
23	0	0	0	0	0	0	134	407	0	0	0	0
24	0	0	0	0	0	0	0	376	0	0	0	0
25	0	0	0	0	0	0	0	336	0	0	0	0
26	0	0	0	0	0	0	158	308	0	0	0	0
27	0	0	0	0	0	0	174	258	0	0	0	0
28	0	0	0	0	0	0	174	301	0	0	0	0
29	0	0	0	0		0	175	262	0	0	0	0
30	0	0	0	0		0	175	460	0	0	0	0
31	0		0	0		0		416		0	0	
Min	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**195**	**0**	**0**	**0**	**0**
Max	**0**	**0**	**0**	**0**	**0**	**0**	**335**	**573**	**560**	**0**	**0**	**0**
Mean	**0**	**0**	**0**	**0**	**0**	**0**	**58**	**441**	**161**	**0**	**0**	**0**
ac-ft	**0**	**0**	**0**	**0**	**0**	**0**	**3456**	**27121**	**9594**	**0**	**0**	**0**

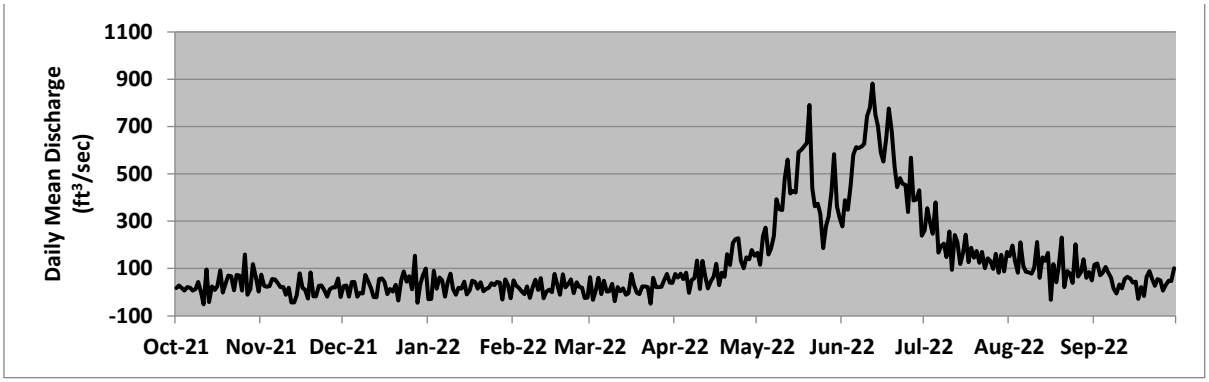


Appendix A (10 of 38)
Granby Reservoir, CO

Location.— --Lat 40°08'54", long 105°51'48", Grand County, Hydrologic Unit 14010001, on Granby Dam, 5.5 miles northeast of Granby, Colorado, on the Colorado River.
Gage.—-- Water level recorder with satellite telemetry. Elevation of gage is 8300 (m.s.l.) from topographic map.
Remarks.—-- Inflow computed daily based on change in content from midnight to midnight, and on the average daily releases through the reservoir outlet works. Recorders were operated from 01-Oct-2021 to 30-Sep-2022. Records are complete. Negative values are based on accounting procedures and mass balances. This record consists of operational data which could be subject to future revisions and changes.

Inflow, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	18	74	26	-30	50	64	77	166	278	261	153	117
2	29	26	28	-28	28	-32	62	117	388	354	197	122
3	18	24	-19	90	18	4	78	238	349	293	132	71
4	7	25	43	15	4	61	56	272	455	247	82	82
5	22	55	43	63	-8	-8	83	160	581	380	210	106
6	19	54	-20	50	24	49	-3	183	614	168	111	84
7	7	37	-2	-19	-24	2	51	238	608	194	87	61
8	14	22	-5	41	22	4	59	393	616	206	84	15
9	43	21	73	79	53	36	133	351	627	149	79	-6
10	0	-11	46	14	10	-38	14	348	743	257	102	33
11	-52	20	17	-11	60	21	132	481	781	95	211	16
12	95	-43	-20	20	-26	4	65	560	882	242	60	56
13	-42	-43	-22	15	1	16	17	417	751	212	148	65
14	24	-12	56	45	11	-10	46	428	702	118	132	58
15	9	80	58	-9	0	-4	67	421	590	167	167	41
16	26	18	43	8	77	77	121	593	552	244	-32	44
17	92	11	-8	49	30	32	29	602	653	126	118	-29
18	-2	-26	13	43	-11	-3	82	616	777	188	42	22
19	38	84	2	15	76	-8	65	631	680	146	114	-16
20	70	-18	31	42	20	24	161	791	531	174	231	65
21	68	-17	-35	4	36	24	115	439	444	124	21	89
22	8	28	50	14	54	21	208	364	482	170	89	57
23	73	28	87	20	-4	-49	224	375	457	102	80	26
24	70	8	44	37	42	61	228	330	454	143	40	55
25	7	-18	68	30	23	21	133	186	339	133	202	51
26	159	13	12	43	19	22	102	281	569	99	67	6
27	-11	20	154	40	-24	23	147	320	388	162	85	31
28	14	20	-44	-30	-23	52	139	426	391	83	139	49
29	118	59	35	54		77	178	583	431	157	61	47
30	65	-20	71	29		40	154	363	240	87	85	101
31	3		100	-25		39		316		170	50	
Min	**-52**	**-43**	**-44**	**-30**	**-26**	**-49**	**-3**	**117**	**240**	**83**	**-32**	**-29**
Max	**159**	**84**	**154**	**90**	**77**	**77**	**228**	**791**	**882**	**380**	**231**	**122**
Mean	**33**	**17**	**30**	**23**	**19**	**20**	**101**	**387**	**545**	**182**	**108**	**51**
ac-ft	**2001**	**1024**	**1835**	**1401**	**1066**	**1239**	**5993**	**23777**	**32436**	**11213**	**6642**	**3011**

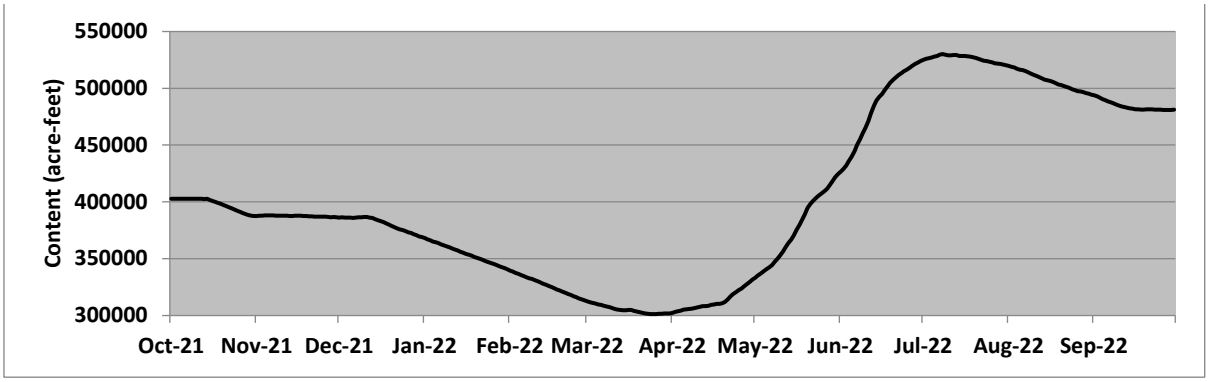


Appendix A (11 of 38)
Granby Reservoir, CO

Location.— --Lat 40°08'54", long 105°51'48", Grand County, Hydrologic Unit 14010001, on Granby Dam, 5.5 miles northeast of Granby, Colorado, on the Colorado River.
Gage.—-- Water level recorder with satellite telemetry. Elevation of gage is 8300 (m.s.l.) from topographic map.
Remarks.—--Reservoir is formed by an earth-fill dam and four earth-fill dikes. Construction completed in 1950. Impoundment began on 14-Sep-1949. Granby Reservoir provides west-slope storage for the C-BT project. Maximum capacity is 539,800 AF at elevation 8,280.00, with 463,300 AF of active capacity between elevations 8186.90 and 8280.00 feet. Recorder was operated from 01-Oct-2021 to 30-Sep-2022. Records are complete and reliable. This record consists of operational data which could be subject to future revisions and changes.

Storage, AF, 2400-hour Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	402704	387627	386207	368054	339528	312506	302334	333291	426620	525117	519612	493784
2	402767	387812	386269	366850	338600	311617	302995	335306	428894	525974	518753	493019
3	402767	387873	386083	366070	337557	310949	303706	336809	432019	526478	518398	491760
4	402767	387935	386083	365050	336461	310393	304367	338947	435810	527053	517261	490571
5	402577	387996	386021	364508	335538	309725	305082	340627	439949	527844	516476	489529
6	402577	387935	385897	363672	334615	309171	305414	342257	444711	528563	515980	488481
7	402577	387935	386021	362534	333580	308509	305525	344061	450300	529422	515124	487646
8	402577	387750	386269	361637	332545	307842	305911	347100	455124	530071	513992	486740
9	402704	387812	386392	360803	332084	307235	306625	349915	460174	529422	512925	485769
10	402704	387812	386637	359850	331055	306570	307124	352621	465262	528993	511789	484863
11	402577	387873	386576	358838	330137	305746	307622	355989	471059	528921	510942	483958
12	402704	387750	386145	357945	329048	305082	308064	360268	477866	529351	509738	483333
13	402451	387566	385711	356997	327966	304698	308176	363552	484377	529207	508679	482781
14	402577	387566	384730	356108	326939	304588	308564	366790	489181	528563	507690	482366
15	401635	387750	383929	355099	325913	304588	309226	370403	492388	528348	507057	481948
16	400756	387812	383009	354158	325004	304753	309725	375315	495045	528491	506633	481531
17	400006	387750	382026	353389	324038	304753	310060	379700	498408	528060	505575	481324
18	399064	387380	380924	352502	322904	304090	310282	384052	501846	527844	504516	481185
19	398124	387380	379884	351563	321940	303487	310837	389294	504939	527411	503534	481254
20	397189	387194	378846	350678	320922	302720	311950	394568	507408	526695	502900	481393
21	396251	387194	377624	349737	319909	302334	313960	398061	509597	525831	502057	481393
22	395128	387007	376588	348858	318949	301733	316647	400881	511577	525117	501210	481393
23	394134	387007	375678	347919	317992	301457	318837	403271	513351	524257	500301	481254
24	393137	387007	375071	347041	317040	301292	320527	405474	514841	523969	499177	481185
25	392019	386822	374220	346222	316028	301238	322168	407305	516264	523327	498338	481116
26	391213	386822	373247	345347	315074	301292	323752	409143	518043	522681	497424	480978
27	390098	386637	372523	344470	314127	301347	325516	411491	519612	522038	497145	480908
28	389107	386515	371492	343361	313232	301457	327507	414483	521326	521753	496586	480908
29	388488	386576	370524	342432		301623	329449	418056	522609	521539	495744	480908
30	387873	386392	369621	341559		301733	331398	421586	523969	520897	495115	481116
31	387627		368897	340454		301843		424487		520395	494413	
Min	**387627**	**386392**	**368897**	**340454**	**313232**	**301238**	**302334**	**333291**	**426620**	**520395**	**494413**	**480908**
Max	**402767**	**387996**	**386637**	**368054**	**339528**	**312506**	**331398**	**424487**	**523969**	**530071**	**519612**	**493784**
Mean	**398028**	**387416**	**380618**	**354313**	**326383**	**305044**	**312445**	**376616**	**484419**	**526246**	**506616**	**484146**
EOM	**387627**	**386392**	**368897**	**340454**	**0**	**301843**	**331398**	**424487**	**523969**	**520395**	**494413**	**481116**

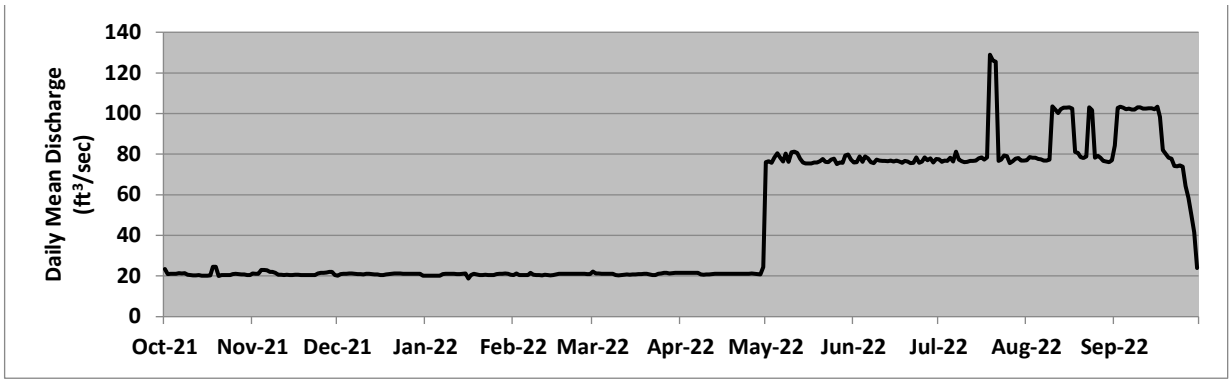


Appendix A (12 of 38)
Granby Reservoir, CO

Location.— --Lat 40°08'54", long 105°51'48", Grand County, Hydrologic Unit 14010001, on Granby Dam, 5.5 miles northeast of Granby, Colorado, on the Colorado River.
Gage.—-- Water level recorder with satellite telemetry. Elevation of gage is 8300 feet (m.s.l.), from topographic map.
Remarks.—--Reservoir is formed by an earth-fill dam and four earth-fill dikes. Construction completed in 1950. Impoundment began on 14-Sep-1949. Granby Reservoir provides west-slope storage for the C-BT project. Data was provided by personnel from the Northern Water. The stream gage directly below the dam is used to measure flows during winter. A USGS station further downstream is used to measure flows between spring and fall. Data was recorded from 01-Oct-2021 to 30-Sep-2022. Records are complete and fair. This record contains operational data which could be subject to future revisions and changes.

Discharge, cfs, 2400-hour Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	23	21	20	20	21	22	22	76	76	78	77	84
2	21	21	21	20	21	21	22	76	76	76	78	103
3	21	21	21	20	21	21	22	76	79	77	78	103
4	21	23	21	20	21	21	22	78	76	77	78	103
5	21	23	21	20	21	21	22	80	79	78	78	102
6	21	23	21	20	21	21	22	78	78	76	77	102
7	21	22	21	21	22	21	22	76	76	81	77	102
8	21	22	21	21	21	21	21	80	76	77	77	102
9	21	22	21	21	21	20	21	76	77	76	77	103
10	21	21	21	21	20	20	21	81	77	76	104	103
11	20	21	21	21	20	21	21	81	77	76	102	102
12	20	21	21	21	21	21	21	81	77	77	100	102
13	20	21	21	21	20	21	21	78	76	77	102	103
14	20	21	21	21	20	21	21	76	77	77	103	103
15	20	21	21	21	20	21	21	75	76	78	103	102
16	20	21	21	19	21	21	21	75	77	78	103	103
17	20	21	21	20	21	21	21	75	76	77	102	98
18	24	21	21	21	21	21	21	76	76	78	81	82
19	25	21	21	21	21	21	21	76	77	129	81	80
20	20	21	21	21	21	21	21	77	76	126	79	78
21	21	21	21	21	21	21	21	78	76	125	78	78
22	21	21	21	21	21	21	21	76	76	77	79	74
23	21	21	21	21	21	21	21	76	78	77	103	74
24	21	21	21	21	21	21	21	77	76	79	102	74
25	21	22	21	21	21	21	21	78	76	79	78	74
26	21	22	21	21	21	22	21	75	78	76	79	64
27	21	22	21	21	21	21	21	76	77	76	78	58
28	21	22	21	21	21	21	21	76	78	78	77	50
29	21	22	21	21		21	21	79	76	78	76	41
30	21	20	21	21		22	24	80	78	77	76	24
31	21		20	21		22		77		77	77	
Min	**20**	**20**	**20**	**19**	**20**	**20**	**21**	**75**	**76**	**76**	**76**	**24**
Max	**25**	**23**	**21**	**21**	**22**	**22**	**24**	**81**	**79**	**129**	**104**	**103**
Mean	**21**	**21**	**21**	**21**	**21**	**21**	**21**	**77**	**77**	**82**	**86**	**86**
ac-ft	**1290**	**1260**	**1284**	**1268**	**1153**	**1290**	**1261**	**4754**	**4568**	**5049**	**5276**	**5106**

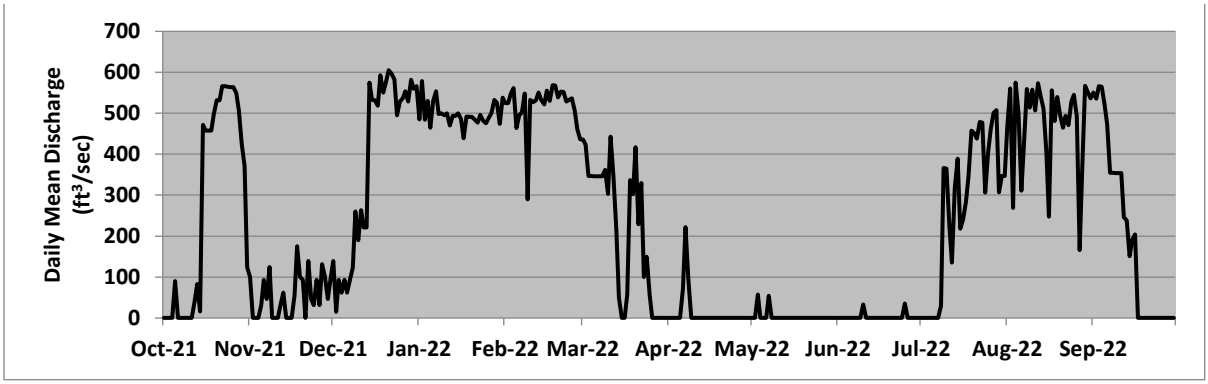


Appendix A (13 of 38)
Farr Pumping Plant, Granby Reservoir, CO

Location.— --Lat 40°11'30", long 105°52'52", Grand County, Hydrologic Unit 14010001, at Farr Pumping Plant on the north end of Granby Reservoir, 8 miles northeast of Granby, Colorado, on the Colorado River.
Gage.—-- Reading taken directly from the pumps, based on conduit pressure and Granby Reservoir's elevation. Elevation of the pumping plant is 8320 ft from topographic map.
Remarks.—-- Water is pumped from Granby to the Granby Pump Canal which discharges into Shadow Mountain Reservoir. The operation keeps Shadow Mountain Reservoir/Grand Lake at a steady water surface level (within 0.72 feet for this period) when trans-mountain diversions via Adams Tunnel are taking place. Data was provided by Farr Pumping Plant operators, Northern Water, each morning. Data was collected from 01-Oct-2021 to 30-Sep-2022. Records are complete and reliable. This record contains operational data which could be subject to future revisions and changes.

Discharge, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	0	100	139	485	525	436	0	0	0	0	467	551
2	0	0	15	579	525	423	0	0	0	0	561	536
3	0	0	93	484	549	347	0	57	0	0	269	566
4	0	0	62	530	562	347	0	0	0	0	575	565
5	90	31	93	465	464	346	0	0	0	0	500	520
6	0	93	62	530	496	346	71	0	0	0	311	472
7	0	46	93	554	502	346	222	54	0	0	425	355
8	0	124	123	498	548	346	93	0	0	30	559	355
9	0	0	260	500	290	362	0	0	0	366	514	354
10	0	0	190	495	533	303	0	0	33	365	558	354
11	0	0	263	500	527	443	0	0	0	226	507	354
12	41	31	221	470	532	345	0	0	0	135	573	246
13	83	62	221	494	551	215	0	0	0	318	542	238
14	16	0	575	494	532	50	0	0	0	389	512	151
15	472	0	533	500	522	0	0	0	0	218	406	191
16	458	0	532	486	555	0	0	0	0	241	248	204
17	458	55	519	439	530	57	0	0	0	284	556	0
18	458	175	593	492	569	337	0	0	0	348	481	0
19	498	100	551	491	568	302	0	0	0	458	540	0
20	532	93	578	491	539	417	0	0	0	452	495	0
21	532	0	605	484	553	229	0	0	0	438	465	0
22	566	139	597	477	552	330	0	0	0	479	494	0
23	566	46	583	496	529	100	0	0	0	477	471	0
24	565	31	495	482	533	149	0	0	0	306	528	0
25	564	93	529	476	537	57	0	0	35	403	545	0
26	564	31	537	488	507	0	0	0	0	459	493	0
27	550	131	554	501	462	0	0	0	0	501	166	0
28	508	100	529	533	437	0	0	0	0	508	365	0
29	426	46	582	526		0	0	0	0	307	567	0
30	371	93	560	474		0	0	0	0	347	551	0
31	124		566	538		0		0		347	537	
Min	0	0	15	439	290	0	0	0	0	0	166	0
Max	566	175	605	579	569	443	222	57	35	508	575	566
Mean	272	54	382	498	519	214	13	4	2	271	477	200
ac-ft	16744	3213	23510	30649	28818	13156	766	220	135	16665	29318	11925

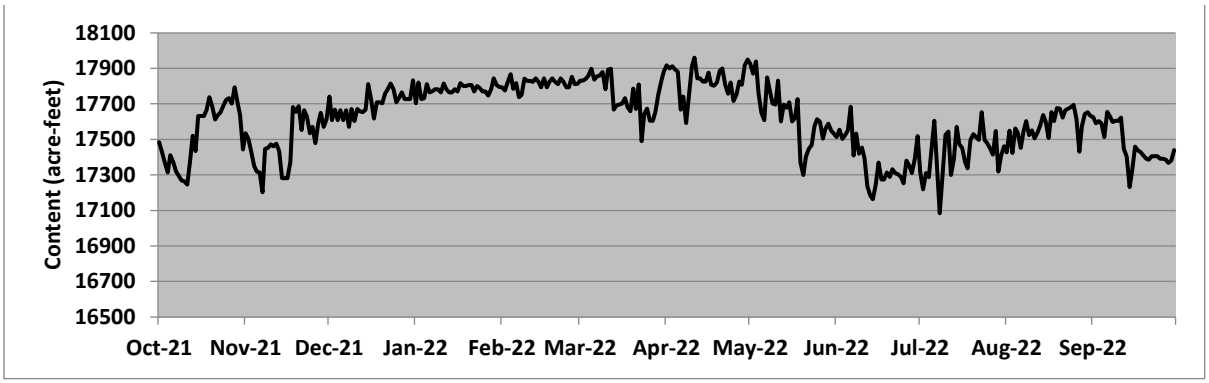


Appendix A (14 of 38)
Shadow Mountain/Grand Lake, CO

Location.— --Lat 40°12'26", long 105°50'28", Grand County, Hydrologic Unit 14010001, on the Colorado River at the Shadow Mountain outlet works structure, 10 miles northeast of Granby, Colorado.
Gage.—---Water-stage recorder with satellite telemetry. Elevation of gage is 8375 feet (m.s.l.) from topographic map.
Remarks.——Shadow Mountain/Grand Lake was constructed between 1944 and 1946. Impoundment began in 1946. Active capacity between elevations 8,366 and 8,367 is 1,800 AF. Grand Lake is used as forebay storage for Adams Tunnel. Recorder was operated from 01-Oct-2021 to 30-Sep-2022. Some data were provided by Farr Pumping Plant personnel during down time. Records are complete and fair. This record contains operational data which could be subject to future revisions and changes.

Storage, AF, 2400-hour Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	17484	17534	17742	17704	17793	17832	17917	17926	17513	17316	17427	17626
2	17429	17503	17608	17819	17774	17832	17899	17870	17555	17219	17550	17589
3	17369	17429	17668	17727	17824	17842	17912	17939	17502	17311	17424	17603
4	17314	17350	17608	17732	17866	17860	17894	17760	17522	17287	17561	17589
5	17411	17319	17663	17811	17785	17897	17881	17650	17551	17439	17534	17513
6	17374	17314	17608	17764	17816	17837	17668	17608	17683	17605	17453	17655
7	17319	17203	17663	17772	17738	17855	17742	17849	17410	17329	17548	17628
8	17295	17447	17571	17783	17751	17860	17592	17777	17533	17085	17603	17597
9	17269	17453	17671	17783	17842	17879	17752	17702	17420	17305	17524	17605
10	17264	17471	17603	17764	17830	17782	17912	17697	17454	17526	17551	17605
11	17245	17461	17671	17814	17830	17892	17959	17831	17395	17545	17506	17623
12	17366	17476	17658	17783	17824	17897	17844	17602	17235	17300	17537	17447
13	17521	17434	17653	17764	17843	17668	17844	17697	17184	17388	17579	17401
14	17434	17282	17667	17764	17824	17692	17825	17678	17163	17571	17636	17231
15	17632	17282	17811	17783	17793	17697	17825	17709	17244	17473	17600	17324
16	17632	17282	17727	17769	17843	17702	17876	17602	17370	17453	17508	17460
17	17632	17374	17617	17816	17793	17731	17807	17620	17274	17374	17653	17438
18	17664	17681	17709	17801	17824	17681	17802	17727	17274	17337	17603	17428
19	17738	17655	17709	17801	17843	17658	17820	17370	17314	17498	17676	17410
20	17685	17687	17704	17806	17824	17787	17886	17300	17288	17529	17673	17391
21	17612	17553	17759	17806	17811	17671	17899	17403	17331	17511	17623	17386
22	17635	17663	17783	17769	17843	17810	17807	17447	17311	17498	17663	17405
23	17654	17626	17814	17801	17824	17489	17757	17469	17302	17653	17673	17405
24	17691	17534	17783	17788	17793	17642	17820	17576	17289	17498	17681	17405
25	17722	17571	17709	17769	17793	17673	17715	17613	17252	17479	17695	17391
26	17732	17479	17732	17769	17853	17605	17752	17600	17381	17451	17615	17391
27	17701	17589	17764	17746	17811	17605	17825	17505	17352	17414	17431	17386
28	17793	17650	17727	17783	17813	17655	17807	17560	17311	17548	17574	17368
29	17716	17571	17727	17843		17752	17917	17588	17389	17319	17643	17381
30	17634	17613	17727	17806		17825	17949	17550	17518	17411	17653	17439
31	17442		17833	17796		17881		17531		17461	17631	
Min	**17245**	**17203**	**17571**	**17704**	**17738**	**17489**	**17592**	**17300**	**17163**	**17085**	**17424**	**17231**
Max	**17793**	**17687**	**17833**	**17843**	**17866**	**17897**	**17959**	**17939**	**17683**	**17653**	**17695**	**17655**
Mean	**17529**	**17483**	**17700**	**17782**	**17814**	**17758**	**17830**	**17637**	**17377**	**17423**	**17582**	**17471**
EOM	**17442**	**17613**	**17833**	**17796**	**0**	**17881**	**17949**	**17531**	**17518**	**17461**	**17631**	**17439**



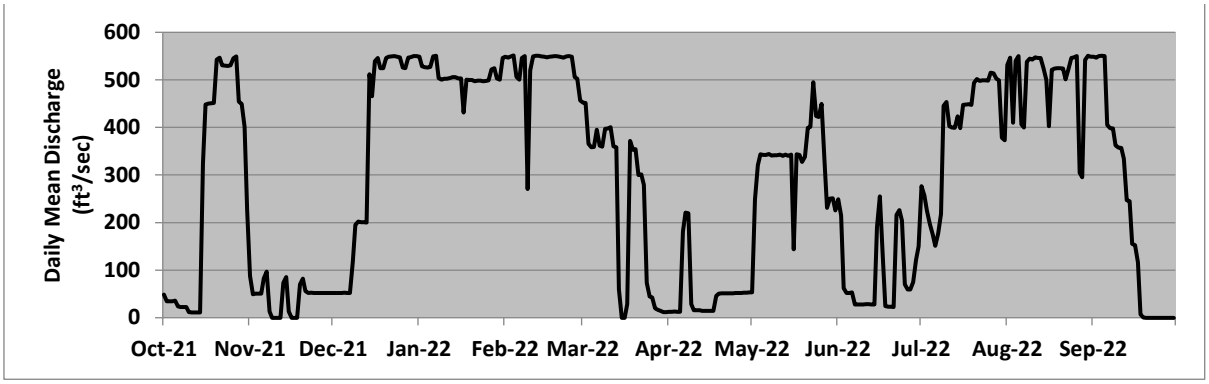
Appendix A (15 of 38)

Alva B. Adams Tunnel at East Portal, near Estes Park, CO

Location.— --Lat 40°19'40", long 105°34'39", Larimer County, Hydrologic Unit 10190006, 4.5 miles southwest of Estes Park, Colorado.
Gage.—-- Water-stage recorder with satellite telemetry at 15-foot Parshall flume. Elevation of gage is 8250 ft (m.s.l.) from topographic map.
Remarks.—-- Constructed between 1940 and 1947. Tunnel is 13.1 miles long and extends between Grand Lake and East Portal approximately 4 miles southwest of Estes Park. Its maximum capacity is 550 cfs. Recorder was operated from 01-Oct-2021 to 30-Sep-2022. Records are complete and reliable. This record contains operational data which could be subject to future revisions and changes. Official record published by the Colorado Division of Water Resources.

Discharge, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	49	88	52	548	548	452	12	53	249	276	531	548
2	35	49	52	528	547	452	12	249	215	257	547	547
3	34	51	52	526	549	365	13	321	62	225	410	550
4	34	51	52	526	551	358	13	343	52	197	540	550
5	36	51	52	527	506	359	13	342	52	175	550	550
6	24	83	52	549	500	395	181	342	53	151	407	405
7	23	97	52	551	546	361	221	344	28	177	400	399
8	23	13	118	503	550	359	220	341	28	218	538	398
9	23	0	195	500	270	397	29	341	28	446	545	362
10	12	0	202	502	520	398	16	341	28	453	542	358
11	11	0	201	503	549	401	16	343	29	402	547	357
12	11	0	201	504	550	360	16	340	29	400	546	334
13	11	74	200	505	550	358	15	343	28	399	546	247
14	11	85	512	506	549	60	14	340	28	423	525	245
15	324	13	466	503	548	0	14	343	191	399	500	155
16	448	0	539	503	547	0	14	144	255	447	403	153
17	450	0	546	431	549	28	14	344	130	448	521	117
18	451	0	525	501	549	371	46	342	25	449	524	7
19	451	70	525	499	550	353	51	327	23	447	524	0
20	542	82	546	500	549	354	51	338	23	494	525	0
21	546	56	549	497	548	300	51	399	22	502	524	0
22	530	52	550	499	547	301	51	401	216	498	501	0
23	530	53	550	498	549	279	51	495	226	499	523	0
24	529	52	549	497	550	73	51	424	204	499	546	0
25	531	52	547	498	549	44	52	422	70	498	547	0
26	545	52	526	499	506	43	52	450	59	515	550	0
27	549	52	524	522	502	20	52	331	59	513	305	0
28	454	52	547	525	456	16	53	231	75	502	295	0
29	449	52	548	503		14	53	250	122	499	542	0
30	401	52	550	500		12	53	251	150	378	551	0
31	226		550	546		12		225		373	549	
Min	**11**	**0**	**52**	**431**	**270**	**0**	**12**	**53**	**22**	**151**	**295**	**0**
Max	**549**	**97**	**550**	**551**	**551**	**452**	**221**	**495**	**255**	**515**	**551**	**550**
Mean	**268**	**44**	**359**	**510**	**528**	**235**	**50**	**326**	**92**	**392**	**503**	**209**
ac-ft	**16000**	**2642**	**20979**	**30251**	**29324**	**14452**	**2974**	**19588**	**5471**	**23377**	**29855**	**12459**

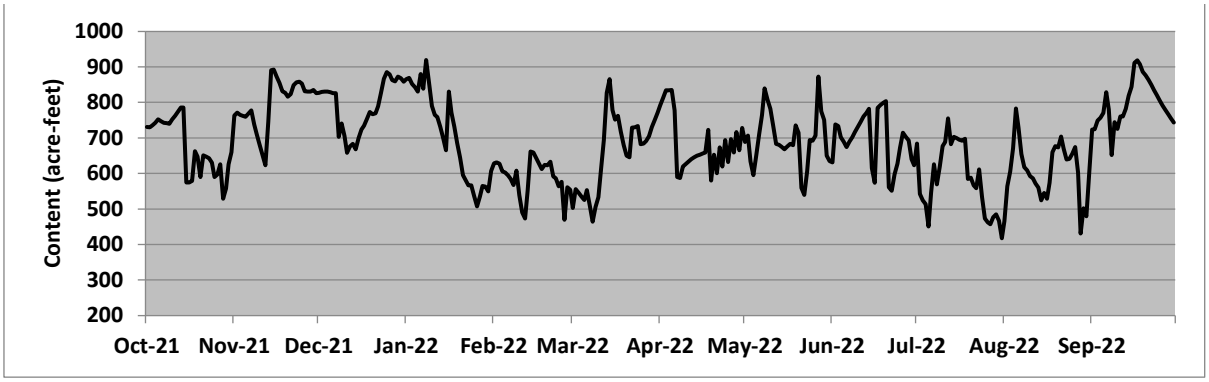


Appendix A (16 of 38)
Marys Lake, CO

Location.— --Lat 40°22'40", long 105°31'50", Larimer County, Hydrologic Unit 10190006, 2 miles southwest of Estes Park, Colorado.
Gage.—-- Water-level recorder with satellite telemetry. Elevation of gage is 8060 feet (m.s.l.) from topographic map.
Remarks.—-- Constructed between 1947 and 1949. Impoundment began in August 1950. Active capacity between elevations 8,025 and 8,040 is 500 AF. Used as a forebay storage for Estes Powerplant. The only measurable inflow into the reservoir comes from Adams Tunnel. Recorder was operated from 01-Oct-2021 to 30-Sep-2022. Record is complete and reliable. The gage does not record water surface levels below elevation 8,022.62 feet, content of 322 AF. Values reported as less than 322 AF are estimates. These are operational data which could be subject to further revisions and changes.

Storage, AF, 2400-hour Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	731	763	827	865	628	502	792	689	631	684	466	723
2	730	771	829	869	631	556	812	707	738	542	564	724
3	736	765	830	852	628	546	834	634	733	524	605	749
4	743	762	830	843	606	535	834	595	702	514	671	757
5	752	759	829	831	603	525	835	651	689	451	783	770
6	747	769	826	879	594	553	777	710	675	546	729	828
7	743	777	826	838	584	510	590	765	689	626	654	780
8	741	738	703	919	568	464	587	840	702	570	617	652
9	740	710	740	856	608	506	620	808	716	619	608	744
10	752	681	706	790	539	533	627	782	731	677	593	726
11	762	652	658	765	490	609	634	733	745	689	586	761
12	774	623	676	759	474	694	640	684	760	755	572	760
13	785	746	684	732	551	827	646	681	770	682	560	782
14	785	891	668	701	662	865	650	675	782	703	524	819
15	575	892	700	665	659	778	653	668	615	700	545	844
16	574	873	724	830	643	752	656	676	574	695	529	911
17	579	854	734	771	626	762	659	683	784	692	574	918
18	663	832	753	732	613	717	723	679	792	697	660	908
19	648	826	773	685	624	679	580	736	799	584	677	886
20	590	816	766	645	623	650	653	714	804	588	673	876
21	651	824	770	595	633	645	601	560	561	567	704	864
22	647	849	789	580	592	729	673	540	552	559	670	849
23	643	856	826	566	586	730	619	607	598	611	639	835
24	630	858	866	567	564	733	694	694	628	534	641	820
25	590	853	885	536	577	682	632	692	672	474	656	805
26	597	831	879	507	470	684	697	707	714	462	675	791
27	626	830	863	535	561	691	659	872	703	457	602	779
28	529	831	859	565	554	705	717	774	693	477	431	767
29	558	835	872	563		731	665	751	640	485	502	755
30	626	826	868	549		751	728	650	623	467	480	743
31	660		858	607		771		635		417	603	
Min	**529**	**623**	**658**	**507**	**470**	**464**	**580**	**540**	**552**	**417**	**431**	**652**
Max	**785**	**892**	**885**	**919**	**662**	**865**	**835**	**872**	**804**	**755**	**783**	**918**
Mean	**674**	**796**	**788**	**710**	**589**	**659**	**683**	**696**	**694**	**582**	**606**	**798**
EOM	**660**	**826**	**858**	**607**	**0**	**771**	**728**	**635**	**623**	**417**	**603**	**743**

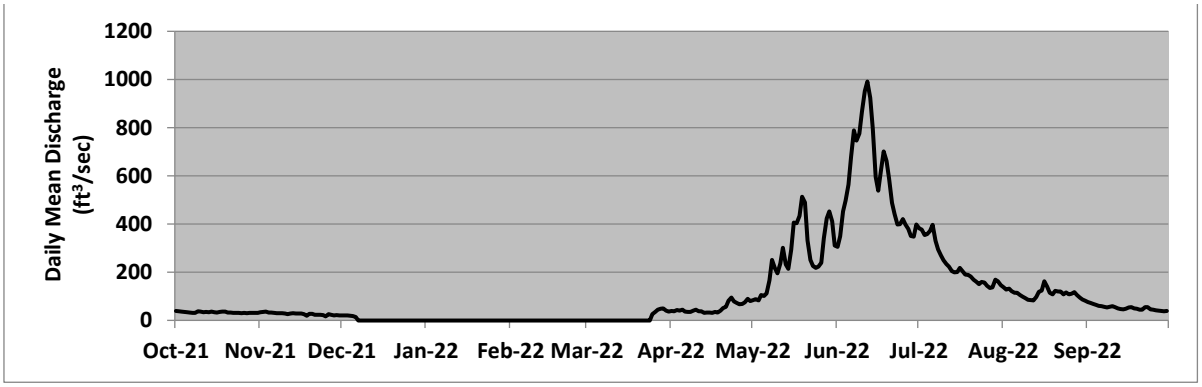


Appendix A (17 of 38)
Big Thompson River above Lake Estes, CO

Location.— --Lat 40°22'42", long 105°30'48", Larimer County, Hydrologic Unit 10190006, 600 feet downstream from bridge on state highways 7 and 36 in Estes Park, Colorado, downstream from Black Canyon Creek, and 0.3 miles northwest of Estes Powerplant.
Gage.—-- Water-stage recorder with satellite telemetry. 15-foot Parshall flume with overflow weirs and supplemental outside Gage.—Datum of gage at 7492.5 feet.
Remarks.—— Drainage area is 137 mi^2. Station consists of an automated data collection platform. Recorder was operated from 01-Oct-2021 until 06-Dec-2021, before it was winterized. The station was put back into service from 25-Mar-2022 to 30-Sep-2022. Values for the off-season are marked as zero, but winter month flows normally fluctuate between 10 and 30 cfs. This record contains operational data which could be subject to future revisions and changes. The official record for this station is published by the Colorado Division of Water Resources.

Discharge, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	40	35	21	0	0	0	39	85	306	382	138	76
2	38	36	21	0	0	0	38	88	350	377	129	72
3	37	36	21	0	0	0	43	84	452	355	133	69
4	36	34	20	0	0	0	41	106	498	359	122	65
5	34	33	19	0	0	0	45	103	565	372	115	61
6	33	31	14	0	0	0	37	113	678	397	115	59
7	32	31	0	0	0	0	35	167	789	332	106	57
8	32	30	0	0	0	0	35	251	747	295	100	54
9	38	30	0	0	0	0	41	217	775	270	93	56
10	37	30	0	0	0	0	45	196	866	250	86	59
11	34	26	0	0	0	0	39	237	952	234	84	56
12	35	29	0	0	0	0	39	302	991	223	84	50
13	35	31	0	0	0	0	32	233	924	205	98	47
14	37	29	0	0	0	0	33	215	795	200	120	46
15	34	29	0	0	0	0	33	295	595	201	124	49
16	34	29	0	0	0	0	32	406	539	219	163	54
17	36	26	0	0	0	0	35	403	628	204	140	55
18	37	20	0	0	0	0	33	435	702	191	116	51
19	36	27	0	0	0	0	41	513	662	189	108	49
20	34	27	0	0	0	0	52	489	588	182	123	45
21	33	24	0	0	0	0	56	332	489	169	120	45
22	32	24	0	0	0	0	82	252	442	162	120	56
23	31	24	0	0	0	0	96	227	398	151	109	55
24	31	22	0	0	0	0	80	218	399	160	117	47
25	31	17	0	0	0	27	72	224	422	157	108	44
26	32	27	0	0	0	35	68	239	399	144	111	43
27	30	23	0	0	0	45	69	342	379	135	118	42
28	31	22	0	0	0	49	76	424	350	138	105	40
29	32	22	0	0		50	90	453	348	169	96	39
30	32	21	0	0		42	81	411	398	163	87	40
31	32		0	0		37		311		147	82	
Min	**30**	**17**	**0**	**0**	**0**	**0**	**32**	**84**	**306**	**135**	**82**	**39**
Max	**40**	**36**	**21**	**0**	**0**	**50**	**96**	**513**	**991**	**397**	**163**	**76**
Mean	**34**	**28**	**4**	**0**	**0**	**9**	**51**	**270**	**581**	**230**	**112**	**53**
ac-ft	**2097**	**1639**	**227**	**0**	**0**	**564**	**3053**	**16605**	**34567**	**14151**	**6877**	**3137**

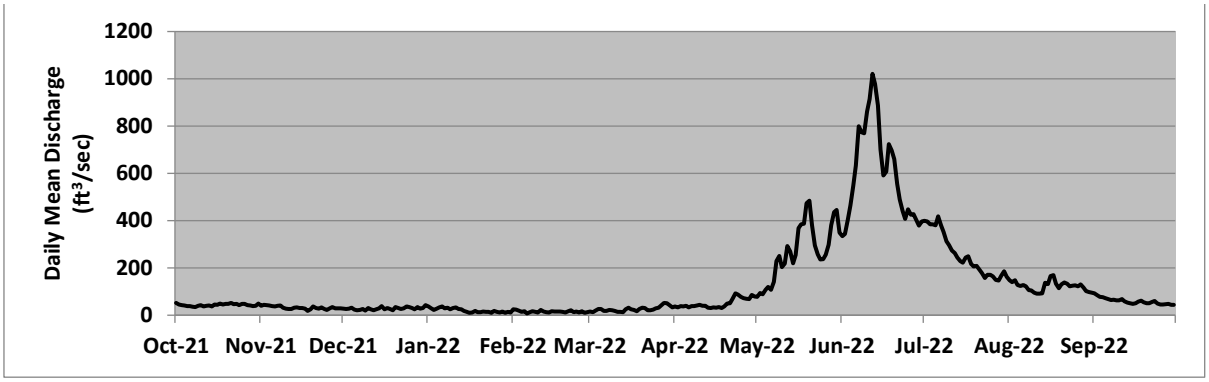


Appendix A (18 of 38)
Olympus Dam, CO

Location.— --Lat 40°22'31", long 105°29'15", Larimer County, Hydrologic Unit 10190006, 1.5 miles east of Estes Park, Colorado, on the Big Thompson River.
Gage.——Water-stage recorders with satellite telemetry. Inflow computed daily based on the change in content from midnight to midnight at Marys Lake and Lake Estes, daily average releases from Olympus Dam, and daily average discharge at Olympus Tunnel and Adams Tunnel.
Remarks.—— Olympus dam was constructed between 1947 and 1949. Impoundment began in November 1948. Total capacity at maximum water surface elevation of 7475.0 feet is 3,070 AF. System starts up can create computation errors in the calculated inflows. No adjustments to the record were required for the period. This record contains operational data which could be subject to future revisions and changes.

Computed Inflow, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	52	40	28	37	26	15	37	79	334	399	148	93
2	45	44	26	30	24	13	34	94	344	396	140	84
3	43	43	29	23	20	20	38	89	404	384	148	79
4	42	42	32	28	14	27	37	108	464	384	128	76
5	39	39	24	33	17	26	40	120	548	381	125	73
6	39	37	22	37	7	18	33	108	632	418	128	68
7	37	40	23	30	14	19	39	141	799	381	122	64
8	35	41	27	33	17	23	38	230	773	352	106	66
9	41	32	20	25	15	21	41	251	769	313	105	64
10	43	28	31	31	11	19	45	204	862	296	95	64
11	38	27	25	33	22	15	40	218	913	274	91	68
12	40	27	21	27	16	14	41	293	1021	263	92	59
13	42	32	25	25	13	13	33	270	977	244	92	53
14	38	34	30	18	11	26	31	220	887	229	137	52
15	45	31	38	14	17	32	33	255	701	223	133	48
16	44	31	25	10	16	25	32	368	591	244	165	51
17	50	28	31	11	15	23	34	385	608	249	170	58
18	46	18	27	19	16	18	30	387	723	217	134	62
19	48	25	21	13	15	27	38	474	697	206	115	55
20	48	38	34	13	11	32	50	485	660	209	130	51
21	53	30	31	15	17	30	51	381	556	193	139	50
22	47	28	27	14	21	21	70	295	489	178	133	56
23	48	33	29	15	13	22	93	258	441	158	122	61
24	43	27	38	10	17	24	88	236	407	171	125	50
25	48	22	35	18	12	30	77	237	448	171	127	46
26	48	30	31	14	17	32	72	257	425	164	122	46
27	43	35	26	11	11	43	70	298	428	149	131	47
28	41	29	35	16	13	52	68	380	402	147	117	48
29	38	29	29	10		51	87	436	379	167	102	44
30	41	29	31	15		43	80	445	396	185	98	44
31	49		43	12		33		349		162	95	
Min	**35**	**18**	**20**	**10**	**7**	**13**	**30**	**79**	**334**	**147**	**91**	**44**
Max	**53**	**44**	**43**	**37**	**26**	**52**	**93**	**485**	**1021**	**418**	**170**	**93**
Mean	**44**	**32**	**29**	**21**	**16**	**26**	**50**	**269**	**603**	**255**	**123**	**59**
ac-ft	**2685**	**1929**	**1769**	**1277**	**875**	**1601**	**2979**	**16561**	**35859**	**15683**	**7571**	**3530**

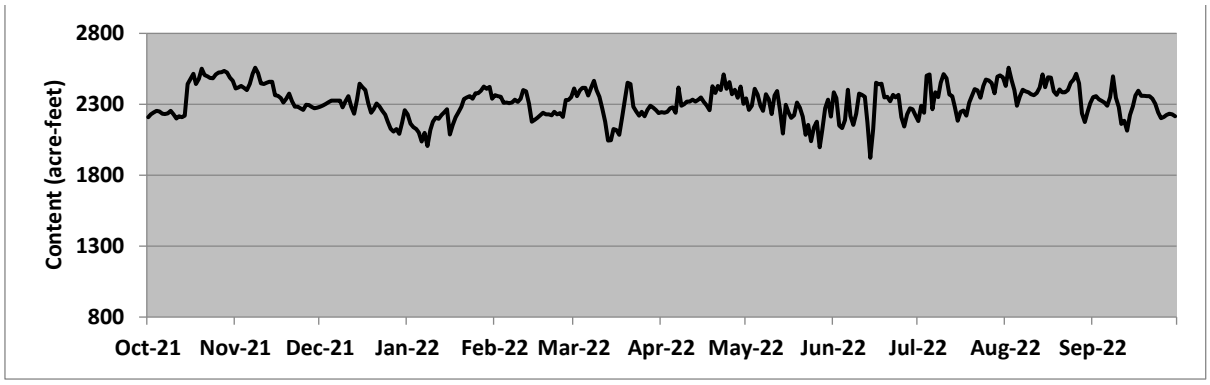


Appendix A (19 of 38)
Olympus Dam, CO

Location.— --Lat 40°22'31", long 105°29'19", Larimer County, Hydrologic Unit 10190006, 1.5 miles east of Estes Park, Colorado, on the Big Thompson River.
Gage.—-- Water-level recorder with satellite telemetry. Elevation of gage is 7490 feet (m.s.l.) from topographic map.
Remarks.—-- Constructed between 1947 and 1949. Impoundment began in November 1948. Active capacity between elevations 7,450.25 and 7,474.00 is 2,476 AF. Used as afterbay storage for Estes Powerplant and forebay for Olympus Tunnel. Recorder was operated from 01-Oct-2021 to 30-Sep-2022. Records are complete and reliable. This record contains operational data which could be subject to future revisions and changes.

Storage, AF, 2400-hour Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	2209	2411	2284	2229	2364	2411	2244	2341	2385	2181	2428	2349
2	2229	2418	2292	2163	2356	2356	2239	2261	2343	2289	2558	2356
3	2242	2430	2302	2138	2353	2397	2247	2290	2150	2239	2471	2335
4	2252	2414	2314	2125	2309	2414	2272	2409	2132	2500	2398	2323
5	2249	2398	2326	2100	2312	2414	2278	2368	2188	2509	2289	2311
6	2232	2442	2324	2036	2307	2361	2240	2290	2402	2265	2354	2290
7	2231	2514	2326	2098	2312	2416	2418	2252	2218	2383	2402	2349
8	2236	2556	2324	2005	2333	2464	2289	2369	2153	2351	2390	2497
9	2252	2519	2278	2117	2316	2398	2301	2335	2234	2450	2385	2345
10	2229	2447	2321	2178	2338	2353	2319	2231	2374	2512	2369	2280
11	2199	2442	2357	2206	2398	2269	2318	2361	2366	2483	2362	2162
12	2216	2450	2282	2198	2390	2178	2333	2393	2353	2368	2379	2183
13	2209	2457	2234	2224	2306	2043	2319	2257	2171	2356	2418	2113
14	2219	2459	2331	2244	2178	2046	2333	2093	1922	2280	2511	2224
15	2443	2362	2445	2265	2190	2124	2348	2295	2124	2185	2420	2285
16	2478	2359	2420	2087	2204	2117	2316	2239	2450	2245	2490	2361
17	2514	2343	2398	2155	2223	2085	2292	2204	2440	2256	2487	2395
18	2442	2311	2307	2209	2239	2207	2257	2223	2445	2219	2391	2359
19	2478	2340	2239	2244	2228	2340	2426	2312	2348	2312	2366	2359
20	2551	2374	2265	2284	2229	2452	2379	2275	2353	2356	2404	2356
21	2506	2321	2304	2336	2221	2442	2428	2212	2321	2406	2385	2356
22	2495	2284	2285	2348	2247	2282	2400	2085	2366	2397	2383	2338
23	2485	2282	2252	2356	2228	2249	2511	2153	2348	2345	2400	2302
24	2482	2270	2226	2338	2237	2219	2407	2040	2366	2430	2450	2242
25	2511	2259	2178	2378	2211	2247	2455	2137	2207	2473	2475	2201
26	2523	2295	2127	2378	2329	2216	2369	2178	2143	2467	2514	2211
27	2525	2294	2106	2395	2329	2261	2402	1997	2228	2448	2447	2224
28	2534	2280	2125	2425	2349	2289	2346	2119	2272	2378	2236	2232
29	2523	2270	2090	2409		2277	2425	2270	2265	2494	2174	2229
30	2487	2275	2173	2423		2257	2302	2333	2223	2504	2249	2214
31	2464		2257	2338		2237		2212		2490	2307	
Min	**2199**	**2259**	**2090**	**2005**	**2178**	**2043**	**2239**	**1997**	**1922**	**2181**	**2174**	**2113**
Max	**2551**	**2556**	**2445**	**2425**	**2398**	**2464**	**2511**	**2409**	**2450**	**2512**	**2558**	**2497**
Mean	**2376**	**2376**	**2274**	**2240**	**2287**	**2284**	**2340**	**2243**	**2276**	**2373**	**2396**	**2293**
EOM	**2464**	**2275**	**2257**	**2338**	**0**	**2237**	**2302**	**2212**	**2223**	**2490**	**2307**	**2214**

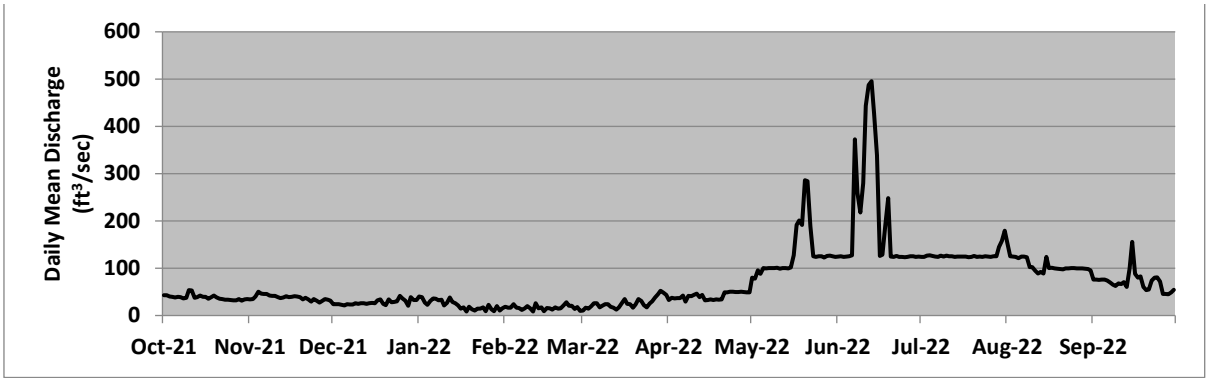


Appendix A (20 of 38)
Big Thompson River below Olympus Dam, CO

Location.— --Lat 40°22'35", long 105°29'06", Larimer County, Hydrologic Unit 10190006, 620 feet downstream from Olympus Dam and 100 feet upstream of Dry Gulch, 2.0 miles east in Estes Park.
Gage.—-- Water-stage recorder with satellite telemetry. 15-foot Parshall flume with overflow weirs in a concrete shelter with a supplemental outside Gage.—Datum of gage at 7422.50 feet.
Remarks.—— Drainage area is 155 mi^2. Area at site used between 29-Jan-1934 and 21-Mar-1951 was 162 mi^2. Station consists of automated data collection platform and digital recorder as primary record. Recorder was operated from 01-Oct-2021 to 30-Sep-2022. Record is complete. Flow calculations during peak runoff could lose accuracy as the water begins to flow over the outside boards. This record contains operational data which could be subject to future revisions and changes. The official record for this station is published by the Colorado Division of Water Resources.

Discharge, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	43	35	24	41	19	11	33	81	125	124	154	76
2	43	35	24	39	17	17	38	78	125	124	126	76
3	41	40	24	27	17	15	37	96	124	127	125	76
4	40	51	23	23	25	20	37	89	125	128	124	76
5	38	46	22	31	17	26	37	101	126	126	122	76
6	40	46	24	37	16	26	43	100	127	125	125	74
7	39	46	24	36	12	18	30	101	372	124	125	70
8	37	43	24	32	16	21	42	101	259	127	124	66
9	38	42	26	34	20	24	41	101	218	125	102	62
10	54	42	25	22	16	24	44	102	280	127	103	68
11	54	39	26	27	9	19	46	99	444	126	95	66
12	38	37	26	38	26	17	39	101	487	125	89	71
13	39	38	25	29	15	13	44	101	495	124	92	61
14	43	41	27	26	18	17	33	100	427	125	89	100
15	40	39	27	21	9	26	33	102	339	125	124	156
16	40	40	26	15	16	35	34	127	127	125	101	89
17	36	41	33	17	16	25	33	191	129	125	101	80
18	39	40	34	9	13	25	34	201	191	124	100	83
19	42	39	25	19	17	17	34	192	248	124	99	61
20	39	34	22	14	15	24	35	286	125	126	99	54
21	36	38	34	11	16	35	49	284	124	124	98	55
22	35	35	29	15	21	31	49	189	126	125	100	74
23	33	30	29	15	29	22	51	125	124	124	100	81
24	34	35	30	17	21	18	51	124	124	125	100	81
25	33	32	42	9	21	25	50	126	124	125	100	72
26	33	27	37	23	14	30	50	125	124	124	100	46
27	33	31	32	13	18	38	50	123	126	126	100	46
28	35	35	21	9	10	45	50	126	125	126	100	45
29	32	33	39	20		53	50	127	124	145	99	49
30	34	32	33	11		49	49	125	125	158	99	55
31	35		33	15		44		124		179	96	
Min	**32**	**27**	**21**	**9**	**9**	**11**	**30**	**78**	**124**	**124**	**89**	**45**
Max	**54**	**51**	**42**	**41**	**29**	**53**	**51**	**286**	**495**	**179**	**154**	**156**
Mean	**38**	**38**	**28**	**22**	**17**	**26**	**41**	**131**	**205**	**129**	**107**	**72**
ac-ft	**2364**	**2266**	**1725**	**1379**	**947**	**1604**	**2469**	**8026**	**12180**	**7907**	**6564**	**4256**

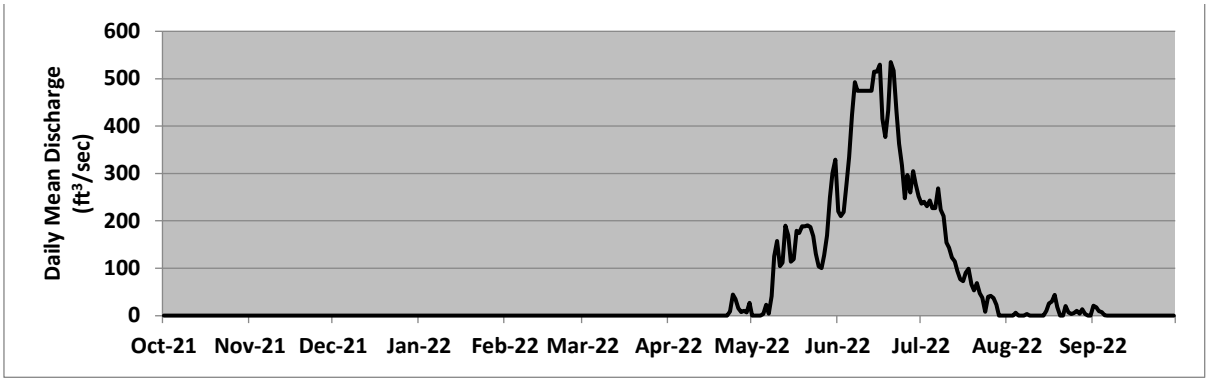


Appendix A (21 of 38)
Olympus Tunnel near Estes Park, CO

Location.— --Lat 40°22'24", long 105°29'00", Larimer County, Hydrologic Unit 10190006, southeast of Estes Park, Colorado.
Gage.—-- Water-stage recorder and satellite telemetry. Elevation of gage is 7460 ft (m.s.l.) from topographic map.
Remarks.—— Constructed between 1949 and 1952. The tunnel is 7.2 miles long, between Estes Park and the Pole Hill Canal. Its diameter is 9.75 feet and maximum design capacity is 550 cfs. The hydropower diversion operation, also known as the skim operation, diverts water from the Big Thompson River through Olympus Tunnel for power generation at three power plants down the foothills, before returning it to the Big Thompson River near the canyon mouth. The skim daily value is determined based on the data from the stream gages in the system. Period of record includes 01-Oct-2021 through 30-Sep-2022. Records are complete and reliable. This record contains operational data which could be subject to future revisions and changes.

Hydropower Diversion (Skim), cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	0	0	0	0	0	0	0	0	220	236	0	21
2	0	0	0	0	0	0	0	0	210	241	0	17
3	0	0	0	0	0	0	0	0	219	231	0	10
4	0	0	0	0	0	0	0	0	279	243	6	8
5	0	0	0	0	0	0	0	3	334	227	0	1
6	0	0	0	0	0	0	0	23	423	227	0	0
7	0	0	0	0	0	0	0	4	493	269	0	0
8	0	0	0	0	0	0	0	41	475	223	3	0
9	0	0	0	0	0	0	0	125	475	210	0	0
10	0	0	0	0	0	0	0	158	475	154	0	0
11	0	0	0	0	0	0	0	104	475	143	0	0
12	0	0	0	0	0	0	0	112	475	123	0	0
13	0	0	0	0	0	0	0	190	475	114	0	0
14	0	0	0	0	0	0	0	169	515	94	0	0
15	0	0	0	0	0	0	0	114	515	77	10	0
16	0	0	0	0	0	0	0	119	530	73	26	0
17	0	0	0	0	0	0	0	179	415	90	30	0
18	0	0	0	0	0	0	0	174	377	99	44	0
19	0	0	0	0	0	0	0	188	433	66	18	0
20	0	0	0	0	0	0	0	188	536	53	0	0
21	0	0	0	0	0	0	0	190	517	69	0	0
22	0	0	0	0	0	0	0	187	430	47	20	0
23	0	0	0	0	0	0	9	168	363	38	7	0
24	0	0	0	0	0	0	45	131	317	8	3	0
25	0	0	0	0	0	0	35	104	248	40	6	0
26	0	0	0	0	0	0	16	100	297	42	10	0
27	0	0	0	0	0	0	8	127	260	37	4	0
28	0	0	0	0	0	0	10	169	305	23	14	0
29	0	0	0	0		0	7	249	278	0	4	0
30	0	0	0	0		0	27	301	252	0	0	0
31	0		0	0		0		329		0	0	
Min	0	0	0	0	0	0	0	0	210	0	0	0
Max	0	0	0	0	0	0	45	329	536	269	44	21
Mean	0	0	0	0	0	0	5	127	387	113	7	2
ac-ft	0	0	0	0	0	0	308	7829	23036	6932	404	112

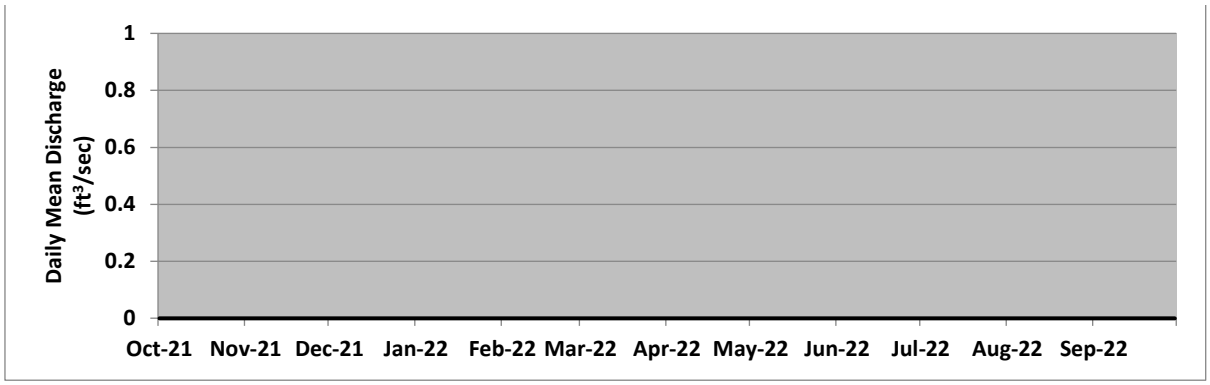


Appendix A (22 of 38)
Olympus Tunnel, CO

Location.— --Lat 40°22'24", long 105°29'00", Larimer County, Hydrologic Unit 10190006, southeast of Estes Park, Colorado.
Gage.—-- Water-stage recorder and satellite telemetry. Elevation of gage is 7460 ft (m.s.l.) from topographic map.
Remarks.—— Constructed between 1949 and 1952. The tunnel is 7.2 miles long, between Estes Park and the Pole Hill Canal. Its diameter is 9.75 feet and maximum design capacity is 550 cfs. The right to divert native runoff is determined by the Colorado Division of Water Resources. Period of record from 01-Oct-2021 through 30-Sep-2022. Record is complete and reliable.

Priority Diversion Flow, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0
29	0	0	0	0		0	0	0	0	0	0	0
30	0	0	0	0		0	0	0	0	0	0	0
31	0		0	0		0		0		0	0	
Min	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Max	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Mean	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
ac-ft	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

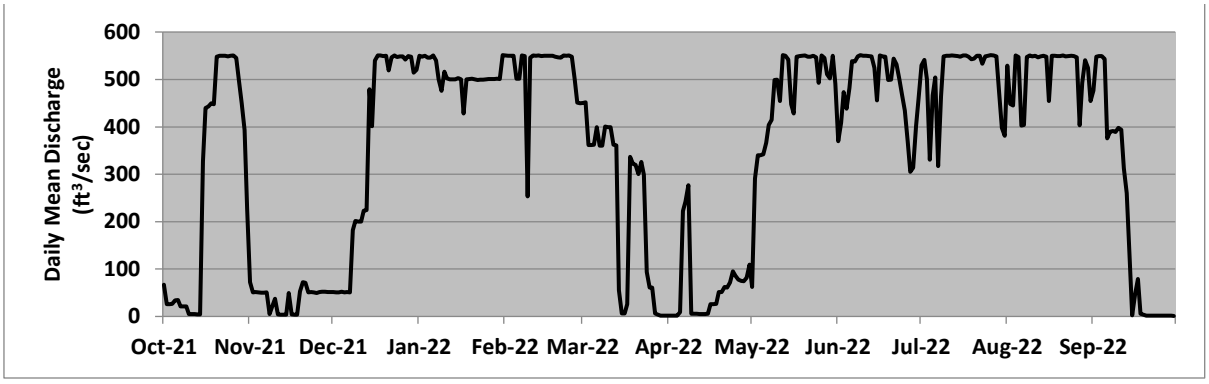


Appendix A (23 of 38)
Olympus Tunnel, CO

Location.— --Lat 40°22'24", long 105°29'00", Larimer County, Hydrologic Unit 10190006, southeast of Estes Park, Colorado, on the Big Thompson River.
Gage.—-- Water-stage recorder with satellite telemetry. Elevation of gage is 7460 ft (m.s.l.) from topographic map.
Remarks.—— Constructed between 1949 and 1952. The tunnel is 7.2 miles long, between Estes Park and the Pole Hill Canal. Its diameter is 9.75 feet and maximum design capacity is 550 cfs. Recorder was operated from 01-Oct-2021 to 30-Sep-2022. Records are complete and reliable. This record contains operational data which could be subject to future revisions and changes. Official record is published by the Colorado Division of Water Resources.

Discharge, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	67	72	51	550	551	451	1	62	370	530	529	477
2	26	50	51	548	550	452	1	291	409	541	448	548
3	26	51	51	550	550	362	1	340	474	500	445	550
4	27	51	52	546	550	362	1	340	438	331	551	549
5	34	50	51	546	502	362	9	342	482	467	547	543
6	34	50	51	551	501	400	222	367	539	504	403	376
7	21	50	51	540	551	360	243	404	538	318	404	390
8	21	5	182	500	550	360	277	415	549	464	547	391
9	21	20	201	476	253	401	5	499	551	549	551	389
10	5	37	200	516	546	399	5	499	550	550	549	398
11	5	4	200	502	551	399	5	455	550	550	550	394
12	5	4	223	500	550	362	5	552	549	551	547	312
13	4	4	225	500	551	361	5	550	548	550	549	260
14	4	4	480	500	550	56	5	542	525	550	550	124
15	327	50	401	503	550	6	5	448	456	548	548	2
16	440	4	540	501	550	6	26	428	551	551	454	46
17	443	3	550	428	550	26	26	548	548	551	550	79
18	450	3	550	500	550	337	27	550	548	548	550	5
19	448	52	549	501	548	322	51	550	499	543	550	4
20	548	72	550	502	547	320	52	551	500	544	550	2
21	550	71	519	500	546	301	62	548	544	550	551	2
22	550	51	547	499	551	326	60	548	532	550	549	2
23	550	51	551	500	550	299	71	550	501	534	550	1
24	549	50	547	500	551	93	95	547	469	549	550	1
25	550	49	549	501	548	60	85	493	434	550	550	1
26	551	52	549	501	501	61	78	551	369	551	547	1
27	545	52	542	501	451	6	75	546	305	551	403	1
28	499	52	549	501	450	3	74	511	314	549	493	1
29	450	51	548	502		1	81	502	401	477	541	1
30	394	51	514	501		1	109	550	460	398	524	1
31	226		520	551		1		491		381	454	
Min	**4**	**3**	**51**	**428**	**253**	**1**	**1**	**62**	**305**	**318**	**403**	**1**
Max	**551**	**72**	**551**	**551**	**551**	**452**	**277**	**552**	**551**	**551**	**551**	**550**
Mean	**270**	**39**	**359**	**510**	**527**	**234**	**59**	**470**	**483**	**512**	**519**	**195**
ac-ft	**16597**	**2317**	**22103**	**31372**	**29252**	**14394**	**3498**	**28895**	**28765**	**31495**	**31902**	**11607**

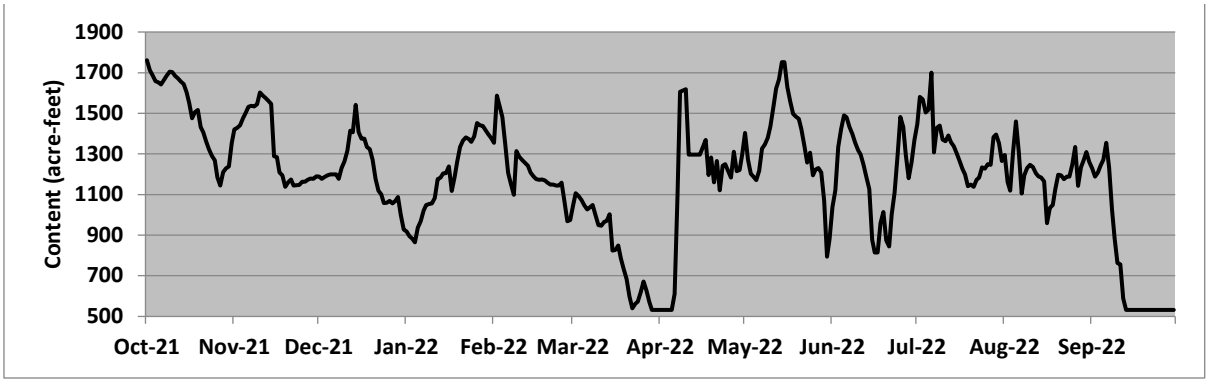


Appendix A (24 of 38)
Pinewood Reservoir near Loveland, Colorado, CO

Location.— --Lat 40°22', long 105°17.9', Larimer County, Hydrologic Unit 10190006, 10 miles southwest of Loveland, Colorado.
Gage.—-- Water-level recorder with satellite telemetry. Elevation of gage is 6,600 feet (m.s.l.) from topographic map.
Remarks.—-- Constructed between 1951 and 1952. Impoundment began on January 4, 1954. Active capacity between elevations 6,550.00 and 6.580.00 is 1,570 AF. The gage is capable of measuring the water surface elevation down to 6555.70 feet, a content of 604 AF. Used as the forebay storage for Flatiron Powerplant. Recorder was operated from 01-Oct-2021 to 30-Sep-2022. Record is complete and reliable. This record contains operational data which could be subject to future revisions and changes.

Storage, AF, 2400-hour Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	1761	1420	1187	919	1354	1046	532	1403	1038	1447	1294	1228
2	1713	1428	1178	895	1587	1107	532	1273	1120	1581	1161	1189
3	1686	1440	1187	883	1531	1093	532	1202	1334	1568	1119	1209
4	1658	1476	1194	865	1482	1073	531	1186	1422	1504	1309	1242
5	1653	1504	1200	936	1348	1046	531	1170	1489	1518	1459	1272
6	1642	1532	1199	968	1207	1026	610	1216	1480	1701	1308	1354
7	1664	1537	1200	1021	1150	1037	1092	1327	1432	1308	1105	1233
8	1686	1534	1178	1049	1098	1049	1606	1347	1398	1428	1194	1027
9	1705	1544	1231	1054	1313	998	1613	1380	1355	1439	1230	886
10	1703	1602	1263	1056	1286	950	1618	1434	1319	1370	1246	763
11	1684	1589	1316	1082	1269	946	1296	1526	1296	1363	1235	757
12	1671	1575	1414	1175	1256	965	1296	1622	1246	1391	1206	588
13	1657	1561	1406	1184	1241	970	1297	1666	1186	1357	1189	532
14	1643	1546	1541	1203	1209	1003	1297	1752	1126	1337	1183	532
15	1603	1288	1409	1206	1189	824	1296	1752	878	1303	1164	532
16	1551	1285	1375	1239	1176	828	1332	1630	814	1265	958	532
17	1475	1209	1375	1118	1173	848	1369	1558	814	1226	1034	532
18	1506	1195	1334	1187	1174	786	1196	1498	959	1199	1049	532
19	1517	1138	1324	1262	1169	733	1282	1483	1014	1141	1126	532
20	1431	1159	1270	1334	1158	684	1159	1472	874	1149	1197	532
21	1407	1175	1177	1366	1149	597	1265	1420	845	1138	1194	532
22	1360	1145	1120	1382	1149	540	1121	1342	1003	1173	1175	532
23	1322	1145	1100	1373	1145	562	1241	1257	1109	1183	1189	532
24	1291	1148	1058	1359	1145	573	1249	1306	1286	1233	1188	532
25	1268	1162	1060	1385	1158	617	1216	1194	1482	1228	1248	532
26	1186	1164	1068	1451	1066	672	1183	1222	1433	1250	1335	532
27	1144	1172	1056	1440	968	628	1311	1230	1294	1246	1142	531
28	1210	1179	1068	1438	975	570	1215	1209	1181	1383	1234	531
29	1229	1177	1088	1416		532	1222	1070	1258	1395	1267	531
30	1238	1189	998	1397		532	1296	795	1368	1353	1310	531
31	1355		927	1379		532		882		1265	1260	
Min	**1144**	**1138**	**927**	**865**	**968**	**532**	**531**	**795**	**814**	**1138**	**958**	**531**
Max	**1761**	**1602**	**1541**	**1451**	**1587**	**1107**	**1618**	**1752**	**1489**	**1701**	**1459**	**1354**
Mean	**1504**	**1341**	**1210**	**1194**	**1219**	**818**	**1145**	**1349**	**1195**	**1337**	**1203**	**744**
EOM	**1355**	**1189**	**927**	**1379**	**0**	**532**	**1296**	**882**	**1368**	**1265**	**1260**	**531**

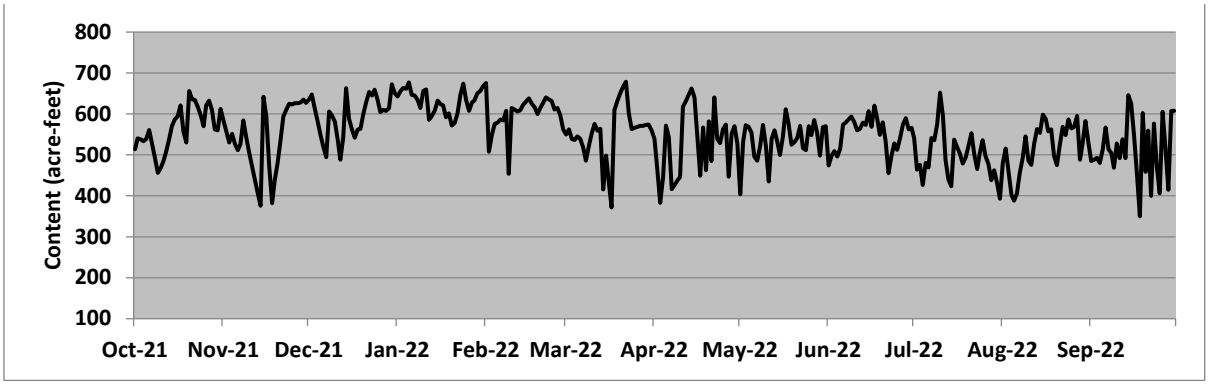


Appendix A (25 of 38)
Flatiron Reservoir, CO

Location.— --Lat 40°22.1', long 105°13.3', Larimer County, Hydrologic Unit 10190006, 8 miles southwest of Loveland, Colorado.
Gage.—-- Water-level recorder with satellite telemetry. Elevation of gage is 5,600 feet (m.s.l.) from topographic map.
Remarks.—-- Constructed between 1951 and 1953. Impoundment began in January 1954. Active capacity between elevations 5,462.00 and 5.472.80 is 436 AF. Used as the afterbay storage for Flatiron Powerplant. Recorder was operated from 01-Oct-2021 to 30-Sep-2022. Record is complete and reliable. This record contains operational data which could be subject to future revisions and changes.

Storage, AF, 2400-hour Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	514	584	635	643	675	550	540	404	474	541	481	485
2	541	557	648	657	508	562	464	533	497	464	515	488
3	538	530	614	664	548	539	383	573	509	476	459	493
4	534	551	582	662	576	536	445	569	496	426	402	480
5	539	526	549	677	579	546	572	555	515	481	388	514
6	561	512	520	647	587	540	543	496	574	469	405	568
7	527	527	494	646	584	519	416	486	579	541	456	514
8	493	584	607	635	608	486	427	521	587	536	492	505
9	456	544	596	614	454	521	437	574	593	575	546	468
10	468	507	581	656	614	552	446	523	580	653	486	528
11	486	473	536	660	611	576	618	435	560	595	476	492
12	511	440	488	586	606	559	631	539	564	488	528	538
13	540	407	542	595	609	564	647	560	579	440	563	492
14	570	376	663	609	622	415	662	534	574	424	554	646
15	587	642	589	633	630	498	640	500	607	538	598	625
16	595	593	563	624	638	436	546	544	569	519	588	546
17	621	471	542	621	625	372	449	612	621	503	557	452
18	558	382	562	592	617	609	568	576	588	479	563	350
19	531	438	564	602	600	631	463	525	549	493	497	602
20	656	479	601	572	616	651	582	531	580	522	475	459
21	636	534	629	578	626	666	485	541	533	553	524	559
22	635	593	654	601	640	679	640	571	455	501	569	400
23	618	610	646	647	636	602	540	516	497	466	549	576
24	597	625	660	674	632	563	529	512	528	504	587	471
25	570	623	636	634	611	566	562	570	512	536	565	407
26	621	626	605	608	615	569	574	549	540	497	569	606
27	633	627	610	628	597	571	447	585	574	478	595	516
28	610	628	608	634	562	571	552	555	590	439	488	415
29	563	635	614	651		573	570	498	562	462	527	608
30	560	627	673	657		574	527	568	567	431	583	608
31	613		651	668		560		570		393	532	
Min	**456**	**376**	**488**	**572**	**454**	**372**	**383**	**404**	**455**	**393**	**388**	**350**
Max	**656**	**642**	**673**	**677**	**675**	**679**	**662**	**612**	**621**	**653**	**598**	**646**
Mean	**564**	**542**	**595**	**631**	**601**	**553**	**530**	**536**	**552**	**498**	**520**	**514**
EOM	**613**	**627**	**651**	**668**	**0**	**560**	**527**	**570**	**567**	**393**	**532**	**608**

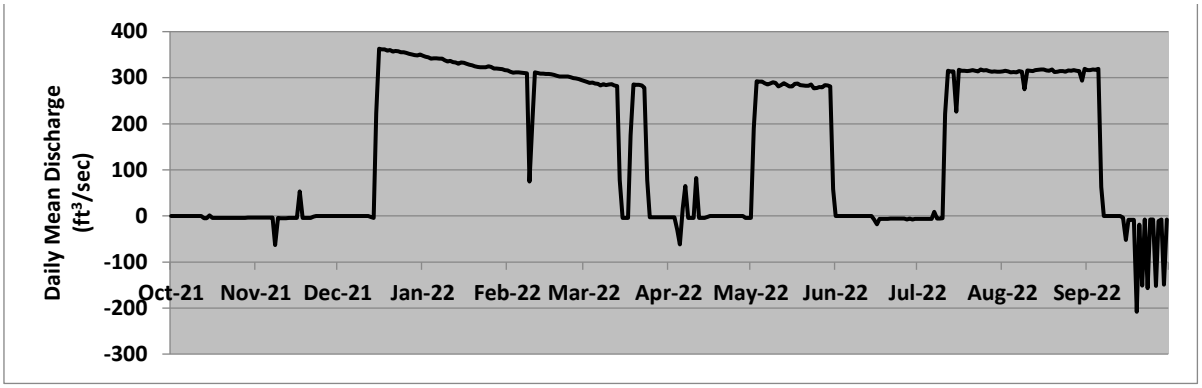


Appendix A (26 of 38)
Flatiron Powerplant Unit #3 Pump, CO

Location.— --Lat 40°21'53", long 105°14'09", Larimer County, Hydrologic Unit 10190006, 9 miles west of Loveland, Colorado
Gage.—-- There is a flow meter in place.
Remarks.—-- Constructed between 1951 and 1953. The Powerplant consists of three generating units. Unit #3 can be used to pump water from Flatiron Reservoir to Carter Lake Reservoir, or to generate power. For the purpose of this table, any negative values indicate power generation or leakage through the conduit from Carter Lake Reservoir into Flatiron Reservoir. The maximum capacity of the pump is approximately 480 cfs, but the efficiency varies according to the water surface levels at Carter Lake and Flatiron Reservoirs. Discharges are measured using a flow meter inside the pressure conduit. Recorder was operated from 01-Oct-2021 to 30-Sep-2022. Record is complete and reliable. This record contains operational data which could be subject to future revisions and changes.

Discharge, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	0	-4	0	347	316	293	-3	-4	0	-6	314	317
2	0	-4	0	345	313	291	-3	191	0	-6	315	317
3	0	-4	0	344	311	289	-3	292	0	-6	314	318
4	0	-4	0	342	312	289	-31	291	0	-6	312	317
5	0	-4	0	343	312	288	-62	292	0	-6	312	319
6	0	-4	0	342	311	286	16	288	0	-6	312	63
7	0	-4	0	341	310	283	65	286	0	9	315	0
8	0	-63	0	341	310	286	-4	287	0	-5	313	0
9	0	-5	0	338	75	284	-4	290	0	-5	275	0
10	0	-5	0	335	204	285	-4	289	0	-5	316	0
11	0	-5	0	337	312	286	82	281	0	222	315	0
12	0	-5	0	334	310	283	-4	284	0	315	315	0
13	-5	-5	-2	333	309	282	-4	288	0	314	317	0
14	-5	-4	-4	330	309	78	-4	285	0	314	317	-3
15	2	-4	223	333	308	-4	-2	281	-8	226	318	-52
16	-4	-4	363	332	308	-4	0	282	-18	318	318	-8
17	-4	53	362	331	308	-4	0	287	-6	315	316	-8
18	-4	-4	362	329	306	175	0	288	-6	315	315	-8
19	-4	-4	359	327	304	286	0	284	-6	315	318	-208
20	-4	-4	360	325	303	285	0	283	-6	315	313	-19
21	-4	-4	357	324	303	285	0	283	-6	317	313	-151
22	-4	-1	358	323	303	283	0	283	-6	315	314	-8
23	-4	0	357	323	303	278	0	286	-5	314	314	-157
24	-4	0	355	323	301	78	0	277	-5	318	313	-8
25	-4	0	355	325	300	-3	0	278	-5	316	316	-8
26	-4	0	354	323	299	-3	0	280	-5	317	315	-152
27	-4	0	352	320	297	-3	0	279	-8	315	317	-11
28	-4	0	351	320	295	-3	0	284	-5	313	315	-8
29	-4	0	349	319		-3	-4	283	-8	314	315	-149
30	-4	0	348	318		-3	-4	282	-6	313	293	-8
31	-4		350	317		-3		58		313	319	
Min	**-5**	**-63**	**-4**	**317**	**75**	**-4**	**-62**	**-4**	**-18**	**-6**	**275**	**-208**
Max	**2**	**53**	**363**	**347**	**316**	**293**	**82**	**292**	**0**	**318**	**319**	**319**
Mean	**-2**	**-3**	**191**	**331**	**295**	**175**	**1**	**265**	**-4**	**206**	**313**	**23**
ac-ft	**-147**	**-178**	**11722**	**20358**	**16364**	**10788**	**49**	**16297**	**-218**	**12673**	**19247**	**1361**

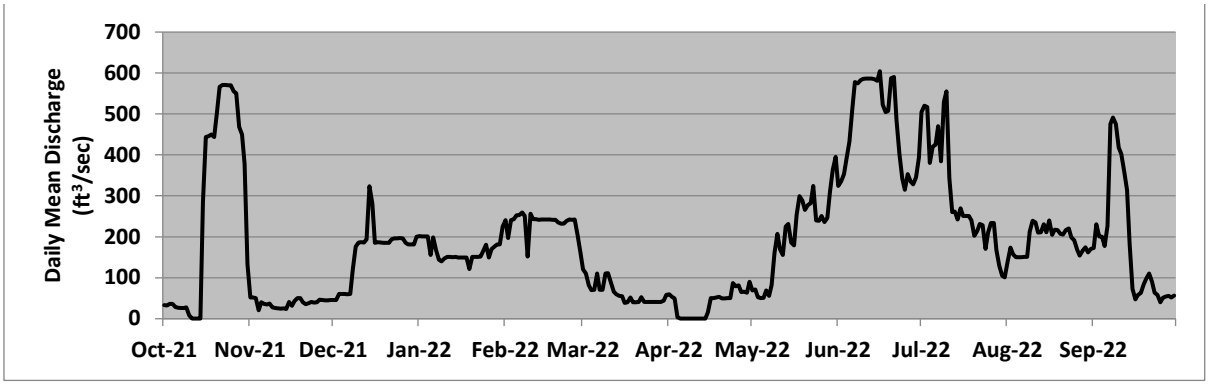


Appendix A (27 of 38)
CHFC 930 Section, CO

Location.— --Lat 40°22'26", long 105°13'52", Larimer County, Hydrologic Unit 10190006, 8 miles southwest of Loveland, Colorado.
Gage.—-- Water-stage recorder with satellite telemetry. Elevation of gage is 5470 feet from topographic map.
Remarks.—-- Constructed between 1949 and 1953. The canal is 3.8 miles long and has a maximum capacity of 930 cfs. The canal is used to move C-BT water and diverted native water to the Big Thompson River and/or Horsetooth Reservoir. Recorder was operated from 01-Oct-2021 to 30-Sep-2022. Canal algae growth can create accuracy issues. The record is complete and fair. This record contains operational data which could be subject to future revisions and changes.

Flow, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	33	51	45	201	241	121	60	69	324	505	139	172
2	32	52	45	201	197	110	54	71	336	520	173	231
3	36	50	60	201	241	81	49	52	353	517	157	201
4	36	20	60	201	243	70	3	50	391	380	150	200
5	29	40	60	155	252	70	0	51	433	420	150	178
6	26	36	60	198	253	110	0	69	513	425	150	227
7	26	34	60	168	259	70	0	56	578	470	151	476
8	26	36	121	144	251	70	0	82	575	384	151	491
9	28	28	176	140	151	110	0	161	583	529	213	475
10	8	26	186	147	256	111	0	207	586	556	239	418
11	0	25	186	150	243	89	0	170	587	343	235	402
12	0	24	186	151	243	66	0	156	587	260	210	360
13	0	25	194	150	241	60	0	225	586	262	211	314
14	0	24	323	150	242	56	0	231	585	242	230	183
15	286	40	281	149	242	55	16	186	581	270	211	73
16	444	32	185	150	242	39	50	179	605	251	240	47
17	446	43	187	150	242	40	50	253	522	251	205	58
18	450	50	186	149	241	52	51	299	505	251	217	63
19	444	50	185	121	242	40	54	288	508	240	217	84
20	506	40	185	151	235	40	50	266	587	202	207	97
21	566	36	185	151	232	41	49	278	591	214	206	110
22	571	37	194	151	232	52	50	282	485	231	216	90
23	571	41	196	151	238	40	50	324	403	228	220	63
24	570	39	196	165	242	40	87	240	342	170	199	58
25	570	40	197	181	242	40	79	239	315	210	191	40
26	556	46	196	150	242	40	82	251	353	233	169	51
27	551	45	185	169	204	40	65	236	335	233	154	54
28	468	45	181	176	161	41	66	246	328	167	166	56
29	450	45	182	181		41	63	308	345	129	174	52
30	378	45	181	182		44	90	364	394	105	162	56
31	133		200	225		58		395		101	170	
Min	**0**	**20**	**45**	**121**	**151**	**39**	**0**	**50**	**315**	**101**	**139**	**40**
Max	**571**	**52**	**323**	**225**	**259**	**121**	**90**	**395**	**605**	**556**	**240**	**491**
Mean	**266**	**38**	**163**	**165**	**234**	**62**	**37**	**203**	**474**	**300**	**190**	**179**
ac-ft	**16344**	**2270**	**10047**	**10132**	**12993**	**3839**	**2217**	**12464**	**28195**	**18449**	**11667**	**10669**

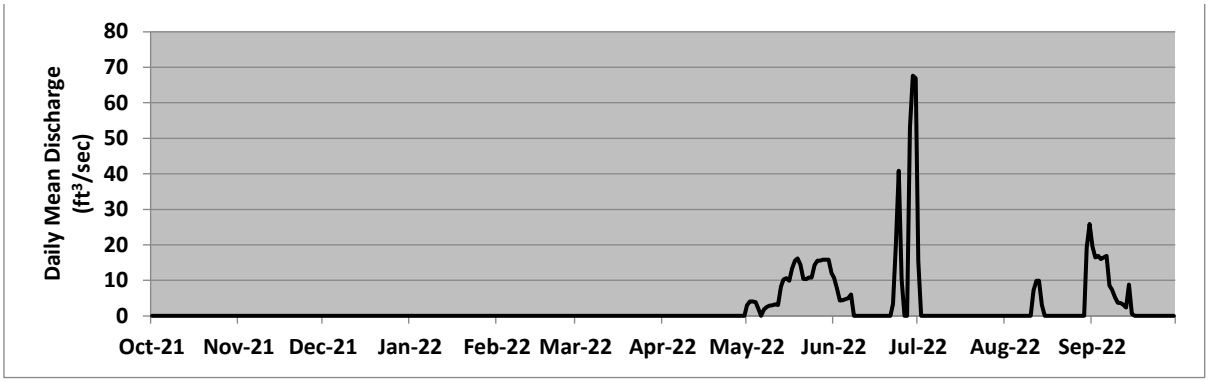


Appendix A (28 of 38)
Dille Tunnel near Drake, CO

Location.— --Lat 40°25'02", long 105°14'35", Larimer County, Hydrologic Unit 10190006, 11 miles west of Loveland, Colorado, on the Big Thompson River.
Gage.—-- Water-stage recorder with satellite telemetry at Parshall Flume. Elevation of gage is 5520 feet (m.s.l.) from topographic map.
Remarks.—-- Constructed in 1950. Maximum capacity is 600 cfs, but only 400 cfs can be measured accurately. Dille Tunnel diverts water from the Big Thompson River for power generation and water supply. The hydropower diversion operation, also known as the skim operation, diverts water from the Big Thompson River through Dille Tunnel for power generation at the Big Thompson Powerplant, where the diverted water is returned to the river. The skim daily value is determined based on the data from the Gage.— Record is complete and accurate.

Hydropower Diversion Flow (Skim), cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	0	0	0	0	0	0	0	3	11	15	0	20
2	0	0	0	0	0	0	0	4	8	0	0	16
3	0	0	0	0	0	0	0	4	4	0	0	17
4	0	0	0	0	0	0	0	4	4	0	0	16
5	0	0	0	0	0	0	0	2	5	0	0	16
6	0	0	0	0	0	0	0	0	5	0	0	17
7	0	0	0	0	0	0	0	2	6	0	0	9
8	0	0	0	0	0	0	0	3	0	0	0	7
9	0	0	0	0	0	0	0	3	0	0	0	5
10	0	0	0	0	0	0	0	3	0	0	0	4
11	0	0	0	0	0	0	0	3	0	0	7	4
12	0	0	0	0	0	0	0	3	0	0	10	3
13	0	0	0	0	0	0	0	8	0	0	10	2
14	0	0	0	0	0	0	0	10	0	0	3	9
15	0	0	0	0	0	0	0	11	0	0	0	1
16	0	0	0	0	0	0	0	10	0	0	0	0
17	0	0	0	0	0	0	0	13	0	0	0	0
18	0	0	0	0	0	0	0	16	0	0	0	0
19	0	0	0	0	0	0	0	16	0	0	0	0
20	0	0	0	0	0	0	0	14	0	0	0	0
21	0	0	0	0	0	0	0	10	0	0	0	0
22	0	0	0	0	0	0	0	10	3	0	0	0
23	0	0	0	0	0	0	0	11	20	0	0	0
24	0	0	0	0	0	0	0	11	41	0	0	0
25	0	0	0	0	0	0	0	14	10	0	0	0
26	0	0	0	0	0	0	0	16	0	0	0	0
27	0	0	0	0	0	0	0	16	0	0	0	0
28	0	0	0	0	0	0	0	16	53	0	0	0
29	0	0	0	0		0	0	16	68	0	0	0
30	0	0	0	0		0	0	16	67	0	19	0
31	0		0	0		0		12		0	26	
Min	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Max	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**16**	**68**	**15**	**26**	**20**
Mean	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**9**	**10**	**0**	**2**	**5**
ac-ft	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**554**	**605**	**31**	**149**	**289**

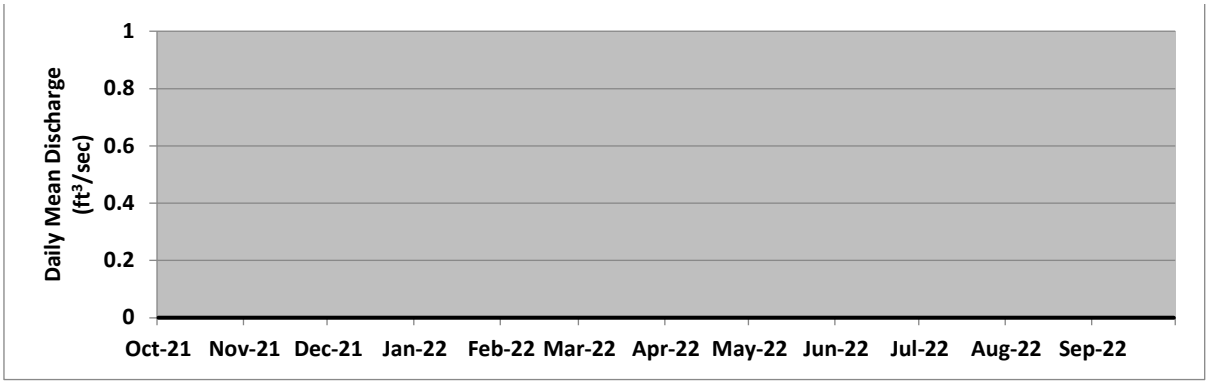


Appendix A (29 of 38)
Dille Tunnel near Drake, CO

Location.— --Lat 40°25'02", long 105°14'35", Larimer County, Hydrologic Unit 10190006, 11 miles west of Loveland, Colorado, on the Big Thompson River.
Gage.—-- None.
Remarks.—-- Constructed in 1950. Maximum capacity is 600 cfs. Dille Tunnel diverts water from the Big Thompson River for power generation and water supply. The right to divert native runoff is determined by the State of Colorado. The numbers presented in this table are based on gaged flows and available priority water. Record is complete and reliable. This record contains operational data which could be subject to future revisions and changes.

Priority Diversion Flow, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0
29	0	0	0	0		0	0	0	0	0	0	0
30	0	0	0	0		0	0	0	0	0	0	0
31	0		0	0		0		0		0	0	
Min	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Max	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Mean	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
ac-ft	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

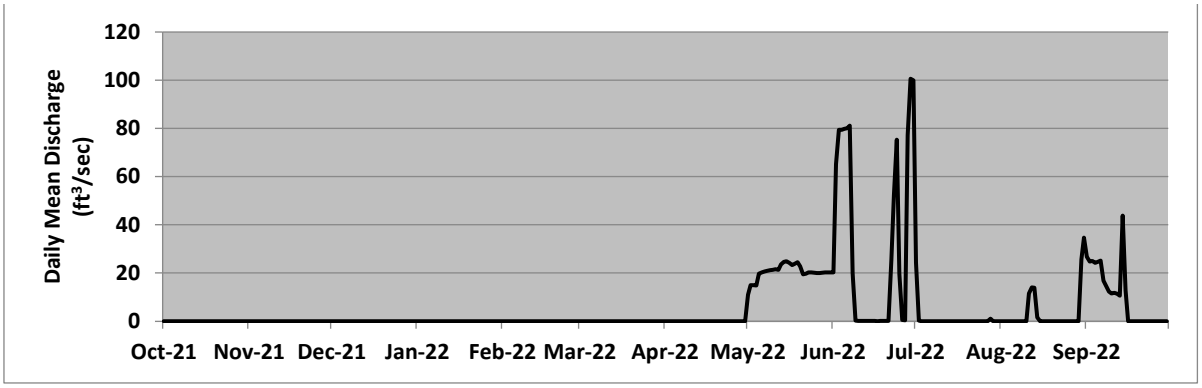


Appendix A (30 of 38)
Dille Tunnel near Drake, CO

Location.— --Lat 40°25'02", long 105°14'35", Larimer County, Hydrologic Unit 10190006, 11 miles west of Loveland, Colorado, on the Big Thompson River.
Gage.—-- Water-stage recorder with satellite telemetry at Parshall Flume. Elevation of gage is 5520 feet from topographic map.
Remarks.—— Constructed in 1950. The Dille Tunnel has a maximum capacity is 600 cfs, but only 400 cfs can be measured accurately. Dille Tunnel diverts water from the Big Thompson River for power generation and water supply. Record is complete and reliable. This record contains operational data which could be subject to future revisions and changes. The official record is published by the Colorado Division of Water Resources.

Discharge, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	0	0	0	0	0	0	0	11	20	24	0	27
2	0	0	0	0	0	0	0	15	65	0	0	25
3	0	0	0	0	0	0	0	15	79	0	0	25
4	0	0	0	0	0	0	0	15	79	0	0	24
5	0	0	0	0	0	0	0	20	80	0	0	25
6	0	0	0	0	0	0	0	20	80	0	0	25
7	0	0	0	0	0	0	0	21	81	0	0	17
8	0	0	0	0	0	0	0	21	20	0	0	15
9	0	0	0	0	0	0	0	21	0	0	0	12
10	0	0	0	0	0	0	0	21	0	0	0	12
11	0	0	0	0	0	0	0	22	0	0	12	12
12	0	0	0	0	0	0	0	21	0	0	14	11
13	0	0	0	0	0	0	0	24	0	0	14	11
14	0	0	0	0	0	0	0	25	0	0	2	44
15	0	0	0	0	0	0	0	25	0	0	0	13
16	0	0	0	0	0	0	0	24	0	0	0	0
17	0	0	0	0	0	0	0	23	0	0	0	0
18	0	0	0	0	0	0	0	24	0	0	0	0
19	0	0	0	0	0	0	0	24	0	0	0	0
20	0	0	0	0	0	0	0	23	0	0	0	0
21	0	0	0	0	0	0	0	20	0	0	0	0
22	0	0	0	0	0	0	0	20	25	0	0	0
23	0	0	0	0	0	0	0	20	52	0	0	0
24	0	0	0	0	0	0	0	20	75	0	0	0
25	0	0	0	0	0	0	0	20	20	0	0	0
26	0	0	0	0	0	0	0	20	1	0	0	0
27	0	0	0	0	0	0	0	20	0	0	0	0
28	0	0	0	0	0	0	0	20	77	1	0	0
29	0	0	0	0		0	0	20	101	0	0	0
30	0	0	0	0		0	0	20	100	0	26	0
31	0		0	0		0		20		0	35	
Min	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**11**	**0**	**0**	**0**	**0**
Max	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**25**	**101**	**24**	**35**	**44**
Mean	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**20**	**32**	**1**	**3**	**10**
ac-ft	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1259**	**1901**	**51**	**202**	**588**

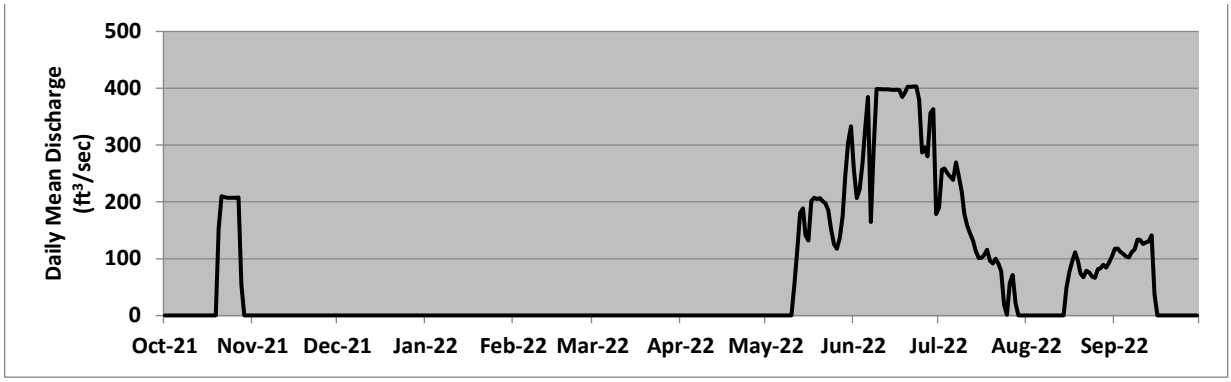


Appendix A (31 of 38)
Big Thompson Power Plant, CO

Location.— --Lat 40°25'16", long 105°13'26", Larimer County, Hydrologic Unit 10190006, 9 miles west of Loveland, Colorado, on the Big Thompson River.
Gage.—-- Flow meter with satellite telemetry. Elevation of gage is 5280 feet (m.s.l.) from topographic map.
Remarks.—-- Initial operation in 1959. Maximum capacity is 400 cfs. Power plant returns hydropower diversions to the Big Thompson River downstream of the Big Thompson River canyon mouth. The plant is also used to deliver C-BT project and Windy Gap Project water to the Big Thompson River. Depending on weather, the plant is generally winterized from November through April, each year. This record contains data recorded between 01-Oct-2021 and 30-Sep-2022. Record is complete and fair. This record contains operational data which could be subject to future revisions and changes.

Discharge, *cfs*, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	0	0	0	0	0	0	0	0	257	190	0	117
2	0	0	0	0	0	0	0	0	206	257	0	118
3	0	0	0	0	0	0	0	0	222	259	0	113
4	0	0	0	0	0	0	0	0	268	250	0	108
5	0	0	0	0	0	0	0	0	326	244	0	104
6	0	0	0	0	0	0	0	0	385	239	0	102
7	0	0	0	0	0	0	0	0	165	269	0	112
8	0	0	0	0	0	0	0	0	296	244	0	117
9	0	0	0	0	0	0	0	0	399	218	0	134
10	0	0	0	0	0	0	0	0	398	179	0	133
11	0	0	0	0	0	0	0	54	398	158	0	126
12	0	0	0	0	0	0	0	113	398	144	0	129
13	0	0	0	0	0	0	0	181	398	132	0	130
14	0	0	0	0	0	0	0	189	397	113	0	141
15	0	0	0	0	0	0	0	141	397	101	49	37
16	0	0	0	0	0	0	0	132	397	101	77	0
17	0	0	0	0	0	0	0	202	397	106	96	0
18	0	0	0	0	0	0	0	207	384	116	112	0
19	0	0	0	0	0	0	0	205	392	97	95	0
20	153	0	0	0	0	0	0	207	403	92	74	0
21	210	0	0	0	0	0	0	201	403	100	67	0
22	208	0	0	0	0	0	0	198	403	90	79	0
23	207	0	0	0	0	0	0	185	403	78	76	0
24	207	0	0	0	0	0	0	151	379	20	69	0
25	207	0	0	0	0	0	0	126	287	1	66	0
26	207	0	0	0	0	0	0	118	296	57	82	0
27	208	0	0	0	0	0	0	136	280	71	83	0
28	54	0	0	0	0	0	0	175	356	21	89	0
29	0	0	0	0		0	0	245	363	0	84	0
30	0	0	0	0		0	0	304	179	0	93	0
31	0		0	0		0		333		0	104	
Min	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**165**	**0**	**0**	**0**
Max	**210**	**0**	**0**	**0**	**0**	**0**	**0**	**333**	**403**	**269**	**112**	**141**
Mean	**54**	**0**	**0**	**0**	**0**	**0**	**0**	**123**	**341**	**127**	**45**	**57**
ac-ft	**3297**	**0**	**0**	**0**	**0**	**0**	**0**	**7542**	**20292**	**7831**	**2767**	**3414**

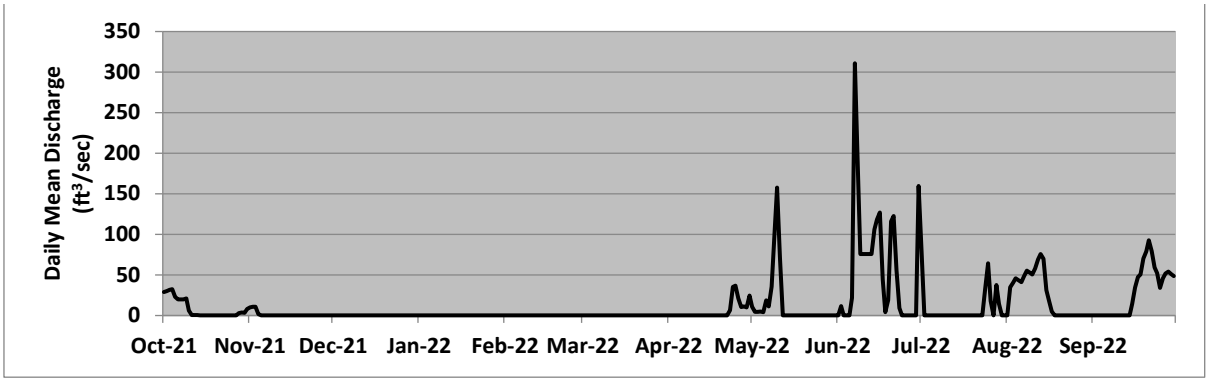


Appendix A (32 of 38)
CHFC Wasteway, CO

Location.— --Lat 40°25'13", long 105°13'28", Larimer County, Hydrologic Unit 10190006, 9 miles west of Loveland, Colorado, on the Big Thompson River.
Gage.—-- Water-stage recorder with satellite telemetry at 15-foot Parshall Flume. Elevation of gage is 5465 feet (m.s.l.) from Designer's Operating Criteria.
Remarks.—-- Constructed between 1949 and 1953. Maximum capacity is 400 cfs. The structure is used to return diverted water and to deliver C-BT and Windy Gap Project water to the Big Thompson River. Depending on weather, the facility is generally winterized between November and April. Recorder was operated from 01-Oct-2021 until 04-Nov-2021, before it was winterized. The station was put back into service from 23-Apr-2022 to 30-Sep-2022. Record is complete and reliable. These data are provisional operations data and are subject to further revision and change. The official record is published by the Colorado Division of Water Resources.

Discharge, *c*fs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	29	10	0	0	0	0	0	11	0	81	0	0
2	30	11	0	0	0	0	0	4	11	0	35	0
3	32	11	0	0	0	0	0	5	0	0	40	0
4	32	2	0	0	0	0	0	5	0	0	46	0
5	23	0	0	0	0	0	0	4	0	0	43	0
6	20	0	0	0	0	0	0	19	22	0	41	0
7	20	0	0	0	0	0	0	11	311	0	48	0
8	20	0	0	0	0	0	0	35	185	0	55	0
9	21	0	0	0	0	0	0	101	76	0	53	0
10	6	0	0	0	0	0	0	157	76	0	50	0
11	0	0	0	0	0	0	0	71	76	0	58	0
12	0	0	0	0	0	0	0	0	76	0	69	0
13	0	0	0	0	0	0	0	0	76	0	76	0
14	0	0	0	0	0	0	0	0	106	0	70	0
15	0	0	0	0	0	0	0	0	118	0	31	14
16	0	0	0	0	0	0	0	0	127	0	19	34
17	0	0	0	0	0	0	0	0	44	0	5	47
18	0	0	0	0	0	0	0	0	4	0	0	51
19	0	0	0	0	0	0	0	0	19	0	0	70
20	0	0	0	0	0	0	0	0	116	0	0	79
21	0	0	0	0	0	0	0	0	122	0	0	92
22	0	0	0	0	0	0	0	0	55	0	0	79
23	0	0	0	0	0	0	6	0	9	0	0	59
24	0	0	0	0	0	0	35	0	0	33	0	52
25	0	0	0	0	0	0	37	0	0	64	0	34
26	0	0	0	0	0	0	21	0	0	18	0	46
27	0	0	0	0	0	0	10	0	0	0	0	51
28	3	0	0	0	0	0	11	0	0	37	0	54
29	3	0	0	0		0	10	0	0	14	0	51
30	3	0	0	0		0	24	0	159	0	0	49
31	8		0	0		0		0		0	0	
Min	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Max	**32**	**11**	**0**	**0**	**0**	**0**	**37**	**157**	**311**	**81**	**76**	**92**
Mean	**8**	**1**	**0**	**0**	**0**	**0**	**5**	**14**	**60**	**8**	**24**	**29**
ac-ft	**497**	**65**	**0**	**0**	**0**	**0**	**307**	**839**	**3545**	**491**	**1464**	**1710**

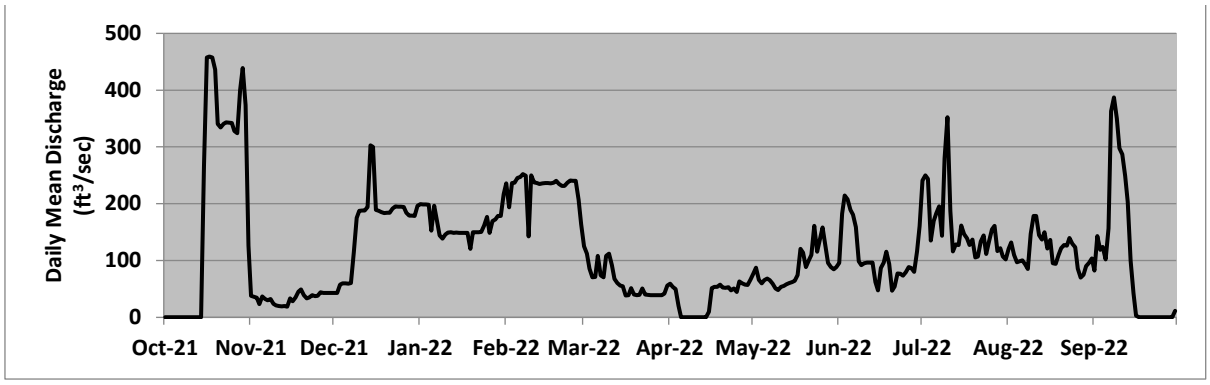


Appendix A (33 of 38)
CHFC 550 Section, CO

Location.— --Lat 40°25'25", long 105°13'34", Larimer County, Hydrologic Unit 10190006, 9 miles west of Loveland, Colorado.
Gage.—-- Water-stage recorder with satellite telemetry. Elevation of gage is 5460 feet (m.s.l.) from topographic map.
Remarks.—-- Constructed between 1949 and 1953. The canal is 9.4 miles long and has a maximum design capacity of 550 cfs. The canal is used to move C-BT water and Big Thompson River priority water to Horsetooth Reservoir. Recorder was operated from 01-Oct-2021 to 30-Sep-2022. Algae growth in canal can create accuracy issues. Record is complete and reliable. This record contains operational data which could be subject to future revisions and changes.

Discharge, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	0	38	43	199	236	125	59	77	96	241	121	82
2	0	36	43	199	194	112	54	87	182	250	132	143
3	0	35	57	199	236	85	49	66	214	243	110	119
4	0	23	60	198	237	71	20	60	207	135	97	124
5	0	36	60	152	245	71	0	65	189	169	98	102
6	0	32	59	196	247	108	0	68	181	183	100	157
7	0	30	60	169	252	74	0	66	159	195	93	363
8	0	32	114	144	249	70	0	59	99	143	85	387
9	0	24	175	139	142	108	0	51	92	279	147	350
10	0	21	188	146	250	112	0	48	95	352	179	298
11	0	20	188	149	237	92	0	53	96	187	179	287
12	0	19	188	149	237	68	0	55	96	116	145	249
13	0	20	194	149	235	60	0	58	96	128	137	203
14	0	19	303	149	236	56	0	60	62	127	150	100
15	265	33	300	148	236	55	10	62	47	161	121	42
16	457	28	189	149	236	38	51	64	87	146	136	3
17	459	35	187	148	236	39	53	74	96	139	95	0
18	457	45	185	148	237	51	53	120	116	127	94	0
19	436	49	184	120	240	40	58	114	94	137	110	0
20	340	39	184	150	235	39	52	89	47	105	121	0
21	334	33	184	150	231	40	52	100	54	107	127	0
22	340	35	191	149	231	51	53	110	77	134	126	0
23	343	39	195	150	237	40	47	161	77	144	140	0
24	343	37	194	161	241	39	51	115	73	111	129	0
25	342	38	195	176	240	39	45	136	80	134	123	0
26	328	44	194	149	240	39	63	158	88	155	86	0
27	324	43	184	169	207	39	60	125	87	161	70	0
28	401	43	179	172	164	39	57	96	80	116	75	0
29	439	43	179	178		39	57	88	116	121	90	0
30	374	43	179	179		42	67	84	161	107	96	11
31	126		196	217		56		88		102	103	
Min	**0**	**19**	**43**	**120**	**142**	**38**	**0**	**48**	**47**	**102**	**70**	**0**
Max	**459**	**49**	**303**	**217**	**252**	**125**	**67**	**161**	**214**	**352**	**179**	**387**
Mean	**197**	**34**	**162**	**163**	**230**	**62**	**34**	**86**	**108**	**160**	**117**	**101**
ac-ft	**12117**	**2005**	**9980**	**10022**	**12783**	**3837**	**2004**	**5276**	**6433**	**9835**	**7168**	**5989**

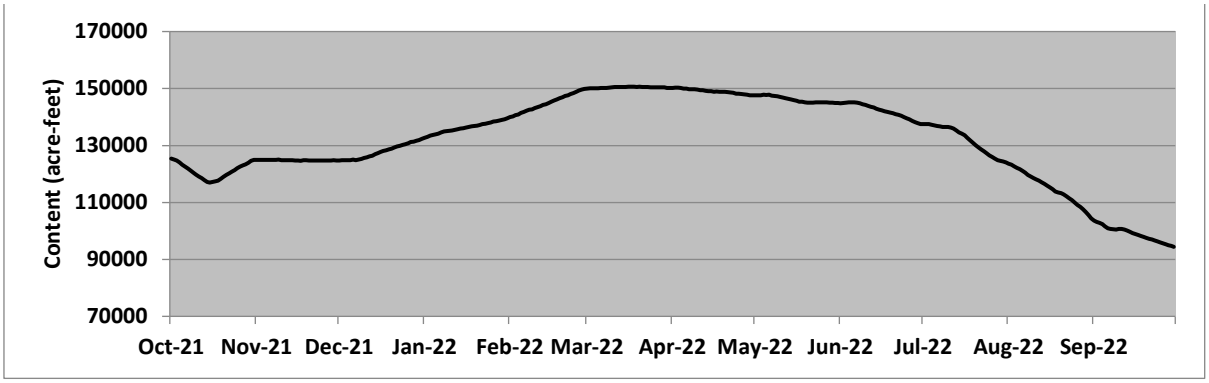


Appendix A (34 of 38)
Horsetooth Reservoir near Fort Collins, CO

Location.— —-Lat 40°36'00", long 105°10'05", Larimer County, Hydrologic Unit 10190007, at Horsetooth Dam outlet works, 4.8 miles west of Fort Collins, Colorado.
Gage.—— Water level recorder with satellite telemetry. Elevation of gage is 5300 feet (m.s.l.) from topographic map.
Remarks.—— Reservoir is formed by four earth-fill dams. Construction completed in 1949. Impoundment began in 1951. Horsetooth Reservoir is one of two terminal reservoirs for C-BT diversions. Trans-mountain diversions are stored at Horsetooth Reservoir before final delivery. Maximum capacity is 156,735 AF at elevation 5430.00 ft, with 142,038 AF of active storage. Recorder was operated from 01-Oct-2021 to 30-Sep-2022. Record is complete and reliable. This record contains operational data which could be subject to future revisions and changes.

Storage, AF, 2400-hour Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	125383	124913	124751	132731	139962	149964	150261	147584	144875	137579	123637	103640
2	125058	124931	124823	133085	140212	150043	150301	147663	144973	137579	123260	103230
3	124733	124986	124805	133440	140633	150083	150301	147644	145090	137579	122706	102888
4	124049	124986	124805	133738	140922	150103	150162	147802	145188	137314	122188	102366
5	123314	124949	124895	133906	141423	150123	150003	147762	145207	137087	121690	101617
6	122617	124986	125040	134168	141789	150222	149984	147802	145129	136897	121121	101001
7	121921	124968	124841	134618	142215	150222	149784	147466	145012	136689	120465	100726
8	121245	124949	125112	134899	142581	150241	149744	147446	144778	136462	119723	100565
9	120518	125040	125274	135012	142736	150321	149704	147249	144465	136462	119089	100533
10	119847	124877	125635	135162	143144	150461	149604	147032	144212	136557	118543	100710
11	119142	124859	125816	135331	143434	150581	149386	146796	143960	136349	118106	100726
12	118526	124823	126233	135557	143784	150581	149445	146638	143609	135915	117616	100500
13	117913	124859	126414	135745	144251	150501	149148	146362	143318	135331	117109	100210
14	117197	124805	126977	135934	144523	150521	149089	146148	142950	134655	116500	99759
15	116952	124751	127341	136047	144973	150581	149069	145911	142601	134168	115891	99277
16	117179	124733	127797	136311	145421	150601	148850	145676	142330	133570	115301	98876
17	117441	124661	128144	136500	145774	150601	148930	145421	142040	132731	114593	98556
18	117721	124841	128362	136708	146128	150601	148870	145343	141808	131859	113870	98221
19	118369	124805	128709	136897	146579	150581	148910	145129	141615	131026	113526	97886
20	118966	124751	128893	137011	146973	150601	148831	145090	141307	130159	113268	97535
21	119635	124787	129369	137163	147347	150521	148732	145012	140980	129314	112840	97265
22	120200	124787	129626	137485	147644	150541	148612	145031	140730	128618	112122	96995
23	120838	124751	129866	137674	148058	150541	148513	145110	140404	128034	111508	96631
24	121387	124787	130233	137845	148453	150441	148236	145129	139962	127268	110862	96346
25	122063	124787	130510	138112	148870	150481	148137	145149	139560	126559	109966	96015
26	122563	124787	130823	138378	149307	150461	148058	145188	139160	125979	109173	95684
27	123081	124751	131211	138492	149624	150421	147940	145207	138644	125383	108468	95369
28	123350	124751	131377	138797	149884	150421	147821	145031	138169	124877	107647	95055
29	123995	124841	131729	139006		150381	147644	145051	137845	124589	106647	94756
30	124661	124787	131951	139236		150261	147584	144914	137542	124373	105552	94442
31	124949		132378	139503		150241		144934		124031	104380	
Min	**116952**	**124661**	**124751**	**132731**	**139962**	**149964**	**147584**	**144914**	**137542**	**124031**	**104380**	**94442**
Max	**125383**	**125040**	**132378**	**139503**	**149884**	**150601**	**150301**	**147802**	**145207**	**137579**	**123637**	**103640**
Mean	**121123**	**124843**	**127863**	**136274**	**144880**	**150395**	**149055**	**146120**	**142249**	**132097**	**115076**	**98913**
EOM	**124949**	**124787**	**132378**	**139503**	**0**	**150241**	**147584**	**144934**	**137542**	**124031**	**104380**	**94442**

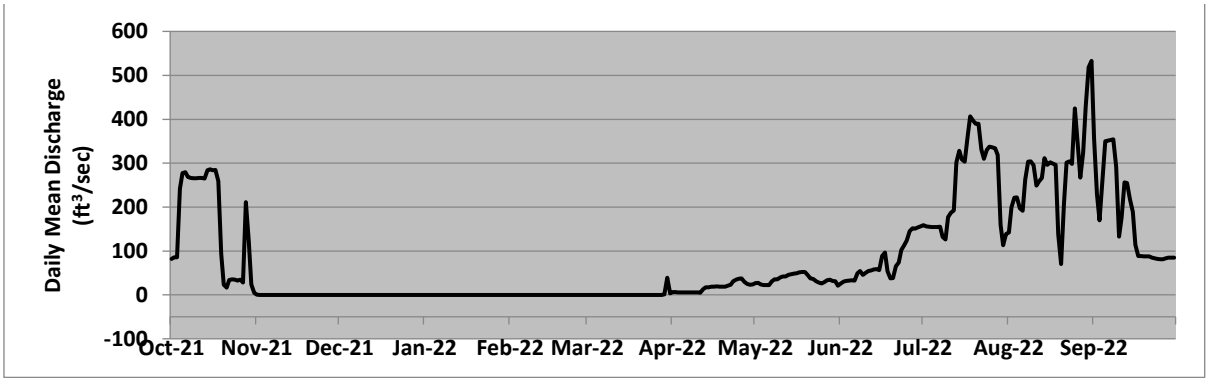


Appendix A (35 of 38)
Charles Hansen Supply Canal below Horsetooth Reservoir, CO

Location.— --Lat 40°36'01", long 105°10'18", Larimer County, Hydrologic Unit 10190007, 4 miles west of Fort Collins, Colorado.
Gage.—-- Two flow meters with satellite telemetry measure the flow for each conduit leading toward the hollow jet valves.
Remarks.—-- Constructed between 1950 and 1952. The canal is 5.1 miles long and has a maximum capacity of 1500 cfs. The canal is used to deliver C-BT and Windy Gap Project water stored at Horsetooth Reservoir. Recorder was operated from 01-Oct-2021 to 30-Sep-2022 by the Northern Water and the Colorado Division of Water Resources. Record is complete and fair. This record contains operational data which could be subject to future revisions and changes.

Discharge, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	82	1	0	0	0	0	6	27	26	159	142	356
2	86	0	0	0	0	0	7	27	30	156	200	230
3	86	0	0	0	0	0	6	24	32	155	221	170
4	242	0	0	0	0	0	6	22	33	155	222	260
5	277	0	0	0	0	0	6	22	33	155	197	350
6	280	0	0	0	0	0	6	22	33	155	192	352
7	269	0	0	0	0	0	6	31	49	155	263	353
8	266	0	0	0	0	0	6	35	54	132	303	355
9	266	0	0	0	0	0	6	36	46	126	304	292
10	266	0	0	0	0	0	6	40	50	177	296	133
11	267	0	0	0	0	0	5	42	55	188	249	177
12	266	0	0	0	0	0	13	42	56	192	259	257
13	265	0	0	0	0	0	17	46	58	302	266	255
14	284	0	0	0	0	0	17	47	59	328	312	218
15	286	0	0	0	0	0	19	49	56	309	296	189
16	284	0	0	0	0	0	19	49	88	304	302	114
17	285	0	0	0	0	0	19	52	97	360	299	88
18	260	0	0	0	0	0	19	52	53	407	296	88
19	94	0	0	0	0	0	18	52	37	397	139	88
20	23	0	0	0	0	0	19	45	39	390	70	88
21	17	0	0	0	0	0	21	38	66	390	209	88
22	34	0	0	0	0	0	23	36	74	331	301	85
23	35	0	0	0	0	0	31	31	102	310	304	84
24	35	0	0	0	0	0	35	29	113	331	298	82
25	33	0	0	0	0	0	37	26	124	338	425	81
26	35	0	0	0	0	0	38	29	146	336	343	81
27	28	0	0	0	0	0	30	33	152	334	267	84
28	212	0	0	0	0	0	25	35	151	319	325	85
29	124	0	0	0		1	23	32	154	160	431	85
30	24	0	0	0		39	24	31	156	113	519	85
31	5		0	0		3		21		138	533	
Min	**5**	**0**	**0**	**0**	**0**	**0**	**5**	**21**	**26**	**113**	**70**	**81**
Max	**286**	**1**	**0**	**0**	**0**	**39**	**38**	**52**	**156**	**407**	**533**	**356**
Mean	**162**	**0**	**0**	**0**	**0**	**1**	**17**	**36**	**74**	**252**	**283**	**175**
ac-ft	**9943**	**1**	**0**	**0**	**0**	**88**	**1019**	**2190**	**4406**	**15474**	**17423**	**10416**

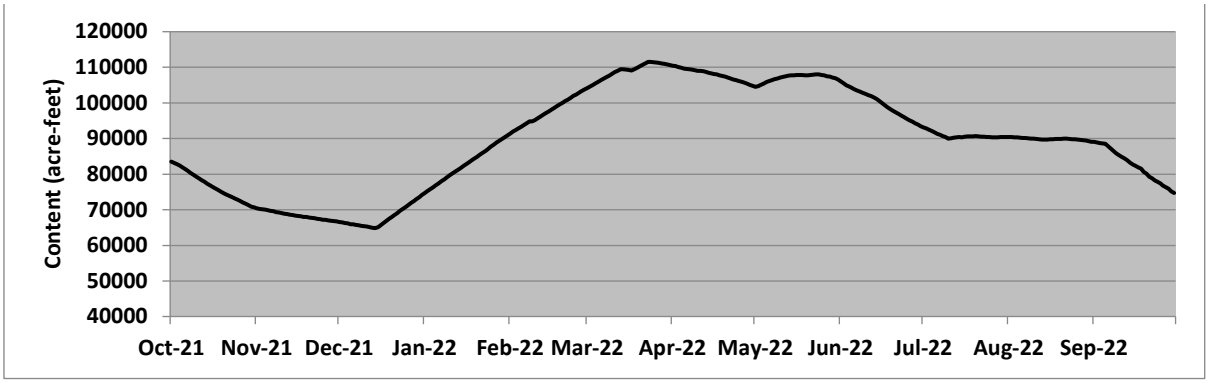


Appendix A (36 of 38)
Carter Lake near Berthoud, Colorado, CO

Location.— --Lat 40°19' 28", long 105°12' 41", Larimer County, Hydrologic Unit 10190006, on Dam #1, 7 miles northwest of Berthoud, Colorado, and 10 miles west of Loveland, Colorado.
Gage.—---Water level recorder with satellite telemetry. Elevation of gage is 5770 feet (m.s.l.) from topographic map.
Remarks.—--Reservoir is formed by three earth-fill dams. Construction completed in 1952. Carter Lake Reservoir is one of two terminal reservoirs for C-BT water diversions. Trans-mountain water diversions are stored at Carter Lake Reservoir before final delivery. Maximum capacity is 112,200 AF at elevation 5759.00 feet, with 108,900 AF of active capacity. Recorder was operated from 01-Oct-2021 to 30-Sep-2022. Record is complete and fair. This record contains operational data which could be subject to future revisions and changes.

Storage, AF, 2400-hour Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	83490	70373	66591	74756	91439	104190	110471	104558	106057	93149	90418	89062
2	83148	70266	66429	75296	91951	104658	110324	104680	105542	92828	90397	88914
3	82797	70139	66295	75787	92368	105094	110086	105038	104960	92454	90375	88735
4	82404	70032	66209	76370	92893	105519	109938	105452	104614	92144	90322	88651
5	81920	69905	65970	76853	93343	105945	109632	105832	104246	91738	90259	88566
6	81426	69720	65922	77398	93837	106382	109575	106135	103845	91364	90142	87955
7	80953	69613	65788	78015	94290	106831	109472	106427	103489	91077	90206	87231
8	80328	69341	65626	78533	94786	107315	109336	106674	103144	90737	90099	86477
9	79817	69205	65503	79102	94786	107709	109200	106876	102823	90407	89961	85860
10	79316	69069	65350	79622	95229	108217	108974	107101	102556	90025	89940	85286
11	78848	68904	65274	80164	95727	108612	109008	107326	102190	90078	89856	84828
12	78299	68798	65141	80727	96215	109019	108895	107495	101880	90248	89824	84402
13	77904	68642	64932	81220	96671	109450	108702	107641	101527	90354	89697	83852
14	77367	68565	64827	81735	97183	109461	108443	107731	101096	90418	89686	83241
15	76904	68362	65093	82281	97640	109336	108330	107788	100589	90386	89708	82735
16	76440	68275	65683	82827	98175	109245	108138	107822	99940	90481	89792	82363
17	75957	68189	66266	83334	98623	109110	107980	107878	99336	90577	89814	81941
18	75516	68025	66812	83841	99138	109416	107765	107856	98799	90619	89877	81518
19	75055	67957	67417	84423	99588	109846	107551	107731	98208	90641	89867	80676
20	74646	67793	67976	84901	100039	110256	107405	107788	97761	90662	89919	80113
21	74258	67706	68537	85474	100534	110711	107135	107844	97303	90587	89982	79286
22	73919	67610	69098	85996	100964	111087	106842	107935	96856	90545	90014	78828
23	73562	67475	69652	86487	101460	111532	106607	108002	96432	90492	89898	78218
24	73176	67359	70217	87094	101969	111532	106382	108036	95954	90471	89845	77833
25	72829	67225	70813	87724	102401	111406	106158	107833	95575	90407	89803	77448
26	72444	67148	71352	88313	102889	111361	105956	107731	95142	90312	89750	76762
27	72059	67043	71921	88882	103333	111224	105721	107518	94699	90312	89665	76339
28	71715	66947	72424	89380	103767	111110	105441	107360	94279	90344	89527	75907
29	71323	66851	72977	89898		110962	105049	107090	93891	90397	89464	75186
30	70882	66716	73522	90375		110791	104804	106932	93494	90428	89295	74766
31	70646		74198	90906		110631		106551		90428	89115	
Min	**70646**	**66716**	**64827**	**74756**	**91439**	**104190**	**104804**	**104558**	**93494**	**90025**	**89115**	**74766**
Max	**83490**	**70373**	**74198**	**90906**	**103767**	**111532**	**110471**	**108036**	**106057**	**93149**	**90418**	**89062**
Mean	**76753**	**68442**	**67865**	**82829**	**97544**	**108966**	**107977**	**107054**	**99874**	**90810**	**89888**	**82433**
EOM	**70646**	**66716**	**74198**	**90906**	**0**	**110631**	**104804**	**106551**	**93494**	**90428**	**89115**	**74766**

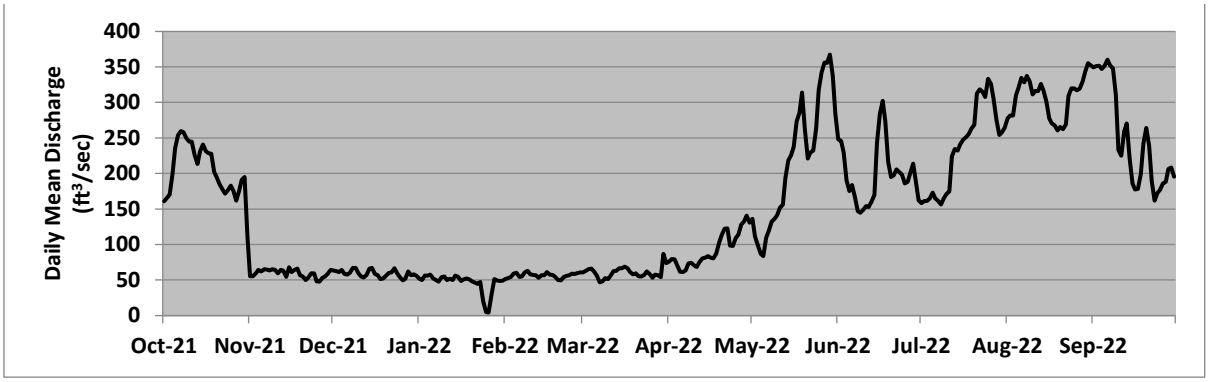


Appendix A (37 of 38)
Saint Vrain Canal below Carter Reservoir, CO

Location.— --Lat 40°19'27", long 105°12'35", Larimer County, Hydrologic Unit 10190006, downstream from Carter Reservoir Dam #1, 7 miles northwest of Berthoud, Colorado, and 10 miles west of Loveland, Colorado.
Gage.—-- Water-stage recorder with telephone telemetry. Data provided by the Northern Water. Elevation of gage is 5,590 feet from topographic map.
Remarks.—-- Constructed between 1952 and 1954. The canal is 9.8 miles long and has a maximum capacity of 625 cfs. The canal is used to deliver C-BT and Windy Gap Project water, as well as diverted native water from conveyance contract holders. Record was provided by the Northern Water for the period 01-Oct-2021 to 30-Sep-2022. Record is complete and fair. This record contains operational data which could be subject to future revisions and changes.

Flow, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	161	55	64	52	51	61	76	136	248	158	277	350
2	165	56	62	50	53	63	80	112	246	161	282	351
3	170	59	61	56	55	65	79	99	229	161	281	352
4	199	64	64	56	59	66	70	87	190	165	310	347
5	235	62	59	58	60	62	62	84	175	173	321	352
6	254	65	58	52	55	56	61	110	184	165	335	360
7	260	65	60	50	55	47	64	119	167	161	328	352
8	258	63	67	48	61	48	73	132	147	157	337	348
9	249	65	67	54	63	53	74	136	144	165	330	311
10	245	64	60	55	58	51	71	141	149	171	311	233
11	245	60	55	50	57	57	69	152	154	175	316	225
12	226	64	53	52	57	63	76	156	153	224	316	259
13	213	63	57	50	53	63	81	194	160	235	326	270
14	231	55	66	56	57	67	81	218	170	232	317	221
15	241	68	67	54	57	66	84	226	243	241	301	186
16	231	61	59	49	61	69	81	237	284	247	278	177
17	229	64	57	51	58	67	81	273	302	251	270	178
18	228	66	51	52	57	61	87	286	273	255	268	200
19	202	57	52	51	54	58	102	314	216	263	260	242
20	195	55	56	48	50	59	113	261	195	268	265	264
21	185	50	60	47	49	56	122	221	197	313	262	239
22	177	54	61	45	54	55	123	229	206	318	269	190
23	172	59	66	47	56	57	99	232	202	315	309	162
24	177	59	60	20	57	62	98	263	199	307	320	173
25	183	48	54	5	59	58	109	317	186	333	320	177
26	175	48	49	4	59	53	114	342	188	326	317	186
27	162	53	52	29	60	57	128	356	201	305	319	188
28	176	55	62	51	61	57	132	356	214	276	329	206
29	191	59	57	50		54	141	367	187	254	343	208
30	195	64	58	49		87	131	337	162	258	355	195
31	111		56	49		74		284		265	352	
Min	**111**	**48**	**49**	**4**	**49**	**47**	**61**	**84**	**144**	**157**	**260**	**162**
Max	**260**	**68**	**67**	**58**	**63**	**87**	**141**	**367**	**302**	**333**	**355**	**360**
Mean	**205**	**59**	**59**	**46**	**57**	**60**	**92**	**219**	**199**	**235**	**307**	**250**
ac-ft	**12576**	**3532**	**3630**	**2855**	**3140**	**3709**	**5474**	**13443**	**11841**	**14475**	**18892**	**14878**



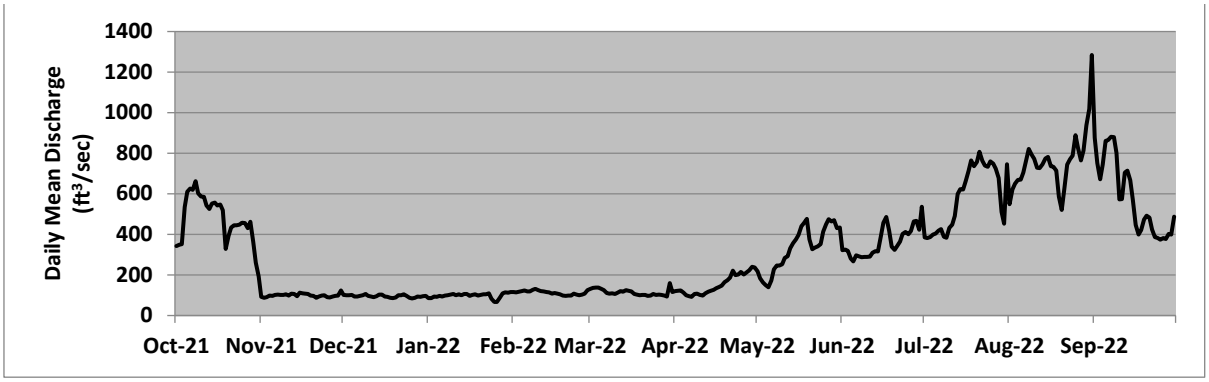
Appendix A (38 of 38)
Colorado-Big Thompson Project, CO

Location.— -- Larimer, Grand, Summit, Boulder, Weld counties in Colorado, hydrologic units 14010001, 14010002 and 10190006, 10190007, on the Colorado River, Big Thompson River, and Cache La Poudre River basins.

Remarks.—— This table presents a summation of all the daily deliveries of C-BT and Windy Gap Project water through the Saint Vrain Canal, the Charles Hansen Supply Canal, the Dixon Canal, the Charles Hansen Feeder Canal, and small deliveries upstream from Flatiron Reservoir. These values include metered water. The water diverted is used for agricultural, municipal, and industrial purposes, to generate hydroelectric power and to provide recreation for the public. This record contains operational data which could be subject to future revisions and changes. Period of record is between 01-Oct-2021 and 30-Sep-2022. Data were provided by the Northern Water. Record is complete and reliable.

Total Daily Water Deliveries, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	342	92	101	85	115	131	120	218	322	385	549	875
2	348	87	99	85	114	136	122	183	324	381	621	751
3	352	90	99	93	117	137	123	163	318	386	650	672
4	534	98	101	92	120	137	112	149	280	398	668	743
5	609	96	94	95	123	131	100	138	266	403	669	860
6	626	101	93	93	118	124	94	172	297	417	705	866
7	619	102	97	98	118	110	91	228	292	426	766	881
8	662	101	100	100	126	107	105	246	287	387	821	879
9	602	101	106	102	131	110	107	246	288	383	792	801
10	586	105	96	105	125	106	101	252	289	432	773	571
11	585	98	92	100	120	112	97	284	289	447	728	574
12	542	107	90	103	118	119	109	292	309	489	726	704
13	524	106	95	100	115	117	116	331	316	599	745	714
14	551	95	103	106	113	125	121	356	315	622	774	667
15	556	113	103	105	107	121	126	375	389	621	781	571
16	543	108	93	96	111	118	134	397	456	662	736	446
17	546	107	92	101	108	106	140	440	486	712	733	398
18	518	106	86	105	104	102	147	455	418	764	713	420
19	328	98	85	97	99	99	164	476	340	735	586	473
20	392	97	88	101	96	101	174	375	323	757	520	492
21	434	87	100	105	97	101	186	326	343	807	622	482
22	444	92	100	103	99	96	220	335	364	762	744	423
23	444	98	104	110	107	99	199	341	402	739	770	386
24	448	99	96	82	103	106	202	352	411	733	788	382
25	457	90	87	67	100	101	214	413	400	759	888	374
26	455	89	83	66	103	103	202	449	416	748	823	381
27	431	93	87	87	108	101	212	474	464	724	765	377
28	462	96	93	109	124	98	223	464	467	678	813	402
29	363	98	91	113		94	240	470	422	511	937	399
30	260	123	95	112		159	236	430	536	453	1018	486
31	192		96	115		115		434		745	1284	
Min	192	87	83	66	96	94	91	138	266	381	520	374
Max	662	123	106	115	131	159	240	476	536	807	1284	881
Mean	476	99	95	98	112	114	151	331	361	583	758	582
ac-ft	29270	5901	5844	6014	6219	6984	8997	20360	21478	35836	46626	34612



Appendix B

Tables and Graphs

B-1.—Western Division–Pick-Sloan Missouri Basin Program Pertinent Reservoir Data

Western Division – Pick-Sloan Missouri Basin Program Pertinent Reservoir Data (Data in AF)					
Reservoir	**Dead Storage[1]**	**Active Storage[2]**	**Total Storage**	**Normal Minimum Storage**	**Limitation on normal minimum storage**
Green Mountain	6,860	146,779	153,639	47,684	Minimum elevation for rated power output
Willow Creek	1,486	9,067	10,553	6,675	Elevation of pump canal head-works
Granby	74,190	465,568	539,758	74,190	Lowest outlet elevation
Shadow Mountain	506	16,848	17,354	16,026	Minimum permissible Grand Lake elevation 8,366
Grand Lake	NA3	511	1,015	504	Legislation limits fluctuation
Marys Lake	42	885	927	308	Minimum elevation for power generation
Lake Estes	409	2,659	3,068	740	Minimum elevation to release 550 cfs
Pinewood Lake	416	1,765	2,181	613	Minimum elevation for power generation
Flatiron	125	635	760	324	Minimum elevation to release 550 cfs
Carter Lake	3,306	108,924	112,230	306	Lowest outlet elevation
Horsetooth	7,003	149,732	156,735	17,600	Elevation on highest delivery works
Total	**94,343**	**907,085**	**998,220**	**167,970**	

[1] Storage capacity below elevation of lowest outlet

[2] Total storage minus dead storage

[3] Not determined

Table B-2.—C-BT Monthly Summary Of Blue River Operations Water Year 2022 (AF)

BLUE RIVER OPERATIONS	INITIAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	Total Or Avg %
Undepleted Runoff Above Green Mountain Reservoir		11,369	10,631	8,912	8,602	7,605	9,002	18,301	64,234	95,560	40,006	27,581	17,146	318,948
Undepleted Runoff Above Dillon Reservoir.		6,452	5,538	4,776	4,771	4,460	4,760	8,385	35,989	52,630	21,196	16,312	9,886	175,154
Percent Of Total Undepleted Runoff Abv Dillon Reservoir		56.8%	52.1%	53.6%	55.5%	58.6%	52.9%	45.8%	56.0%	55.1%	53.0%	59.1%	57.7%	54.9%
Depletions By 1929 Colorado Springs Right		0	0	0	0	0	0	27	159	154	160	144	4	649
Depletions By 1948 Colorado Springs Right		0	0	0	0	0	0	44	1291	3882	2348	0	0	7565
Inflow To Dillon Reservoir		7,607	6,472	4,776	4,771	4,460	4,760	8,297	34,159	47,181	18,407	16,169	9,882	166,940
Dillon Reservoir Storage (1,000 AF)	220.9	209.2	199.8	199.9	199.7	199.6	199.7	201.0	219.0	247.4	236.7	233.3	222.5	---
Roberts Tunnel Diversions		11,181	8,718	128	0	0	0	2,406	11,940	14,656	24,526	15,120	16,221	104,896
Dillon Reservoir Outflow To The River		7,109	6,607	4,601	4,952	4,485	4,760	4,636	3,412	3,333	3,459	3,530	3,403	54,289
Total Depletions By Denver		497	-135	175	-181	-26	0	3,661	30,747	43,848	14,948	12,639	6,478	112,651
Runoff Between Dillon Reservoir & Green Mountain Reservoir		4,941	5,063	4,153	3,812	3,147	4,248	9,895	28,244	42,927	18,805	11,268	7,259	143,763
Actual Inflow To Green Mountain Reservoir		12,026	11,701	8,737	8,783	7,631	9,002	14,552	31,658	46,263	22,269	14,799	10,663	198,083
Green Mountain Reservoir End Of Month Storage (1,000 AF)	76.3	70.7	67.2	65.0	59.6	57.1	53.9	52.7	79.3	120.6	131.2	119.5	104.8	---
Total Green Mountain Outflow		**17,305**	**15,158**	**10,907**	**14,245**	**10,054**	**12,186**	**15,757**	**4,623**	**4,193**	**10,818**	**25,680**	**24,774**	**165,702**

Table B-3.—Pick-Sloan Missouri Basin Program 2022 Summary Actual Operations
2022 Actual Operations. Water in 1,000 AF. Energy in Gigawatt hours

	INITIAL OR TOTAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
GREEN MOUNTAIN RESERVOIR													
Depleted Watershed Inflow	198.1	12.0	11.7	8.7	8.8	7.6	9.0	14.6	31.7	46.3	22.3	14.8	10.7
Turbine Release	155.6	17.3	15.2	10.9	14.2	10.0	12.2	15.4	0.3	0.0	9.6	25.7	24.8
Bypass	10.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	4.4	4.2	1.2	0.0	0.0
Spill	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
End of Month Content	76.3	70.7	67.2	65.0	59.6	57.1	53.9	52.7	79.3	120.6	131.2	119.5	104.8
Kwh/AF		151.7	138.8	105.4	126.0	106.0	112.0	127.3	89.8	0.0	167.4	185.9	178.1
Generation	22.8	2.6	2.1	1.1	1.8	1.1	1.4	2.0	0.0	0.0	1.6	4.8	4.4
WILLOW CREEK RESERVOIR													
Inflow	78.2	1.5	1.3	1.1	1.1	0.9	1.7	14.5	35.8	12.0	4.4	2.5	1.4
Release to River	19.2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	12.5	1.4	0.8	0.5	0.5
Pumped to Granby	57.3	0.0	0.0	2.1	0.0	0.0	0.0	14.5	24.5	10.8	2.9	1.2	1.3
End of Month Content	6.8	7.7	8.5	6.9	7.5	7.9	9.1	8.5	7.1	6.7	7.1	7.7	7.2
Pump Energy	11.9	0.0	0.0	0.0	0.0	0.0	0.0	3.1	5.4	2.2	0.6	0.2	0.3
GRANBY - SHADOW MOUNTAIN - GRAND LAKE													
Natural Watershed Inflow	246.5	4.4	3.7	4.3	4.3	3.4	4.5	16.4	67.8	92.7	26.2	12.4	6.3
Total Inflow into Granby	299.4	4.5	3.8	6.8	3.0	2.7	3.0	31.8	98.6	107.3	20.5	10.8	6.6
Granby Fish Release	32.7	1.3	1.2	1.3	1.2	1.1	1.2	1.2	4.6	4.5	4.9	5.1	5.0
Granby Seepage	3.2	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.3	0.5	0.6	0.5
Granby Spill	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2
Adams Tunnel	212.3	16.4	2.6	22.1	31.3	29.3	14.5	3.0	20.0	5.5	24.1	30.9	12.5
Granby End of Month content	402.7	387.6	386.4	368.9	340.5	313.2	301.8	331.4	424.5	524.0	520.4	494.4	481.1
SM-GL End of Month Content	17.5	17.4	17.6	17.8	17.8	17.8	17.9	17.9	17.5	17.5	17.5	17.6	17.4
Pumped from Granby	175.1	16.7	3.2	23.5	30.6	28.8	13.2	0.8	0.2	0.1	16.7	29.3	11.9
Granby Pump Kwh/AF		160.8	194.0	163.7	166.8	170.8	184.6	335.3	610.1	568.5	142.1	139.9	152.3
Granby Pump Energy	28.4	2.7	0.6	3.8	5.1	4.9	2.4	0.3	0.1	0.1	2.4	4.1	1.8

Table B-3.—Pick-Sloan Missouri Basin Program 2022 Summary Actual Operations
2022 Actual Operations. Water in 1,000 AF. Energy in Gigawatt hours

	INITIAL OR TOTAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MARYS LAKE – ESTES – FLATIRON													
Adams Tunnel Water	212.3	16.4	2.6	22.1	31.3	29.3	14.5	3.0	20.0	5.5	24.1	30.9	12.5
Marys Lake Generation	28.6	2.8	0.0	2.9	5.6	5.3	2.3	0.1	3.2	0.5	4.1	0.7	1.0
Estes Generation	93.8	7.4	0.7	10.1	14.6	13.3	6.1	1.0	8.7	1.9	10.8	13.9	5.3
Divertible Big-Thompson	37.6	0.0	0.0	3.6	6.6	5.6	3.8	0.2	5.8	0.0	4.3	6.4	1.1
Diverted Big-Thompson Water	38.6	0.0	0.0	0.0	0.0	0.0	0.0	0.3	7.8	23.0	6.9	0.4	0.1
Olympus Tunnel	252.2	16.6	2.3	22.1	31.4	29.3	14.4	3.5	28.9	28.8	31.5	31.9	11.6
Pole Hill Generation	173.8	11.4	0.0	14.8	22.8	21.1	9.4	0.1	20.5	20.7	22.5	22.7	7.8
Flatiron 1 & 2 Generation	215.7	14.1	1.4	19.1	26.8	26.6	12.0	1.7	25.7	24.5	27.3	27.2	9.5
Flatiron 3 Turbine Release		0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	1.7
Flatiron 3 Kwh/AF Generation		-	-	-	-	-	-	-	-	-	-	-	-
Flatiron 3 Generation		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Flatiron 3 Pumping	110.5	0.0	0.1	11.7	20.2	16.1	10.6	0.4	16.1	0.0	12.7	19.1	3.3
Flatiron 3 Kwh/AF Pump		0.0	0.0	0.0	327.8	347.3	361.2	0.0	360.1	343.5	337.9	0.0	0.0
Flatiron 3 Pump Energy	37.6	0.0	0.036	3.6	6.6	5.6	3.8	0.2	5.8	0.0	4.3	6.4	1.1
CARTER LAKE		OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
Pumped from Flatiron	110.5	0.0	0.1	11.7	20.2	16.1	10.6	0.4	16.1	0.0	12.7	19.1	3.3
Release to Flatiron	1.9	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	1.7
Irrigation Delivery	110.5	0.0	0.1	11.7	20.2	16.1	10.6	0.4	16.1	0.0	12.7	19.1	3.3
Evaporation & Seepage	3.1	0.2	0.1	0.0	0.0	0.0	0.1	0.4	0.4	0.5	0.4	0.4	0.3
End of Month Content	83.8	70.6	66.7	74.2	90.9	103.8	110.6	104.8	106.6	93.5	90.4	89.1	74.8
BIG THOMPSON POWERPLANT													
Diverted Dille Tunnel Water	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1.9	0.1	0.2	0.6
Irrigation Delivery	14.6	3.9	0.3	0.0	0.0	0.0	0.0	0.0	0.1	0.1	1.0	3.8	5.4
Turbine Release	45.2	3.3	0.0	0.0	0.0	0.0	0.0	0.0	7.5	20.3	7.8	2.8	3.4
Generation	5.8	0.4	0.0	0.0	0.0	0.0	0.0	0.0	1.0	3.0	1.0	0.2	0.4
HORSETOOTH RESERVOIR		OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP

Table B-3.—Pick-Sloan Missouri Basin Program 2022 Summary Actual Operations
2022 Actual Operations. Water in 1,000 AF. Energy in Gigawatt hours

	INITIAL OR TOTAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
Hansen Feeder Canal Inflow	76.7	12.1	2.0	10.0	9.2	12.3	3.0	1.5	4.0	3.7	8.4	4.9	5.5
Irrigation Delivery	98.8	12.7	2.0	2.2	2.4	2.6	2.4	3.1	6.0	9.3	19.9	22.2	13.9
Evaporation	5.3	0.4	0.2	0.1	0.0	0.0	0.2	0.8	0.8	0.9	0.8	0.7	0.5
End of Month Content	125.7	124.9	124.8	132.4	139.5	149.9	150.2	147.6	144.9	137.5	124.0	104.4	94.4
TOTAL C-BT DELIVERY[1]	224.0	16.7	2.5	13.9	22.6	18.7	13.1	3.5	22.3	9.4	33.6	45.0	22.5
BASE GENERATION													
Green Mountain	51.9	4.7	2.9	3.0	3.0	2.5	2.7	2.8	3.0	5.9	7.4	7.6	6.4
Flatiron 3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Big Thompson	10.9	0.4	0.2	0.1	0.0	0.0	0.0	0.3	1.8	2.7	2.6	1.9	0.9
TOTAL	62.8	5.1	3.1	3.1	3.0	2.5	2.7	3.1	4.8	8.6	10.0	9.5	7.3
LOAD FOLLOWING GENERATION													
Marys Lake	37.2	2.1	3.0	4.2	4.3	3.9	3.3	2.3	2.9	2.0	3.3	3.3	2.6
Estes	100.3	5.9	7.9	11.1	11.0	9.8	8.7	5.9	7.7	6.1	9.4	9.4	7.4
Pole Hill	172.3	8.9	12.4	15.8	16.9	15.6	13.4	8.1	16.3	20.6	18.7	14.5	11.1
Flatiron 1 & 2	226.9	12.0	15.7	21.8	21.9	19.2	17.5	11.4	21.8	26.4	24.0	20.3	14.9
TOTAL	536.7	28.9	39.0	52.9	54.1	48.5	42.9	27.7	48.7	55.1	55.4	47.5	36.0
PUMP ENERGY		**OCT**	**NOV**	**DEC**	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**
Willow Creek	5.8	0.1	0.3	0.0	0.0	0.0	0.1	0.5	2.3	1.9	0.3	0.1	0.2
Granby	30.7	2.1	3.0	4.2	4.2	3.6	3.4	1.8	0.9	0.4	1.9	2.7	2.5
Flatiron 3	26.7	1.8	3.1	3.9	4.0	3.4	2.8	1.8	1.6	1.7	0.9	0.8	0.9
TOTAL	**63.2**	**4.0**	**6.4**	**8.1**	**8.2**	**7.0**	**6.3**	**4.1**	**4.8**	**4.0**	**3.1**	**3.6**	**3.6**
TOTAL GENERATION	**599.5**	**34.0**	**42.1**	**56.0**	**57.1**	**51.0**	**45.6**	**30.8**	**53.5**	**63.7**	**65.4**	**57.0**	**43.3**
TOTAL GENERATION MINUS PUMP	**536.3**	**30.0**	**35.7**	**47.9**	**48.9**	**44.0**	**39.3**	**26.7**	**48.7**	**59.7**	**62.3**	**53.4**	**39.7**

[1] May include Windy Gap and/or carriage contract water

B-4.—2022 Flood Damage Prevented In Water Year 2022

	Cumulative Total Prior to WY 2022	WY 2022	Cumulative Total Current
Granby, Willow Creek, Shadow Mountain, and Grand Lake	$726,574	$61,495	$788,069
Green Mountain	$330,407	$7,995	$338,402
Total	$1,056,981	$69,490	$1,126,471

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HYDROLOGY OPERATIONS

Dillon Reservoir

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Dillon Inflow	kaf	6.5	5.2	4.6	4.0	3.3	3.7	8.2	46.0	74.7	30.3	13.6	8.2	208.3
DL to GM Gain	kaf	5.3	4.6	4.1	3.5	3.0	3.8	7.9	29.2	46.8	21.3	10.4	6.6	146.5

Green Mountain Reservoir

Init Cont: 105.00 kaf **Elev:** 7924.0 ft

Maximum Cont: 154.60 kaf **Elev:** 7950.4 ft

Minimum Cont: 8.00 kaf **Elev:** 7804.7 ft

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Depletion	kaf	3.4	2.2	1.5	0.9	0.5	0.6	5.3	41.0	40.7	13.6	7.8	2.3	119.8
Depleted Inflow	kaf	8.4	7.6	7.1	6.6	5.8	6.9	10.9	35.3	83.6	39.6	16.6	12.6	241.0
Turbine Release	kaf	27.3	11.4	11.8	11.8	10.7	11.9	10.4	17.0	23.1	26.5	30.5	43.2	235.6
Spill/Waste	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total River Release	cfs	445	192	192	193	193	193	175	277	388	430	496	726	
Total River Release	kaf	27.3	11.4	11.8	11.8	10.7	11.9	10.4	17.0	23.1	26.5	30.5	43.2	235.6
Evaporation	kaf	0.2	0.1	0.0	0.0	0.0	0.1	0.2	0.3	0.5	0.7	0.5	0.4	3.0
End-Month Targets	kaf	85.6	60.4	60.4	60.4	60.4	60.4	62.0	80.0	140.0	152.5	138.0	107.0	
End-Month Contents	kaf	85.6	81.7	77.0	71.8	66.8	61.7	62.0	80.0	140.0	152.5	138.0	107.0	
End-Month Elevation	ft	7911.28	7908.45	7904.91	7900.77	7896.63	7892.13	7892.40	7907.20	7943.38	7949.46	7942.38	7925.37	

Willow Creek Reservoir

Init Cont: 7.00 kaf **Elev:** 8120.5 ft

Maximum Cont: 10.20 kaf **Elev:** 8128.8 ft

Minimum Cont: 7.20 kaf **Elev:** 8116.9 ft

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Native Inflow	kaf	1.3	1.1	1.1	1.0	0.8	1.1	4.1	21.8	15.5	3.5	1.7	1.3	54.3
Minimum Release	kaf	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	4.8
5412.5 Release	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Spill/Bypass	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.2
Total River Release	kaf	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	4.8
Pumped to Granby	kaf	0.0	0.5	0.6	0.6	0.5	0.6	3.7	19.9	16.1	3.0	1.2	0.8	47.5
Evaporation	kaf	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.7
End-Month Targets	kaf	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	
End-Month Contents	kaf	8.0	8.2	8.2	8.2	8.2	8.2	8.2	9.6	8.2	8.2	8.2	8.2	
End-Month Elevation	ft	8123.62	8124.40	8124.40	8124.40	8124.40	8124.40	8124.40	8129.27	8124.40	8124.40	8124.40	8124.40	

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Granby Reservoir

Init Cont: 481.00 kaf **Maximum Cont:** 539.80 kaf **Minimum Cont:** 76.50 kaf
Elev: 8271.7 ft **Elev:** 8280.0 ft **Elev:** 8186.9 ft

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Native Inflow	kaf	2.4	2.1	1.9	1.7	1.4	1.6	4.3	23.5	36.6	13.3	5.4	3.2	97.4
Release from Shadow Mtn	kaf	2.8	2.7	2.8	1.2	1.1	1.2	1.2	7.0	21.4	6.3	2.5	2.1	52.3
Pump from Windy Gap	kaf	0.0	0.0	0.0	0.0	0.0	0.0	5.0	20.0	10.0	0.0	0.0	0.0	35.0
Pump from Willow Creek	kaf	0.0	0.5	0.6	0.6	0.5	0.6	3.7	19.9	16.1	3.0	1.2	0.8	47.5
Total Inflow	kaf	5.2	5.3	5.3	3.5	3.0	3.4	14.1	70.4	84.1	22.6	9.0	6.0	231.9
Minimum River Release	kaf	1.2	1.2	1.2	1.2	1.1	1.2	1.2	4.6	4.5	4.6	2.5	1.2	25.7
5412.5 Release	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Spill/Bypass	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.2
Total River Release	kaf	1.2	1.2	1.2	1.2	1.1	1.2	1.2	4.6	4.5	4.6	2.5	1.2	25.7
Pumped to Shadow Mtn	kaf	0.1	0.1	14.5	32.8	28.7	27.6	12.3	2.4	0.0	12.1	27.0	30.3	187.9
Evaporation	kaf	1.6	0.7	0.0	0.0	0.0	0.8	1.4	2.3	3.1	2.9	2.3	2.0	17.1
Seepage loss	kaf	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	3.6
End-Month Contents	kaf	483.1	486.2	475.4	444.5	417.4	390.9	389.8	450.6	526.9	529.3	506.3	478.6	
End-Month Elevation	ft	8272.00	8272.45	8270.89	8266.32	8262.16	8257.95	8257.78	8267.24	8278.21	8278.56	8275.33	8271.35	

Shadow Mountain Reservoir

Init Cont: 17.00 kaf **Maximum Cont:** 18.40 kaf **Minimum Cont:** 16.60 kaf
Elev: 8366.5 ft **Elev:** 8367.0 ft **Elev:** 8366.0 ft

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Native Inflow	kaf	3.2	2.8	2.5	2.2	1.8	2.1	5.7	30.5	48.4	19.0	7.1	4.2	129.5
Pumped from Granby	kaf	0.1	0.1	14.5	32.8	28.7	27.6	12.3	2.4	0.0	12.1	27.0	30.3	187.9
Total Inflow	kaf	3.3	2.9	17.0	35.0	30.5	29.7	18.0	32.9	48.4	31.1	34.2	34.5	317.5
Minimum River Release	kaf	2.2	2.7	2.8	1.2	1.1	1.2	1.2	1.2	3.0	3.1	2.5	2.1	24.3
Spill/Bypass	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total River Release	kaf	2.8	2.7	2.8	1.2	1.1	1.2	1.2	7.0	21.4	6.3	2.5	2.1	52.3
Adams Tunnel Flow	kaf	0.0	0.0	14.2	33.8	29.4	28.2	16.4	25.3	26.2	24.0	31.1	31.9	260.5
Evaporation	kaf	0.3	0.1	0.0	0.0	0.0	0.2	0.3	0.5	0.6	0.5	0.4	0.4	3.3
End-Month Contents	kaf	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	
End-Month Elevation	ft	8366.62	8366.62	8366.62	8366.62	8366.62	8366.62	8366.62	8366.62	8366.62	8366.62	8366.62	8366.62	

Adams Tunnel

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Maximum Tunnel Capacity	kaf	0.0	0.0	14.2	33.8	30.5	30.3	16.4	26.9	26.2	24.0	31.1	31.9	265.3
Actual Diversion	kaf	0.0	0.0	14.2	33.8	29.4	28.2	16.4	25.3	26.2	24.0	31.1	31.9	260.5
% Maximum Delivery	%	0	0	100	100	96	93	100	94	100	100	100	100	

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Lake Estes

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Big Thompson Inflow	kaf	2.5	1.5	1.0	0.6	0.4	0.5	1.5	8.7	26.7	18.6	8.2	4.4	74.6
Minimum River Release	kaf	3.1	1.5	1.5	1.5	1.4	1.5	2.2	6.9	7.4	7.7	6.9	3.7	45.3
Actual River Release	kaf	2.5	1.5	1.0	0.6	0.4	0.5	1.5	7.6	20.0	9.6	6.9	3.7	55.8
Max Diversion Available	kaf	0.0	0.1	0.0	0.0	0.0	0.0	0.0	2.7	19.2	10.9	1.3	0.8	35.0
Priority Water Diverted	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Skim Water Diverted	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	6.7	9.0	1.3	0.7	18.8
% Maximum Diversion	%	0	0	0	0	0	0	0	40	35	82	100	95	
Irrigation Demand	kaf	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.4	0.3	0.2	1.6
Irrigation Delivery	kaf	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.4	0.3	0.2	1.4
Total River Release	kaf	2.5	1.5	1.0	0.6	0.4	0.5	1.5	7.6	20.0	9.6	6.9	3.7	55.8

Olympus Tunnel

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Maximum Tunnel Capacity	kaf	0.0	0.0	14.2	33.8	30.5	33.8	32.7	33.8	32.7	33.8	33.8	32.7	311.8
Actual Delivery	kaf	0.0	0.0	14.2	33.8	29.4	28.2	16.3	26.2	32.7	32.6	32.1	32.4	277.9
% Maximum Delivery	%	0	0	100	100	96	83	50	78	100	96	95	99	
Inflow to Flatiron	kaf	5.0	3.0	14.7	33.8	29.4	28.2	16.3	26.2	32.7	32.6	32.1	32.4	286.4

Carter Lake

Init Cont: 75.00 kaf Maximum Cont: 112.20 kaf Minimum Cont: 6.00 kaf
Elev: 5724.1 ft Elev: 5759.0 ft Elev: 5626.8 ft

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Pumped from Flatiron	kaf	0.0	0.0	7.7	22.2	13.1	0.0	0.0	10.1	16.8	14.1	19.9	19.4	123.3
Flatiron Bifurcation	kaf	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2
Carter to Flatiron	kaf	5.0	3.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.8
Evaporation Loss	kaf	0.2	0.1	0.0	0.0	0.0	0.1	0.2	0.4	0.5	0.4	0.3	0.3	2.5
Seepage Loss	kaf	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.2	0.1	1.5
End-Month Targets	kaf	112.2	112.2	112.2	112.2	11.2	11.2	11.2	112.2	112.2	112.2	112.2	112.2	
End-Month Contents	kaf	59.1	52.4	56.3	75.6	86.2	82.8	77.9	81.2	88.8	86.2	83.7	83.7	
End-Month Elevation	ft	5707.70	5700.19	5704.57	5724.90	5735.23	5731.94	5727.18	5730.38	5737.67	5735.22	5732.84	5732.79	
Priority Water Diverted to Carter	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Irrigation & Metered Demand	kaf	9.8	2.7	2.1	1.9	1.9	2.5	4.1	5.7	7.3	15.0	20.9	18.2	92.1
Windy Gap demand	kaf	0.5	0.8	0.9	0.7	0.5	0.6	0.4	0.6	1.3	1.1	0.9	0.8	9.1
Total Demand	kaf	10.3	3.5	3.0	2.7	2.4	3.1	4.5	6.3	8.6	16.1	21.9	19.0	101.4
Total Delivery	kaf	10.3	3.5	3.0	2.7	2.4	3.1	4.5	6.3	8.6	16.1	21.9	19.0	101.4
% Required Delivery	%	100	100	100	100	100	100	100	100	100	100	100	100	
Shortage	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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Hansen Canal 930

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Minimum Flow	**kaf**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maximum Flow	**kaf**	57.2	55.3	57.2	57.2	51.6	57.2	55.3	57.2	55.3	57.2	57.2	55.3	673.2
Actual Flow	**kaf**	5.0	3.0	7.1	11.6	16.3	28.2	16.3	16.2	15.8	18.5	12.2	13.0	163.2

Dille Tunnel

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Big Thompson River Below Lake Estes	**kaf**	2.5	1.5	1.0	0.6	0.4	0.5	1.5	7.6	20.0	9.6	6.9	3.7	55.8
North Fork Big Thompson River at Drake	**kaf**	0.9	0.5	0.4	0.3	0.2	0.2	0.4	2.1	4.1	2.5	1.4	0.8	13.8
Dille Skim Water Diverted	**kaf**	1.0	0.0	0.0	0.0	0.0	0.0	0.1	7.3	16.3	8.8	5.8	2.1	41.4
Dille Priority Water Diverted	**kaf**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
water available	**kaf**	3.4	2.1	1.4	0.9	0.6	0.8	1.8	9.8	24.1	12.1	8.2	4.5	69.7
water diverted	**kaf**	1.0	0.0	0.0	0.0	0.0	0.0	0.1	7.3	16.3	8.8	5.8	2.1	41.4
% Diverted	**%**	18	0	0	0	0	0	2	135	300	162	107	40	
Big T @ Canyon Mouth	**kaf**	2.5	2.1	1.4	0.9	0.6	0.8	1.7	2.5	7.8	3.3	2.5	2.4	28.5

Trifurcation

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Release from Flatiron	**kaf**	5.0	3.0	7.1	11.6	16.3	28.2	16.3	16.2	15.8	18.5	12.2	13.0	163.2
Release to 550 Canal	**kaf**	3.1	3.0	7.0	11.6	16.2	28.1	16.1	14.6	8.7	7.9	6.3	5.5	128.1
Dille Tunnel	**kaf**	1.0	0.0	0.0	0.0	0.0	0.0	0.1	7.3	16.3	8.8	5.8	2.1	41.4
Total release to river	**kaf**	1.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.2	1.2	4.2	6.1	13.1
Irrigation demand	**kaf**	1.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.2	1.2	4.1	6.0	12.9
Windy Gap demand	**kaf**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Total requirement	**kaf**	1.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.2	1.2	4.2	6.1	13.1
Total delivery	**kaf**	1.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.2	1.2	4.2	6.1	13.1
% Required Delivery	**%**	100	100	100	100	100	100	100	100	100	100	100	100	
Shortage	**kaf**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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Hansen Canal 550

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Inflow from Flatiron	kaf	3.1	3.0	7.0	11.6	16.2	28.1	16.1	14.6	8.7	7.9	6.3	5.5	128.1
Maximum flow	kaf	33.8	32.7	33.8	33.8	26.6	29.4	28.5	24.6	28.5	29.4	29.4	28.5	359.0
Irrigation demand	kaf	0.9	0.0	0.1	0.1	0.0	0.0	0.2	0.3	0.2	0.4	0.5	0.7	3.4
Irrigation delivery	kaf	0.9	0.0	0.1	0.1	0.0	0.0	0.2	0.3	0.2	0.4	0.5	0.7	3.4
Minimum flow	kaf	3.1	3.0	3.1	3.1	2.8	3.1	3.0	3.1	3.0	3.1	3.1	3.0	36.5
Rels to Horsetooth	kaf	3.1	3.0	7.0	11.6	16.2	28.1	16.1	14.6	8.7	7.9	6.3	5.5	128.1

Horsetooth Reservoir

Init Cont: 94.00 kaf **Maximum Cont:** 157.00 kaf **Minimum Cont:** 13.00 kaf
Elev: 5395.3 ft **Elev:** 5430.0 ft **Elev:** 5316.8 ft

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Inflow	kaf	3.1	3.0	7.0	11.6	16.2	28.1	16.1	14.6	8.7	7.9	6.3	5.5	128.1
Total irrigation delivery	kaf	15.0	2.4	2.6	2.4	2.1	2.3	2.9	5.6	7.2	17.1	25.6	16.1	101.3
Evaporation loss	kaf	0.4	0.1	0.0	0.0	0.0	0.2	0.4	0.7	0.9	0.8	0.6	0.5	4.6
Seepage loss	kaf	0.2	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	2.2
End-Month Targets	kaf	156.0	156.0	156.0	156.0	156.0	156.0	156.0	156.0	156.0	156.0	156.0	156.0	
End-Month Content	kaf	82.0	82.2	86.5	95.5	109.4	134.9	147.5	155.6	156.0	145.8	125.8	114.5	
End-Month Elevation	ft	5387.06	5387.23	5390.13	5395.98	5404.54	5418.84	5425.39	5429.45	5429.64	5424.55	5413.89	5407.49	
Priority water diverted to Horsetooth	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Irrigation demand	kaf	12.0	0.0	0.0	0.0	0.0	0.0	0.1	1.5	2.0	11.0	19.6	10.7	56.9
Metered Demand	kaf	2.4	2.0	2.2	2.0	1.8	1.9	2.1	3.5	4.3	5.2	4.7	4.4	36.5
Windy Gap demand	kaf	0.6	0.4	0.4	0.4	0.3	0.4	0.6	0.6	0.9	0.9	1.3	1.1	7.9
Total demand	kaf	15.0	2.4	2.6	2.4	2.1	2.3	2.9	5.6	7.2	17.1	25.6	16.1	101.3
% Required Delivery	%	100	100	100	100	100	100	100	100	100	100	100	100	
Shortage	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

CBT Project Summary

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Total CBT Delivery	kaf	26.2	4.7	4.4	4.1	3.8	4.5	6.6	11.3	14.3	33.1	50.2	40.2	203.4

Windy Gap

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Pumping	kaf	0.0	0.0	0.0	0.0	0.0	0.0	5.0	20.0	10.0	0.0	0.0	0.0	35.0
Losses	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.5	2.0	1.0	0.0	0.0	0.0	3.5
Spill	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.2
Total Delivery	kaf	1.1	1.2	1.3	1.1	0.8	1.0	1.0	1.2	2.3	2.0	2.2	2.0	17.2
Account Balance	kaf	-1.1	-2.3	-3.6	-4.7	-5.6	-6.6	-3.1	13.7	20.5	18.6	16.3	14.3	

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PUMPING AND GENERATION OPERATIONS

Green Mountain Generation

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Maximum Generation	**gwh**	18.600	18.000	18.600	18.600	16.800	18.600	18.000	18.600	18.000	18.600	18.600	18.000	219.000
Generation	**gwh**	5.000	2.000	2.000	2.000	1.800	1.900	1.700	2.800	4.400	5.600	6.400	8.500	44.100
% Maximum Generation	**%**	27	11	11	11	11	10	9	15	24	30	34	47	
Average	**kwh/af**	183	175	172	169	165	161	159	165	190	211	209	198	

Willow Creek Pumping

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Maximum Pumping	**kaf**	24.6	23.8	24.6	24.6	22.2	24.6	23.8	24.6	23.8	24.6	24.6	23.8	289.6
Actual Pumping	**kaf**	0.0	0.5	0.6	0.6	0.5	0.6	3.7	19.9	16.1	3.0	1.2	0.8	47.5
Pump Energy	**gwh**	0.000	0.100	0.100	0.100	0.100	0.100	0.800	4.200	3.400	0.600	0.300	0.200	10.000
% Maximum Pumping	**%**	0	2	3	2	2	2	15	81	68	12	5	3	195
Average	**kwh/af**	0	213	213	213	213	213	213	213	213	213	213	213	

Lake Granby Pumping

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Maximum Pumping	**kaf**	36.9	35.7	36.9	36.9	33.3	36.9	35.7	36.9	35.7	36.9	36.9	35.7	434.4
Actual Pumping	**kaf**	0.1	0.1	14.5	32.8	28.7	27.6	12.3	2.4	0.0	12.1	27.0	30.3	187.9
Pump Energy	**gwh**	0.000	0.000	2.100	4.700	4.200	4.100	1.800	0.400	0.000	1.700	3.800	4.300	27.100
% Maximum Pumping	**%**	0	0	39	89	86	75	35	6	0	33	73	85	
Average	**kwh/af**	143	142	143	144	145	147	148	147	0	140	141	142	

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Marys Lake Generation

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Adams Tunnel Flow	**kaf**	0.0	0.0	14.2	33.8	29.4	28.2	16.4	25.3	26.2	24.0	31.1	31.9	260.5
Maximum Generation	**gwh**	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.500	6.400	6.200	16.100
Generation	**gwh**	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.800	5.800	6.000	14.600
% Maximum Generation	**%**	0	0	0	0	0	0	0	0	0	11	19	19	
Average	**kwh/af**	0	0	0	0	0	0	0	0	0	115	187	188	

Lake Estes Generation

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Adams Tunnel Flow	**kaf**	0.0	0.0	14.2	33.8	29.4	28.2	16.4	25.3	26.2	24.0	31.1	31.9	260.5
Maximum Generation	**gwh**	0.000	0.000	6.700	16.000	14.500	16.000	15.500	16.000	15.500	16.000	16.000	15.500	147.700
Generation	**gwh**	0.000	0.000	6.700	16.000	13.900	13.300	7.400	11.800	12.200	11.000	14.600	15.100	122.000
% Maximum Generation	**%**	0	0	100	100	96	83	48	74	78	68	91	97	
Average	**kwh/af**	0	0	473	473	474	469	451	468	464	456	468	472	

Pole Hill Generation

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Olympus Tunnel Flow	**kaf**	0.0	0.0	14.2	33.8	30.5	33.8	32.7	33.8	32.7	33.8	33.8	32.7	311.8
Maximum Generation	**gwh**	0.000	0.000	10.800	25.800	23.300	25.800	25.000	25.800	25.000	25.800	25.800	25.000	238.100
Generation	**gwh**	0.000	0.000	10.800	25.800	22.500	21.500	11.300	19.300	24.900	24.900	24.500	24.700	210.200
% Maximum Generation	**%**	0	0	100	100	0	0	0	0	0	0	95	0	
Average	**kwh/af**	0	0	762	762	735	637	346	571	761	737	724	756	

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Flatiron Units 1 and 2 Generation

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Inflow to Flatiron	**kaf**	5.0	3.0	14.7	33.8	29.4	28.2	16.3	26.2	32.7	32.6	32.1	32.4	286.4
Maximum Generation	**gwh**	0.000	0.000	13.500	32.200	29.100	32.200	31.200	32.200	31.200	32.200	32.200	31.200	297.200
Generation	**gwh**	0.000	0.000	12.000	32.200	27.400	24.400	12.900	23.600	31.100	30.500	29.900	30.700	254.700
% Maximum Generation	**%**	0	0	89	100	94	76	41	73	100	95	93	99	
Average	**kwh/af**	0	0	816	952	933	865	790	901	952	934	931	948	

Flatiron Unit 3 Pump/Generation

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Maximum Pumping	**kaf**	0.0	0.0	7.7	22.2	13.1	0.0	0.0	10.1	16.8	14.1	19.9	19.4	123.3
Pump from Flatiron	**kaf**	0.0	0.0	7.7	22.2	13.1	0.0	0.0	10.1	16.8	14.1	19.9	19.4	123.3
Pump Energy	**gwh**	0.000	0.000	2.200	6.800	4.300	0.000	0.000	3.200	5.600	4.700	6.600	6.400	39.800
% Maximum Pumping	**%**	0	0	100	100	100	0	0	100	100	100	100	100	
Average	**kwh/af**	0	0	291	307	326	0	0	322	332	331	331	329	
Maximum Turbine release	**kaf**	23.9	22.3	22.6	23.8	16.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	108.6
Carter to Flatiron	**kaf**	5.0	3.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.8
Maximum Generation	**gwh**	4.800	4.200	4.200	4.800	3.400	0.000	0.000	0.000	0.000	0.000	0.000	0.000	21.400
Actual Generation	**gwh**	1.000	0.600	0.300	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.900
% Maximum Generation	**%**	0	0	0	0	0	0	0	0	0	0	0	0	
Average	**kwh/af**	200	190	185	0	0	0	0	0	0	0	0	0	

Big Thompson Generation

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Total release	**kaf**	2.0	0.0	0.0	0.0	0.0	0.0	0.2	8.6	23.2	19.0	11.2	9.0	73.2
Turbine release	**kaf**	2.0	0.0	0.0	0.0	0.0	0.0	0.2	8.6	23.2	19.0	11.2	9.0	73.2
Wasteway release	**kaf**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maximum Generation	**gwh**	3.800	3.700	3.800	3.800	3.500	3.800	3.700	3.800	3.700	3.800	3.800	3.700	44.900
Generation	**gwh**	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.100	3.600	3.000	1.600	1.200	10.500
% Maximum Generation	**%**	0	0	0	0	0	0	0	29	98	77	42	32	
Average	**kwh/af**	0	0	0	0	0	0	0	130	157	156	143	133	

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Project Generation

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Total Generation	**gwh**	6.000	2.600	31.900	75.900	65.600	61.100	33.200	58.700	76.200	77.600	82.700	86.300	657.800
Total Max Generation	**gwh**	27.200	25.900	57.700	101.200	90.500	96.500	93.400	96.500	93.400	100.000	102.900	99.600	984.800

Project Pump Energy

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Granby	**gwh**	0.000	0.000	2.100	4.700	4.200	4.100	1.800	0.400	0.000	1.700	3.800	4.300	27.100
Willow Creek	**gwh**	0.000	0.100	0.100	0.100	0.100	0.100	0.800	4.200	3.400	0.600	0.300	0.200	10.000
Flatiron Unit 3	**gwh**	0.000	0.000	2.200	6.800	4.300	0.000	0.000	3.200	5.600	4.700	6.600	6.400	39.800
Total Pump Energy	**gwh**	0.000	0.100	4.400	11.600	8.600	4.200	2.600	7.800	9.000	7.000	10.600	10.900	76.800

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HYDROLOGY OPERATIONS

Dillon Reservoir

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Dillon Inflow	kaf	6.1	4.8	4.3	3.9	3.2	3.3	3.9	22.6	36.6	14.9	7.7	5.6	116.9
DL to GM Gain	kaf	5.0	4.0	3.7	3.4	2.9	3.2	5.2	17.7	25.2	11.7	6.2	4.8	93.0

Green Mountain Reservoir

Init Cont: 105.00 kaf Elev: 7924.0 ft
Maximum Cont: 154.60 kaf Elev: 7950.4 ft
Minimum Cont: 8.00 kaf Elev: 7804.7 ft

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Depletion	kaf	3.0	1.8	1.2	0.8	0.4	0.2	1.1	22.1	36.6	12.3	4.6	2.6	86.7
Depleted Inflow	kaf	8.0	7.0	6.8	6.5	5.7	6.3	8.2	20.7	28.2	14.8	9.3	7.7	129.2
Turbine Release	kaf	27.0	10.9	11.3	11.3	10.2	11.3	8.6	4.6	4.5	19.3	20.9	17.5	157.4
Spill/Waste	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total River Release	cfs	439	183	183	184	184	184	144	75	75	314	339	293	
Total River Release	kaf	27.0	10.9	11.3	11.3	10.2	11.3	8.6	4.6	4.5	19.3	20.9	17.5	157.4
Evaporation	kaf	0.2	0.1	0.0	0.0	0.0	0.1	0.2	0.3	0.5	0.5	0.4	0.3	2.6
End-Month Targets	kaf	85.6	60.4	60.4	60.4	60.4	60.4	62.0	80.0	140.0	96.0	84.0	74.0	
End-Month Contents	kaf	85.6	81.7	77.1	72.3	67.7	62.6	62.0	77.8	101.0	96.0	84.0	74.0	
End-Month Elevation	ft	7911.28	7908.43	7905.02	7901.22	7897.42	7892.92	7892.40	7905.54	7921.69	7918.44	7910.16	7902.57	

Willow Creek Reservoir

Init Cont: 7.00 kaf Elev: 8120.5 ft
Maximum Cont: 10.20 kaf Elev: 8128.8 ft
Minimum Cont: 7.20 kaf Elev: 8116.9 ft

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Native Inflow	kaf	1.2	1.0	1.0	0.9	0.8	0.9	1.6	7.5	3.9	1.7	1.1	0.9	22.5
Minimum Release	kaf	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	4.8
5412.5 Release	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Spill/Bypass	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total River Release	kaf	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	4.8
Pumped to Granby	kaf	0.0	0.3	0.6	0.5	0.4	0.4	1.2	7.0	3.3	1.1	0.6	0.4	15.8
Evaporation	kaf	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.7
End-Month Targets	kaf	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	
End-Month Contents	kaf	7.9	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	
End-Month Elevation	ft	8123.44	8124.40	8124.40	8124.40	8124.40	8124.40	8124.40	8124.40	8124.40	8124.40	8124.40	8124.40	

COLORADO - BIG THOMPSON MONTHLY OPERATIONS

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Granby Reservoir

Init Cont: 481.00 kaf **Maximum Cont:** 539.80 kaf **Minimum Cont:** 76.50 kaf

Elev: 8271.7 ft **Elev:** 8280.0 ft **Elev:** 8186.9 ft

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Native Inflow	kaf	2.2	1.9	1.7	1.6	1.3	1.4	2.0	10.7	18.8	6.7	3.4	2.2	53.9
Release from Shadow Mtn	kaf	2.5	2.7	2.8	1.2	1.1	1.2	1.2	1.2	8.2	3.3	2.5	2.1	30.0
Pump from Windy Gap	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	2.0	0.0	0.0	0.0	12.0
Pump from Willow Creek	kaf	0.0	0.3	0.6	0.5	0.4	0.4	1.2	7.0	3.3	1.1	0.6	0.4	15.8
Total Inflow	kaf	4.7	4.9	5.1	3.3	2.9	3.1	4.4	28.9	32.4	11.1	6.4	4.7	111.9
Minimum River Release	kaf	1.2	1.2	1.2	1.2	1.1	1.2	1.2	4.6	4.5	4.6	2.5	1.2	25.7
5412.5 Release	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Spill/Bypass	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total River Release	kaf	1.2	1.2	1.2	1.2	1.1	1.2	1.2	4.6	4.5	4.6	2.5	1.2	25.7
Pumped to Shadow Mtn	kaf	0.1	0.4	14.7	33.0	28.8	29.1	11.9	15.1	0.5	24.6	31.3	24.1	213.6
Evaporation	kaf	1.6	0.7	0.0	0.0	0.0	0.8	1.4	2.2	2.8	2.6	2.0	1.7	15.8
Seepage loss	kaf	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	3.6
End-Month Contents	kaf	482.6	484.9	473.7	442.5	415.3	386.9	376.5	383.2	407.6	386.6	357.0	334.5	
End-Month Elevation	ft	8271.93	8272.26	8270.65	8266.02	8261.82	8257.30	8255.60	8256.71	8260.61	8257.25	8252.37	8248.51	

Shadow Mountain Reservoir

Init Cont: 17.00 kaf **Maximum Cont:** 18.40 kaf **Minimum Cont:** 16.60 kaf

Elev: 8366.5 ft **Elev:** 8367.0 ft **Elev:** 8366.0 ft

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Native Inflow	kaf	2.9	2.5	2.3	2.1	1.8	1.9	2.7	14.2	25.2	8.9	4.5	2.9	71.9
Pumped from Granby	kaf	0.1	0.4	14.7	33.0	28.8	29.1	11.9	15.1	0.5	24.6	31.3	24.1	213.6
Total Inflow	kaf	3.0	2.9	17.0	35.0	30.5	31.0	14.6	29.3	25.7	33.5	35.8	27.0	285.3
Minimum River Release	kaf	2.2	2.7	2.8	1.2	1.1	1.2	1.2	1.2	3.0	3.1	2.5	2.1	24.3
Spill/Bypass	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total River Release	kaf	2.5	2.7	2.8	1.2	1.1	1.2	1.2	1.2	8.2	3.3	2.5	2.1	30.0
Adams Tunnel Flow	kaf	0.0	0.0	14.2	33.8	29.4	29.5	13.0	27.4	16.7	29.5	32.7	24.4	250.6
Evaporation	kaf	0.3	0.1	0.0	0.0	0.0	0.2	0.3	0.5	0.6	0.5	0.4	0.4	3.3
End-Month Contents	kaf	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	
End-Month Elevation	ft	8366.62	8366.62	8366.62	8366.62	8366.62	8366.62	8366.62	8366.62	8366.62	8366.62	8366.62	8366.62	

Adams Tunnel

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Maximum Tunnel Capacity	kaf	0.0	0.0	14.2	33.8	30.5	33.8	13.0	27.4	16.7	29.5	32.7	24.4	256.0
Actual Diversion	kaf	0.0	0.0	14.2	33.8	29.4	29.5	13.0	27.4	16.7	29.5	32.7	24.4	250.6
% Maximum Delivery	%	0	0	100	100	96	87	100	100	100	100	100	100	

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Lake Estes

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Big Thompson Inflow	kaf	2.2	1.2	0.8	0.5	0.3	0.3	0.7	5.3	10.1	5.9	3.4	2.0	32.7
Minimum River Release	kaf	3.1	1.5	1.5	1.5	1.4	1.5	2.2	6.9	7.4	7.7	6.9	3.7	45.3
Actual River Release	kaf	2.2	1.2	0.8	0.5	0.3	0.3	0.7	4.7	7.4	5.9	3.4	2.0	29.4
Max Diversion Available	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	2.6	0.0	0.0	0.0	3.2
Priority Water Diverted	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Skim Water Diverted	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	2.6	0.0	0.0	0.0	3.2
% Maximum Diversion	%	0	0	0	0	0	0	0	100	100	0	0	0	
Irrigation Demand	kaf	0.2	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.3	0.4	0.3	0.2	1.9
Irrigation Delivery	kaf	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.3	0.4	0.3	0.2	1.7
Total River Release	kaf	2.2	1.2	0.8	0.5	0.3	0.3	0.7	4.7	7.4	5.9	3.4	2.0	29.4

Olympus Tunnel

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Maximum Tunnel Capacity	kaf	0.0	0.0	14.2	33.8	30.5	33.8	32.7	33.8	32.7	33.8	33.8	32.7	311.8
Actual Delivery	kaf	0.0	0.0	14.2	33.8	29.4	29.4	12.9	27.8	19.0	29.1	32.5	24.2	252.3
% Maximum Delivery	%	0	0	100	100	96	87	39	82	58	86	96	74	
Inflow to Flatiron	kaf	5.2	3.1	14.8	33.8	29.4	29.4	12.9	27.8	19.0	29.1	32.5	24.2	261.2

Carter Lake

Init Cont: 75.00 kaf Maximum Cont: 112.20 kaf Minimum Cont: 6.00 kaf
Elev: 5724.1 ft Elev: 5759.0 ft Elev: 5626.8 ft

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Pumped from Flatiron	kaf	0.0	0.0	7.7	22.3	13.2	0.0	0.0	10.4	7.7	20.8	22.4	0.0	104.5
Flatiron Bifurcation	kaf	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2
Carter to Flatiron	kaf	5.2	3.1	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.2
Evaporation Loss	kaf	0.2	0.1	0.0	0.0	0.0	0.1	0.2	0.4	0.4	0.4	0.3	0.3	2.4
Seepage Loss	kaf	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	1.3
End-Month Targets	kaf	112.2	112.2	112.2	112.2	11.2	11.2	11.2	112.2	112.2	112.2	112.2	11.2	
End-Month Contents	kaf	56.2	50.2	54.6	74.2	85.2	81.9	76.5	74.5	66.6	65.5	61.4	44.0	
End-Month Elevation	ft	5704.53	5697.75	5702.76	5723.47	5734.24	5731.04	5725.82	5723.82	5715.71	5714.55	5710.21	5690.34	
Priority Water Diverted to Carter	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Irrigation & Metered Demand	kaf	12.4	1.8	1.6	1.9	1.6	2.4	4.5	11.2	13.6	20.2	25.1	16.1	112.4
Windy Gap demand	kaf	0.5	0.8	1.0	0.8	0.5	0.6	0.5	0.6	1.4	1.2	1.0	0.9	9.8
Total Demand	kaf	12.9	2.7	2.5	2.6	2.1	3.0	4.9	11.9	15.0	21.4	26.1	17.0	122.1
Total Delivery	kaf	12.9	2.7	2.5	2.6	2.1	3.0	4.9	11.9	15.0	21.4	26.1	17.0	122.1
% Required Delivery	%	100	100	100	100	100	100	100	100	100	100	100	100	
Shortage	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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Hansen Canal 930

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Minimum Flow	**kaf**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maximum Flow	**kaf**	57.2	55.3	57.2	57.2	51.6	57.2	55.3	57.2	55.3	57.2	57.2	55.3	673.2
Actual Flow	**kaf**	5.2	3.1	7.1	11.4	16.2	29.4	12.9	17.4	11.4	8.3	10.0	24.2	156.6

Dille Tunnel

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Big Thompson River Below Lake Estes	**kaf**	2.2	1.2	0.8	0.5	0.3	0.3	0.7	4.7	7.4	5.9	3.4	2.0	29.4
North Fork Big Thompson River at Drake	**kaf**	0.8	0.5	0.4	0.3	0.2	0.2	0.2	0.8	1.3	0.8	0.5	0.3	6.3
Dille Skim Water Diverted	**kaf**	0.5	0.0	0.0	0.0	0.0	0.0	0.0	3.0	6.4	4.2	1.4	0.1	15.6
Dille Priority Water Diverted	**kaf**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
water available	**kaf**	3.0	1.8	1.2	0.8	0.6	0.5	0.9	5.5	8.8	6.7	3.9	2.3	36.0
water diverted	**kaf**	0.5	0.0	0.0	0.0	0.0	0.0	0.0	3.0	6.4	4.2	1.4	0.1	15.6
% Diverted	**%**	10	0	0	0	0	0	0	56	118	78	27	2	
Big T @ Canyon Mouth	**kaf**	2.4	1.8	1.2	0.8	0.6	0.5	0.9	2.4	2.4	2.5	2.5	2.2	20.2

Trifurcation

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Release from Flatiron	**kaf**	5.2	3.1	7.1	11.4	16.2	29.4	12.9	17.4	11.4	8.3	10.0	24.2	156.6
Release to 550 Canal	**kaf**	3.1	3.0	6.9	11.2	16.0	29.2	12.6	15.5	6.6	5.0	3.9	18.0	131.0
Dille Tunnel	**kaf**	0.5	0.0	0.0	0.0	0.0	0.0	0.0	3.0	6.4	4.2	1.4	0.1	15.6
Total release to river	**kaf**	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.6	1.5	2.6	4.9	5.4	16.1
Irrigation demand	**kaf**	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.6	1.5	2.6	4.9	5.3	16.0
Windy Gap demand	**kaf**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Total requirement	**kaf**	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.6	1.5	2.6	4.9	5.4	16.1
Total delivery	**kaf**	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.6	1.5	2.6	4.9	5.4	16.1
% Required Delivery	**%**	100	100	100	100	100	100	100	100	100	100	100	100	
Shortage	**kaf**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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Hansen Canal 550

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Inflow from Flatiron	kaf	3.1	3.0	6.9	11.2	16.0	29.2	12.6	15.5	6.6	5.0	3.9	18.0	131.0
Maximum flow	kaf	33.8	32.7	33.8	33.8	26.6	29.4	28.5	29.4	28.5	29.4	29.4	28.5	363.8
Irrigation demand	kaf	1.0	0.1	0.2	0.2	0.2	0.3	0.3	0.7	0.6	0.8	1.2	0.9	6.5
Irrigation delivery	kaf	1.0	0.1	0.2	0.2	0.2	0.3	0.3	0.7	0.6	0.8	1.2	0.9	6.5
Minimum flow	kaf	3.1	3.0	3.1	3.1	2.8	3.1	3.0	3.1	3.0	3.1	3.1	3.0	36.5
Rels to Horsetooth	kaf	3.1	3.0	6.9	11.2	16.0	29.2	12.6	15.5	6.6	5.0	3.9	18.0	131.0

Horsetooth Reservoir

Init Cont: 94.00 kaf **Maximum Cont:** 157.00 kaf **Minimum Cont:** 13.00 kaf
Elev: 5395.3 ft **Elev:** 5430.0 ft **Elev:** 5316.8 ft

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Inflow	kaf	3.1	3.0	6.9	11.2	16.0	29.2	12.6	15.5	6.6	5.0	3.9	18.0	131.0
Total irrigation delivery	kaf	16.7	2.0	1.9	2.4	2.3	2.5	4.6	13.0	17.2	27.3	28.3	9.9	128.1
Evaporation loss	kaf	0.3	0.1	0.0	0.0	0.0	0.2	0.4	0.7	0.8	0.7	0.5	0.4	4.1
Seepage loss	kaf	0.2	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	2.2
End-Month Targets	kaf	156.0	156.0	156.0	156.0	156.0	156.0	156.0	156.0	156.0	156.0	156.0	156.0	
End-Month Content	kaf	80.3	81.0	85.8	94.5	108.0	134.3	141.6	143.3	131.6	108.4	83.3	90.8	
End-Month Elevation	ft	5385.93	5386.43	5389.69	5395.33	5403.69	5418.51	5422.36	5423.23	5417.07	5403.92	5388.00	5392.98	
Priority water diverted to Horsetooth	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Irrigation demand	kaf	13.4	0.1	0.0	0.0	0.0	0.0	1.0	7.9	10.0	19.0	20.5	4.3	76.2
Metered Demand	kaf	2.6	1.4	1.5	2.0	1.9	2.1	2.9	4.4	6.2	7.3	6.4	4.5	43.2
Windy Gap demand	kaf	0.7	0.5	0.5	0.4	0.4	0.4	0.7	0.7	1.0	1.0	1.4	1.2	8.9
Total demand	kaf	16.7	2.0	1.9	2.4	2.3	2.5	4.6	13.0	17.2	27.3	28.3	9.9	128.1
% Required Delivery	%	100	100	100	100	100	100	100	100	100	100	100	100	
Shortage	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

CBT Project Summary

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Total CBT Delivery	kaf	30.6	3.4	3.2	4.1	3.7	4.8	8.9	25.0	32.3	50.1	58.3	31.2	255.6

Windy Gap

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Pumping	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	2.0	0.0	0.0	0.0	12.0
Losses	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.2	0.0	0.0	0.0	1.2
Spill	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delivery	kaf	1.2	1.3	1.5	1.2	0.9	1.1	1.1	1.3	2.4	2.2	2.4	2.1	18.7
Account Balance	kaf	-1.2	-2.5	-3.9	-5.1	-6.0	-7.1	-8.2	-0.5	-1.2	-3.4	-5.8	-8.0	

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PUMPING AND GENERATION OPERATIONS

Green Mountain Generation

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Maximum Generation	**gwh**	18.600	18.000	18.600	18.600	16.800	18.600	18.000	18.600	18.000	18.600	18.600	18.000	219.000
Generation	**gwh**	4.900	1.900	1.900	1.900	1.700	1.800	1.400	0.800	0.800	3.600	3.800	3.000	27.500
% Maximum Generation	**%**	27	11	10	10	10	10	8	4	4	19	20	17	
Average	**kwh/af**	183	175	172	169	165	162	159	164	180	186	180	172	

Willow Creek Pumping

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Maximum Pumping	**kaf**	24.6	23.8	24.6	24.6	22.2	24.6	23.8	24.6	23.8	24.6	24.6	23.8	289.6
Actual Pumping	**kaf**	0.0	0.3	0.6	0.5	0.4	0.4	1.2	7.0	3.3	1.1	0.6	0.4	15.8
Pump Energy	**gwh**	0.000	0.100	0.100	0.100	0.100	0.100	0.200	1.500	0.700	0.200	0.100	0.100	3.300
% Maximum Pumping	**%**	0	1	2	2	2	2	5	28	14	5	2	2	65
Average	**kwh/af**	0	213	213	213	213	213	213	213	213	213	213	213	

Lake Granby Pumping

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Maximum Pumping	**kaf**	36.9	35.7	36.9	36.9	33.3	36.9	35.7	36.9	35.7	36.9	36.9	35.7	434.4
Actual Pumping	**kaf**	0.1	0.4	14.7	33.0	28.8	29.1	11.9	15.1	0.5	24.6	31.3	24.1	213.6
Pump Energy	**gwh**	0.000	0.100	2.100	4.700	4.200	4.300	1.800	2.200	0.100	3.600	4.700	3.600	31.400
% Maximum Pumping	**%**	0	1	40	89	86	79	33	41	2	67	85	67	
Average	**kwh/af**	143	143	143	144	145	147	149	149	148	147	149	151	

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Marys Lake Generation

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Adams Tunnel Flow	**kaf**	0.0	0.0	14.2	33.8	29.4	29.5	13.0	27.4	16.7	29.5	32.7	24.4	250.6
Maximum Generation	**gwh**	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.500	6.400	6.200	16.100
Generation	**gwh**	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.200	6.200	4.400	13.800
% Maximum Generation	**%**	0	0	0	0	0	0	0	0	0	11	19	18	
Average	**kwh/af**	0	0	0	0	0	0	0	0	0	109	188	182	

Lake Estes Generation

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Adams Tunnel Flow	**kaf**	0.0	0.0	14.2	33.8	29.4	29.5	13.0	27.4	16.7	29.5	32.7	24.4	250.6
Maximum Generation	**gwh**	0.000	0.000	6.700	16.000	14.500	16.000	15.500	16.000	15.500	16.000	16.000	15.500	147.700
Generation	**gwh**	0.000	0.000	6.700	16.000	13.900	14.000	6.000	12.800	7.500	13.700	15.400	11.400	117.400
% Maximum Generation	**%**	0	0	100	100	96	87	39	80	48	85	96	74	
Average	**kwh/af**	0	0	473	473	474	475	461	468	448	464	471	468	

Pole Hill Generation

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Olympus Tunnel Flow	**kaf**	0.0	0.0	14.2	33.8	30.5	33.8	32.7	33.8	32.7	33.8	33.8	32.7	311.8
Maximum Generation	**gwh**	0.000	0.000	10.800	25.800	23.300	25.800	25.000	25.800	25.000	25.800	25.800	25.000	238.100
Generation	**gwh**	0.000	0.000	10.800	25.800	22.400	22.600	8.700	21.100	12.500	22.000	24.800	18.300	189.000
% Maximum Generation	**%**	0	0	100	100	96	88	35	82	50	85	96	73	
Average	**kwh/af**	0	0	762	762	735	668	264	624	381	650	733	560	

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Flatiron Units 1 and 2 Generation

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Inflow to Flatiron	**kaf**	5.2	3.1	14.8	33.8	29.4	29.4	12.9	27.8	19.0	29.1	32.5	24.2	261.2
Maximum Generation	**gwh**	0.000	0.000	13.500	32.200	29.100	32.200	31.200	32.200	31.200	32.200	32.200	31.200	297.200
Generation	**gwh**	0.000	0.000	12.000	32.200	27.400	25.900	9.700	24.600	16.800	26.300	30.200	20.700	225.800
% Maximum Generation	**%**	0	0	89	100	94	80	31	76	54	82	94	66	
Average	**kwh/af**	0	0	812	952	933	880	752	887	881	905	930	855	

Flatiron Unit 3 Pump/Generation

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Maximum Pumping	**kaf**	0.0	0.0	7.7	22.3	13.2	0.0	0.0	10.4	7.7	20.8	22.4	22.9	127.4
Pump from Flatiron	**kaf**	0.0	0.0	7.7	22.3	13.2	0.0	0.0	10.4	7.7	20.8	22.4	0.0	104.5
Pump Energy	**gwh**	0.000	0.000	2.200	6.800	4.300	0.000	0.000	3.300	2.500	6.400	6.800	0.000	32.300
% Maximum Pumping	**%**	0	0	100	100	100	0	0	100	100	100	100	0	
Average	**kwh/af**	0	0	289	305	325	0	0	315	319	306	303	0	
Maximum Turbine release	**kaf**	23.8	22.1	22.5	23.7	16.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	108.1
Carter to Flatiron	**kaf**	5.2	3.1	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.2
Maximum Generation	**gwh**	4.700	4.100	4.100	4.700	3.400	0.000	0.000	0.000	0.000	0.000	0.000	0.000	21.000
Actual Generation	**gwh**	1.000	0.600	0.300	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.900
% Maximum Generation	**%**	22	14	8	0	0	0	0	0	0	0	0	0	
Average	**kwh/af**	199	188	183	0	0	0	0	0	0	0	0	0	

Big Thompson Generation

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Total release	**kaf**	1.7	0.0	0.0	0.0	0.0	0.0	0.0	4.3	10.6	6.8	6.4	5.5	35.3
Turbine release	**kaf**	1.7	0.0	0.0	0.0	0.0	0.0	0.0	4.3	10.6	6.8	6.4	5.5	35.3
Wasteway release	**kaf**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maximum Generation	**gwh**	3.800	3.700	3.800	3.800	3.500	3.800	3.700	3.800	3.700	3.800	3.800	3.700	44.900
Generation	**gwh**	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.400	1.500	0.800	0.700	0.500	3.900
% Maximum Generation	**%**	0	0	0	0	0	0	0	11	40	20	18	15	
Average	**kwh/af**	0	0	0	0	0	0	0	101	142	113	108	100	

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Project Generation

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Total Generation	**gwh**	6.000	2.500	31.800	75.800	65.500	64.300	25.700	59.800	39.000	69.600	81.000	58.400	579.400
Total Max Generation	**gwh**	27.200	25.900	57.600	101.200	90.500	96.500	93.400	96.500	93.400	100.000	102.900	99.600	984.700

Project Pump Energy

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Granby	**gwh**	0.000	0.100	2.100	4.700	4.200	4.300	1.800	2.200	0.100	3.600	4.700	3.600	31.400
Willow Creek	**gwh**	0.000	0.100	0.100	0.100	0.100	0.100	0.200	1.500	0.700	0.200	0.100	0.100	3.300
Flatiron Unit 3	**gwh**	0.000	0.000	2.200	6.800	4.300	0.000	0.000	3.300	2.500	6.400	6.800	0.000	32.300
Total Pump Energy	**gwh**	0.000	0.100	4.400	11.700	8.600	4.400	2.000	7.000	3.200	10.200	11.600	3.700	66.900

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HYDROLOGY OPERATIONS

Dillon Reservoir

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Dillon Inflow	kaf	8.5	7.2	5.1	4.2	3.5	5.5	17.9	74.0	120.7	70.2	25.3	13.2	355.3
DL to GM Gain	kaf	6.9	5.8	4.3	3.8	3.4	5.8	13.9	50.1	72.3	55.2	19.3	11.7	252.5

Green Mountain Reservoir

Init Cont: 105.00 kaf **Elev:** 7924.0 ft | **Maximum Cont:** 154.60 kaf **Elev:** 7950.4 ft | **Minimum Cont:** 8.00 kaf **Elev:** 7804.7 ft

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Depletion	kaf	5.4	4.2	2.1	1.1	0.8	-0.7	3.1	28.5	27.8	10.6	8.5	7.2	98.6
Depleted Inflow	kaf	9.9	8.8	7.4	6.8	6.2	11.9	28.7	96.7	168.1	116.3	36.4	17.7	514.9
Turbine Release	kaf	28.9	13.9	14.4	14.4	13.1	14.5	34.8	86.5	87.6	88.0	50.3	48.3	494.7
Spill/Waste	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.1	0.0	0.0	15.1
Total River Release	cfs	470	234	234	235	235	236	585	1407	1472	1677	819	811	
Total River Release	kaf	28.9	13.9	14.4	14.4	13.1	14.5	34.8	86.5	87.6	103.1	50.3	48.3	509.8
Evaporation	kaf	0.2	0.1	0.0	0.0	0.0	0.1	0.2	0.2	0.5	0.7	0.6	0.4	3.0
End-Month Targets	kaf	85.6	60.4	60.4	60.4	60.4	60.4	50.0	60.0	140.0	152.5	138.0	107.0	
End-Month Contents	kaf	85.6	80.4	73.4	65.8	58.9	56.3	50.0	60.0	140.0	152.5	138.0	107.0	
End-Month Elevation	ft	7911.28	7907.50	7902.09	7895.76	7889.48	7886.96	7880.54	7890.55	7943.38	7949.46	7942.38	7925.37	

Willow Creek Reservoir

Init Cont: 7.00 kaf **Elev:** 8120.5 ft | **Maximum Cont:** 10.20 kaf **Elev:** 8128.8 ft | **Minimum Cont:** 7.20 kaf **Elev:** 8116.9 ft

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Native Inflow	kaf	2.2	1.5	1.2	1.0	0.9	2.4	11.1	47.1	40.4	7.1	3.0	2.0	119.9
Minimum Release	kaf	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	4.8
5412.5 Release	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Spill/Bypass	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	37.3	40.0	6.6	0.9	0.0	84.8
Total River Release	kaf	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	4.8
Pumped to Granby	kaf	0.7	1.0	0.7	0.6	0.5	2.0	10.7	7.3	0.0	0.0	3.3	1.5	28.3
Evaporation	kaf	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.7
End-Month Targets	kaf	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	
End-Month Contents	kaf	8.2	8.2	8.2	8.2	8.2	8.2	8.2	10.1	9.9	9.9	8.2	8.2	
End-Month Elevation	ft	8124.40	8124.40	8124.40	8124.40	8124.40	8124.40	8124.40	8130.94	8130.39	8130.18	8124.40	8124.40	

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Granby Reservoir

Init Cont: 481.00 kaf **Maximum Cont:** 539.80 kaf **Minimum Cont:** 76.50 kaf
Elev: 8271.7 ft **Elev:** 8280.0 ft **Elev:** 8186.9 ft

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Native Inflow	kaf	2.9	2.6	2.1	1.8	1.5	3.0	10.6	40.9	66.6	33.3	8.9	5.0	179.2
Release from Shadow Mtn	kaf	3.9	3.3	2.8	1.2	1.1	1.2	3.4	30.4	69.3	15.6	2.5	2.1	136.8
Pump from Windy Gap	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pump from Willow Creek	kaf	0.7	1.0	0.7	0.6	0.5	2.0	10.7	7.3	0.0	0.0	3.3	1.5	28.3
Total Inflow	kaf	7.6	6.9	5.6	3.6	3.1	6.2	24.7	78.7	135.9	48.8	14.7	8.5	344.3
Minimum River Release	kaf	1.2	1.2	1.2	1.2	1.1	1.2	1.2	4.6	4.5	4.6	2.5	1.2	25.7
5412.5 Release	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Spill/Bypass	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	81.5	40.1	0.4	0.0	122.0
Total River Release	kaf	1.2	1.2	1.2	1.2	1.1	1.2	1.2	4.6	4.5	4.6	2.5	1.2	25.7
Pumped to Shadow Mtn	kaf	0.1	0.0	14.3	32.7	28.6	23.4	4.5	0.0	0.0	2.5	20.7	23.8	150.6
Evaporation	kaf	1.6	0.7	0.0	0.0	0.0	0.9	1.5	2.4	3.2	3.0	2.3	2.1	17.7
Seepage loss	kaf	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	3.6
End-Month Contents	kaf	485.5	490.2	480.0	449.3	422.5	403.0	420.2	491.6	538.1	536.5	525.0	506.3	
End-Month Elevation	ft	8272.34	8273.02	8271.55	8267.04	8262.95	8259.88	8262.60	8273.23	8279.77	8279.55	8277.96	8275.32	

Shadow Mountain Reservoir

Init Cont: 17.00 kaf **Maximum Cont:** 18.40 kaf **Minimum Cont:** 16.60 kaf
Elev: 8366.5 ft **Elev:** 8367.0 ft **Elev:** 8366.0 ft

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Native Inflow	kaf	4.4	3.4	2.7	2.3	2.0	4.0	14.0	51.5	81.5	41.4	13.4	7.5	228.1
Pumped from Granby	kaf	0.1	0.0	14.3	32.7	28.6	23.4	4.5	0.0	0.0	2.5	20.7	23.8	150.6
Total Inflow	kaf	4.5	3.4	17.0	35.0	30.5	27.5	18.5	51.5	81.5	43.9	34.1	31.3	378.7
Minimum River Release	kaf	2.2	2.7	2.8	1.2	1.1	1.2	1.2	1.2	3.0	3.1	2.5	2.1	24.3
Spill/Bypass	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total River Release	kaf	3.9	3.3	2.8	1.2	1.1	1.2	3.4	30.4	69.3	15.6	2.5	2.1	136.8
Adams Tunnel Flow	kaf	0.0	0.0	14.2	33.8	29.4	26.0	14.7	20.4	11.4	27.6	31.0	28.7	237.2
Evaporation	kaf	0.3	0.1	0.0	0.0	0.0	0.2	0.3	0.5	0.6	0.5	0.4	0.4	3.3
End-Month Contents	kaf	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	
End-Month Elevation	ft	8366.62	8366.62	8366.62	8366.62	8366.62	8366.62	8366.62	8366.62	8366.62	8366.62	8366.62	8366.62	

Adams Tunnel

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Maximum Tunnel Capacity	kaf	0.0	0.0	14.2	33.8	30.5	26.0	14.7	20.7	19.2	28.4	31.0	28.7	247.2
Actual Diversion	kaf	0.0	0.0	14.2	33.8	29.4	26.0	14.7	20.4	11.4	27.6	31.0	28.7	237.2
% Maximum Delivery	%	0	0	100	100	96	100	100	98	59	97	100	100	

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Lake Estes

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Big Thompson Inflow	kaf	2.8	1.9	1.3	0.9	0.7	1.7	6.4	26.6	51.9	28.9	11.4	6.6	141.1
Minimum River Release	kaf	3.1	1.5	1.5	1.5	1.4	1.5	2.2	6.9	7.4	7.7	6.9	3.7	45.3
Actual River Release	kaf	2.8	1.9	1.3	0.9	0.7	1.4	2.2	16.7	30.2	22.4	9.1	3.7	93.3
Max Diversion Available	kaf	0.1	0.5	0.0	0.0	0.0	0.3	4.2	19.7	44.4	21.2	4.5	2.8	97.7
Priority Water Diverted	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	13.5	0.0	0.0	0.0	14.1
Skim Water Diverted	kaf	0.0	0.0	0.0	0.0	0.0	0.3	4.2	9.3	8.2	6.5	2.3	2.8	33.6
% Maximum Diversion	%	0	0	0	0	0	100	100	51	49	31	51	100	
Irrigation Demand	kaf	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.3	0.4	0.1	1.4
Irrigation Delivery	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.3	0.4	0.1	1.3
Total River Release	kaf	2.8	1.9	1.3	0.9	0.7	1.4	2.2	16.7	30.2	22.4	9.1	3.7	93.3

Olympus Tunnel

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Maximum Tunnel Capacity	kaf	0.0	0.0	14.2	33.8	30.5	33.8	32.7	33.8	32.7	33.8	33.8	32.7	311.8
Actual Delivery	kaf	0.0	0.0	14.2	33.8	29.4	26.3	18.9	30.2	32.7	33.8	32.9	31.4	283.6
% Maximum Delivery	%	0	0	100	100	96	78	58	89	100	100	97	96	
Inflow to Flatiron	kaf	4.7	3.0	14.7	33.8	29.4	26.3	18.9	30.2	32.7	33.8	32.9	31.4	291.8

Carter Lake

Inst Cont: 75.00 kaf **Maximum Cont:** 112.20 kaf **Minimum Cont:** 6.00 kaf
Elev: 5724.1 ft **Elev:** 5759.0 ft **Elev:** 5626.8 ft

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Pumped from Flatiron	kaf	0.0	0.0	7.5	21.8	12.9	0.0	0.0	9.7	18.4	17.7	17.4	17.3	122.7
Flatiron Bifurcation	kaf	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2
Carter to Flatiron	kaf	4.7	3.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.5
Evaporation Loss	kaf	0.2	0.1	0.0	0.0	0.0	0.1	0.2	0.4	0.5	0.5	0.4	0.3	2.7
Seepage Loss	kaf	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.2	0.2	0.2	1.7
End-Month Targets	kaf	112.2	112.2	112.2	112.2	11.2	11.2	11.2	112.2	112.2	112.2	112.2	112.2	
End-Month Contents	kaf	60.6	54.7	59.1	78.3	89.0	86.0	81.7	86.8	98.7	107.5	104.5	98.6	
End-Month Elevation	ft	5709.33	5702.84	5707.73	5727.61	5737.89	5735.02	5730.88	5735.83	5746.40	5754.35	5751.64	5746.27	
Priority Water Diverted to Carter	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	8.5	0.0	0.0	0.0	8.6
Irrigation & Metered Demand	kaf	8.7	2.0	1.6	1.8	1.7	2.2	3.5	3.5	4.6	7.3	19.1	22.0	78.0
Windy Gap demand	kaf	0.4	0.7	0.8	0.7	0.5	0.5	0.4	0.5	1.2	1.0	0.9	0.8	8.4
Total Demand	kaf	9.1	2.7	2.4	2.5	2.1	2.7	3.9	4.1	5.8	8.4	19.9	22.8	86.4
Total Delivery	kaf	9.1	2.7	2.4	2.5	2.1	2.7	3.9	4.1	5.8	8.4	19.9	22.8	86.4
% Required Delivery	%	100	100	100	100	100	100	100	100	100	100	100	100	
Shortage	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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Hansen Canal 930

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Minimum Flow	**kaf**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maximum Flow	**kaf**	57.2	55.3	57.2	57.2	51.6	57.2	55.3	57.2	55.3	57.2	57.2	55.3	673.2
Actual Flow	**kaf**	4.7	3.0	7.2	12.0	16.5	26.3	18.9	20.4	14.4	16.1	15.5	14.0	169.0

Dille Tunnel

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Big Thompson River Below Lake Estes	**kaf**	2.8	1.9	1.3	0.9	0.7	1.4	2.2	16.7	30.2	22.4	9.1	3.7	93.3
North Fork Big Thompson River at Drake	**kaf**	0.8	0.5	0.4	0.3	0.3	0.7	3.5	8.1	11.7	5.5	2.6	1.5	35.9
Dille Skim Water Diverted	**kaf**	1.2	0.1	0.0	0.0	0.0	0.1	3.3	13.7	15.6	16.9	9.3	2.9	63.1
Dille Priority Water Diverted	**kaf**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
water available	**kaf**	3.6	2.5	1.8	1.2	1.0	2.1	5.7	24.8	41.9	27.9	11.7	5.3	129.5
water diverted	**kaf**	1.2	0.1	0.0	0.0	0.0	0.1	3.3	13.7	15.6	16.9	9.3	2.9	63.1
% Diverted	**%**	22	3	0	0	0	1	61	253	287	311	171	53	
Big T @ Canyon Mouth	**kaf**	2.5	2.3	1.8	1.2	1.0	2.0	2.4	11.1	26.3	11.0	2.5	2.4	66.5

Trifurcation

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Release from Flatiron	**kaf**	4.7	3.0	7.2	12.0	16.5	26.3	18.9	20.4	14.4	16.1	15.5	14.0	169.0
Release to 550 Canal	**kaf**	3.1	3.0	7.2	12.0	16.5	26.0	14.6	11.0	6.1	9.1	10.2	5.5	124.3
Dille Tunnel	**kaf**	1.2	0.1	0.0	0.0	0.0	0.1	3.3	13.7	15.6	16.9	9.3	2.9	63.1
Total release to river	**kaf**	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	2.8	5.5	9.3
Irrigation demand	**kaf**	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	2.8	5.5	9.3
Windy Gap demand	**kaf**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Total requirement	**kaf**	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	2.8	5.5	9.3
Total delivery	**kaf**	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	2.8	5.5	9.3
% Required Delivery	**%**	100	100	100	100	100	100	100	100	100	100	100	100	
Shortage	**kaf**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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Hansen Canal 550

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Inflow from Flatiron	kaf	3.1	3.0	7.2	12.0	16.5	26.0	14.6	11.0	6.1	9.1	10.2	5.5	124.3
Maximum flow	kaf	33.8	32.7	33.8	33.8	26.6	29.4	28.5	26.3	28.5	29.4	29.4	28.5	360.7
Irrigation demand	kaf	0.8	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.3	0.3	0.2	1.8
Irrigation delivery	kaf	0.8	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.3	0.3	0.2	1.8
Minimum flow	kaf	3.1	3.0	3.1	3.1	2.8	3.1	3.0	3.1	3.0	3.1	3.1	3.0	36.5
Rels to Horsetooth	kaf	3.1	3.0	7.2	12.0	16.5	26.0	14.6	11.0	6.1	9.1	10.2	5.5	124.3

Horsetooth Reservoir

Init Cont: 94.00 kaf **Elev:** 5395.3 ft

Maximum Cont: 157.00 kaf **Elev:** 5430.0 ft

Minimum Cont: 13.00 kaf **Elev:** 5316.8 ft

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Inflow	kaf	3.1	3.0	7.2	12.0	16.5	26.0	14.6	11.0	6.1	9.1	10.2	5.5	124.3
Total irrigation delivery	kaf	11.4	2.7	2.2	2.1	2.0	2.2	2.7	3.1	5.1	8.1	23.6	18.6	83.8
Evaporation loss	kaf	0.4	0.1	0.0	0.0	0.0	0.2	0.4	0.7	0.9	0.8	0.6	0.5	4.6
Seepage loss	kaf	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	2.3
End-Month Targets	kaf	156.0	156.0	156.0	156.0	156.0	156.0	156.0	156.0	156.0	156.0	156.0	156.0	
End-Month Content	kaf	85.6	85.6	90.4	100.1	114.4	137.7	149.0	156.0	155.9	156.0	141.8	127.9	
End-Month Elevation	ft	5389.56	5389.52	5392.72	5398.88	5407.46	5420.34	5426.15	5429.64	5429.61	5429.64	5422.47	5415.09	
Priority water diverted to Horsetooth	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	4.9	0.0	0.0	0.0	5.4
Irrigation demand	kaf	8.4	0.7	0.0	0.0	0.0	0.0	0.0	0.5	0.1	3.0	18.3	14.4	45.4
Metered Demand	kaf	2.4	1.6	1.8	1.8	1.7	1.9	2.1	2.0	4.1	4.2	4.1	3.2	30.9
Windy Gap demand	kaf	0.6	0.4	0.4	0.4	0.3	0.4	0.6	0.6	0.8	0.8	1.2	1.0	7.5
Total demand	kaf	11.4	2.7	2.2	2.1	2.0	2.2	2.7	3.1	5.1	8.1	23.6	18.6	83.8
% Required Delivery	%	100	100	100	100	100	100	100	100	100	100	100	100	
Shortage	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

CBT Project Summary

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Total CBT Delivery	kaf	21.1	4.3	3.4	3.6	3.4	4.1	5.8	6.3	9.3	15.3	44.9	45.4	166.9

Windy Gap

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Pumping	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Losses	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Spill	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-8.7	0.0	0.0	0.0	-8.7
Total Delivery	kaf	1.0	1.1	1.2	1.0	0.8	0.9	0.9	1.1	2.1	1.9	2.1	1.8	15.9
Account Balance	kaf	-1.0	-2.1	-3.3	-4.3	-5.1	-6.0	-6.9	-8.1	0.0	0.0	-1.9	-3.7	

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PUMPING AND GENERATION OPERATIONS

Green Mountain Generation

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Maximum Generation	**gwh**	18.600	18.000	18.600	18.600	16.800	18.600	18.000	18.600	18.000	18.600	18.600	18.000	219.000
Generation	**gwh**	5.300	2.400	2.500	2.400	2.100	2.300	5.400	12.900	16.200	18.600	10.500	9.600	90.200
% Maximum Generation	**%**	28	14	13	13	12	12	30	69	90	100	57	53	
Average	**kwh/af**	183	175	170	165	160	156	155	149	184	211	210	198	

Willow Creek Pumping

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Maximum Pumping	**kaf**	24.6	23.8	24.6	24.6	22.2	24.6	23.8	7.5	0.0	0.0	18.2	23.8	217.7
Actual Pumping	**kaf**	0.7	1.0	0.7	0.6	0.5	2.0	10.7	7.3	0.0	0.0	3.3	1.5	28.3
Pump Energy	**gwh**	0.200	0.200	0.200	0.100	0.100	0.400	2.300	1.600	0.000	0.000	0.700	0.300	6.100
% Maximum Pumping	**%**	3	4	3	2	2	8	45	97	0	0	18	6	188
Average	**kwh/af**	213	213	213	213	213	213	213	213	0	0	213	213	

Lake Granby Pumping

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Maximum Pumping	**kaf**	36.9	35.7	36.9	36.9	33.3	36.9	35.7	36.9	35.7	36.9	36.9	35.7	434.4
Actual Pumping	**kaf**	0.1	0.0	14.3	32.7	28.6	23.4	4.5	0.0	0.0	2.5	20.7	23.8	150.6
Pump Energy	**gwh**	0.000	0.000	2.000	4.700	4.100	3.400	0.700	0.000	0.000	0.400	2.900	3.400	21.600
% Maximum Pumping	**%**	0	0	39	89	86	64	13	0	0	7	56	67	
Average	**kwh/af**	143	0	142	144	145	147	147	0	0	140	140	141	

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Marys Lake Generation

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Adams Tunnel Flow	**kaf**	0.0	0.0	14.2	33.8	29.4	26.0	14.7	20.4	11.4	27.6	31.0	28.7	237.2
Maximum Generation	**gwh**	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.500	6.400	6.200	16.100
Generation	**gwh**	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.800	5.800	5.300	13.900
% Maximum Generation	**%**	0	0	0	0	0	0	0	0	0	10	19	18	
Average	**kwh/af**	0	0	0	0	0	0	0	0	0	102	187	185	

Lake Estes Generation

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Adams Tunnel Flow	**kaf**	0.0	0.0	14.2	33.8	29.4	26.0	14.7	20.4	11.4	27.6	31.0	28.7	237.2
Maximum Generation	**gwh**	0.000	0.000	6.700	16.000	14.500	16.000	15.500	16.000	15.500	16.000	16.000	15.500	147.700
Generation	**gwh**	0.000	0.000	6.700	16.000	13.900	12.000	6.700	9.300	4.800	12.700	14.500	13.500	110.100
% Maximum Generation	**%**	0	0	100	100	96	75	43	58	31	79	91	87	
Average	**kwh/af**	0	0	474	474	474	461	457	454	426	460	468	471	

Pole Hill Generation

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Olympus Tunnel Flow	**kaf**	0.0	0.0	14.2	33.8	30.5	33.8	32.7	33.8	32.7	33.8	33.8	32.7	311.8
Maximum Generation	**gwh**	0.000	0.000	10.800	25.800	23.300	25.800	25.000	25.800	25.000	25.800	25.800	25.000	238.100
Generation	**gwh**	0.000	0.000	10.800	25.800	22.500	20.000	13.500	22.900	25.000	25.800	25.100	24.000	215.400
% Maximum Generation	**%**	0	0	100	100	96	78	54	89	100	100	97	96	
Average	**kwh/af**	0	0	762	762	735	592	412	676	763	763	743	733	

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Flatiron Units 1 and 2 Generation

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Inflow to Flatiron	kaf	4.7	3.0	14.7	33.8	29.4	26.3	18.9	30.2	32.7	33.8	32.9	31.4	291.8
Maximum Generation	gwh	0.000	0.000	13.500	32.200	29.100	32.200	31.200	32.200	31.200	32.200	32.200	31.200	297.200
Generation	gwh	0.000	0.000	12.000	32.200	27.500	22.400	15.300	27.700	31.200	32.200	31.000	29.300	260.800
% Maximum Generation	%	0	0	89	100	94	69	49	86	100	100	96	94	
Average	kwh/af	0	0	818	953	934	851	810	918	953	953	940	933	

Flatiron Unit 3 Pump/Generation

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Maximum Pumping	kaf	0.0	0.0	7.5	21.8	12.9	0.0	0.0	9.7	18.4	17.7	17.4	17.3	122.7
Pump from Flatiron	kaf	0.0	0.0	7.5	21.8	12.9	0.0	0.0	9.7	18.4	17.7	17.4	17.3	122.7
Pump Energy	gwh	0.000	0.000	2.200	6.800	4.300	0.000	0.000	3.200	6.300	6.300	6.200	6.100	41.400
% Maximum Pumping	%	0	0	100	100	100	0	0	100	100	100	100	100	
Average	kwh/af	0	0	294	310	330	0	0	329	341	354	358	352	
Maximum Turbine release	kaf	23.9	22.4	22.8	24.0	16.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	109.2
Carter to Flatiron	kaf	4.7	3.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.5
Maximum Generation	gwh	4.800	4.300	4.300	4.900	3.400	0.000	0.000	0.000	0.000	0.000	0.000	0.000	21.700
Actual Generation	gwh	0.900	0.600	0.300	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.800
% Maximum Generation	%	20	13	8	0	0	0	0	0	0	0	0	0	
Average	kwh/af	201	192	188	0	0	0	0	0	0	0	0	0	

Big Thompson Generation

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Total release	kaf	2.0	0.1	0.0	0.0	0.0	0.4	7.6	23.1	23.8	23.6	14.3	11.2	106.1
Turbine release	kaf	2.0	0.1	0.0	0.0	0.0	0.4	7.6	23.1	23.8	23.6	14.3	11.2	106.1
Wasteway release	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maximum Generation	gwh	3.800	3.700	3.800	3.800	3.500	3.800	3.700	3.800	3.700	3.800	3.800	3.700	44.900
Generation	gwh	0.000	0.000	0.000	0.000	0.000	0.000	1.000	3.600	3.700	3.700	2.200	1.600	15.800
% Maximum Generation	%	0	0	0	0	0	0	26	94	100	96	57	44	
Average	kwh/af	0	0	0	0	0	0	126	156	156	157	152	145	

BUREAU OF RECLAMATION

COLORADO - BIG THOMPSON MONTHLY OPERATIONS
United States Bureau of Reclamation
Eastern Colorado Area Office
Loveland, Colorado

CBT October 2022 Max Reasonable: 01-OCT-2022

Project Generation

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Total Generation	**gwh**	6.200	3.000	32.400	76.400	66.000	56.600	41.800	76.300	80.900	95.900	89.200	83.200	707.900
Total Max Generation	**gwh**	27.200	26.000	57.800	101.300	90.600	96.500	93.400	96.500	93.400	100.000	102.900	99.600	985.200

Project Pump Energy

		Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Total
Granby	**gwh**	0.000	0.000	2.000	4.700	4.100	3.400	0.700	0.000	0.000	0.400	2.900	3.400	21.600
Willow Creek	**gwh**	0.200	0.200	0.200	0.100	0.100	0.400	2.300	1.600	0.000	0.000	0.700	0.300	6.100
Flatiron Unit 3	**gwh**	0.000	0.000	2.200	6.800	4.300	0.000	0.000	3.200	6.300	6.300	6.200	6.100	41.400
Total Pump Energy	**gwh**	0.200	0.200	4.400	11.600	8.500	3.900	2.900	4.800	6.300	6.600	9.800	9.800	69.000

B-8: Water Year 2023 Plan Summary Graphs

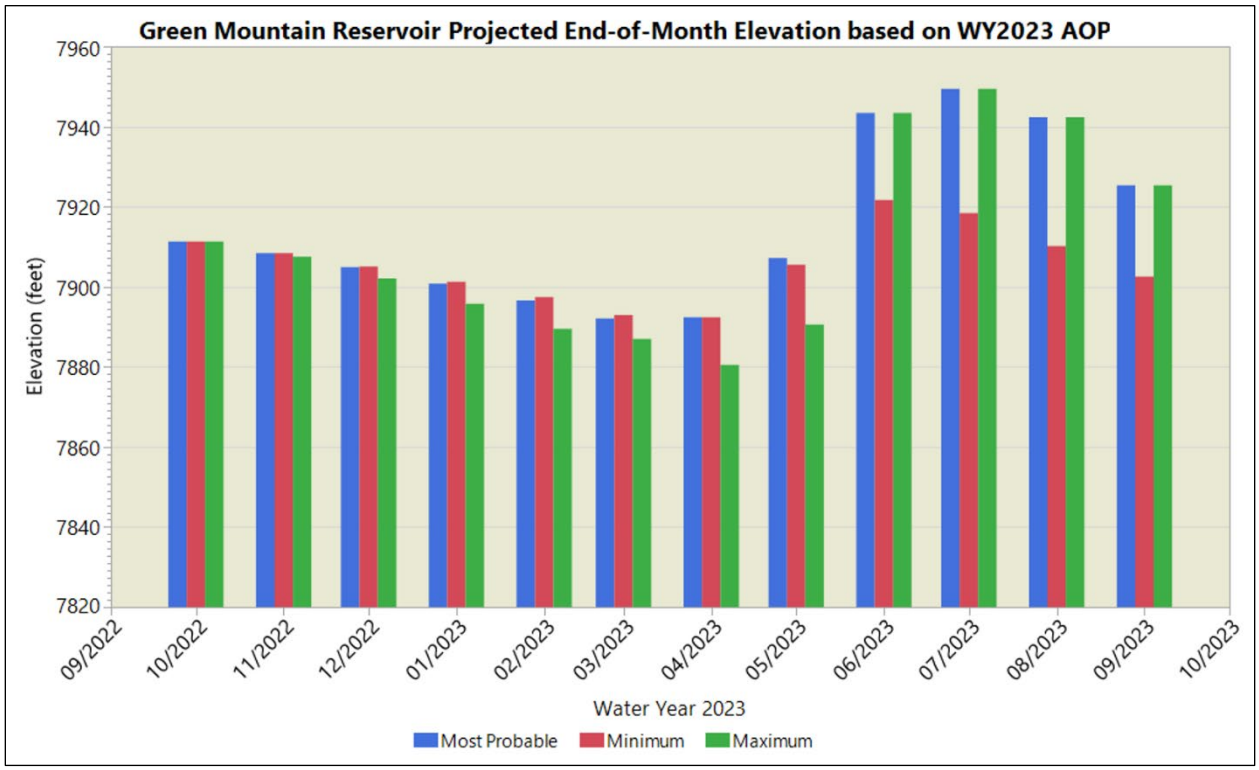


Figure B-8A.—Water Year 2023 Operation Plan, Green Mountain Reservoir elevations.

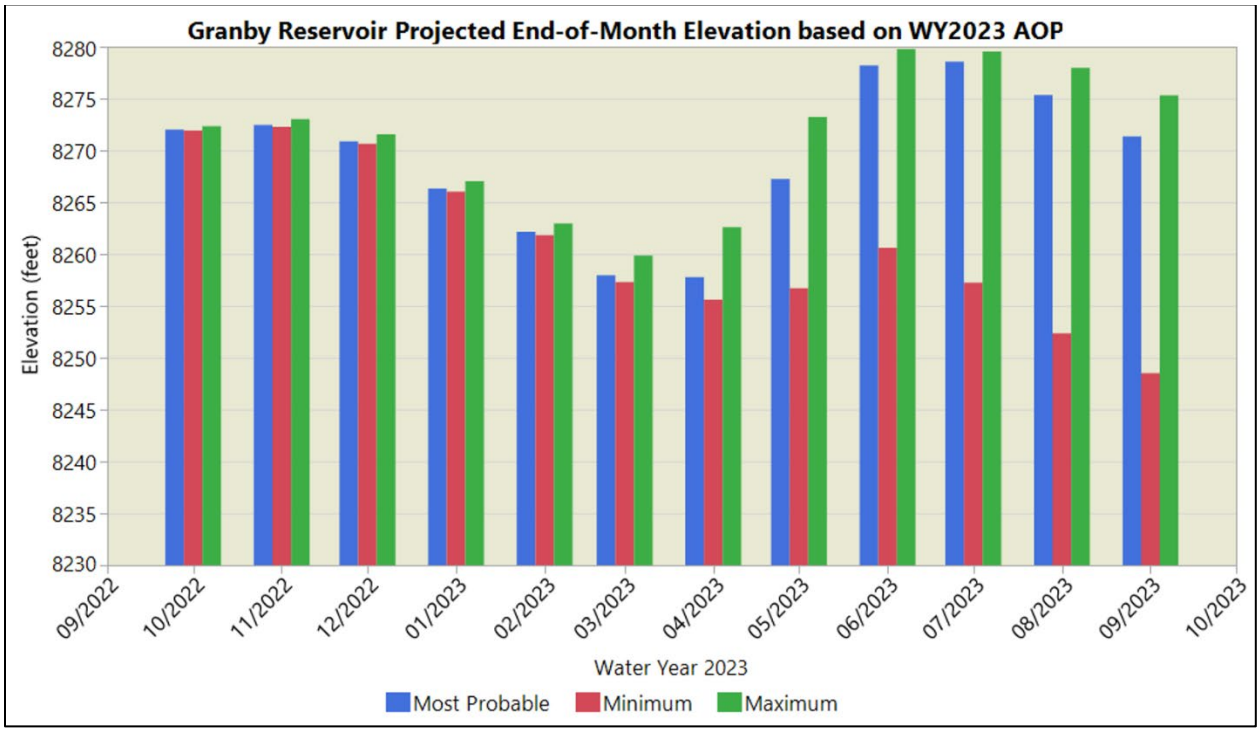


Figure B-8B.—Water Year 2023 Operation Plan, Granby Reservoir elevations.

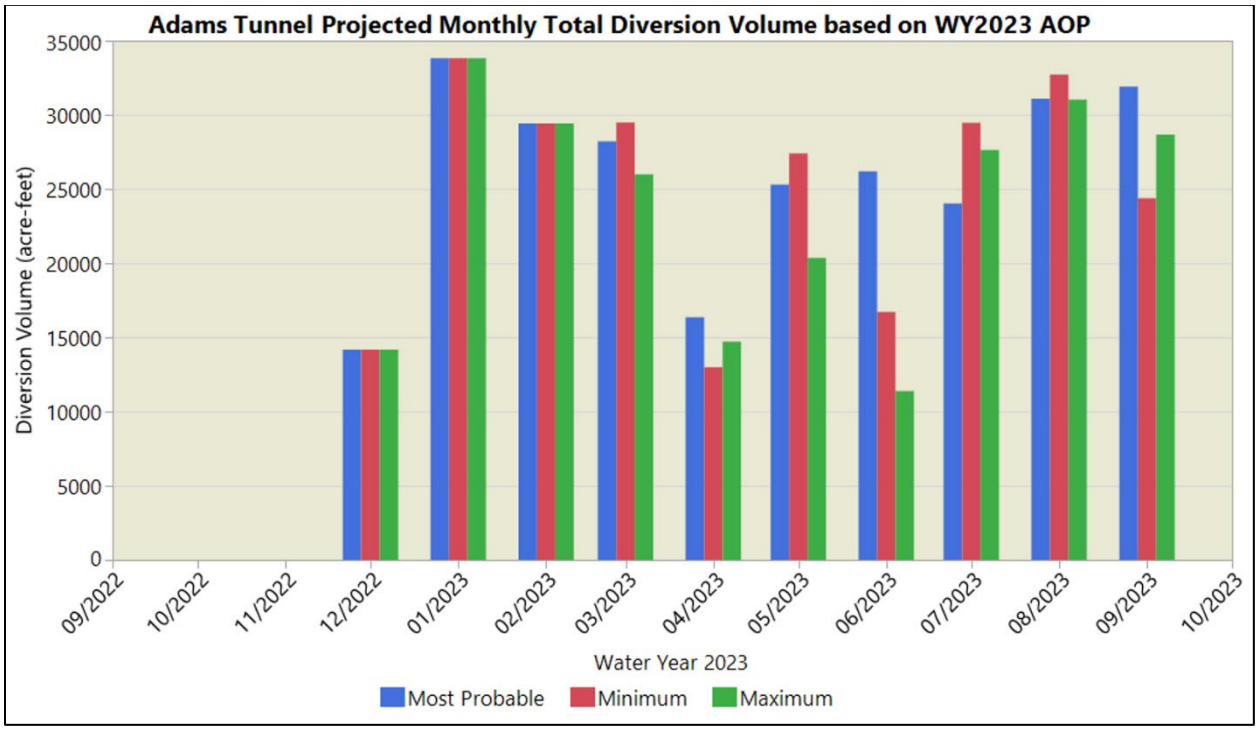


Figure B-8C.—Water Year 2023 Operation Plan, Adams Tunnel Diversions.

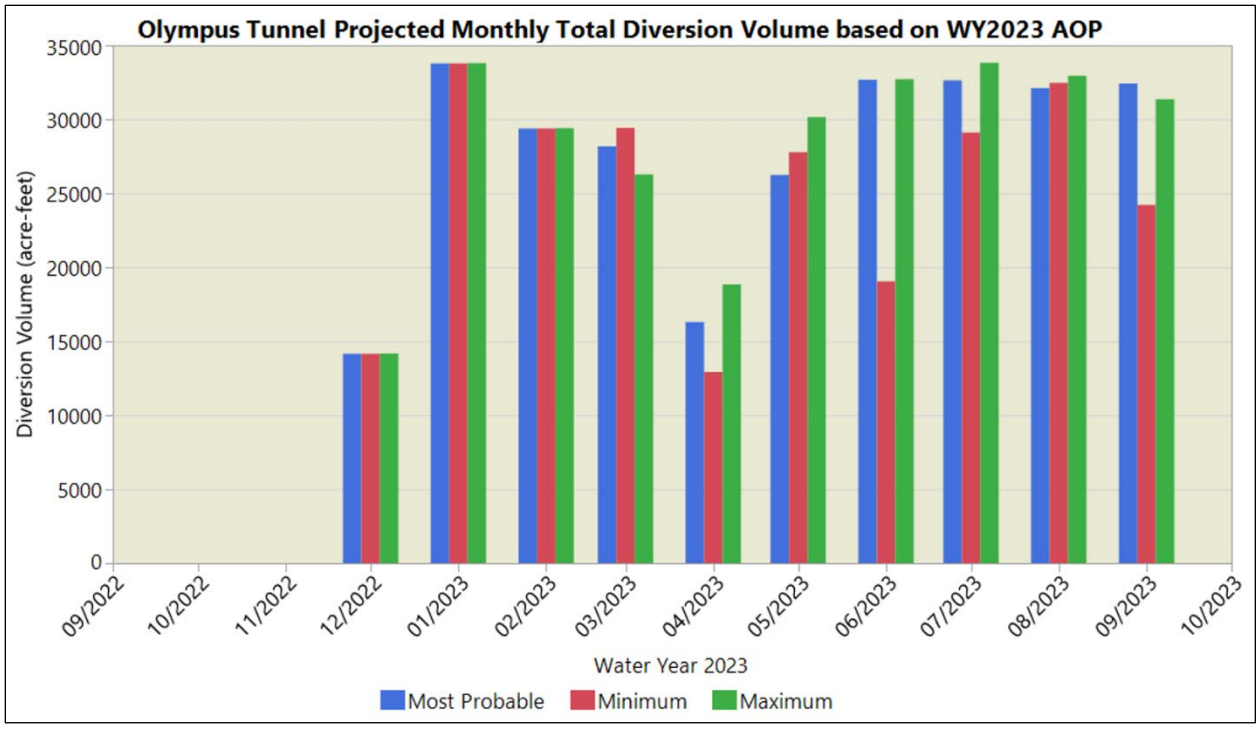


Figure B-8D.—Water Year 2023 Operation Plan, Olympus Tunnel Diversions.

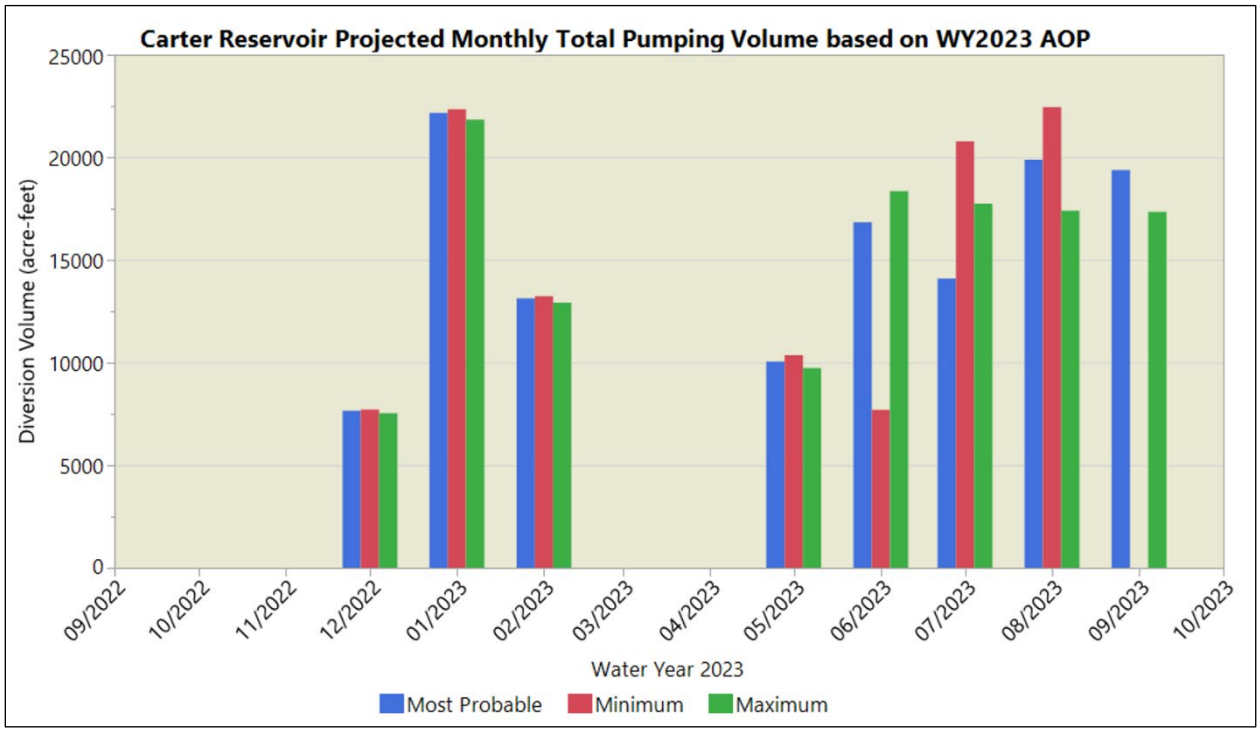


Figure B-8E.—Water Year 2023 Operation Plan, Flatiron Unit #3 pump volume to Carter Lake Reservoir.

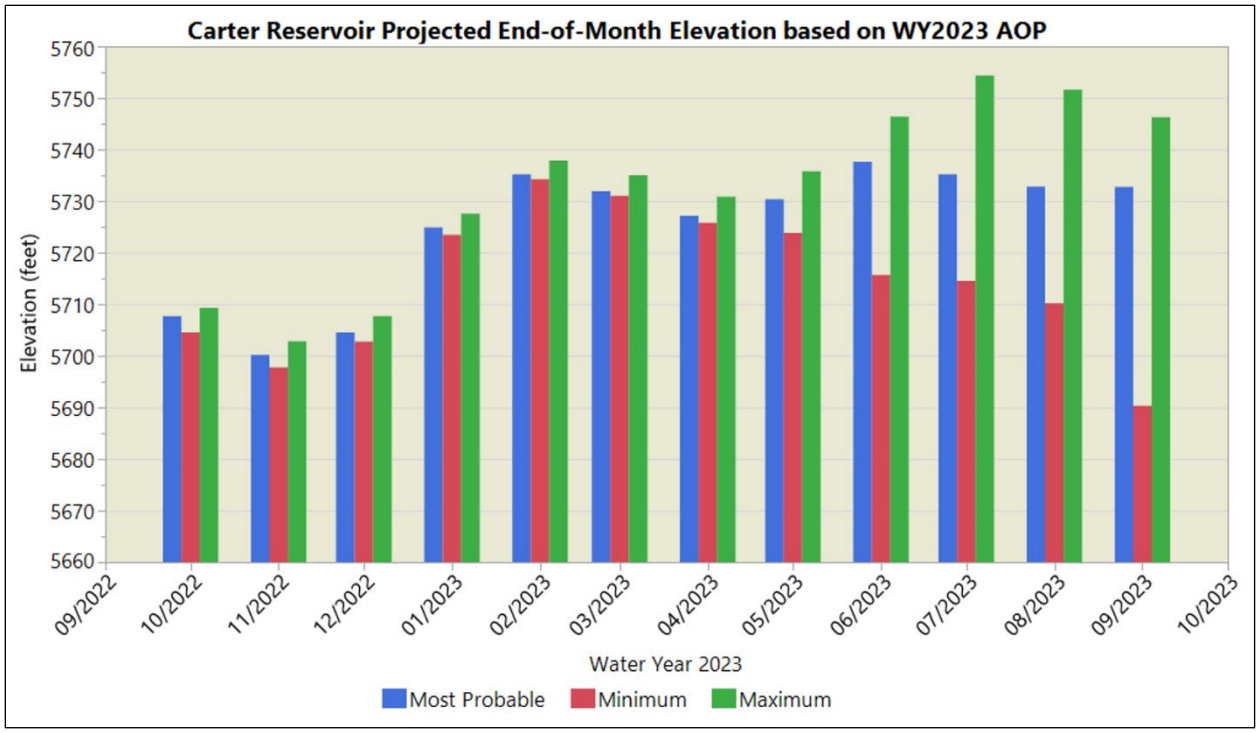


Figure B-8F.—Water Year 2023 Operation Plan, Carter Lake Reservoir elevations.

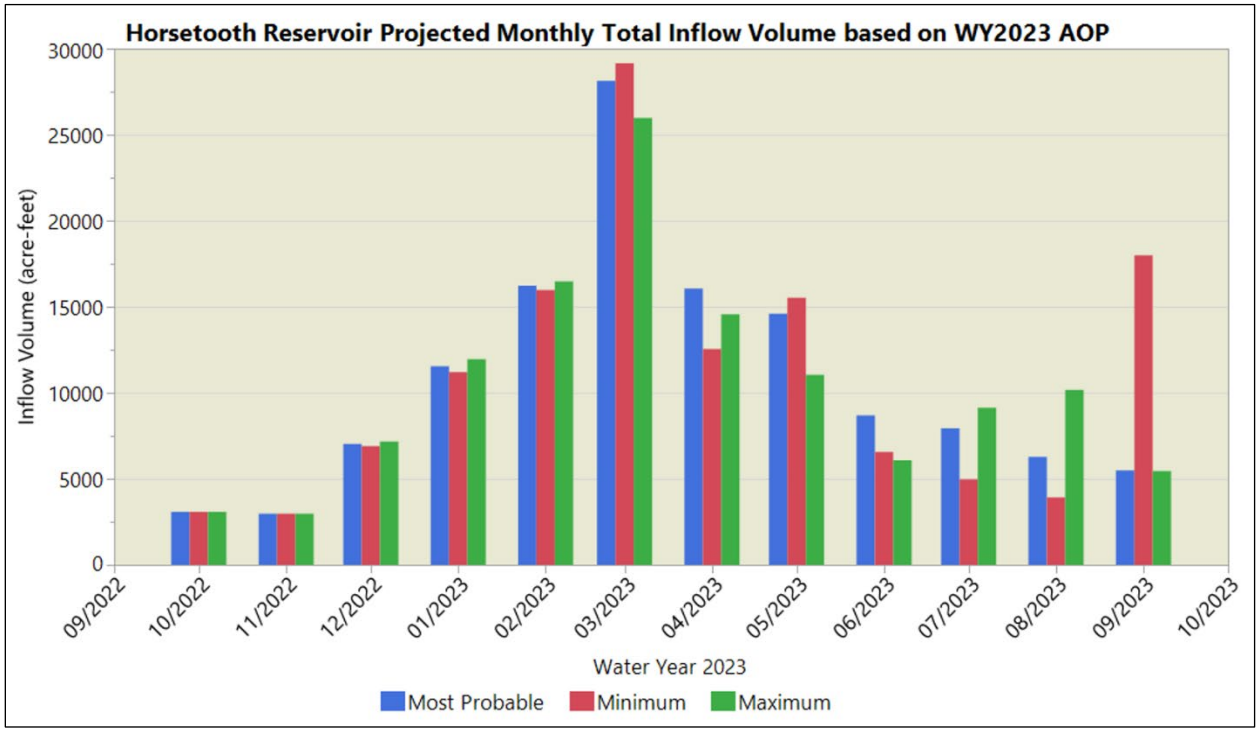


Figure B-8G.—Water Year 2023 Operation Plan, Hansen Feeder Canal inflow to Horsetooth Reservoir.

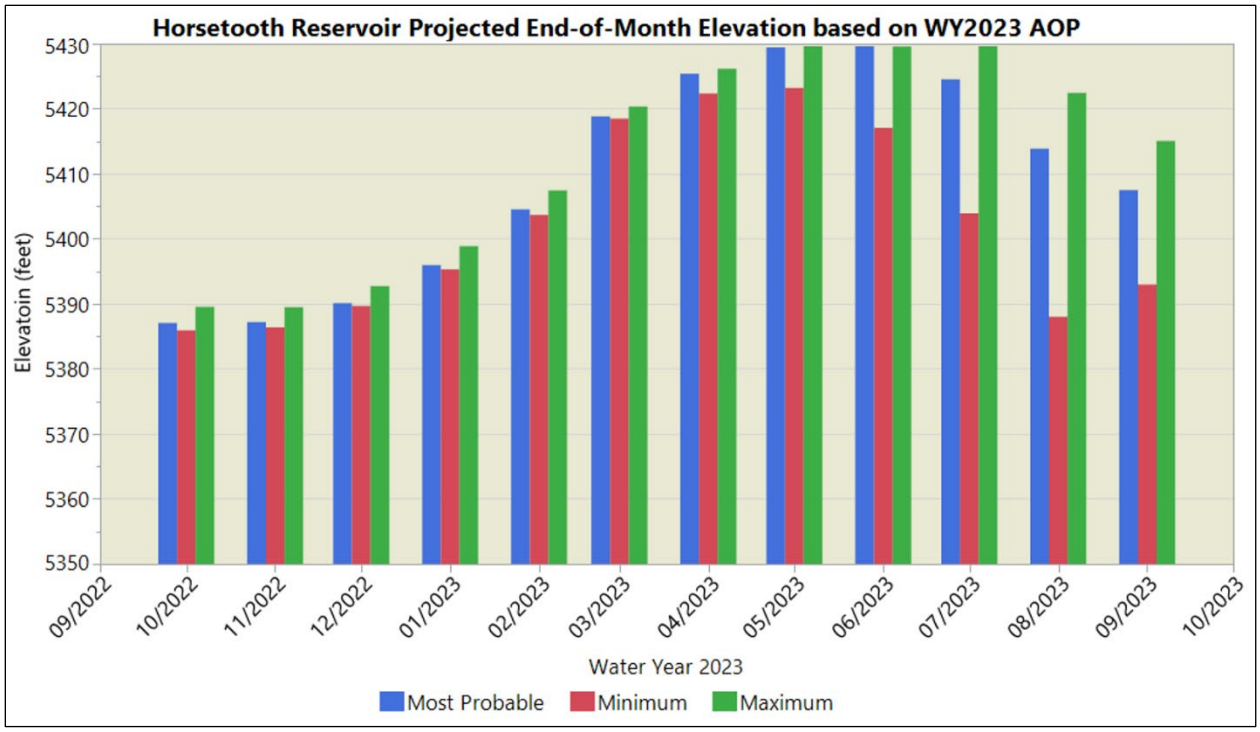


Figure B-8H.—Water Year 2023 Operation Plan, Horsetooth Reservoir elevations.

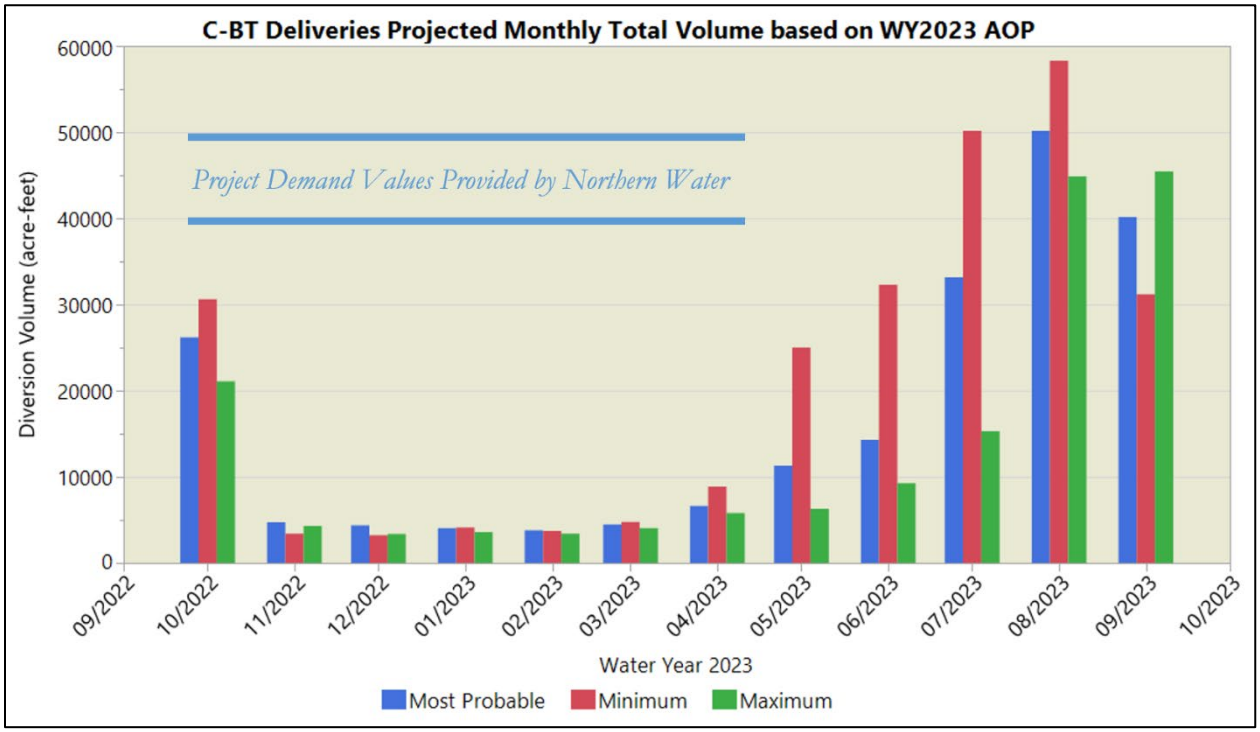


Figure B-8I.—Water Year 2023 Operation Plan, C-BT monthly delivery volumes.

Appendix C

Exhibits

C-1 Publicity Map, Extents, Facts and Connectivity Schematic of the Colorado-Big Thompson Project

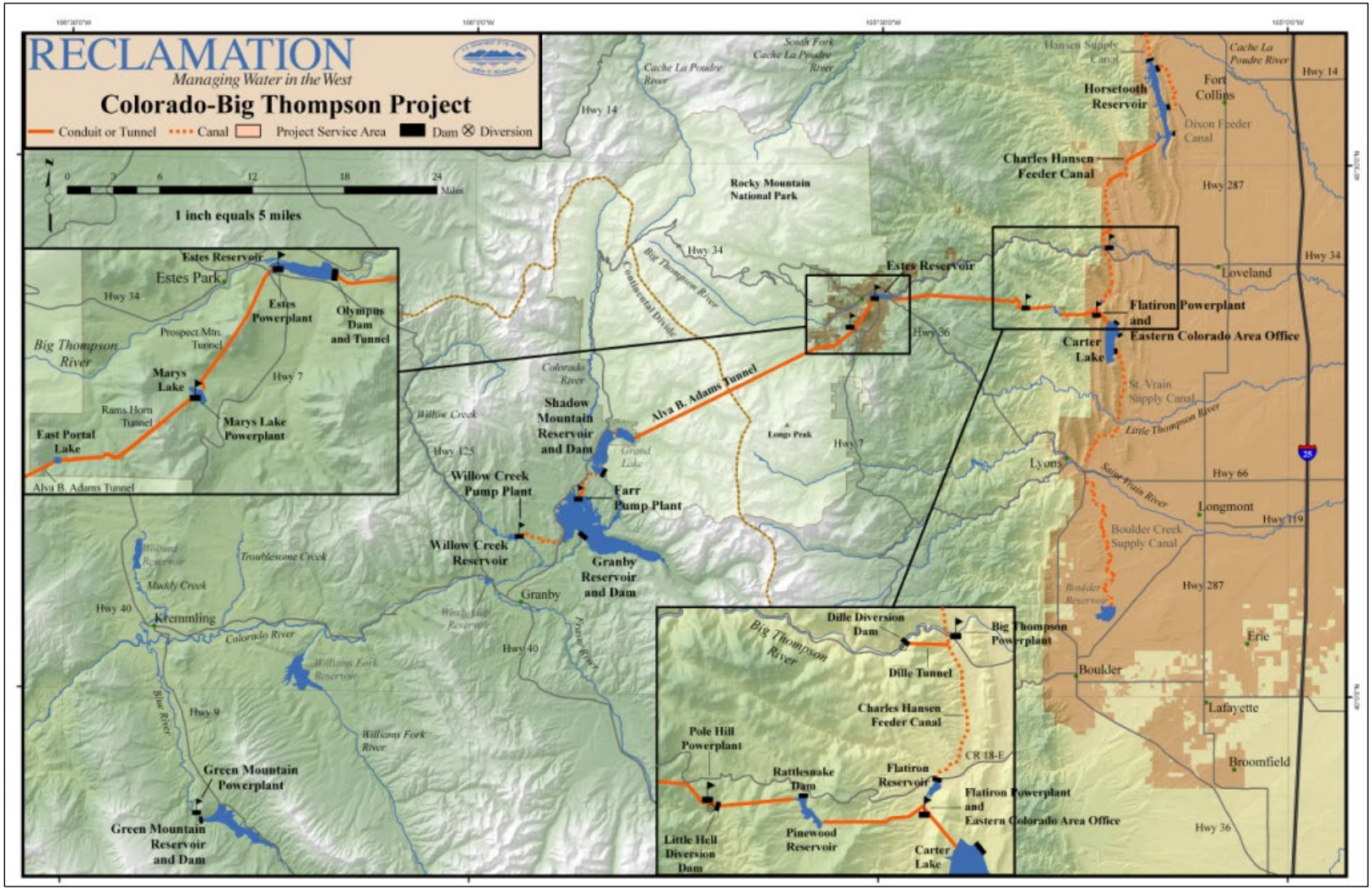
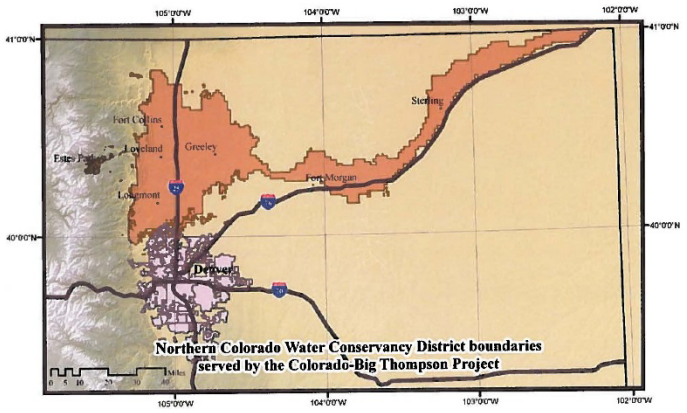


Figure C-1A.—Map showing overview of C-BT Project.



Colorado-Big Thompson Facts

- A trans-mountain, trans-basin water diversion, storage, and delivery project
- Signed into law by President Roosevelt in 1937
- Construction period: 1938-1952
- Ten major reservoirs (Green Mountain, Willow Creek, Granby, Shadow Mountain, Marys Lake, Estes, Pinewood, Carter, Flatiron and Horsetooth)
- Twenty major dams and dikes
- Twenty-two tunnels, canals and other conduits covering about 130 miles
- Six hydroelectric powerplants (Green Mountain, Marys, Estes, Pole Hill, Flatiron, Big Thompson)
- Water right allows for diversion of up to 310,000 acre-feet of water a year
- Average annual diversion over life of project is 260,000 acre-feet
- Water falls over 2000 feet from Continental Divide to Colorado's eastern Plains, providing for hydroelectric power generation.
- Together, all six powerplants generate approximately 759 million kilo-Watt hours of electricity a year—enough to power 58,300 American homes for a year.
- The C-BT provides water to 29 cities and towns, including 620,000 irrigated acres and a population of 725,000 people

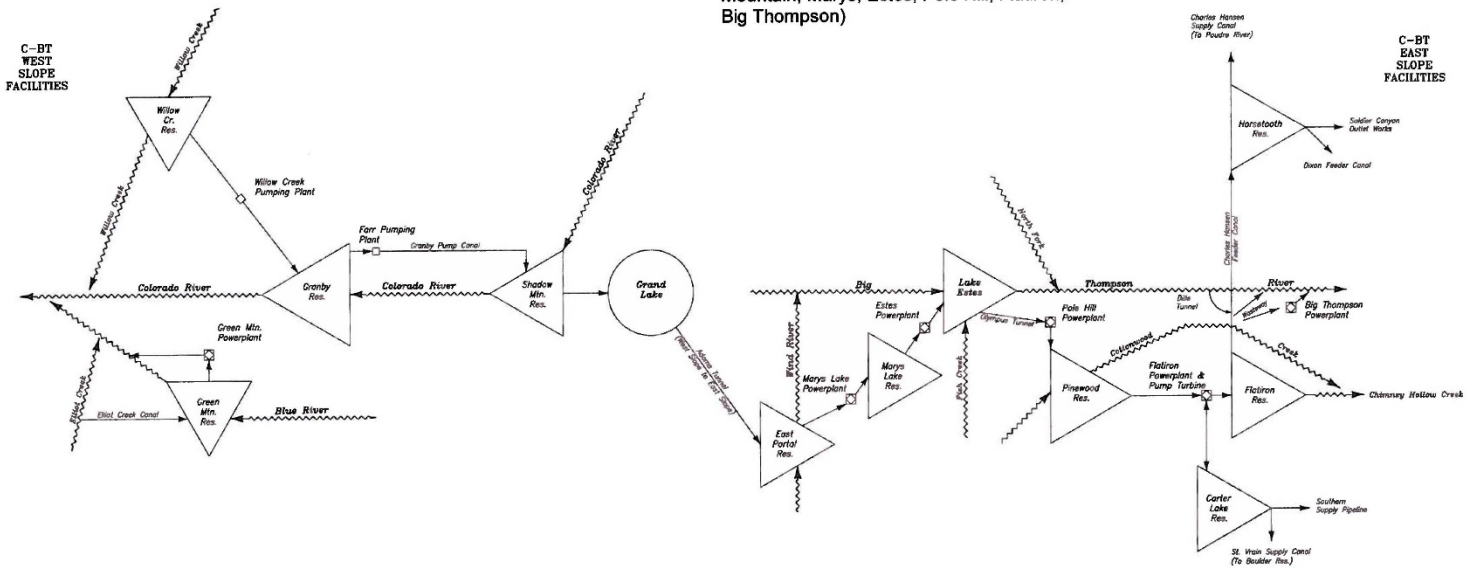


Figure C-1B.—Schematic of C-BT Project.

C-2 Profile View of the Colorado-Big Thompson Project

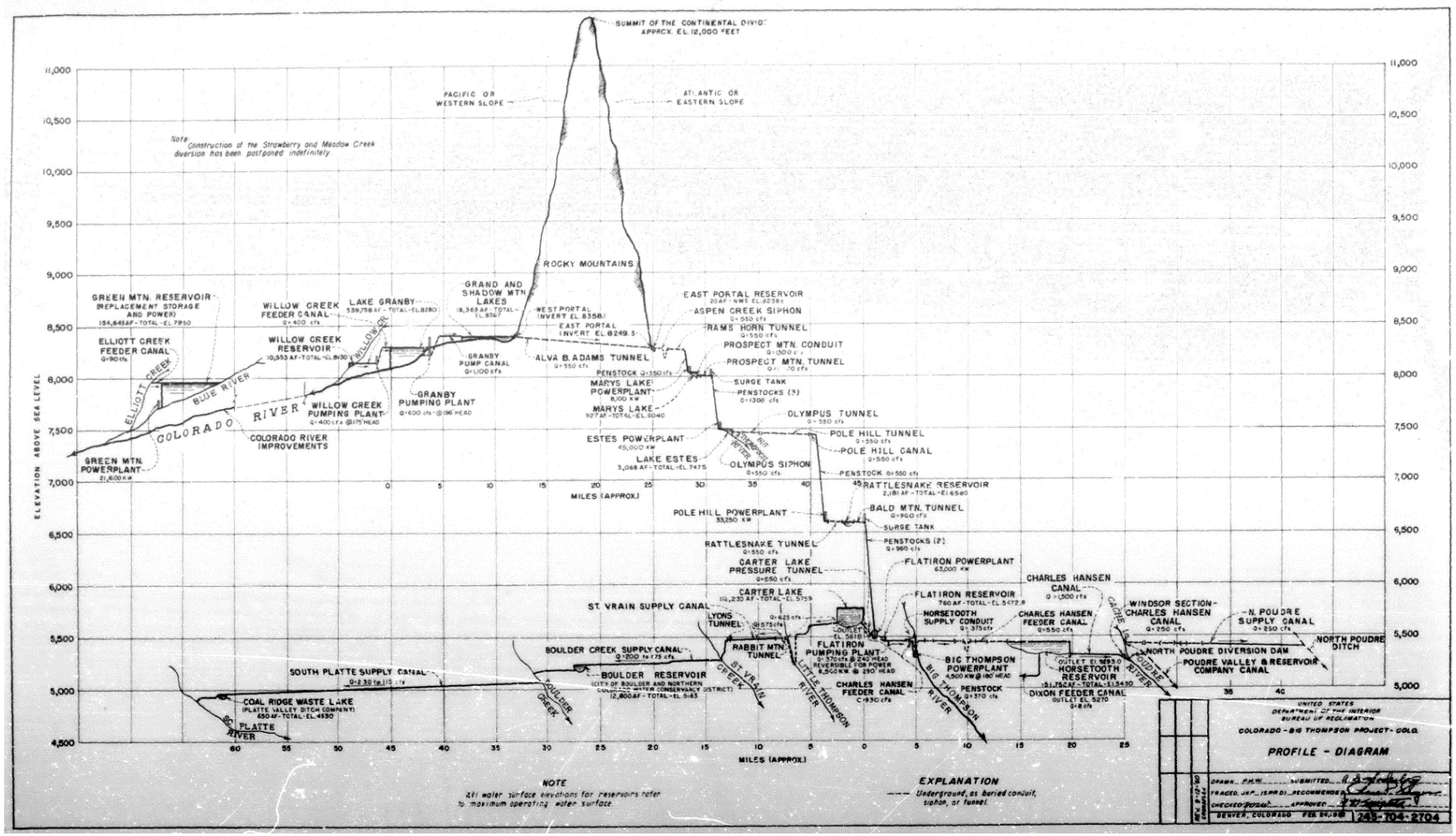


Figure C-2.—Profile view of C-BT Project

Attachment A

Seventy-First Annual Report of the Western Division System Power Operations

Preface

This is the seventy-first annual report for the Pick-Sloan Missouri Basin Program, Western Division System (WD System) power operations. For the purpose of this report, the WD System also includes the Yellowtail Powerplant Units 1 and 2 and the generating facilities of the Fryingpan Arkansas Project (Fry-Ark). The function of the report is to inform interested parties of the generation and pump energy requirements of the hydropower system. The report consists of two parts: One part describes the actual generation and pumping operations for water year 2022 (WY 2022) and the second part presents the plan of generation and pumping operations for WY 2023.

Water Year 2022—Generation And Pump Energy Summary

Power generation for the C-BT was less than average compared to the thirty-year average. The Fry-Ark was less the thirty-year average for WY 2022. The North Platte project was less than the thirty-year average and the Big Horn project was less than average. Overall, WD System power generation during WY 2022 was less than average. Only Pole Hill powerplant on the power arm powerplants in the C-BT produced greater than average power, while Green Mountain and the Big Thompson powerplants were about half of their average. Much like the C-BT, the Fry-Ark produced less than average power, while most of the plants in Wyoming and Montana were less than average in production. The exception was Spirit Mountain Powerplant, which was mildly greater than its thirty-year average, for the water year.

In the case of the C-BT, observed demands for water were slightly less than average for WY 2022. The declared quota was 70 percent by April of 2022 and was increased to 80 percent in May of 2022, which was greater than average for the water year. However, timely monsoonal moisture during the growing season reduced demands to slightly less than average for the WY. Adams Tunnel diversions were nearly average. Snowpack on the east slope of the C-BT was about average but the East Portal Spillway repair outage which began on September 18, 2022, caused project generation to essentially cease the last two weeks of the WY. Those factors combined to produce a mildly less than average total generation for the C-BT.

From the generation data in Table A-1, the C-BT powerplants produced an accumulated gross generation total of 544.3 gigawatt-hours (GWh) of electricity representing 91 percent of its thirty-year average and 25.7 percent of gross WD System generation. The gross generation produced by the entire WD System was 1,793.9 GWh or 82.8 percent of the thirty-year average. Gross generation includes one-half of the Yellowtail Powerplant generation. Net generation is the gross generation less the energy used for pumping at Farr Plant, Willow Creek Pump, Flatiron Unit 3, and the two Mount Elbert units. Using Tables, A-1, and A-2, WD System net generation for WY 2022 was 1,419.4 GWh. The average for a water year is 1,921.0 GWh. The total WD System load includes firm energy deliveries, C-BT use-energy, support-energy, plant station service, and an estimate of transmission-system losses.

Table A-1 in Appendix A includes the gross generation for every powerplant in the WD System. Table A-2 reports the total energy required to operate the pumps in the WD System. Some of the numbers

included in this section were provided by WAPA. Table A-3 shows monthly generation and pumping energy, by plant, and monthly WD System loads. The WD System boundaries are illustrated in Appendix B-1. Figure B-2 graphically summarizes Table A-3 including the C-BT contribution to the WD System.

In WY 2022, the Willow Creek Pumping Station pumped to Granby Reservoir more than the total volume pumped during WY 2021. The Willow Creek Pumping Station used 11.8 GWh of power during its WY 2022 operation. Meanwhile, the Farr Pumping Plant and the Flatiron Powerplant Unit 3 required 26.8 and 31.2 GWh, respectively. The Farr Pumping Plant required slightly less than average energy, while Flatiron Powerplant Unit 3 operations required slightly more than the thirty-year average. All three pump's combined power requirement was 69.9 GWh, 111 percent of the thirty-year average, 4.0 percent of gross WD System generation. Pumping electrical demand is defined primarily by how much water is pumped and secondarily by how high the pump lifts that water.

According to the figures provided by WAPA, sales of electric power in the Western Division System totaled 2,181 GWh during WY 2022, with a revenue of $63,769,665 a slight decrease from the previous year. Energy deficits were covered by a combination of scheduled interchange energy, use of the Mount Elbert pumped storage plant, and power purchases. The power purchases totaled 816.0 GWh during WY 2022 for which WAPA paid a total of $52,505,638 a notable increase from the previous water year. This increase is primarily due to extended maintenance on several LAP units during WY 2022, as well as increased pricing seen during WY 2022.

Water Year 2023—Generation and Pump Energy Forecast

Under the most-probable runoff condition plan (2023 AOP), the gross generation for the C-BT powerplants is projected to be 658.1 GWh during WY 2023, while pump energy requirements from the C-BT Power System are expected to reach 74.2 GWh. The result creates a projected gross generation less pumping of 583.9 GWh for the C-BT in WY 2023 (Table A-4). The total generation for the entire WD System is expected to be 2,038.5 GWh, with a total load of 2,162.5 GWh, leaving a power deficit of 124.0 GWh for WY 2023. The WD System generation includes one-half of the total Yellowtail Powerplant generation and the Mount Elbert Powerplant generation resulting from Fry-Ark Project water deliveries. The total load includes energy deliveries under firm contracts, seasonal support energy deliveries, energy dedicated for C-BT use, estimates of station service energy, and estimates of transmission WD System losses.

Table A-4 summarizes the projected monthly WD System generation, pump energy, and loads for the most probable forecasted runoff conditions for WY 2023. Figure B-3 is a graphical summary of the WD System gross generation less pumping, including the C-BT contribution for the most probable inflow conditions. Table A-5 lists the scheduled maintenance for the various facilities in the C-BT as anticipated when the AOP simulation was completed. Tables A-6 and A-7 summarize the capacity data for the powerplants and pumping plants within the WD System, including the Yellowtail and Mount Elbert Units.

Attachment 1 – Appendix A

Tables

Table A-1.—Western Division System Generation for Water Year 2022

Western Division System – Generation for WY 2022

Powerplant	Accum. Gross Generation WY2022 (GWH)	Accum. Gross Generation Avg[1] (GWH)	Accum. Gross Generation Percent of Avg
Green Mtn.	23.5	51.9	45
Marys Lake	29.0	37.2	78
Estes	94.8	100.3	94
Pole Hill	174.3	172.3	101
Flatiron 1&2	216.8	226.9	96
Big Thompson	5.9	10.9	55
Seminoe	48.5	132.5	37
Kortes	84.3	140.4	60
Freemont Canyon	206.1	232.3	89
Alcova	90.6	115.7	78
Glendo	63.2	80.1	80
Guernsey	14.0	18.5	76
Boysen	62.1	66.9	93
Heart Mtn.[1]	15.3	13.9	101
Buffalo Bill[2]	62.1	66.2	94
Shoshone[2]	18.1	20.4	89
Spirit Mtn.[2]	15.5	15.0	103
Mt. Elbert[3]	247.0	169	147
Yellowtail[4]	645.6	959	67
Total	**1,793.9**	**2,166.3**	**83**

[1] 1976-2005 average unless noted otherwise

[2] Average gross generation for 1995-2012

[3] Gross pump/storage generation reported. Average is for 1990-1999

[4] Half of average gross generation of 1971-1990. In general, half of Yellowtail energy is dedicated the Western Division System through marketing arrangement; the other half is marketed in Eastern Division System.

Table A-2.—Pump Energy Used During Water Year 2022

Pumping Plant	WY2022 (GWH)	Avg[1] (GWH)	Percent of Avg
Willow Creek	11.9	5.8	205
Farr	26.8	30.7	87
Flatiron Unit #3	31.2	26.7	117
Mt. Elbert[2]	304.5	182.1	167
Total	**374.4**	**245.3**	**153**

[1] 1976-2005 average unless noted otherwise

[2] Average pump energy for 1990-1999

Table A-3.—Gross Generation Less Pumping for Water Year 2022

Pick-Sloan Missouri Basin Program Western Division Power System
Water Year 2022 Operations
Gross Generation Less Pumping In Gigawatt-Hours

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
Mt. Elbert[1]	0.0	0.1	0.1	3.5	6.7	7.1	0.7	0.8	1.3	1.4	6.9	2.4	31.0
Green Mtn.	2.7	2.2	1.2	1.9	1.2	1.5	2.0	0.0	0.0	1.6	4.8	4.4	23.5
Willow Cr. pump	0.0	0.0	0.0	0.0	0.0	0.0	3.1	5.4	2.2	0.6	0.2	0.3	11.8
Farr pump	2.6	0.5	3.7	4.9	4.7	2.3	0.1	0.0	0.0	2.3	4.0	1.7	26.8
Marys Lake	2.9	0.0	3.0	5.7	5.3	2.4	0.2	3.3	0.5	4.1	0.7	1.0	29.1
Estes	7.5	0.8	10.2	14.8	13.4	6.2	1.0	8.8	2.0	10.8	13.9	5.3	94.7
Pole Hill	11.4	0.1	14.8	22.9	21.1	9.4	0.2	20.5	20.7	22.5	22.8	7.9	174.3
Flatiron 1&2	14.2	1.4	19.2	26.9	26.7	12.1	1.8	25.7	24.6	27.4	27.4	9.6	217.0
Flatiron 3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3
Flatiron 3 pump	0.0	0.0	3.7	6.6	5.6	3.9	0.2	5.8	0.0	4.3	0.0	1.1	31.2
Big Thompson	0.4	0.0	0.0	0.0	0.0	0.0	0.0	1.0	3.0	1.0	0.2	0.4	6.0
Seminoe	0.1	0.1	1.7	3.5	3.2	3.5	5.9	11.5	11.4	3.9	3.7	0.0	48.5
Kortes	5.0	5.0	5.2	5.1	4.5	5.1	8.4	15.1	14.1	6.7	5.4	4.7	84.3
Fremont Canyon	0.4	7.5	7.8	7.2	6.1	7.0	18.6	9.7	35.3	46.1	41.5	18.9	206.1
Alcova	2.8	2.6	2.7	1.0	0.0	0.9	4.9	3.4	16.5	26.1	21.3	8.4	90.6
Glendo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.4	13.1	20.4	19.1	4.2	63.2
Guernsey	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	4.0	1.5	4.2	2.8	14.0
Pilot Butte[2]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Boysen	2.6	3.3	3.7	3.6	3.3	3.3	3.7	8.6	10.7	7.7	6.2	5.5	62.2
Shoshone	1.5	1.4	1.2	1.3	1.2	1.3	1.3	1.5	1.7	2.0	1.9	1.7	18.0
Buffalo Bill	2.1	0.0	0.4	0.6	0.4	0.2	4.2	12.0	13.0	12.9	9.7	6.7	62.2
Spirit Mtn.	1.2	0.0	0.0	0.0	0.0	0.0	0.1	2.2	2.9	2.7	3.3	3.1	15.5
Diamond Creek pump	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Heart Mtn.	1.2	0.0	0.0	0.0	0.0	0.0	0.1	1.7	2.0	3.1	3.5	3.7	15.3
Yellowtail[3]	34.4	39.2	44.0	47.1	46.0	45.2	41.6	50.3	95.2	84.5	60.5	57.6	645.6
Fry-Ark	0.0	0.1	0.1	3.5	6.7	7.1	0.7	0.8	1.3	1.4	6.9	2.4	31.0
C-BT	36.5	4.0	41.0	60.7	57.4	25.4	1.8	48.1	48.6	60.2	65.6	25.8	475.1
North Platte	8.3	15.2	17.4	16.8	13.8	16.5	37.8	47.6	94.4	104.7	95.2	39.0	506.7
Bighorn	25.5	22.9	26.1	27.8	26.7	26.1	29.0	51.9	79.1	71.4	56.3	50.9	493.5
TOTAL GEN	**70.3**	**42.2**	**84.6**	**108.8**	**104.6**	**75.1**	**69.3**	**148.4**	**223.4**	**237.7**	**224.0**	**118.1**	**1506.3**
TOTAL LOAD	**162.4**	**162.2**	**177**	**172.8**	**137**	**149.7**	**176.1**	**184.5**	**211.2**	**262.5**	**211.6**	**156.8**	**2163.8**
SURPLUS/DEFICIT	**-92.1**	**-20.0**	**-92.4**	**-64.1**	**-32.4**	**-74.6**	**-107**	**-36.2**	**12.2**	**-24.9**	**12.4**	**-38.7**	**-657.5**

[1] Flow through energy reported, not pump/storage energy as reported in Table A-1
[2] Marketed energy.
[3] Total Yellowtail reported in row but only half of total generation of Yellowtail used for Bighorn and Total Gen row of Western Division Power Generation Calculations. In general, half of Yellowtail energy is dedicated to the Western Division System through marketing arrangement. The other half is marketed in Eastern Division System.

Table A-4.—Most Probable Inflow Projected Gross Generation and Pumping for Water Year 2023

PICK-SLOAN MISSOURI BASIN PROGRAM WESTERN DIVISION POWER SYSTEM
WATER YEAR 2023 FORECASTED OPERATIONS
MOST PROBABLE WATER SUPPLY CONDITION
GROSS GENERATION AND PUMPING IN GIGAWATT-HOURS

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
Mt. Elbert[1]	0.3	0.0	2.7	3.3	4.9	4.5	3.0	2.9	2.3	1.4	5.3	2.4	33.7
Green Mtn.	5.0	2.0	2.0	2.0	1.8	1.9	1.7	2.8	4.4	5.6	6.4	8.5	28.3
Willow Cr. pump	0.0	0.1	0.1	0.1	0.1	0.1	0.8	4.2	3.4	0.6	0.3	0.2	7.5
Farr pump	0.0	0.0	2.1	4.7	4.2	4.1	1.8	0.4	0.0	1.7	3.8	4.3	29.6
Marys Lake	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	5.8	6.0	45.9
Estes	0.0	0.0	6.7	16.0	13.9	13.3	7.4	11.8	12.2	11.0	14.6	15.1	119.5
Pole Hill	0.0	0.0	10.8	25.8	22.5	21.5	11.3	19.3	24.9	24.9	24.5	24.7	201.7
Flatiron 1&2	0.0	0.0	12.0	32.2	27.4	24.4	12.9	23.6	31.1	30.5	29.9	30.7	252.9
Flatiron 3	1.0	0.6	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
Flatiron 3 pump	0.0	0.0	2.2	6.8	4.3	0.0	0.0	3.2	5.6	4.7	6.6	6.4	37.1
Big Thompson	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	3.6	3.0	1.6	1.2	8.8
Seminoe	0.0	4.9	5.0	5.0	4.5	5.0	13.9	25.4	25.6	26.9	19.9	5.0	164
Kortes	5.6	5.4	5.6	5.6	5.1	5.6	15.4	27.5	26.6	27.5	20.9	5.4	166.7
Fremont Canyon	0.0	5.1	5.8	5.8	5.2	11.2	11.7	22.1	34.6	43.1	42.0	34.9	218.9
Alcova	3.8	3.7	3.8	3.8	3.4	6.7	3.7	11.2	17.1	20.9	20.9	18.4	123
Glendo	0.0	0.0	0.0	0.0	0.0	0.0	1.2	11.8	13.0	24.3	19.4	11.2	88.1
Guernsey	0.0	0.0	0.0	0.0	0.0	0.0	0.7	3.8	3.7	3.8	3.8	3.4	19.1
Pilot Butte[2]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
Boysen	4.8	4.7	4.8	4.8	4.3	4.7	5.0	10.3	11.5	8.5	7.3	6.9	86.7
Shoshone	1.1	2.2	1.1	1.1	1.0	1.1	1.1	2.2	2.2	2.2	1.2	1.1	12.5
Buffalo Bill	4.1	0.0	1.7	1.7	1.5	1.9	10.9	13.4	13.0	13.4	13.1	12.8	97.3
Spirit Mtn.	2.3	0.0	0.0	0.0	0.0	0.0	0.0	2.8	3.0	3.3	3.3	3.1	17.3
Diamond Cr. pump	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
Heart Mtn.	3.5	0.0	0.0	0.0	0.0	0.0	0.0	4.5	4.3	4.5	4.1	1.6	13.6
Yellowtail[3]	30.2	28.1	28.9	28.6	25.6	30.3	30.5	50.4	57.2	39.4	36.4	33.1	418.4
Fry-Ark	0.3	0.0	2.7	3.3	4.9	4.5	3.0	2.9	2.3	1.4	5.3	2.4	33.1
C-BT	6.0	2.5	27.4	64.4	57.0	56.9	30.7	50.8	67.2	70.8	72.1	75.3	582.9
North Platte	9.4	19.0	20.2	20.2	18.2	28.5	46.5	101.8	120.6	146.4	126.8	78.4	779.8
Bighorn	46.1	34.9	36.5	36.2	32.4	38.1	47.5	83.6	91.1	71.2	65.4	58.7	641.6
TOTAL GEN.	61.9	56.4	86.7	124.1	112.5	128.0	127.7	239.1	281.1	289.7	269.6	214.9	2038.5
TOTAL LOAD	156.6	162.4	162.2	177.1	172.6	137.0	149.3	176.4	184.7	211.0	262.0	211.2	2162.5
SURPLUS/DEFICIT	-94.7	-106.0	-75.5	-53.0	-60.1	-9.0	-21.6	62.7	96.4	78.7	7.6	3.7	-124.0

[1] Project values are historic average flow through energy.
[2] Projected values are marketed energy
[3] Half of total Yellowtail generation reported in row. In general, half of Yellowtail energy is dedicated to the Western Division System through marketing arrangement. The other half is marketed in Eastern Division System.

Table A-5.—Estimated Maintenance Schedule for Water Year 2023—Colorado-Big Thompson and Fryingpan-Arkansas Projects

Colorado-Big Thompson And Fryingpan-Arkansas Projects
Estimated Maintenance Schedule For Water Year 2023[1]

Feature	Task Name	Start	Finish
Big T Unit 1	Annual Maintenance	No Annual Maintenance in 2023	
Big T XFMR KW1A	Annual Maintenance	No Annual Maintenance in 2023	
Adams Tunnel	2022 East Portal Spillway Repair	Thu 9/18/22	Mon 12/19/22
Adams Tunnel	2023 Annual Inspection	TBD	TBD
Marys Lake Powerplant	2022 Bottom End Turbine Overhaul	Mon 10/3/22	Sat 7/15/23
Estes Blackstart	2023 Capability Test	TBD	TBD
Estes Unit 1	2023 Annual Maintenance	Mon 3/20/23	Fri 5/12/23
Estes Unit 2	2023 Annual Maintenance	No Annual Maintenance in 2023	
Estes Unit 3	2023 Annual Maintenance	Mon 9/18/23	Fri 10/13/23
Bald Mtn Tunnel	Chimney (Ch.) Hollow Conduit Interconnect	Tue 9/19/22	Mon 11/28/22
Flatiron Unit 1	2023 Annual Maintenance	No Annual Maintenance in 2023	
Flatiron XMFR KW1A	2023 Annual Maintenance	No Annual Maintenance in 2023	
Flatiron Unit 2	2023 Annual Maintenance	Mon 3/6/23	Thu 4/14/23
Flatiron XMFR KW2A	2023 Annual Maintenance	Mon 3/13/23	Thu 3/31/23
Flatiron Unit 3	Annual Maintenance	No Annual Maintenance in 2023	
Flatiron Unit 3	Pressure Conduit Wye Install for Ch. Hollow	Mon 9/11/23	Mon 12/11/23
Green Mtn. Unit 1	Penstock Recoat & 2023 Annual Maintenance	Sat 3/18/23	Thu 8/10/23
Green Mtn. Unit 2	Penstock Recoat & 2023 Annual Maintenance	Tue 11/1/22	Fri 3/17/23
Pole Hill Unit G1	2022 Annual Maintenance	Mon 10/24/22	Thu 1/5/23
Pole Hill XFMR K1A	2022 Annual Maintenance	Mon 10/31/22	Thu 11/17/22
Pole Hill Unit G1	Turbine Runner Inspection	Tue 2/21/23	Fri 2/24/23
Mt Elbert Unit 1	WAPA Switchman Training	Wed 2/8/23	Wed 2/8/23
Mt Elbert Unit 1	2023 Annual Maintenance	Mon 2/13/23	Fri 3/31/23
Mt Elbert Unit 1	Shaft Seal Replacement	Mon 6/19/23	Fri 8/11/23
Mt Elbert Unit 2	2023 Annual Maintenance	Mon 4/3/23	Fri 5/19/23
Mt Elbert Unit 2	Shaft Seal Replacement	Tue 4/24/23	Fri 6/16/23
Mt Elbert Units 1 and 2	Switchgear Replacement	Tue 4/24/23	Fri 6/16/23
CHFC 930 Section	2023 Northern Water Inspection & Repairs	TBD	TBD

1 Maintenance schedule information accurate as of January 31, 2023

Table A-6.—Power Plant Data

Western Division - Pick-Sloan Missouri Basin Program
Powerplant Data

Facility	No. Units	Capacity Each Unit (kWh)	Total Installed Capacity (kWh)	Normal Operating Head (ft)	Output at Rated Head (cfs)
Green Mountain	2	13,000	26,000	192-262	1,660
Marys Lake	1	8,100	8,100	202-217	550
Estes	3	16,500	49,500	551-571	1,300
Pole Hill	1	33,250	33,250	830-838	550
Flatiron Units 1 & 2	2	43,000	86,000	1,096 - 1,118	1,070
Flatiron Unit 3[1]	1	8,500	8,500	158-287	440
Big Thompson	1	5,300	5,300	183- 184	350
Seminoe	3	15,000	45,000	97-227	2,850
Kortes	3	12,000	36,000	192-204	2,700
Fremont Canyon	2	33,000	66,000	247-363	2,200
Alcova	2	18,000	36,000	153-165	2,200
Glendo	2	19,000	38,000	73-156	2,800
Guernsey	2	2,400	4,800	89-91	820
Pilot Butte	2	800	1,600	-- --	---
Boysen	2	7,500	15,000	72-112	2,415
Shoshone	1	3,000	3,000	-- --	---
Buffalo Bill	3	6,000	18,000	-- --	---
Heart Mountain	1	5,000	5,000	265-275	355
Mt. Elbert	2	103,000	206,000	447-477	6,400
Yellowtail	4	72,000	288,000	327-440	8,500
TOTAL	**34**	**--------**	**979,050**	**----------**	**-------**

[1] Pumping plant which may be operated in reverse to generate energy

Table A-7.—Pumping Plant Data

Western Division - Pick-Sloan Missouri Basin Program
Pumping Plant Data

Facilities	Number	Capacity (cfs)	Normal Operating Head (ft)	Installed (HP)	Kwh to Pump 1 acre-foot at Maximum Head
Granby	3	600	92-186	18,000	227
Willow Creek	2	400	167-169	18,000	227
Flatiron Unit 3[1]	1	440	173-287	13,000	391
Mt. Elbert	2	5,690	447-477	340,000	620

[1] Pumping plant which may be operated in reverse to generate energy

Attachment 1 – Appendix B

Exhibits

B-1: Western Division Water Resource Map

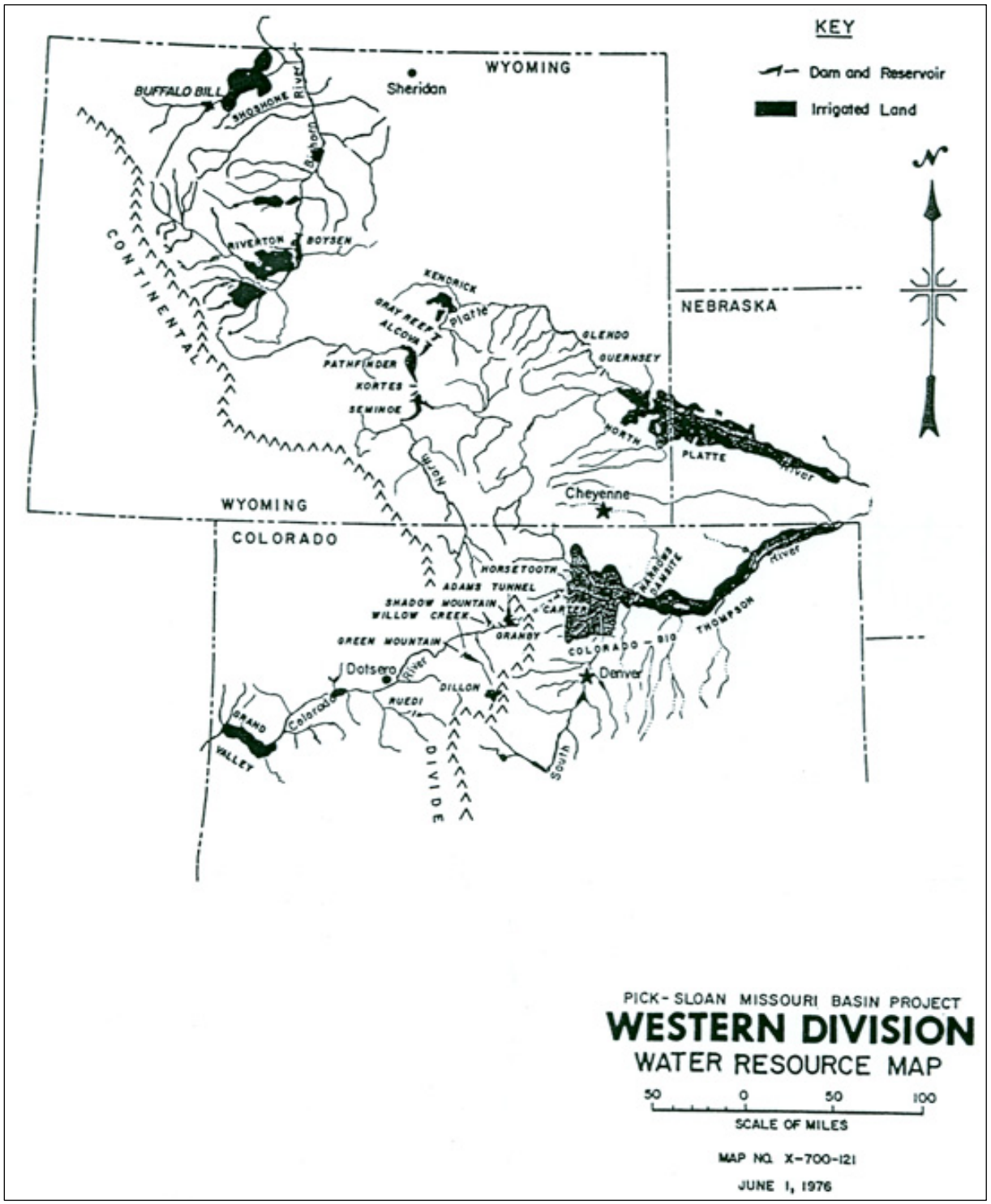


Figure B-1.—Water resource map of irrigated land and dam/reservoirs of the Western Division serving them.

B-2: LAP Gross Generation Less Pumping for Water Year 2022

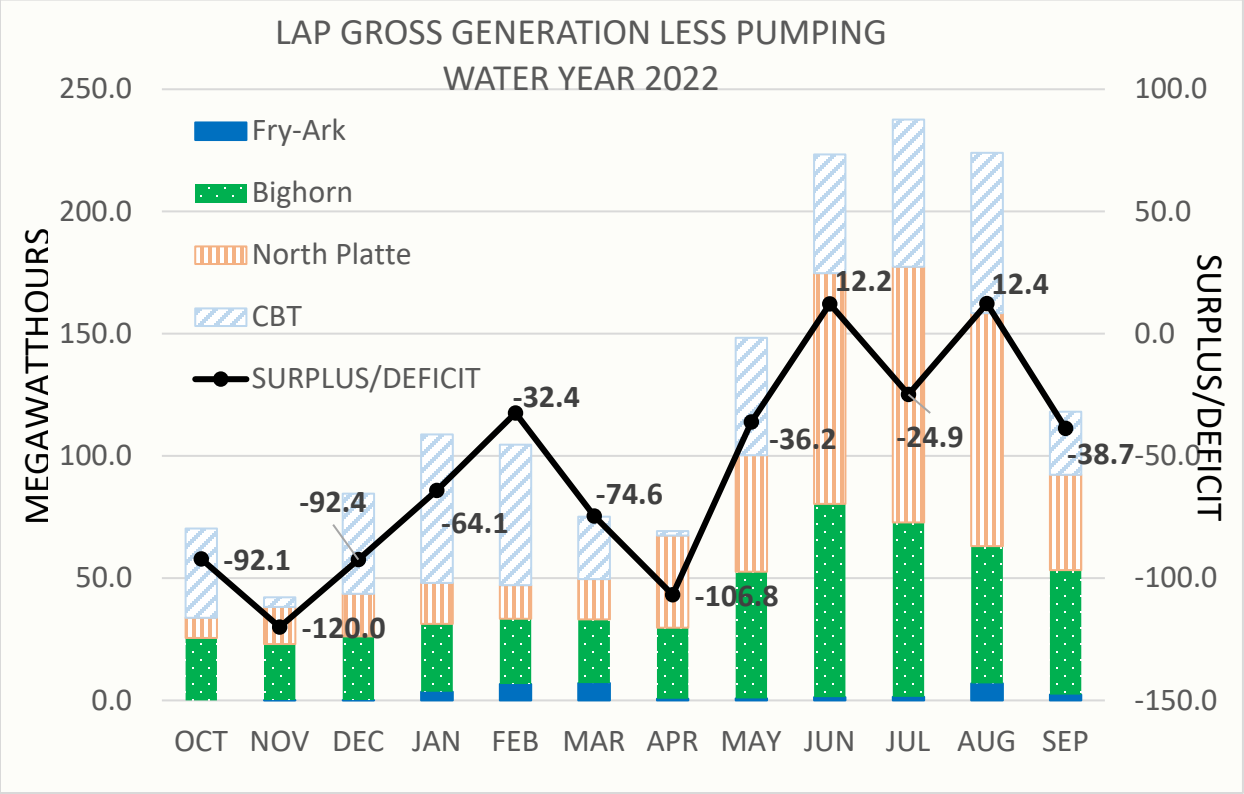


Figure B-2.—Monthly Loveland Area Power (LAP) Generation Less Pumping for WY 2022 by Reclamation projects in Western Division System. Monthly surplus and deficits are shown as overlay plot.

B-3: Most Probable Inflow Projected Lap Gross Generation Less Pumping for Water Year 2023

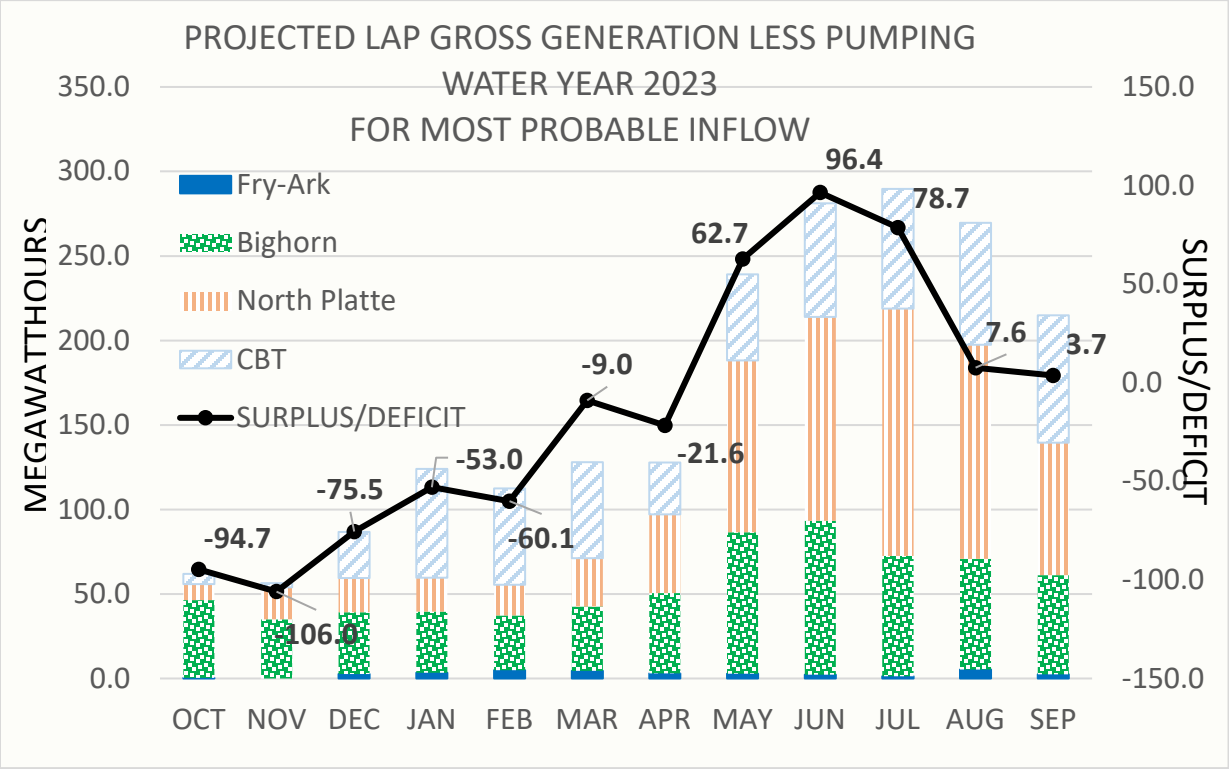


Figure B-3.—Monthly Loveland Area Power (LAP) Generation Less Pumping for WY 2023 from October 2022 AOP Most Probable Scenario by Reclamation projects in Western Division System. Monthly surplus and deficits are shown as overlay plot.