DESCRIPTION OF THE COLORADO-BIG THOMPSON PROJECT

The Colorado-Big Thompson Project (C-BT) is one of the largest and most complex natural resource developments undertaken by the Bureau of Reclamation. It consists of over 100 structures integrated into a trans-mountain water diversion system through which multiple benefits are provided.

The C-BT spreads over approximately 250 miles in the state of Colorado. It stores, regulates, and diverts water from the Colorado River west of the Rocky Mountains, providing supplemental water for irrigation of 720,000 acres of land east of the Rocky Mountains. It also provides water for municipal use, industrial use, hydroelectric power, and water-oriented recreation.

Major features of the C-BT includes; dams, dikes, reservoirs, powerplants, pumping plants, pipelines, tunnels, transmission lines, substations, and other associated structures (Table 1, Exhibits 1 and 2).

Historically, the C-BT has diverted approximately 230,000 acre-feet of water annually (310,000 acre-feet 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 (NCWCD) apportions the water used for irrigation to more than 120 ditches and 60 reservoirs. Twenty-nine communities receive municipal and industrial water from the C-BT. The Western Area Power Administration (WAPA) markets the electric power produced at the six powerplants.

The western slope collection system captures runoff from the high mountains and stores, regulates, and conveys the water to Adams Tunnel for diversion to the east slope under the Continental Divide.

To ensure irrigation and power generation under prior rights on the Colorado River, Green Mountain Reservoir was constructed on the Blue River. Spring runoff is stored in this reservoir and later released to meet the requirements of the senior water rights holders downstream along the Colorado River and to allow east slope diversion of water by the C-BT throughout the year.

Pursuant to authorities in Senate Document 80, (which authorized the C-BT), the 1984 Green Mountain Operating Policy and the agreements in the September 1996 Stipulation and Agreement of the Orchard Mesa Check Case settlement (Case No. 91CW247, Colorado Water Div. 5), the content of the Historic Users Pool (HUP) in Green Mountain Reservoir is evaluated during the summer to determine the availability of water surplus to historic beneficiaries needs. If it is determined that surplus water is available, it may be delivered based upon need, first to the federal Grand Valley Powerplant and then to other uses based on a priority system or on specific agreements.

Irrigation systems on the Colorado River, above the Blue River confluence, were improved to enable continued use of existing rights. Releases are made from Lake Granby to maintain the Colorado River as a live fishing stream.

The C-BT's principal storage facilities on the west slope are Lake Granby, Grand Lake, and Shadow Mountain Reservoir located on the Colorado River near Granby, and Willow Creek Reservoirs located on Willow Creek, a tributary to the Colorado River below Lake Granby. Willow Creek Pumping Plant lifts the water 175 feet. It then flows by gravity via the Willow Creek Feeder Canal down to Lake Granby.

Completed in 1953, Willow Creek Reservoir has a total storage capacity of 10,600 acre-feet. The uncontrolled spillway, located at the left abutment, has a maximum flow capacity of 3,200 ft^3/s. The Willow Creek Feeder Canal also begins at the left abutment and it has a capacity of 400 ft^3/s. The canal is used to transfer water to Granby Reservoir. Excess inflow into the reservoir is moved by way of the Willow Creek Feeder Canal and pumped to Lake Granby for storage.

Granby Reservoir, completed in 1950, on the Upper Colorado River collects and stores most of the water supply for the C-BT. The reservoir stores the flow of the Colorado River as well as water pumped from Willow Creek Reservoir. The reservoir has a total storage capacity of 539,800 acre-feet. The spillway is located on the left abutment. Flows over the spillway are controlled by two radial gates, with a total release capacity of 11,500 ft^3/s.

Granby Pumping Plant lifts the water 99 feet from Lake Granby to Granby Pump Canal. The canal conveys the water 1.8 miles to Shadow Mountain Lake, which also intercepts flows from the North Fork of the Colorado River. Shadow Mountain Lake connects with Grand Lake to make a single body of water from which diversions flow into Adams Tunnel to begin the journey to the eastern slope. The Granby Pumping Plant has three units with a combined installed capacity of 1,200 ft^3/s.

Emerging from Adams Tunnel into the East Portal Reservoir, the water flows across Aspen Creek Valley in a siphon and then under Rams Horn Mountain through a tunnel. At this point, it enters a steel penstock and falls 205 feet to Marys Lake Powerplant. This powerplant is located on the west shore of Marys Lake, which provides afterbay and forebay capacity for re-regulating the flow. The water is conveyed between Marys Lake and Estes Powerplant, on the shore of Lake Estes, through Prospect Mountain Conduit and Prospect Mountain Tunnel.

Lake Estes, which serves as an afterbay for the Estes Powerplant, is formed by Olympus Dam. The storage in Lake Estes and the forebay storage in Marys Lake enable the Estes Powerplant to meet daily variations in energy demand. Completed in 1949, Lake Estes on the Big Thompson River provides regulating capacity for power generation purposes. The reservoir has a total capacity of 3,100 acre-feet. It captures the discharge of Estes Powerplant and inflows coming from the Big Thompson River, which regulates river flow below the dam, and releases of water to the Foothills Power System via Olympus Tunnel (550 ft^3/s capacity). The Estes Powerplant has three hydroelectric units with a total capacity of 45 megawatts. The combined flow capacity for the three units is 1,300 ft^3/s. The spillway, located on the right abutment, has five radial gates with a total discharge capacity of 21,200 ft^3/s. The center gate has been automated, and is operated remotely from the Casper Control Center (CCC). During the winter months, C-BT water is diverted through Adams and Olympus Tunnels and routed through the Foothills Power System on its journey to terminal storage at Carter and Horsetooth Reservoirs.

This entire operation is controlled remotely from the CCC.

Water from Lake Estes and the Big Thompson River flows are conveyed by Olympus Siphon and Tunnel, and Pole Hill Tunnel and Canal, to a penstock through which the water drops 815 feet to Pole Hill Powerplant. The flow is then routed through Pole Hill Powerplant Afterbay, Rattlesnake Tunnel, Pinewood Lake, Bald Mountain Pressure Tunnel, and eventually dropped 1,055 feet through two penstocks to Flatiron Powerplant. This powerplant discharges into Flatiron Reservoir, which regulates the water for release to the foothills storage and distribution system. The afterbay storage in Flatiron Reservoir and the forebay storage in Pinewood Lake enable Flatiron Powerplant to meet daily power loads.

Southward, the Flatiron reversible pump/turbine lifts water from Flatiron Reservoir, a maximum of 297 feet, and delivers it through Carter Lake Reservoir Pressure Conduit and Tunnel to Carter Lake Reservoir. When the flow is reversed, the unit acts as a turbine-generator and produces electrical energy.

The Saint Vrain Supply Canal delivers water from Carter Lake Reservoir to the Little Thompson River, St. Vrain Creek, and Boulder Creek Supply Canal. The latter delivers water to Boulder Creek and Boulder Reservoir. The South Platte Supply Canal, diverting from Boulder Creek, delivers water to the South Platte River.

Northward, the Charles Hansen Feeder Canal transports water from Flatiron Reservoir to the Big Thompson River and Horsetooth Reservoir. The canal crosses the Big Thompson River in a siphon above the river and highway. Water from the Big Thompson River can be diverted into the canal by Dille Diversion Dam and utilized for power generation at Big Thompson Powerplant.

C-BT water deliveries and Big Thompson River water to be returned to the river are dropped through a chute from the feeder canal ahead of the siphon crossing, or are passed through the Big Thompson Powerplant to convert the available head to electrical energy.

Horsetooth Reservoir is located west of Fort Collins between two hogback ridges, where Horsetooth Dam closes the gap at one end. Soldier, Dixon, and Spring Canyon Dams and Satanka Dike close the remaining gaps. An outlet at Soldier Canyon Dam supplies water to the city of Fort Collins, three rural domestic water districts, Colorado State University, and the Dixon Feeder Canal for the irrigated area cut off from its original water supply by the reservoir. The principal outlet from Horsetooth Reservoir is through Horsetooth Dam into the Charles Hansen Supply Canal. This canal delivers water to a chute discharging into the Cache la Poudre River and to a siphon crossing the river to supply the Windsor Reservoir and Canal Company. A turnout from the Supply Canal supplies the city of Greeley municipal water works. Water is delivered to the river to replace, by exchange, water diverted upstream to the North Poudre Supply Canal, which conveys it to the North Poudre Irrigation Company System.

SUMMARY OF OPERATIONS FOR WATER YEAR 2010

The C-BT project experienced a below-average water year 2010 (WY 2010) as far as total precipitation was concerned, even though it seemed to be a relatively wet year with periods of high runoff and full reservoirs. The fact is, WY 2010 was a dry year with mostly below-average snowpack but with a few relatively wet periods and a strong runoff season. Those conditions combined with the high carryover reservoir volumes from the previous water year created the impression of a wet year.

The C-BT operations during WY 2010 were driven by weather and reservoir conditions as much as the Annual Operating Plan (AOP). Project operations followed the AOP plans but were routinely adjusted based on facilities availability, outage schedules, weather conditions and runoff patterns. The project operations were able to accommodate programs such as the Grand Lake Water Clarity Study for 2010 and the Coordinated Reservoir Operations. The AOPs flexibility also allowed the system to capture over 30,000 acre-feet of priority water from the east slope while maximizing power generation and skim operations. A description of the skim operation is included in page 36.

The fall season of WY 2010, mainly October and early November of 2009, was very active and wet over most of the Upper Colorado River Basin. A series of strong weather systems moved through the area in October bringing significant snow to the northern mountains of Colorado. Those storms impacted the Blue River, Upper Colorado, and Big Thompson River watersheds. Front Range communities experienced over 25 inches of wet snow in October 2009.

The snowstorms of the fall created expectations of a very wet winter. But as November advanced the snowstorms diminished in intensity and frequency and the region entered a much drier period. By the middle of November most of the Snow Telemetry (SNOTEL) stations in the C-BT area were reporting average or below-average snowpack. For the rest of the winter and spring seasons most of the SNOTEL sites covering the C-BT region reported mostly below-average snowpack totals.

The C-BT began diverting water from the west slope in October, keeping the Adams Tunnel running full for most of the month. By the end of October, the maintenance season began and multiple facilities were under clearance for approximately six weeks. Water from the west slope began to flow once again by the middle of December 2009. At that point, the system was limited to a maximum flow of 460 ft^3/sec by the outage of Flatiron's Unit #1 and the limitations imposed on Unit #2. Flatiron's Unit #2 was the only unit available to move water through and was limited to a maximum generation of 35 mega-watts (MW) which equals a flow of 460 ft^3/sec. Water diversions through Adams Tunnel continued uninterrupted at that rate until late April with most of the water being pumped to Carter Lake. By that time Carter Lake was practically full while Horsetooth was 15 feet away from its maximum capacity.

By the middle of April, the Flatiron Unit #3 entered its annual maintenance period and all the water diversions were re-routed towards Horsetooth Reservoir. As the end of April approached the target water surface elevations for Carter and Horsetooth Reservoirs had been met. Diversions through Adams Tunnel were reduced to retain some storage capacity for Big Thompson River native water.

As the late spring arrived the wet weather pattern returned to the area. Cool temperatures in the mountains kept the snowpack intact until late May and early June. But by late spring a series of rain storms moved into the region. The rain combined with warmer temperatures pushed the runoff peaks higher than anyone had expected. High runoff peaks were experienced at every watershed within the project. The situation triggered a series of emergency operational procedures which allowed closer monitoring of dams and other facilities. Even though some of the reservoir releases were higher than anything experienced in more than 10 years there were no damages or injuries of any kind reported.

The start-of-fill for Green Mountain Reservoir was declared to be April 20. Runoff at the Blue River began around the middle of May. By that time the Green Mountain Reservoir was holding 90,000 acre-feet in storage. At the C-BT collection system Granby Reservoir was holding 360,000 acre-feet with approximately 180,000 acre-feet of storage capacity available. Meanwhile, the Big Thompson River runoff was just beginning. With only minimal diversions through Adams Tunnel during May the C-BT foothills system was just beginning skim operations.

Inflow to Shadow Mountain and Grand Lake began early in May and continued to increase steadily. By the end of the month Shadow Mountain was releasing over 1,500 ft^3/sec. With Carter and Horsetooth Reservoirs almost at full capacity the Adams Tunnel diversions were temporarily suspended, forcing Shadow Mountain to bypass all its inflow. With Shadow Mountain bypassing all its inflow Granby Reservoir's elevation was rising rapidly. Releases continued to be increased in June as inflow continued to rise. By June 6 releases from Shadow Mountain had reached over 3,000 ft^3/sec, the highest in many years. The situation required 24-hour monitoring while putting NCWCD and Eastern Colorado Area Office (ECAO) personnel on alert for a few days. There were no damages reported during or after the operation. After June 8 the inflow rate began to recede.

Wet and cool weather along the Front Range and eastern plains kept demands for water low during May. The low demands for water allowed the C-BT to capture Big Thompson River native water for several weeks in a row. Initially all the native water captured was sent to Horsetooth Reservoir. By early June, once Flatiron's Unit #3 became available following its annual maintenance period, native water began to flow again into Carter Lake. The addition of the newly rebuilt Flatiron's Unit #1 provided even more flexibility to the C-BT operations. Most of the Big Thompson River water captured was being passed through the Pole Hill and Flatiron powerplants, providing substantial power generation. The availability of Flatiron's Unit #1 increased the C-BT capacity back up to its maximum of 550 ft^3/sec.

Runoff continued to increase as temperatures began to warm up. Meanwhile a rainy pattern had developed. By June 12 the native inflow to Lake Estes had risen up to over 1,300 ft^3/sec triggering large releases of water over the Olympus Dam spillway. After careful consideration and in consultation with the Bureau of Reclamation's Technical Center in Denver and the Great Plains Regional Office in Billings, Montana the decision was made to use all five radial gates at Olympus Dam to release 1,050 ft^3/sec. The large releases did not cause any damages downstream. Meanwhile the system continued capturing and storing native water via the

Olympus Tunnel while generating significant power with it. As the runoff in the Big Thompson River began to diminish, the amount of skim also dropped.

By the end of June the C-BT was no longer in priority to capture native Big Thompson River water. The C-BT finished the water year with 31,734 acre-feet of native water captured and stored at Carter and Horsetooth Reservoirs.

As the middle of June approached the attention turned to Green Mountain Reservoir, which reached its maximum capacity sooner than previously expected. Green Mountain's inflow is directly impacted by the releases from Dillon Reservoir. Last summer the inflow to Green Mountain was occasionally as high as 3,600 ft^3/sec. As the inflow to the reservoir continued to rise the releases were adjusted accordingly. With both units generating at full capacity and additional releases added via the spillway the maximum flow at the Blue River gage below the dam reached 2,400 ft^3/sec by the middle of June. By late June the inflow to Green Mountain Reservoir had dropped significantly and the releases were gradually reduced to 1,300 ft^3/sec.

As the end of June neared another change in direction for C-BT operations was taking place. By the end of June, Granby Reservoir was beginning to approach its maximum capacity. In order to take advantage of all the C-BT water available the diversion through the Adams Tunnel was initiated once more. Doing that, instead of simply skimming water from the Big Thompson River for power generation allowed the C-BT to produce twice the power generation normally observed that time of the year. Every available acre-feet of storage at Carter and Horsetooth Reservoirs were utilized to store project water. Pumping to Carter Lake was resumed twice in July in order to accommodate all the C-BT water.

Inflow to Granby began to recede in July. By late July, runoff was almost over as dry weather had returned to the region. Summer temperatures were pushing demands for water higher every day. By early August demands were at their peak in some locations. It was at that time that the water clarity study for Grand Lake began. The study started with a flow of 225 ft^3/sec through the Adams Tunnel. That flow was later increased to 250 ft^3/sec. The study took place between August and September. The flows kept during the study continued to lower the water surface level at Granby Reservoir. Once the Water Clarity Study was concluded in early September the diversions through Adams Tunnel were increased again to 550 ft^3/sec. That flow continued until the end of September lowering Granby Reservoir to an elevation of 8273.30 feet, with a storage content of 491,975 acre-feet.

By the end of WY 2010 the Horsetooth Reservoir storage content had dropped from 153,000 acre-feet in June to 100,700 acre-feet. Carter Reservoir meanwhile had dropped from approximately 112,000 acre-feet down to 54,830 acre-feet by September 30.

The initial quota set by the NCWCD for C-BT water in November was 60 percent or 186,000 acre-feet. However, NCWCD increased that initial quota in April up to 80 percent or 248,000 acre-feet. The project ended the water year delivering a total of 250,623 acre-feet from which 171,618 acre-feet was C-BT water, 52,247 acre-feet of C-BT accounted to carry-over from the previous water year, 22,457 acre-feet of Windy Gap water, and 4,301 acre-feet for replacements. Potential carryover volume for Water Year 2011 (WY 2011) is 55,171 acre-feet.

The total C-BT power generation for the WY 2010 was above average with 624.2 giga-watt hours (GWh) produced, which is 104 percent of the 30-year average. This total includes power generated at Green Mountain Reservoir, Marys Lake, Lake Estes, Pole Hill, Flatiron, and the Big Thompson powerplants.

A total of 23,090 acre-feet were skimmed via the Olympus Tunnel for power generation purposes while 24,117 acre-feet were skimmed via the Dille Tunnel. Water skimmed via the Olympus Tunnel allows power generation at Pole Hill Powerplant, as well as Flatiron Powerplant and the Big Thompson Powerplant. Water skimmed via the Dille Tunnel can only be used to augment power at the Big Thompson Powerplant.

WATER YEAR 2010 OPERATIONS

Green Mountain Reservoir

The snowpack for the Green Mountain Reservoir watershed began the water year near its average but dropped below its average by November 2009. The cool spring temperatures kept the snowpack intact during April and May. By late May the meltdown began and the runoff climbed at a steady pace from that point on. By the middle of June most of the snowpack had vanished, but the monsoonal season kept inflows high for a few more weeks.

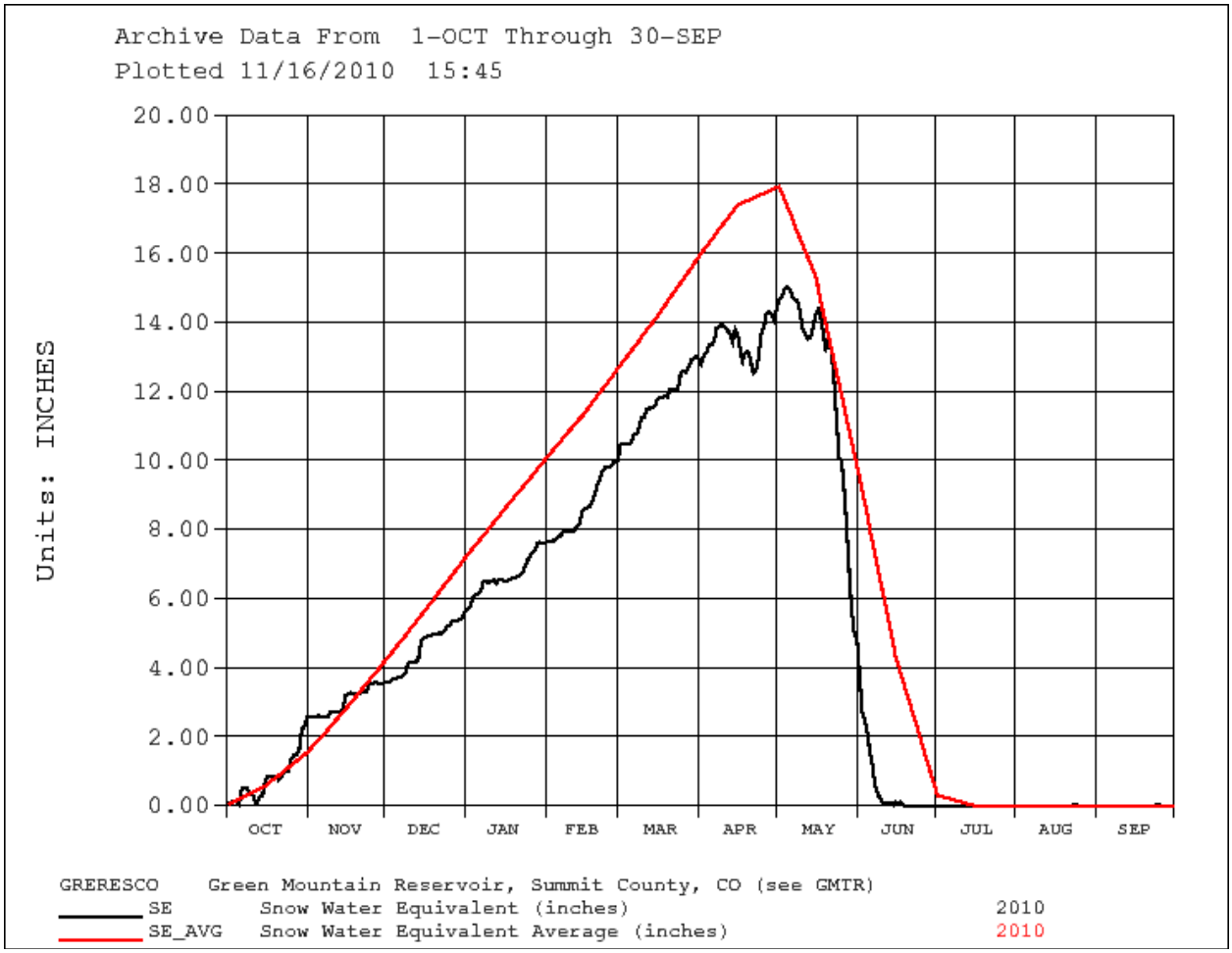

Figure #1: **Snow-water equivalent versus snow-water equivalent 30-year average for the Green Mountain Reservoir drainage area.**

Start of fill for 2010 was declared as April 20, with the reservoir holding 81,354 acre-feet in storage, well above its historic 65,000 acre-feet start of fill target. Pursuant to the State Engineers Office's interim policy, "Administration of Green Mountain Reservoir for 2010" of April 26, 2010, Green Mountain Reservoir achieved a "paper fill" on June 2, 2010. On that date, Denver Water and Colorado Springs Utilities (Cities) owed Green Mountain Reservoir 21,844 acre-feet of water for their out-of-priority diversions.

A provision of the interim policy allowed Green Mountain Reservoir to continue storing its inflow under a 1955 Water Right after "paper filling" to reduce the amount of water owed by the Cities. Under this provision, Green Mountain Reservoir was able to store sufficient water by June 7 to entirely eliminate the amount owed by the Cities.

By taking advantage of its junior and senior refill rights, Green Mountain Reservoir was able to continue storing some of its inflow after June 7, attaining a maximum physical content for the year of 152,687 acre-feet on July 20. With the reservoir achieving a "paper fill" this year, the 52,000 acre-feet Colorado-Big Thompson Project replacement pool, the 5,000 acre-feet Silt Project reservation, the 66,000 acre-feet HUP allocation, and the 20,000 acre-feet set aside for contracts were all fully available this year.

The maximum drawdown rate limitations initially put in place in 2003 due to landslide concerns were continued in 2010. These drawdown rate limitations were to be initiated when the reservoir's water surface elevation dropped below 7880.0 feet. With the reservoir achieving both a "paper fill" and a physical fill in 2010, the water surface elevation remained above 7905.0 feet during the irrigation season, and therefore, the drawdown rate limitations were never triggered.

While the interim policy requires that upstream depletions by Green Mountain beneficiaries junior to Green Mountain Reservoir be charged against the "paper fill" of Green Mountain Reservoir, those depletions were not charged against this year's HUP allocation. Therefore, the entire 66,000 acre-feet HUP allocation remained available when the reservoir achieved its fill. With the relatively wet spring and early summer and the lack of a Shoshone Powerplant call due to maintenance issues, releases to augment the water rights of HUP beneficiaries downstream of Green Mountain Reservoir didn't commence until September 3, with a total of only 1,409 acre-feet being released for that purpose during the year.

HUP surplus releases began on August 17 at an initial rate of 81 ft^3/sec and were quickly ramped up to a rate of 300 ft^3/sec where it remained until September 7. The HUP surplus release was then ramped up to 495 ft^3/sec by September 11. The release remained at that rate through October 24, and then ramped down terminating for the year on October 25. HUP surplus releases totaled 57,813 acre-feet in 2010, with 22,809 acre-feet being released under the agreement for the Grand Valley Powerplant and 35,004 acre-feet being attributable to the Municipal/Recreation Contract. Together, the release for HUP beneficiaries and the HUP surplus release totaled 59,222 acre-feet in 2010. This resulted in an HUP balance of 6,778 acre-feet on October 31.

Operations at Blue River, Dillon, and Green Mountain Reservoirs during WY 2010 are summarized in Table 2, Appendix B. Gross generation at the Green Mountain Powerplant totaled 50,000,000 kilowatt-hours during WY 2010. That total was 98 percent of the 30-year average.

Willow Creek Reservoir

The Willow Creek's watershed received below-average snow during the winter and early spring

months of WY 2010. The snow-water-equivalent was below the average during that time. April and May brought a few storms which enhanced the snowpack just before the runoff season.

But in general it was a relatively dry year for the Willow Creek watershed. The below-average snow-water content resulted in an April-July most-probable runoff forecast of 27,000 acre-feet or 56 percent of average. But by May 2010, the snowpack had risen above the average curve and stayed above-average until early June. The improved snowpack along with spring shower pushed the inflow for the April-July period up to 52,200 acre-feet. Figure #2 compares the 30-year average snow-water equivalent for the drainage area around Willow Creek Reservoir and the measured snow-water equivalent during WY 2010.

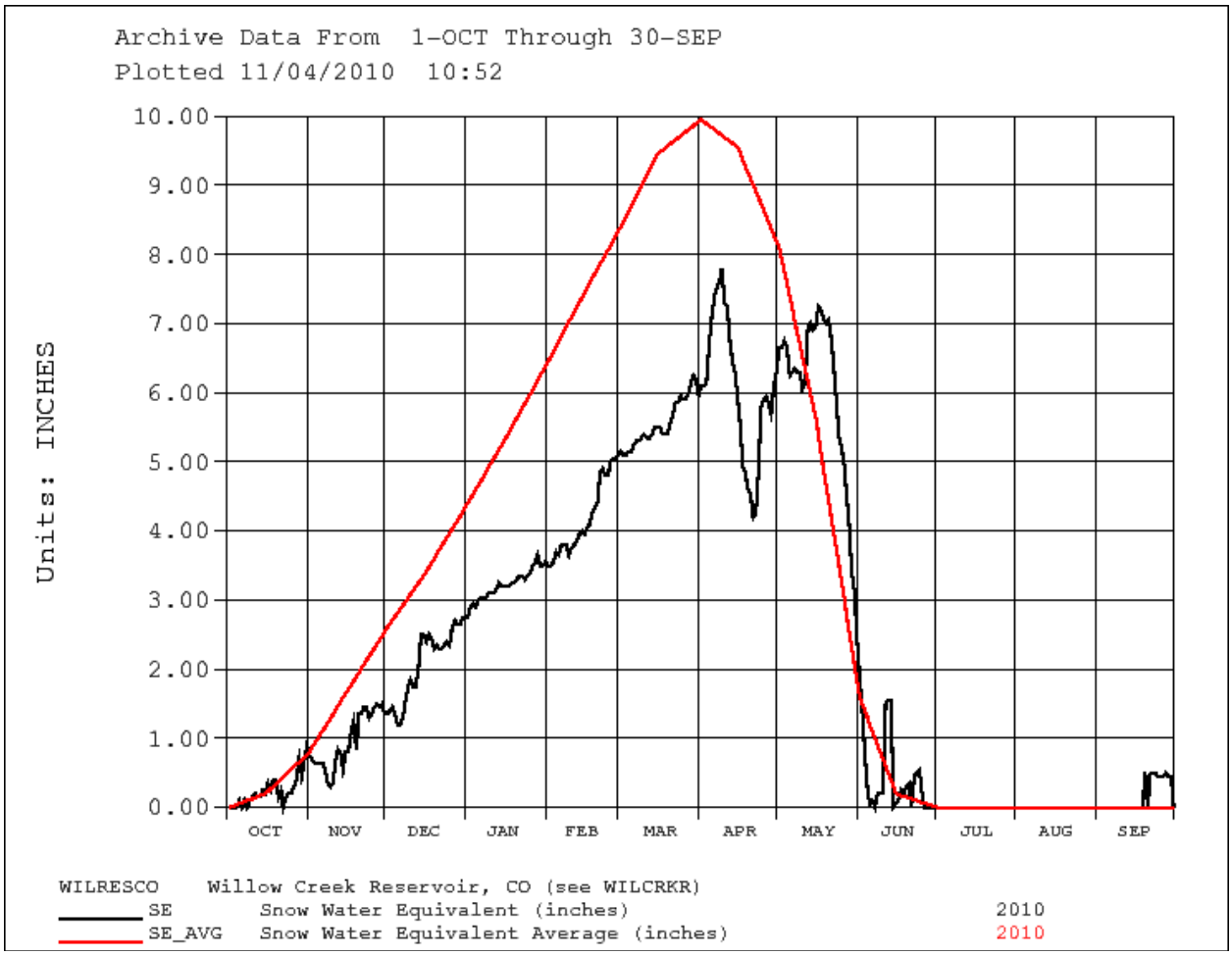

Figure #2: **Snow-water equivalent versus snow-water equivalent 30-year average for the Willow Creek Reservoir drainage area.**

The sometimes high inflow in May and June forced releases through the outlet works in excess of the regular discharges. Between May 22 and July 23, 2010, a total of 6,791 acre-feet of excess capacity inflow were released through the outlet works above the normal 1,400 acre-feet. The added releases combined with the water pumped to Lake Granby kept the reservoir elevation below the spillway level the entire summer. No incidents were reported due to the increased

releases. Total pumping volume to Granby Reservoir for the water year was 44,830 acre-feet. The total inflow for the water year was 60,500 acre-feet, 101 percent of average.

The highest reservoir release recorded for the water year was 339 ft^3/s on May 23. The highest average daily inflow for the water year was 861 ft^3/s, also on May 23.

Granby Reservoir

Granby Reservoir's carryover content going into WY 2010 was 408,300 acre-feet, or 108 percent of the 30-year average for October 1. The reservoir level, which began to drop during the 2009 summer, continued to drop throughout the fall and winter months. Diversions through the Adams Tunnel continued uninterrupted once the fall maintenance season for C-BT facilities ended.

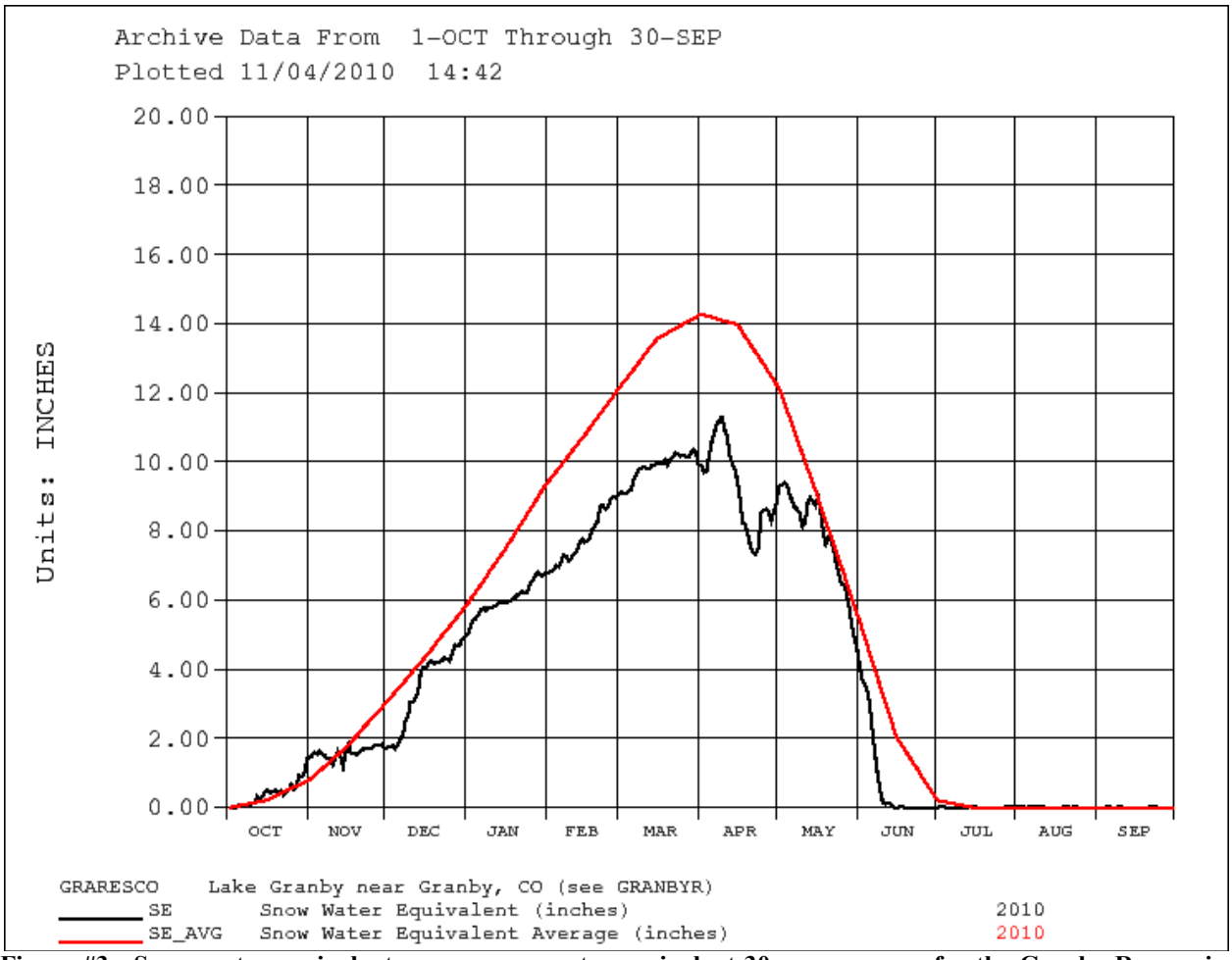

Figure #3: **Snow-water equivalent versus snow-water equivalent 30-year average for the Granby Reservoir drainage area.**

Lake Granby's water year began with above-average precipitation in the late fall. By late November a drier weather pattern had settle in over the region. Similar to other sections of the C-BT the snowpack for the watershed remained below average for most of the water year. The

most-probable runoff forecast for April-July predicted 129,000 acre-feet of inflow for Granby Reservoir or 66 percent of average. Given the low runoff expectation based on the forecast from NCWCD, Reclamation and the Natural Resources Conservation Service, it was decided early in the spring that Granby could not participate in the Coordinated Reservoir Operation for WY 2010. But by late April, a series of spring storms added to the below-average snowpack just enough to bring it back up to average. By the middle of May, the snowpack was matching the average for the day. A series of rain storms impacted the region in late May and early June adding to the high runoff. Inflow computations determined that the total inflow for the period had been 212,169 acre-feet or 108 percent. The Figure #3 shown above compares average and actual snowpack conditions for the drainage area around Granby Reservoir during WY 2010.

The high carryover volume combined with the high runoff for the season pushed the reservoir water surface to its highest level in over 10 years. Diversions through Adams Tunnel from late June through August combined with a deviation from the Standard Operating Procedures (SOP) for reservoir operations kept the Granby Reservoir from spilling. The Great Plains Regional Office gave permision to Reclamation and NCWCD to allow the pool level rise slightly beyond its maximum allowed elevation of 8279.50 feet without increasing releases. That deviation from the SOP directions combined with well timed pumping operations at Farr Plant and from the Willow Creek Pumping Station allowed Reclamation and NCWCD to maximize the available storage capacity. The operation worked perfectly. Not a single drop of water was spilled.

Granby Reservoir reached its maximum capacity for WY 2010 on July 4, a storage content of 537,010 acre-feet. The reservoir elevation that day was 8279.62 feet. From that day on the reservoir level began to fall, slowly. The reservoir finished the water year with 492,044 acre-feet in storage, which represents 112 percent of the 30-year average. That volume was also 18,000 acre-feet higher than the volume recorded on September 30, 2009. Total precipitation during WY 2010 for the Granby Reservoir watershed was 12.95 inches or 75 percent of average. The 30-year average precipitation for the watershed is 17.35 inches. The highest daily average natural inflow to Lake Granby was 4,150 ft^3/s recorded on June 8.

Grand Lake/Shadow Mountain Reservoir

Operations at Grand Lake and Shadow Mountain were relatively normal until the runoff season triggered tremendous flows at all their tributaries. With Carter and Horsetooth Reservoirs near full capacity the Adams Tunnel was only carrying minimum diversions during those days. The releases from Shadow Mountain were as high as 4,600 ft^3/s on May 29. High releases continued for several weeks, but no damages were reported. The operations were closely monitored by Farr Pumping Plant and Reclamation personnel. By late June the releases were finally reduced back down to 50 ft^3/sec.

Later in the summer, between August and September, the regular operations of the C-BT were modified in order to conduct the Water Clarity Study for Grand Lake. WY 2010 was the third year in a row that the study was conducted. Unlike previous years, the plan for the WY 2010's test was to maintain a constant flow of 250 ft^3/sec through the Adams Tunnel while allowing partial pumping from the Farr Plant to Shadow Mountain Reservoir. The idea behind the test was to monitor the impact of such an operation in the water clarity at Grand Lake. The test lasted several weeks. Regular operations for the C-BT resumed in early September. Results of the study will be disclosed at a future date.

Adams Tunnel

The total volume diverted through the Adams Tunnel was 226,820 acre-feet during WY 2010. That was 16,000 acre-feet lower than the previous year but 100 percent of the 30-year average. Water diversions began in October 2009, before being interrupted to allow maintenance work to take place at multiple facilities in the system. The diversion resumed in early December 2009. From that point on, the Adams Tunnel continued diverting at its maximum capacity uninterrupted until May. Runoff in the Big Thompson River watershed began early in May 2010. At that time flows through the tunnel were reduced significantly at that point to accommodate the skim operation over the east slope and to capture east slope native flow to be stored at Carter and Horsetooth Reservoirs. Diversions from the west limited during late May and June. As the runoff subsided by late June the diversion were reinitiated. The Water Clarity Study at Grand Lake limited the diversions to 250 ft^3/sec or less between August and September. After the Water Clarity Test was concluded the flows returned to maximum capacity of 550 ft^3/sec until the end of September.

Lake Estes

The winter season of WY 2010 was relatively dry over the Big Thompson River watershed. As the spring season arrived a series of storms kept adding to the snowpack. By the middle of May the snowpack for the watershed was 100 percent of the 30-year average. The snow-water content in the middle of May was approximately 14 inches. The April-July runoff forecast called for a most-probable runoff of 58,000 acre-feet above Lake Estes or 83 percent of the 30-year average. But a wet weather pattern settled over the area adding up to the expected runoff. The snow pack remained near the average for the season until early June when runoff intensified, thanks in part to a series of spring rain storms that accelerated the snowmelt. Figure #3 shows a graph comparing the average snowpack and the measured snowpack for the WY 2010 within the Big Thompson River drainage area above Lake Estes and Olympus Dam.

By the middle of June the high runoff coming from snowmelt and rain showers had caused significant flooding in the town of Estes Park and had forced Reclamation to open all five radial gates at Olympus Dam to maintain safe releases and keep the reservoir water surface elevation at a safe level. Releases from the dam reached as much as 1,080 ft^3/sec. No damages or injuries were reported due to any reservoir operations. While the releases from the dam were being maximized the Olympus Tunnel was also running water at full capacity, protecting the Big Thompson Canyon from experiencing higher flows. Combined releases from Olympus Dam, via Olympus Tunnel and down the Big Thompson River, reached totals of 1,630 ft^3/s. Once the rainy weather ended in late June the runoff quickly receded. The April-July total inflow to Lake Estes was 80,944 acre-feet.

The high runoff during the spring allowed the C-BT to capture over 31,000 acre-feet of native Big Thompson River water which was eventually stored at Carter and Horsetooth Reservoirs. With many of the local storage reservoirs near full capacity and with the continuing wet

conditions over the area demands for water were at their lowest in May and June. Demands for C-BT water did not begin until July. The C-BT entered priority status to capture Big Thompson River water on May 9 and continued diverting until June 28 as the inflow to Lake Estes receded. The Adams Tunnel trans-mountain diversions were at a minimum between early May and late June to capture the Big Thompson River native water. The foothill's conveyance system however, was kept running at nearly full capacity during that time capturing native water and generating maximum power with Pole Hill and Flatiron powerplants. The Big Thompson Powerplant also generated significant power using skim water during May and June, followed by some skim combined with C-BT deliveries between July and September.

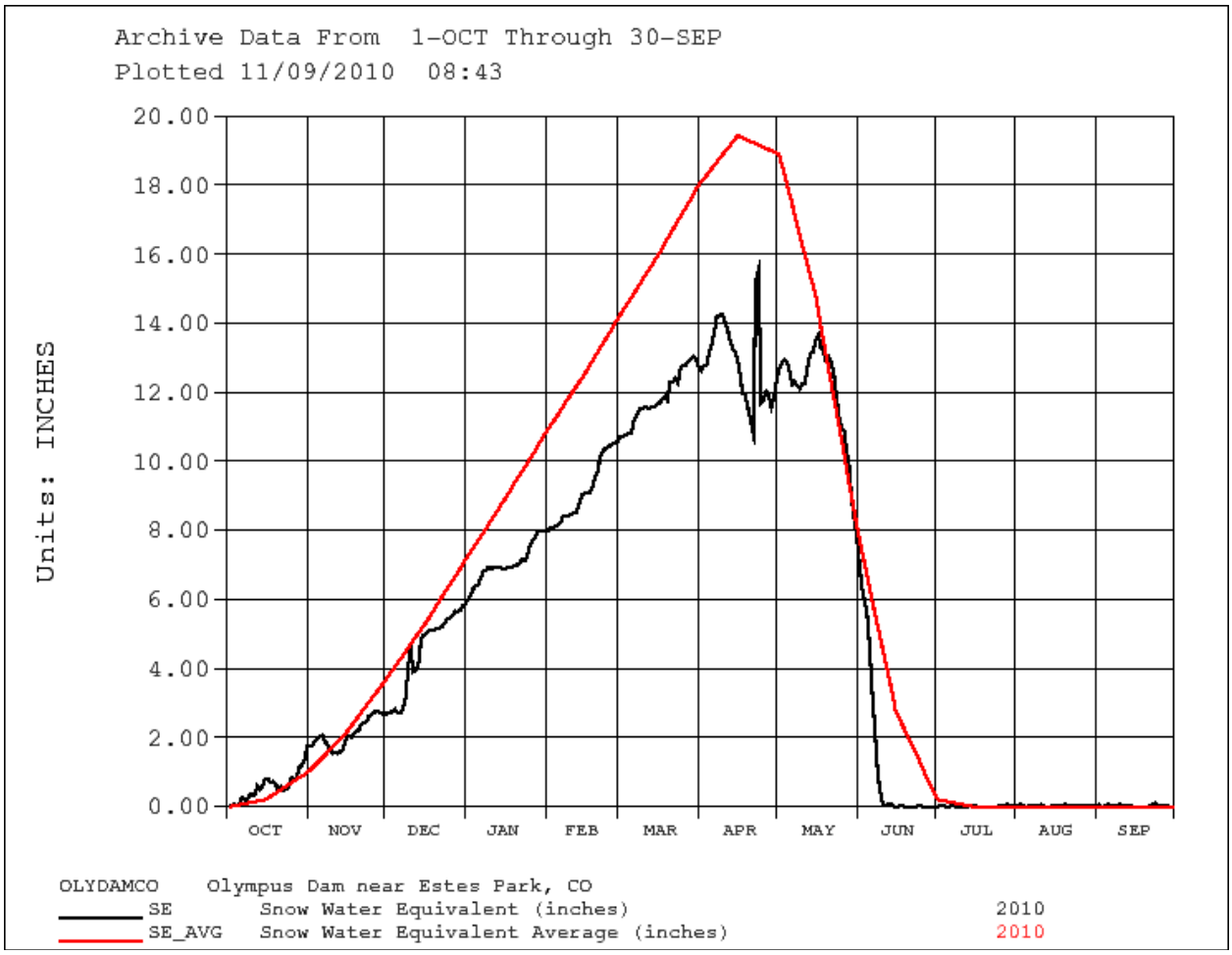

Figure #4: **Snow-water equivalent versus snow-water equivalent 30-year average for the Olympus Dam drainage area.**

The skim operation of WY 2010 was also very successful. Olympus Tunnel was able to skim a total of 23,090 acre-feet of water between late April and the middle of August. The Dille Tunnel was able to skim 24,117 acre-feet of water for power generation at the Big Thompson Powerplant. The highest daily average inflow for Lake Estes this past water year was 1,332 ft^3/sec computed on June 8. The total cumulative computed inflow for the water year at Lake Estes was 101,448 acre-feet, representing 108 percent of the 30-year average.

Foothill's Lower System

The C-BT system continued to run short of its full capacity in 2010 due to the limitations at the Flatiron Powerplant. The unavailability of Flatiron's Unit #1 for the first eight months of the

water year and the operational limitations of Unit #2 prevented the system from functioning at full capacity. For that reason the system had to operate for longer periods of time which created some complications for outage schedules at some facilities and reduced system flexibility. Despite these limitations all the demands for C-BT water were met on time and the power generation operations were very successful. The skim operation had a good season in 2010 while the C-BT system was also able to capture and store 31,734 acre-feet of Big Thompson River's native water.

The water year began with the fall season demands for C-BT water in October 2009. Those demands kept the Adams Tunnel running at nearly full capacity for almost the entire month of October. Horsetooth Reservoir delivered most of the C-BT water needed to satisfy the October demands, although a significant volume was also supplied from Carter Lake. The rest of the C-BT water was delivered via the Big Thompson Powerplant. Pumping to Carter Lake took place during the entire month of October 2009, although some water diverted from the west slope during that month was routed north through the Charles Hansen Feeder Canal to Horsetooth Reservoir.

November is typically the time of the year when maintenance work at powerplants and other facilities in the system takes place. It is also the time to inspect conveyance facilities, conveyance control points along the C-BT and other water delivery features. The WY 2010 maintenance season started in early November and was completed in the middle of December. Water stored at the small reservoirs within the conveyance system was used to satisfy the few demands for C-BT water during that period. Unlike previous years, with adequate volumes of water stored at Horsetooth Reservoir and Carter Lake there was no need to use the Dille Tunnel to move C-BT water in November.

By the middle of December the Adams Tunnel diversions were initiated. Pumping to Carter Lake began on December 15 and continued until early February. Pumping resumed in March and continued until the middle of April. By the middle of April the reservoir had reached its maximum capacity.

The limitations caused by Flatiron Unit #2's poor condition and the Unit #1 outage forced changes and delays in the maintenance schedules. One of the scheduled tasks affected was the annual maintenance for the Charles Hansen Feeder Canal 930 Section. The canal, which normally goes through its annual maintenance period in April, continued moving water during the entire water year. Its maintenance work was postponed until November 2010.

As soon as the runoff season started the C-BT began running its skim operation. Soon after the skim operation began the C-BT reached its priority status to capture and store Big Thompson River native water. With the lower end of the system running at full capacity thanks to the runoff, the Adams Tunnel diversions were shutdown. Pole Hill Powerplant and Flatiron's Unit #2 were running at almost full capacity while Marys and Estes Powerplants were practically

silent. On May 25, Flatiron's Unit #1 became operational adding more flexibility to the system. With the addition of Unit #1, for the first time in almost two years, the C-BT was capable of moving the full 550 ft^3/sec continuously. The increase in system capacity added substantial power generation capacity to the system.

As the wet weather arrived to the region in late May the inflow to Lake Estes increased dramatically. The high flows kept the Olympus Tunnel running full. Testing of Flatiron's Unit #1 began on May 25, in time for the high runoff. Flatiron's Unit #2 was base loaded from that point on. Generation with Unit #1 was ramped up and down as part of the testing process for the newly repaired turbine. On Monday, June 14, as Flatiron's Unit #1 was formally commissioned, Unit #2 was taken down for an extended outage.

Pumping to Carter Lake resumed in late May in an effort to use all the storage space available to collect east slope priority water. By the middle of June, Carter Lake was completely full once again. Horsetooth Reservoir also continued to rise throughout May and into June, thanks to the abundant east slope priority water. By June 13, Horsetooth Reservoir had reached elevation 5427.94 feet; it's highest since the spring of 2003. The Big Thompson Powerplant resumed power generation on June 6 as part of the skim operation. In summary, the Olympus Tunnel passed 21,707 acre-feet of east slope priority water while the Dille Tunnel captured 10,027 acre-feet. Of the grand total of 31,734 acre-feet of east slope priority water captured in May and June, 8,427 acre-feet were stored at Carter Reservoir while 23,307 acre-feet were stored at Horsetooth Reservoir.

By the end of June the runoff had subsided. Demands for C-BT water were slowly beginning to increase. Water diverted through the Adams Tunnel kept the powerplants in the system generating consistently from late June through the end of September. The Big Thompson Powerplant continued generating for most of that period also. The Dille Tunnel diversions, which began in April 1 ended on September 14. The six powerplants in the C-BT produced a total of 624.2 GWh of energy during WY 2010 or 104 percent of average. The 30-year average for the six powerplants is 599.4 GWh.

Carter Lake Reservoir

Completed in 1952 with three dams, Carter Lake Reservoir has a total storage capacity of 112,200 acre-feet. Inflow of C-BT water to Carter Lake Reservoir is from the Flatiron Pumping Plant with a capacity of up to 480 ft^3/s.

Carter Lake Reservoir began the WY 2010 with a storage content of 65,295 acre-feet. Pumping from Flatiron Reservoir took place in October 2009, just before the maintenance season for C-BT facilities began. Pumping was then suspended until December 16. Between December 16 and February 1, the pumping operation continued uninterrupted. Pumping was suspended once again temporarily in preparation for the possible maintenance outage of the Charles Hansen Feeder Canal 930 Section in April. The reason for the stoppage was to continue diversions from the west without any interruptions while the canal was under clearance. Pumping resumed on March 9. Carter Reservoir reached a storage content of 111,659 acre-feet on April 9, almost its full capacity. Pumping operations took place once again in May, June, and July, always pushing the reservoir to its maximum capacity. The plan was to use Carter Lake as the source for C-BT

water deliveries during the outage season in the fall, so it was important to have the reservoir as full as possible, as late in the water year as possible. With multiple outages around the C-BT system scheduled for October and November, Carter Lake was expected to supply water to satisfy all the demands.

After the last pumping session in July the Flatiron Unit #3 pump was turned off. The reservoir elevation began to rapidly drop as the temperatures climbed and the demands for C-BT water increased. But by September 30, 2010, the reservoir was still holding 55,307 acre-feet in storage.

Despite all the pumping sessions during the water year, the pumping operation with Flatiron Unit #3 required a total of 30.4 GWh of energy, 113 percent of the 30-year average. That was almost the exact total for the previous year.

Water deliveries via the Saint Vrain Supply Canal during WY 2010 totaled 80,900 acre-feet. The 30-year average total is 70,150 acre-feet for water delivery. The month of August had the highest volume of water deliveries out of Carter Lake with a total of 22,600 acre-feet. All the recreation and water delivery targets for Carter Lake Reservoir were met during WY 2010.

Horsetooth Reservoir

Completed in 1949, with four dams, Horsetooth Reservoir has a total constructed capacity of 156,700 acre-feet. Inflow to Horsetooth Reservoir mainly comes from C-BT water delivered via the Charles Hansen Feeder Canal.

Horsetooth Reservoir began the WY 2010 with 85,320 acre-feet of water in storage and a water surface elevation of 5389.34 feet. With the C-BT water season ending on October 31 the reservoir continued to drop in elevation during October 2009. It reached its lowest level for the year at 5377.61 feet on November 13. With pumping operations to Carter Lake taking precedence during the winter and early spring months deliveries to Horsetooth were initially low.

Despite the low start, Horsetooth Reservoir reached a water surface level of 5418.09 feet by April 30. As runoff season began the C-BT rapidly entered priority to capture native water from the Big Thompson River. At the time, with Carter Reservoir's content almost at full capacity, all the priority water was sent to Horsetooth Reservoir. It was not until May 29 that Carter Reservoir began to store priority water. For that reason Horsetooth's elevation continued to rise through May and June. By June 13, the reservoir reached its highest level for the water year at 5427.94 feet. It was the reservoir's highest level since water year 2003.

Similar to Carter Lake the reservoir level began to drop rapidly once the warm and dry weather arrived. Water demands began to increase by July. The water clarity study which took place at Grand Lake limited any diversions from the west slope and Horsetooth's level continued to fall. By the end of September, the reservoir's water surface elevation had dropped almost 28 feet, although still higher than recent years for that date. Horsetooth Reservoir met all the targets and obligations for the year and provided one of the best recreational seasons in the last 10 years.

FLOOD BENEFITS

Precipitation in Colorado was considered to be below-average during WY 2010. The snowpack over the Colorado River Basin during the winter season was below-average. Occasional snowstorms hit the mountain areas producing significant accumulations, but the snowpack at lower elevation remained below-average.

When the spring months arrived, temperatures remained cooler than normal preventing the runoff from having an early start. By the middle of May air temperatures began to warm up slowly and runoff started at most locations. Contrary to the winter months, the late spring season brought widespread rain to the region, especially in late May and early June. Runoff took a radical jump in June. Inflows at many reservoirs rose rapidly triggering a series of emergency operations which were not expected given the below-average total precipitation. Once the snow was gone by late June the high flows dropped rapidly.

Based on the data collected from the Colorado River Basin, and according to figures provided by the U.S. Army Corps of Engineers, the C-BT reservoirs over the west slope prevented a total of $68,000 in potential flood damages during WY 2010. According to the Corps of Engineers report a total of $18,000 was attributed to the Green Mountain Reservoir operations while $50,000 was attributed to the operations at Willow Creek Reservoir, Granby Reservoir, and Shadow Mountain/Grand Lake. Since construction, the C-BT has prevented potential flood damages totaling $480,800.

C-BT PLANNING AND CONTROL

The C-BT is operated to provide supplemental municipal and industrial water supply, as well as irrigation water supply and hydroelectric power production. Some of the benefits from the operation of the project are reduction of flood damages, recreation, and fish-and-wildlife preservation, among others. The C-BT is operated for the purposes for which it was authorized and constructed.

The integrated operation of the C-BT is planned and coordinated by the Bureau of Reclamation, Water Scheduling Group, and Eastern Colorado Area Office (ECAO) in Loveland, Colorado. Staff at this office 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 Division of Water Resources of the state of Colorado, the NCWCD, Upper Colorado and Great Plains Regions of Reclamation, the Western Area Power Administration (from the Department of Energy), other Bureau of Reclamation groups, and many other local, state, and Federal agencies.

Experience has proven that proper utilization 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 end product of this budgeting and management process is an Annual Operating Plan (AOP).

The C-BT is operated on a water year basis (October 1 through September 30). The AOP is prepared in January of each year, following the plan's review. AOPs are prepared for reasonable-maximum and reasonable-minimum conditions of water supply and requirements as well as for the most-probable runoff conditions. The C-BT is operated to optimize the most-probable water supply without jeopardizing operational position should either the reasonable-maximum or the reasonable-minimum water supply conditions occur. The plan is reviewed and revised as necessary during the year as new information or changing conditions occur. Flexibility is a keynote and a necessity of the plan. Computer programs and models are used by Reclamation to develop the AOP and water supply forecasts.

ANNUAL OPERATING PLAN FOR WATER YEAR 2011

Three operation studies or model runs for the C-BT were developed on October 2010 to establish the Annual Operating Plan (AOP) for WY 2011 based on different inflow conditions. Each of the studies conformed to the established operating criteria but used differing inflow conditions and water demands. With up-to-date data and information the AOP model run was revised in November 2010. The November 2010 versions of the AOP model runs are presented in this report.

The possibilities of all three inflow conditions were determined from a probability analysis of historic monthly inflows, and were labeled reasonable-minimum, reasonable-maximum, and most probable. Reservoir inflow during WY 2011 has a one-in-twenty chance of being less than the reasonable-minimum and a one-in-twenty chance of being greater than the reasonable-maximum. Statistically, inflows in 2011 will have a nine-in-ten chance of falling between the two extremes. The most probable inflow is based on long-term averages and approximates a 50 percent chance of occurrence. The three studies for WY 2011 are summarized numerically in Appendix B, Tables 5A, 5B, and 5C, and displayed graphically in Appendix C, Exhibits 3 through 7.

This report is intended only as a guide for upcoming spring and summer operations. Forecasts of the April-July reservoir inflows will be made at the beginning of each month from February through June. The results are compared to the forecasted inflows developed by the NCWCD and discussed with NCWCD officials during monthly meetings. The majority of snowmelt runoff occurs in the April-July period. Projected operating schedules will be adjusted, as required throughout the water year, as changes occur to the forecasted inflows, irrigation demands, maintenance schedules, and power loads. Any of the reservoir levels, canal and tunnel flows, pumping and power operations presented in this report are preliminary and subject to changes as conditions mandate.

OCTOBER-JANUARY PERIOD

The three studies for the October-January period of WY 2011 are similar because winter inflows are nearly the same under the three conditions of inflow. The most-probable inflow condition for the WY 2011 October-January C-BT operations is summarized in the following paragraphs. Operations for this period reflect scheduled maintenance and outages on several facilities in the C-BT.

Green Mountain Reservoir

Green Mountain Reservoir began the WY 2011 with 108,426 acre-feet in storage, almost 12,000 acre-feet below the 30-year average. Releases for bypass of inflow and C-BT replacement continued from WY 2010 into WY 2011. Total releases from Green Mountain Reservoir for

replacement, bypass of inflow, power generation and other reservoir operations totaled over 38,245 acre-feet during the October. Those releases lowered the storage content to approximately 79,099 acre-feet by October 31.

Releases from Green Mountain during October were made for replacement, bypass of inflow, power, and reservoir regulation. The average flow at the Blue River gage Green Mountain for the month of October was 622 ft^3/sec. The Green Mountain Powerplant turbines were used to control those releases.

Willow Creek Reservoir

The inflow at Willow Creek Reservoir was below-average during October 2010. Reservoir releases were set at a rate of 17 ft^3/sec early in the month. Releases were adjusted after October 11 and lowered to 7 ft^3/sec where they remained for the rest of the month.

A total of 981 acre-feet of water was pumped to Lake Granby between October 20 and October 22. More pumping is likely to take place in November as preparation for winter operations. Once pumping operations end in November the canal system used to transfer water from Willow Creek Reservoir to Granby Reservoir will be winterized for the season.

Granby Reservoir

The storage in Granby Reservoir at the beginning of the WY 2011 was 492,044 acre-feet, 17,000 acre-feet higher than the previous year and 58,000 acre-feet above the 30-year average.

C-BT diversions from the west slope via Adams Tunnel were discontinued on October 1, 2010, as work on the Grand Lake/Shadow Mountain interconnecting channel began. The Farr Plant pumping operations were very limited. Only water needed to maintain a steady water surface elevation at Shadow Mountain Reservoir was pumped from Granby reservoir during October.

East Slope Terminal Storage

Diversions through Adams Tunnel were low during October 2010, limited to only the native inflow at Grand Lake. The average flow through the tunnel during the month of October was 27 ft^3/sec. Given the minimal diversions through the tunnel and the limited availability of C-BT water at Lake Estes, Marys Lake, and Flatiron Reservoir; water stored at Carter Lake had to be used during October to deliver project water to the Big Thompson River. Flatiron's Unit #3 was used twice as a generator to refill Flatiron Reservoir and provide C-BT water. An estimated 457 acre-feet from Carter Lake were used to supplement deliveries of C-BT water to the Big Thompson River.

Most of the deliveries of C-BT water during October were supplied by Horsetooth and Carter Reservoirs. Horsetooth Reservoir provided approximately 30,000 a cre-feet of water, the majority of it delivered via the Charles Hansen Supply Canal. To the south, Carter Lake provided over 16,700 acre-feet during the same period, most of it via the Saint Vrain Canal.

FEBRUARY THROUGH SEPTEMBER

Most-Probable Inflow Forecast

Green Mountain Reservoir

The target storage content for Green Mountain Reservoir on March 31 is 70,000 acre-feet. Under the most-probable runoff conditions the reservoir content will decline slowly during the late winter and early spring. The reservoir elevation could drop slightly below that target. By late April 2011, the reservoir content could drop as low as 64,700 acre-feet before bouncing back. After the start-of-fill, the reservoir level is expected to rise rapidly. Under the most-probable runoff conditions a full reservoir is expected by early July.

According to the most-probable runoff forecast, it appears at this time that Green Mountain Reservoir might be able to participate in the CROS this coming spring. A decision will be made later in the spring. The CROS is an interagency program developed to enhance the spring peak flows along the 15-Mile-Reach in an attempt to benefit endangered species of fish. The operational principle is to pass native inflow while continuing the process of filling the reservoir. Regardless of whether Green Mountain participates in the CROS operation or not during 2011, the reservoir is expected to fill by early July. Assuming the predicted inflow and releases materialize for August and September, Green Mountain's Reservoir storage content is projected to drop to approximately 116,500 acre-feet by the end of September.

If the most-probable runoff conditions develop next spring, the Denver and Colorado Springs' Blue River depletions are projected to be approximately 131,200 acre-feet during the WY 2011.

Concrete repair work for the spillway at Green Mountain Reservoir is approaching completion. Work on the project will continue until this coming spring. The completion date is expected to be May 15.

Willow Creek Reservoir

Under the most-probable runoff conditions, pumping operations from Willow Creek Reservoir to Granby Reservoir should resume in late April 2011. As usual, the peak of the runoff is expected for May. The Willow Creek Canal pumps will likely operate the entire month of May and a big part of June. Under the Most-Probable runoff conditions the releases to the river should average 7 ft^3/s the entire water year. By the end of WY 2011 the Willow Creek Reservoir storage content should be approximately 9,000 acre-feet.

Granby Reservoir

If the most-probable runoff conditions prevail over the Granby Reservoir drainage area its

reservoir storage content should be approaching a low point of 347,900 acre-feet by the end of April 2011. If Granby reaches that low point, based on those runoff conditions, the reservoir should reach its maximum content for the year in July. Its maximum content for WY 2011 will be approximately 511,000 acre-feet with a water surface elevation of 8276.0 feet.

That elevation is 3.5 feet below Lake Granby's maximum operating elevation of 8279.50 feet.

Under the most-probable runoff conditions there will not be a spill at Granby Reservoir this water year. Under those circumstances, Lake Granby will not be able to participate in the CROS during the spring of 2011. By September 30, Granby Reservoir's content is expected to drop to 495,700 acre-feet. The most-probable runoff forecast assumes that the Water Clarity Study for Grand Lake will take place in August and that any pumping from Farr Plant will be curtailed during the test. If the test does not take place or if any pumping takes place during that time the numbers presented in this report could be affected.

East Slope - Colorado-Big Thompson Project

If the local climatic conditions produce a most-probable runoff event during WY 2011, irrigation, municipal and industrial demands for C-BT and Windy Gap Project water totaling 251,100 acre-feet should be expected. That volume includes water to be delivered from Horsetooth Reservoir and Carter Lake as well as the Charles Hansen Feeder Canal trifurcation and other sections of the C-BT conveyance system. This total includes potential Windy Gap Project deliveries of 23,100 acre-feet.

Under the most-probable runoff plan Carter Lake is expected to reach its maximum elevation for the water year by the middle of May. Carter Lake will reach a storage content of 106,000 acre-feet before it begins to fall. Pumping could resume in June if the C-BT enters priority to capture and store Big Thompson River water. Total volume pumped to Carter Lake this water year is expected to be 92,500 acre-feet. Under this plan a total of 103,700 acre-feet are expected to be delivered from Carter Lake this year. That volume includes Windy Gap Project water. By the end of the water year the reservoir content should have dropped down to 39,400 acre-feet.

The Charles Hansen Feeder Canal 930 Section will not undergo maintenance this coming spring. The canal will be available to deliver water to Horsetooth Reservoir the entire spring season. Maintenance on the Charles Hansen Feeder Canal 550 Section will not begin until sometime in the fall. The maintenance on that section of the canal normally lasts last two weeks. Deliveries of C-BT and Windy Gap water from the Charles Hansen Feeder Canal to the Big Thompson River are expected to total 21,700 acre-feet, with an additional 400 acre-feet delivered from Olympus Dam. Deliveries from the Charles Hansen Feeder Canal are made from the trifurcation located at the Big Thompson River Canyon Mouth using the Big Thompson Powerplant, the Wasteway chute, or sometimes both simultaneously.

Reasonable-Minimum Inflow Forecast

Green Mountain Reservoir

The target storage content for Green Mountain Reservoir on March 31 is 70,000 acre-feet. Under the minimum-reasonable runoff conditions the reservoir content will decline slowly during the late winter and early spring. The reservoir elevation could drop slightly below that target. By late April 2011, the reservoir content could drop as low as 67,800 acre-feet before bouncing back. After the start-of-fill, the reservoir level is expected to rise rapidly. Under the minimum-reasonable runoff conditions, a full reservoir is expected by August.

According to the minimum-reasonable runoff forecast, it appears at this time that Green Mountain Reservoir might be able to participate in the CROS this coming spring. A decision will be made later in the spring. The operational principle is to pass native inflow while continuing the process of filling the reservoir. Regardless of whether Green Mountain participates in the CROS operation or not during 2011, the reservoir is expected to fill by early August. Assuming the predicted inflow and releases materialize for August and September, Green Mountain's Reservoir storage content is projected to drop to approximately 82,800 acre-feet by the end of September.

If the minimum-reasonable runoff conditions develop next spring, the Denver and Colorado Springs' Blue River depletions are projected to be approximately 90,300 acre-feet during the WY 2011.

Concrete repair work for the spillway at Green Mountain Reservoir is approaching completions. Work on the project will continue until this coming spring. The completion date is expected to be May 15.

Willow Creek Reservoir

Under the minimum-reasonable runoff conditions, pumping operations from Willow Creek Reservoir to Granby Reservoir should resume in late April 2011. As usual, the peak of the runoff is expected in May. The Willow Creek Canal pumps will likely operate only partially those months of May and June. Under the minimum-reasonable runoff conditions the releases to the river should average 7 ft^3/s the entire water year. By the end of WY 2011 the Willow Creek Reservoir storage content should be approximately 9,000 acre-feet.

Granby Reservoir

If the minimum-reasonable runoff conditions prevail over the Granby Reservoir drainage area its reservoir storage content should be approaching a low point of 346,000 acre-feet by the end of April 2011. If Granby reaches that low point, based on those runoff conditions, the reservoir should reach its maximum content for the year in June. Its maximum content for WY 2011 will

be approximately 412,000 acre-feet with a water surface elevation of 8262.0 feet. That elevation is 17.5 feet below Lake Granby's maximum operating elevation of 8279.50 feet.

Under the minimum-reasonable runoff conditions, there will not be a spill at Granby Reservoir this water year. Under those circumstances, Lake Granby will not be able to participate in the CROS during the spring of 2011. By September 30, Granby Reservoir's content is expected to drop to 515,700 acre-feet. The maximum-reasonable runoff forecast assumes that the water clarity study for Grand Lake will take place in August and that any pumping from Farr Plant will be curtailed during the test. If the test does not take place or if any pumping takes place during that time the numbers presented in this report could be affected.

East Slope - Colorado-Big Thompson Project

If the local climatic conditions produce a maximum-reasonable runoff event during WY 2011, irrigation, municipal and industrial demands for C-BT and Windy Gap Project water totaling 207,000 acre-feet should be expected. That volume includes water to be delivered from Horsetooth Reservoir and Carter Lake as well as the Charles Hansen Feeder Canal trifurcation and other sections of the C-BT conveyance system. This total includes potential Windy Gap Project deliveries of 22,500 acre-feet.

Under the minimum-reasonable runoff conditions, Carter Lake is expected to reach its maximum elevation for the water year by the middle of May. Carter Lake will reach a storage content of 106,000 acre-feet before it begins to fall. Pumping could resume in June if the C-BT enter priority to capture and store Big Thompson River water. Some pumping will also take place in July, August, and September. Total volume pumped to Carter Lake this water year is expected to be 110,600 acre-feet. Under this plan, a total of 122,100 acre-feet are expected to be delivered from Carter Lake this year. That volume includes Windy Gap Project water. By the end of the water year, the reservoir content should have dropped down to 39,100 acre-feet.

The Charles Hansen Feeder Canal 930 Section will not undergo maintenance this coming spring. The canal will be available to deliver water to Horsetooth Reservoir the entire spring season. Maintenance on the Charles Hansen Feeder Canal 550 Section will not begin until sometime in the fall. The maintenance on that section of the canal normally lasts last two weeks. Deliveries of C-BT and Windy Gap water from the Charles Hansen Feeder Canal to the Big Thompson River are expected to total 27,600 acre-feet, with an additional 600 acre-feet delivered from Olympus Dam. Deliveries from the Charles Hansen Feeder Canal are made from the trifurcation located at the Big Thompson River Canyon Mouth using the Big Thompson Powerplant, the Wasteway chute, or sometimes both simultaneously.

Reasonable-Maximum Inflow Forecast

Green Mountain Reservoir

The target storage content for Green Mountain Reservoir on March 31 is 70,000 acre-feet. Under the maximum-reasonable runoff conditions, the reservoir content will decline slowly during the late winter and early spring. The reservoir elevation could drop slightly below that target. By late April 2011, the reservoir content could drop as low as 63,700 acre-feet before bouncing back. After the start-of-fill, the reservoir level is expected to rise rapidly. Under the maximum-reasonable runoff conditions a full reservoir is expected by July.

According to the maximum-reasonable runoff forecast, it appears at this time that Green Mountain Reservoir should be able to participate in the CROS this coming spring. A decision will be made later in the spring. Regardless of whether Green Mountain participates in the CROS operation or not during 2011, the reservoir is expected to fill by July. Assuming the predicted inflow and releases materialize for August and September, Green Mountain's Reservoir storage content is projected to drop to approximately 131,600 acre-feet by the end of September.

If the maximum-reasonable runoff conditions develop next spring, the Denver and Colorado Springs' Blue River depletions are projected to be approximately 131,200 acre-feet during the WY 2011.

Concrete repair work for the spillway at Green Mountain Reservoir is approaching completions. Work on the project will continue until this coming spring. The completion date is expected to be May 15.

Willow Creek Reservoir

Under the maximum-reasonable runoff conditions, pumping operations from Willow Creek Reservoir to Granby Reservoir should resume in late April 2011. As usual, the peak of the runoff is expected in May, although under the maximum-reasonable runoff conditions significant inflow will also be expected in June. The Willow Creek Canal pumps will likely operate at full capacity between May and June. Under the maximum-reasonable runoff conditions, the releases to the river should average 7 ft^3/s most water year. There should be periods during June when additional releases to the Willow Creek below the dam might be needed to release excess water. By the end of WY 2011 the Willow Creek Reservoir storage content should be approximately 9,000 acre-feet.

Granby Reservoir

If the maximum-reasonable runoff conditions prevail over the Granby Reservoir drainage area its reservoir storage content should be approaching a low point of 354,500 acre-feet by the end of April 2011. If Granby reaches that low point, based on the maximum-reasonable runoff conditions, the reservoir should reach its maximum content for the year in June. Its maximum

content for WY 2011 will be approximately 536,100 acre-feet with a water surface elevation of 8279.5 feet. A significant release to the Colorado River will be necessary to hold the water surface level at or below 8279.5 feet. Under these conditions a potential spill of 43,000 acre-feet is possible.

If a spill at Granby Reservoir during WY 2011 is imminent, it is likely that the project might be available to participate in the CROS during the spring of 2011. By September 30, Granby Reservoir's content is expected to drop to 348,800 acre-feet. The minimum-reasonable runoff forecast assumes that the Water Clarity Study for Grand Lake will take place in August and that any pumping from Farr Plant will be curtailed during the test. If the test does not take place or if any pumping takes place during that time the numbers presented in this report could be affected.

East Slope - Colorado-Big Thompson Project

If the local climatic conditions produce a maximum-reasonable runoff event during WY 2011, irrigation, municipal and industrial demands for C-BT and Windy Gap Project water totaling 301,000 acre-feet should be expected. That volume includes water to be delivered from Horsetooth Reservoir and Carter Lake as well as the Charles Hansen Feeder Canal trifurcation and other sections of the C-BT conveyance system. This total includes potential Windy Gap Project deliveries of 23,300 acre-feet.

Under the maximum-reasonable runoff conditions Carter Lake is expected to reach its maximum elevation for the water year by the middle of May. Carter Lake will reach a storage content of 110,000 acre-feet and sustain it throughout June before it begins to fall. Under such conditions the probability of having C-BT in priority to capture and store Big Thompson River water is high. Pumping could resume in June to store some of that water. Some pumping will also take place in July, August, and September. Total volume pumped to Carter Lake this water year could be expected as high as 125,700 acre-feet. Under this plan, a total of 88,200 acre-feet are expected to be delivered from Carter Lake this year. That volume includes Windy Gap Project water. By the end of the water year, the reservoir content should have dropped down to 87,700 acre-feet.

The Charles Hansen Feeder Canal 930 Section will not undergo maintenance this coming spring. The canal will be available to deliver water to Horsetooth Reservoir the entire spring season. Maintenance on the Charles Hansen Feeder Canal 550 Section will not begin until sometime in the fall. The maintenance on that section of the canal normally lasts two weeks. Deliveries of C-BT and Windy Gap water from the Charles Hansen Feeder Canal to the Big Thompson River are expected to total 16,800 acre-feet, with an additional 200 acre-feet delivered from Olympus Dam. Deliveries from the Charles Hansen Feeder Canal are made from the trifurcation located at the Big Thompson River Canyon Mouth using the Big Thompson Powerplant, the Wasteway chute, or sometimes both simultaneously.

IRRIGATION REQUIREMENTS

The amount of water to be made available to the C-BT for irrigation will be determined by NCWCD. This determination will be subject to change by agreement throughout the remainder of the irrigation season. C hanges may occur due to substantial changes in the prevailing conditions. E stimation of the irrigation requirements for the three inflow conditions was determined by analyzing actual use in similar runoff years.

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."

MINIMUM REQUIRED RESERVOIR RELEASES

On January 19, 1961, t he Secretary of the Interior established specific guidelines for water releases out of Lake Granby, which satisfy fish requirements. A release from Lake Granby of 20 ft^3/s is required from October through April of each year. During the remaining months of the year, the control point is almost 3 miles downstream from the dam at the YMCA gauging station.

Except in years of subnormal inflow, a flow of 75 ft^3/s during May-July period, 40 ft^3/s during August, and 20 ft^3/s during September is required at this location downstream of Lake Granby. The flow during May-September period can be reduced if forecasts indicate that the inflow during the water year to Shadow Mountain Lake, Grand Lake, and Lake Granby (less the decreed rights in the reach of the Colorado River between Granby Dam and the mouth of the Fraser River) and the water capable of being pumped from Willow Creek Reservoir during that year, are 230,000 acre-feet or less.

According to the 'Principles to Govern the Release of Water at Granby Dam to Provide Fishery Flows immediately Downstream in the Colorado River," signed by the Secretary of the Interior and Commissioner of the Bureau of Reclamation in 1961, t he following reduction of fishery flows below Lake Granby will apply on the basis of a forecast to be made by the Bureau of Reclamation during the last week in April using information from all available sources.

Forecast Inflow in Acre-Feet	Percentage Reduction in Minimum Release
220,000 - 230,000	15
210,000 - 220,000	20
195,000 - 210,000	25
Less than 195,000	30

Adjustments will be made in the reductions, when appropriate, based on revised forecasts and consideration of actual flows during May, June, and July. A copy of the document is included in the Standard Operating Procedures for Granby Dams and Reservoir, Appendix A, Exhibit 4.

Also according to the same guidelines, Willow Creek below Willow Creek Reservoir is not considered a fishery resource since an irrigation ditch a short distance below the dam generally uses the entire flow in the late summer months. In the Secretarial determination, no releases were provided to maintain Willow Creek as a live stream. However, a release of 7 ft^3/s or inflow (whichever is the lesser) from Willow Creek Reservoir is required between October 1 and April 30 to augment fishery flows in the Colorado River.

In accordance with the Standard Operating Procedures for Shadow Mountain Reservoir, Chapter 4, Section D, minimum releases from Shadow Mountain Lake of 35 ft^3/s during September and

October, 45 ft^3/s during November and December, 20 ft^3/s from January through May, 50 ft^3/s in June and July, and 40 ft^3/s in August or inflow (whichever is the lesser) must be maintained in order to protect fish and wildlife in the Colorado River above Lake Granby.

The minimum release required out of Green Mountain Reservoir is controlled by senior adjudicated water rights downstream from the reservoir. Inflow to Green Mountain Reservoir is released as required to meet these downstream rights. Releases at all times are adequate for fish preservation.

The State of Colorado's Division of Wildlife, and the United States Fish and Wildlife Service have recommended the following water release schedule for Lake Estes. This schedule meets the flow requirements of native fish along the Big Thompson River.

Minimum Releases

(ft^3/s)	Period
25	November 1 - April 15
50	April 16 - April 30
100	May 1 - May 15
125	May 16 - August 15
100	August 16 - August 31
75	September 1 - September 15
50	September 16 - October 31

Diversion of flows from the Big Thompson River at Lake Estes for power production is generally restricted to the May 15-September 15 period, since runoff during the remaining period usually is much less than the recommended minimum flows. Releases in excess of inflows are not required.

GREEN MOUNTAIN RESERVOIR OPERATIONS

Paragraph 6 of the October 5, 1955, Stipulation, in the decree for the Consolidated Cases Nos. 2782, 5016, and 5017 in the United States District Court for the District of Colorado (Blue River Decree), calls for periodic plans for the operation of Green Mountain Reservoir to be developed. The plans addressing this requirement are included as a part of this report.

Provisions guiding the operations of Green Mountain Reservoir are contained in the following documents:

Manner of Operation of Project Facilities and Auxiliary Features, Senate Document No. 80, 75th Congress, 1st Session

Consolidated Cases Nos. 2782, 5016, and 5017
October 12, 1955, Stipulation and Decree
April 16, 1964, Stipulation and Decree

Operating Policy for Green Mountain Reservoir, Colorado-Big Thompson Project, published in the Federal Register, Vol. 48, No. 247, December 22, 1983,

September 4, 1996, Stipulation and Agreement in Colorado Water Div. 5, Case No. 91CW247 (Orchard Mesa Check Case), and attached HUP Operating Criteria.

Operations will be consistent with the applicable provisions in these documents.

The general operations guided by these provisions are given below:

1. Winter operation (November-March)

   a. Bypass inflow to supply downstream vested senior rights.

   b. Make releases to replace water diverted or stored out of priority by the C-BT collection system, as required.

   c. Make releases for west slope irrigation and domestic uses per Green Mountain Operating Policy and the HUP Operating Criteria.

   d. Make releases for water service contracts pursuant to the Operating Policy.

   e. Maximize power generation, while maintaining:

(1) Adequate storage to meet the anticipated needs under the guiding documents.

(2) A minimum power head consistent with the integrated system power operations.

2. Operation during snowmelt period (April-July)

a. Bypass inflow to supply downstream vested senior rights.

b. Make releases to replace water diverted or stored out of priority by the C-BT collection system, as required.

c. Make releases for west slope irrigation and domestic uses per Green Mountain Operating Policy and the HUP Operating Criteria.

d. Make releases for water service contracts pursuant to the Operating Policy.

e. Participate in the Coordinated Reservoir Operations effort to enhance peak flows for the Colorado River Endangered Fishes. Reduce releases from traditional levels before and after the peak flow period on the Colorado River in the Grand Junction area. During peak flow period, release the lesser of inflows or turbine capacity for approximately a 10-day period.

f. Fill without spilling to maximize power generation by utilizing the storage and power rights concurrently.

g. On or before June 30 each year, meet with Managing Entities established under the settlement of the Orchard Mesa Check Case to assess availability of surplus water in the Historic Users Pool (HUP).

- Confer with Managing Entities on a regular basis through the irrigation season to assess availability of surplus water in the Historic Users Pool (HUP).
- If a surplus condition is declared, make releases up to the amount of surplus, under agreements, to:
  - the Grand Valley Powerplant up to its need or capacity; then to
  - the Grand Valley under the Municipal Recreation contract in excess of that needed by the powerplant

j. Maximize power operation consistent with 1.e.

k. Make releases as outlined in the above referenced documents.[1]

[1] By the use of these provisions for current operating purposes, the United States does not intend to imply any definition of rights and obligations. The order in which these criteria are listed does

3. Operation after snowmelt period (August-October)

a. Bypass inflow to supply downstream vested senior rights.

b. Make releases to replace water diverted or stored out of priority by the C-BT collection system, as required.

c. Make releases for west slope irrigation and domestic uses per Green Mountain Operating Policy and the HUP Operating Criteria.

d. Make releases for water service contracts pursuant to the Operating Policy.

g. Confer with Managing Entities on a regular basis through the irrigation season to assess availability of surplus water in the Historic Users Pool (HUP).
- If a surplus condition is declared, make releases up to the amount of surplus, under agreements, to:
  - the Grand Valley Powerplant up to its need or capacity; then to
  - the Grand Valley under the Municipal Recreation contract in excess of that needed by the powerplant

j. Maximize power operation consistent with 1.e.

k. Make releases as outlined in the above referenced documents.[2]

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[1] By the use of these criteria for current operating purposes, the United States does not intend to imply any definition of rights and obligations. The order in which these criteria are listed does not reflect any intended priority.

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[2] By the use of these provisions for current operating purposes, the United States does not intend to imply any definition of rights and obligations. The order in which these criteria are listed does not reflect any intended priority.

GREEN MOUNTAIN HISTORIC USERS POOL AND THE ORCHARD MESA CHECK CASE SETTLEMENT

Background and Authority

The Orchard Mesa Check (Check) is a structure below the common afterbay of the Orchard Mesa Irrigation District (OMID) Pumping Plant and the federal Grand Valley Powerplant in the Grand Valley of Colorado. The operation of the Check provides the ability to raise the water level in the common afterbay to a level, which causes water to flow through the bypass channel and return to the Colorado River upstream of the Grand Valley Irrigation Company (GVIC) diversion dam.

Operation of the Check was determined to constitute an 'exchange' of water whereby water destined for the senior GVIC irrigation water rights is borrowed for pumping and hydroelectric power generation purposes and returned to GVIC for irrigation use. Operation of the Check influences the supply of water available to Grand Valley irrigation systems; to the Grand Valley Powerplant for power production; Green Mountain Reservoir releases; and the flow in the 15-Mile Reach of the Colorado River. The 15-Mile Reach is that section of the Colorado River from the GVIC diversion dam to the confluence of the Gunnison River and has been designated critical habitat by the Upper Colorado River Endangered Fish Recovery Program.

The Check has been operated on an informal basis without a decreed right since approximately 1926 to manage flows in the Colorado River for the benefit of the United States, Grand Valley Water Users Association (GVWUA), and OMID (Co-applicants). In the late 1980's, a hydropower development was proposed in a reach of the Colorado River between the Grand Valley Diversion Dam, the point where the exchange water is diverted, and the GVIC diversion dam where the exchange water is returned. The Co-applicants were concerned that a water right awarded for this development would have the ability to interfere with the exchange of water. In response to this potential threat to the continued operation of the exchange, the co-applicants filed an application in State Water Court on December 30, 1991, for approval of an exchange of water. This case (Water Division 5, Case No. 91CW247) was informally known as the Orchard Mesa Check Case. Resolution of the case resulted in a negotiated Stipulation and Agreement entered into the District Court, Water Division No. 5, State of Colorado, on September 4, 1996.

Overview of the Stipulated Settlement

The settlement contains two major components: the Stipulation and Agreement and the Green Mountain Reservoir Historic Users Pool Operating Criteria (Operating Criteria). The Operating Criteria further defines operation of the Green Mountain Reservoir Historic Users Pool (HUP)

consistent with Senate Document 80 and the 1984 Operating Policy. The parts of the Stipulation and Agreement pertinent to the operation of the HUP are summarized below:

As part of the Stipulation and Agreement the Co-applicants and GVIC agree not to exercise their irrigation rights against any upstream HUP beneficiary provided that the Check is physically operable; there is at least 66,000 acre-feet of water in storage in the Green Mountain Reservoir HUP, or approved substitute storage reservoir, when Green Mountain Reservoir storage rights cease to be in priority; and the water rights for the Shoshone Powerplant continue to be exercised in a manner consistent with their historical operation. (Section 3.b. of the Stipulation and Agreement)

The Stipulation and Agreement also provides that Reclamation will declare surplus water which is in excess of the needs of HUP beneficiaries for a given water year. Water declared surplus might be delivered through agreements to beneficial uses in western Colorado. This is to be done in accordance with the provisions of the HUP Operating Criteria, which are summarized below:

Management of the HUP under the Operating Criteria

The management of the HUP is accomplished through the process defined in Sections 3.d. and 3.e. of the Operating Criteria. This process requires the development of this Annual HUP Operating Plan on or before June 30 of each year.

The Annual HUP Operating Plan is developed by the Bureau of Reclamation, in consultation with the Grand Valley Water Users Association, the Orchard Mesa Irrigation District, the Grand Valley Irrigation Company, the Division 5 Engineer, the Colorado Water Conservation Board and, Fish and Wildlife Service. These entities are collectively known as the 'Managing Entities'. The Managing Entities agree to make a good faith effort to develop an Annual HUP Operating Plan that is unanimously supported. However, the Bureau of Reclamation reserves the right to establish a release schedule, should unanimous consent be unattainable.

The Annual HUP Operating Plan is based upon actual HUP storage conditions; projected runoff forecasts; operational and climatological conditions; projected irrigation demands; and, 15-Mile Reach flow needs. It is expressly recognized, however; that in some years, release of the entire HUP by the end of the irrigation season will not be necessary or possible.

On or before June 30 of each year, the Bureau of Reclamation assembles initial information on storage in the HUP and comparative runoff years. Based upon the information assembled, a meeting is held with the other Managing Entities. During this meeting, a review of the forecasts is analyzed, and initial determinations of the level of “checking” required to preserve water in the HUP, as well as any determination of water surplus to HUP beneficiaries’ needs are made.

The HUP operations are reviewed and modified by the Managing Entities as necessary to

respond to changing conditions. Subsequent meetings or conference calls are held on an as needed basis to reexamine HUP storage conditions, runoff forecasts, climatological conditions, irrigation demands, 15-Mile Reach flow needs, and other operational conditions. Based upon this information, the Managing Entities adjust the checking. They also determine the water surplus for HUP beneficiary needs, as well as the release of such water.

During periods of below average river flows, review meetings or conference calls may be held as frequently as every week.

This mechanism provides a way to integrate management of releases from the HUP with operation of the Check to accomplish the purposes of the Operating Criteria. The mechanism is also used to integrate releases from the HUP with releases for the endangered fish from other reservoirs including Ruedi and Wolford Mountain.

OPERATION SKIM

Big Thompson River water in excess of the minimum requirements, as recommended by the State of Colorado Division of Wildlife and the United States Fish and Wildlife Service, is diverted at Olympus Dam into the Foothills System to be used for power generation. This operation is known as operation "skim." The amount diverted depends on the flow at the Big Thompson River and the tributaries above Lake Estes, C-BT water imported through the Adams Tunnel, and the capacity of the Foothills System.

The water taken from the Big Thompson River can be used for power generation immediately. It can also be held in storage and replaced to the river with water from other sections of the system, depending on the power requirements. In general, water taken from the Big Thompson River at a variable rate, on a given date, is returned to the river at a flat rate, on the following day. This operation indirectly benefits the tourist and fishing industries along the Big Thompson Canyon by attenuating and diverting high flows, and by maintaining a steady stream during the runoff season.

Operation "skim" and storage of surplus water from the Big Thompson River in C-BT reservoirs are managed according to the AOP and as prescribed by the ECAO Water Scheduling staff.

The skim operation of WY 2010 was a very successful one. With Carter Lake and Horsetooth Reservoir contents at nearly full capacity by the middle of May, diversions from the west were relatively low during the late spring and early summer. The Olympus Tunnel had the opportunity to skim a significant portion of all the available water from the Big Thompson River. The high flows through the Olympus Tunnel kept the rest of water conveyance system also operating at full capacity.

It is expected that WY 2011 will also have a successful skim operation. The addition of Flatiron Powerplant's Unit #1 with a maximum capacity of 550 ft^3/sec has added flexibility to the system, adding to the adding to the total power generation of the C-BT system. The skim total for WY 2011 could surpass last year's. As with WY 2010, during WY 2011 most of the skim water is expected to be captured at Olympus Dam and diverted using Olympus Tunnel which maximizes power generation. Dille Tunnel's contribution is anticipated to be much lower by comparison but its contribution should be significant.

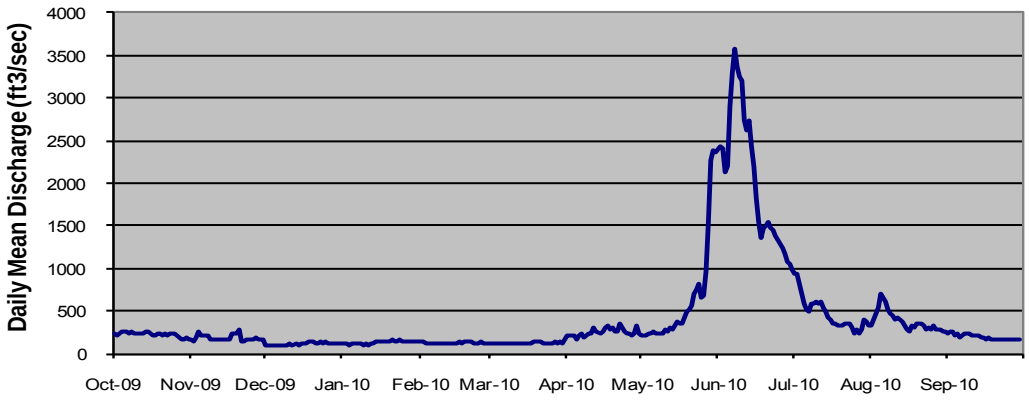
APPENDIX A – DAILY RECORDS

Appendix A (Table 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 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-2009 to 30-Sep-2010. 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.

Inflow, Cubic Feet per Second, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	235	159	98	121	131	118	214	214	2444	935	336	236
2	204	150	95	124	136	116	203	211	2398	934	387	258
3	243	184	93	128	124	117	218	202	2136	821	474	264
4	251	262	100	104	120	111	210	231	2188	695	547	219
5	253	220	100	106	118	118	158	244	2903	574	691	237
6	251	207	100	125	124	115	203	250	3309	514	659	187
7	243	207	100	124	125	111	231	236	3568	480	599	224
8	255	203	101	106	125	122	194	230	3368	594	523	241
9	239	172	102	99	118	118	220	223	3262	592	467	224
10	226	171	101	106	109	122	234	278	3197	612	439	213
11	234	154	108	100	116	117	235	258	2745	595	404	205
12	238	165	103	115	121	114	304	298	2621	603	424	206
13	225	165	107	121	126	113	261	269	2725	533	369	207
14	246	157	100	135	124	117	236	330	2438	493	322	197
15	261	173	107	142	111	124	259	381	2188	430	291	190
16	244	158	121	148	123	106	297	346	1832	394	253	168
17	213	160	114	149	129	116	325	344	1547	359	326	177
18	221	228	148	143	126	120	291	411	1366	360	314	165
19	237	225	134	151	139	135	305	502	1463	321	357	161
20	242	290	134	146	142	131	248	509	1509	337	343	162
21	221	144	127	152	134	130	265	563	1540	341	359	162
22	233	139	127	145	141	128	341	698	1469	351	324	160
23	220	168	134	152	123	121	315	753	1456	342	288	173
24	231	174	128	152	119	123	268	827	1372	301	301	169
25	225	162	129	147	135	118	243	644	1326	245	292	174
26	201	167	129	144	107	111	230	681	1246	284	317	169
27	194	176	107	140	109	129	221	961	1179	242	281	174
28	167	175	114	137	116	118	244	1547	1087	282	281	171
29	170	174	114	137		129	329	2261	1047	402	275	158
30	184	155	121	143		128	231	2391	977	375	259	158
31	171		121	132		155		2372		329	267	
Min	167	139	93	99	107	106	158	202	977	242	253	158
Max	261	290	148	152	142	155	341	2391	3568	935	691	264
Mean	225	181	113	131	124	121	251	634	2064	473	380	194
ac-ft	13814	10777	6963	8071	6872	7430	14913	38929	122579	29046	23302	11500

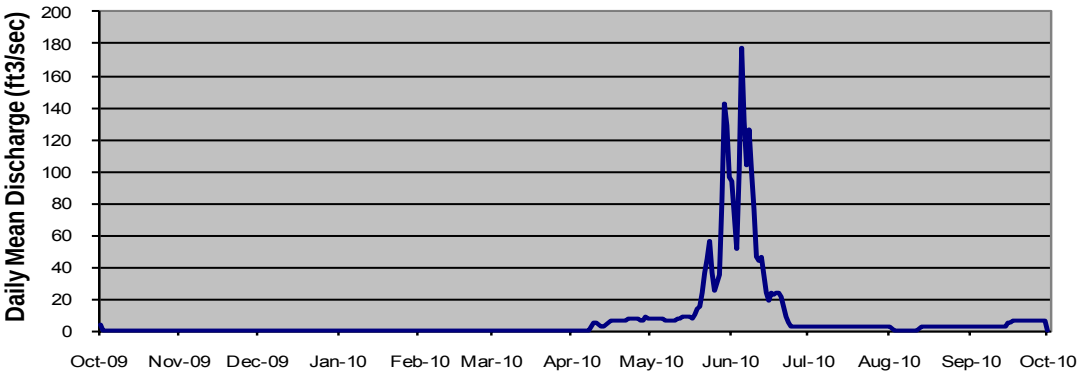


Appendix A (Table 2 of 38)
Elliot Creek Canal near Green Mountain Reservoir, CO

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 from topographic map.
Remarks.—This is a diversion from Elliot Creek in the Blue River Basin to Green Mountain Reservoir. Recorder was operated 8-Apr-2010 through 30-Sep-2010. The data values between 2-Oct-2009 and 08-Apr-2009 are estimated. Records are incomplete and only reliable while recorder was 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.

Discharge, Cubic Feet per Second, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	3	0	0	0	0	0	0	7	93	2	3	2
2	0	0	0	0	0	0	0	7	72	2	2	2
3	0	0	0	0	0	0	0	7	52	2	1	2
4	0	0	0	0	0	0	0	7	100	2	1	2
5	0	0	0	0	0	0	0	7	177	2	1	2
6	0	0	0	0	0	0	0	7	131	2	1	3
7	0	0	0	0	0	0	0	7	103	2	1	3
8	0	0	0	0	0	0	2	7	127	2	1	3
9	0	0	0	0	0	0	5	7	100	2	0	3
10	0	0	0	0	0	0	5	7	76	2	0	3
11	0	0	0	0	0	0	4	7	46	2	1	3
12	0	0	0	0	0	0	2	8	43	2	1	3
13	0	0	0	0	0	0	2	9	46	2	2	3
14	0	0	0	0	0	0	3	9	24	2	2	3
15	0	0	0	0	0	0	5	9	18	2	2	5
16	0	0	0	0	0	0	6	8	23	2	2	5
17	0	0	0	0	0	0	6	8	22	2	2	6
18	0	0	0	0	0	0	6	10	24	2	2	6
19	0	0	0	0	0	0	6	14	24	3	2	6
20	0	0	0	0	0	0	6	15	21	3	2	6
21	0	0	0	0	0	0	7	24	15	3	2	6
22	0	0	0	0	0	0	7	37	9	3	2	6
23	0	0	0	0	0	0	7	45	5	3	2	6
24	0	0	0	0	0	0	7	56	2	3	2	6
25	0	0	0	0	0	0	7	36	2	3	2	6
26	0	0	0	0	0	0	7	25	2	2	2	6
27	0	0	0	0	0	0	7	36	2	2	2	6
28	0	0	0	0	0	0	6	82	2	3	2	6
29	0	0	0	0		0	9	143	2	3	2	6
30	0	0	0	0		0	7	128	2	3	2	6
31	0		0	0		0		96		2	2	
Min	0	0	0	0	0	0	0	7	2	2	0	2
Max	3	0	0	0	0	0	9	143	177	3	3	6
Mean	0	0	0	0	0	0	4	28	46	2	2	4
ac-ft	7	0	0	0	0	0	258	1728	2706	147	103	252

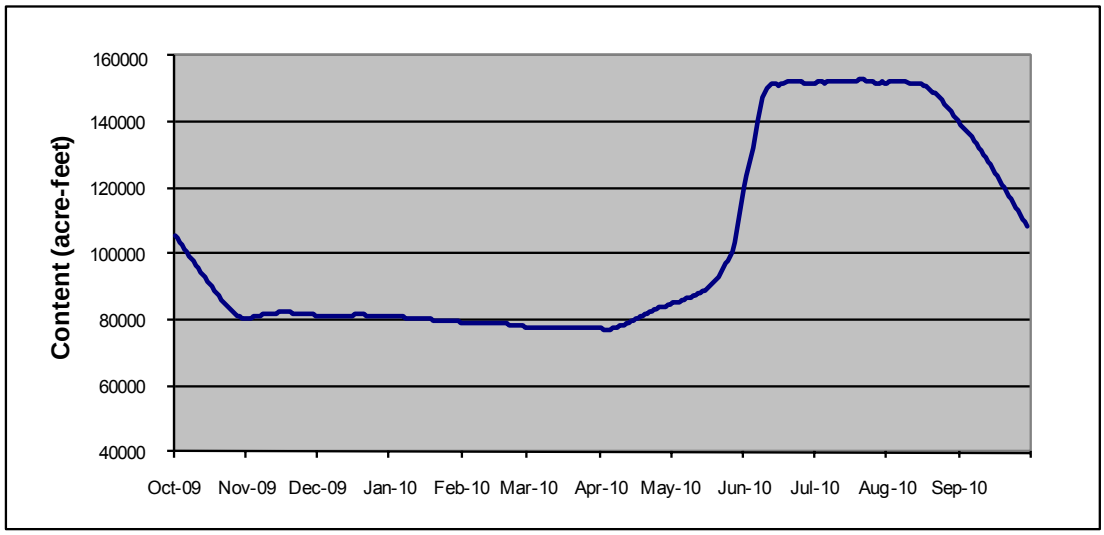


Appendix A (Table 3 of 38)
Green Mountain Reservoir, CO

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 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 Colorado-Big Thompson Project diversions. Recorder was operated from 01-Oct-2009 to 30-Sep-2010. Maximum capacity is 153,639 acre-feet at elevation 7950.00 ft, with 146,779 acre-feet 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, Acre-Feet, 2400-hour Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	105622	80656	81449	81098	79337	78007	77328	85049	120088	151905	151968	139373
2	104542	80656	81449	81057	79271	77994	77289	85244	123692	152159	152074	138559
3	103538	80723	81436	81030	79178	77981	77237	85426	126520	152159	152328	137786
4	102558	80977	81436	80963	79112	77955	77184	85664	128971	152053	152497	136956
5	101584	81152	81436	80897	79086	77942	77171	85929	132357	151968	152603	136151
6	100605	81287	81436	80870	79073	77929	77393	86209	136131	152074	152391	135247
7	99615	81409	81436	80843	79060	77903	77642	86461	140414	152222	152328	134352
8	98650	81517	81436	80790	79046	77903	77824	86700	144295	152497	152264	133437
9	97662	81611	81436	80723	79020	77890	78059	86927	147186	152582	152074	132395
10	96650	81733	81436	80669	78967	77877	78321	87252	148950	152603	151968	131297
11	95648	81828	81449	80602	78927	77850	78584	87535	149910	152582	151926	130208
12	94699	81949	81449	80522	78901	77824	78980	87875	150937	152582	151926	129122
13	93725	82071	81449	80429	78888	77798	79284	88189	151693	152539	151820	128024
14	92791	82179	81449	80348	78875	77772	79522	88632	151778	152539	151609	126896
15	91892	82314	81463	80282	78835	77759	79827	89162	151356	152497	151356	125771
16	90970	82423	81503	80228	78822	77720	80201	89637	151126	152455	151042	124582
17	90042	82505	81530	80175	78822	77720	80616	90115	151503	152497	150853	123434
18	89090	82559	81571	80121	78809	77707	80963	90694	151820	152603	150476	122257
19	88174	82559	81557	80081	78795	77707	81354	91468	152180	152645	149847	121070
20	87267	82355	81544	80028	78756	77707	81625	92244	152349	152687	149179	119889
21	86321	81936	81517	79987	78716	77707	81936	93147	152539	152687	148576	118718
22	85398	81787	81490	79934	78637	77707	82368	94294	152582	152687	147933	117573
23	84565	81733	81476	79894	78478	77694	82765	95557	152624	152666	147207	116451
24	83832	81692	81449	79854	78308	77681	83079	96971	152476	152560	146446	115321
25	83093	81638	81422	79800	78164	77655	83367	98016	152222	152349	145623	114181
26	82382	81611	81395	79747	78059	77628	83627	99132	151820	152201	144845	113031
27	81760	81584	81327	79680	78033	77628	83874	100763	151461	151968	143969	111892
28	81192	81557	81273	79614	78020	77615	84164	103441	151503	151862	143073	110744
29	80843	81530	81219	79548		77576	84565	107507	151672	151947	142164	109570
30	80683	81476	81179	79495		77485	84828	111840	151799	152010	141215	108426
31	80643		81138	79416		77380		116080		151968	140294	
Min	80643	80656	81138	79416	78020	77380	77171	85049	120088	151862	140294	108426
Max	105622	82559	81571	81098	79337	78007	84828	116080	152624	152687	152603	139373
EOM	80643	81476	81138	79416	78020	77380	84828	84828	151799	151968	140294	108426

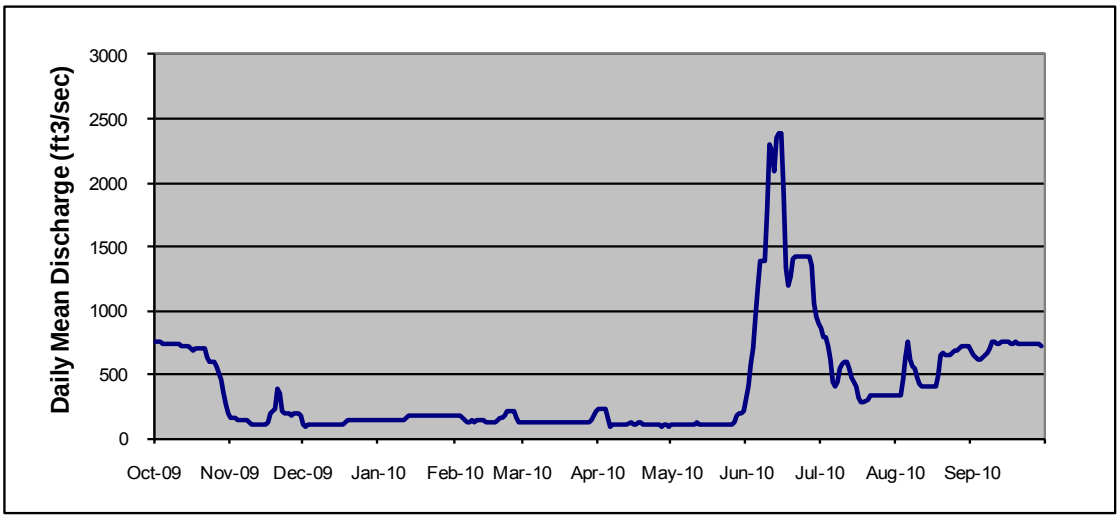


Appendix A (Table 4 of 38)
Blue River below Green Mountain Reservoir, CO

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 U.S. Bureau of Reclamation).
Remarks.--Drainage area is 599 mi^2 including 15.3 mi^2 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. Transmountain diversions upstream from station. Recorder was operated from 01-Oct-2009 to 30-Sep-2010. Records are complete and reliable, but the data has not been revised. 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, Cubic Feet per Second, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	749	152	112	141	170	125	237	101	403	862	336	689
2	749	150	95	141	169	123	220	112	572	788	334	650
3	749	150	100	141	170	123	233	110	705	796	341	631
4	745	134	100	137	153	124	230	111	943	724	462	622
5	743	132	100	140	132	123	164	110	1178	616	626	621
6	744	139	100	139	130	122	90	109	1389	433	750	636
7	742	145	100	137	131	124	105	109	1391	405	616	664
8	741	148	101	133	132	122	102	109	1394	442	555	702
9	737	124	101	133	131	124	101	108	1790	540	550	746
10	736	110	101	133	136	128	102	111	2299	587	482	748
11	739	106	101	133	136	130	103	115	2240	588	422	744
12	717	104	101	156	135	127	104	109	2086	589	403	741
13	716	103	101	169	132	126	107	106	2344	538	404	751
14	714	103	100	176	130	130	116	105	2388	476	408	753
15	714	103	100	176	131	131	105	106	2390	431	399	749
16	709	103	101	175	130	126	108	107	1935	395	396	749
17	681	118	101	176	129	116	114	103	1329	319	406	742
18	701	200	128	170	130	126	114	111	1186	289	488	742
19	698	225	141	171	145	128	108	110	1264	288	646	746
20	700	393	140	173	155	131	112	106	1399	295	668	743
21	698	355	141	173	154	130	108	100	1419	341	651	743
22	698	214	141	172	177	128	105	101	1430	339	649	737
23	640	195	141	171	203	127	102	102	1416	337	645	730
24	600	195	141	172	205	129	103	104	1426	339	667	733
25	597	190	141	174	204	131	99	108	1428	336	691	743
26	560	181	141	171	160	123	99	107	1426	338	691	741
27	507	190	141	173	122	127	96	127	1350	335	704	740
28	450	189	141	170	122	125	98	180	1052	335	720	738
29	346	188	141	171		149	97	195	945	334	719	740
30	264	183	141	169		174	96	195	899	334	721	722
31	191		141	172		208		216		333	714	
Min	191	103	95	133	122	116	90	100	403	288	334	621
Max	749	393	141	176	205	208	237	216	2390	862	750	753
Mean	648	167	118	159	148	131	123	119	1447	455	557	718
ac-ft	39753	9941	7271	9777	8226	8043	7282	7333	85958	27927	34179	42643

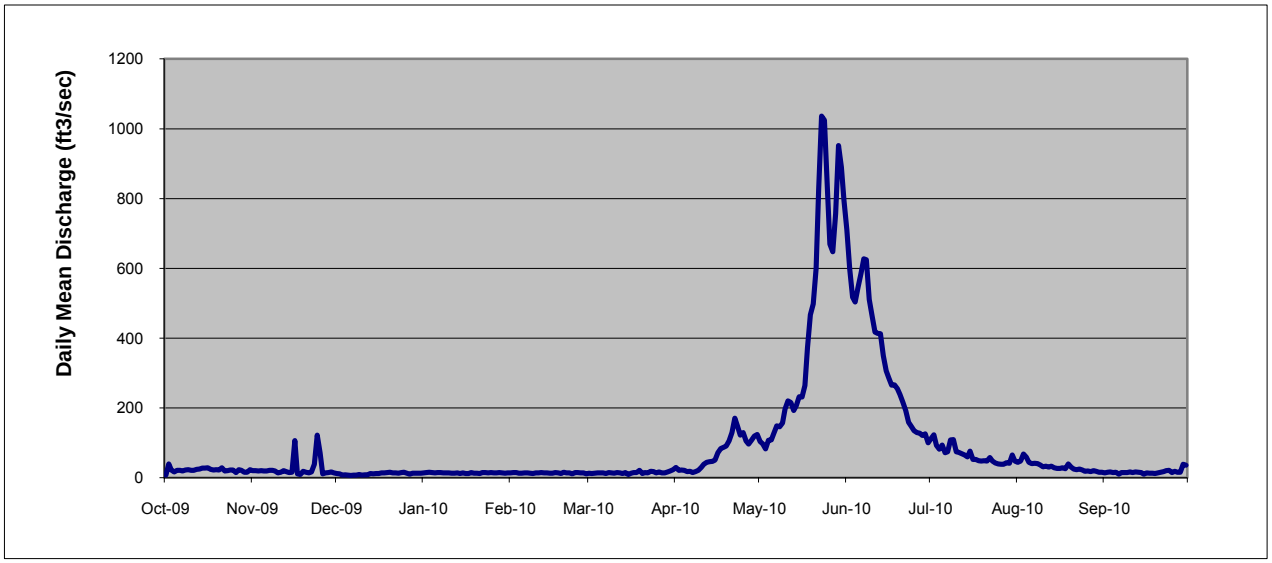


Appendix A (Table 5 of 38)
Willow Creek Reservoir, CO

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 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-2009 to 30-Sep-2010. Records are complete and reliable, but the data has not been revised. This record consists of operational data which could be subject to future revisions and changes.

Inflow, Cubic Feet per Second, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	7	20	12	14	14	13	30	104	711	112	44	14
2	39	21	11	15	15	12	21	98	598	123	48	16
3	22	20	8	16	15	13	23	83	518	93	68	17
4	17	20	8	15	14	14	21	108	503	82	59	15
5	22	19	8	14	13	14	18	109	546	94	45	16
6	21	20	7	15	14	14	19	128	584	72	41	11
7	20	22	8	15	14	12	15	148	627	75	42	15
8	22	21	8	14	13	15	18	146	624	108	40	15
9	23	19	10	14	13	14	21	157	511	110	37	15
10	21	14	8	14	14	13	30	197	463	74	31	17
11	22	16	9	13	14	15	39	220	417	73	34	15
12	24	20	8	13	15	14	44	216	413	69	31	17
13	25	18	12	14	14	12	46	193	413	66	34	16
14	28	15	11	12	14	15	47	207	350	60	29	15
15	28	16	13	14	13	10	51	232	307	76	27	10
16	28	106	12	12	13	13	72	231	286	53	27	14
17	24	11	14	12	15	15	84	265	266	53	28	13
18	22	10	15	15	14	15	88	373	267	49	26	13
19	24	18	15	14	12	21	91	467	255	48	39	13
20	22	16	16	13	16	12	106	498	239	49	31	14
21	29	14	14	13	14	15	130	600	217	48	25	16
22	20	17	14	15	14	14	170	827	193	58	24	17
23	21	39	14	15	12	18	149	1036	159	48	25	21
24	22	123	15	15	15	18	122	1025	148	43	22	21
25	22	71	16	15	15	14	130	833	135	40	19	15
26	15	11	13	14	14	17	106	670	129	39	19	19
27	24	14	11	14	14	14	97	648	128	39	18	16
28	21	15	13	15	11	14	108	757	121	44	21	16
29	16	17	14	14		17	120	952	126	42	18	39
30	16	14	14	14		20	124	890	100	65	16	36
31	23		13	15		23		795		48	16	
Min	7	10	7	12	11	10	15	83	100	39	16	10
Max	39	123	16	16	16	23	170	1036	711	123	68	39
Mean	22	26	12	14	14	15	71	426	345	66	32	17
ac-ft	1373	1538	712	862	765	916	4235	26157	20502	4067	1949	1002

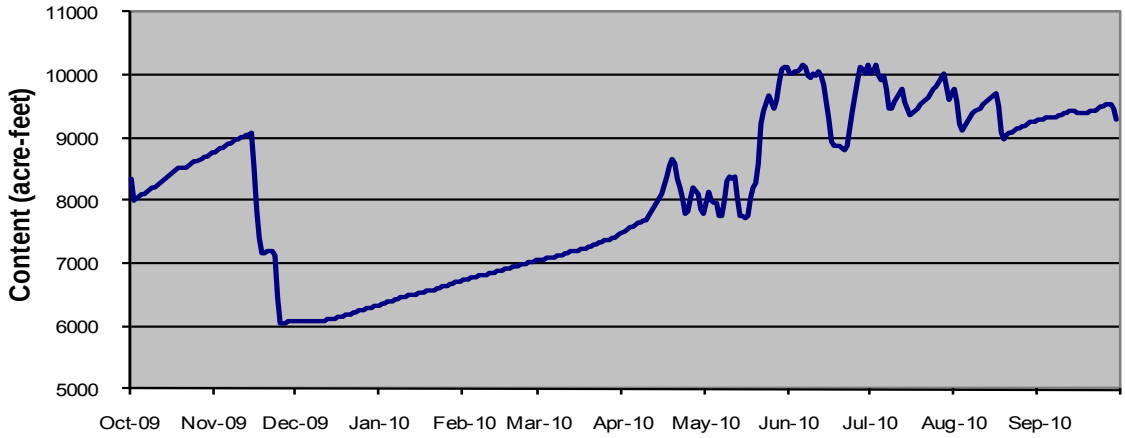


Appendix A (Table 6 of 38)
Willow Creek Reservoir, CO

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 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 acre-feet at elevation 8,130.00 ft, with 9,100 acre-feet of active capacity between elevations 8077.00 and 8130.00 feet. Recorder was operated from 01-Oct 2009 to 30-Sep-2010. Record is 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, Acre-Feet, 2400-hour Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	8351	8776	6094	6338	6731	7056	7516	7972	10029	10040	9763	9278
2	8015	8802	6094	6354	6743	7065	7543	8149	10009	10052	9572	9288
3	8041	8822	6092	6369	6757	7075	7570	8007	10046	10172	9215	9302
4	8059	8846	6091	6384	6769	7086	7596	7969	10049	9998	9123	9313
5	8088	8866	6091	6397	6781	7098	7619	7979	10079	9911	9194	9323
6	8116	8890	6089	6413	6795	7110	7641	7750	10151	9989	9259	9329
7	8140	8918	6089	6428	6807	7118	7657	7741	10117	9786	9321	9340
8	8169	8944	6089	6439	6819	7133	7675	8012	9972	9476	9383	9356
9	8197	8968	6091	6452	6829	7143	7703	8306	9951	9465	9438	9372
10	8222	8981	6091	6466	6841	7154	7748	8395	10029	9553	9482	9385
11	8242	8996	6092	6477	6853	7169	7810	8355	9995	9637	9529	9399
12	8270	9020	6094	6489	6865	7181	7883	8387	10043	9712	9572	9413
13	8304	9038	6103	6500	6877	7190	7958	8029	10004	9783	9617	9424
14	8343	9054	6109	6509	6889	7202	8036	7750	9837	9556	9654	9435
15	8383	9070	6119	6523	6899	7207	8118	7750	9584	9358	9687	9380
16	8422	8539	6129	6532	6909	7218	8246	7734	9288	9402	9721	9385
17	8454	7849	6142	6542	6921	7230	8397	7773	8950	9446	9512	9394
18	8482	7422	6156	6554	6933	7245	8554	8027	8859	9482	9086	9399
19	8511	7162	6170	6566	6942	7271	8674	8193	8872	9520	8989	9405
20	8539	7175	6186	6577	6958	7279	8592	8290	8851	9559	9033	9413
21	8517	7185	6201	6586	6970	7294	8360	8584	8789	9598	9065	9424
22	8539	7202	6215	6600	6980	7307	8212	9226	8866	9654	9091	9443
23	8564	7127	6228	6612	6988	7328	8019	9438	9160	9707	9120	9468
24	8592	6449	6242	6625	7003	7346	7778	9679	9430	9772	9144	9493
25	8619	6037	6258	6639	7017	7359	7833	9572	9673	9831	9162	9506
26	8631	6046	6271	6651	7029	7376	8027	9457	9905	9888	9181	9523
27	8661	6060	6279	6664	7039	7389	8202	9606	10140	9946	9197	9537
28	8687	6076	6290	6678	7046	7402	8100	9877	10096	10015	9218	9551
29	8703	6094	6301	6692		7417	7851	10105	10026	9800	9240	9449
30	8720	6096	6314	6704		7441	7782	10122	10163	9614	9253	9307
31	8751		6325	6718		7472		10117		9693	9267	
Min	8015	6037	6089	6338	6731	7056	7516	7734	8789	9358	8989	9278
Max	8751	9070	6325	6718	7046	7472	8674	10122	10163	10172	9763	9551
EOM	8751	6096	6325	6718	7046	7472	7782	7782	10163	9693	9267	9307

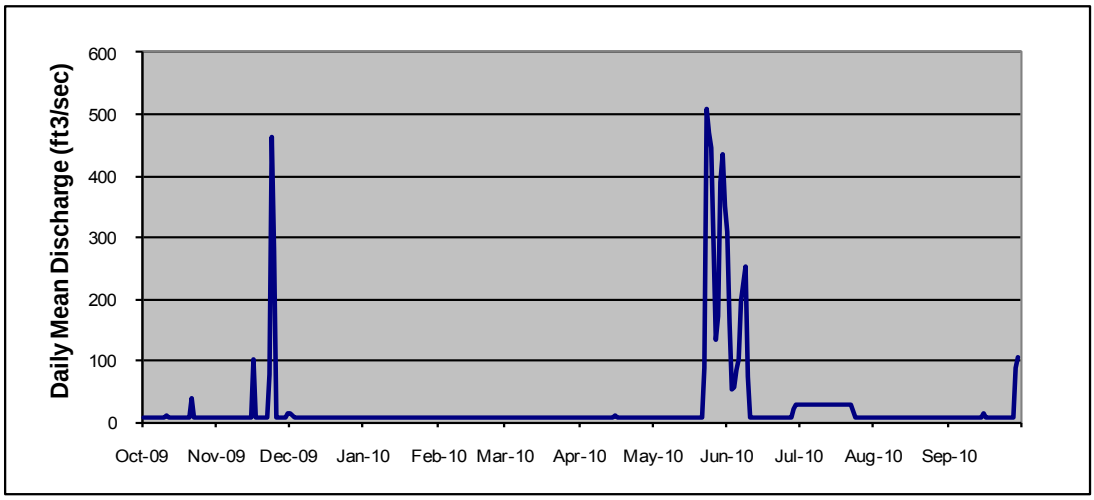


Appendix A (Table 7 of 38)
Willow Creek below Willow Creek Reservoir, CO

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 from topographic map.
Remarks.-- Drainage area is 127 square miles. Recorder was operated from 01-Oct-2009 to 30-Sep-2010. 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, Cubic Feet per Second, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	7	7	13	7	8	8	8	7	308	28	7	7
2	7	8	11	7	8	8	8	7	162	28	7	7
3	7	9	9	7	8	8	8	7	54	28	7	7
4	6	8	8	7	7	8	8	7	56	28	7	7
5	6	9	8	7	7	8	7	7	84	28	7	7
6	6	8	8	7	7	8	7	7	101	28	7	7
7	7	7	8	7	7	8	8	7	198	28	8	7
8	7	7	8	7	7	8	7	7	251	27	8	7
9	7	7	8	7	7	8	7	7	75	27	8	7
10	8	7	8	7	8	8	7	7	7	27	8	7
11	11	8	8	7	8	8	7	7	7	27	8	7
12	9	9	8	7	8	8	7	7	7	28	8	7
13	7	8	7	7	8	8	7	7	7	27	8	9
14	7	7	7	7	8	7	8	7	7	28	8	7
15	7	7	7	7	8	8	9	7	7	27	8	15
16	7	101	7	7	8	8	8	7	7	27	8	7
17	7	7	7	7	8	8	8	7	7	27	8	7
18	7	8	7	8	8	8	8	7	7	27	8	8
19	7	8	7	8	8	8	8	7	7	28	7	8
20	7	9	7	8	8	8	8	7	7	28	8	8
21	39	8	7	8	8	8	7	7	7	28	8	8
22	7	8	7	8	8	8	7	86	7	28	8	8
23	7	76	7	8	8	8	7	510	7	19	8	8
24	7	463	7	8	8	8	7	471	7	7	8	8
25	7	279	7	8	8	8	7	445	7	7	8	8
26	7	6	7	8	8	8	7	292	7	7	8	8
27	7	7	7	7	8	8	7	134	7	6	7	8
28	7	7	7	7	8	8	7	174	20	7	7	7
29	7	7	7	7		8	7	389	27	7	7	89
30	7	13	7	8		8	7	435	28	7	7	105
31	7		7	8		8		351		7	7	
Min	6	6	7	7	7	7	7	7	7	6	7	7
Max	39	463	13	8	8	8	9	510	308	28	8	105
Mean	8	37	8	7	8	8	7	111	50	22	8	14
ac-ft	514	2224	472	458	425	478	442	6808	2955	1344	463	810

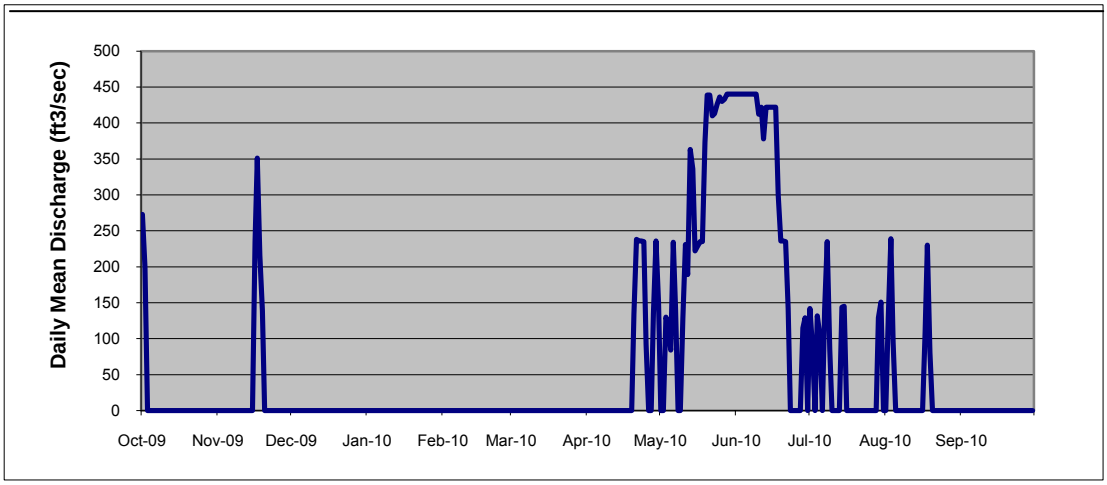


Appendix A (Table 8 of 38)
Willow Creek Pump Canal, CO

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 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-2009 to 30-Sep-201-0. Records are complete and reliable, but the data has not been revised. This record consists of operational data which could be subject to future revisions and changes.

Discharge, Cubic Feet per Second, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	273	0	0	0	0	0	0	0	440	142	0	0
2	200	0	0	0	0	0	0	0	440	88	132	0
3	0	0	0	0	0	0	0	130	440	0	239	0
4	0	0	0	0	0	0	0	118	440	132	95	0
5	0	0	0	0	0	0	0	84	440	105	0	0
6	0	0	0	0	0	0	0	234	440	0	0	0
7	0	0	0	0	0	0	0	143	440	141	0	0
8	0	0	0	0	0	0	0	0	440	235	0	0
9	0	0	0	0	0	0	0	0	440	85	0	0
10	0	0	0	0	0	0	0	129	412	0	0	0
11	0	0	0	0	0	0	0	231	422	0	0	0
12	0	0	0	0	0	0	0	189	378	0	0	0
13	0	0	0	0	0	0	0	363	422	0	0	0
14	0	0	0	0	0	0	0	336	422	144	0	0
15	0	0	0	0	0	0	0	222	422	145	0	0
16	0	234	0	0	0	0	0	229	422	0	0	0
17	0	351	0	0	0	0	0	235	422	0	109	0
18	0	216	0	0	0	0	0	235	299	0	230	0
19	0	139	0	0	0	0	0	373	236	0	81	0
20	0	0	0	0	0	0	134	439	236	0	0	0
21	0	0	0	0	0	0	238	439	235	0	0	0
22	0	0	0	0	0	0	236	410	142	0	0	0
23	0	0	0	0	0	0	236	413	0	0	0	0
24	0	0	0	0	0	0	235	426	0	0	0	0
25	0	0	0	0	0	0	92	436	0	0	0	0
26	0	0	0	0	0	0	0	430	0	0	0	0
27	0	0	0	0	0	0	0	433	0	0	0	0
28	0	0	0	0	0	0	136	440	115	0	0	0
29	0	0	0	0		0	236	440	129	129	0	0
30	0	0	0	0		0	149	440	0	151	0	0
31	0		0	0		0		440		0	0	
Min	0	0	0	0	0	0	0	0	0	0	0	0
Max	273	351	0	0	0	0	238	440	440	235	239	0
Mean	15	31	0	0	0	0	56	272	289	48	29	0
ac-ft	937	1861	0	0	0	0	3350	16705	17175	2964	1754	0

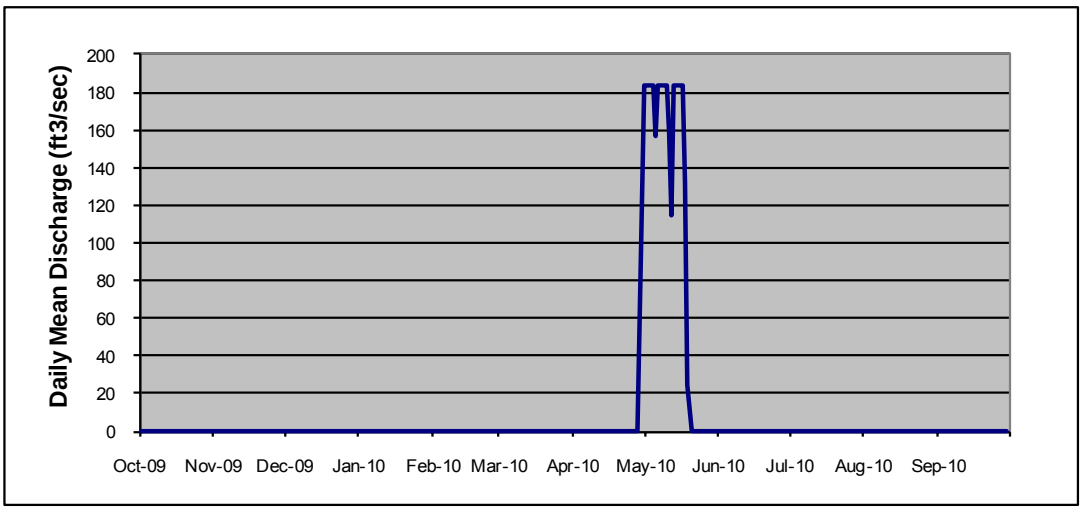


Appendix A (Table 9 of 38)
Windy Gap Pumping Plant, CO

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 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-2009 to 30-Sep-2010. Records are complete and reliable, but the data has not been revised. This record consists of operational data which could be subject to future revisions and changes.

Windy Gap Pump Discharge, Cubic Feet per Second, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	0	0	0	0	0	0	0	184	0	0	0	0
2	0	0	0	0	0	0	0	184	0	0	0	0
3	0	0	0	0	0	0	0	184	0	0	0	0
4	0	0	0	0	0	0	0	184	0	0	0	0
5	0	0	0	0	0	0	0	157	0	0	0	0
6	0	0	0	0	0	0	0	184	0	0	0	0
7	0	0	0	0	0	0	0	184	0	0	0	0
8	0	0	0	0	0	0	0	184	0	0	0	0
9	0	0	0	0	0	0	0	184	0	0	0	0
10	0	0	0	0	0	0	0	184	0	0	0	0
11	0	0	0	0	0	0	0	158	0	0	0	0
12	0	0	0	0	0	0	0	115	0	0	0	0
13	0	0	0	0	0	0	0	184	0	0	0	0
14	0	0	0	0	0	0	0	184	0	0	0	0
15	0	0	0	0	0	0	0	184	0	0	0	0
16	0	0	0	0	0	0	0	184	0	0	0	0
17	0	0	0	0	0	0	0	184	0	0	0	0
18	0	0	0	0	0	0	0	132	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	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	61	0	0	0	0	0
30	0	0	0	0		0	184	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	184	184	0	0	0	0
Mean	0	0	0	0	0	0	8	102	0	0	0	0
ac-ft	0	0	0	0	0	0	485	6261	0	0	0	0

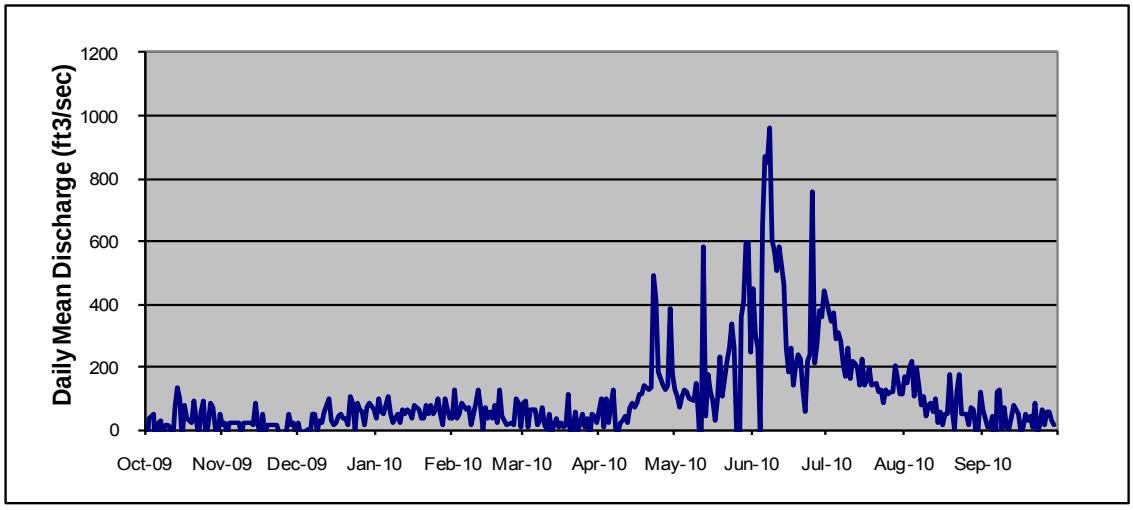


Appendix A (Table 10 of 38)
Granby Reservoir, CO

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 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-2009 to 30-Sep-2010. Records are complete, but the data has not been revised. This record consists of operational data which could be subject to future revisions and changes.

Inflow, Cubic Feet per Second, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	-92	14	23	34	34	85	97	123	448	406	167	63
2	34	18	-14	100	125	88	8	102	301	343	150	34
3	42	-16	-21	54	36	6	100	67	259	370	193	7
4	50	18	-8	46	47	61	24	104	-13	289	219	5
5	-135	18	-3	76	83	66	77	128	655	307	103	43
6	19	18	-21	108	64	64	129	117	873	280	194	-147
7	29	19	49	46	68	17	3	98	851	214	75	121
8	-57	-16	50	19	17	30	-5	94	960	167	108	126
9	12	18	-7	37	51	67	21	145	605	257	45	-2
10	13	18	26	52	81	12	30	36	568	161	79	68
11	10	18	24	21	130	-2	41	-117	502	221	84	11
12	-50	18	54	61	72	51	24	583	583	212	58	3
13	68	17	101	51	3	-5	71	41	467	198	100	77
14	132	84	25	64	67	33	85	174	259	143	19	65
15	101	17	15	55	36	8	69	120	184	225	55	52
16	-34	-17	19	35	58	20	86	90	257	137	17	-4
17	77	50	45	80	37	8	112	30	139	156	51	7
18	32	-15	52	61	80	12	114	100	205	197	48	49
19	23	11	33	33	23	114	143	229	238	143	172	26
20	93	16	35	33	123	-51	126	109	222	146	64	43
21	27	16	16	77	39	9	136	161	129	118	-3	10
22	-20	16	104	46	29	55	489	215	53	124	119	83
23	55	16	86	79	13	-7	413	259	215	83	176	-16
24	89	-17	2	48	20	23	179	337	238	129	46	14
25	-23	-21	81	64	11	52	165	259	760	116	52	62
26	17	-5	66	96	98	8	144	-257	209	122	14	12
27	88	50	54	48	86	33	125	354	271	119	73	54
28	68	16	16	14	5	-35	139	404	382	206	61	58
29	8	21	68	95		50	383	595	356	163	-9	30
30	-44	-17	84	65		43	176	593	444	112	-2	12
31	47		66	33		24		245		110	122	
Min	-135	-21	-21	14	3	-51	-5	-257	-13	83	-9	-147
Max	132	84	104	108	130	114	489	595	960	406	219	126
Mean	22	13	36	56	55	30	123	179	387	193	85	32
ac-ft	1342	754	2219	3425	3043	1856	7330	10967	23009	11832	5243	1909

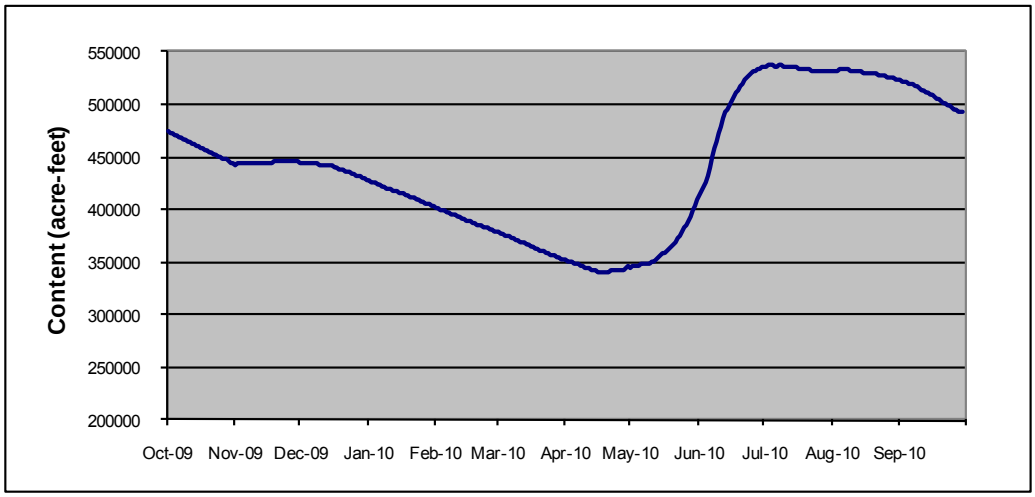


Appendix A (Table 11 of 38)
Granby Reservoir, CO

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 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 Colorado-Big Thompson Project. Maximum capacity is 539,800 acre-feet at elevation 8,280.00, with 463,300 acre-feet of active capacity between elevations 8186.90 and 8280.00 feet. Recorder was operated from 01-Oct-2009 to 30-Sep-2010. Records are complete, but the data has not been revised. A new recorder was added in the spring. This record consists of operational data which could be subject to future revisions and changes.

Storage, Acre-Feet, 2400-hour Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	474216	443119	445110	427336	401950	378421	351798	345405	413334	535484	531150	523112
2	473526	443185	445044	426555	401193	377685	350974	345697	417544	536277	531730	522465
3	472431	443185	444577	425781	400256	376588	350327	346047	421265	536781	532449	521753
4	471470	443252	444113	424939	399376	375739	349737	346513	425524	536999	532952	521112
5	470100	443318	443916	424036	398564	374887	348917	346865	432799	536781	532952	520467
6	469077	443385	443651	423195	397749	374099	348449	347626	441071	536493	533168	519325
7	468051	443452	443585	422361	397003	373187	347568	348273	449563	536205	532952	518682
8	467029	443452	443718	421393	396126	372342	346688	348625	458354	536853	532809	517689
9	466074	443518	443385	420622	395191	371492	345872	349209	465194	537145	532377	516476
10	465126	443585	442986	419978	394382	370585	345112	350561	471952	536709	532090	515336
11	464172	443651	442459	419084	393637	369621	344470	351151	478278	536493	531875	513992
12	463084	443718	442130	418440	392765	368836	343709	353507	486463	536133	531658	512713
13	462071	443784	441998	417609	391956	367934	343071	355217	492038	535845	531368	512145
14	461188	443982	441669	416966	391090	367269	342374	356818	496025	535773	530935	510942
15	460310	444047	441270	416140	390222	366311	341790	358182	499530	535556	530576	509738
16	459161	444510	440545	415440	389356	365409	341151	359730	503324	535121	530071	508394
17	458219	445044	439619	414737	388488	364508	340743	361159	507198	534254	529854	507127
18	457140	445044	438832	413906	387627	363493	340338	362954	510449	533530	529854	505786
19	456128	445375	438042	413207	386822	362773	339991	365289	513850	533385	529854	504446
20	455124	445441	437385	412509	386145	361698	339876	367510	517190	533024	529422	503183
21	454181	445507	436463	411807	385097	360803	340222	369741	520181	532809	528778	501917
22	453106	445573	435875	410854	384361	360029	341443	372221	523112	532521	528348	500860
23	452039	445639	435091	410030	383438	359136	342432	375618	525260	532162	528060	499671
24	450966	445639	434369	409080	382638	358301	343129	379454	527339	531875	527482	498408
25	449897	445573	433584	408193	381660	357413	343013	382515	529927	531513	526910	497284
26	448899	445375	432799	407431	380862	356580	343187	384607	531296	531223	526262	495955
27	448234	445507	431954	406487	380007	355751	343013	388242	532593	530863	525759	494906
28	447301	445573	431038	405474	379272	355040	343187	392827	533458	530791	525260	493993
29	446102	445375	430192	404654		354218	344528	399188	534254	531006	524688	492880
30	444911	445375	429347	403773		353330	345522	404149	534976	531223	524041	492038
31	444113		428374	402830		352502		408825		531151	523612	
Min	444113	443119	428374	402830	379272	352502	339876	345405	413334	530791	523612	492038
Max	474216	445639	445110	427336	401950	378421	351798	408825	534976	537145	533168	523112
EOM	444113	445375	428374	402830	379272	352502	345522	345522	534976	531151	523612	492038



Appendix A (Table 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, 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 Colorado-Big Thompson Project. Data was provided by personnel from the Northern Colorado Water Conservancy District. Releases were made through the outlet works valve. 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-2009 to 30-Sep-2010. Records are complete and fair. This record contains operational data which could be subject to future revisions and changes.

Discharge, Cubic Feet per Second, 2400-hour Values

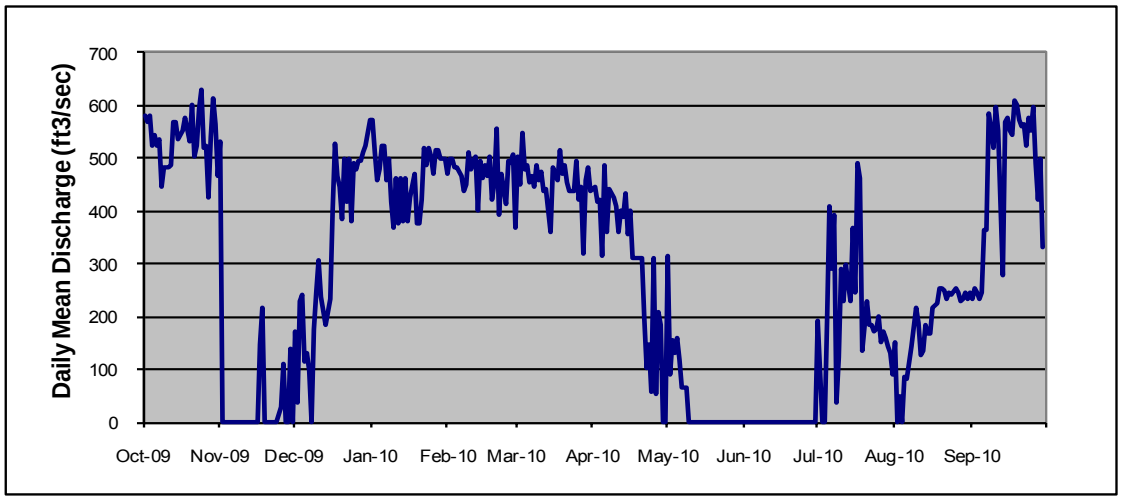
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	41	21	21	22	22	22	21	68	68	71	31	64
2	39	21	21	22	22	22	21	66	78	71	25	64
3	38	21	22	22	22	22	21	65	79	71	28	66
4	38	21	21	21	22	22	21	57	80	74	29	64
5	37	21	21	21	22	22	21	51	79	81	25	66
6	36	21	21	21	22	22	21	50	79	81	26	66
7	36	22	21	21	22	22	21	50	80	81	26	68
8	37	21	21	21	22	22	20	52	86	81	26	67
9	37	21	21	21	22	22	21	51	88	81	27	72
10	36	21	21	21	22	22	21	51	86	81	30	78
11	36	21	21	21	22	22	21	51	83	81	29	79
12	36	21	21	21	22	21	21	50	81	81	28	77
13	36	21	21	21	22	20	21	47	83	81	30	77
14	36	21	21	21	22	20	21	42	85	81	30	77
15	34	21	21	21	22	20	21	44	78	81	30	77
16	27	21	21	21	22	19	21	44	72	81	30	77
17	24	21	21	21	22	21	21	49	71	79	28	76
18	24	21	21	21	22	23	21	49	69	79	27	75
19	25	21	21	21	22	22	21	56	69	83	29	75
20	25	21	21	21	22	21	21	59	67	84	52	78
21	25	21	21	21	22	21	21	58	72	84	63	78
22	25	21	21	21	22	21	22	58	71	84	64	78
23	25	21	21	21	22	20	21	58	71	84	64	77
24	25	21	22	21	22	21	21	59	72	85	63	77
25	25	21	22	22	22	21	21	56	72	85	64	77
26	25	21	22	22	22	21	21	52	72	85	62	77
27	25	21	22	21	22	21	21	53	71	86	62	77
28	25	21	22	21	22	21	21	60	69	86	63	77
29	25	21	22	22		21	21	64	64	78	63	77
30	25	21	22	22		21	25	66	71	63	63	79
31	20		22	22		21		64		64	63	
Min	20	21	21	21	22	19	20	42	64	63	25	64
Max	41	22	22	22	22	23	25	68	88	86	64	79
Mean	31	21	21	21	22	21	21	55	76	80	41	74
ac-ft	1877	1249	1307	1305	1220	1305	1255	3366	4487	4887	2534	4390

Appendix A (Table 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 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 when transmountain diversions via Adams Tunnel are taking place. Data was provided by Farr Pumping Plant operators each morning. Data was collected from 01-Oct-2009 to 30-Sep-2010. Daily data provided by the Northern Colorado Water Conservancy District. Records are complete and reliable. This record contains operational data which could be subject to future revisions and changes.

Discharge, Cubic Feet per Second, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	581	532	173	573	469	505	447	315	0	194	152	234
2	569	0	36	510	498	450	418	90	0	0	0	253
3	582	0	230	460	499	550	421	157	0	0	51	246
4	523	0	243	478	482	480	316	131	0	194	0	234
5	545	0	114	523	483	486	486	158	0	408	85	246
6	525	0	129	524	466	453	360	118	0	292	81	363
7	536	0	100	459	436	468	442	66	0	391	142	363
8	447	0	0	499	450	447	435	66	0	35	180	585
9	482	0	178	418	513	486	427	0	0	122	218	558
10	481	0	244	368	480	460	408	0	0	291	187	521
11	481	0	307	464	496	475	359	0	0	229	126	596
12	489	0	237	378	503	438	403	0	0	297	137	553
13	568	0	184	462	402	443	388	0	0	262	183	278
14	567	0	208	380	495	361	432	0	0	229	168	568
15	536	0	233	463	464	484	358	0	0	367	168	578
16	544	0	402	380	486	472	403	0	0	247	215	553
17	554	149	529	426	466	457	313	0	0	490	220	544
18	578	218	466	472	505	517	313	0	0	463	224	611
19	534	0	448	377	420	471	313	0	0	136	254	601
20	600	0	383	377	455	486	313	0	0	231	254	572
21	505	0	498	423	558	455	195	0	0	183	249	559
22	524	0	417	519	391	440	104	0	0	183	235	564
23	595	0	498	486	469	440	146	0	0	173	247	524
24	632	0	382	519	415	439	59	0	0	178	243	578
25	518	29	493	502	495	494	311	0	0	200	254	554
26	522	112	478	471	491	423	52	0	0	152	247	599
27	425	0	496	516	508	446	209	0	0	171	228	493
28	540	0	494	516	367	318	183	0	0	158	234	420
29	614	138	511	500		460	0	0	0	145	246	501
30	563	0	526	500		485	0	0	0	130	234	331
31	466		573	499		437		0		91	246	
Min	425	0	0	368	367	318	0	0	0	0	0	234
Max	632	532	573	573	558	550	486	315	0	490	254	611
Mean	536	39	329	466	470	459	300	36	0	214	184	473
ac-ft	32919	2332	20216	28595	26061	28167	17848	2180	0	13151	11302	28076

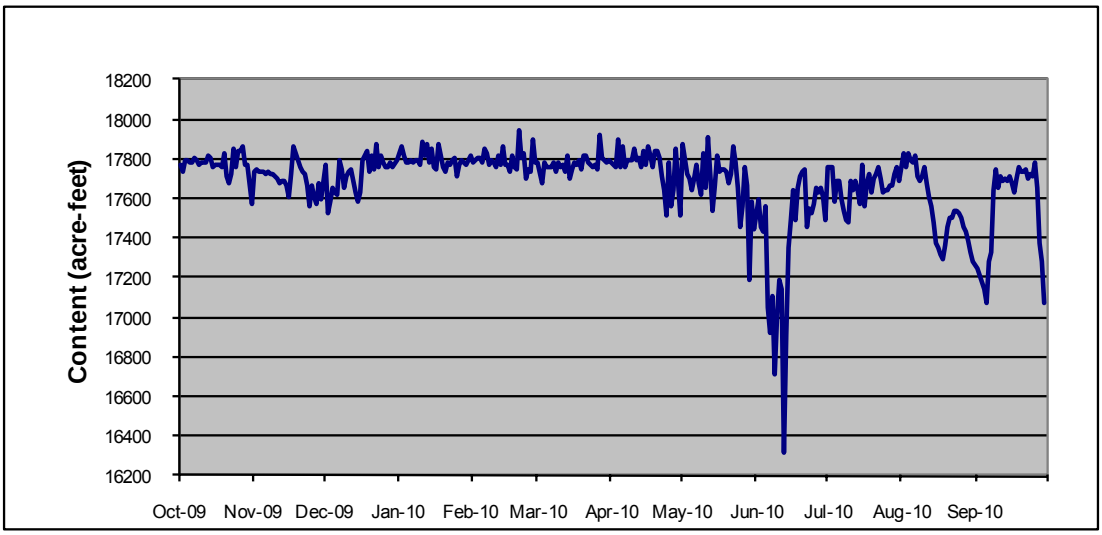


Appendix A (Table 14 of 38)
Shadow Mountain/Grand Lake, CO

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 from topographic map.
Remarks.--Constructed between 1944 and 1946. Impoundment began in 1946. Active capacity between elevations 8,366 and 8,367 is 1,800 acre-feet. Grand Lake is used as forebay storage for Adams Tunnel. Recorder was operated from 01-Oct-2009 to 30-Sep-2010. 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, Acre-Feet, 2400-hour Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	17772	17739	17765	17825	17776	17781	17774	17873	17601	17753	17823	17248
2	17736	17742	17529	17858	17795	17672	17763	17726	17457	17758	17763	17212
3	17791	17737	17579	17813	17803	17779	17892	17700	17435	17579	17828	17175
4	17791	17737	17653	17776	17808	17758	17758	17645	17557	17690	17792	17138
5	17783	17732	17632	17779	17781	17753	17868	17700	17049	17692	17786	17078
6	17783	17718	17621	17793	17855	17761	17761	17773	16920	17593	17813	17285
7	17801	17732	17797	17776	17832	17779	17790	17681	17110	17532	17713	17330
8	17798	17718	17742	17790	17771	17729	17790	17618	16710	17487	17685	17645
9	17766	17718	17658	17795	17790	17776	17795	17828	17002	17482	17713	17743
10	17779	17713	17708	17766	17776	17761	17855	17650	17190	17690	17763	17649
11	17779	17700	17732	17887	17763	17774	17798	17905	17145	17643	17671	17709
12	17783	17673	17747	17819	17813	17739	17805	17718	16321	17685	17608	17692
13	17814	17686	17686	17872	17766	17813	17763	17534	16909	17643	17561	17696
14	17809	17686	17626	17781	17868	17706	17837	17663	17349	17574	17482	17685
15	17759	17668	17589	17855	17769	17748	17774	17815	17493	17766	17377	17712
16	17772	17608	17627	17763	17766	17779	17868	17737	17643	17559	17353	17680
17	17772	17721	17795	17743	17739	17774	17813	17750	17488	17682	17322	17630
18	17772	17866	17813	17873	17811	17793	17758	17742	17659	17724	17298	17699
19	17754	17833	17837	17819	17758	17751	17843	17733	17711	17634	17364	17754
20	17827	17797	17739	17763	17751	17816	17837	17673	17738	17703	17451	17741
21	17717	17755	17819	17738	17943	17816	17805	17728	17746	17721	17500	17736
22	17675	17737	17743	17776	17806	17785	17711	17859	17454	17758	17506	17746
23	17722	17718	17873	17771	17825	17774	17645	17778	17546	17703	17537	17704
24	17846	17668	17763	17795	17696	17758	17516	17652	17528	17629	17537	17727
25	17759	17561	17813	17800	17743	17766	17784	17458	17568	17648	17524	17714
26	17843	17663	17776	17714	17739	17745	17561	17560	17655	17643	17500	17778
27	17841	17613	17753	17771	17892	17915	17639	17761	17626	17661	17451	17659
28	17857	17571	17763	17790	17776	17800	17847	17669	17658	17663	17427	17373
29	17765	17681	17781	17785		17798	17692	17184	17603	17726	17390	17286
30	17771	17599	17756	17774		17785	17513	17584	17487	17763	17327	17074
31	17570		17798	17813		17790		17439		17685	17285	
Min	17570	17561	17529	17714	17696	17672	17513	17184	16321	17482	17285	17074
Max	17857	17866	17873	17887	17943	17915	17892	17905	17746	17766	17828	17778
EOM	17570	17599	17798	17813	17776	17790	17513	17513	17487	17685	17285	17074

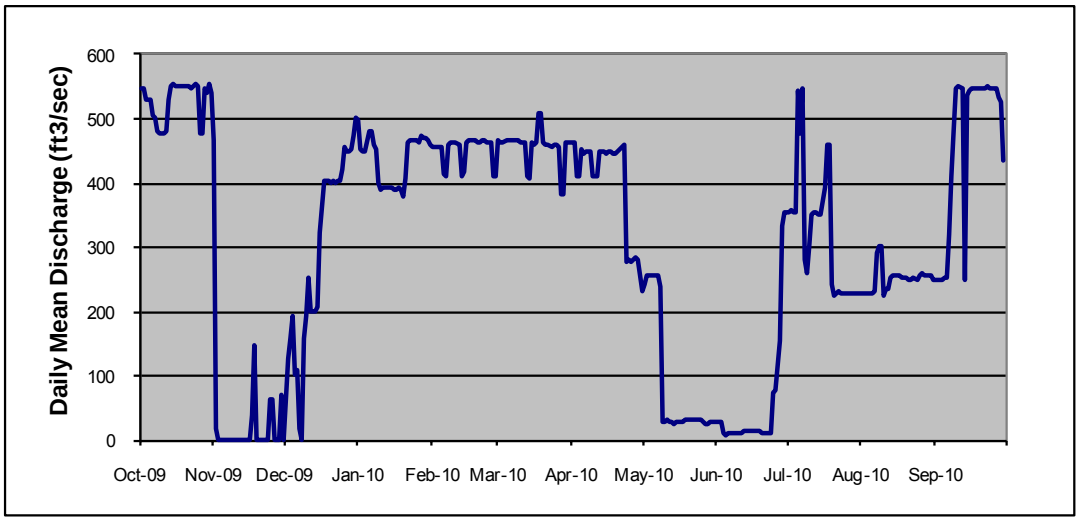


Appendix A (Table 15 of 38)
Alva B. Adams Tunnel at East Portal, near Estes Park, CO

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 from topographic map.
Remarks.-- Constructed between 1940 and 1947. Tunnel is 13.1 miles long, and extends between Grand Lake and Estes Park. Its maximum capacity is 550 cubic feet per second. Recorder was operated from 01-Oct-2009 to 30-Sep-2010. Records are complete and reliable. This record contains operational data which could be subject to future revisions and changes.

Discharge, Cubic Feet per Second, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	546	468	63	498	456	467	461	242	28	353	229	249
2	546	19	126	453	456	462	463	257	28	357	229	248
3	530	1	159	450	455	465	409	257	28	355	230	248
4	528	1	193	450	455	466	409	256	10	353	230	248
5	528	1	101	480	456	466	453	256	8	542	229	251
6	504	1	107	480	414	466	444	257	9	477	230	252
7	502	1	18	459	411	465	450	257	9	548	290	321
8	479	1	1	454	458	465	451	239	10	281	303	411
9	476	1	157	399	462	466	449	27	11	260	301	481
10	477	1	193	390	462	465	411	27	12	303	224	548
11	477	1	251	392	462	465	410	33	12	352	235	550
12	479	1	202	392	458	464	450	27	14	353	235	546
13	528	1	201	393	412	410	447	27	15	353	253	249
14	553	1	200	391	416	409	448	26	14	351	255	537
15	553	1	206	392	464	463	446	27	15	351	255	545
16	551	1	322	391	466	461	448	27	15	393	255	547
17	551	37	404	388	467	463	448	27	15	460	255	547
18	552	146	403	392	465	510	447	29	14	460	253	546
19	552	1	403	391	467	508	447	30	13	242	253	548
20	552	1	401	379	463	461	449	31	12	224	253	547
21	551	1	402	407	464	461	451	31	11	228	250	547
22	549	1	400	465	467	459	456	32	11	231	250	549
23	552	1	402	467	468	458	460	32	10	230	251	550
24	554	1	402	468	465	458	279	32	10	228	249	548
25	550	65	421	468	464	458	281	32	75	228	255	548
26	478	62	457	465	464	456	279	28	77	228	258	549
27	477	1	450	472	409	381	280	26	153	228	258	547
28	549	1	450	471	410	383	283	26	334	228	257	533
29	542	69	451	469		464	280	27	356	228	257	527
30	553	1	475	467		464	230	28	354	229	256	436
31	541		501	459		464		28		229	249	
Min	476	1	1	379	409	381	230	26	8	224	224	248
Max	554	468	501	498	468	510	463	257	356	548	303	550
Mean	528	29	288	435	451	457	404	86	56	319	251	458
ac-ft	32396	1743	17669	26717	25023	28064	23999	5308	3333	19567	15426	27229

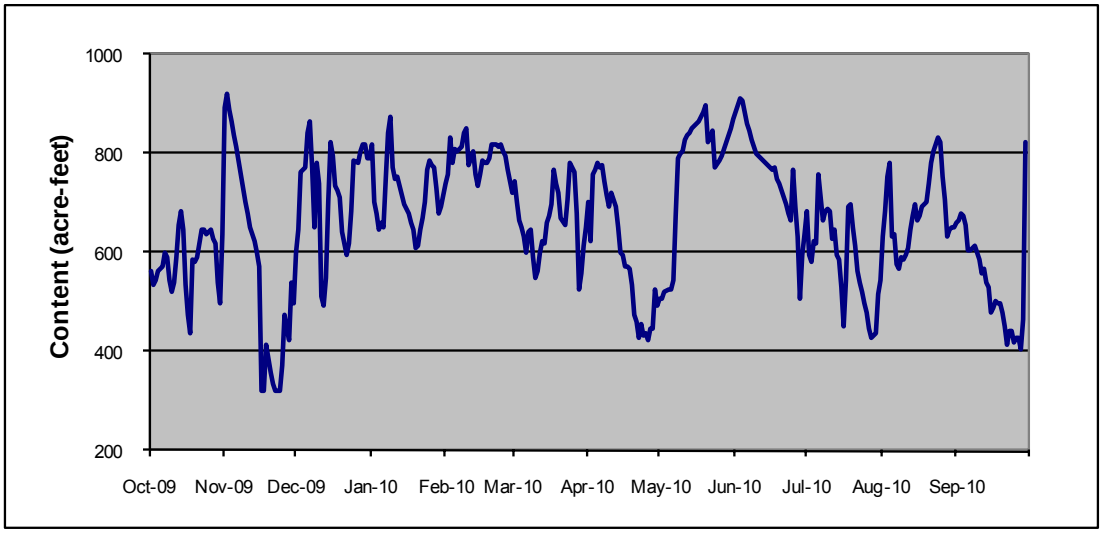


Appendix A (Table16 of 38)
Marys Lake, CO

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 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 acre-feet. 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-2009 to 30-Sep-2010. Record is complete and reliable, except for 5 days in November when the water surface level dropped below 8,022.62. The gage does not record water surface levels below elevation 8,022.62 feet, content of 321 acre-feet. These are operational data which could be subject to further revisions and changes.

Storage, Acre-Feet, 2400-hour Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	562	895	600	818	741	743	701	505	882	686	634	661
2	535	920	647	704	757	700	623	507	898	597	682	667
3	546	891	765	681	831	666	756	520	914	579	751	677
4	563	865	770	649	783	650	768	524	905	622	779	676
5	570	836	844	661	808	630	784	525	882	617	630	655
6	572	812	865	650	806	602	772	543	861	760	635	604
7	602	784	774	749	812	643	777	676	845	667	576	603
8	589	758	651	841	844	646	746	791	829	683	569	611
9	544	731	784	874	850	592	718	799	815	686	592	615
10	522	704	741	772	776	549	695	805	802	685	588	585
11	541	677	512	748	793	564	721	827	793	629	596	560
12	591	652	495	753	804	600	691	835	789	646	609	568
13	656	625	547	735	758	625	650	842	787	594	646	540
14	682	601	700	715	734	620	600	849	782	584	675	532
15	647	574	825	696	758	660	596	856	776	531	698	481
16	537	320	793	677	784	676	570	862	769	453	667	489
17	472	320	735	662	780	697	572	866	773	546	675	501
18	439	413	723	648	783	765	569	874	750	694	695	496
19	584	387	711	608	793	740	534	884	739	698	702	499
20	581	360	642	615	818	723	473	897	728	650	738	477
21	591	335	617	646	820	670	458	822	713	615	782	451
22	645	320	595	671	818	656	428	834	699	563	805	413
23	646	320	619	704	813	705	458	847	681	538	819	440
24	639	320	685	767	818	780	430	772	665	522	833	441
25	643	370	785	784	803	771	439	786	766	500	822	420
26	648	474	783	775	796	762	422	797	691	477	752	430
27	626	449	805	770	768	678	448	810	632	448	707	428
28	620	424	819	730	723	526	445	823	505	428	634	403
29	539	537	818	678		559	528	837	597	438	645	464
30	497	498	791	695		612	492	853	639	518	653	824
31	636		792	717		652		869		542	653	
Min	439	320	495	608	723	526	422	505	505	428	569	403
Max	682	920	865	874	850	780	784	897	914	760	833	824
EOM	636	498	792	717	723	652	492	492	639	542	653	824

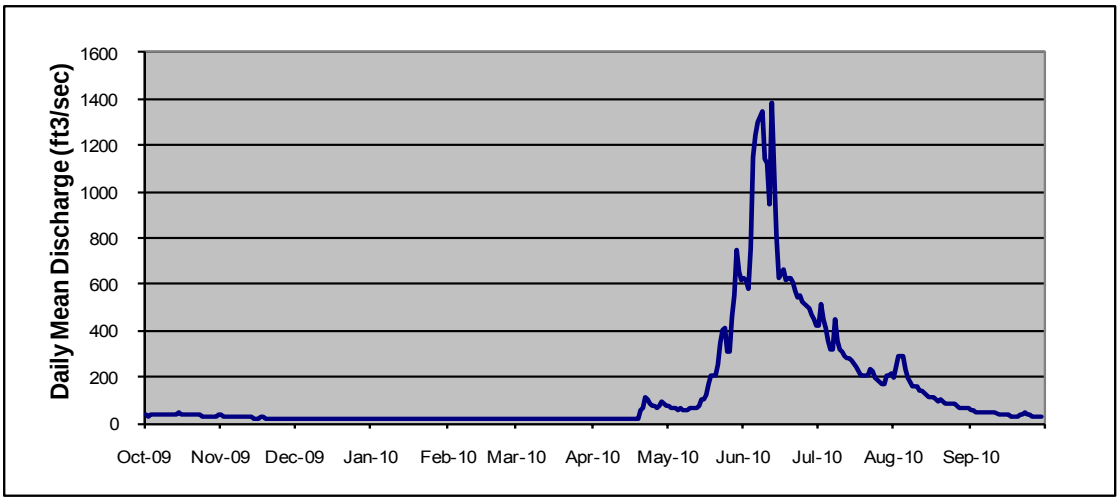


Appendix A (Table 17 of 38)
Big Thompson River above Lake Estes, CO

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 data collection platform as primary record with graphic chart recorder as backup. Recorder was operated from 01-Oct-2009 to 30-Sep-2010. The station is shutdown during winter (November 29th through April 19th). Values for the off-season are estimated. Peak flows in June may have been affected as the water rose above the side boards of the flume, therefore affecting the rating table. This record contains operational data which could be subject to future revisions and changes. The official record for this station is published by the State of Colorado, Department of Water Resources.

Discharge, Cubic Feet per Second, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	34	34	19	18	18	18	18	72	630	420	196	57
2	30	32	16	18	18	18	18	68	617	519	244	52
3	34	30	17	18	18	18	18	64	580	450	286	51
4	36	29	18	18	18	18	18	63	758	408	290	47
5	41	28	17	18	18	18	18	61	1150	354	231	44
6	35	28	18	18	18	18	18	61	1248	319	198	43
7	36	27	18	18	18	18	18	59	1299	320	174	42
8	41	27	17	18	18	18	18	58	1348	447	163	44
9	38	26	18	18	18	18	18	56	1143	358	162	51
10	36	25	18	18	18	18	18	65	1120	315	161	46
11	35	25	18	18	18	18	18	70	946	305	140	43
12	39	25	17	18	18	18	18	69	1383	288	142	41
13	38	26	17	18	18	18	18	64	1084	279	134	38
14	39	21	17	18	18	18	18	78	805	280	123	38
15	43	22	18	18	18	18	18	100	626	272	117	34
16	39	18	18	18	18	18	18	105	641	243	111	33
17	35	26	18	18	18	18	18	123	660	223	108	32
18	36	25	18	18	18	18	18	170	616	210	102	32
19	38	23	18	18	18	18	18	207	631	210	95	30
20	38	20	18	18	18	18	60	203	629	210	100	32
21	40	22	18	18	18	18	68	254	605	210	91	34
22	34	22	18	18	18	18	109	345	571	238	86	34
23	35	18	18	18	18	18	103	403	540	221	82	42
24	32	14	18	18	18	18	85	410	550	199	83	38
25	33	23	18	18	18	18	80	306	521	188	80	34
26	24	22	18	18	18	18	74	313	519	178	73	31
27	32	21	18	18	18	18	66	462	496	165	68	30
28	31	20	18	18	18	18	72	551	470	169	66	30
29	29	19	18	18		18	94	752	445	201	67	29
30	25	18	18	18		18	78	656	422	208	63	28
31	35		18	18		18		618		212	61	
Min	24	14	16	18	18	18	18	56	422	165	61	28
Max	43	34	19	18	18	18	109	752	1383	519	290	57
Mean	35	24	18	18	18	18	41	222	769	278	132	39
ac-ft	2161	1418	1090	1106	999	1106	2435	13639	45650	17066	8111	2304

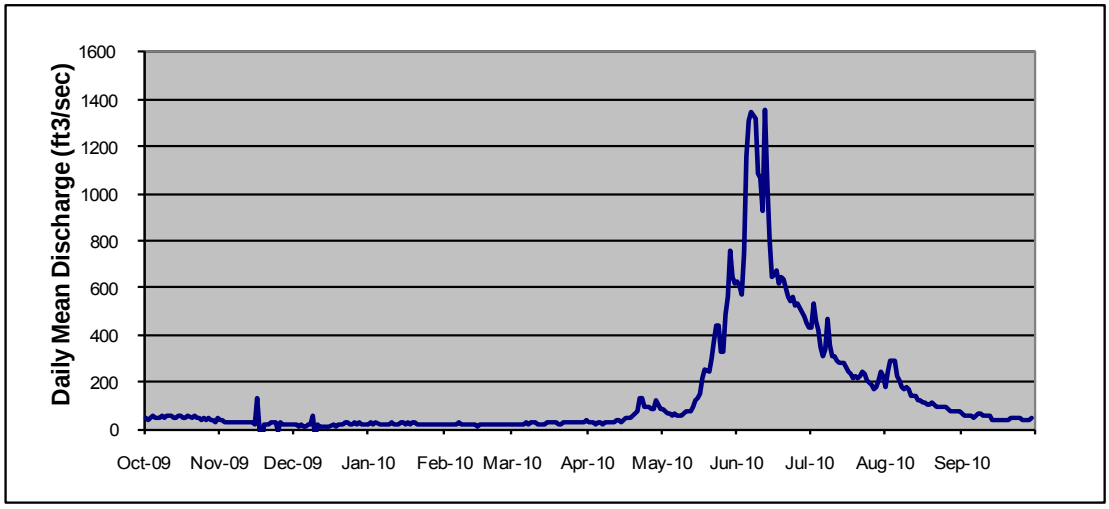


Appendix A (Table 18 of 38)
Olympus Dam, CO

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 on November 1948. Total capacity at maximum water surface elevation of 7475.0 feet is 3,070 acre-feet. Inflow is computed based on change-in-storage, flow through the Adams Tunnel and outflow. Records are complete and reliable, but have not been revised. This record contains operational data which could be subject to future revisions and changes.

Inflow, Cubic Feet per Second, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	46	39	17	16	15	19	31	82	623	427	180	64
2	40	39	17	30	18	23	25	76	612	533	245	61
3	47	28	8	23	17	23	28	70	567	457	293	60
4	52	30	21	25	21	20	22	68	745	416	290	56
5	51	26	10	19	16	21	25	61	1156	349	228	53
6	47	31	13	21	22	24	26	65	1308	309	202	50
7	46	28	15	18	24	21	22	57	1345	335	180	56
8	58	28	16	19	19	24	23	58	1317	470	172	64
9	49	26	53	21	19	24	29	53	1087	360	174	70
10	53	25	-35	29	19	25	27	63	1067	311	165	58
11	52	25	20	22	17	21	27	76	923	307	141	57
12	54	25	5	23	18	22	38	79	1359	289	143	54
13	49	27	5	23	17	20	34	70	1050	280	136	37
14	51	25	12	24	14	21	31	95	802	282	126	40
15	59	23	11	24	16	24	41	125	642	277	120	42
16	54	132	10	22	16	25	45	127	657	247	114	40
17	47	1	16	24	18	27	48	151	675	233	108	41
18	49	-59	13	23	19	26	49	211	614	214	101	39
19	54	23	17	24	19	31	56	254	642	224	107	38
20	48	19	20	24	20	21	62	242	639	218	112	37
21	52	21	23	22	20	22	73	297	603	225	101	42
22	42	27	27	20	20	24	131	373	565	247	95	42
23	46	28	27	19	19	33	131	436	540	230	91	51
24	41	25	23	16	19	27	94	439	560	207	93	45
25	44	-6	19	16	20	24	98	325	522	195	91	43
26	34	26	25	17	19	28	93	330	531	184	85	40
27	49	19	22	21	16	27	83	483	500	169	79	40
28	42	18	27	22	18	27	88	559	478	174	77	41
29	34	19	15	23		25	122	754	453	204	78	34
30	32	16	15	19		27	84	649	430	244	72	48
31	45		18	19		35		617		221	70	
Min	32	-59	-35	16	14	19	22	53	430	169	70	34
Max	59	132	53	30	24	35	131	754	1359	533	293	70
Mean	47	24	16	21	18	25	56	237	767	285	138	48
ac-ft	2908	1453	998	1316	1016	1505	3341	14546	45565	17492	8454	2855

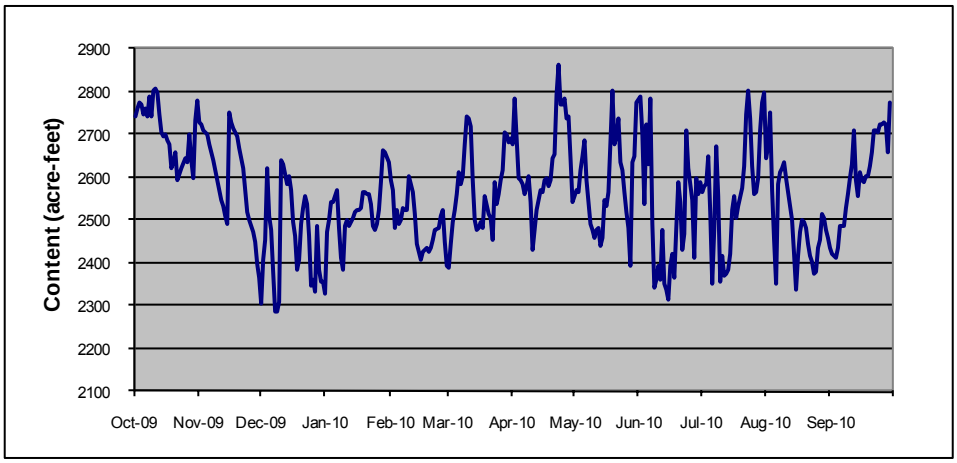


Appendix A (Table 19 of 38)
Olympus Dam, CO

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 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 acre-feet. Used as afterbay storage for Estes Powerplant and forebay for Olympus Tunnel. Recorder was operated from 01-Oct-2009 to 30-Sep-2010. Records are complete and reliable. This record contains operational data which could be subject to future revisions and changes.

Storage, Acre-Feet, 2400-hour Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	2742	2730	2304	2327	2594	2387	2679	2558	2789	2566	2643	2435
2	2762	2721	2408	2470	2569	2443	2785	2569	2701	2577	2674	2423
3	2773	2711	2453	2501	2481	2494	2691	2567	2535	2582	2752	2416
4	2768	2705	2619	2544	2524	2524	2599	2618	2723	2650	2571	2413
5	2749	2698	2509	2542	2491	2561	2592	2650	2630	2517	2452	2435
6	2762	2679	2475	2569	2499	2611	2582	2684	2784	2349	2351	2486
7	2744	2660	2381	2483	2527	2584	2561	2592	2491	2475	2584	2488
8	2791	2640	2287	2413	2525	2603	2577	2491	2341	2672	2611	2527
9	2744	2618	2287	2386	2524	2679	2603	2475	2359	2556	2623	2559
10	2801	2592	2309	2486	2601	2742	2541	2460	2394	2354	2635	2599
11	2808	2569	2642	2499	2584	2739	2431	2475	2359	2418	2599	2630
12	2796	2547	2631	2484	2567	2716	2476	2483	2475	2368	2564	2708
13	2745	2532	2584	2494	2514	2592	2522	2442	2352	2376	2499	2592
14	2703	2511	2604	2504	2443	2499	2571	2460	2338	2383	2419	2558
15	2694	2489	2569	2517	2424	2475	2564	2546	2312	2423	2339	2613
16	2699	2752	2496	2524	2407	2481	2592	2530	2392	2525	2416	2592
17	2686	2730	2464	2524	2424	2494	2597	2564	2423	2558	2472	2591
18	2676	2713	2383	2529	2432	2481	2577	2682	2367	2503	2499	2601
19	2621	2694	2407	2564	2437	2558	2594	2803	2481	2534	2494	2604
20	2637	2667	2489	2567	2424	2514	2645	2677	2589	2575	2483	2625
21	2659	2643	2527	2561	2434	2506	2655	2694	2544	2625	2443	2659
22	2594	2621	2554	2561	2454	2455	2792	2735	2429	2745	2418	2708
23	2606	2569	2539	2539	2475	2591	2860	2633	2467	2803	2400	2708
24	2620	2519	2464	2486	2481	2539	2768	2616	2711	2739	2376	2706
25	2643	2499	2347	2478	2509	2563	2768	2564	2621	2625	2381	2725
26	2635	2484	2362	2491	2525	2592	2782	2517	2547	2559	2434	2721
27	2699	2472	2333	2522	2448	2614	2737	2483	2410	2564	2452	2727
28	2638	2447	2488	2587	2392	2706	2744	2392	2597	2599	2516	2723
29	2596	2399	2384	2662		2701	2643	2635	2561	2708	2506	2659
30	2733	2365	2357	2659		2681	2544	2647	2589	2777	2478	2775
31	2780		2357	2635		2689		2773		2796	2457	
Min	2594	2365	2287	2327	2392	2387	2431	2392	2312	2349	2339	2413
Max	2808	2752	2642	2662	2601	2742	2860	2803	2789	2803	2752	2775
EOM	2780	2365	2357	2635	2392	2689	2544	2544	2589	2796	2457	2775

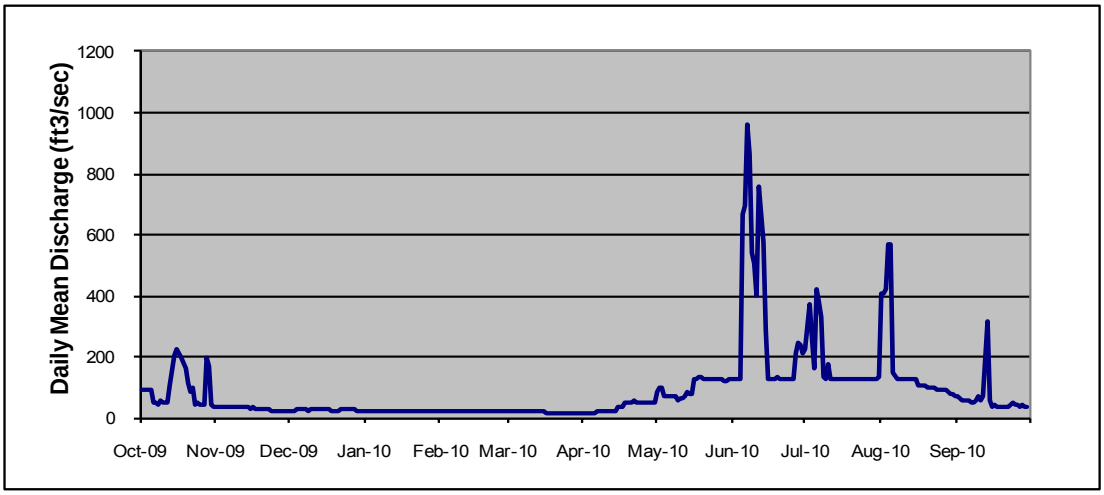


Appendix A (Table 20 of 38)
Big Thompson River below Olympus Dam, CO

Location. --Lat 40°22'35", long 105°29'06", Larimer County, Hydrologic Unit 10190006, 600 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 7492.50 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 data collection platform and digital recorder as primary record. Recorder was operated from 01-Oct-2009 to 30-Sep-2010. 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 State of Colorado, Department of Water Resources.

Discharge, Cubic Feet per Second, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	89	35	24	20	20	20	14	84	124	225	404	70
2	92	34	24	20	20	20	14	100	127	372	407	64
3	93	34	24	20	20	20	14	100	126	262	420	57
4	91	32	25	20	20	20	14	72	128	160	571	57
5	89	33	26	20	20	20	14	74	666	420	568	55
6	52	36	25	20	20	20	21	70	692	376	147	53
7	47	35	25	20	20	20	21	68	960	329	129	49
8	43	35	25	20	20	20	21	71	863	132	128	51
9	53	34	24	20	20	20	21	54	542	125	124	58
10	49	35	25	20	20	20	21	64	505	172	126	68
11	53	34	25	20	20	21	21	60	401	125	127	55
12	51	33	26	20	20	21	21	68	756	124	126	68
13	106	32	26	22	20	20	21	85	575	129	126	317
14	153	32	26	20	20	20	21	79	284	129	129	56
15	205	32	26	20	20	20	32	76	127	129	125	38
16	228	32	25	20	20	14	32	129	128	124	103	44
17	209	27	25	20	20	14	33	129	124	127	106	35
18	199	27	24	20	20	14	48	131	127	127	105	35
19	165	27	24	20	20	14	50	133	130	128	104	35
20	113	27	25	20	20	14	49	126	129	128	101	35
21	87	27	24	20	20	14	53	129	129	128	101	37
22	95	26	26	20	20	14	51	130	130	128	100	37
23	45	25	26	20	20	14	51	123	127	127	97	39
24	48	24	27	20	20	14	51	124	126	126	92	47
25	45	24	27	20	20	15	51	125	126	129	91	45
26	44	24	26	20	20	15	51	123	128	127	94	41
27	40	24	27	20	20	15	51	124	211	128	91	37
28	193	24	27	20	20	15	50	120	247	128	81	39
29	167	24	20	20		15	49	122	235	128	77	38
30	41	23	20	20		14	50	123	210	126	80	35
31	34		20	20		14		124		131	72	
Min	34	23	20	20	20	14	14	54	124	124	72	35
Max	228	36	27	22	20	21	53	133	960	420	571	317
Mean	97	30	25	20	20	17	34	101	306	169	166	56
ac-ft	5977	1758	1521	1238	1110	1054	2005	6218	18184	10391	10205	3353

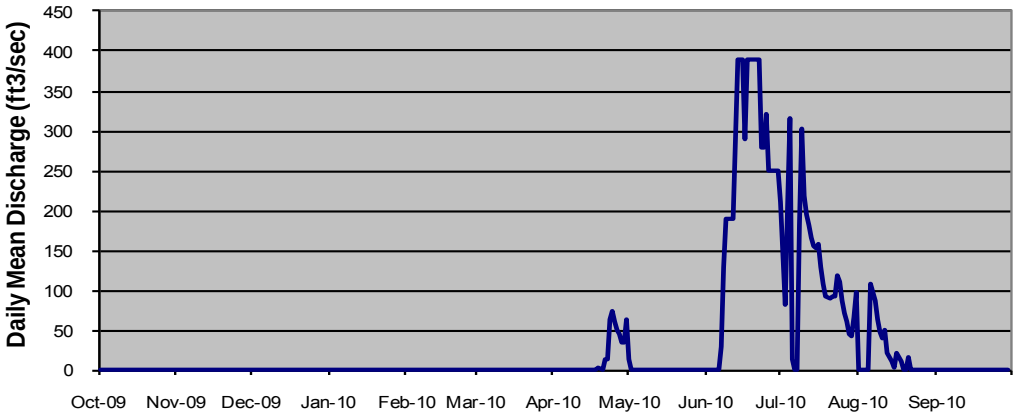


Appendix A (Table 21 of 38)
Olympus Tunnel near Estes Park, CO

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 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 capacity is 550 cubic feet per second. 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 from 01-Oct-2009 through 30-Sep-2010. Records are complete and reliable. This record contains operational data which could be subject to future revisions and changes.

Hydropower Diversion (Skim), Cubic Feet per Second, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	0	0	0	0	0	0	0	14	0	210	0	0
2	0	0	0	0	0	0	0	0	0	81	0	0
3	0	0	0	0	0	0	0	0	0	205	0	0
4	0	0	0	0	0	0	0	0	0	317	0	0
5	0	0	0	0	0	0	0	0	0	13	0	0
6	0	0	0	0	0	0	0	0	0	0	108	0
7	0	0	0	0	0	0	0	0	30	0	86	0
8	0	0	0	0	0	0	0	0	130	181	62	0
9	0	0	0	0	0	0	0	0	190	303	48	0
10	0	0	0	0	0	0	0	0	190	219	40	0
11	0	0	0	0	0	0	0	0	190	194	51	0
12	0	0	0	0	0	0	0	0	190	182	20	0
13	0	0	0	0	0	0	0	0	390	167	15	0
14	0	0	0	0	0	0	0	0	390	154	11	0
15	0	0	0	0	0	0	0	0	390	153	2	0
16	0	0	0	0	0	0	0	0	290	159	20	0
17	0	0	0	0	0	0	0	0	390	130	16	0
18	0	0	0	0	0	0	0	0	390	109	10	0
19	0	0	0	0	0	0	2	0	390	92	0	0
20	0	0	0	0	0	0	0	0	390	89	0	0
21	0	0	0	0	0	0	12	0	390	91	15	0
22	0	0	0	0	0	0	13	0	390	91	1	0
23	0	0	0	0	0	0	63	0	280	118	0	0
24	0	0	0	0	0	0	75	0	280	110	0	0
25	0	0	0	0	0	0	61	0	320	86	0	0
26	0	0	0	0	0	0	51	0	250	71	0	0
27	0	0	0	0	0	0	46	0	250	61	0	0
28	0	0	0	0	0	0	35	0	250	46	0	0
29	0	0	0	0		0	35	0	250	42	0	0
30	0	0	0	0		0	63	0	250	66	0	0
31	0		0	0		0		0		97	0	
Min	0	0	0	0	0	0	0	0	0	0	0	0
Max	0	0	0	0	0	0	75	14	390	317	108	0
Mean	0	0	0	0	0	0	15	0	228	124	16	0
ac-ft	0	0	0	0	0	0	902	28	13563	7597	1000	0

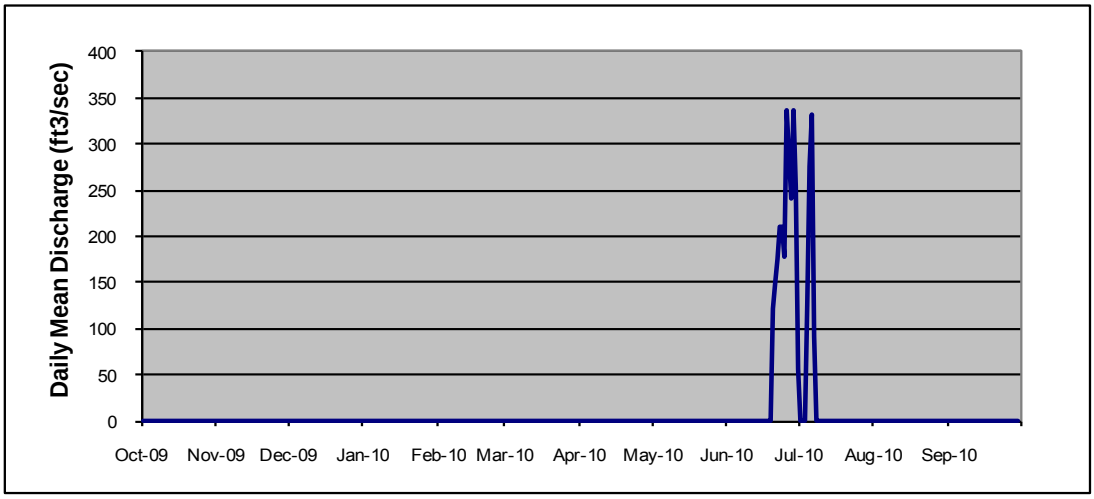


Appendix A (Table 22 of 38)
Olympus Tunnel, CO

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 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 capacity is 550 cubic feet per second. The right to divert native run-off is determined by the State of Colorado. Period of record from 01-Oct-2009 through 30-Sep-2010. Record is complete and reliable.

Priority Diversion Flow, Cubic Feet per Second, 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	127	0	0
5	0	0	0	0	0	0	0	0	0	277	0	0
6	0	0	0	0	0	0	0	0	0	333	0	0
7	0	0	0	0	0	0	0	0	0	91	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	121	0	0	0
21	0	0	0	0	0	0	0	0	150	0	0	0
22	0	0	0	0	0	0	0	0	176	0	0	0
23	0	0	0	0	0	0	0	0	210	0	0	0
24	0	0	0	0	0	0	0	0	210	0	0	0
25	0	0	0	0	0	0	0	0	178	0	0	0
26	0	0	0	0	0	0	0	0	336	0	0	0
27	0	0	0	0	0	0	0	0	242	0	0	0
28	0	0	0	0	0	0	0	0	336	0	0	0
29	0	0	0	0		0	0	0	252	0	0	0
30	0	0	0	0		0	0	0	55	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	336	333	0	0
Mean	0	0	0	0	0	0	0	0	76	27	0	0
ac-ft	0	0	0	0	0	0	0	0	4487	1639	0	0

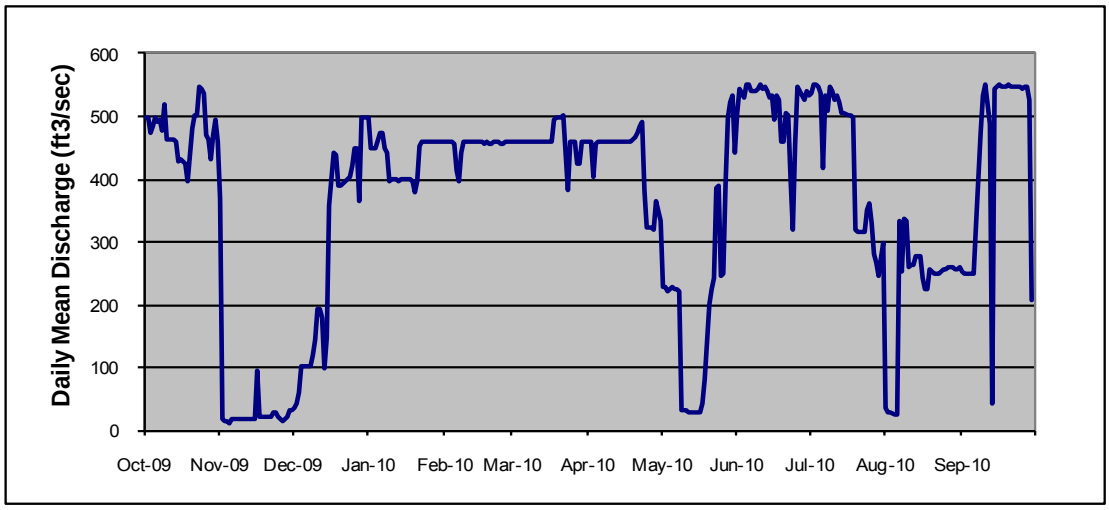


Appendix A (Table 23 of 38)
Olympus Tunnel, CO

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 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 capacity is 550 cubic feet per second. Recorder was operated from 01-Oct-2009 to 30-Sep-2010. Records are complete and reliable. This record contains operational data which could be subject to future revisions and changes.

Discharge, Cubic Feet per Second, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	498	367	36	497	459	458	459	227	507	537	36	251
2	497	16	42	448	458	458	459	226	542	551	27	249
3	473	15	61	449	459	459	404	222	539	551	28	249
4	483	15	103	449	459	459	458	224	530	549	26	249
5	498	12	103	473	456	459	460	226	550	537	24	249
6	492	18	101	473	413	458	459	226	550	419	334	250
7	496	17	101	450	398	459	459	225	542	534	254	327
8	477	17	103	441	442	459	460	221	539	507	338	401
9	519	17	119	397	459	458	459	31	544	548	334	475
10	463	17	144	399	459	459	459	30	552	542	260	534
11	463	17	193	400	459	459	459	31	544	527	263	549
12	464	17	195	400	458	459	459	30	548	532	264	488
13	464	17	178	398	459	459	459	29	539	524	278	42
14	459	17	98	400	458	459	458	29	529	505	278	544
15	429	16	147	399	458	460	460	29	532	505	279	547
16	431	95	359	399	458	460	460	29	495	502	243	549
17	429	22	441	399	458	459	460	29	535	503	225	548
18	424	20	438	399	459	494	459	43	528	500	226	548
19	395	19	390	398	458	499	462	82	460	319	254	548
20	481	19	390	378	458	499	467	199	461	317	252	549
21	500	19	394	397	458	499	473	225	505	317	248	548
22	503	20	398	452	458	501	484	243	501	314	248	548
23	547	30	399	460	459	383	490	385	403	316	248	549
24	544	26	402	459	458	460	383	388	319	350	256	547
25	535	20	421	460	458	460	324	247	456	362	258	548
26	469	19	449	460	459	459	323	248	547	330	258	545
27	465	15	449	460	458	425	322	391	535	281	259	548
28	431	20	365	460	459	426	320	499	527	266	258	548
29	470	32	498	460		460	363	524	540	244	258	525
30	496	30	498	459		460	332	533	532	272	258	208
31	459		498	458		460		442		298	258	
Min	395	12	36	378	398	383	320	29	319	244	24	42
Max	547	367	498	497	459	501	490	533	552	551	338	549
Mean	476	33	275	433	454	461	432	210	514	431	227	442
ac-ft	29210	1988	16860	26593	25165	28289	25647	12902	30548	26450	13917	26255

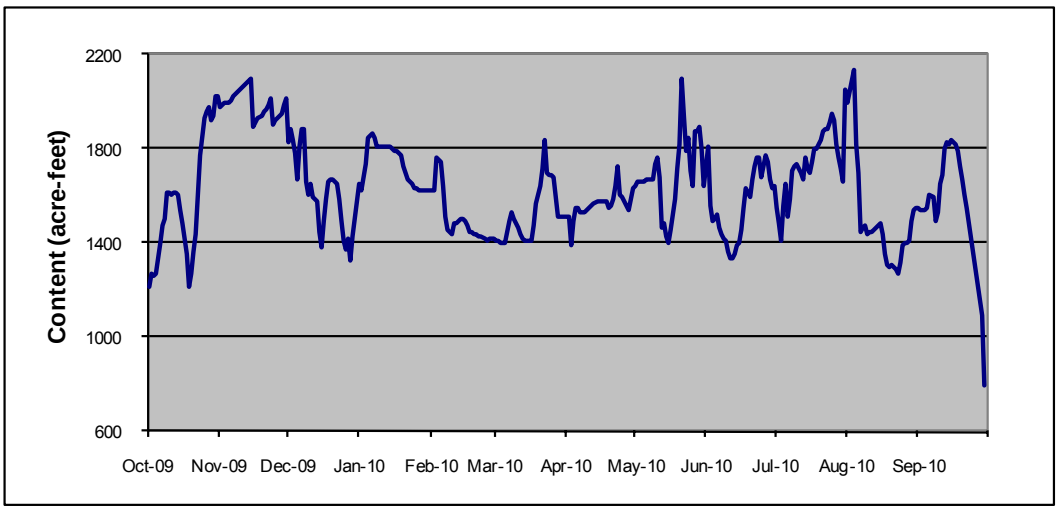


Appendix A (Table 24 of 38)
Pinewood Reservoir near Loveland, Colorado , CO

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 from topographic map.
Remarks.-- Constructed between 1951 and 1952. Impoundment began in January 4, 1954. Active capacity between elevations 6,550.00 and 6.580.00 is 1,570 acre-feet. Used as the forebay storage for Flatiron Powerplant. Recorder was operated from 01-Oct-2009 to 30-Sep-2010. Record is complete and reliable. The gage is capable of measuring the water surface elevation down to 6555.70 feet, a content of 604 acre-feet. This record contains operational data which could be subject to future revisions and changes.

Storage, Acre-Feet, 2400-hour Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	1216	1978	1824	1647	1624	1412	1515	1645	1807	1552	1999	1549
2	1269	1986	1880	1619	1623	1405	1515	1656	1555	1484	2040	1544
3	1262	1992	1834	1678	1761	1404	1394	1657	1491	1410	2087	1538
4	1271	1998	1780	1736	1752	1400	1496	1659	1499	1557	2135	1544
5	1338	1997	1669	1842	1743	1398	1550	1664	1521	1656	1818	1552
6	1403	2008	1810	1869	1646	1443	1546	1671	1462	1514	1695	1606
7	1477	2020	1886	1848	1511	1489	1529	1672	1435	1589	1445	1592
8	1502	2029	1881	1814	1458	1533	1532	1669	1416	1706	1463	1494
9	1619	2039	1661	1805	1446	1499	1529	1737	1413	1729	1473	1529
10	1611	2050	1607	1805	1437	1479	1537	1761	1362	1737	1439	1648
11	1608	2059	1655	1807	1487	1461	1545	1679	1332	1712	1445	1685
12	1614	2067	1598	1810	1486	1435	1555	1462	1335	1699	1450	1797
13	1613	2078	1576	1809	1494	1415	1564	1484	1353	1668	1462	1829
14	1608	2090	1443	1808	1501	1409	1575	1431	1386	1759	1472	1815
15	1541	2099	1383	1802	1499	1408	1579	1396	1402	1717	1484	1838
16	1482	1897	1497	1795	1491	1409	1580	1459	1452	1696	1435	1830
17	1420	1914	1587	1789	1470	1408	1579	1525	1550	1744	1358	1823
18	1353	1929	1664	1783	1447	1479	1576	1588	1633	1802	1308	1793
19	1217	1943	1672	1774	1445	1566	1552	1716	1613	1797	1295	1730
20	1269	1957	1673	1726	1442	1643	1558	1821	1595	1838	1309	1673
21	1360	1968	1661	1702	1436	1720	1585	2097	1665	1878	1297	1608
22	1440	1982	1652	1668	1429	1834	1646	1935	1727	1888	1285	1546
23	1604	2012	1590	1662	1424	1698	1727	1790	1763	1884	1272	1484
24	1769	1905	1494	1648	1416	1691	1608	1843	1767	1913	1314	1420
25	1928	1918	1408	1629	1413	1685	1592	1707	1676	1947	1388	1355
26	1954	1932	1374	1629	1414	1677	1574	1639	1772	1919	1396	1286
27	1976	1937	1414	1627	1415	1597	1558	1872	1746	1823	1401	1226
28	1919	1945	1324	1627	1419	1516	1539	1877	1669	1758	1405	1161
29	1940	1982	1431	1625		1509	1585	1895	1634	1719	1489	1093
30	2022	2015	1499	1625		1510	1634	1800	1642	1664	1538	792
31	2021		1573	1623		1514		1640		2050	1549	
Min	1216	1897	1324	1619	1413	1398	1394	1396	1332	1410	1272	792
Max	2022	2099	1886	1869	1761	1834	1727	2097	1807	2050	2135	1838
EOM	2021	2015	1573	1623	1419	1514	1634	1634	1642	2050	1549	792

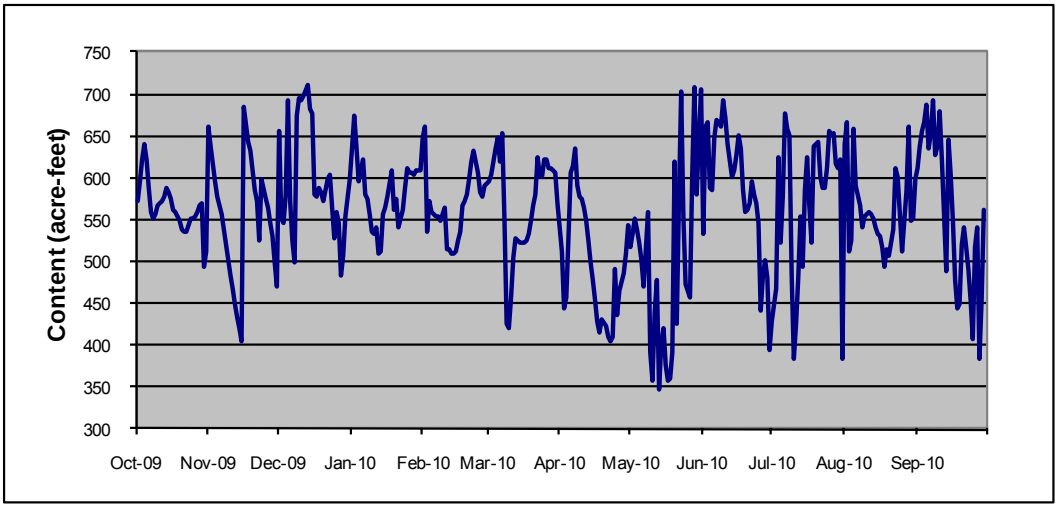


Appendix A (Table 25 of 38)
Flatiron Reservoir, CO

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 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 acre-feet. Used as the afterbay storage for Flatiron Powerplant. Recorder was operated from 01-Oct-2009 to 30-Sep-2010. Record is complete but unreliable. The quality is the data is compromised. This record contains operational data which could be subject to future revisions and changes.

Storage, Acre-Feet, 2400-hour Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	572	661	656	634	649	595	512	517	532	427	640	610
2	595	639	550	674	661	603	445	532	662	467	666	639
3	622	617	547	636	535	618	458	550	666	625	512	656
4	641	596	581	596	571	635	529	538	588	523	525	665
5	623	576	692	609	559	647	605	524	586	578	658	688
6	588	557	572	622	554	620	615	502	648	677	591	635
7	559	537	526	580	553	654	634	470	668	658	566	653
8	551	519	499	574	549	552	590	558	666	651	540	691
9	556	501	673	556	556	426	577	391	661	486	553	628
10	566	482	695	535	563	421	576	359	692	383	557	637
11	570	467	693	532	514	458	565	439	672	425	559	679
12	572	449	698	540	514	504	548	477	639	480	556	622
13	576	434	711	510	509	527	524	347	602	554	552	488
14	587	421	681	512	508	522	500	402	608	494	542	645
15	582	405	677	557	512	523	478	420	627	586	533	605
16	574	686	580	563	525	523	454	375	651	624	530	548
17	563	665	577	576	536	524	427	359	634	568	516	477
18	559	643	588	610	567	534	414	361	586	522	494	445
19	549	631	582	562	571	547	430	392	560	636	514	449
20	539	608	573	575	581	567	422	620	562	642	508	520
21	536	586	586	541	599	580	410	425	569	602	522	541
22	536	573	598	551	619	625	404	574	595	588	539	518
23	544	524	604	561	631	604	409	703	579	587	612	490
24	551	598	563	588	605	602	490	555	569	611	602	455
25	551	576	527	611	583	621	437	473	546	656	512	408
26	554	565	560	606	578	623	465	457	442	652	549	517
27	558	546	547	607	591	611	476	602	483	652	586	540
28	567	531	482	603	594	611	486	709	501	617	661	385
29	570	499	506	609		609	509	579	481	610	550	455
30	494	470	554	608		607	542	645	393	623	551	563
31	513		599	609		569		707		383	598	
Min	494	405	482	510	508	421	404	347	393	383	494	385
Max	641	686	711	674	661	654	634	709	692	677	666	691
EOM	513	470	599	609	594	569	542	542	393	383	598	563

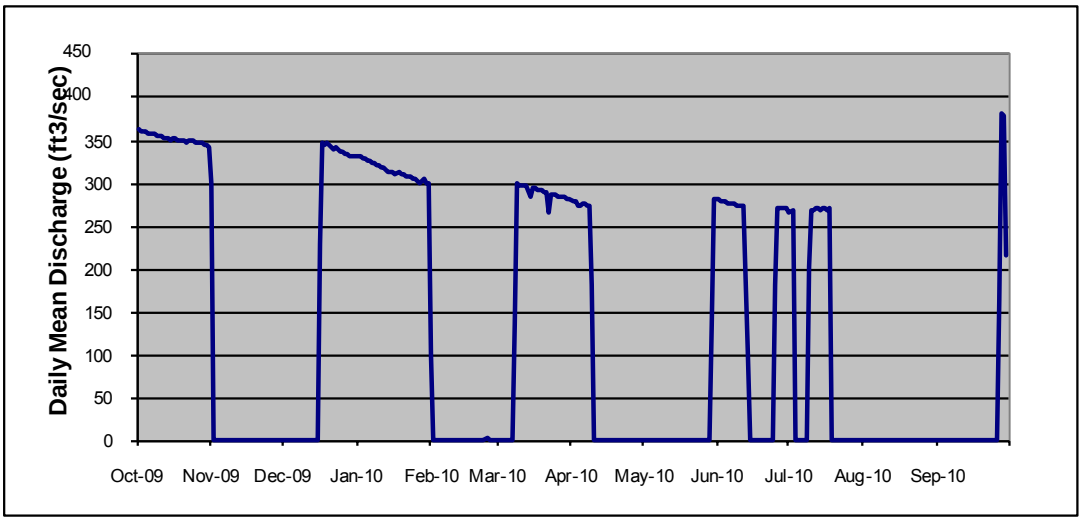


Appendix A (Table 26 of 38)
Flatiron Powerplant Unit #3 Pump, CO

Location. --Lat 40°21'53", long 105°14'09", Larimer County, Hydrologic Unit 10190006, 9 miles west of Loveland, Colorado
Gage.-- There is no flow meter or gage in place. Flow is estimated by converting Megawatt-hours to cubic feet per second from calibrated tables.
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. The maximum capacity is approximately 480 cubic feet per second, but the efficiency varies according to the water surface levels at Carter Lake and Flatiron Reservoir. Discharges are obtained by converting the electric energy needed to pump into flow using an efficiency curve. Record is complete and fair. This record contains operational data which could be subject to future revisions and changes.

Discharge, Cubic Feet per Second, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	362	299	0	331	100	0	278	0	280	267	0	0
2	360	0	0	330	0	0	280	0	279	268	0	0
3	360	0	0	329	0	0	274	0	278	0	0	0
4	361	0	0	329	0	0	273	0	278	0	0	0
5	359	0	0	326	0	0	277	0	276	0	0	0
6	358	0	0	326	0	0	275	0	276	0	0	0
7	358	0	0	323	0	0	275	0	277	0	0	0
8	357	0	0	323	0	133	274	0	275	0	0	0
9	355	0	0	322	0	299	182	0	275	203	0	0
10	355	0	0	320	0	299	0	0	275	270	0	0
11	356	0	0	318	0	296	0	0	274	268	0	0
12	353	0	0	318	0	297	0	0	274	270	0	0
13	353	0	0	316	0	297	0	0	96	272	0	0
14	352	0	0	314	0	285	0	0	0	269	0	0
15	351	0	0	313	0	294	0	0	0	270	0	0
16	352	0	230	314	0	294	0	0	0	270	0	0
17	352	0	348	312	0	293	0	0	0	269	0	0
18	350	0	346	313	0	292	0	0	0	270	0	0
19	350	0	346	311	0	292	0	0	0	0	0	0
20	351	0	344	310	0	290	0	0	0	0	0	0
21	348	0	343	308	0	291	0	0	0	0	0	0
22	349	0	341	307	0	265	0	0	0	0	0	0
23	349	0	341	307	0	288	0	0	0	0	0	0
24	349	0	339	306	3	288	0	0	0	0	0	0
25	347	0	338	305	0	287	0	0	183	0	0	0
26	347	0	337	303	0	285	0	0	271	0	0	0
27	348	0	335	301	0	285	0	0	271	0	0	164
28	346	0	334	302	0	284	0	0	271	0	0	382
29	346	0	332	306		283	0	135	270	0	0	380
30	345	0	333	299		281	0	281	270	0	0	217
31	343		332	300		281		282		0	0	
Min	343	0	0	299	0	0	0	0	0	0	0	0
Max	362	299	348	331	100	299	280	282	280	272	0	382
Mean	352	10	172	314	4	219	80	23	165	102	0	38
ac-ft	21624	592	10530	19290	204	13420	4730	1382	9800	6268	0	2262

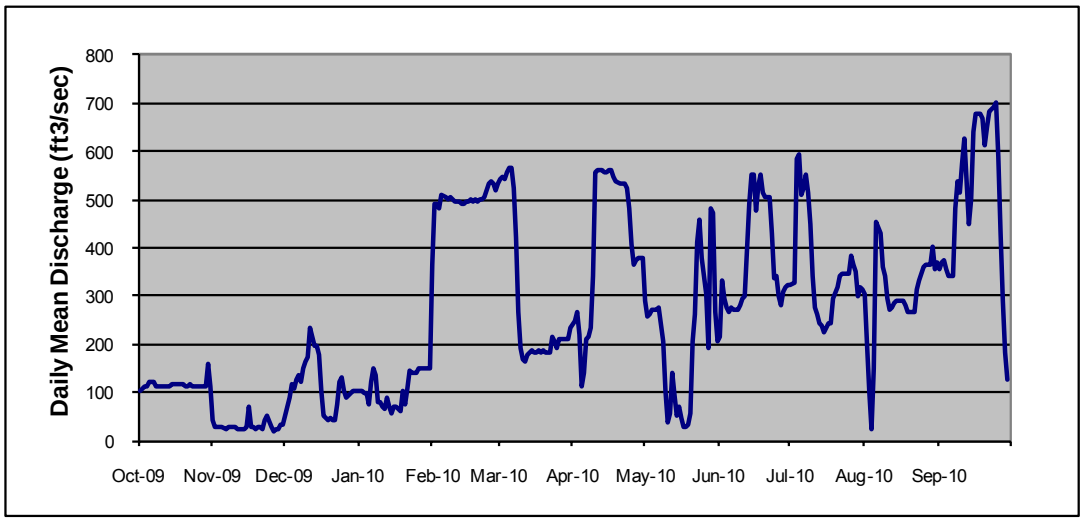


Appendix A (Table 27 of 38)
Charles Hansen Feeder Canal 930 Section, CO

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 cubic feet per second. The canal is used to move Colorado-Big Thompson Project water and diverted native water to the Big Thompson River and/or Horsetooth Reservoir. Recorder was operated from 01-Oct-2009 to 30-Sep-2010. Record is complete and fair. This record contains operational data which could be subject to future revisions and changes.

Flow, Cubic Feet per Second, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	105	44	50	103	364	544	248	288	215	324	306	358
2	106	27	70	102	492	545	265	259	332	327	201	370
3	111	26	87	99	489	545	220	260	296	583	101	373
4	113	26	119	100	481	556	111	273	275	593	25	354
5	120	26	108	77	508	567	139	274	266	509	151	342
6	123	26	126	121	504	567	211	274	275	524	452	343
7	122	26	137	149	502	525	215	276	273	552	428	343
8	113	26	122	134	504	420	235	206	273	515	359	480
9	112	26	150	79	499	265	344	101	272	450	344	540
10	113	26	165	79	496	192	559	38	282	343	294	516
11	114	26	173	70	495	168	560	54	297	275	273	575
12	114	25	232	65	494	164	561	141	297	260	275	625
13	113	25	195	87	493	178	561	91	490	244	287	449
14	112	25	194	73	491	185	557	50	553	236	289	502
15	117	26	178	58	495	184	558	70	551	227	290	641
16	117	71	104	70	496	183	562	45	478	233	290	680
17	117	26	50	72	500	186	562	27	528	243	289	678
18	116	26	47	62	497	184	547	27	554	244	280	678
19	115	21	44	103	499	185	537	31	516	296	265	669
20	113	27	49	75	498	185	534	58	505	320	267	612
21	113	26	42	106	498	185	532	205	505	344	267	651
22	118	23	41	144	499	182	533	264	505	344	265	685
23	113	43	73	141	506	216	526	412	432	345	312	686
24	113	50	122	143	532	205	482	461	337	345	333	693
25	113	26	132	142	538	194	408	381	340	348	360	701
26	113	21	105	149	531	208	364	303	299	384	367	589
27	113	24	91	151	518	211	376	191	280	366	366	429
28	112	24	94	150	532	211	380	482	307	352	365	290
29	114	34	100	151		211	380	471	316	299	401	181
30	158	31	104	151		211	380	266	320	316	357	124
31	112		103	151		236		207		315	369	
Min	105	21	41	58	364	164	111	27	215	227	25	124
Max	158	71	232	151	538	567	562	482	554	593	452	701
Mean	115	29	110	108	498	284	415	209	372	357	298	505
ac-ft	7086	1740	6745	6645	27625	17417	24646	12842	22113	21886	18270	30006

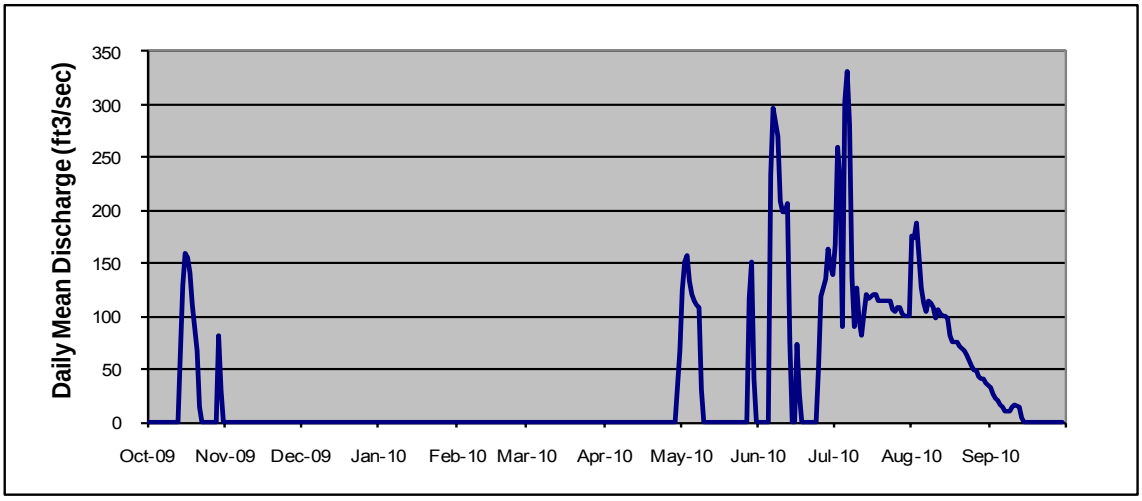


Appendix A (Table 28 of 38)
Dille Tunnel near Drake, CO

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 from topographic map.
Remarks.-- Constructed in 1950. Maximum capacity is 600 cubic feet per second. 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 Power Plant, where the diverted water is returned to the river. The skim daily value is determined based on the data from the gage. Recorder was operated from 01-Oct-2009 to 16-Nov-2009, and from 30-Apr-2030 to 30-Sep-2009. There were no diversions between 09-Dec-2008 and 03-Apr-2009. Record is complete and reliable. This record contains operational data which could be subject to future revisions and changes.

Hydropower Diversion Flow (Skim), Cubic Feet per Second, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	0	0	0	0	0	0	0	124	0	168	177	32
2	0	0	0	0	0	0	0	152	0	259	175	26
3	0	0	0	0	0	0	0	158	0	227	189	22
4	0	0	0	0	0	0	0	134	0	90	127	20
5	0	0	0	0	0	0	0	120	0	303	112	16
6	0	0	0	0	0	0	0	115	234	332	104	15
7	0	0	0	0	0	0	0	111	297	281	115	11
8	0	0	0	0	0	0	0	109	271	138	112	10
9	0	0	0	0	0	0	0	30	209	91	109	10
10	0	0	0	0	0	0	0	0	199	126	99	14
11	0	0	0	0	0	0	0	0	198	96	106	16
12	0	0	0	0	0	0	0	0	207	81	102	15
13	0	0	0	0	0	0	0	0	76	102	100	4
14	66	0	0	0	0	0	0	0	0	121	100	0
15	128	0	0	0	0	0	0	0	0	117	99	0
16	159	0	0	0	0	0	0	0	73	121	82	0
17	155	0	0	0	0	0	0	0	26	120	75	0
18	142	0	0	0	0	0	0	0	0	115	75	0
19	110	0	0	0	0	0	0	0	0	115	75	0
20	67	0	0	0	0	0	0	0	0	114	71	0
21	15	0	0	0	0	0	0	0	0	114	70	0
22	0	0	0	0	0	0	0	0	0	114	67	0
23	0	0	0	0	0	0	0	0	0	114	63	0
24	0	0	0	0	0	0	0	0	0	107	53	0
25	0	0	0	0	0	0	0	0	52	105	50	0
26	0	0	0	0	0	0	0	0	118	108	50	0
27	0	0	0	0	0	0	0	0	136	109	42	0
28	0	0	0	0	0	0	0	116	163	102	40	0
29	81	0	0	0		0	0	151	148	100	40	0
30	31	0	0	0		0	68	41	139	100	37	0
31	0		0	0		0		0		100	35	
Min	0	0	0	0	0	0	0	0	0	81	35	0
Max	159	0	0	0	0	0	68	158	297	332	189	32
Mean	31	0	0	0	0	0	2	44	85	138	89	7
ac-ft	1888	0	0	0	0	0	135	2695	5041	8494	5447	418

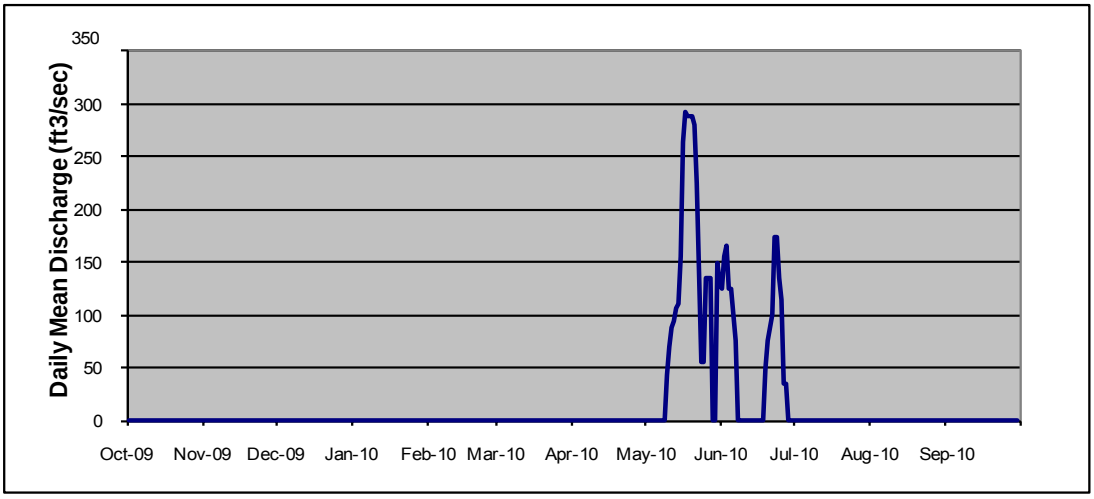


Appendix A (Table 29 of 38)
Dille Tunnel near Drake, CO

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 cubic feet per second. Dille Tunnel diverts water from the Big Thompson River for power generation and water supply. The right to divert native run-off is determined by the State of Colorado. Recorder was operated from 01-Oct-2009 to 16-Nov-2009, and from 30-Apr-2010 to 30-Sep-2010. Record is complete and reliable. This record contains operational data which could be subject to future revisions and changes.

Priority Diversion Flow, Cubic Feet per Second, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	0	0	0	0	0	0	0	0	125	0	0	0
2	0	0	0	0	0	0	0	0	155	0	0	0
3	0	0	0	0	0	0	0	0	165	0	0	0
4	0	0	0	0	0	0	0	0	125	0	0	0
5	0	0	0	0	0	0	0	0	125	0	0	0
6	0	0	0	0	0	0	0	0	75	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	44	0	0	0	0
10	0	0	0	0	0	0	0	69	0	0	0	0
11	0	0	0	0	0	0	0	88	0	0	0	0
12	0	0	0	0	0	0	0	94	0	0	0	0
13	0	0	0	0	0	0	0	107	0	0	0	0
14	0	0	0	0	0	0	0	111	0	0	0	0
15	0	0	0	0	0	0	0	156	0	0	0	0
16	0	0	0	0	0	0	0	264	0	0	0	0
17	0	0	0	0	0	0	0	292	0	0	0	0
18	0	0	0	0	0	0	0	289	0	0	0	0
19	0	0	0	0	0	0	0	289	50	0	0	0
20	0	0	0	0	0	0	0	289	75	0	0	0
21	0	0	0	0	0	0	0	280	100	0	0	0
22	0	0	0	0	0	0	0	225	175	0	0	0
23	0	0	0	0	0	0	0	55	175	0	0	0
24	0	0	0	0	0	0	0	55	135	0	0	0
25	0	0	0	0	0	0	0	135	115	0	0	0
26	0	0	0	0	0	0	0	135	35	0	0	0
27	0	0	0	0	0	0	0	135	35	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	150	0	0	0	0
31	0		0	0		0		130		0	0	
Min	0	0	0	0	0	0	0	0	0	0	0	0
Max	0	0	0	0	0	0	0	292	175	0	0	0
Mean	0	0	0	0	0	0	0	109	56	0	0	0
ac-ft	0	0	0	0	0	0	0	6713	3297	0	0	0

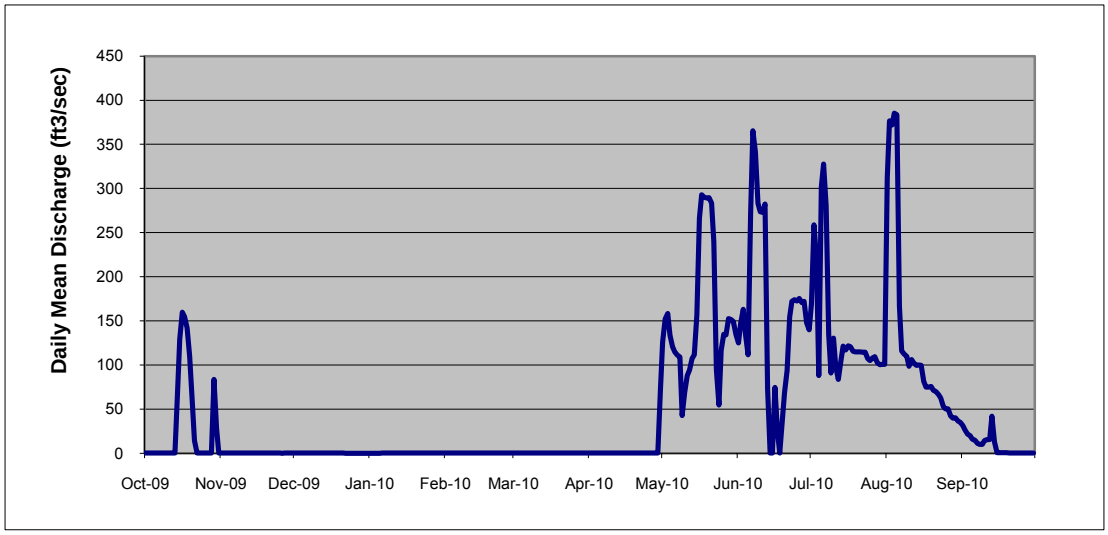


Appendix A (30 of 38)
Dille Tunnel near Drake, CO

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. Maximum capacity is 600 cubic feet per second. Dille Tunnel diverts water from the Big Thompson River for power generation and water supply. Recorder was operated from 01-Oct-2009 to 16-Nov-2009, and from 30-Apr-2010 to 30-Sep-2010. Record is complete and reliable, although data has not been revised. This record contains operational data which could be subject to future revisions and changes.

Discharge, Cubic Feet per Second, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	0	0	0	0	0	0	0	126	125	169	312	31
2	0	0	0	0	0	0	0	152	147	259	377	26
3	0	0	0	0	0	0	0	158	163	219	372	22
4	0	0	0	0	0	0	0	134	135	88	385	20
5	0	0	0	0	0	0	0	121	111	302	384	16
6	0	0	0	0	0	0	0	115	272	328	167	15
7	0	0	0	0	0	0	0	111	366	280	116	11
8	0	0	0	0	0	0	0	109	341	134	112	10
9	0	0	0	0	0	0	0	43	283	91	110	10
10	0	0	0	0	0	0	0	69	274	130	98	14
11	0	0	0	0	0	0	0	88	273	98	106	15
12	0	0	0	0	0	0	0	94	282	84	102	15
13	0	0	0	0	0	0	0	107	73	104	100	42
14	68	0	0	0	0	0	0	111	0	121	100	13
15	129	0	0	0	0	0	0	157	0	117	99	0
16	160	0	0	0	0	0	0	266	75	122	81	0
17	155	0	0	0	0	0	0	293	24	121	75	0
18	142	0	0	0	0	0	0	290	0	116	75	0
19	110	0	0	0	0	0	0	289	37	115	75	0
20	66	0	0	0	0	0	0	289	69	115	71	0
21	14	0	0	0	0	0	0	283	94	115	70	0
22	0	0	0	0	0	0	0	240	154	114	67	0
23	0	0	0	0	0	0	0	95	172	114	63	0
24	0	0	0	0	0	0	0	54	174	107	53	0
25	0	0	0	0	0	0	0	117	173	105	50	0
26	0	0	0	0	0	0	0	135	175	108	50	0
27	0	0	0	0	0	0	0	134	171	109	42	0
28	0	0	0	0	0	0	0	153	172	102	40	0
29	84	0	0	0		0	0	151	148	100	40	0
30	28	0	0	0		0	70	149	140	101	36	0
31	0		0	0		0		135		101	35	
Min	0	0	0	0	0	0	0	43	0	84	35	0
Max	160	0	0	0	0	0	70	293	366	328	385	42
Mean	31	0	0	0	0	0	2	154	154	138	125	9
ac-ft	1904	4	2	3	3	4	143	9441	9151	8492	7649	526

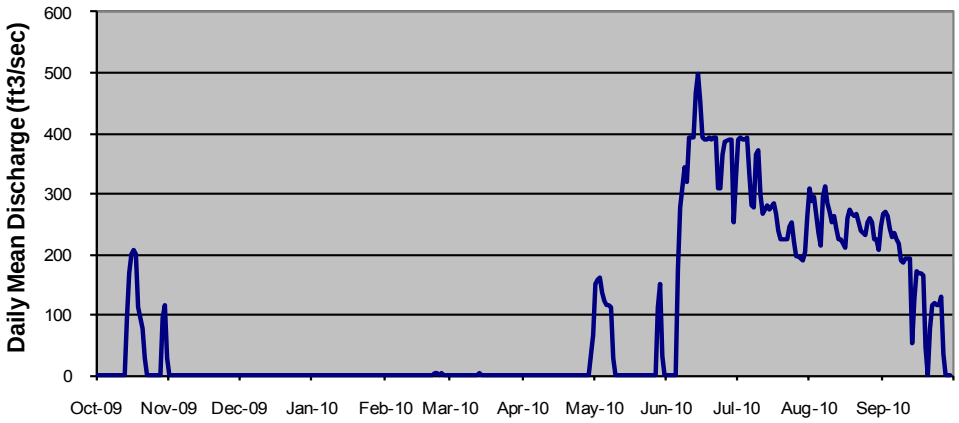


Appendix A (Table 31 of 38)
Big Thompson Power Plant, CO

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 from topographic map.
Remarks.-- Initial operation in 1959. Maximum capacity is 400 cubic feet per second. 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 Colorado-Big Thompson project and Windy Gap Project water to the Big Thompson River. The plant is winterized from November through April each year. This record contains data recorded between 01-Oct-2009 and 30-Sep-2010. Record is complete and fair. This record contains operational data which could be subject to future revisions and changes.

Discharge, Cubic Feet per Second, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	0	1	0	1	1	2	0	151	0	391	309	268
2	1	0	1	1	1	1	0	156	0	391	286	270
3	1	0	1	1	0	1	0	161	0	391	294	264
4	1	0	1	1	1	1	0	138	0	389	233	240
5	1	0	1	1	1	1	0	123	0	392	214	228
6	1	0	1	1	1	1	0	117	174	332	295	234
7	1	0	1	1	1	1	0	115	277	282	314	226
8	1	0	1	2	1	2	0	111	342	278	285	217
9	1	0	1	2	1	1	0	29	318	365	271	191
10	1	0	1	1	1	1	0	0	392	372	253	185
11	1	0	1	1	1	2	0	0	393	299	263	192
12	1	0	1	0	1	1	0	0	394	267	241	194
13	1	0	1	0	1	2	0	0	468	275	226	51
14	95	0	1	0	1	2	0	0	498	280	225	126
15	167	0	1	0	1	1	0	0	453	272	218	172
16	199	0	1	0	1	1	0	0	391	283	211	170
17	206	0	1	0	1	1	0	0	390	266	259	168
18	199	0	1	1	2	0	0	0	390	238	275	165
19	114	0	1	0	1	0	0	0	392	224	267	45
20	77	0	1	0	1	0	0	0	390	226	264	0
21	28	0	1	0	2	0	0	0	392	225	266	77
22	-1	0	1	0	2	0	0	0	392	225	253	115
23	0	0	1	0	2	0	0	0	310	246	240	118
24	0	0	1	0	1	0	0	0	309	252	233	117
25	0	0	1	0	2	0	0	0	364	219	254	116
26	0	0	1	0	1	0	0	0	387	195	261	130
27	1	0	1	0	1	0	0	0	389	196	253	36
28	1	0	1	1	2	0	0	111	390	192	226	0
29	95	0	1	1		0	0	151	253	188	225	0
30	115	0	1	1		0	67	32	327	204	207	0
31	27		1	1		0		0		265	245	
Min	-1	0	0	0	0	0	0	0	0	188	207	0
Max	206	1	1	2	2	2	67	161	498	392	314	270
Mean	43	0	1	1	1	1	2	45	306	278	254	144
ac-ft	2642	3	60	36	69	46	130	2763	18166	17066	15577	8543



Appendix A (Table 32 of 38)
Charles Hansen Feeder Canal Wasteway, CO

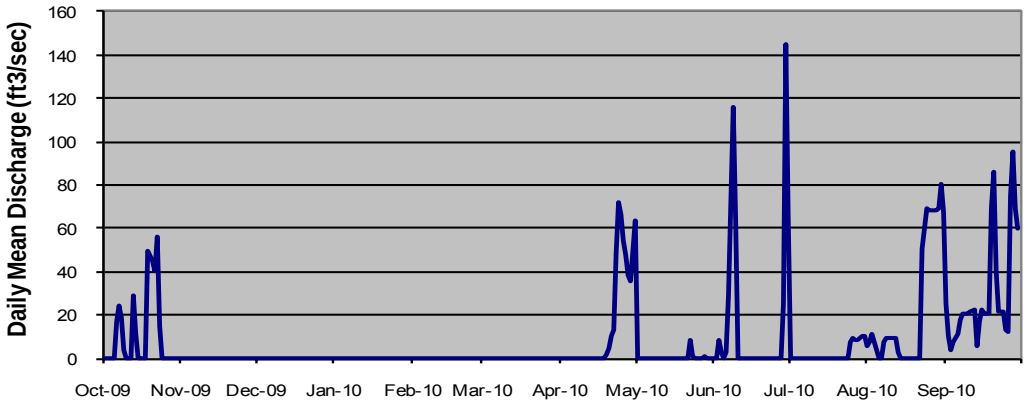
Location. --Lat 40°25'13", long 105°13'28", Larimer County, Hydrologic Unit 10190006, 9 miles west of Loveland, Colorado, on the Big Thompson River.

Gage.-- Water-stage recorder with satellite telemetry at 15 foot Parshall Flume. Elevation of gage is 5465 feet from Designer's Operating Criteria.

Remarks.-- Constructed between 1949 and 1953. Maximum capacity is 400 cubic feet per second. The structure is used to return diverted water and to deliver Colorado-Big Thompson Project and Windy Gap Project water to the Big Thompson River. The structure is winterized between November and April. Recorder was operated between the middle of April and 30-Sep-2010. Record is complete and reliable. These data are provisional operations data and are subject to further revision and change.

Discharge, Cubic Feet per Second, 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	5	25
2	0	0	0	0	0	0	0	0	0	0	7	10
3	0	0	0	0	0	0	0	0	8	0	11	4
4	0	0	0	0	0	0	0	0	3	0	3	7
5	0	0	0	0	0	0	0	0	0	0	0	10
6	17	0	0	0	0	0	0	0	3	0	0	11
7	24	0	0	0	0	0	0	0	29	0	7	18
8	18	0	0	0	0	0	0	0	116	0	10	20
9	4	0	0	0	0	0	0	0	64	0	9	21
10	0	0	0	0	0	0	0	0	0	0	9	21
11	0	0	0	0	0	0	0	0	0	0	9	22
12	0	0	0	0	0	0	0	0	0	0	9	22
13	29	0	0	0	0	0	0	0	0	0	3	6
14	11	0	0	0	0	0	0	0	0	0	0	17
15	0	0	0	0	0	0	0	0	0	0	0	23
16	0	0	0	0	0	0	0	0	0	0	0	21
17	0	0	0	0	0	0	0	0	0	0	0	21
18	0	0	0	0	0	0	0	0	0	0	0	21
19	49	0	0	0	0	0	2	0	0	0	0	70
20	45	0	0	0	0	0	4	0	0	0	0	86
21	40	0	0	0	0	0	10	0	0	0	0	40
22	56	0	0	0	0	0	13	9	0	0	0	22
23	15	0	0	0	0	0	49	1	0	0	50	22
24	0	0	0	0	0	0	72	0	0	0	69	21
25	0	0	0	0	0	0	66	0	0	7	69	13
26	0	0	0	0	0	0	54	0	0	10	69	13
27	0	0	0	0	0	0	48	0	0	9	69	75
28	0	0	0	0	0	0	39	1	26	9	68	95
29	0	0	0	0		0	35	0	145	9	69	69
30	0	0	0	0		0	63	0	65	10	81	60
31	0		0	0		0		0		10	67	
Min	0	0	0	0	0	0	0	0	0	0	0	4
Max	56	0	0	0	0	0	72	9	145	10	81	95
Mean	10	0	0	0	0	0	15	0	15	2	22	29
ac-ft	613	0	0	0	0	0	903	19	910	127	1377	1750

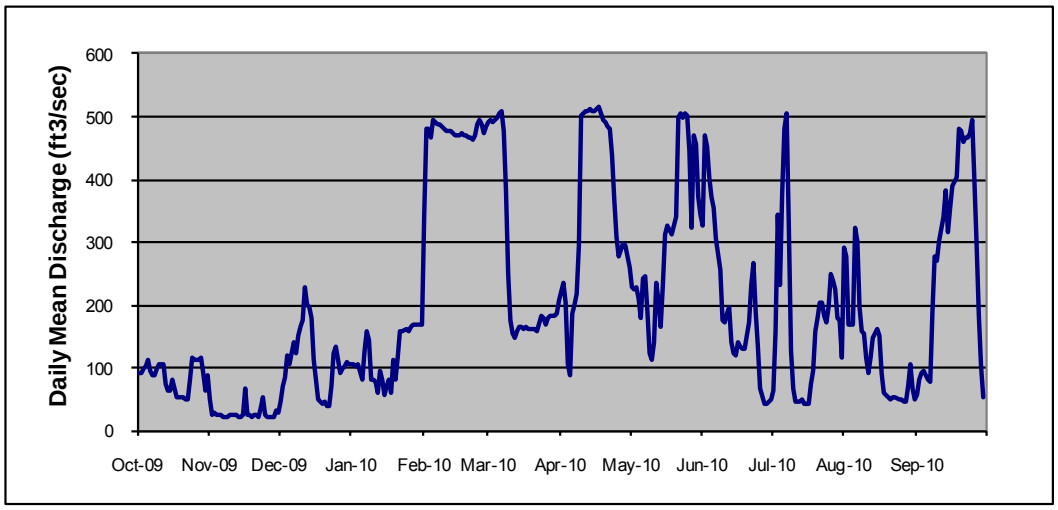


Appendix A (Table 33 of 38)
Charles Hansen Feeder Canal 550 Section, CO

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 from topographic map.
Remarks.-- Constructed between 1949 and 1953. The canal is 9.4 miles long and has a maximum capacity of 550 cubic feet per second. The canal is used to convey Colorado-Big Thompson Project water and move native runoff to Horsetooth Reservoir. Recorder was operated from 01-Oct-2009 to 30-Sep-2010. Record is complete and reliable. This record contains operational data which could be subject to future revisions and changes.

Discharge, Cubic Feet per Second, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	92	50	45	107	343	493	220	229	327	64	292	57
2	93	24	70	106	481	494	234	225	472	158	276	79
3	99	27	84	103	482	491	203	229	451	345	168	90
4	101	25	121	105	468	498	106	211	405	232	169	95
5	112	23	104	81	494	507	86	180	373	379	321	88
6	96	24	124	125	490	507	186	243	355	481	301	80
7	89	22	140	158	487	477	200	246	304	506	195	78
8	88	23	124	145	488	384	219	191	256	327	158	190
9	97	24	152	81	483	248	296	124	175	128	154	277
10	106	24	166	82	479	175	502	111	172	66	115	269
11	106	23	175	76	478	155	507	139	185	45	91	303
12	107	23	228	60	476	149	509	234	197	46	114	342
13	75	23	200	93	473	159	512	205	142	46	146	381
14	65	22	197	80	470	165	509	163	121	48	154	317
15	62	23	180	56	471	164	509	230	120	43	161	353
16	79	67	114	71	471	163	512	312	140	43	151	389
17	66	25	48	81	474	163	514	328	133	72	90	396
18	54	25	45	60	470	161	505	318	130	96	61	405
19	52	20	41	113	470	161	495	312	131	158	55	479
20	51	26	47	81	468	160	493	342	151	178	52	478
21	49	25	40	117	467	160	484	497	173	203	49	459
22	50	21	40	160	465	158	480	506	230	203	52	467
23	80	36	70	159	469	183	438	498	268	182	52	467
24	116	51	124	160	489	178	370	505	189	170	48	474
25	114	25	133	160	494	167	309	501	134	195	48	494
26	114	20	111	166	488	179	279	447	66	249	47	396
27	114	22	93	168	475	183	288	322	43	240	45	294
28	116	21	97	168	483	183	297	472	42	224	69	184
29	90	31	103	168		184	296	455	44	178	105	101
30	62	28	107	168		185	260	372	48	175	68	53
31	87		107	168		206		344		115	50	
Min	49	20	40	56	343	149	86	111	42	43	45	53
Max	116	67	228	168	494	507	514	506	472	506	321	494
Mean	86	28	111	117	473	253	361	306	199	181	124	285
ac-ft	5301	1634	6789	7178	26222	15528	21421	18798	11836	11081	7638	16903

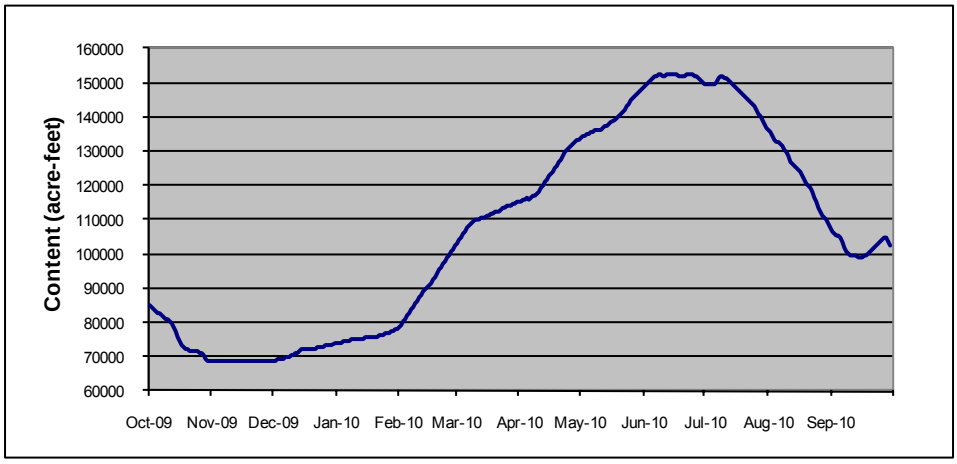


Appendix A (34 of 38)
Horsetooth Reservoir near Fort Collins, CO

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 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 Colorado-Big Thompson Project diversions. Transmountain diversions are stored at Horsetooth Reservoir before final delivery. Maximum capacity is 156,735 acre-feet at elevation 5430.00 ft, with 142,038 acre-feet of active storage. Recorder was operated from 01-Oct-2009 to 30-Sep-2010. Record is complete but fair. This record contains operational data which could be subject to future revisions and changes.

Storage, Acre-Feet, 2400-hour Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	84829	68822	68929	73888	78586	103183	115440	133833	148772	149786	136275	106665
2	84312	68769	68969	74027	79431	104035	115771	134245	149448	149328	135426	105984
3	83839	68769	69023	74166	80323	104908	115944	134545	150144	149368	134507	105536
4	83396	68782	69250	74304	81149	105802	116153	134844	150741	149388	133534	105139
5	82957	68822	69304	74429	82020	106648	116049	134994	151241	149667	132752	104678
6	82518	68809	69466	74554	82883	107515	116466	135313	151763	150362	132473	103542
7	82050	68809	69641	74762	83780	108351	116709	135634	152003	151182	132176	102122
8	81569	68822	69857	75000	84666	109023	117074	135897	152203	151763	131544	100954
9	81076	68835	70114	75056	85573	109428	117477	135935	152223	151763	130566	100033
10	80713	68862	70370	75154	86438	109714	118282	136011	152103	151543	129498	99551
11	80423	68889	70559	75195	87279	109883	119089	136200	152143	151122	128327	99423
12	79589	68796	71021	75238	88138	110102	119954	136822	152464	150741	127142	99455
13	78444	68755	71280	75335	89031	110339	120784	137124	152564	150243	126361	99343
14	77249	68862	71661	75378	89899	110577	121656	137333	152443	149667	125853	99118
15	75853	68862	71975	75461	90755	110831	122510	137771	152344	149070	125059	98925
16	74651	68943	72111	75489	91633	111052	123370	138264	152223	148435	124014	99053
17	73472	68969	72276	75573	92497	111289	124229	138930	152164	147882	122761	99326
18	72647	68969	72249	75616	93430	111526	125095	139466	152063	147191	121638	99712
19	72345	68943	72263	75700	94303	111849	125925	140003	151943	146697	120554	100290
20	72029	68956	72345	75811	95228	112088	126760	140616	151983	146129	119742	100841
21	71879	68903	72372	75951	96126	112345	127705	141444	152083	145639	119072	101359
22	71688	68889	72400	76133	96995	112550	128748	142197	152164	145091	117897	101959
23	71552	68876	72524	76246	97871	113030	129590	143028	152323	144506	116518	102563
24	71416	68969	72688	76542	98748	113321	130364	143864	152424	143903	115043	103085
25	71429	68943	72894	76712	99648	113561	130916	144641	152323	143028	113578	103723
26	71334	68929	73073	76938	100533	113801	131414	145443	152043	142022	112106	104250
27	70871	68969	73141	77150	101408	114043	131916	145952	151663	141019	111221	104513
28	70289	68916	73293	77405	102285	114336	132473	146677	151262	139964	110746	104563
29	69533	68889	73417	77631		114491	133030	147368	150781	138911	109950	103789
30	68796	68929	73597	77831		114785	133477	147882	150184	137903	108906	102285
31	68701		73680	78059		115129		148356		136935	107766	
Min	68701	68755	68929	73888	78586	103183	115440	133833	148772	136935	107766	98925
Max	84829	68969	73680	78059	102285	115129	133477	148356	152564	151763	136275	106665
EOM	68701	68929	73680	78059	102285	115129	133477	133477	150184	136935	107766	102285

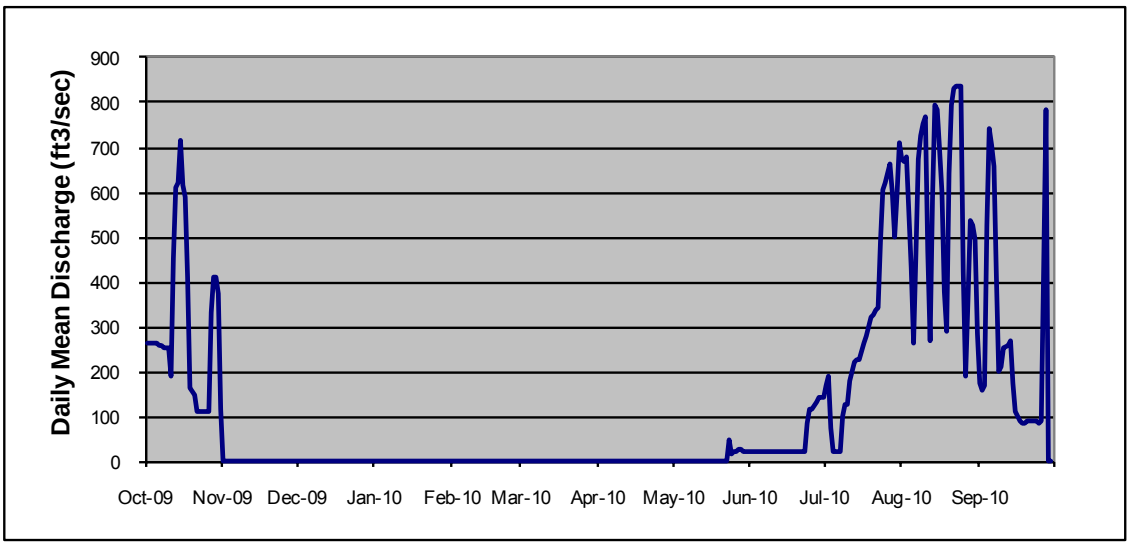


Appendix A (35 of 38)
Charles Hansen Supply Canal below Horsetooth Reservoir, CO

Location. --Lat 40°36'01", long 105°10'18", Larimer County, Hydrologic Unit 10190007, 4 miles west of Fort Collins, Colorado.
Gage.-- Water-stage recorder with satellite telemetry at concrete control. Elevation of gage is 5280 feet from topographic map.
Remarks.-- Constructed between 1950 and 1952. The canal is 5.1 miles long and has a maximum capacity of 1500 cubic feet per second. The canal is used to deliver Colorado-Big Thompson Project and Windy Gap Project water stored at Horsetooth Reservoir. Recorder was operated from 01-Oct-2009 to 30-Sep-2010 by the Northern Colorado Water Conservancy District. Record is complete and fair. This record contains operational data which could be subject to future revisions and changes.

Discharge, Cubic Feet per Second, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	263	1	0	0	0	0	0	0	21	167	675	175
2	264	0	0	0	0	0	0	0	21	188	667	155
3	263	0	0	0	0	0	0	0	21	76	680	167
4	263	0	0	0	0	0	0	0	21	21	433	524
5	261	0	0	0	0	0	0	0	21	21	265	744
6	257	0	0	0	0	0	0	0	21	21	462	708
7	256	0	0	0	0	0	0	0	21	21	676	659
8	255	0	0	0	0	0	0	0	21	99	726	413
9	254	0	0	0	0	0	0	0	21	127	755	199
10	254	0	0	0	0	0	0	0	21	127	766	211
11	191	0	0	0	0	0	0	0	21	181	469	254
12	451	0	0	0	0	0	0	0	21	200	270	257
13	608	0	0	0	0	0	0	0	21	219	582	271
14	623	0	0	0	0	0	0	0	21	228	797	172
15	716	0	0	0	0	0	0	0	21	228	782	111
16	615	0	0	0	0	0	0	0	21	261	694	100
17	591	0	0	0	0	0	0	0	21	279	602	87
18	411	0	0	0	0	0	0	0	21	298	378	85
19	162	0	0	0	0	0	0	0	21	321	291	85
20	146	0	0	0	0	0	0	0	21	328	642	90
21	112	0	0	0	0	0	0	0	21	337	794	89
22	112	0	0	0	0	0	0	0	21	341	829	87
23	112	0	0	0	0	0	0	48	21	489	837	88
24	113	0	0	0	0	0	0	17	84	606	835	88
25	113	0	0	0	0	0	0	19	114	619	423	84
26	113	0	0	0	0	0	0	23	115	644	190	90
27	334	0	0	0	0	0	0	24	132	661	356	427
28	412	0	0	0	0	0	0	24	140	601	534	783
29	408	0	0	0		0	0	23	144	500	524	0
30	371	0	0	0		0	0	22	141	597	496	0
31	114		0	0		0		21		710	285	
Min	112	0	0	0	0	0	0	0	21	21	190	0
Max	716	1	0	0	0	0	0	48	144	710	837	783
Mean	304	0	0	0	0	0	0	7	45	307	571	240
ac-ft	18650	9	9	8	1	0	0	435	2689	18841	35074	14261

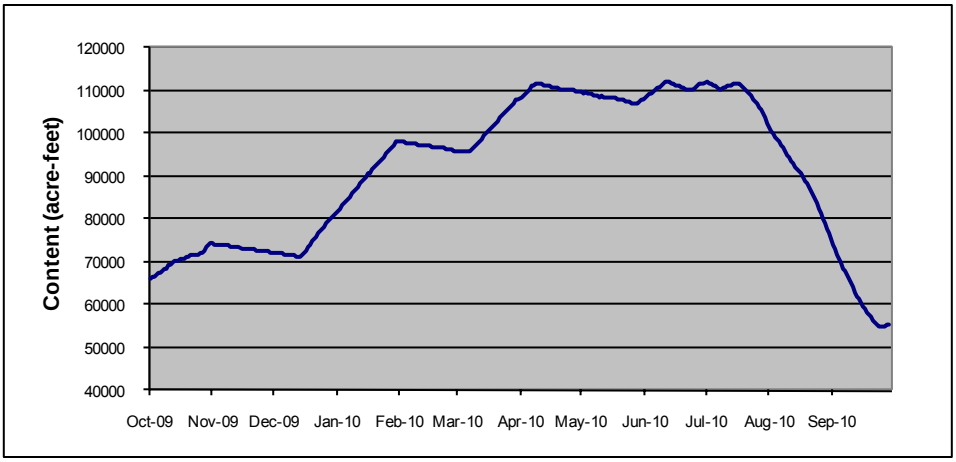


Carter Lake near Berthoud, Colorado, CO

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 from topographic map.
Remarks.--Reservoir is formed by three earth-fill dams. Construction completed in 1952. Carter Lake is one of two terminal reservoirs for Colorado-Big Thompson Project water diversions. Transmountain water diversions are stored at Carter Lake before final delivery. Maximum capacity is 112,200 acre-feet at elevation 5759.00 ft, with 108,900 acre-feet of active capacity. Recorder was operated from 01-Oct-2009 to 30-Sep-2010. A new radio transmitter was installed in July, 2010. Record is complete and fair. This record contains operational data which could be subject to future revisions and changes.

Storage, Acre-Feet, 2400-hour Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	65579	74238	72207	81231	98066	95976	108059	109824	108115	111806	102390	75386
2	65970	74258	72207	81796	97979	95921	108511	109711	108375	112068	101228	74138
3	66352	74158	72108	82425	98011	95900	109031	109518	108884	111725	100534	72967
4	66639	74108	71931	83045	97924	95813	109484	109598	109166	111520	99830	71804
5	67071	73988	71980	83563	97782	95705	109938	109427	109518	111121	99127	70637
6	67407	73939	71961	84194	97782	95760	110380	109144	109745	110973	98568	69536
7	67658	73860	71715	84818	97728	95597	110939	109144	110086	110665	97946	68604
8	67851	73800	71686	85338	97673	95749	111372	108918	110483	110347	97303	67725
9	68256	73751	71666	85922	97509	96313	111657	108918	110802	110460	96541	66860
10	68575	73751	71519	86445	97509	96801	111600	108657	111201	110551	95856	65961
11	69079	73601	71519	87021	97401	97346	111543	108567	111486	110836	95099	65169
12	69507	73532	71470	87608	97292	97837	111429	108679	112000	111087	94419	64259
13	69944	73552	71372	88187	97183	98339	111258	108511	112114	111235	93622	62769
14	70188	73453	71176	88661	97128	98832	111178	108511	111943	111326	92828	61992
15	70334	73403	71156	89253	97074	99358	111030	108511	111806	111520	92090	61172
16	70383	73255	71538	89835	97019	99907	110973	108319	111771	111725	91290	60412
17	70529	73255	72158	90471	96856	100379	110859	108228	111087	111691	90598	59664
18	70568	73205	72760	90906	96769	100875	110745	108206	111201	111748	89814	58976
19	70784	73036	73403	91439	96584	101427	110745	108059	110939	111292	88956	58319
20	70979	73056	73959	92047	96693	101991	110506	107946	110825	110631	88166	57700
21	71225	73006	74656	92571	96584	102434	110449	107889	110563	110233	87346	57075
22	71421	72908	75206	93000	96530	102911	110449	107889	110165	109733	86508	56434
23	71548	72760	75867	93590	96530	103555	110403	107641	110267	109268	85463	55968
24	71568	72710	76520	94074	96421	104056	110335	107439	110040	108668	84475	55537
25	71765	72661	77044	94624	96313	104614	110222	107349	110176	108070	83500	55108
26	71794	72562	77640	95239	96204	105183	110313	107158	110403	107472	82404	54743
27	72010	72562	78248	95760	96204	105575	110165	107101	110688	106887	81271	54708
28	72315	72463	78868	96388	96030	106135	110052	106921	111030	106225	80133	55019
29	72760	72375	79428	96878		106674	109995	106988	111440	105575	78960	55332
30	73304	72266	80041	97346		107180	109881	107236	111554	104759	77782	55305
31	73800		80615	97957		107776		107754		103823	76550	
Min	65579	72266	71156	81231	96030	95597	108059	106921	108115	103823	76550	54708
Max	73800	74258	80615	97957	98066	107776	111657	109824	112114	112068	102390	75386
EOM	73800	72266	80615	97957	96030	107776	109881	109881	111554	103823	76550	55305

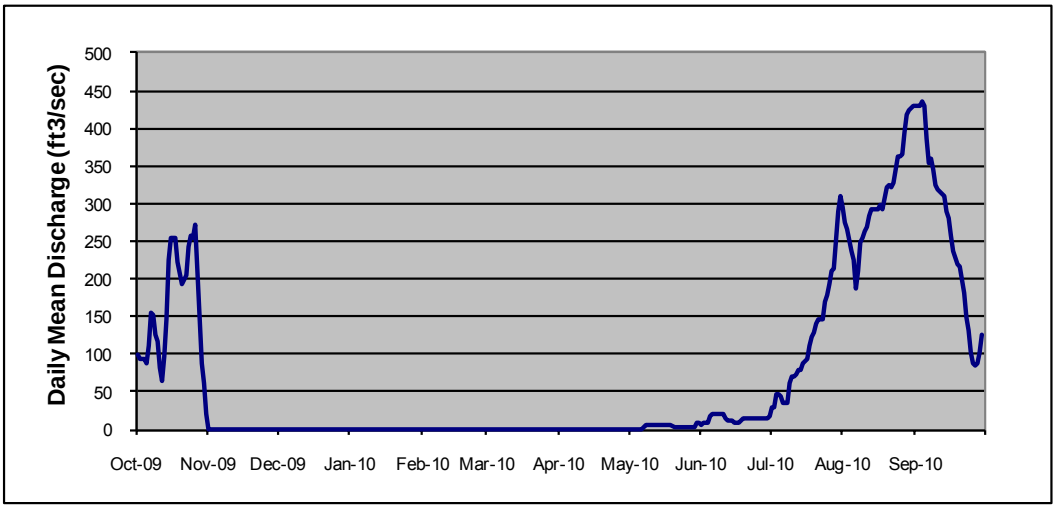


Appendix A (37 of 38)
Saint Vrain Canal below Carter Reservoir, CO

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 Colorado Water Conservancy District. 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 cubic feet per second. The canal is used to deliver Colorado-Big Thompson Project and Windy Gap Project water as well as diverted native water from conveyance contract holders. Record was provided by the Northern Colorado Water Conservancy District for the period 01-Oct-2009 to 30-Sep-2010. Record is complete and fair. This record contains operational data which could be subject to future revisions and changes.

Flow, Cubic Feet per Second, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	100	0	0	0	0	0	0	0	7	30	294	430
2	93	0	0	0	0	0	0	0	10	30	276	430
3	93	0	0	0	0	0	0	0	10	46	267	430
4	93	0	0	0	0	0	0	0	10	48	238	437
5	87	0	0	0	0	0	0	0	17	43	225	430
6	111	0	0	0	0	0	0	0	20	36	188	385
7	156	0	0	0	0	0	0	4	20	34	210	355
8	151	0	0	0	0	0	0	6	20	34	250	360
9	125	0	0	0	0	0	0	6	20	63	253	346
10	117	0	0	0	0	0	0	6	20	70	263	325
11	81	0	0	0	0	0	0	6	15	72	270	320
12	63	0	0	0	0	0	0	6	12	74	284	313
13	96	0	0	0	0	0	0	6	12	78	291	310
14	148	0	0	0	0	0	0	6	12	80	291	290
15	225	0	0	0	0	0	0	6	9	89	291	280
16	255	0	0	0	0	0	0	6	8	94	291	259
17	255	0	0	0	0	0	0	6	8	112	297	236
18	255	0	0	0	0	0	0	6	11	123	293	229
19	222	0	0	0	0	0	0	6	15	128	307	221
20	194	0	0	0	0	0	0	3	15	139	322	216
21	200	0	0	0	0	0	0	2	15	145	325	199
22	205	0	0	0	0	0	0	2	15	145	322	180
23	244	0	0	0	0	0	0	2	15	145	329	148
24	258	0	0	0	0	0	0	2	15	168	362	132
25	255	0	0	0	0	0	0	2	15	179	361	103
26	272	0	0	0	0	0	0	2	15	193	366	87
27	210	0	0	0	0	0	0	2	15	210	394	85
28	149	0	0	0	0	0	0	2	15	214	418	88
29	89	0	0	0		0	0	3	15	252	425	103
30	60	0	0	0		0	0	10	17	289	428	127
31	19		0	0		0		10		311	430	
Min	19	0	0	0	0	0	0	0	7	30	188	85
Max	272	0	0	0	0	0	0	10	20	311	430	437
Mean	157	0	0	0	0	0	0	4	14	119	308	262
ac-ft	9663	0	0	0	0	0	0	234	835	7278	18934	15548

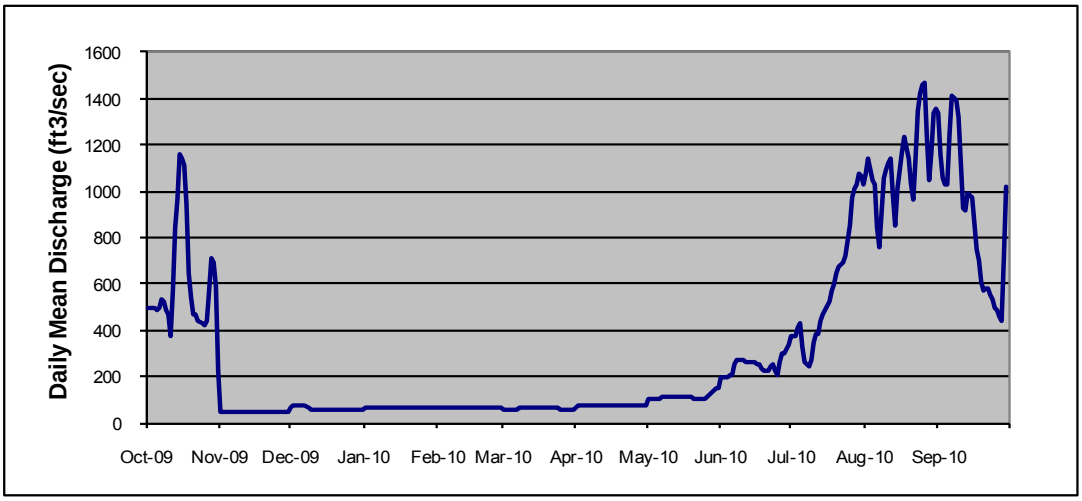


Appendix A (38 of 38)
Colorado-Big Thompson Project, CO

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 Colorado-Big Thompson Project 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 Colorado-Big Thompson Project is a transmountain water diversion system. The water diverted is used for irrigation, 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-2009 and 30-Sep-2010. Data was provided by the Northern Colorado Water Conservancy District. Record is complete and reliable.

Total Daily Water Deliveries, Cubic Feet per Second, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	499	47	68	64	66	59	74	104	195	377	1078	1335
2	494	47	75	64	66	59	74	103	198	374	1141	1159
3	499	47	75	64	66	59	74	103	198	415	1095	1053
4	496	47	75	64	66	59	74	104	198	432	1046	1025
5	486	47	75	64	66	59	74	104	205	330	1033	1027
6	495	47	75	64	66	59	74	104	208	265	845	1244
7	535	47	75	64	66	59	74	108	250	255	754	1409
8	525	47	61	64	66	62	74	110	269	245	903	1395
9	483	47	55	64	66	63	74	110	268	270	1059	1321
10	470	47	55	64	66	63	74	110	268	343	1099	1122
11	377	47	55	64	63	63	74	110	263	380	1123	922
12	574	47	55	64	61	63	74	110	260	381	1141	919
13	838	47	55	64	61	63	74	110	260	436	982	990
14	961	47	55	64	61	63	74	110	260	464	852	982
15	1161	47	55	64	61	63	74	110	258	488	1014	971
16	1146	47	55	64	61	63	74	110	256	509	1167	864
17	1114	47	55	64	61	63	74	110	256	528	1234	744
18	947	47	55	64	61	63	74	110	236	569	1192	699
19	649	47	55	64	61	63	74	110	228	600	1141	609
20	540	47	55	64	61	63	77	107	228	642	1026	573
21	470	47	55	64	61	63	75	105	228	671	966	584
22	471	47	55	64	61	63	74	105	242	680	1145	584
23	441	47	55	64	61	63	74	105	249	688	1345	550
24	427	47	55	64	61	63	74	105	223	720	1427	529
25	425	47	55	64	61	60	74	105	209	851	1458	492
26	441	47	55	64	61	59	74	115	265	975	1469	485
27	572	47	55	64	61	59	74	121	298	1008	1233	455
28	713	47	55	64	61	59	74	132	298	1030	1046	444
29	697	47	58	64		59	74	139	317	1073	1173	710
30	589	47	60	64		59	74	146	341	1067	1338	1017
31	224		60	64		59		146		1033	1361	
Min	224	47	55	64	61	59	74	103	195	245	754	444
Max	1161	47	75	64	66	63	77	146	341	1073	1469	1409
Mean	605	47	60	64	63	61	74	112	248	584	1125	874
ac-ft	37140	2765	3660	3931	3482	3755	4417	6883	14715	35846	69073	51895



APPENDIX B – OPERATIONAL DATA

TABLE 1

WESTERN DIVISION – PICK-SLOAN MISSOURI BASIN PROGRAM
PERTINENT RESERVOIR DATA

(Data in Acre-feet)

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	9,779	10,553	6,675	Elevation of pump canal head-works
Lake 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 ft.
Grand Lake	3/	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 ft^3/s
Pinewood Lake	416	1,765	2,181	613	Minimum elevation for power generation
Flatiron	125	635	760	324	Minimum elevation to release 550 ft^3/s
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	903,373	998,220	167,970	

1/ Storage capacity below elevation of lowest outlet
2/ Total storage minus dead storage
3/ Not determined

TABLE 2

COLORADO-BIG THOMPSON PROJECT

MONTHLY SUMMARY
OF BLUE RIVER OPERATIONS

WATER YEAR 2010 (ACRE-FEET)

	INI	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
UNDEPLETED RUNOFF ABOVE GREEN MTN. RESERVOIR		17,800	11,400	7,400	8,500	7,500	8,300	19,200	58,100	130,500	40,050	30,500	13,500	352,750
UNDEPLETED RUNOFF ABOVE DILLON RES.		9,400	6,400	4,100	4,800	4,000	4,300	10,300	36,700	74,900	23,400	19,250	7,850	205,400
PERCENT OF TOTAL UN-DEPLETED RUNOFF ORI-GINATING ABOVE DILLON		0.528	0.561	0.554	0.565	0.533	0.518	0.536	0.632	0.574	0.584	0.631	0.582	0.582
DEPLETIONS BY 1929 COLORADO SPRINGS RIGHT		0	0	0	0	0	0	35	201	570	163	154	56	1179
DEPLETIONS BY 1948 COLORADO SPRINGS RIGHT		-13	-131	0	0	0	0	159	1405	4177	1851	1182	129	8759
INFLOW TO DILLON		9,400	6,500	4,000	4,800	4,000	4,300	10,100	35,000	70,100	21,400	17,900	7,700	195,200
DILLON STORAGE (1000 AF)	242.9	241.0	239.1	239.7	240.2	240.8	241.2	242.7	259.6	257.1	253.2	247.1	229.9	
ROBERTS TUNNEL DIVERSIONS		4,200	1,700	0	0	0	600	2,600	0	4,500	12,400	10,800	17,900	54,700
DILLON OUTFLOW TO THE RIVER		5,800	5,800	3,400	4,300	3,400	3,400	6,000	17,500	67,200	11,800	11,900	5,700	146,200
TOTAL DEPLETIONS BY DENVER		3,500	700	700	500	600	900	4,100	17,400	2,900	9,500	5,900	1,900	48,600
RUNOFF ORIGINATING BETWEEN DILLON AND GREEN MTN RESERVOIR		8,600	5,100	3,500	3,800	3,500	4,100	9,000	21,900	56,700	17,000	11,500	5,800	150,500
ACTUAL INFLOW TO GREEN MTN RESERVOIR		14,300	10,900	6,800	8,000	6,800	7,400	14,900	39,150	122,800	28,500	23,200o	11,400	294,150
GREEN MTN RESERVOIR STORAGE (1000 AF)	106.6	80.6	81.5	81.1	79.4	78.0	77.4	84.8	116.1	151.8	152.0	140.3	108.4	
TOTAL GREEN MTN OUTFLOW		40,000	10,000	7,100	9,800	8,200	8,000	7,300	7,300	86,100	27,400	34,100	42,600	287,900

PICK-SLOAN MISSOURI BASIN PROGRAM
WESTERN DIVISION WATER AND POWER SYSTEM
COLORADO-BIG THOMPSON PROJECT

2010 ACTUAL OPERATIONS

	WATER IN 1000 ACRE-FEET						* * *	* * *	* * *	* * *	* * *	ENERGY IN GWH	
	INITIAL OR TOTAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
GREEN MOUNTAIN RESERVOIR													
Depleted Watershed Inflow	294.2	14.3	10.9	6.8	8.0	6.8	7.4	14.9	39.2	122.8	28.5	23.2	11.4
Turbine Release	277.5	40.0	10.0	7.1	9.8	8.2	8.0	9.2	7.3	73.8	27.4	34.1	42.6
Bypass	0.04	0.0	0.0	0.0	0.0	0.0	0.0	0.04	0.0	0.0	0.0	0.0	0.0
Spill	12.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.4	0.0	0.0	0.0
End of Month Content	106.6	80.6	81.5	81.1	79.4	78.0	77.4	84.8	116.1	151.8	152.0	140.3	108.4
Kwh/AF		187.5	130.0	98.6	112.2	109.8	100.0	76.1	95.9	212.7	204.4	214.1	204.2
Generation	51.0	7.5	1.3	0.7	1.1	0.9	0.8	0.7	0.7	15.7	5.6	7.3	8.7
WILLOW CREEK RESERVOIR													
Inflow	60.4	1.4	1.0	0.7	0.8	0.7	0.9	4.3	23.9	19.8	4.1	1.9	0.9
Release to River	13.3	0.5	1.6	0.5	0.4	0.4	0.4	0.4	4.5	2.2	1.3	0.4	0.7
Pumped to Granby	44.9	1.9	0.0	0.0	0.0	0.0	0.0	3.4	16.7	17.2	3.0	1.8	0.0
End of Month Content	8.9	8.8	6.1	6.3	6.7	7.1	7.5	7.8	10.1	10.2	9.7	9.3	9.3
Pump Energy	9.7	0.2	0.4	0.0	0.0	0.0	0.0	0.7	3.6	3.8	0.6	0.4	0.0
GRANBY - SHADOW MOUNTAIN - GRAND LAKE													
Natural Watershed Inflow	247.70	5.0	3.5	2.2	2.8	2.9	3.0	15.6	53.3	120.6	22.7	12.3	3.8
Total Inflow into Granby	280.6	6.2	5.9	4.6	4.6	4.0	3.1	13.3	72.6	134.2	18.3	9.6	4.2
Granby Fish Release	29.3	1.9	1.3	1.3	1.3	1.2	1.3	1.3	3.4	4.5	4.9	2.5	4.4
Granby Seepage	5.0	0.5	0.4	0.4	0.4	0.4	0.3	0.2	0.2	0.5	0.6	0.6	0.5
Granby 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
Adams Tunnel	226.0	32.4	1.7	17.7	26.8	25.1	28.1	24.1	5.2	2.7	19.5	15.4	27.3
Granby End of Month content	474.8	444.1	445.6	428.2	402.5	378.7	351.7	344.7	409.0	535.0	531.2	523.6	492.2
SM-GL End of Month Content	17.7	17.6	17.6	17.8	17.8	17.8	17.8	17.5	17.5	17.5	17.7	17.3	17.1
Pumped from Granby	211.2	33.0	2.4	20.2	28.6	26.1	28.2	17.9	2.2	0.0	13.2	11.3	28.1
Granby Pump Kwh/AF		145.5	166.7	148.5	150.3	153.3	163.1	173.2	181.8	0.0	143.9	141.6	145.9
Granby Pump Energy	32.2	4.8	0.4	3.0	4.3	4.0	4.6	3.1	0.4	0.0	1.9	1.6	4.1

PICK-SLOAN MISSOURI BASIN PROGRAM
WESTERN DIVISION WATER AND POWER SYSTEM
COLORADO-BIG THOMPSON PROJECT

2010 ACTUAL OPERATIONS

	WATER IN 1000 ACRE-FEET				* * *	* * *	* * *	* * *	* * *	ENERGY IN GWH			
	INITIAL OR TOTAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MARYS LAKE – ESTES – FLATIRON													
Adams Tunnel Water	226.0	32.4	1.7	17.7	26.8	25.1	28.1	24.1	5.2	2.7	19.5	15.4	27.3
Marys Lake Generation	39.3	5.9	0.2	2.9	4.9	4.5	5.1	4.3	0.6	0.2	3.2	2.5	5.0
Estes Generation	102.2	14.7	0.5	7.7	12.6	11.9	13.1	10.9	1.6	1.1	8.8	6.9	12.4
Divertible Big-Thompson	57.5	0.0	0.0	0.0	0.0	0.0	0.0	1.1	7.5	37.6	9.7	1.6	0.0
Diverted Big-Thompson Water	30.9	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	22.1	7.1	0.8	0.0
Olympus Tunnel	264.2	29.3	2.0	16.9	26.6	25.2	28.3	25.7	12.9	30.6	26.5	13.9	26.3
Pole Hill Generation	184.9	21.3	0.6	9.8	19.2	18.3	20.5	18.4	8.4	22.4	18.8	8.8	18.8
Flatiron 1 & 2 Generation	237.3	26.2	1.2	14.9	24.1	23.2	25.6	23.3	10.9	27.5	23.7	11.9	24.8
Flatiron 3 Turbine Release	4.6	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	2.7	1.7
Flatiron 3 Kwh/AF Gen.		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	222.2	176.5
Flatiron 3 Generation	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.3
Flatiron 3 Pumping	90.2	21.7	0.6	10.5	19.3	0.2	13.4	4.7	1.4	9.8	6.3	0.0	2.3
Flatiron 3 Kwh/AF Pump		308.8	333.3	323.8	336.8	500.0	350.7	361.7	357.1	367.3	365.1	0.0	304.3
Flatiron 3 Pump Energy	30.4	6.7	0.2	3.4	6.5	0.1	4.7	1.7	0.5	3.6	2.3	0.0	0.7
CARTER LAKE													
Pumped from Flatiron	90.2	21.7	0.6	10.5	19.3	0.2	13.4	4.7	1.4	9.8	6.3	0.0	2.3
Release to Flatiron	4.6	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	2.7	1.7
Irrigation Delivery	81.2	12.0	1.3	1.4	1.3	1.2	1.3	1.8	2.6	4.3	12.1	22.6	19.3
Evaporation & Seepage	2.0	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.3	0.3	0.4	0.4	0.3
End of Month Content	65.3	73.8	72.3	80.6	98.0	96.0	107.8	109.9	107.8	111.6	103.8	76.6	55.3
BIG THOMPSON POWERPLANT													
Diverted Dille Tunnel Water	37.3	1.9	0.0	0.0	0.0	0.0	0.0	0.1	9.4	9.2	8.5	7.7	0.5
Irrigation Delivery	37.3	5.7	0.01	0.2	0.3	0.1	0.2	0.1	0.2	3.0	2.5	12.4	12.6
Turbine Release	64.5	2.6	0.0	0.0	0.0	0.0	0.0	0.1	2.8	17.7	17.1	15.6	8.6
Generation	9.5	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.3	2.7	2.6	2.4	1.2
HORSETOOTH RESERVOIR													
Hansen Feeder Canal Inflow	140.1	4.1	1.6	6.6	6.9	26.1	15.4	21.4	18.7	9.0	9..6	5.9	14.8
Irrigation Delivery	103.05	18.4	0.8	1.3	1.3	1.3	1.2	2.05	3.0	5.7	19.5	31.1	17.4
Evaporation	4.0	0.2	0.1	0.0	0.0	0.0	0.1	0.3	0.5	0.7	0.8	0.7	0.6
End of Month Content	85.3	68.7	68.9	73.7	78.1	102.3	115.1	133.5	148.4	150.2	136.9	107.8	102.3
TOTAL CBT DELIVERY	221.5	36.1	2.1	2.9	2.9	2.6	2.7	3.9	5.8	13.0	34.1	66.1	49.3

PICK-SLOAN MISSOURI BASIN PROGRAM
WESTERN DIVISION WATER AND POWER SYSTEM
COLORADO-BIG THOMPSON PROJECT

2010 ACTUAL OPERATIONS

	WATER IN 1000 ACRE-FEET				* * *	* * *	* * *	* * *	* * *	ENERGY IN GWH			
	INITIAL OR TOTAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
BASE GENERATION													
Green Mountain	51.0	7.5	1.3	0.7	1.1	0.9	0.8	0.7	0.7	15.7	5.6	7.3	8.7
Flatiron 3	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.3
Big Thompson	9.5	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.3	2.7	2.6	2.4	1.2
TOTAL	61.4	7.8	1.3	0.7	1.1	0.9	0.8	0.7	1.0	18.4	8.2	10.3	10.2
LOAD FOLLOWING GENERATION													
Marys Lake	39.3	5.9	0.2	2.9	4.9	4.5	5.1	4.3	0.6	0.2	3.2	2.5	5.0
Estes	102.2	14.7	0.5	7.7	12.6	11.9	13.1	10.9	1.6	1.1	8.8	6.9	12.4
Pole Hill	184.9	21.3	0.6	9.8	19.2	18.3	20.5	18.4	8.4	22.4	18.8	8.8	18.8
Flatiron 1 & 2	237.3	26.2	1.2	14.9	24.1	23.2	25.6	23.3	10.9	27.5	23.7	11.9	24.8
TOTAL	563.7	68.1	2.5	35.3	60.8	57.9	64.3	56.9	21.5	51.2	54.5	30.1	61.0
PUMP ENERGY													
Willow Creek	9.7	0.2	0.4	0.0	0.0	0.0	0.0	0.7	3.6	3.8	0.6	0.4	0.0
Granby	32.2	4.8	0.4	3.0	4.3	4.0	4.6	3.1	0.4	0.0	1.9	1.6	4.1
Flatiron 3	30.4	6.7	0.2	3.4	6.5	0.1	4.7	1.7	0.5	3.6	2.3	0.0	0.7
TOTAL	146.5	11.7	1.0	6.4	10.8	4.1	9.3	5.5	4.5	7.4	4.8	2.0	4.8
TOTAL GENERATION	625.1	75.9	3.8	36.0	61.9	58.8	65.1	57.6	22.5	69.6	62.7	40.4	71.2
TOTAL GENERATION MINUS PUMP	478.6	64.2	2.8	29.6	51.1	54.7	55.8	52.1	18.0	62.2	57.9	38.4	66.4

TABLE 4

COLORADO-BIG THOMPSON PROJECT

FLOOD DAMAGE PREVENTED IN WATER YEAR 2010

	Cumulative Total Prior to WY 2010	WY 2010	Cumulative Total Current
Granby, Willow Creek, Shadow Mountain and Grand Lake	$296,200	$50,000.00	$346,200
Green Mountain	$116,600	$18,000.00	$134,600
Total	$412,800	$68,000.00	$480,800

CBTAOP V1.10 Run: 15-Nov-2010 15:43
Most Probable Plan (70% Quota)

COLORADO-BIG THOMPSON MONTHLY OPERATIONS

HYDROLOGY OPERATIONS

Green Mtn Reservoir — Initial Cont 108.4 kaf, Elev 7926.13 ft; Maximum Cont 153.6 kaf, Elev 7949.91 ft; Minimum Cont 6.0 kaf, Elev 7795.72 ft

2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Dillon Inflow	kaf	7.0	4.9	4.4	4.0	3.6	4.3	8.2	40.5	74.8	38.2	15.8	7.8	213.5
Dillon-Grn Mtn Gain	kaf	7.5	4.8	4.2	3.8	3.2	4.1	8.8	28.3	48.9	26.8	13.3	8.4	162.1
Undepleted Inflow	kaf	14.5	9.7	8.6	7.8	6.8	8.4	17.0	68.8	123.7	65.0	29.1	16.2	375.6
Depletion	kaf	5.0	1.5	0.8	0.8	0.4	1.3	7.9	38.8	50.0	25.0	-0.3	0.0	131.2
Depleted Inflow	kaf	9.5	8.2	7.8	7.0	6.4	7.1	9.1	30.0	73.7	40.0	29.4	16.2	244.4
Turbine Release	kaf	38.4	8.9	9.2	9.8	8.5	11.2	11.9	6.1	11.9	36.3	38.1	41.7	232.0
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	kaf	38.4	8.9	9.2	9.8	8.5	11.2	11.9	6.1	11.9	36.3	38.1	41.7	232.0
Min Release	cfs	625	150	150	159	153	182	200	100	200	550	620	700	
Total River Release	cfs	625	150	150	159	153	182	200	99	200	590	620	701	
Evaporation	kaf	0.3	0.1	0.0	0.0	0.0	0.2	0.3	0.5	0.8	0.8	0.7	0.6	4.3
End-Month Targets	kaf					75.0	70.0	85.0	115.0	150.0	152.0			
End-Month Content	kaf	79.2	78.4	77.0	74.2	72.1	67.8	64.7	88.1	149.1	152.0	142.6	116.5	
End-Month Elevation	ft	7906.51	7905.90	7904.83	7902.64	7900.95	7897.39	7894.71	7912.99	7947.77	7949.15	7944.60	7930.83	

Willow Crk Reservoir — Initial Cont 9.3 kaf, Elev 8125.63 ft; Maximum Cont 10.2 kaf, Elev 8128.83 ft; Minimum Cont 5.0 kaf, Elev 8104.78 ft

2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Native Inflow	kaf	1.5	0.9	0.8	0.8	0.7	1.0	3.6	22.7	17.6	4.0	1.6	1.4	56.6
Min Release	kaf	0.4	0.8	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	5.2
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	0.8	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	5.2
Pumped to Granby	kaf	1.4	1.8	0.4	0.4	0.4	0.5	3.2	20.4	17.1	3.5	1.0	1.0	51.1
Evaporation	kaf	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.6
End-Month Targets	kaf	8.9	7.2				7.2	7.2	9.0	9.0	9.0		9.0	
End-Month Content	kaf	8.9	7.2	7.2	7.2	7.1	7.2	7.2	9.0	9.0	9.0	9.1	9.0	
End-Month Elevation	ft	8124.12	8116.90	8116.90	8116.90	8116.42	8116.90	8116.90	8124.50	8124.50	8124.50	8124.88	8124.50	

Lake Granby — Initial Cont 492.1 kaf, Elev 8273.30 ft; Maximum Cont 536.1 kaf, Elev 8279.50 ft; Minimum Cont 76.5 kaf, Elev 8186.91 ft

2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Native inflow	kaf	2.4	1.3	1.4	1.4	1.2	1.5	5.3	22.7	37.0	12.6	4.7	2.4	93.9
Rels frm Shadow Mtn	kaf	2.2	2.7	2.8	1.2	1.1	1.2	1.2	12.4	49.4	10.9	2.5	2.1	89.7
Pump frm 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 frm Willow Crk	kaf	1.4	1.8	0.4	0.4	0.4	0.5	3.2	20.4	17.1	3.5	1.0	1.0	51.1
Total Inflow	kaf	6.0	5.8	4.6	3.0	2.7	3.2	9.7	55.5	103.5	27.0	8.2	5.5	234.7
Min 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
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	1.7	15.3	24.9	32.9	29.7	33.1	26.4	0.0	0.0	0.0	6.9	13.2	184.1
Evaporation	kaf	1.6	0.7	0.2	0.0	0.0	0.9	1.4	2.2	3.0	2.8	2.2	2.0	17.0
Seepage loss	kaf	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.5	0.5	0.5	4.3
End-Month Content	kaf	493.3	481.6	459.6	428.2	399.8	367.5	347.9	396.3	491.9	511.0	507.1	495.7	
End-Month Elevation	ft	8273.47	8271.79	8268.57	8263.83	8259.38	8254.12	8250.82	8258.82	8273.27	8275.99	8275.44	8273.81	

Shadow Mtn — Initial Cont 17.1 kaf, Elev 8366.30 ft; Maximum Cont 18.4 kaf, Elev 8367.00 ft; Minimum Cont 16.6 kaf, Elev 8366.02 ft

2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Native inflow	kaf	3.6	2.0	2.1	2.1	1.9	2.2	7.9	34.0	55.6	19.0	7.1	3.6	141.1
Pumped from Granby	kaf	1.7	15.3	24.9	32.9	29.7	33.1	26.4	0.0	0.0	0.0	6.9	13.2	184.1
Total Inflow	kaf	5.3	17.3	27.0	35.0	31.6	35.3	34.3	34.0	55.6	19.0	14.0	16.8	325.2
Min 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	11.2	46.4	7.8	0.0	0.0	65.4
Total River Release	kaf	2.2	2.7	2.8	1.2	1.1	1.2	1.2	12.4	49.4	10.9	2.5	2.1	89.7
Adams Tunnel Flow	kaf	2.7	14.4	24.1	33.8	30.5	33.8	32.7	20.9	5.4	7.4	10.9	14.2	230.8
Evaporation	kaf	0.4	0.2	0.1	0.0	0.0	0.3	0.4	0.7	0.8	0.7	0.6	0.5	4.7
End-Month Content	kaf	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1	
End-Month Elevation	ft	8366.30	8366.30	8366.30	8366.30	8366.30	8366.30	8366.30	8366.30	8366.30	8366.30	8366.30	8366.30	

Adams Tunnel	2010	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Max Tunnel Capacity	kaf	2.7	16.4	33.8	33.8	30.5	33.8	32.7	33.8	32.7	33.8	33.8	32.7	350.5
Actual delivery	kaf	2.7	14.4	24.1	33.8	30.5	33.8	32.7	20.9	5.4	7.4	10.9	14.2	230.8
% max delivery	%	100	88	71	100	100	100	100	62	17	22	32	43	

Big T @ Lake Estes 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Big Thompson inflow	kaf	2.6	1.8	1.2	1.0	0.7	1.0	3.3	15.1	32.2	16.4	8.4	3.8	87.5
Min 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
Act river release	kaf	2.6	1.5	1.2	1.0	0.7	1.0	3.3	6.9	7.4	7.7	6.9	3.7	43.9
Skim water available	kaf	0.0	0.3	0.0	0.0	0.0	0.0	1.1	8.2	24.8	8.7	1.5	0.1	44.7
Skim water diverted	kaf	0.0	0.3	0.0	0.0	0.0	0.0	0.0	8.2	24.8	8.7	1.5	0.1	43.6
% skim diverted	%		100						100	100	100	100	100	
Irrigation demand	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.4
Irrigation delivery	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.4
Total river release	kaf	2.6	1.5	1.2	1.0	0.7	1.0	3.3	6.9	7.5	7.8	7.0	3.8	44.3

Olympus Tunnel 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Max Tunnel Capacity	kaf	33.8	16.4	33.8	33.8	30.5	33.8	32.7	33.8	32.7	33.8	33.8	32.7	381.6
Actual delivery	kaf	2.7	14.7	24.1	33.8	30.5	33.8	32.7	29.1	30.1	16.0	12.3	14.2	274.0
% max delivery	%	8	90	71	100	100	100	100	86	92	47	36	43	
Seepage and Evap	kaf	0.2	0.0	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	1.5
Inflow to Flatiron	kaf	2.5	14.7	23.9	33.7	30.4	33.7	32.6	29.0	30.0	15.9	12.1	14.0	272.5

Carter Lake — Initial Cont 55.3 kaf, Elev 5703.50 ft; Maximum Cont 112.2 kaf, Elev 5758.98 ft; Minimum Cont 11.2 kaf, Elev 5639.99 ft

2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Pump from Flatiron	kaf	0.0	0.0	8.8	22.7	18.3	18.0	16.0	8.7	0.0	0.0	0.0	0.0	92.5
Release to Flatiron	kaf	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Evaporation loss	kaf	0.2	0.1	0.0	0.0	0.0	0.1	0.3	0.4	0.5	0.4	0.3	0.2	2.5
Seepage loss	kaf	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1	1.7
End-Month Targets	kaf	38.5	36.6	43.6	64.7	81.4	97.5	105.9	106.0	97.5	79.3	56.6	39.1	
End-Month Content	kaf	38.5	36.6	43.6	64.5	81.1	97.0	105.2	106.0	97.6	79.4	56.7	39.4	
End-Month Elevation	ft	5683.50	5681.04	5689.86	5713.50	5730.30	5745.35	5752.78	5753.50	5745.90	5728.64	5705.06	5684.64	
Irrigation demand	kaf	11.7	0.0	0.0	0.0	0.0	0.0	5.0	3.5	3.0	11.8	16.8	12.6	64.4
Metered delivery	kaf	3.7	1.3	1.3	1.3	1.2	1.4	1.8	2.6	3.2	4.0	3.8	3.0	28.6
Windy Gap demand	kaf	0.6	0.4	0.4	0.4	0.4	0.4	0.5	1.2	1.5	1.8	1.7	1.4	10.7
Total demand	kaf	16.0	1.7	1.7	1.7	1.6	1.8	7.3	7.3	7.7	17.6	22.3	17.0	103.7
Total delivery	kaf	16.0	1.7	1.7	1.7	1.6	1.8	7.3	7.3	7.7	17.6	22.3	17.0	103.7
% 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

Hansen Canal 930 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Minimum flow	kaf	0.7	1.5	3.1	4.6	4.2	4.6	1.5	1.5	1.5	1.5	1.5	1.5	27.7
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	3.0	14.7	15.1	11.0	12.1	15.7	16.6	20.3	30.0	15.9	12.1	14.0	180.5

Dille Tunnel 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Big T @ Canyon Mouth	kaf	4.0	2.3	1.5	1.4	1.3	1.8	5.6	21.6	35.2	21.8	10.9	5.1	112.5
Less Estes Skim	kaf	0.0	0.3	0.0	0.0	0.0	0.0	0.0	8.2	24.8	8.7	1.5	0.1	43.6
Big T irr (Estes)	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.4
Handy Ditch release	kaf	1.2	0.0	0.0	0.0	0.0	0.0	1.2	1.2	1.2	1.8	2.9	1.7	11.2
Water available	kaf	2.8	2.0	1.5	1.4	1.3	1.8	4.4	12.2	9.3	11.4	6.6	3.4	58.1
Water diverted	kaf	2.8	0.0	0.0	0.0	0.0	0.0	4.4	12.2	0.0	11.4	6.6	3.4	40.8
% diverted	%	100						100	100		100	100	100	

Trifurcation Works 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Rels from Flatiron	kaf	3.0	14.7	15.1	11.0	12.1	15.7	16.6	20.3	30.0	15.9	12.1	14.0	180.5
Rels to 550 Canal	kaf	1.3	14.4	15.1	11.0	12.1	15.7	16.6	12.1	5.2	4.2	4.1	3.8	115.6
Big T irrigation	kaf	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	6.5	10.1	21.3
Dille Tunnel	kaf	2.8	0.0	0.0	0.0	0.0	0.0	4.4	12.2	0.0	11.4	6.6	3.4	40.8
Tot rels to river	kaf	4.5	0.3	0.0	0.0	0.0	0.0	4.4	20.4	24.8	23.1	14.6	13.6	105.7
Irrigation demand	kaf	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	4.9	8.6	16.6
Big T irr (Estes)	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.4
Windy Gap demand	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	1.6	1.5	4.7
Total requirement	kaf	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	3.1	6.6	10.2	21.7
Total delivery	kaf	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	3.1	6.6	10.2	21.7
% required delivery	%	100	0	0	0	0	0	0	0	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

Hansen Canal 550 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Inflow from Flatiron	kaf	1.3	14.4	15.1	11.0	12.1	15.7	16.6	12.1	5.2	4.2	4.1	3.8	115.6
Maximum flow	kaf	32.0	30.9	32.0	32.0	28.9	32.0	30.9	32.0	30.9	32.0	32.0	30.9	376.5
Seepage loss	kaf	0.2	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	2.2
Irrigation demand	kaf	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.3	0.9	0.9	0.7	4.8
Irrigation delivery	kaf	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.3	0.9	0.9	0.7	4.8
Minimum flow	kaf	0.7	1.5	4.6	4.6	4.2	1.5	1.5	1.5	1.5	1.5	1.5	1.5	26.1
Rels to Horsetooth	kaf	0.7	14.2	14.7	10.6	11.7	15.3	16.2	11.5	4.7	3.1	3.0	2.9	108.6

Horsetooth Reservoir — Initial Cont 102.3 kaf, Elev 5400.24 ft; Maximum Cont 156.7 kaf, Elev 5429.98 ft; Minimum Cont 5.0 kaf, Elev 5297.06 ft

2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Inflow	kaf	0.7	14.2	14.7	10.6	11.7	15.3	16.2	11.5	4.7	3.1	3.0	2.9	108.6

Total irr delivery	kaf	31.3	1.4	1.5	1.5	1.5	1.6	2.0	3.3	3.6	26.9	31.5	13.9	120.0
Evaporation loss	kaf	0.3	0.1	0.0	0.0	0.0	0.3	0.5	0.7	0.9	0.7	0.5	0.4	4.4
Seepage loss	kaf	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	1.7
End-Month Targets	kaf	71.4	83.9	97.0	106.0	116.0	129.5	143.1	150.1	150.1	125.4	96.3	84.8	
End-Month Content	kaf	71.3	83.9	97.0	105.9	116.0	129.3	142.8	150.1	150.1	125.4	96.3	84.8	
End-Month Elevation	ft	5379.50	5388.38	5396.94	5402.43	5408.38	5415.83	5422.99	5426.71	5426.71	5413.69	5396.50	5388.99	
Irrigation demand	kaf	28.9	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.4	21.2	26.2	10.1	87.2
Metered delivery	kaf	1.4	1.0	1.1	1.1	1.1	1.2	1.5	2.6	2.8	4.5	4.1	2.7	25.1
Windy Gap demand	kaf	1.0	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	1.2	1.2	1.1	7.7
Total demand	kaf	31.3	1.4	1.5	1.5	1.5	1.6	2.0	3.3	3.6	26.9	31.5	13.9	120.0
Total irr delivery	kaf	31.3	1.4	1.5	1.5	1.5	1.6	2.0	3.3	3.6	26.9	31.5	13.9	120.0
% 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
Total CBT Delivery	kaf	47.8	2.5	2.6	2.6	2.5	2.8	8.6	9.4	9.8	43.9	56.8	37.8	227.1

Windy Gap Ownership 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Accrual	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 release	kaf	1.6	0.8	0.8	0.8	0.8	0.8	0.9	1.6	1.9	4.6	4.5	4.0	23.1
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
End-month Ownership	kaf	27.2	26.4	25.6	24.8	24.0	23.2	22.3	20.7	18.8	14.2	9.7	5.7	

PUMPING AND GENERATION OPERATIONS

Green Mtn Gen 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Max Generation	gwh	18.600	18.000	18.600	18.600	16.800	9.300	17.907	18.600	18.000	18.600	18.600	18.000	209.607
Generation	gwh	7.000	1.530	1.574	1.662	1.426	1.853	1.937	1.038	2.336	7.649	7.975	8.414	44.394
% Max Generation	%	38	9	8	9	8	20	11	6	13	41	43	47	
Ave kwh/af		182	172	171	170	168	165	163	170	196	211	209	202	

Willow Crk Pumping 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Maximum pumping	kaf	27.7	26.8	27.7	27.7	25.0	27.7	26.8	27.7	26.8	27.7	27.7	26.8	326.1
Actual pumping	kaf	1.4	1.8	0.4	0.4	0.4	0.5	3.2	20.4	17.1	3.5	1.0	1.0	51.1
Pump energy	gwh	0.298	0.383	0.085	0.085	0.085	0.107	0.682	4.345	3.642	0.746	0.213	0.213	10.884
% max pumping	%	5	7	1	1	2	2	12	74	64	13	4	4	
Average kwh/af		213	213	213	213	213	213	213	213	213	213	213	213	

Lake Granby Pumping 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	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	1.7	15.3	24.9	32.9	29.7	33.1	26.4	0.0	0.0	0.0	6.9	13.2	184.1
Pump energy	gwh	0.241	2.173	3.561	4.771	4.366	4.932	3.960	0.000	0.000	0.000	0.973	1.874	26.851
% max pumping	%	5	43	67	89	89	90	74				19	37	
Average kwh/af		142	142	143	145	147	149	150				141	142	

Marys Lake Gen 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Adams Tunnel Flow	kaf	2.7	14.4	24.1	33.8	30.5	33.8	32.7	20.9	5.4	7.4	10.9	14.2	
Max generation	gwh	2.980	2.880	6.060	6.060	5.400	6.060	5.840	6.060	5.840	6.060	6.060	5.840	65.140
Generation	gwh	0.440	2.540	4.320	6.060	5.400	6.060	5.840	3.690	0.880	1.180	1.880	2.520	40.810
% Max Generation	%	15	88	71	100	100	100	100	61	15	19	31	43	
Ave kwh/af		163	176	179	179	177	179	179	177	163	159	172	177	

Lake Estes Gen 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Adams Tunnel Flow	kaf	2.7	14.4	24.1	33.8	30.5	33.8	32.7	20.9	5.4	7.4	10.9	14.2	
Max generation	gwh	14.920	14.450	14.920	14.920	13.450	14.920	14.450	14.920	14.450	14.920	14.920	14.450	175.690
Generation	gwh	1.150	6.700	10.640	14.920	13.450	14.920	14.450	9.260	2.260	3.100	4.850	6.600	102.300
% Max Generation	%	8	46	71	100	100	100	100	62	16	21	33	46	
Ave kwh/af		426	465	441	441	441	441	442	443	419	419	445	465	

Pole Hill Gen 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Olympus Tunnel flow	kaf	2.7	14.7	24.1	33.8	30.5	33.8	32.7	29.1	30.1	16.0	12.3	14.2	274.0
Max generation	gwh	25.260	0.000	6.950	25.260	22.800	25.260	24.460	25.260	24.460	25.260	25.260	24.460	254.690
Generation	gwh	1.650	0.000	6.950	25.190	22.720	25.190	24.380	21.700	22.400	12.020	9.170	10.600	181.970
% Max Generation	%	7		100	100	100	100	100	86	92	48	36	43	
Ave kwh/af		611		688	745	745	745	746	746	744	751	746	746	

Flatiron 1&2 Gen 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Inflow to Flatiron	kaf	2.5	14.7	23.9	33.7	30.4	33.7	32.6	29.0	30.0	15.9	12.1	14.0	272.5
Max generation	gwh	29.040	0.000	8.450	29.040	26.250	29.040	28.130	29.040	28.130	29.040	29.040	28.130	293.330
Generation	gwh	1.950	0.000	8.450	28.960	26.160	28.960	28.040	25.000	25.800	14.120	10.790	12.500	210.730
% Max Generation	%	7		100	100	100	100	100	86	92	49	37	44	
Ave kwh/af		780		837	859	861	859	860	862	860	888	892	893	

Flatiron 3 Pump/Gen 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Maximum pumping	kaf	24.0	24.5	25.0	23.0	18.5	18.3	16.3	16.3	16.2	18.4	21.0	23.1	244.6
Pump from Flatiron	kaf	0.0	0.0	8.8	22.7	18.3	18.0	16.0	8.7	0.0	0.0	0.0	0.0	92.5
Pump energy	gwh	0.000	0.000	2.314	6.379	5.710	6.210	5.968	3.332	0.000	0.000	0.000	0.000	29.913
% max pumping	%			35	99	99	98	98	53					
Average kwh/af				263	281	312	345	373	383					

Release to Flatiron	kaf	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Maximum generation	gwh	4.059	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.059
Actual generation	gwh	0.091	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.091
% max generation	%	2												
Average kwh/af		182												

Big Thompson Gen 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Total release	kaf	4.5	0.3	0.0	0.0	0.0	0.0	4.4	20.4	24.8	23.1	14.6	13.6	105.7
Turbine release	kaf	4.5	0.0	0.0	0.0	0.0	0.0	4.4	20.4	23.9	23.1	14.6	13.6	104.5
Wasteway release	kaf	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	1.2
Max generation	gwh	3.940	0.000	0.000	0.000	0.000	0.000	3.800	3.940	3.800	3.940	3.940	3.800	27.160
Generation	gwh	0.500	0.000	0.000	0.000	0.000	0.000	0.480	3.180	3.800	3.720	2.120	2.000	15.800
% Max Generation	%	13						13	81	100	94	54	53	
Ave kwh/af		111						109	156	159	161	145	147	

PROJECT GENERATION AND PUMPING SUMMARY

Project Generation 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Base Generation:														
Big Thompson	gwh	0.500	0.000	0.000	0.000	0.000	0.000	0.480	3.180	3.800	3.720	2.120	2.000	15.800
Green Mtn	gwh	7.000	1.530	1.574	1.662	1.426	1.853	1.937	1.038	2.336	7.649	7.975	8.414	44.394
Flatiron 3	gwh	0.091	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.091
Total	gwh	7.591	1.530	1.574	1.662	1.426	1.853	2.417	4.218	6.136	11.369	10.095	10.414	60.285
Load Following Generation:														
Marys Lake	gwh	0.440	2.540	4.320	6.060	5.400	6.060	5.840	3.690	0.880	1.180	1.880	2.520	40.810
Lake Estes	gwh	1.150	6.700	10.640	14.920	13.450	14.920	14.450	9.260	2.260	3.100	4.850	6.600	102.300
Pole Hill	gwh	1.650	0.000	6.950	25.190	22.720	25.190	24.380	21.700	22.400	12.020	9.170	10.600	181.970
Flatiron 1,2	gwh	1.950	0.000	8.450	28.960	26.160	28.960	28.040	25.000	25.800	14.120	10.790	12.500	210.730
Total	gwh	5.190	9.240	30.360	75.130	67.730	75.130	72.710	59.650	51.340	30.420	26.690	32.220	535.810
Total generation	gwh	12.781	10.770	31.934	76.792	69.156	76.983	75.127	63.868	57.476	41.789	36.785	42.634	596.095
Total max generation	gwh	98.799	35.330	54.980	93.880	84.700	84.580	94.587	97.820	94.680	97.820	97.820	94.680	1029.676

Project Pump Energy 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Granby	gwh	0.241	2.173	3.561	4.771	4.366	4.932	3.960	0.000	0.000	0.000	0.973	1.874	26.851
Willow Creek	gwh	0.298	0.383	0.085	0.085	0.085	0.107	0.682	4.345	3.642	0.746	0.213	0.213	10.884
Flatiron 3	gwh	0.000	0.000	2.314	6.379	5.710	6.210	5.968	3.332	0.000	0.000	0.000	0.000	29.913
Total pump energy	gwh	0.539	2.556	5.960	11.235	10.161	11.249	10.610	7.677	3.642	0.746	1.186	2.087	67.648
Total net generation	gwh	12.242	8.214	25.974	65.557	58.995	65.734	64.517	56.191	53.834	41.043	35.599	40.547	528.447

Release Flexibility 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Adams Tunnel	Min kaf	2.7	14.4	24.1	33.8	30.5	33.8	32.7	20.9	5.4	7.4	10.9	14.2	
Adams Tunnel	Max kaf	2.7	14.4	24.1	33.8	30.5	33.8	32.7	20.9	5.4	7.4	10.9	14.2	
Marys Lake	Min gwh	0.440	2.540	4.320	6.060	5.400	6.060	5.840	3.690	0.880	1.180	1.880	2.520	
Marys Lake	Max gwh	0.440	2.540	4.320	6.060	5.400	6.060	5.840	3.690	0.880	1.180	1.880	2.520	
Lake Estes	Min gwh	1.150	6.700	10.640	14.920	13.450	14.920	14.450	9.260	2.260	3.100	4.850	6.600	
Lake Estes	Max gwh	1.150	6.700	10.640	14.920	13.450	14.920	14.450	9.260	2.260	3.100	4.850	6.600	
Olympus Tunnel	Min kaf	2.7	14.7	24.1	33.8	30.5	33.8	32.7	29.1	30.1	16.0	12.3	14.2	
Olympus Tunnel	Max kaf	2.7	14.7	24.1	33.8	30.5	33.8	32.7	29.1	30.1	16.0	12.3	14.2	
Pole Hill	Min gwh	1.790	0.000	6.950	25.260	22.800	25.260	24.460	21.770	22.480	12.100	9.310	10.740	
Pole Hill	Max gwh	1.790	0.000	6.950	25.260	22.800	25.260	24.460	21.770	22.480	12.100	9.310	10.740	
Flatiron 1&2	Min gwh	1.950	0.000	8.450	28.960	26.160	28.960	28.040	25.000	25.800	14.120	10.790	12.500	
Flatiron 1&2	Max gwh	1.950	0.000	8.450	28.960	26.160	28.960	28.040	25.000	25.800	14.120	10.790	12.500	
Load following	Min gwh	5.330	9.240	30.360	75.200	67.810	75.200	72.790	59.720	51.420	30.500	26.830	32.360	
Load following	Max gwh	5.330	9.240	30.360	75.200	67.810	75.200	72.790	59.720	51.420	30.500	26.830	32.360	
Total project	Min gwh	12.921	10.770	31.934	76.862	69.236	77.053	75.207	63.938	57.556	41.869	36.925	42.774	
Total project	Max gwh	12.921	10.770	31.934	76.862	69.236	77.053	75.207	63.938	57.556	41.869	36.925	42.774	

GENERATION CAPACITY AND DURATION

Project Generation 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Base Generation:														
Green Mtn	mw	9.4	2.1	2.1	2.2	2.1	2.5	2.7	1.4	3.2	10.3	10.7	11.7	
Flatiron 3	mw	0.1												
Big Thompson	mw	0.7						0.7	4.3	5.3	5.0	2.8	2.8	
Total base load	mw	10.2	2.1	2.1	2.2	2.1	2.5	3.4	5.7	8.5	15.3	13.5	14.5	
Load Following Generation:														
Marys Lake														
Min Capacity	mw	0.0	0.0	0.0	8.1	1.4	8.1	8.1	0.0	0.0	0.0	0.0	0.0	
Duration	hr/d	17.9	10.9	5.7	12.0	1.6	12.0	12.0	8.1	13.2	10.4	11.1	10.9	
Max Capacity	mw	2.7	6.8	8.1	8.1	8.1	8.1	8.1	8.1	2.7	3.0	5.0	6.7	
Duration	hr/d	6.1	12.1	17.3	12.0	22.0	12.0	12.0	14.9	10.8	13.2	11.9	12.1	
Lake Estes														
Min Capacity	mw	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

Duration	hr/d	17.9	12.0	12.0	11.0	12.4	11.0	11.0	12.0	13.2	12.0	12.0	12.0
Max Capacity	mw	7.0	17.2	30.1	45.0	40.1	45.0	45.0	26.4	7.0	9.1	13.9	17.0
Duration	hr/d	6.1	12.0	12.0	10.0	11.7	10.0	10.0	12.0	10.8	12.0	12.0	12.0
Pole Hill													
Min Capacity	mw	0.0	0.0	0.0	34.0	0.0	34.0	34.0	0.0	0.0	0.0	0.0	0.0
Duration	hr/d	17.9	12.0	6.3	12.0	1.8	12.0	12.0	2.6	2.1	12.0	12.0	12.0
Max Capacity	mw	11.0	31.4	34.0	34.0	34.0	34.0	34.0	34.0	34.0	33.0	25.6	30.4
Duration	hr/d	6.1	12.0	17.7	12.0	22.4	12.0	12.0	21.4	22.1	12.0	12.0	12.0
Flatiron 1&2													
Min Capacity	mw	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Duration	hr/d	18.5	12.0	12.0	8.7	11.4	8.7	9.5	12.0	11.6	12.0	12.0	12.0
Max Capacity	mw	13.0	36.4	58.7	86.0	79.6	86.0	85.2	74.0	78.0	40.6	30.2	35.0
Duration	hr/d	5.5	12.0	12.0	10.0	11.3	10.0	10.0	12.0	11.7	12.0	12.0	12.0
Total Load Following													
Min Capacity	mw	0.0	0.0	0.0	42.1	1.4	42.1	42.1	0.0	0.0	0.0	0.0	0.0
Max Capacity	mw	33.7	91.8	130.9	173.1	161.8	173.1	172.3	142.5	121.7	85.7	74.7	89.1
Total Project Capacity													
Min Capacity	mw	10.2	2.1	2.1	44.3	3.5	44.6	45.5	5.7	8.5	15.3	13.5	14.5
Max Capacity	mw	43.9	93.9	133.0	175.3	163.9	175.6	175.7	148.2	130.2	101.0	88.2	103.6

CBTAOP V1.10 Run: 16-Nov-2010 11:05
Minimum Reasonable Plan (90% Quota)

COLORADO-BIG THOMPSON MONTHLY OPERATIONS

HYDROLOGY OPERATIONS

Green Mtn Reservoir — Initial Cont 108.4 kaf, Elev 7926.13 ft; Maximum Cont 153.6 kaf, Elev 7949.91 ft; Minimum Cont 6.0 kaf, Elev 7795.72 ft

2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Dillon Inflow	kaf	7.0	4.9	4.4	4.0	3.6	4.3	6.8	24.6	33.5	18.2	10.0	5.7	127.0
Dillon-Grn Mtn Gain	kaf	7.5	4.8	4.2	3.8	3.2	4.1	7.2	18.6	24.0	14.8	9.9	5.9	108.0
Undepleted Inflow	kaf	14.5	9.7	8.6	7.8	6.8	8.4	14.0	43.2	57.5	33.0	19.9	11.6	235.0
Depletion	kaf	5.0	1.5	0.8	0.8	0.4	1.3	3.8	21.5	30.5	15.1	6.9	2.7	90.3
Depleted Inflow	kaf	9.5	8.2	7.8	7.0	6.4	7.1	10.2	21.7	27.0	17.9	13.0	8.9	144.7
Turbine Release	kaf	38.4	8.9	9.2	9.8	8.5	11.2	8.9	4.0	3.9	23.5	21.3	19.0	166.6
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	kaf	38.4	8.9	9.2	9.8	8.5	11.2	8.9	4.0	3.9	23.5	21.3	19.0	166.6
Min Release	cfs	625	150	150	159	153	182	150	65	65	382	347	319	
Total River Release	cfs	625	150	150	159	153	182	150	65	66	382	346	319	
Evaporation	kaf	0.3	0.1	0.0	0.0	0.0	0.2	0.3	0.5	0.7	0.7	0.5	0.4	3.7
End-Month Targets	kaf					75.0	70.0	85.0	115.0	150.0	152.0			
End-Month Content	kaf	79.2	78.4	77.0	74.2	72.1	67.8	68.8	86.0	108.4	102.1	93.3	82.8	
End-Month Elevation	ft	7906.51	7905.90	7904.83	7902.64	7900.95	7897.39	7898.24	7911.51	7926.13	7922.28	7916.56	7909.19	

Willow Crk Reservoir — Initial Cont 9.3 kaf, Elev 8125.63 ft; Maximum Cont 10.2 kaf, Elev 8128.83 ft; Minimum Cont 5.0 kaf, Elev 8104.78 ft

2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Native Inflow	kaf	1.5	0.9	0.8	0.8	0.7	1.0	3.8	12.7	6.3	2.1	1.1	0.7	32.4
Min Release	kaf	0.4	0.8	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	5.2
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	0.8	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	5.2
Pumped to Granby	kaf	1.4	1.8	0.4	0.4	0.4	0.5	3.4	10.4	5.8	1.6	0.4	0.4	26.9
Evaporation	kaf	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.6
End-Month Targets	kaf	8.9	7.2				7.2	7.2	9.0	9.0	9.0		9.0	
End-Month Content	kaf	8.9	7.2	7.2	7.2	7.1	7.2	7.2	9.0	9.0	9.0	9.2	9.0	
End-Month Elevation	ft	8124.12	8116.90	8116.90	8116.90	8116.42	8116.90	8116.90	8124.50	8124.50	8124.50	8125.26	8124.50	

Lake Granby — Initial Cont 492.1 kaf, Elev 8273.30 ft; Maximum Cont 536.1 kaf, Elev 8279.50 ft; Minimum Cont 76.5 kaf, Elev 8186.91 ft

2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Native inflow	kaf	2.4	1.3	1.4	1.4	1.2	1.5	4.9	17.3	21.8	7.0	2.5	1.6	64.3
Rels frm Shadow Mtn	kaf	2.2	2.7	2.8	1.2	1.1	1.2	1.2	1.2	24.6	3.1	2.5	2.1	45.9
Pump frm 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 frm Willow Crk	kaf	1.4	1.8	0.4	0.4	0.4	0.5	3.4	10.4	5.8	1.6	0.4	0.4	26.9
Total Inflow	kaf	6.0	5.8	4.6	3.0	2.7	3.2	9.5	28.9	52.2	11.7	5.4	4.1	137.1
Min 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
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	1.7	15.7	25.4	32.9	29.7	33.1	26.9	1.1	0.0	14.0	28.0	26.1	234.6
Evaporation	kaf	1.6	0.7	0.2	0.0	0.0	0.9	1.4	2.2	2.8	2.6	2.0	1.7	16.1
Seepage loss	kaf	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	4.0
End-Month Content	kaf	493.3	481.2	458.7	427.3	398.9	366.6	346.3	367.0	411.5	401.6	374.1	348.8	
End-Month Elevation	ft	8273.47	8271.73	8268.44	8263.69	8259.23	8253.97	8250.54	8254.03	8261.23	8259.66	8255.21	8250.97	

Shadow Mtn — Initial Cont 17.1 kaf, Elev 8366.30 ft; Maximum Cont 18.4 kaf, Elev 8367.00 ft; Minimum Cont 16.6 kaf, Elev 8366.02 ft

2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Native inflow	kaf	3.6	2.0	2.1	2.1	1.9	2.2	7.4	26.0	32.6	10.6	3.7	2.5	96.7
Pumped from Granby	kaf	1.7	15.7	25.4	32.9	29.7	33.1	26.9	1.1	0.0	14.0	28.0	26.1	234.6
Total Inflow	kaf	5.3	17.7	27.5	35.0	31.6	35.3	34.3	27.1	32.6	24.6	31.7	28.6	331.3
Min 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	21.6	0.0	0.0	0.0	21.6
Total River Release	kaf	2.2	2.7	2.8	1.2	1.1	1.2	1.2	1.2	24.6	3.1	2.5	2.1	45.9
Adams Tunnel Flow	kaf	2.7	14.8	24.6	33.8	30.5	33.8	32.7	25.2	7.2	20.8	28.6	26.0	280.7
Evaporation	kaf	0.4	0.2	0.1	0.0	0.0	0.3	0.4	0.7	0.8	0.7	0.6	0.5	4.7
End-Month Content	kaf	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1	
End-Month Elevation	ft	8366.30	8366.30	8366.30	8366.30	8366.30	8366.30	8366.30	8366.30	8366.30	8366.30	8366.30	8366.30	

Adams Tunnel	2010	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Max Tunnel Capacity	kaf	2.7	16.4	33.8	33.8	30.5	33.8	32.7	33.8	32.7	33.8	33.8	32.7	350.5

Actual delivery	kaf	2.7	14.8	24.6	33.8	30.5	33.8	32.7	25.2	7.2	20.8	28.6	26.0	280.7
% max delivery	%	100	90	73	100	100	100	100	75	22	62	85	80	

Big T @ Lake Estes 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Big Thompson inflow	kaf	2.6	1.8	1.2	1.0	0.7	1.0	1.9	10.9	19.6	12.5	5.8	2.8	61.8
Min 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
Act river release	kaf	2.6	1.5	1.2	1.0	0.7	1.0	1.9	6.9	7.4	7.7	5.8	2.8	40.5
Skim water available	kaf	0.0	0.3	0.0	0.0	0.0	0.0	0.0	4.0	12.2	4.8	0.0	0.0	21.3
Skim water diverted	kaf	0.0	0.3	0.0	0.0	0.0	0.0	0.0	4.0	12.2	4.8	0.0	0.0	21.3
% skim diverted	%		100						100	100	100			
Irrigation demand	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.1	0.6
Irrigation delivery	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.1	0.6
Total river release	kaf	2.6	1.5	1.2	1.0	0.7	1.0	1.9	7.0	7.5	7.8	6.0	2.9	41.1

Olympus Tunnel 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Max Tunnel Capacity	kaf	33.8	16.4	33.8	33.8	30.5	33.8	32.7	33.8	32.7	33.8	33.8	32.7	381.6
Actual delivery	kaf	2.7	15.1	24.6	33.8	30.5	33.8	32.7	29.1	19.3	25.5	28.4	25.9	301.4
% max delivery	%	8	92	73	100	100	100	100	86	59	75	84	79	
Seepage and Evap	kaf	0.2	0.0	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	1.5
Inflow to Flatiron	kaf	2.5	15.1	24.4	33.7	30.4	33.7	32.6	29.0	19.2	25.4	28.2	25.7	299.9

Carter Lake — Initial Cont 55.3 kaf, Elev 5703.50 ft; Maximum Cont 112.2 kaf, Elev 5758.98 ft; Minimum Cont 11.2 kaf, Elev 5639.99 ft

2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Pump from Flatiron	kaf	0.0	0.2	9.0	22.4	18.1	17.8	15.6	11.8	0.8	4.5	6.1	4.3	110.6
Release to Flatiron	kaf	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Evaporation loss	kaf	0.2	0.1	0.0	0.0	0.0	0.1	0.3	0.4	0.5	0.4	0.3	0.2	2.5
Seepage loss	kaf	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1	1.7
End-Month Targets	kaf	38.5	36.6	43.6	64.7	81.4	97.5	105.9	106.0	97.5	79.3	56.6	39.1	
End-Month Content	kaf	38.5	36.6	43.6	64.0	80.2	95.7	103.0	106.0	97.5	79.3	56.6	39.1	
End-Month Elevation	ft	5683.50	5681.04	5689.86	5712.97	5729.43	5744.16	5750.81	5753.50	5745.81	5728.54	5704.95	5684.26	
Irrigation demand	kaf	11.7	0.0	0.0	0.0	0.0	0.0	5.2	4.0	3.6	15.9	22.5	16.5	79.4
Metered delivery	kaf	3.7	1.5	1.5	1.5	1.4	1.6	2.1	3.0	3.7	4.6	4.4	3.6	32.6
Windy Gap demand	kaf	0.6	0.4	0.4	0.4	0.4	0.4	0.5	1.2	1.3	1.6	1.5	1.4	10.1
Total demand	kaf	16.0	1.9	1.9	1.9	1.8	2.0	7.8	8.2	8.6	22.1	28.4	21.5	122.1
Total delivery	kaf	16.0	1.9	1.9	1.9	1.8	2.0	7.8	8.2	8.6	22.1	28.4	21.5	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

Hansen Canal 930 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Minimum flow	kaf	0.7	1.5	3.1	4.6	4.2	4.6	1.5	1.5	1.5	1.5	1.5	1.5	27.7
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	3.0	14.9	15.4	11.3	12.3	15.9	17.0	17.2	18.4	20.9	22.1	21.4	189.8

Dille Tunnel 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Big T @ Canyon Mouth	kaf	4.0	2.3	1.5	1.4	1.3	1.8	2.9	14.0	23.0	15.1	7.2	3.9	78.4
Less Estes Skim	kaf	0.0	0.3	0.0	0.0	0.0	0.0	0.0	4.0	12.2	4.8	0.0	0.0	21.3
Big T irr (Estes)	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.1	0.6
Handy Ditch release	kaf	1.2	0.0	0.0	0.0	0.0	0.0	1.2	1.2	1.2	1.8	2.9	1.7	11.2
Water available	kaf	2.8	2.0	1.5	1.4	1.3	1.8	1.7	8.9	9.7	8.6	4.5	2.3	46.5
Water diverted	kaf	2.8	0.0	0.0	0.0	0.0	0.0	1.7	8.9	9.7	8.6	4.5	2.3	38.5
% diverted	%	100						100	100	100	100	100	100	

Trifurcation Works 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Rels from Flatiron	kaf	3.0	14.9	15.4	11.3	12.3	15.9	17.0	17.2	18.4	20.9	22.1	21.4	189.8
Rels to 550 Canal	kaf	1.3	14.6	15.4	11.3	12.3	15.9	17.0	13.2	6.2	12.5	13.8	8.0	141.5
Big T irrigation	kaf	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	8.3	13.4	27.0
Dille Tunnel	kaf	2.8	0.0	0.0	0.0	0.0	0.0	1.7	8.9	9.7	8.6	4.5	2.3	38.5
Tot rels to river	kaf	4.5	0.3	0.0	0.0	0.0	0.0	1.7	12.9	21.9	17.0	12.8	15.7	86.8
Irrigation demand	kaf	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	6.7	11.9	22.3
Big T irr (Estes)	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.1	0.6
Windy Gap demand	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	1.6	1.5	4.7
Total requirement	kaf	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	3.7	8.5	13.5	27.6
Total delivery	kaf	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	3.7	8.5	13.5	27.6
% required delivery	%	100	0	0	0	0	0	0	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

Hansen Canal 550 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Inflow from Flatiron	kaf	1.3	14.6	15.4	11.3	12.3	15.9	17.0	13.2	6.2	12.5	13.8	8.0	141.5
Maximum flow	kaf	32.0	30.9	32.0	32.0	28.9	32.0	30.9	32.0	30.9	32.0	32.0	30.9	376.5
Seepage loss	kaf	0.2	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	2.2
Irrigation demand	kaf	0.4	0.2	0.3	0.3	0.2	0.3	0.3	0.6	0.5	1.2	1.3	1.0	6.6
Irrigation delivery	kaf	0.4	0.2	0.3	0.3	0.2	0.3	0.3	0.6	0.5	1.2	1.3	1.0	6.6
Minimum flow	kaf	0.7	1.5	4.6	4.6	4.2	1.5	1.5	1.5	1.5	1.5	1.5	1.5	26.1
Rels to Horsetooth	kaf	0.7	14.4	14.9	10.8	11.9	15.4	16.5	12.4	5.5	11.1	12.3	6.8	132.7

Horsetooth Reservoir — Initial Cont 102.3 kaf, Elev 5400.24 ft; Maximum Cont 156.7 kaf, Elev 5429.98 ft; Minimum Cont 5.0 kaf, Elev 5297.06 ft

2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Inflow	kaf	0.7	14.4	14.9	10.8	11.9	15.4	16.5	12.4	5.5	11.1	12.3	6.8	132.7
Total irr delivery	kaf	31.3	1.6	1.7	1.8	1.7	1.8	2.4	3.9	4.4	34.9	40.8	17.8	144.1
Evaporation loss	kaf	0.3	0.1	0.0	0.0	0.0	0.3	0.5	0.7	0.9	0.7	0.5	0.4	4.4
Seepage loss	kaf	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	1.7
End-Month Targets	kaf	71.4	83.9	97.0	106.0	116.0	129.5	143.1	150.1	150.1	125.4	96.3	84.8	
End-Month Content	kaf	71.3	83.9	97.0	105.8	115.9	129.1	142.5	150.1	150.1	125.4	96.3	84.8	
End-Month Elevation	ft	5379.50	5388.38	5396.94	5402.37	5408.33	5415.72	5422.84	5426.71	5426.71	5413.69	5396.50	5388.99	
Irrigation demand	kaf	28.9	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.6	28.1	34.6	13.4	106.2
Metered delivery	kaf	1.4	1.2	1.3	1.4	1.3	1.4	1.8	3.1	3.4	5.6	5.0	3.3	30.2
Windy Gap demand	kaf	1.0	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	1.2	1.2	1.1	7.7
Total demand	kaf	31.3	1.6	1.7	1.8	1.7	1.8	2.4	3.9	4.4	34.9	40.8	17.8	144.1
Total irr delivery	kaf	31.3	1.6	1.7	1.8	1.7	1.8	2.4	3.9	4.4	34.9	40.8	17.8	144.1
% 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
Total CBT Delivery	kaf	47.8	2.9	3.1	3.2	2.9	3.3	9.6	11.2	11.9	57.5	74.7	49.8	277.9

Windy Gap Ownership 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Accrual	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 release	kaf	1.6	0.8	0.8	0.8	0.8	0.8	0.9	1.6	1.7	4.4	4.3	4.0	22.5
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
End-month Ownership	kaf	27.2	26.4	25.6	24.8	24.0	23.2	22.3	20.7	19.0	14.6	10.3	6.3	

PUMPING AND GENERATION OPERATIONS

Green Mtn Gen 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Max Generation	gwh	18.600	18.000	18.600	18.600	16.800	9.300	18.000	18.600	18.000	18.600	18.600	18.000	209.700
Generation	gwh	7.000	1.530	1.574	1.662	1.426	1.853	1.462	0.683	0.719	4.445	3.932	3.393	29.679
% Max Generation	%	38	9	8	9	8	20	8	4	4	24	21	19	
Ave kwh/af		182	172	171	170	168	165	164	171	184	189	185	179	

Willow Crk Pumping 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Maximum pumping	kaf	27.7	26.8	27.7	27.7	25.0	27.7	26.8	27.7	26.8	27.7	27.7	26.8	326.1
Actual pumping	kaf	1.4	1.8	0.4	0.4	0.4	0.5	3.4	10.4	5.8	1.6	0.4	0.4	26.9
Pump energy	gwh	0.298	0.383	0.085	0.085	0.085	0.107	0.724	2.215	1.235	0.341	0.085	0.085	5.728
% max pumping	%	5	7	1	1	2	2	13	38	22	6	1	1	
Average kwh/af		213	213	213	213	213	213	213	213	213	213	213	213	

Lake Granby Pumping 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	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	1.7	15.7	25.4	32.9	29.7	33.1	26.9	1.1	0.0	14.0	28.0	26.1	234.6
Pump energy	gwh	0.241	2.229	3.632	4.771	4.366	4.932	4.035	0.165	0.000	2.058	4.144	3.915	34.488
% max pumping	%	5	44	69	89	89	90	75	3		38	76	73	
Average kwh/af		142	142	143	145	147	149	150	150		147	148	150	

Marys Lake Gen 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Adams Tunnel Flow	kaf	2.7	14.8	24.6	33.8	30.5	33.8	32.7	25.2	7.2	20.8	28.6	26.0	
Max generation	gwh	2.980	2.880	6.060	6.060	5.400	6.060	5.840	6.060	5.840	6.060	6.060	5.840	65.140
Generation	gwh	0.440	2.580	4.420	6.060	5.400	6.060	5.840	4.520	1.140	3.680	5.120	4.600	49.860
% Max Generation	%	15	90	73	100	100	100	100	75	20	61	84	79	
Ave kwh/af		163	174	180	179	177	179	179	179	158	177	179	177	

Lake Estes Gen 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Adams Tunnel Flow	kaf	2.7	14.8	24.6	33.8	30.5	33.8	32.7	25.2	7.2	20.8	28.6	26.0	
Max generation	gwh	14.920	14.450	14.920	14.920	13.450	14.920	14.450	14.920	14.450	14.920	14.920	14.450	175.690
Generation	gwh	1.150	6.900	10.840	14.920	13.450	14.920	14.450	11.100	3.000	9.220	12.600	11.500	124.050
% Max Generation	%	8	48	73	100	100	100	100	74	21	62	84	80	
Ave kwh/af		426	466	441	441	441	441	442	440	417	443	441	442	

Pole Hill Gen 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Olympus Tunnel flow	kaf	2.7	15.1	24.6	33.8	30.5	33.8	32.7	29.1	19.3	25.5	28.4	25.9	301.4
Max generation	gwh	25.260	0.000	6.950	25.260	22.800	25.260	24.460	25.260	24.460	25.260	25.260	24.460	254.690
Generation	gwh	1.650	0.000	6.950	25.190	22.720	25.190	24.380	21.700	14.600	18.980	21.060	19.190	201.610
% Max Generation	%	7		100	100	100	100	100	86	60	75	83	78	
Ave kwh/af		611		688	745	745	745	746	746	756	744	742	741	

Flatiron 1&2 Gen 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Inflow to Flatiron	kaf	2.5	15.1	24.4	33.7	30.4	33.7	32.6	29.0	19.2	25.4	28.2	25.7	299.9
Max generation	gwh	29.040	0.000	8.450	29.040	26.250	29.040	28.130	29.040	28.130	29.040	29.040	28.130	293.330
Generation	gwh	1.950	0.000	8.450	28.960	26.160	28.960	28.040	25.000	17.180	22.640	24.360	22.820	234.520
% Max Generation	%	7		100	100	100	100	100	86	61	78	84	81	
Ave kwh/af		780		837	859	861	859	860	862	895	891	864	888	

Flatiron 3 Pump/Gen 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Maximum pumping	kaf	24.0	24.5	25.0	23.0	18.5	18.5	16.5	16.4	16.2	18.4	21.0	23.1	245.1
Pump from Flatiron	kaf	0.0	0.2	9.0	22.4	18.1	17.8	15.6	11.8	0.8	4.5	6.1	4.3	110.6
Pump energy	gwh	0.000	0.052	2.367	6.272	5.629	6.105	5.756	4.496	0.299	1.548	1.848	1.170	35.542
% max pumping	%		1	36	97	98	96	95	72	5	24	29	19	
Average kwh/af			261	263	280	311	343	369	381	374	344	303	272	
Release to Flatiron	kaf	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Maximum generation	gwh	4.059	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.059
Actual generation	gwh	0.091	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.091
% max generation	%	2												
Average kwh/af		182												

Big Thompson Gen 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Total release	kaf	4.5	0.3	0.0	0.0	0.0	0.0	1.7	12.9	21.9	17.0	12.8	15.7	86.8
Turbine release	kaf	4.5	0.0	0.0	0.0	0.0	0.0	1.7	12.9	21.9	17.0	12.8	15.7	86.5
Wasteway release	kaf	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Max generation	gwh	3.940	0.000	0.000	0.000	0.000	0.000	3.800	3.940	3.800	3.940	3.940	3.800	27.160
Generation	gwh	0.500	0.000	0.000	0.000	0.000	0.000	0.146	1.880	3.480	2.600	1.860	2.340	12.806
% Max Generation	%	13						4	48	92	66	47	62	
Ave kwh/af		111						86	146	159	153	145	149	

PROJECT GENERATION AND PUMPING SUMMARY

Project Generation 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Base Generation:														
Big Thompson	gwh	0.500	0.000	0.000	0.000	0.000	0.000	0.146	1.880	3.480	2.600	1.860	2.340	12.806
Green Mtn	gwh	7.000	1.530	1.574	1.662	1.426	1.853	1.462	0.683	0.719	4.445	3.932	3.393	29.679
Flatiron 3	gwh	0.091	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.091
Total	gwh	7.591	1.530	1.574	1.662	1.426	1.853	1.608	2.563	4.199	7.045	5.792	5.733	42.576
Load Following Generation:														
Marys Lake	gwh	0.440	2.580	4.420	6.060	5.400	6.060	5.840	4.520	1.140	3.680	5.120	4.600	49.860
Lake Estes	gwh	1.150	6.900	10.840	14.920	13.450	14.920	14.450	11.100	3.000	9.220	12.600	11.500	124.050
Pole Hill	gwh	1.650	0.000	6.950	25.190	22.720	25.190	24.380	21.700	14.600	18.980	21.060	19.190	201.610
Flatiron 1,2	gwh	1.950	0.000	8.450	28.960	26.160	28.960	28.040	25.000	17.180	22.640	24.360	22.820	234.520
Total	gwh	5.190	9.480	30.660	75.130	67.730	75.130	72.710	62.320	35.920	54.520	63.140	58.110	610.040
Total generation	gwh	12.781	11.010	32.234	76.792	69.156	76.983	74.318	64.883	40.119	61.565	68.932	63.843	652.616
Total max generation	gwh	98.799	35.330	54.980	93.880	84.700	84.580	94.680	97.820	94.680	97.820	97.820	94.680	1029.769

Project Pump Energy 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Granby	gwh	0.241	2.229	3.632	4.771	4.366	4.932	4.035	0.165	0.000	2.058	4.144	3.915	34.488
Willow Creek	gwh	0.298	0.383	0.085	0.085	0.085	0.107	0.724	2.215	1.235	0.341	0.085	0.085	5.728
Flatiron 3	gwh	0.000	0.052	2.367	6.272	5.629	6.105	5.756	4.496	0.299	1.548	1.848	1.170	35.542
Total pump energy	gwh	0.539	2.664	6.084	11.128	10.080	11.144	10.515	6.876	1.534	3.947	6.077	5.170	75.758
Total net generation	gwh	12.242	8.346	26.150	65.664	59.076	65.839	63.803	58.007	38.585	57.618	62.855	58.673	576.858

Release Flexibility 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Adams Tunnel	Min kaf	2.7	14.8	24.6	33.8	30.5	33.8	32.7	25.2	7.2	20.8	28.6	26.0	
Adams Tunnel	Max kaf	2.7	14.8	24.6	33.8	30.5	33.8	32.7	25.2	7.2	20.8	28.6	26.0	
Marys Lake	Min gwh	0.440	2.580	4.420	6.060	5.400	6.060	5.840	4.520	1.140	3.680	5.120	4.600	
Marys Lake	Max gwh	0.440	2.580	4.420	6.060	5.400	6.060	5.840	4.520	1.140	3.680	5.120	4.600	
Lake Estes	Min gwh	1.150	6.900	10.840	14.920	13.450	14.920	14.450	11.100	3.000	9.220	12.600	11.500	
Lake Estes	Max gwh	1.150	6.900	10.840	14.920	13.450	14.920	14.450	11.100	3.000	9.220	12.600	11.500	
Olympus Tunnel	Min kaf	2.7	15.1	24.6	33.8	30.5	33.8	32.7	29.1	19.3	25.5	28.4	25.9	
Olympus Tunnel	Max kaf	2.7	15.1	24.6	33.8	30.5	33.8	32.7	29.1	19.3	25.5	28.4	25.9	
Pole Hill	Min gwh	1.790	0.000	6.950	25.260	22.800	25.260	24.460	21.770	14.650	19.050	21.220	19.330	
Pole Hill	Max gwh	1.790	0.000	6.950	25.260	22.800	25.260	24.460	21.770	14.650	19.050	21.220	19.330	
Flatiron 1&2	Min gwh	1.950	0.000	8.450	28.960	26.160	28.960	28.040	25.000	17.180	22.640	24.360	22.820	
Flatiron 1&2	Max gwh	1.950	0.000	8.450	28.960	26.160	28.960	28.040	25.000	17.180	22.640	24.360	22.820	
Load following	Min gwh	5.330	9.480	30.660	75.200	67.810	75.200	72.790	62.390	35.970	54.590	63.300	58.250	
Load following	Max gwh	5.330	9.480	30.660	75.200	67.810	75.200	72.790	62.390	35.970	54.590	63.300	58.250	
Total project	Min gwh	12.921	11.010	32.234	76.862	69.236	77.053	74.398	64.953	40.169	61.635	69.092	63.983	
Total project	Max gwh	12.921	11.010	32.234	76.862	69.236	77.053	74.398	64.953	40.169	61.635	69.092	63.983	

GENERATION CAPACITY AND DURATION

Project Generation 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Base Generation:														
Green Mtn	mw	9.4	2.1	2.1	2.2	2.1	2.5	2.0	0.9	1.0	6.0	5.3	4.7	
Flatiron 3	mw	0.1												

Big Thompson	mw	0.7						0.2	2.5	4.8	3.5	2.5	3.3
Total base load	mw	10.2	2.1	2.1	2.2	2.1	2.5	2.2	3.4	5.8	9.5	7.8	8.0

TABLE 5B
PAGE 5 of 5

Load Following Generation:													
Marys Lake													
Min Capacity	mw	0.0	0.0	0.0	8.1	1.4	8.1	8.1	0.0	0.0	0.0	0.0	0.0
Duration	hr/d	17.9	10.9	5.3	12.0	1.6	12.0	12.0	4.9	10.2	8.1	2.4	4.3
Max Capacity	mw	2.7	7.0	8.1	8.1	8.1	8.1	8.1	8.1	2.9	8.1	8.1	8.1
Duration	hr/d	6.1	12.1	17.7	12.0	22.0	12.0	12.0	18.1	13.6	14.9	20.6	18.7
Lake Estes													
Min Capacity	mw	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Duration	hr/d	17.9	12.0	12.0	11.0	12.4	11.0	11.0	12.0	12.0	12.0	12.0	12.0
Max Capacity	mw	7.0	17.7	30.5	45.0	40.1	45.0	45.0	31.2	8.8	26.1	35.7	32.4
Duration	hr/d	6.1	12.0	12.0	10.0	11.7	10.0	10.0	12.0	12.0	12.0	12.0	12.0
Pole Hill													
Min Capacity	mw	0.0	0.0	0.0	34.0	0.0	34.0	34.0	0.0	0.0	0.0	0.0	0.0
Duration	hr/d	17.9	12.0	6.0	12.0	1.8	12.0	12.0	2.6	9.8	5.3	3.2	5.0
Max Capacity	mw	11.0	32.1	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0
Duration	hr/d	6.1	12.0	18.0	12.0	22.4	12.0	12.0	21.4	14.2	18.7	20.8	19.0
Flatiron 1&2													
Min Capacity	mw	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Duration	hr/d	18.5	12.0	12.0	8.7	11.4	8.7	9.5	12.0	12.0	12.0	12.0	12.0
Max Capacity	mw	13.0	37.4	60.2	86.0	79.6	86.0	85.2	74.0	46.4	62.8	70.8	63.4
Duration	hr/d	5.5	12.0	12.0	10.0	11.3	10.0	10.0	12.0	12.0	12.0	12.0	12.0
Total Load Following													
Min Capacity	mw	0.0	0.0	0.0	42.1	1.4	42.1	42.1	0.0	0.0	0.0	0.0	0.0
Max Capacity	mw	33.7	94.2	132.8	173.1	161.8	173.1	172.3	147.3	92.1	131.0	148.6	137.9
Total Project Capacity													
Min Capacity	mw	10.2	2.1	2.1	44.3	3.5	44.6	44.3	3.4	5.8	9.5	7.8	8.0
Max Capacity	mw	43.9	96.3	134.9	175.3	163.9	175.6	174.5	150.7	97.9	140.5	156.4	145.9

CBTAOP V1.10 Run: 16-Nov-2010 11:05
Maximum Reasonable Plan (50% Quota)

COLORADO-BIG THOMPSON MONTHLY OPERATIONS

HYDROLOGY OPERATIONS

Green Mtn Reservoir — Initial Cont 108.4 kaf, Elev 7926.13 ft; Maximum Cont 153.6 kaf, Elev 7949.91 ft; Minimum Cont 6.0 kaf, Elev 7795.72 ft

2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Dillon Inflow	kaf	7.0	4.9	4.4	4.0	3.6	4.3	7.7	41.0	110.4	73.2	28.9	10.3	299.7
Dillon-Grn Mtn Gain	kaf	7.5	4.8	4.2	3.8	3.2	4.1	8.3	28.6	70.4	48.0	21.2	10.0	214.1
Undepleted Inflow	kaf	14.5	9.7	8.6	7.8	6.8	8.4	16.0	69.6	180.8	121.2	50.1	20.3	513.8
Depletion	kaf	5.0	1.5	0.8	0.8	0.4	1.3	7.9	38.8	50.0	25.0	-0.3	0.0	131.2
Depleted Inflow	kaf	9.5	8.2	7.8	7.0	6.4	7.1	8.1	30.8	130.8	96.2	50.4	20.3	382.6
Turbine Release	kaf	38.4	8.9	9.2	9.8	8.5	11.2	11.9	6.1	75.9	85.4	48.1	41.7	355.1
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	kaf	38.4	8.9	9.2	9.8	8.5	11.2	11.9	6.1	75.9	85.4	48.1	41.7	355.1
Min Release	cfs	625	150	150	159	153	182	200	100	200	550	620	700	
Total River Release	cfs	625	150	150	159	153	182	200	99	1276	1389	782	701	
Evaporation	kaf	0.3	0.1	0.0	0.0	0.0	0.2	0.3	0.5	0.8	0.8	0.7	0.6	4.3
End-Month Targets	kaf					75.0	70.0	85.0	100.0	142.0	152.0			
End-Month Content	kaf	79.2	78.4	77.0	74.2	72.1	67.8	63.7	87.9	142.0	152.0	153.6	131.6	
End-Month Elevation	ft	7906.51	7905.90	7904.83	7902.64	7900.95	7897.39	7893.83	7912.85	7944.30	7949.15	7949.91	7939.02	

Willow Crk Reservoir — Initial Cont 9.3 kaf, Elev 8125.63 ft; Maximum Cont 10.2 kaf, Elev 8128.83 ft; Minimum Cont 5.0 kaf, Elev 8104.78 ft

2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Native Inflow	kaf	1.5	0.9	0.8	0.8	0.7	1.0	5.9	30.2	31.8	7.1	3.0	1.5	85.2
Min Release	kaf	0.4	0.8	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	5.2
Spill/Bypass	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.5	0.0	0.0	0.0	3.5
Total River Release	kaf	0.4	0.8	0.4	0.4	0.4	0.4	0.4	0.4	3.9	0.4	0.4	0.4	8.7
Pumped to Granby	kaf	1.4	1.8	0.4	0.4	0.4	0.5	5.5	27.7	26.8	7.8	1.8	1.7	76.2
Evaporation	kaf	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.6
End-Month Targets	kaf	8.9	7.2				7.2	7.2	9.0	9.0	9.0		9.0	
End-Month Content	kaf	8.9	7.2	7.2	7.2	7.1	7.2	7.2	9.2	10.2	9.0	9.7	9.0	
End-Month Elevation	ft	8124.12	8116.90	8116.90	8116.90	8116.42	8116.90	8116.90	8125.26	8128.83	8124.50	8127.09	8124.50	

Lake Granby — Initial Cont 492.1 kaf, Elev 8273.30 ft; Maximum Cont 536.1 kaf, Elev 8279.50 ft; Minimum Cont 76.5 kaf, Elev 8186.91 ft

2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Native inflow	kaf	2.4	1.3	1.4	1.4	1.2	1.5	6.7	24.0	54.6	24.1	8.6	3.4	130.6
Rels frm Shadow Mtn	kaf	2.2	2.7	2.8	1.2	1.1	1.2	1.2	12.5	68.5	3.1	2.5	2.1	101.1
Pump frm 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 frm Willow Crk	kaf	1.4	1.8	0.4	0.4	0.4	0.5	5.5	27.7	26.8	7.8	1.8	1.7	76.2
Total Inflow	kaf	6.0	5.8	4.6	3.0	2.7	3.2	13.4	64.2	149.9	35.0	12.9	7.2	307.9
Min 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
Spill/Bypass	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.4	25.6	0.0	0.0	43.0
Total River Release	kaf	1.2	1.2	1.2	1.2	1.1	1.2	1.2	4.6	21.9	30.2	2.5	1.2	68.7
Pumped to Shadow Mtn	kaf	1.7	15.2	24.5	32.9	29.5	33.1	24.2	0.0	0.0	1.4	24.1	7.3	193.9
Evaporation	kaf	1.6	0.7	0.2	0.0	0.0	0.9	1.4	2.2	3.1	2.9	2.3	2.1	17.4
Seepage loss	kaf	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.5	0.5	0.5	4.3
End-Month Content	kaf	493.3	481.7	460.1	428.7	400.5	368.2	354.5	411.6	536.1	536.1	519.6	515.7	
End-Month Elevation	ft	8273.47	8271.80	8268.65	8263.91	8259.49	8254.23	8251.94	8261.25	8279.50	8279.50	8277.20	8276.65	

Shadow Mtn — Initial Cont 17.1 kaf, Elev 8366.30 ft; Maximum Cont 18.4 kaf, Elev 8367.00 ft; Minimum Cont 16.6 kaf, Elev 8366.02 ft

2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Native inflow	kaf	3.6	2.0	2.1	2.1	1.9	2.2	10.1	36.1	81.8	36.2	12.8	5.1	196.0
Pumped from Granby	kaf	1.7	15.2	24.5	32.9	29.5	33.1	24.2	0.0	0.0	1.4	24.1	7.3	193.9
Total Inflow	kaf	5.3	17.2	26.6	35.0	31.4	35.3	34.3	36.1	81.8	37.6	36.9	12.4	389.9
Min 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	11.3	65.5	0.0	0.0	0.0	76.8
Total River Release	kaf	2.2	2.7	2.8	1.2	1.1	1.2	1.2	12.5	68.5	3.1	2.5	2.1	101.1
Adams Tunnel Flow	kaf	2.7	14.3	23.7	33.8	30.3	33.8	32.7	22.9	12.5	33.8	33.8	9.8	284.1
Evaporation	kaf	0.4	0.2	0.1	0.0	0.0	0.3	0.4	0.7	0.8	0.7	0.6	0.5	4.7
End-Month Content	kaf	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1	17.1	
End-Month Elevation	ft	8366.30	8366.30	8366.30	8366.30	8366.30	8366.30	8366.30	8366.30	8366.30	8366.30	8366.30	8366.30	

Adams Tunnel	2010	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Max Tunnel Capacity	kaf	2.7	16.4	33.8	33.8	30.5	33.8	32.7	33.8	32.7	33.8	33.8	32.7	350.5
Actual delivery	kaf	2.7	14.3	23.7	33.8	30.3	33.8	32.7	22.9	12.5	33.8	33.8	9.8	284.1
% max delivery	%	100	87	70	100	99	100	100	68	38	100	100	30	

Big T @ Lake Estes 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Big Thompson inflow	kaf	2.6	1.8	1.2	1.0	0.7	1.0	2.9	17.6	50.5	26.0	13.6	6.0	124.9
Min 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
Act river release	kaf	2.6	1.5	1.2	1.0	0.7	1.0	2.9	6.9	30.3	25.9	13.5	3.7	91.2
Skim water available	kaf	0.0	0.3	0.0	0.0	0.0	0.0	0.7	10.7	43.1	18.3	6.7	2.3	82.1
Skim water diverted	kaf	0.0	0.3	0.0	0.0	0.0	0.0	0.0	10.7	20.2	0.1	0.1	2.3	33.7
% skim diverted	%		100						100	47	1	1	100	
Irrigation demand	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.2
Irrigation delivery	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.2
Total river release	kaf	2.6	1.5	1.2	1.0	0.7	1.0	2.9	6.9	30.3	26.0	13.6	3.7	91.4

Olympus Tunnel 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Max Tunnel Capacity	kaf	33.8	16.4	33.8	33.8	30.5	33.8	32.7	33.8	32.7	33.8	33.8	32.7	381.6
Actual delivery	kaf	2.7	14.6	23.7	33.8	30.3	33.8	32.7	33.6	32.7	33.8	33.8	12.1	317.6
% max delivery	%	8	89	70	100	99	100	100	99	100	100	100	37	
Seepage and Evap	kaf	0.2	0.0	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	1.5
Inflow to Flatiron	kaf	2.5	14.6	23.5	33.7	30.2	33.7	32.6	33.5	32.6	33.7	33.6	11.9	316.1

Carter Lake — Initial Cont 55.3 kaf, Elev 5703.50 ft; Maximum Cont 112.2 kaf, Elev 5758.98 ft; Minimum Cont 11.2 kaf, Elev 5639.99 ft

2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Pump from Flatiron	kaf	0.0	0.0	8.6	22.7	18.4	18.0	16.0	11.5	7.7	12.5	10.3	0.0	125.7
Release to Flatiron	kaf	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Evaporation loss	kaf	0.2	0.1	0.0	0.0	0.0	0.1	0.3	0.4	0.5	0.5	0.4	0.3	2.8
Seepage loss	kaf	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.2	1.8
End-Month Targets	kaf	38.5	36.6	43.6	64.7	81.4	97.5	105.9	110.0	110.0	110.0	110.0	39.1	
End-Month Content	kaf	38.5	36.7	43.6	64.6	81.4	97.4	105.9	110.0	110.0	108.1	101.3	87.7	
End-Month Elevation	ft	5683.50	5681.18	5689.86	5713.60	5730.59	5745.72	5753.41	5757.04	5757.04	5755.37	5749.28	5736.66	
Irrigation demand	kaf	11.7	0.0	0.0	0.0	0.0	0.0	4.9	3.3	2.7	8.2	11.5	9.0	51.3
Metered delivery	kaf	3.7	1.2	1.2	1.2	1.1	1.3	1.6	2.3	2.8	3.6	3.3	2.7	26.0
Windy Gap demand	kaf	0.6	0.4	0.4	0.4	0.4	0.4	0.5	1.2	1.5	1.9	1.8	1.4	10.9
Total demand	kaf	16.0	1.6	1.6	1.6	1.5	1.7	7.0	6.8	7.0	13.7	16.6	13.1	88.2
Total delivery	kaf	16.0	1.6	1.6	1.6	1.5	1.7	7.0	6.8	7.0	13.7	16.6	13.1	88.2
% 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

Hansen Canal 930 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Minimum flow	kaf	0.7	1.5	3.1	4.6	4.2	4.6	1.5	1.5	1.5	1.5	1.5	1.5	27.7
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	3.0	14.6	14.9	11.0	11.8	15.7	16.6	22.0	24.9	21.2	23.3	11.9	190.9

Dille Tunnel 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Big T @ Canyon Mouth	kaf	4.0	2.3	1.5	1.4	1.3	1.8	6.9	29.2	61.5	37.7	20.1	7.6	175.3
Less Estes Skim	kaf	0.0	0.3	0.0	0.0	0.0	0.0	0.0	10.7	20.2	0.1	0.1	2.3	33.7
Big T irr (Estes)	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.2
Handy Ditch release	kaf	1.2	0.0	0.0	0.0	0.0	0.0	1.2	1.2	1.2	1.8	2.9	1.7	11.2
Water available	kaf	2.8	2.0	1.5	1.4	1.3	1.8	5.7	17.3	40.1	35.9	17.2	3.6	130.6
Water diverted	kaf	2.8	0.0	0.0	0.0	0.0	0.0	5.7	14.0	3.7	22.1	17.2	3.6	69.1
% diverted	%	100						100	81	9	62	100	100	

Trifurcation Works 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Rels from Flatiron	kaf	3.0	14.6	14.9	11.0	11.8	15.7	16.6	22.0	24.9	21.2	23.3	11.9	190.9
Rels to 550 Canal	kaf	1.3	14.3	14.9	11.0	11.8	15.7	16.6	11.3	4.7	18.6	18.2	2.2	140.6
Big T irrigation	kaf	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	5.0	7.4	16.6
Dille Tunnel	kaf	2.8	0.0	0.0	0.0	0.0	0.0	5.7	14.0	3.7	22.1	17.2	3.6	69.1
Tot rels to river	kaf	4.5	0.3	0.0	0.0	0.0	0.0	5.7	24.7	23.9	24.7	22.3	13.3	119.4
Irrigation demand	kaf	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	3.4	5.9	11.9
Big T irr (Estes)	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.2
Windy Gap demand	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	1.6	1.5	4.7
Total requirement	kaf	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	5.1	7.4	16.8
Total delivery	kaf	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	5.1	7.4	16.8
% required delivery	%	100	0	0	0	0	0	0	0	0	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

Hansen Canal 550 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Inflow from Flatiron	kaf	1.3	14.3	14.9	11.0	11.8	15.7	16.6	11.3	4.7	18.6	18.2	2.2	140.6
Maximum flow	kaf	32.0	30.9	32.0	32.0	28.9	32.0	30.9	32.0	30.9	32.0	32.0	30.9	376.5
Seepage loss	kaf	0.2	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	2.2
Irrigation demand	kaf	0.4	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.2	0.6	0.7	0.5	3.4
Irrigation delivery	kaf	0.4	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.2	0.6	0.7	0.5	3.4
Minimum flow	kaf	0.7	1.5	4.6	4.6	4.2	1.5	1.5	1.5	1.5	1.5	1.5	1.5	26.1
Rels to Horsetooth	kaf	0.7	14.2	14.6	10.7	11.5	15.4	16.2	10.8	4.3	17.8	17.3	1.5	135.0

Horsetooth Reservoir — Initial Cont 102.3 kaf, Elev 5400.24 ft; Maximum Cont 156.7 kaf, Elev 5429.98 ft; Minimum Cont 5.0 kaf, Elev 5297.06 ft

2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Inflow	kaf	0.7	14.2	14.6	10.7	11.5	15.4	16.2	10.8	4.3	17.8	17.3	1.5	135.0
Total irr delivery	kaf	31.3	1.4	1.4	1.5	1.4	1.5	1.9	2.9	3.2	19.4	22.4	10.3	98.6
Evaporation loss	kaf	0.3	0.1	0.0	0.0	0.0	0.3	0.5	0.7	0.9	0.8	0.6	0.5	4.7
Seepage loss	kaf	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.2	1.8
End-Month Targets	kaf	71.4	83.9	97.0	106.0	116.0	129.5	143.1	150.1	150.1	150.1	150.1	84.8	
End-Month Content	kaf	71.3	83.9	97.0	106.0	116.0	129.5	143.1	150.1	150.1	147.5	141.7	132.2	
End-Month Elevation	ft	5379.50	5388.38	5396.94	5402.49	5408.38	5415.94	5423.15	5426.71	5426.71	5425.40	5422.42	5417.40	
Irrigation demand	kaf	28.9	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.3	14.2	17.6	6.8	68.1
Metered delivery	kaf	1.4	1.0	1.0	1.1	1.0	1.1	1.4	2.3	2.5	4.0	3.6	2.4	22.8
Windy Gap demand	kaf	1.0	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	1.2	1.2	1.1	7.7
Total demand	kaf	31.3	1.4	1.4	1.5	1.4	1.5	1.9	2.9	3.2	19.4	22.4	10.3	98.6
Total irr delivery	kaf	31.3	1.4	1.4	1.5	1.4	1.5	1.9	2.9	3.2	19.4	22.4	10.3	98.6
% 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
Total CBT Delivery	kaf	47.8	2.3	2.3	2.4	2.2	2.5	8.2	8.4	8.5	31.6	40.2	27.3	183.7

Windy Gap Ownership 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Accrual	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 release	kaf	1.6	0.8	0.8	0.8	0.8	0.8	0.9	1.6	1.9	4.7	4.6	4.0	23.3
Spill	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.4	0.0	0.0	0.0	17.4
End-month Ownership	kaf	27.2	26.4	25.6	24.8	24.0	23.2	22.3	20.7	1.4	-3.3	-7.9	-11.9	

PUMPING AND GENERATION OPERATIONS

Green Mtn Gen 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Max Generation	gwh	18.600	18.000	18.600	18.600	16.800	9.300	17.845	18.600	18.000	18.600	18.600	18.000	209.545
Generation	gwh	7.000	1.530	1.574	1.662	1.426	1.853	1.933	1.035	14.761	17.866	10.181	8.646	69.467
% Max Generation	%	38	9	8	9	8	20	11	6	82	96	55	48	
Ave kwh/af		182	172	171	170	168	165	162	170	194	209	212	207	

Willow Crk Pumping 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Maximum pumping	kaf	27.7	26.8	27.7	27.7	25.0	27.7	26.8	27.7	26.8	27.7	27.7	26.8	326.1
Actual pumping	kaf	1.4	1.8	0.4	0.4	0.4	0.5	5.5	27.7	26.8	7.8	1.8	1.7	76.2
Pump energy	gwh	0.298	0.383	0.085	0.085	0.085	0.107	1.172	5.900	5.708	1.661	0.383	0.362	16.229
% max pumping	%	5	7	1	1	2	2	21	100	100	28	6	6	
Average kwh/af		213	213	213	213	213	213	213	213	213	213	213	213	

Lake Granby Pumping 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	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	1.7	15.2	24.5	32.9	29.5	33.1	24.2	0.0	0.0	1.4	24.1	7.3	193.9
Pump energy	gwh	0.241	2.158	3.504	4.771	4.337	4.932	3.630	0.000	0.000	0.196	3.374	1.029	28.172
% max pumping	%	5	43	66	89	89	90	68			4	65	20	
Average kwh/af		142	142	143	145	147	149	150			140	140	141	

Marys Lake Gen 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Adams Tunnel Flow	kaf	2.7	14.3	23.7	33.8	30.3	33.8	32.7	22.9	12.5	33.8	33.8	9.8	
Max generation	gwh	2.980	2.880	6.060	6.060	5.400	6.060	5.840	6.060	5.840	6.060	6.060	5.840	65.140
Generation	gwh	0.440	2.530	4.240	6.060	5.360	6.060	5.840	4.080	2.200	6.060	6.060	1.660	50.590
% Max Generation	%	15	88	70	100	99	100	100	67	38	100	100	28	
Ave kwh/af		163	177	179	179	177	179	179	178	176	179	179	169	

Lake Estes Gen 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Adams Tunnel Flow	kaf	2.7	14.3	23.7	33.8	30.3	33.8	32.7	22.9	12.5	33.8	33.8	9.8	
Max generation	gwh	14.920	14.450	14.920	14.920	13.450	14.920	14.450	14.920	14.450	14.920	14.920	14.450	175.690
Generation	gwh	1.150	6.650	10.450	14.920	13.350	14.920	14.450	10.060	5.800	14.920	14.920	4.300	125.890
% Max Generation	%	8	46	70	100	99	100	100	67	40	100	100	30	
Ave kwh/af		426	465	441	441	441	441	442	439	464	441	441	439	

Pole Hill Gen 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Olympus Tunnel flow	kaf	2.7	14.6	23.7	33.8	30.3	33.8	32.7	33.6	32.7	33.8	33.8	12.1	317.6
Max generation	gwh	25.260	0.000	6.950	25.260	22.800	25.260	24.460	25.260	24.460	25.260	25.260	24.460	254.690
Generation	gwh	1.650	0.000	6.950	25.190	22.560	25.190	24.380	25.050	24.380	25.190	25.120	9.020	214.680
% Max Generation	%	7		100	100	99	100	100	99	100	100	99	37	
Ave kwh/af		611		688	745	745	745	746	746	746	745	743	745	

Flatiron 1&2 Gen 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Inflow to Flatiron	kaf	2.5	14.6	23.5	33.7	30.2	33.7	32.6	33.5	32.6	33.7	33.6	11.9	316.1
Max generation	gwh	29.040	0.000	8.450	29.040	26.250	29.040	28.130	29.040	28.130	29.040	29.040	28.130	293.330
Generation	gwh	1.950	0.000	8.450	28.960	25.980	28.960	28.040	28.800	28.040	28.960	28.880	10.610	247.630
% Max Generation	%	7		100	100	99	100	100	99	100	100	99	38	
Ave kwh/af		780		837	859	860	859	860	860	860	859	860	892	

Flatiron 3 Pump/Gen 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Maximum pumping	kaf	24.0	24.5	24.9	23.0	18.4	18.3	16.2	16.1	15.3	15.9	16.4	17.1	230.1
Pump from Flatiron	kaf	0.0	0.0	8.6	22.7	18.4	18.0	16.0	11.5	7.7	12.5	10.3	0.0	125.7
Pump energy	gwh	0.000	0.000	2.262	6.379	5.759	6.228	5.984	4.474	3.034	4.900	3.924	0.000	42.944
% max pumping	%			35	99	100	98	99	71	50	79	63		
Average kwh/af				263	281	313	346	374	389	394	392	381		
Release to Flatiron	kaf	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
Maximum generation	gwh	4.059	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.059
Actual generation	gwh	0.091	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.091
% max generation	%	2												
Average kwh/af		182												

Big Thompson Gen 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Total release	kaf	4.5	0.3	0.0	0.0	0.0	0.0	5.7	24.7	23.9	24.7	22.3	13.3	119.4
Turbine release	kaf	4.5	0.0	0.0	0.0	0.0	0.0	5.7	24.7	23.9	24.7	22.3	13.3	119.1
Wasteway release	kaf	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
Max generation	gwh	3.940	0.000	0.000	0.000	0.000	0.000	3.800	3.940	3.800	3.940	3.940	3.800	27.160
Generation	gwh	0.500	0.000	0.000	0.000	0.000	0.000	0.600	3.940	3.800	3.940	3.560	1.960	18.300
% Max Generation	%	13						16	100	100	100	90	52	
Ave kwh/af		111						105	160	159	160	160	147	

PROJECT GENERATION AND PUMPING SUMMARY

Project Generation 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Base Generation:														
Big Thompson	gwh	0.500	0.000	0.000	0.000	0.000	0.000	0.600	3.940	3.800	3.940	3.560	1.960	18.300
Green Mtn	gwh	7.000	1.530	1.574	1.662	1.426	1.853	1.933	1.035	14.761	17.866	10.181	8.646	69.467
Flatiron 3	gwh	0.091	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.091
Total	gwh	7.591	1.530	1.574	1.662	1.426	1.853	2.533	4.975	18.561	21.806	13.741	10.606	87.858
Load Following Generation:														
Marys Lake	gwh	0.440	2.530	4.240	6.060	5.360	6.060	5.840	4.080	2.200	6.060	6.060	1.660	50.590
Lake Estes	gwh	1.150	6.650	10.450	14.920	13.350	14.920	14.450	10.060	5.800	14.920	14.920	4.300	125.890
Pole Hill	gwh	1.650	0.000	6.950	25.190	22.560	25.190	24.380	25.050	24.380	25.190	25.120	9.020	214.680
Flatiron 1,2	gwh	1.950	0.000	8.450	28.960	25.980	28.960	28.040	28.800	28.040	28.960	28.880	10.610	247.630
Total	gwh	5.190	9.180	30.090	75.130	67.250	75.130	72.710	67.990	60.420	75.130	74.980	25.590	638.790
Total generation	gwh	12.781	10.710	31.664	76.792	68.676	76.983	75.243	72.965	78.981	96.936	88.721	36.196	726.648
Total max generation	gwh	98.799	35.330	54.980	93.880	84.700	84.580	94.525	97.820	94.680	97.820	97.820	94.680	1029.614

Project Pump Energy 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Granby	gwh	0.241	2.158	3.504	4.771	4.337	4.932	3.630	0.000	0.000	0.196	3.374	1.029	28.172
Willow Creek	gwh	0.298	0.383	0.085	0.085	0.085	0.107	1.172	5.900	5.708	1.661	0.383	0.362	16.229
Flatiron 3	gwh	0.000	0.000	2.262	6.379	5.759	6.228	5.984	4.474	3.034	4.900	3.924	0.000	42.944
Total pump energy	gwh	0.539	2.541	5.851	11.235	10.181	11.267	10.786	10.374	8.742	6.757	7.681	1.391	87.345
Total net generation	gwh	12.242	8.169	25.813	65.557	58.495	65.716	64.457	62.591	70.239	90.179	81.040	34.805	639.303

Release Flexibility 2010			Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Adams Tunnel	Min	kaf	2.7	14.3	23.7	33.8	30.3	33.8	32.7	22.9	12.5	33.8	33.8	9.8	
Adams Tunnel	Max	kaf	2.7	14.3	23.7	33.8	30.3	33.8	32.7	22.9	12.5	33.8	33.8	9.8	
Marys Lake	Min	gwh	0.440	2.530	4.240	6.060	5.360	6.060	5.840	4.080	2.200	6.060	6.060	1.660	
Marys Lake	Max	gwh	0.440	2.530	4.240	6.060	5.360	6.060	5.840	4.080	2.200	6.060	6.060	1.660	
Lake Estes	Min	gwh	1.150	6.650	10.450	14.920	13.350	14.920	14.450	10.060	5.800	14.920	14.920	4.300	
Lake Estes	Max	gwh	1.150	6.650	10.450	14.920	13.350	14.920	14.450	10.060	5.800	14.920	14.920	4.300	
Olympus Tunnel	Min	kaf	2.7	14.6	23.7	33.8	30.3	33.8	32.7	33.6	32.7	33.8	33.8	12.1	
Olympus Tunnel	Max	kaf	2.7	14.6	23.7	33.8	30.3	33.8	32.7	33.6	32.7	33.8	33.8	12.1	
Pole Hill	Min	gwh	1.790	0.000	6.950	25.260	22.640	25.260	24.460	25.120	24.460	25.260	25.260	9.170	
Pole Hill	Max	gwh	1.790	0.000	6.950	25.260	22.640	25.260	24.460	25.120	24.460	25.260	25.260	9.170	
Flatiron 1&2	Min	gwh	1.950	0.000	8.450	28.960	25.980	28.960	28.040	28.800	28.040	28.960	28.880	10.610	
Flatiron 1&2	Max	gwh	1.950	0.000	8.450	28.960	25.980	28.960	28.040	28.800	28.040	28.960	28.880	10.610	
Load following	Min	gwh	5.330	9.180	30.090	75.200	67.330	75.200	72.790	68.060	60.500	75.200	75.120	25.740	
Load following	Max	gwh	5.330	9.180	30.090	75.200	67.330	75.200	72.790	68.060	60.500	75.200	75.120	25.740	
Total project	Min	gwh	12.921	10.710	31.664	76.862	68.756	77.053	75.323	73.035	79.061	97.006	88.861	36.346	
Total project	Max	gwh	12.921	10.710	31.664	76.862	68.756	77.053	75.323	73.035	79.061	97.006	88.861	36.346	

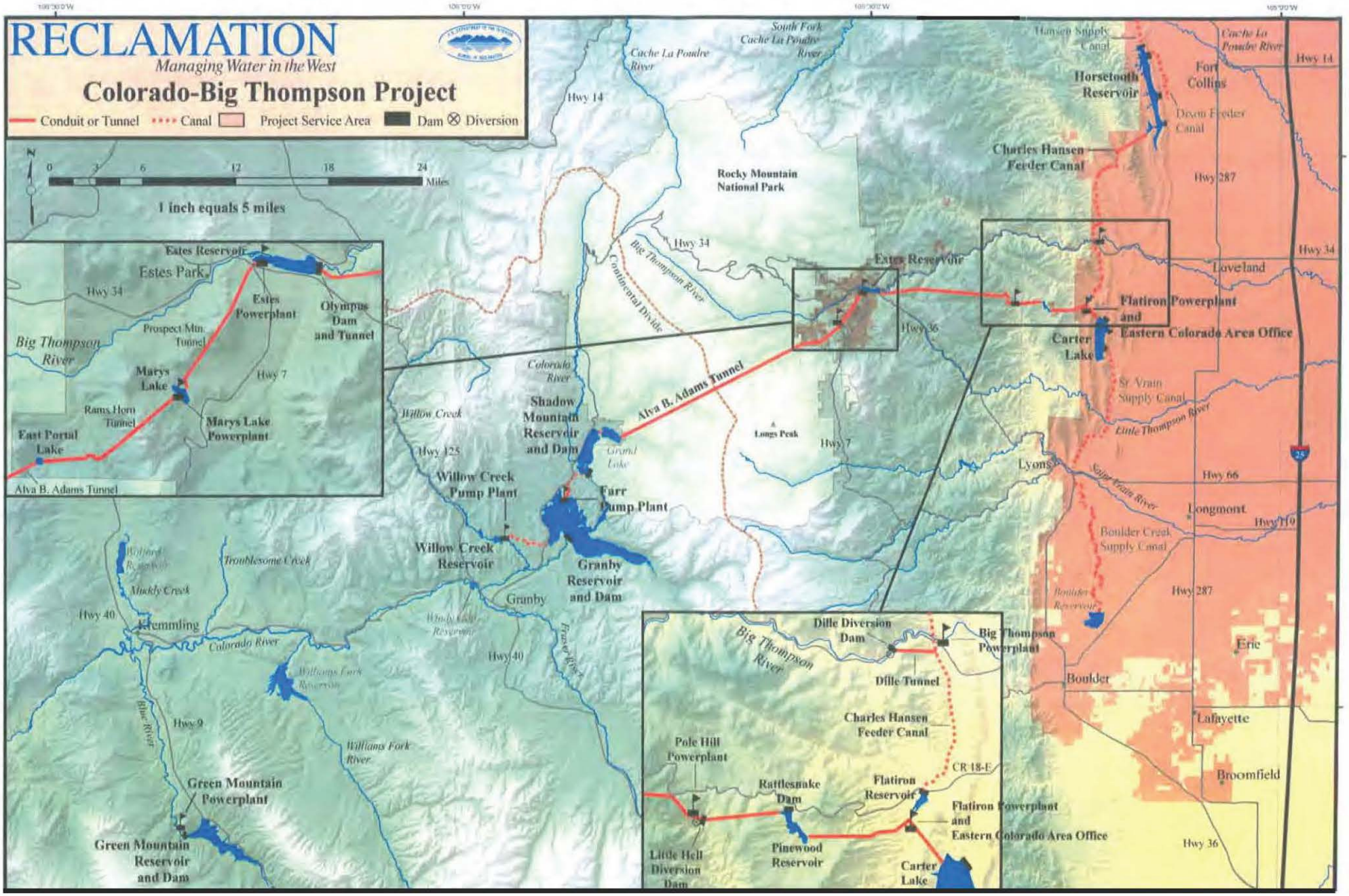
GENERATION CAPACITY AND DURATION

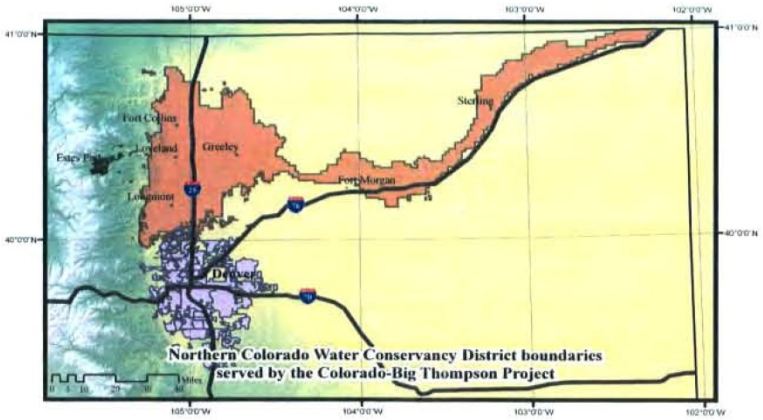
Project Generation 2010		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Base Generation:														
Green Mtn	mw	9.4	2.1	2.1	2.2	2.1	2.5	2.7	1.4	20.5	24.0	13.7	12.0	
Flatiron 3	mw	0.1												
Big Thompson	mw	0.7						0.8	5.3	5.3	5.3	4.8	2.7	
Total base load	mw	10.2	2.1	2.1	2.2	2.1	2.5	3.5	6.7	25.8	29.3	18.5	14.7	

Load Following Generation:													
Marys Lake													
Min Capacity	mw	0.0	0.0	0.0	8.1	0.8	8.1	8.1	0.0	0.0	8.1	8.1	0.0
Duration	hr/d	17.9	10.9	6.0	12.0	1.6	12.0	12.0	6.6	10.9	12.0	12.0	11.4
Max Capacity	mw	2.7	6.8	8.1	8.1	8.1	8.1	8.1	8.1	5.8	8.1	8.1	4.7
Duration	hr/d	6.1	12.1	17.0	12.0	21.8	12.0	12.0	16.5	12.1	12.0	12.0	11.6
Lake Estes													
Min Capacity	mw	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Duration	hr/d	17.9	12.0	12.0	11.0	12.2	11.0	11.0	12.0	12.0	11.0	11.0	12.0
Max Capacity	mw	7.0	17.1	29.8	45.0	39.3	45.0	45.0	29.3	15.2	45.0	45.0	12.4
Duration	hr/d	6.1	12.0	12.0	10.0	11.8	10.0	10.0	12.0	12.0	10.0	10.0	12.0
Pole Hill													
Min Capacity	mw	0.0	0.0	0.0	34.0	0.0	34.0	34.0	34.0	34.0	34.0	34.0	0.0
Duration	hr/d	17.9	12.0	6.6	12.0	1.9	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Max Capacity	mw	11.0	31.2	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	25.2
Duration	hr/d	6.1	12.0	17.4	12.0	22.2	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Flatiron 1&2													
Min Capacity	mw	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Duration	hr/d	18.5	12.0	12.0	8.7	11.5	8.7	9.5	8.9	9.5	8.7	8.8	12.0
Max Capacity	mw	13.0	36.2	57.5	86.0	78.8	86.0	85.2	86.0	85.2	86.0	86.0	29.7
Duration	hr/d	5.5	12.0	12.0	10.0	11.5	10.0	10.0	10.0	10.0	10.0	10.0	12.0
Total Load Following													
Min Capacity	mw	0.0	0.0	0.0	42.1	0.8	42.1	42.1	34.0	34.0	42.1	42.1	0.0
Max Capacity	mw	33.7	91.3	129.4	173.1	160.2	173.1	172.3	157.4	140.2	173.1	173.1	72.0
Total Project Capacity													
Min Capacity	mw	10.2	2.1	2.1	44.3	2.9	44.6	45.6	40.7	59.8	71.4	60.6	14.7
Max Capacity	mw	43.9	93.4	131.5	175.3	162.3	175.6	175.8	164.1	166.0	202.4	191.6	86.7

APPENDIX C - EXHIBITS

Exhibit 1


RECLAMATION
Managing Water in the West
Colorado-Big Thompson Project
Conduit or Tunnel
Canal
Project Service Area
Dam
Diversion
0 3 6 12 18 24 Miles
1 inch equals 5 miles
Estes Reservoir
Estes Park
Hwy 34
Estes Powerplant
Olympus Dam and Tunnel
Prospect Mtn. Tunnel
Big Thompson River
Marys Lake
Hwy 7
Rams Horn Tunnel
Marys Lake Powerplant
East Portal Lake
Alva B. Adams Tunnel
Cache La Poudre River
South Fork Cache La Poudre River
Hwy 14
Rocky Mountain National Park
Hwy 34
Big Thompson River
Continental Divide
Colorado River
Willow Creek
Shadow Mountain Reservoir and Dam
Grand Lake
Alva B. Adams Tunnel
Hwy 125
Willow Creek Pump Plant
Farr Pump Plant
Willow Creek Reservoir
Granby Reservoir and Dam
Granby
Troublesome Creek
Muddy Creek
Hwy 40
Kremmling
Colorado River
Hwy 40
Fraser River
Williams Fork Reservoir
Hwy 9
Blue River
Williams Fork River
Green Mountain Powerplant
Green Mountain Reservoir and Dam
Longs Peak
Hwy 7
Hwy 36
Estes Reservoir
Hansen Supply Canal
Horsetooth Reservoir
Fort Collins
Cache La Poudre River
Hwy 14
Dixon Feeder Canal
Charles Hansen Feeder Canal
Hwy 287
Hwy 34
Loveland
Flatiron Powerplant and Eastern Colorado Area Office
Carter Lake
St Vrain Supply Canal
Little Thompson River
Lyons
Hwy 66
Longmont
Hwy 119
Boulder Creek Supply Canal
Boulder Reservoir
Hwy 287
Eric
Boulder
Lafayette
Broomfield
Hwy 36
Dille Diversion Dam
Big Thompson Powerplant
Dille Tunnel
Charles Hansen Feeder Canal
Pole Hill Powerplant
CR 18-E
Rattlesnake Dam
Flatiron Reservoir
Flatiron Powerplant and Eastern Colorado Area Office
Little Hell Diversion Dam
Pinewood Reservoir
Carter Lake



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

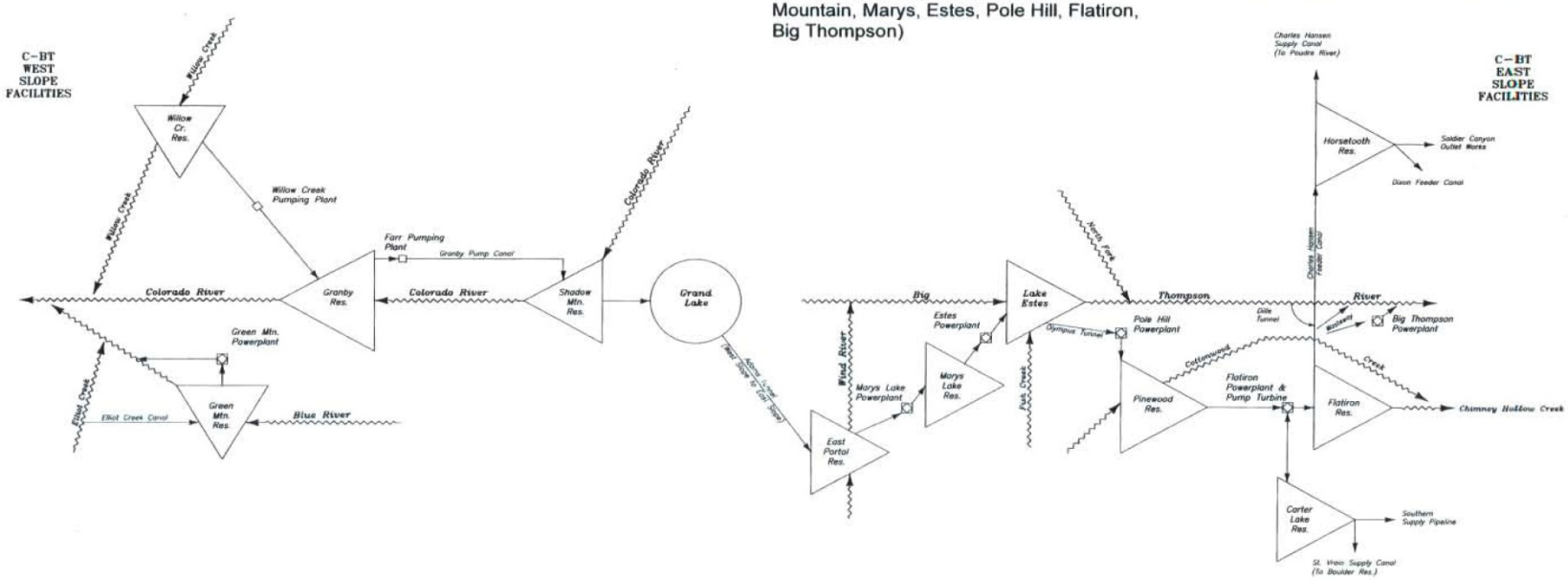


Exhibit 2

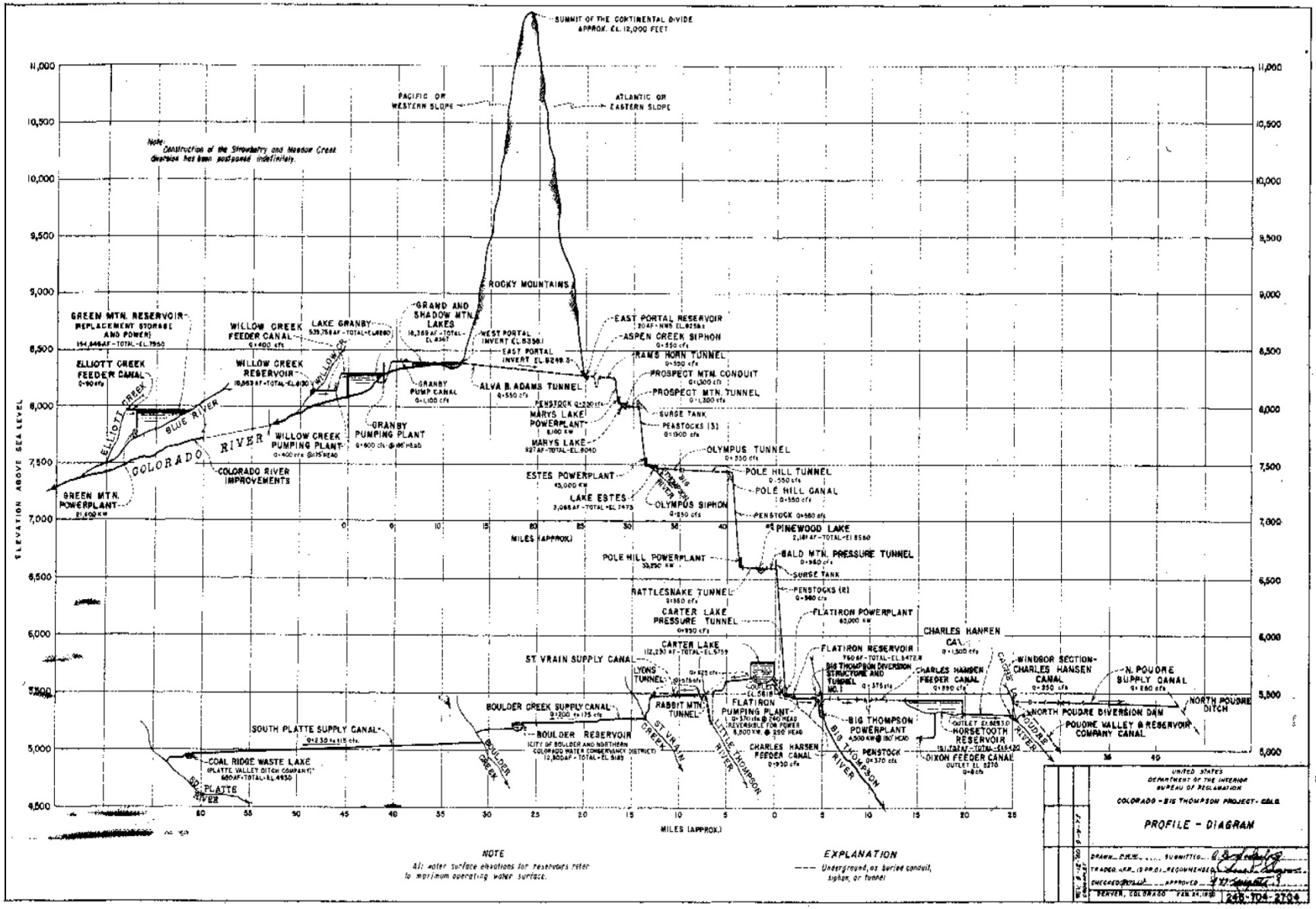
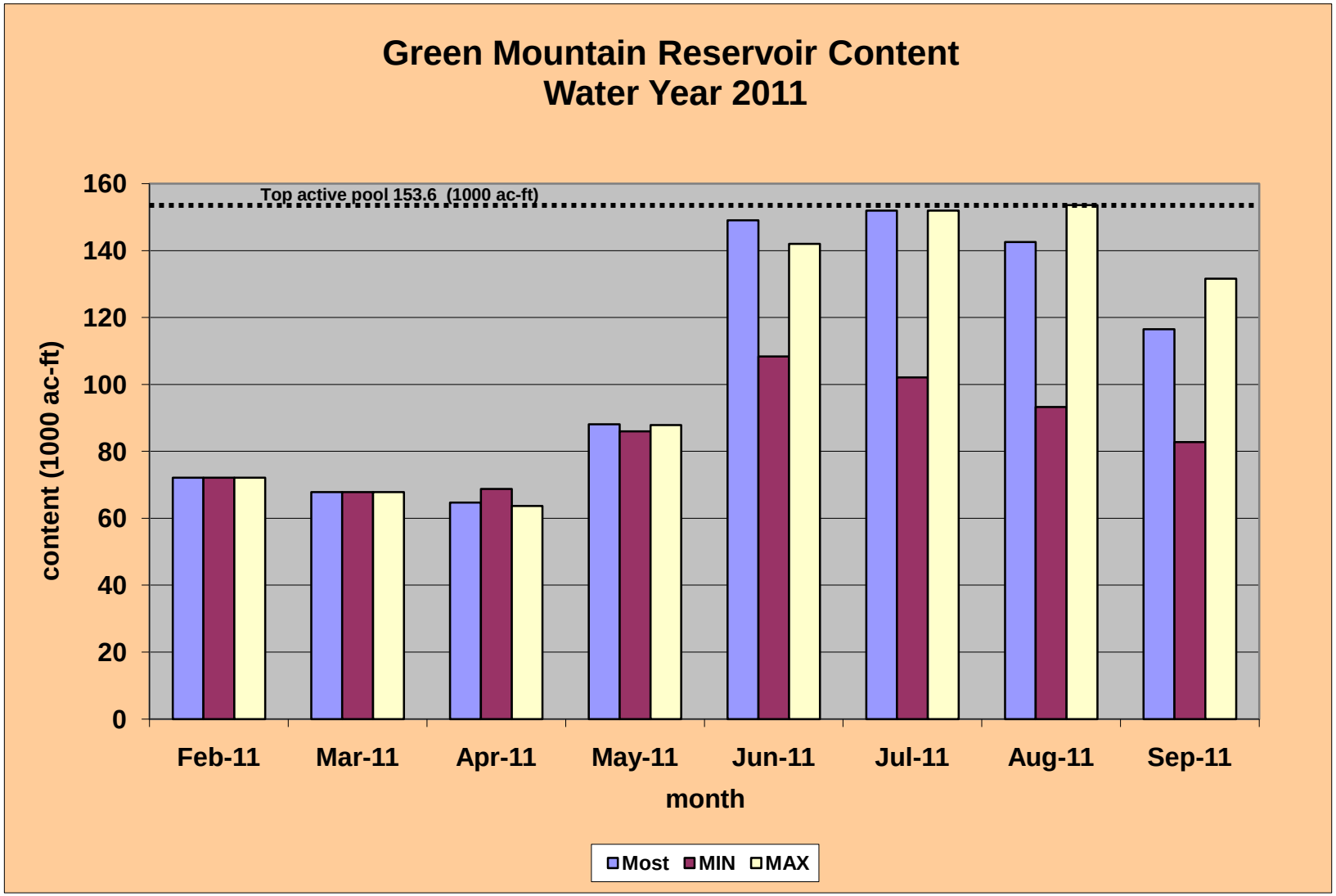
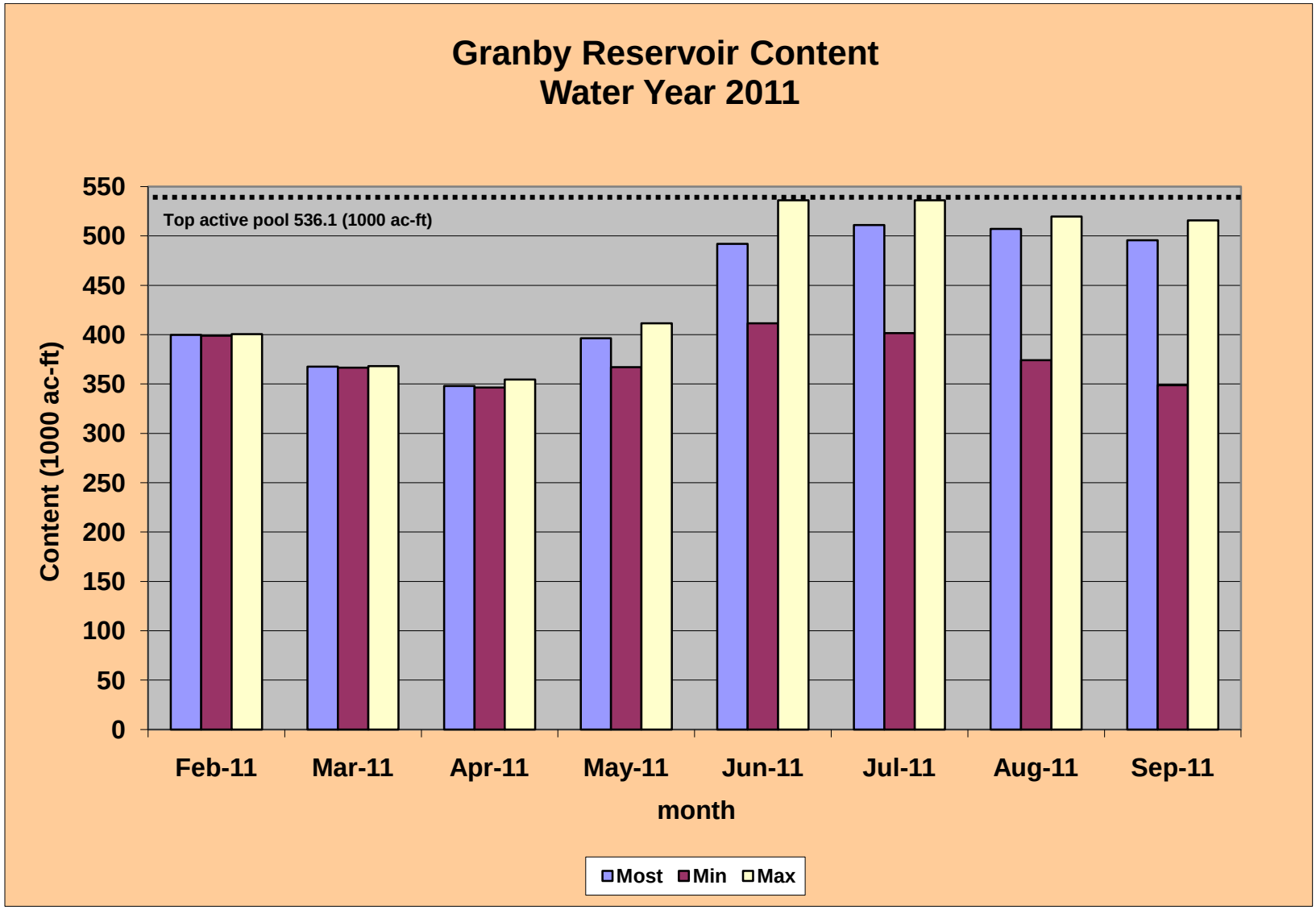

SUMMIT OF THE CONTINENTAL DIVIDE
APPROX. EL. 12,000 FEET
PACIFIC OR WESTERN SLOPE
ATLANTIC OR EASTERN SLOPE
Note: Construction of the Strawberry and Meadow Creek diversion has been postponed indefinitely.
ROCKY MOUNTAINS
GREEN MTN. RESERVOIR (REPLACEMENT STORAGE AND POWER)
WILLOW CREEK FEEDER CANAL
LAKE GRANBY
GRAND AND SHADOW MTN. LAKES
WEST PORTAL INVERT EL. 8358.1
EAST PORTAL INVERT EL. 8249.3
EAST PORTAL RESERVOIR
ASPEN CREEK SIPHON
RAMS HORN TUNNEL
PROSPECT MTN. CONDUIT
PROSPECT MTN. TUNNEL
ELLIOTT CREEK FEEDER CANAL
WILLOW CREEK RESERVOIR
GRANBY PUMP CANAL
ALVA B. ADAMS TUNNEL
PENSTOCK
MARYS LAKE POWERPLANT
SURGE TANK
PENSTOCKS (3)
GRANBY PUMPING PLANT
MARYS LAKE
OLYMPUS TUNNEL
ELLIOTT CREEK
BLUE RIVER
COLORADO RIVER
WILLOW CREEK PUMPING PLANT
COLORADO RIVER IMPROVEMENTS
ESTES POWERPLANT
POLE HILL TUNNEL
POLE HILL CANAL
LAKE ESTES
OLYMPUS SIPHON
PENSTOCK
GREEN MTN. POWERPLANT
MILES (APPROX.)
PINEWOOD LAKE
POLE HILL POWERPLANT
BALD MTN. PRESSURE TUNNEL
SURGE TANK
RATTLESNAKE TUNNEL
PENSTOCKS (R)
CARTER LAKE PRESSURE TUNNEL
FLATIRON POWERPLANT
CHARLES HANSEN CA.
CARTER LAKE
FLATIRON RESERVOIR
ST VRAIN SUPPLY CANAL
BIG THOMPSON DIVERSION STRUCTURE AND TUNNEL NO. 1
CHARLES HANSEN FEEDER CANAL
WINDSOR SECTION-CHARLES HANSEN CANAL
N. POUDRE SUPPLY CANAL
NORTH POUDRE DITCH
LYONS TUNNEL
BOULDER CREEK SUPPLY CANAL
RABBIT MTN. TUNNEL
FLATIRON PUMPING PLANT
BIG THOMPSON POWERPLANT
NORTH POUDRE DIVERSION DAM
POUDRE VALLEY & RESERVOIR COMPANY CANAL
SOUTH PLATTE SUPPLY CANAL
BOULDER RESERVOIR
(CITY OF BOULDER AND NORTHERN COLORADO WATER CONSERVANCY DISTRICT)
PENSTOCK
HORSETOOTH RESERVOIR
CHARLES HANSEN FEEDER CANAL
DIXON FEEDER CANAL
COAL RIDGE WASTE LAKE
(PLATTE VALLEY DITCH COMPANY)
PLATTE
BOULDER CREEK
ST VRAIN CREEK
LITTLE THOMPSON RIVER
BIG THOMPSON RIVER
CACHE LA POUDRE RIVER
ELEVATION ABOVE SEA LEVEL
MILES (APPROX.)
NOTE
All water surface elevations for reservoirs refer to maximum operating water surface.
EXPLANATION
Underground, as buried conduit, siphon, or tunnel
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
COLORADO-BIG THOMPSON PROJECT-COLO.
PROFILE - DIAGRAM
DENVER, COLORADO
248-704-2704

Exhibit 3



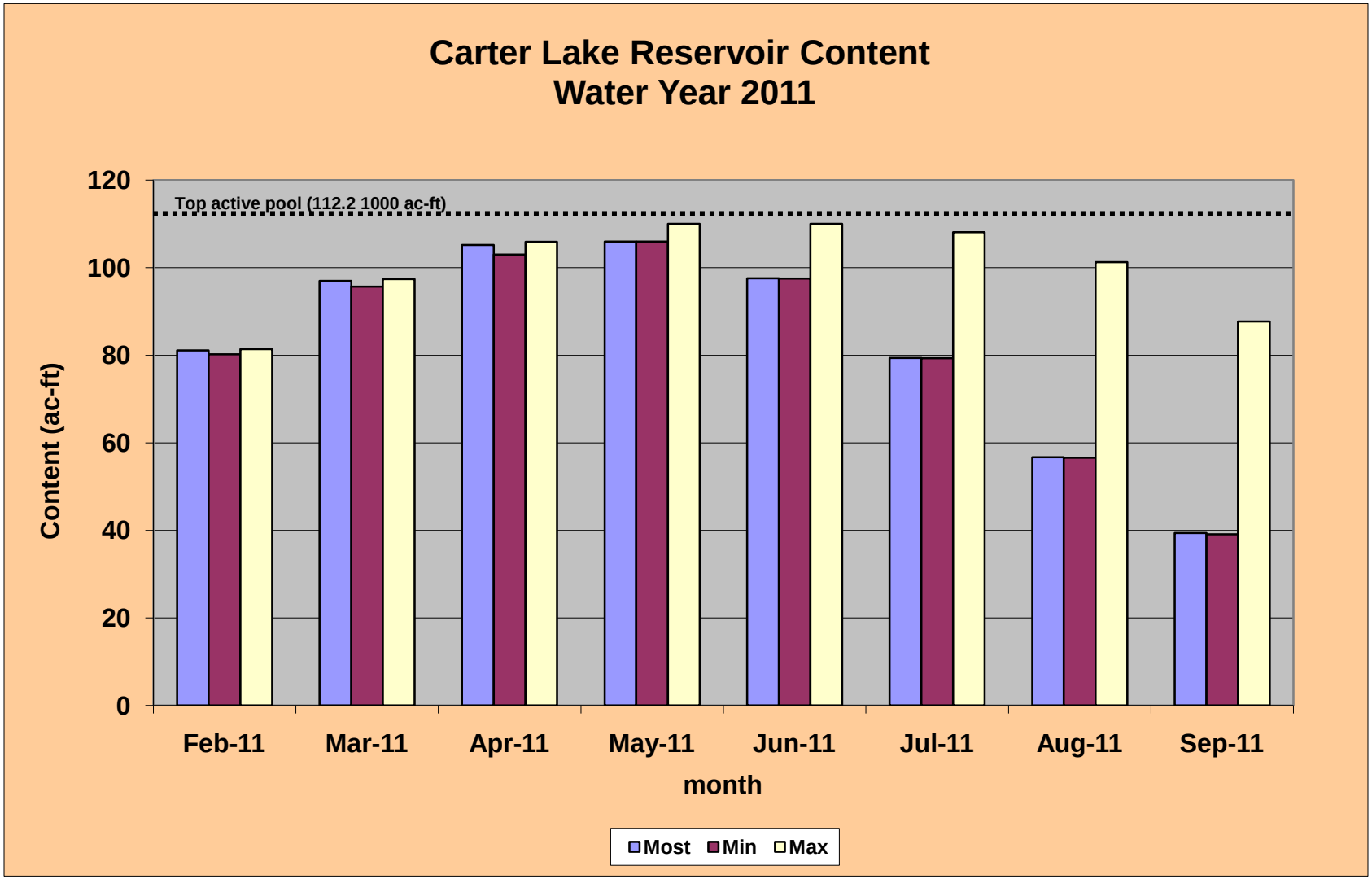
Active Pool between elevations 7,800.00 and 7,950.00 feet (between 6,860 and 153,639 acre-feet).

Exhibit 4



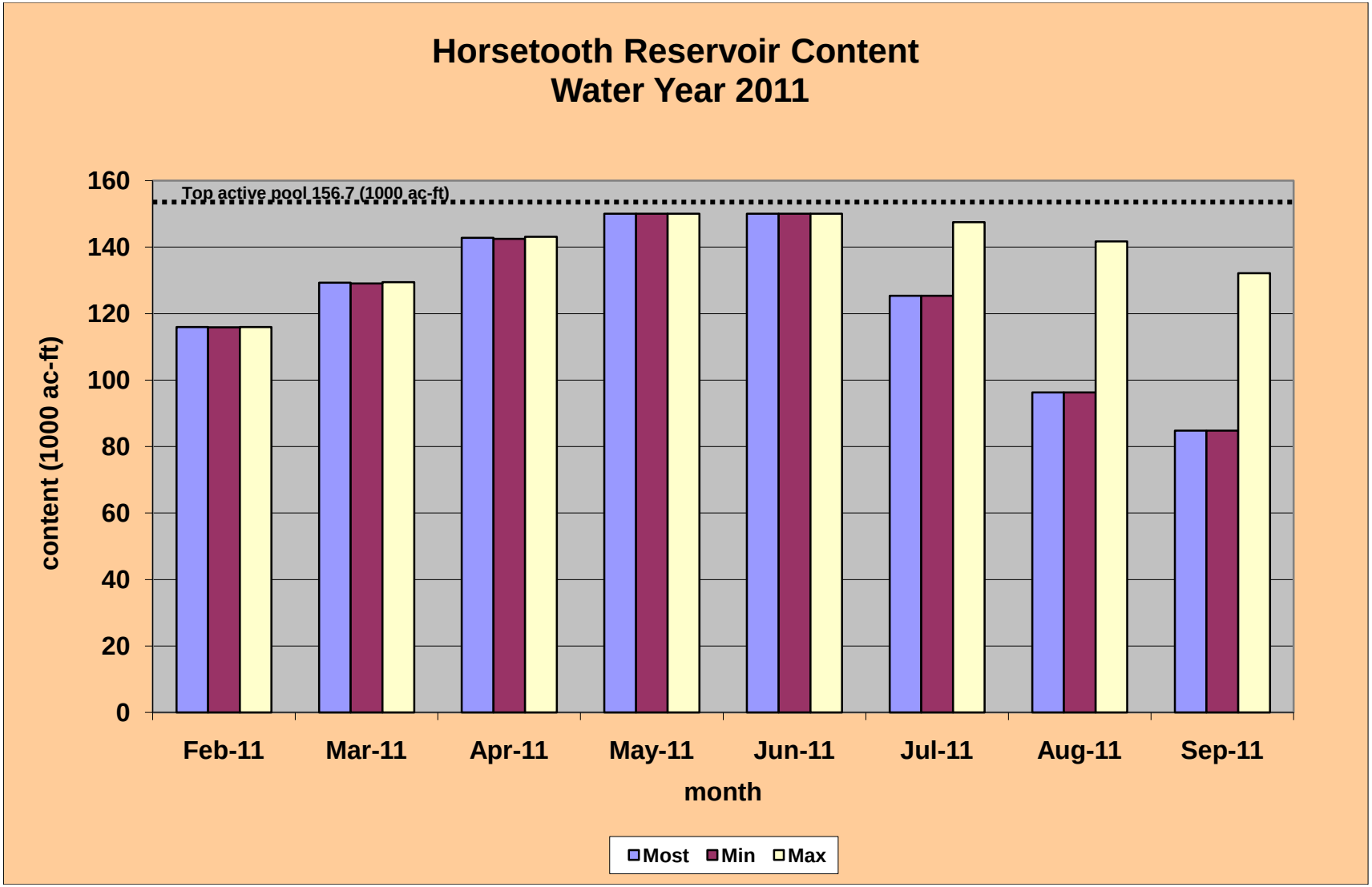
Active Pool between elevations 8,186.90 and 8,280.00 feet (between 74,190 and 539,758 acre-feet).

Exhibit 5



Active Pool between elevations 5,618.00 and 5,759.00 feet (3,306 and 112,230 acre-feet).

Exhibit 6



Active Pool between elevations 5,325.00 and 5,430.00 feet (between 17,600 and 156,735 acre-feet)

WESTERN DIVISION POWER SYSTEM
WATER YEAR 2010 – GENERATION AND PUMP ENERGY SUMMARY

The Colorado-Big Thompson Project (C-BT) powerplants produced a total of 624.2 GWh of electricity during water year 2010 (WY 2010) representing 104 percent of its 30-year average. Meanwhile the gross generation produced by the entire Western Division Power System's (System) was 2,724.8 giga-watt hours (GWh) or 103 percent of average. Gross generation includes one-half of the Yellowtail generation. Total generation is the gross generation less the energy used for pumping at Farr Plant, Willow Creek Pump, Flatiron Unit #3, and Mount Elbert's. The System's total generation was 2,363.6 GWh. The average for a water year is 2,400.7 GWh. The total System load includes firm energy deliveries, C-BT use-energy, support-energy, plant station service, and an estimate of transmission-system losses.

The Western Division Power System boundaries are illustrated in Exhibit 1. Table 1 in this section includes the total generation for every powerplant in the system. Table 3 shows monthly generation and pumping energy, by plant, as well as monthly System loads for the water year. The total energy that was required to operate the pumps in the System is included in Table 2. Some of the numbers included in this section were provided by Western Area Power Administration (WAPA).

Inflow for all the C-BT reservoirs was high during the late spring and early summer of WY 2010. The snowpack recorded was not as high as the previous year, but it was enough to fill Green Mountain, Granby, Horsetooth, and Carter Reservoirs. By late June the C-BT reservoirs were holding nearly 100 percent of its total capacity. Diversions through the Adams Tunnel were high during the winter and early spring in order to fill Carter and Horsetooth Reservoirs. But as the runoff season began, the diversions from the west slope diminished. C-BT diversions through the Adams Tunnel were limited to 460 ft^3/sec between October, 2009 and late May 2010 due to the outage for Flatiron Powerplant's Unit #1. That was 90 ft^3/sec short of the C-BT's maximum flow capacity. But when Flatiron's Unit #1 became available once again it added more flexibility to the C-BT system. The high runoff experience in May and June of 2010 kept the Pole hill and Flatiron powerplants operating at full capacity and uninterrupted during the late spring and early summer.

As usual, pumping at the Willow Creek Canal, the Farr Plant, and the Flatiron Powerplant was high during the winter and early spring months before it slowed down in the late spring. The energy used at those three plants to pump C-BT water during WY 2010 totaled 62.4 GWh. That represents 99 percent of the average. The total energy used from the System to pump water during WY 2010 totaled (including Mount Elbert) 361.2 GWh. The average energy used per water year is 245.2 GWh. Mount Elbert's total energy used to pump water was 228.8 GWh. The average energy used according to the 10-year average (years 1990-1999) is 182.1 GWh.

According to the numbers provided by WAPA's office in Loveland sales of electric power totaled 2,824,277 mega-watt hours (MWh) during WY 2010 for a total of $96,847,764. 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 531,638 MWh during WY 2010 for which (WAPA) paid a total of $27,622,927, lower than the previous year.

WESTERN DIVISION POWER SYSTEM
WATER YEAR 2011 – GENERATION AND PUMP ENERGY FORECAST

Under the most-probable runoff condition plan from December 2010, the gross generation for the C-BT powerplants is projected to be 528.4 GWh for the WY 2011, while pump energy requirements from the C-BT Power System are expected to reach 67.7 GWh. The total generation for the entire Western Division Power System (System) is expected to be 2,056.4 GWh, with a total load of 2,163.4 GWh, leaving a shortfall of 107.0 GWh. The System generation includes one-half of the total Yellowtail Powerplant generation and the Mount Elbert Powerplant generation resulting from Fryingpan-Arkansas 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 system losses.

Under the reasonable-minimum runoff conditions plan from December 2010, the total System generation is projected to be 1,767.9 GWh during WY 2011, 288.5 GWh less than the total generation projected under most probable runoff conditions. Also under the reasonable-minimum runoff plan, pump energy requirements for the C-BT would total 75.7 GWh while the C-BT powerplants will generate a total of 576.9 GWh. The total System load is expected to be 2163.4 GWh over the entire water year, leaving a total generation shortfall of 395.5 GWh. Under the reasonable-minimum runoff conditions total generation shortfalls are expected for almost every month of the water year, with the exception of August and September.

If reasonable-maximum runoff conditions occur during WY 2011, the System generation should total 2,543.5 GWh, 487.1 GWh more than the generation projected under most probable runoff conditions. Under the reasonable-maximum conditions the total C-BT pump energy requirements would be 87.3 GWh. The total System load is expected to be 2,163.4 GWh over the entire water year, leaving a total generation surplus of 380.1 GWh.

Tables 4A through 4C summarize the projected monthly System generation, pump energy, and loads for the three forecasted runoff conditions for WY 2011. Exhibits 3A through 3C graphically display the gross generation less pumping for the C-BT contributing to the System for the most probable, reasonable-minimum, and reasonable-maximum inflow conditions. Tables 5A and 5B lists the scheduled maintenance for the various facilities in the C-BT. Tables 6 and 7 summarize the capacity data for the powerplants and pumping plants within the System, including the Yellowtail and Mount Elbert Units.

APPENDIX A - TABLES

TABLE 1

WESTERN DIVISION SYSTEM
GROSS GENERATION - WATER YEAR 2010
(Energy in GWh)

Powerplant	Accumulated Gross Generation 1/		
	WY 2010	Yearly Avg.2/	Percent of Avg.
Green Mountain	51.0	51.9	98
Marys Lake	39.3	37.3	105
Estes	102.2	100.3	102
Pole Hill	184.9	172.3	107
Flatiron 1 & 2	237.3	226.7	105
Big Thompson	9.5	10.9	87
Seminoe	155.3	132.5	117
Kortes	150.7	140.3	107
Fremont Canyon	243.4	239.6	102
Alcova	133.5	118.1	113
Glendo	101.1	80.3	126
Guernsey	21.0	19.4	108
Boysen	74.9	69.3	108
Heart Mountain	19.0	15.2 3/	125
Buffalo Bill	66.8	69.4 3/	96
Shoshone	22.8	20.4 3/	112
Spirit Mountain	15.9	14.0 3/	114
Mt. Elbert	223.5	169.0 4/	132
Yellowtail4/	872.7	959.0 5/	91
Total	2724.8	2645.9	103

1/ October-September
2/ 1976-2005 average
3/ 1995-2005 average
4/ 1990-1999 average
5/ 1971-1990 average; one-half of the Yellowtail energy is dedicated to the Western Division System through marketing arrangement. The other half is marketed through the Eastern Division System.

TABLE 2

WESTERN DIVISION SYSTEM
PUMP ENERGY-WATER YEAR 2010

Pumping Plant	October-September Pump Energy		
	WY 2010 (GWh)	Avg. 1/ (GWh)	Percent of Avg.
Willow Greek	9.8	5.7	172
Granby (Farr Plant)	32.2	30.6	105
Flatiron Unit #3	30.4	26.8	113
Mt. Elbert	228.8	182.1 2/	159
Total	361.2	245.2	147

1/ 1976-2005 average
2/ 1990-1999 average

TABLE 3

PICK-SLOAN MISSOURI BASIN PROGRAM WESTERN DIVISION POWER SYSTEM
WATER YEAR 2010 OPERATIONS
GROSS GENERATION LESS PUMPING IN GIGAWATT- HOURS

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
Mt. Elbert *	4.6	0.0	7.4	5.7	1.3	1.2	1.2	2.0	4.6	4.8	0.8	0.7	34.3
Green Mtn.	7.5	1.3	0.7	1.1	0.9	0.8	0.7	0.7	15.7	5.6	7.3	8.7	51.0
Willow Cr. pump	0.2	0.4	0.0	0.0	0.0	0.0	0.7	3.6	3.8	0.6	0.4	0.0	9.7
Farr pump	4.8	0.4	3.0	4.3	4.0	4.6	3.1	0.4	0.0	1.9	1.6	4.1	32.2
Marys Lake	5.9	0.2	2.9	4.9	4.5	5.1	4.3	0.6	0.2	3.2	2.5	5.0	39.3
Estes	14.7	0.5	7.7	12.6	11.9	13.1	10.9	1.6	1.1	8.8	6.9	12.4	102.2
Pole Hill	21.3	0.6	9.8	19.2	18.3	20.5	18.4	8.0	22.4	18.8	8.8	18.8	184.9
Flatiron 1&2	26.2	1.2	14.9	24.1	23.2	25.6	23.3	10.9	27.5	23.7	11.9	24.8	237.3
Flatiron 3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.3	0.9
Flatiron 3 pump	6.7	0.2	3.4	6.5	0.1	4.7	1.7	0.5	3.6	2.3	0.0	0.7	30.4
Big Thompson	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.3	2.7	2.6	2.4	1.2	9.5
Seminoe	4.1	3.9	4.1	4.4	4.1	4.5	18.0	31.0	35.8	22.0	15.2	8.2	155.3
Kortes	5.0	4.8	5.1	5.2	4.5	5.1	19.5	29.0	27.4	20.9	15.6	8.6	150.7
Fremont Canyon	0.7	5.7	7.1	6.9	6.4	10.4	20.5	28.7	43.0	42.1	43.6	28.3	243.4
Alcova	2.6	3.2	3.5	3.5	3.2	5.1	6.9	15.5	25.7	25.6	25.5	13.2	133.5
Glendo	0.0	0.0	0.0	0.0	0.0	0.0	1.4	17.3	21.0	25.5	23.9	12.0	101.1
Guernsey	0.0	0.0	0.0	0.0	0.0	0.0	1.9	4.5	4.4	4.3	4.2	1.7	21.0
Pilot Butte **	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	4.2	5.0	5.2	5.1	4.4	4.1	4.1	10.5	11.0	9.9	6.8	4.6	74.9
Shoshone	2.1	2.0	2.1	2.1	0.7	2.1	2.0	1.9	1.9	2.1	2.1	1.7	22.8
Buffalo Bill	8.3	3.2	2.1	2.2	3.1	2.3	4.6	7.6	9.9	11.9	7.8	3.8	66.8
Spirit Mtn.	0.7	0.0	0.0	0.0	0.0	0.0	0.3	2.5	2.9	3.2	3.2	3.1	15.9
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	0.0
Heart Mtn.	1.3	0.0	0.0	0.0	0.0	0.0	0.5	3.6	3.4	3.5	3.6	3.1	19.0
Yellowtail/2	34.1	28.2	28.3	27.5	22.4	17.2	16.4	57.5	78.2	63.1	34.1	29.8	436.4
Fry-Ark	4.6	0.0	7.4	5.7	1.3	1.2	1.2	2.0	4.6	4.8	0.8	0.7	34.3
CBT	64.2	2.8	29.6	51.1	54.7	55.8	52.1	17.6	62.2	57.9	38.4	66.4	552.8
North Platte	12.4	17.6	19.8	20.0	18.2	25.1	68.2	126.0	157.3	140.4	128.0	72.0	805.0
Bighorn	50.7	38.4	37.7	36.9	30.6	25.7	27.9	83.6	107.3	93.7	57.6	46.1	635.8
TOTAL GEN	131.9	58.8	94.5	113.7	104.8	107.8	149.4	229.2	331.3	296.7	224.7	185.2	2027.9
TOTAL LOAD	162.5	162.3	177.2	172.6	137.1	149.2	176.3	184.8	211.2	262.2	211.2	156.8	2163.4
SURPLUS/DEFICIT	-30.6	-103.6	-82.7	-58.9	-32.3	-41.4	-26.9	44.4	120.1	34.5	13.5	28.4	-135.5

* PROJECTED VALUES ARE HISTORIC AVERAGE FLOW THROUGH ENERGY

** PROJECTED VALUES ARE MARKETED ENERGY

TABLE 4A

PICK-SLOAN MISSOURI BASIN PROGRAM WESTERN DIVISION POWER SYSTEM
WATER YEAR 2011 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 *	1.3	2.4	2.4	2.5	3.1	2.5	3.5	3.9	4.7	4.4	2.0	1.0	33.7
Green Mtn.	7.0	1.5	1.6	1.7	1.4	1.9	1.9	1.0	2.3	7.6	8.0	8.4	44.4
Willow Cr. pump	0.3	0.4	0.1	0.1	0.1	0.1	0.7	4.3	3.6	0.7	0.2	0.2	10.9
Farr pump	0.2	2.2	3.6	4.8	4.4	4.9	4.0	0.0	0.0	0.0	1.0	1.9	26.9
Marys Lake	0.4	2.5	4.3	6.1	5.4	6.1	5.8	3.7	0.9	1.2	1.9	2.5	40.8
Estes	1.2	6.7	10.6	14.9	13.5	14.9	14.5	9.3	2.3	3.1	4.9	6.6	102.3
Pole Hill	1.7	0.0	7.0	25.2	22.7	25.2	24.4	21.7	22.4	12.0	9.2	10.6	182.0
Flatiron 1&2	2.0	0.0	8.5	29.0	26.2	29.0	28.0	25.0	25.8	14.1	10.8	12.5	210.7
Flatiron 3	0.1	0.0	0.0	0.0	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	2.3	6.4	5.7	6.2	6.0	3.3	0.0	0.0	0.0	0.0	29.9
Big Thompson	0.5	0.0	0.0	0.0	0.0	0.0	0.5	3.2	3.8	3.7	2.1	2.0	15.8
Seminoe	5.7	5.5	5.7	5.7	5.1	5.7	30.9	32.0	31.9	16.3	16.2	12.0	172.6
Kortes	5.6	5.4	5.6	5.6	5.0	5.6	22.3	27.6	26.7	15.7	15.7	11.7	152.4
Fremont Canyon	0.4	7.1	7.3	7.3	6.6	10.1	18.8	46.1	44.7	46.9	45.9	34.5	275.8
Alcova	4.2	4.1	4.2	4.2	3.8	5.5	6.6	22.2	20.8	21.5	21.5	16.9	135.4
Glendo	0.0	0.0	0.0	0.0	0.0	0.1	8.9	24.2	20.2	23.6	17.6	6.5	101.2
Guernsey	0.0	0.0	0.0	0.0	0.0	0.0	3.6	3.8	3.7	3.8	3.8	3.4	22.0
Pilot Butte**	0.4	0.0	0.0	0.0	0.0	0.0	0.6	1.2	1.2	1.2	1.2	1.2	7.0
Boysen	3.7	4.2	4.3	4.3	3.8	4.2	6.3	11.6	11.5	10.8	8.7	5.4	78.9
Shoshone	1.1	1.1	1.1	1.1	0.7	1.1	1.1	1.1	2.2	2.2	2.1	1.1	16.2
Buffalo Bill	7.4	5.6	4.2	4.2	3.8	4.2	4.0	13.1	13.0	13.4	13.4	12.8	99.0
Spirit Mtn.	0.8	0.0	0.0	0.0	0.0	0.0	1.1	2.8	2.9	3.2	3.2	3.1	17.2
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	0.0
Heart Mtn.	0.0	0.0	0.0	0.0	0.0	0.0	0.9	3.8	4.3	4.5	4.5	2.7	20.5
Yellowtail/2	28.6	27.0	27.7	27.5	24.6	27.0	26.2	33.9	55.4	48.7	36.1	33.5	396.2
Fry-Ark	1.3	2.4	2.4	2.5	3.1	2.5	3.5	3.9	4.7	4.4	2.0	1.0	33.7
CBT	12.2	8.2	26.0	65.6	59.0	65.7	64.5	56.2	53.8	41.0	35.6	40.5	528.4
North Platte	15.9	22.1	22.8	22.8	20.5	26.9	91.1	155.8	148.0	127.8	120.6	85.1	859.4
Bighorn	42.2	37.8	37.3	37.1	32.9	36.5	40.2	67.4	90.4	84.0	69.3	59.8	634.9
TOTAL GEN	71.6	70.5	88.5	127.9	115.5	131.7	199.2	283.4	297.0	257.3	227.5	186.4	2056.4
TOTAL LOAD	162.5	162.3	177.2	172.6	137.1	149.2	176.3	184.8	211.2	262.2	211.2	156.8	2163.4
SURPLUS/DEFICIT	-90.9	-91.8	-88.7	-44.7	-21.6	-17.5	22.9	98.6	85.8	-4.9	16.3	29.6	-107.0

* PROJECTED VALUES ARE HISTORIC AVERAGE FLOW THROUGH ENERGY

** PROJECTED VALUES ARE MARKETED ENERGY

TABLE 4B

PICK-SLOAN MISSOURI BASIN PROGRAM WESTERN DIVISION POWER SYSTEM
WATER YEAR 2011 FORECASTED OPERATIONS
REASONABLE-MINIMUM 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 *	1.3	2.4	2.4	2.5	3.1	2.5	3.5	3.9	4.7	4.4	2.0	1.0	33.7
Green Mtn.	7.0	1.5	1.6	1.7	1.4	1.9	1.5	0.7	0.7	4.4	3.9	3.4	29.7
Willow Cr. pump	0.3	0.4	0.1	0.1	0.1	0.1	0.7	2.2	1.2	0.3	0.1	0.1	5.7
Farr pump	0.2	2.2	3.6	4.8	4.4	4.9	4.0	0.2	0.0	2.1	4.1	3.9	34.5
Marys Lake	0.4	2.6	4.4	6.1	5.4	6.1	5.8	4.5	1.1	3.7	5.1	4.6	49.9
Estes	1.2	6.9	10.8	14.9	13.5	14.9	14.5	11.1	3.0	9.2	12.6	11.5	124.1
Pole Hill	1.7	0.0	7.0	25.2	22.7	25.2	24.4	21.7	14.6	19.0	21.1	19.2	201.6
Flatiron 1&2	2.0	0.0	8.5	29.0	26.2	29.0	28.0	25.0	17.2	22.6	24.4	22.8	234.5
Flatiron 3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Flatiron 3 pump	0.0	0.1	2.4	6.3	5.6	6.1	5.8	4.5	0.3	1.5	1.8	1.2	35.5
Big Thompson	0.5	0.0	0.0	0.0	0.0	0.0	0.1	1.9	3.5	2.6	1.9	2.3	12.8
Seminoe	5.7	5.5	5.7	5.7	5.1	5.7	13.1	13.6	13.2	13.6	13.5	10.0	110.3
Kortes	5.6	5.4	5.6	5.6	5.0	5.6	12.9	13.3	12.9	13.3	13.3	10.0	108.7
Fremont Canyon	0.4	7.1	7.3	7.3	6.6	9.9	13.8	43.9	33.0	35.0	33.5	19.6	217.5
Alcova	4.2	4.1	4.2	4.2	3.8	5.4	4.1	21.3	15.7	16.2	16.2	10.0	109.2
Glendo	0.0	0.0	0.0	0.0	0.0	0.0	3.5	15.5	11.7	24.6	18.8	6.1	80.3
Guernsey	0.0	0.0	0.0	0.0	0.0	0.0	1.9	3.8	3.7	3.8	3.8	3.4	20.3
Pilot Butte **	1.2	0.5	0.0	0.0	0.0	0.0	0.8	1.9	4.0	3.8	3.7	1.7	17.6
Boysen	3.7	4.1	4.3	4.2	3.8	4.2	4.0	5.7	5.8	6.4	5.6	4.7	56.4
Shoshone	1.2	1.1	1.1	1.1	0.7	1.1	1.1	1.1	1.1	1.2	1.2	1.1	13.1
Buffalo Bill	6.2	6.0	4.2	4.2	3.7	4.2	4.0	13.3	12.8	13.1	13.3	10.9	95.9
Spirit Mtn.	0.8	0.0	0.0	0.0	0.0	0.0	1.1	3.0	3.0	3.1	3.0	2.9	16.9
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	0.0
Heart Mtn.	0.0	0.0	0.0	0.0	0.0	0.0	0.9	1.5	1.7	3.1	1.1	0.3	8.6
Yellowtail/2	28.0	25.5	26.2	25.9	23.2	25.6	19.2	24.7	29.9	25.8	25.4	23.2	302.6
Fry-Ark	1.3	2.4	2.4	2.5	3.1	2.5	3.5	3.9	4.7	4.4	2.0	1.0	33.7
CBT	12.2	8.3	26.2	65.7	59.1	65.8	63.8	58.0	38.6	57.6	62.9	58.7	576.9
North Platte	15.9	22.0	22.7	22.7	20.5	26.6	49.2	111.4	90.2	106.6	99.2	59.2	646.2
Bighorn	41.1	37.2	35.8	35.5	31.4	35.0	31.0	51.1	58.4	56.5	53.3	44.7	511.1
TOTAL GEN	70.6	70.0	87.1	126.3	114.1	129.9	147.6	224.4	191.9	225.0	217.3	163.6	1767.9
TOTAL LOAD	162.5	162.3	177.2	172.6	137.1	149.2	176.3	184.8	211.2	262.2	211.2	156.8	2163.4
SURPLUS/DEFICIT	-91.9	-92.3	-90.1	-46.3	-23.0	-19.3	-28.7	39.6	-19.3	-37.2	6.1	6.8	-395.5

* PROJECTED VALUES ARE HISTORIC AVERAGE FLOW THROUGH ENERGY
** PROJECTED VALUES ARE MARKETED ENERGY

TABLE 4C

PICK-SLOAN MISSOURI BASIN PROGRAM WESTERN DIVISION POWER SYSTEM
WATER YEAR 2011 FORECASTED OPERATIONS
REASONABLE-MAXIMUM 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 *	1.3	2.4	2.4	2.5	3.0	2.5	3.5	3.9	4.7	4.4	2.0	1.0	33.6
Green Mtn.	7.0	1.5	1.6	1.7	1.4	1.9	1.9	1.0	14.8	17.9	10.2	8.6	69.5
Willow Cr. pump	0.3	0.4	0.1	0.1	0.1	0.1	1.2	5.9	5.7	1.7	0.4	0.4	16.2
Farr pump	0.2	2.2	3.5	4.8	4.3	4.9	3.6	0.0	0.0	0.2	3.4	1.0	28.2
Marys Lake	0.4	2.5	4.2	6.1	5.4	6.1	5.8	4.1	2.2	6.1	6.1	1.7	50.6
Estes	1.2	6.7	10.5	14.9	13.4	14.9	14.5	10.1	5.8	14.9	14.9	4.3	125.9
Pole Hill	1.7	0.0	7.0	25.2	22.6	25.2	24.4	25.1	24.4	25.2	25.1	9.0	214.7
Flatiron 1&2	2.0	0.0	8.5	29.0	26.0	29.0	28.0	28.8	28.0	29.0	28.9	10.6	247.6
Flatiron 3	0.1	0.0	0.0	0.0	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	2.3	6.4	5.8	6.2	6.0	4.5	3.0	4.9	3.9	0.0	42.9
Big Thompson	0.5	0.0	0.0	0.0	0.0	0.0	0.6	3.9	3.8	3.9	3.6	2.0	18.3
Seminoe	5.7	5.5	5.7	5.7	5.1	5.7	32.1	33.2	31.6	32.1	21.6	6.9	190.9
Kortes	5.6	5.4	5.6	5.6	5.0	5.6	22.3	27.6	26.7	27.6	20.7	6.6	164.3
Fremont Canyon	0.4	7.1	7.3	7.3	6.6	29.6	45.0	47.1	45.7	47.3	47.2	12.4	303.2
Alcova	4.2	4.1	4.2	4.2	3.8	13.7	24.6	27.6	26.7	27.6	27.6	5.8	173.8
Glendo	0.0	0.0	0.0	0.0	0.0	17.6	23.5	25.9	27.3	28.2	24.1	8.8	155.4
Guernsey	0.0	0.0	0.0	0.0	0.0	3.6	3.6	3.8	3.7	3.8	3.8	3.4	25.6
Pilot Butte**	1.6	0.0	0.0	0.0	0.0	0.0	0.7	1.5	3.5	4.1	3.0	1.7	16.1
Boysen	3.8	4.2	4.3	4.3	3.9	4.3	10.9	11.0	11.4	11.9	10.4	6.7	87.2
Shoshone	1.1	1.1	1.1	1.1	0.7	1.1	1.1	2.2	2.2	2.2	2.2	1.1	17.4
Buffalo Bill	8.7	5.1	4.2	4.2	3.8	4.2	4.0	13.4	13.0	13.4	13.4	12.7	100.1
Spirit Mtn.	0.8	0.0	0.0	0.0	0.0	0.0	1.1	2.8	2.9	3.2	3.2	3.1	17.2
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	0.0
Heart Mtn.	0.0	0.0	0.0	0.0	0.0	0.0	0.9	4.5	4.3	4.5	4.5	3.0	21.5
Yellowtail/2	29.6	28.6	29.4	29.0	25.9	28.6	47.2	87.4	98.2	107.0	46.2	40.7	597.7
Fry-Ark	1.3	2.4	2.4	2.5	3.0	2.5	3.5	3.9	4.7	4.4	2.0	1.0	33.6
CBT	12.2	8.2	25.8	65.6	58.5	65.7	64.5	62.6	70.2	90.2	81.0	34.8	639.3
North Platte	15.9	22.1	22.8	22.8	20.6	75.8	151.1	165.2	161.6	166.5	144.9	44.0	1013.3
Bighorn	45.7	39.0	39.1	38.7	34.3	38.2	66.0	122.8	135.5	146.3	82.8	69.0	857.3
TOTAL GEN	75.1	71.6	90.1	129.5	116.3	182.3	285.0	354.5	372.1	407.4	310.7	148.9	2543.5
TOTAL LOAD	162.5	162.3	177.2	172.6	137.1	149.2	176.3	184.8	211.2	262.2	211.2	156.8	2163.4
SURPLUS/DEFICIT	-87.4	-90.7	-87.1	-43.1	-20.8	33.1	108.7	169.7	160.9	145.2	99.5	-7.9	380.1

* PROJECTED VALUES ARE HISTORIC AVERAGE FLOW THROUGH ENERGY
** PROJECTED VALUES ARE MARKETED ENERGY

Table 5

COLORADO-BIG THOMPSON AND FRYINGPAN-ARKANSAS PROJECTS MAINTENANCE SCHEDULE FOR WATER YEAR 2011

Facility	Description of Work	Begin Date	End Date	Generation Affected	Deliveries Affected
Causeway Concrete Rehab	Shadow Mtn / Grand Lake Refurbish Concrete *(35 days total)*	1-Oct-10	3-Nov-10	Y	Y
Water Clarity Study	Farr - Pumping under consideration	2-Aug-11	18-Aug-11	possibly	possibly
Green Mountain Unit #1	Annual Maintenance	3-Jan-11	10-Feb-11	N	N
Green Mountain Unit #2	Annual Maintenance	21-Feb-10	31-Mar-10	N	N
Green Mountain (ARRA)	Spillway Repair	9-Mar-10	15-May-11	N	N
Green Mountain Unit #1	KZ1A Annual Maintenance	3-Nov-10	5-Nov-10	N	N
Green Mountain Unit #1	KZ1A Annual Maintenance	1-Nov-10	3-Nov-10	N	N
Marys Lake Plant	Annual Maintenance in 2010	1-Oct-10	12-Nov-10	Y	Y
Estes Units #1	Annual Maintenance	04-Jan-11	12-Feb-11	partially	N
Estes Units #2	Annual Maintenance	15-Feb-11	25-Mar-11	partially	N
Estes Units #3	Annual Maintenance	29-Mar-11	6-May11	partially	N
Pole Hill Unit	Annual Maintenance in 2011	1-Oct-10	12-Nov-10	Y	N
Pole Hill Canal (ARRA)	Canal Lining Box Culverts installation *(to be continued in 2012)*	1-Oct-11	19-Nov-11	Y	partially
Pole Hill (ARRA)	Replace Turbine Runner *(dates not determined yet)*			Y	N
Flatiron Unit #1	Annual Maintenance	1-Apr-11	15-May-11	Y	N
Flatiron Unit #3	Annual Maintenance	1-Aug-11	15-Sep-11	Y	N
Flatiron Unit #1	Replacement of facility RTU	13-Oct-10	5-Nov-10	Y	N
Flatiron Unit 2 (ARRA)	Stator Rewind w/ Core Replacement Option	19-Jul-10	14-Feb-11	Y	N

TABLE 5

COLORADO-BIG THOMPSON AND FRYINGPAN-ARKANSAS PROJECTS MAINTENANCE SCHEDULE FOR WATER YEAR 2011

Facility	Description of Work	Begin Date	End Date	Generation Affected	Deliveries Affected
Flatiron Penstocks #1 & #2 (ARRA)	Penstock Painting - Outside	19-Jul-10	28-Dec-10	Y	N
Flatiron Penstocks #2 (ARRA)	Penstock Painting - Inside	15-Aug-10	14-Feb-11	Y	N
Flatiron Penstocks #1 (ARRA)	Penstock Painting - Inside	1-Mar-11	1-Sep-11	Y	N
Flatiron Headgates	Refurbish Intake Butterfly Valve & Trashracks @ Bald Mountain Surge Tank *(requires draining Pinewood)*	1-Oct-10	11-Dec-10	Y	Y
Hansen Canal 550 Section	Annual Maintenance of Canal	2-Sep-11	16-Sep-11	Y	Y
Hansen Canal 930 Section	Annual Maintenance of Canal	cancelled			
Carter Lake Outlet Work	Set Bulkhead over Outlet Works & refurbish Outlet Gates.	1-Nov-10	1-Nov-11	N	N
Big Thompson Unit	Annual Maintenance	12-Dec-10	1-Feb-11	N	N
Mt. Elbert Unit # 2	Crack inspection unit	18-Oct-10	21-Oct-10	Y	N
Mt. Elbert Unit # 2	Repair Turbine Shaft Seal	5-Nov-10	19-Nov-10	Y	N
Mt. Elbert Unit # 2	Annual Maintenance	7-Feb-11	18-Mar-11	Y	N

TABLE 6

WESTERN DIVISION - PICK-SLOAN MISSOURI BASIN PROGRAM

POWERPLANT DATA

Facility	No. Units	Capacity Each Unit	Total Installed Capacity	Normal Operating Head (ft)	Output at Rated Head (ft^3/s)
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	2	43,000	86,000	1,096 - 1,118	1,070
(Flatiron 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 Butte2/	2	800	1,600	-- --	---
Boysen	2	7,500	15,000	72-112	2,415
Shoshone3/	1	3,000	3,000	-- --	---
Buffalo Bill3/	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	----------	-------

TABLE 7

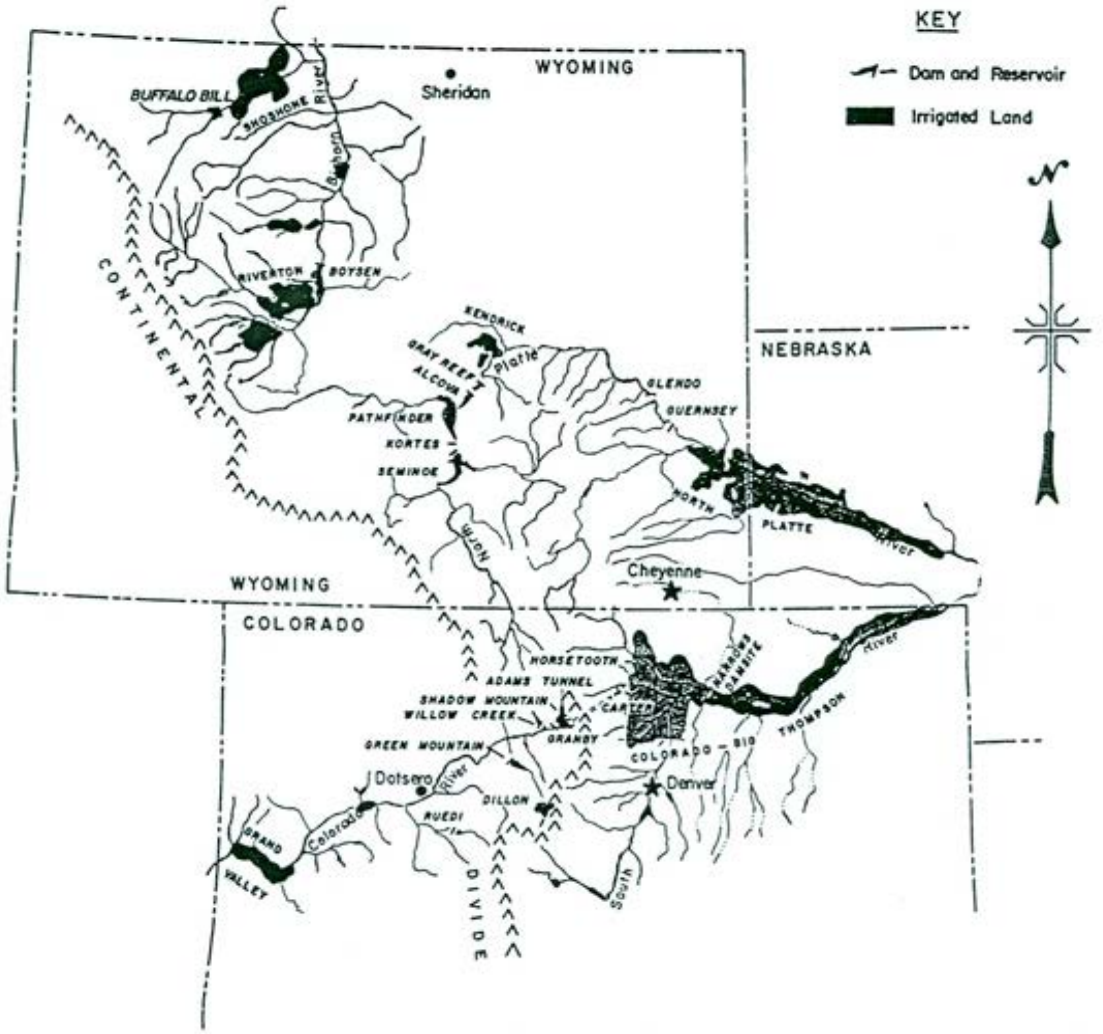
WESTERN DIVISION - PICK-SLOAN MISSOURI BASIN PROGRAM

PUMPING PLANT DATA

	Pumping Units			Plant Rating	
Facilities	No	Capacity (ft^3/s)	Normal Operating Head (ft)	Installed (Hp)	Kwh to Pump 1-Acre-ft at Maximum Head
Granby	3	600	92-186	18,000	227
Willow Creek	2	400	167-169	18,000	227
Flatiron	11/	440	173-287	13,000	391
Mt. Elbert	2	5,690	447-477	340,000	620

APPENDIX B - EXHIBITS

Exhibit 1



PICK-SLOAN MISSOURI BASIN PROJECT

WESTERN DIVISION

WATER RESOURCE MAP

50 0 50 100

SCALE OF MILES

MAP NO. X-700-121

JUNE 1, 1976

Exhibit 2

LAP GROSS GENERATION LESS PUMPING
WATER YEAR 2010

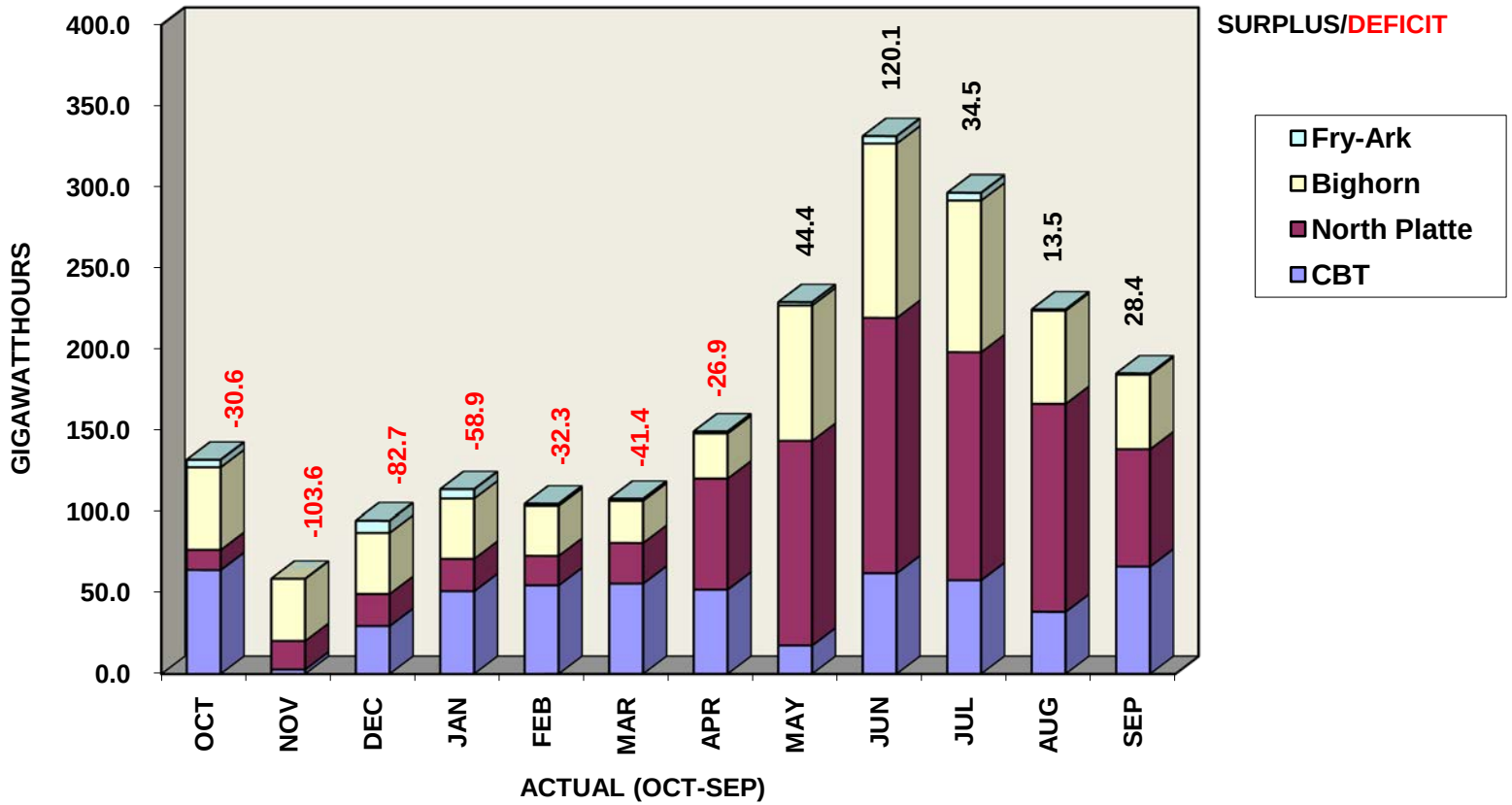


Exhibit 3

LAP GROSS GENERATION LESS PUMPING
WATER YEAR 2011

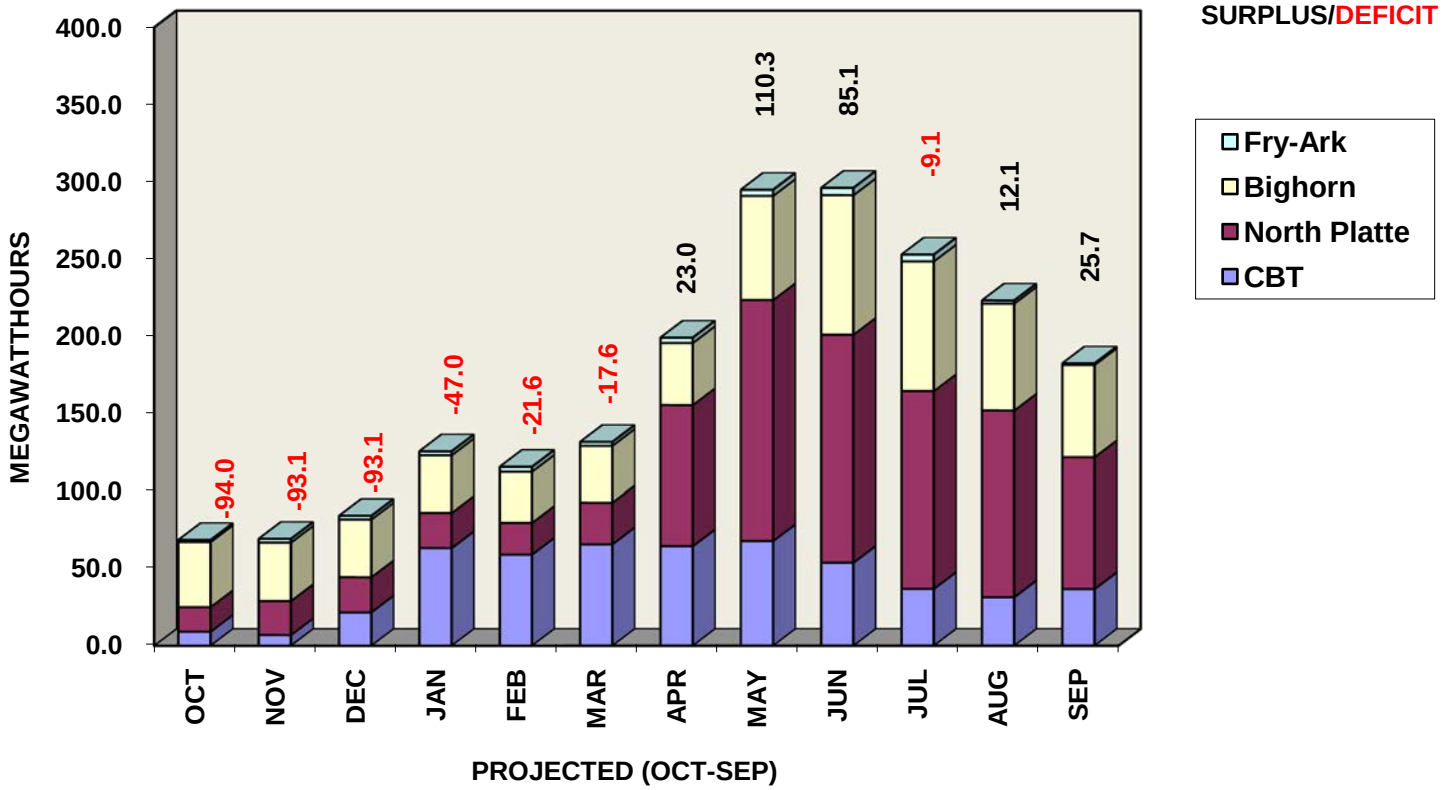


Exhibit 4A

PROJECTED LAP GROSS GENERATION LESS PUMPING
WATER YEAR 2011
FOR MOST PROBABLE INFLOW

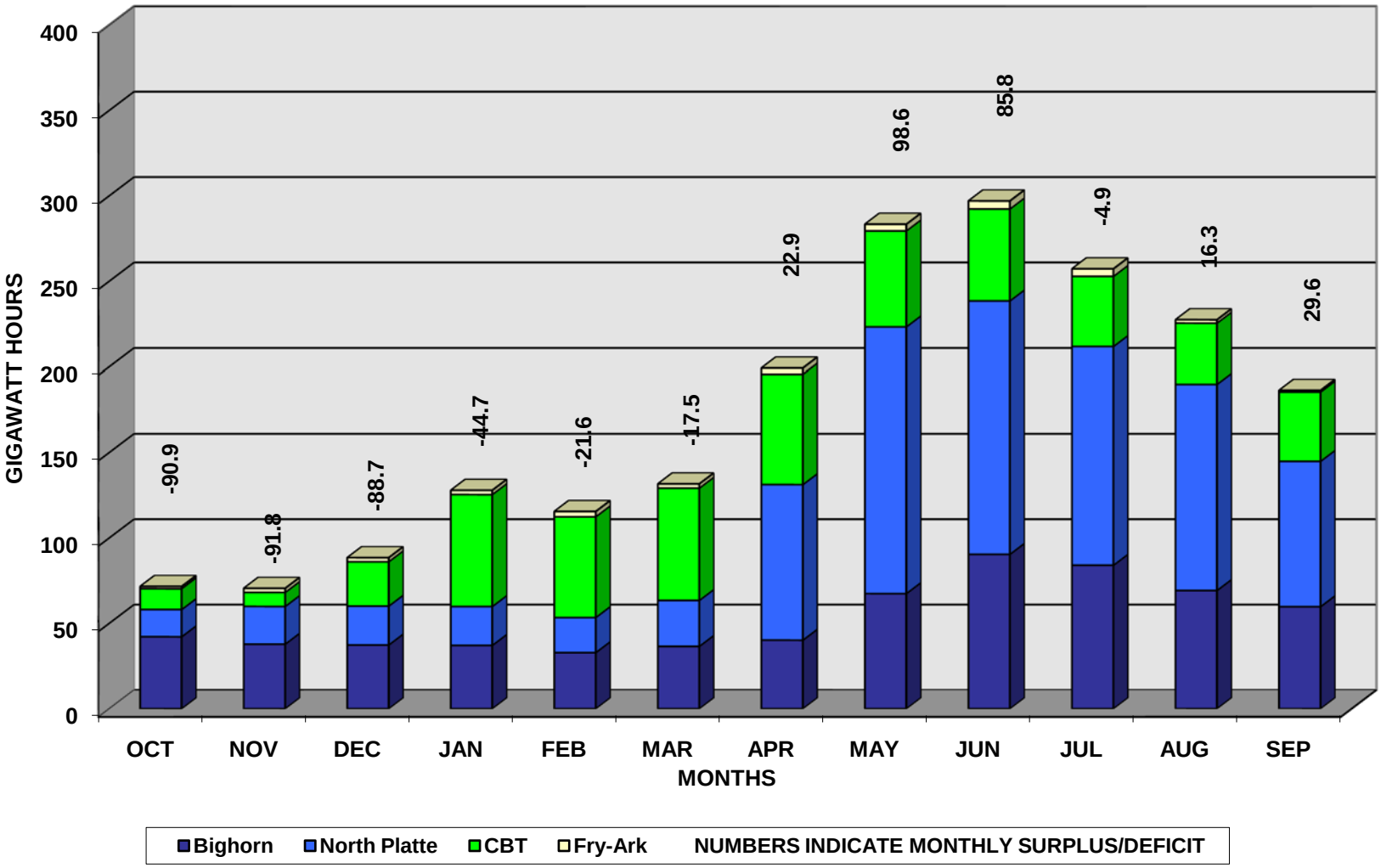


Exhibit 4B

PROJECTED LAP GROSS GENERATION LESS PUMPING
WATER YEAR 2011
FOR REASONABLE MINIMUM INFLOW

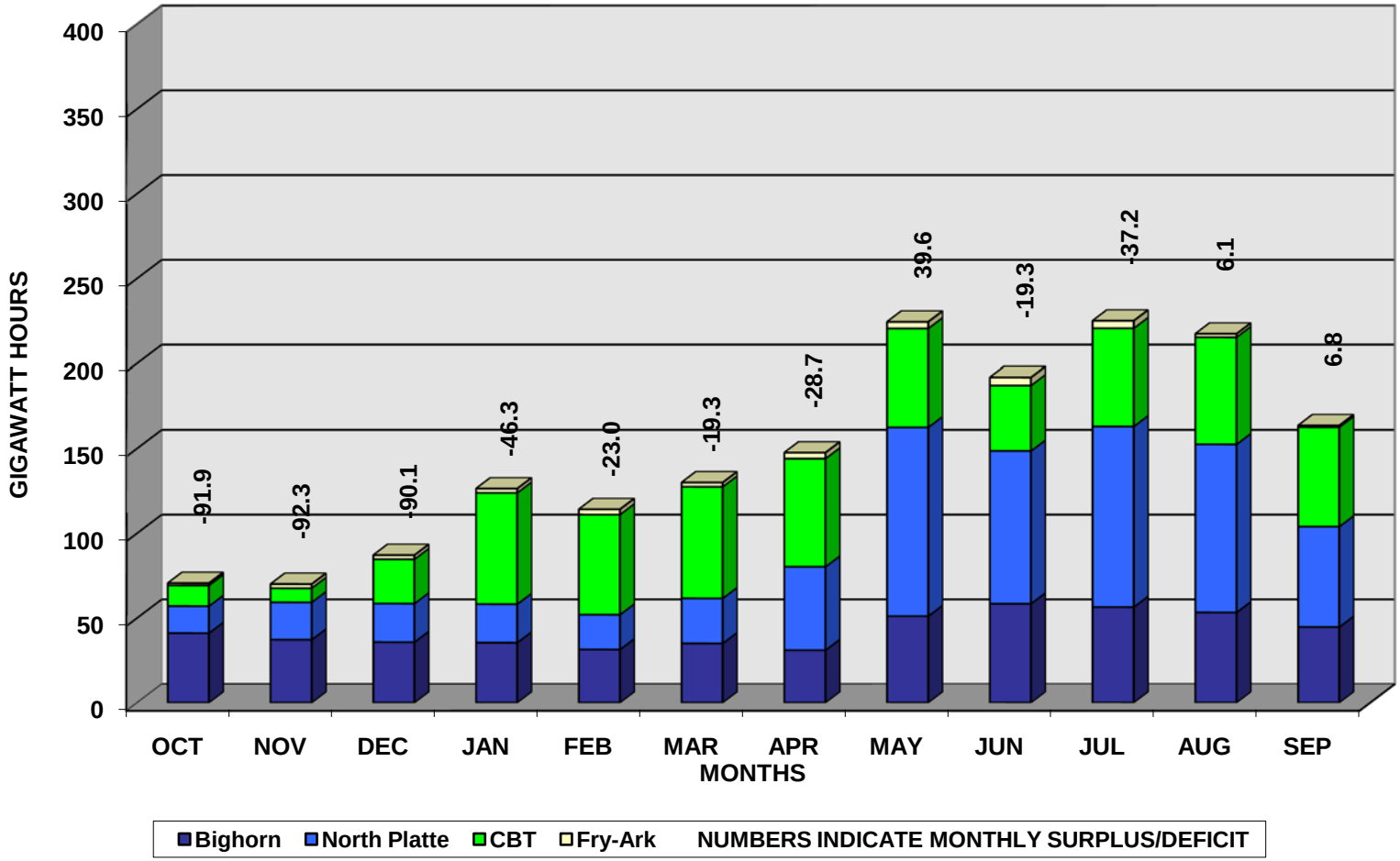
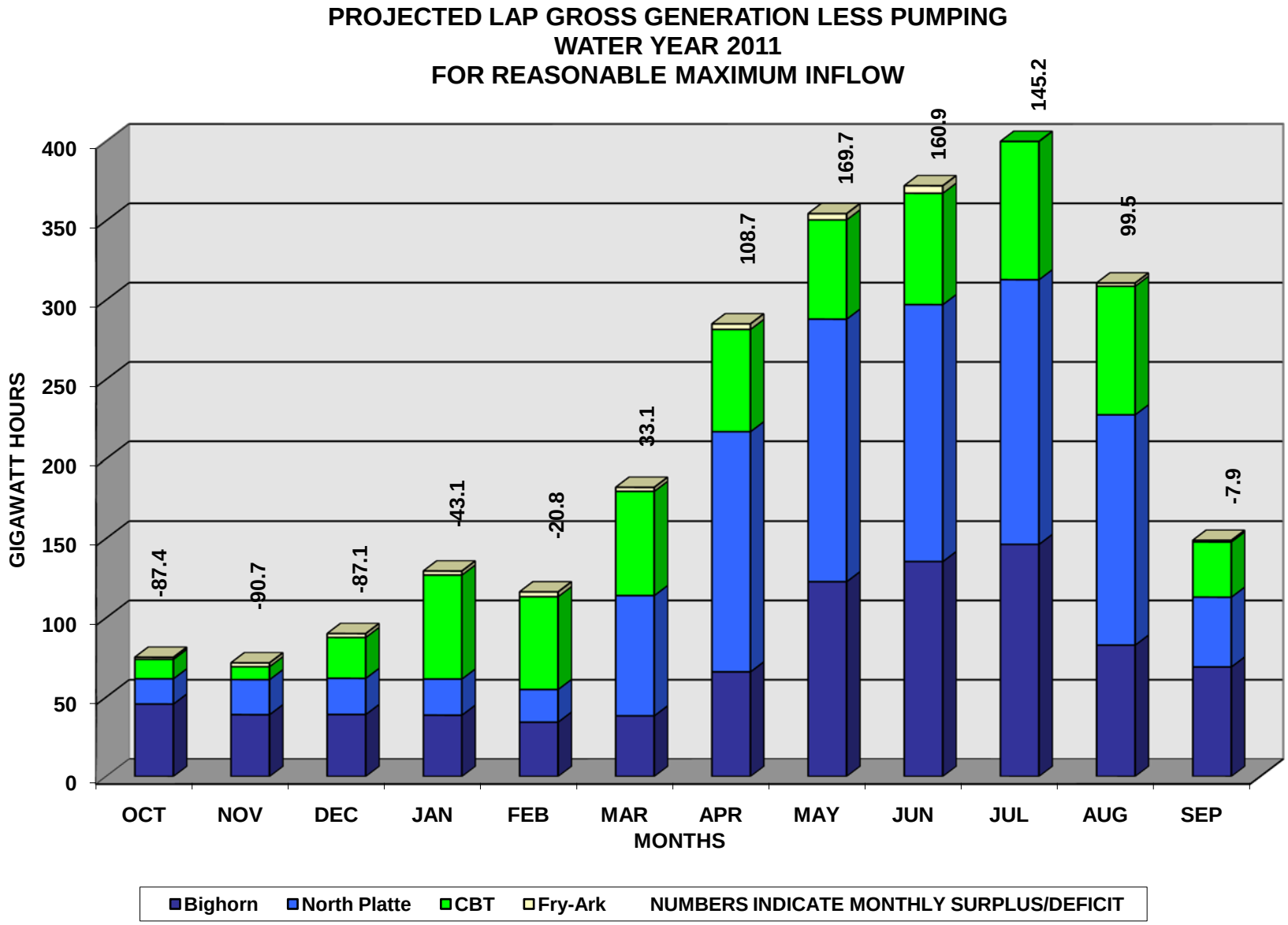


Exhibit 4C


PROJECTED LAP GROSS GENERATION LESS PUMPING
WATER YEAR 2011
FOR REASONABLE MAXIMUM INFLOW
GIGAWATT HOURS
400
350
300
250
200
150
100
50
0
-87.4
-90.7
-87.1
-43.1
-20.8
33.1
108.7
169.7
160.9
145.2
99.5
-7.9
OCT
NOV
DEC
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
MONTHS
Bighorn
North Platte
CBT
Fry-Ark
NUMBERS INDICATE MONTHLY SURPLUS/DEFICIT