HIGHLIGHTS FOR SEPTEMBER 2018

DAKOTAS AREA OFFICE

September precipitation was varied in the Heart River Basin with 105 percent and 68 percent of average precipitation at Dickinson and Heart Butte Dams, respectively. Within the Cheyenne, Grand and James River basins precipitation was varied, ranging from 57 percent of average at Deerfield Reservoir to 254 percent of average at Belle Fourche Reservoir.

September inflows in the Heart River basin were varied, with zero inflow at Dickinson and 136 percent of average inflow at Lake Tschida. For the Cheyenne River basin, inflows were mostly above average, ranging from zero at Keyhole Reservoir to 143 percent of average at Deerfield Reservoir. The James and Grand River basins exhibited below average inflows, with 23 percent of average at Jamestown Reservoir and zero at Shadehill Reservoir.

Reservoir storage in the Heart River basin finished the month about average; 125 percent of average for Dickinson Reservoir, and 98 percent of average at Heart Butte Reservoir. Storage in the Cheyenne River basin was above average at the end of September, ranging from 120 percent of average at Deerfield Reservoir to 305 percent of average at Belle Fourche Reservoir. Storage at Shadehill and Jamestown Reservoirs was about average for the end of September, showing 113 percent and 99 percent of average, respectively.

EASTERN COLORADO AREA OFFICE

Precipitation was below average over the Colorado-Big Thompson Project (CBT) during September. The Willow Creek and Granby Reservoir watersheds reported the lowest precipitation at 29 percent of average, while Green Mountain Reservoir had the highest at 46 percent of average.

Inflows were below average over the CBT during September. The inflow to Lake Estes Reservoir was the lowest at 38 percent of average. The inflow to Willow Creek Reservoir was the highest at 62 percent of average.

The Lake Granby storage of 463,200 AF on October 1 was 25,200 AF above average and 55,400 AF lower than one year ago on this date. Terminal reservoir storage in Carter Lake and Horsetooth Reservoir was 85 and 110 percent of average, respectively. The September end-of-month CBT storage water in Green Mountain, Lake Granby, Carter Lake, and Horsetooth Reservoir was 672,300 AF; 27,600 AF below average.

Precipitation was below average over the Fryingpan-Arkansas Project (Fry-Ark) during September. Precipitation at Ruedi Reservoir was the lowest with zero precipitation, while Pueblo Reservoir received the highest with 98 percent of average.

Native inflows were above average over the Fry-Ark during September. The inflow to Ruedi Reservoir was the lowest at 37 percent of average. The inflow to the other reservoirs was absurdly high relative to the average values, which are very low, ranging from 1 to 32 acre-feet.

Reservoir storage is below average for the Fry-Ark. Ruedi Reservoir is the lowest at 73 percent of average. Pueblo Reservoir is the highest at 126 percent of average. The total September end-of-month storage in the four reservoirs is 450,900 AF, 96 percent of average.

MONTANA AREA OFFICE

Precipitation during September was below average in the Upper Missouri River basin, ranging from 8 percent of average at Clark Canyon Reservoir to 89 percent of average at Lake Elwell Reservoir. Inflows were about average ranging from 92 percent of average at Lake Elwell and Gibson Reservoirs to 138 percent of average at Clark Canyon Reservoir. Reservoir storage is about average, and ranges from 95 percent of average at Canyon Ferry Reservoir to 109 percent of average at Clark Canyon Reservoir.

For the Milk River Basin, the precipitation was varied, ranging from 50 percent of average at Sherburne Reservoir to 131 percent of average at Fresno Reservoir. The inflows were varied, ranging from 86 percent of average at Sherburne Reservoir to 140 percent of average at Fresno Reservoir. End-of-month storage ranges from 73 percent of average at Sherburne Reservoir to 135 percent of average at Nelson Reservoir.

September precipitation was 94 percent of average at Yellowtail Dam. Inflows were 100 percent of average. Storage was normal at 93 percent of average.

NEBRASKA-KANSAS AREA OFFICE

Precipitation for the year is above normal at 15 of the 16 project dams, varying from 82 percent at Glen Elder Dam to 170 percent at Trenton Dam. Lovewell Dam recorded the second greatest September precipitation at the site.

September precipitation was varied in the Republican River Basin, ranging from 34 percent of average at Hugh Butler Reservoir to 237 percent of average at Lovewell Reservoir. Inflows were below average and ranged from 5 percent of average at Enders Reservoir to 153 percent of average at Lovewell Reservoir. Ignoring Bonny Reservoir, which has been drained for Compact compliance, storage ranges from 49 percent of average at Enders Reservoir to 118 percent of average at Keith Sebelius Reservoir.

For the Solomon Basin, the precipitation was above average, ranging from 102 percent of average at Glen Elder Reservoir to 188 percent of average at Webster Reservoir. The inflows were above average, ranging from 162 percent of average at Kirwin Reservoir to 451 percent of average at Webster Reservoir. End-of-month storage ranges from 110 percent of average at Glen Elder Reservoir to 223 percent of average at Webster Reservoir.

For the Smokey Hill, Niobrara, and Lower Platte Basins, precipitation was mostly above average, ranging from 78 percent of average at Box Butte Reservoir to 145 percent of average at Davis Creek Reservoir. The inflows were varied, ranging from 38 percent of average at Cedar Bluff Reservoir to 114 percent of average at Calamus Reservoir. End-of-month storage ranges from 59 percent of average at Cedar Bluff Reservoir to 128 percent of average at Merritt Reservoir.

OKLAHOMA-TEXAS AREA OFFICE

September precipitation was varied over the Arkansas River Basin, ranging from 60 percent of average at Sanford Reservoir to 144 percent of average at Cheney Reservoir. Inflows were varied, ranging from 9 percent of average at Sanford Reservoir to 398 percent of average at Norman Reservoir. Storage in the Arkansas River basin is above average and ranges from 105 percent of average at Sanford Reservoir to 122 percent of average at Cheney Reservoir.

For the Red River Basin, the September precipitation was above average, ranging from 221 percent of average at McGee Creek Reservoir to 353 percent of average at Mountain Park Reservoir. The inflows ranged from 22 percent of average at Altus Reservoir to 1,062 percent of average at McGee Creek Reservoir. Storage in the Red River basin ranges from 52 percent of average at Altus Reservoir to 135 percent of average at Mountain Park Reservoir.

For the Nueces, Colorado and Washita Basins, the precipitation was above average, ranging from 143 percent of average at Foss Reservoir to 551 percent of average at Choke Canyon Reservoir. The inflows were varied, ranging from zero at Nasworthy Reservoir to 539 percent of average at Twin Buttes Reservoir. Storage in these basins ranges from 47 percent of average at Twin Buttes Reservoir to 106 percent of average at Foss Reservoir.

WYOMING AREA OFFICE

Precipitation during September was below average in the North Platte River Basin, ranging from 16 percent of average at Guernsey Reservoir to 24 percent of average at Pathfinder and Glendo Reservoirs. Inflows were below average at Seminoe at a mere 34 percent of average, and way above average elsewhere, ranging from 451 percent of average at Glendo to 1,388 percent of average at Guernsey Reservoir. Reservoir storage is above average, and ranges from 114 percent of average at Seminoe Reservoir to 125 percent of average at Glendo Reservoir.

September precipitation was below average in the Bighorn River Basin. September precipitation ranged from three percent of average at Bull Lake Reservoir to 22 percent of average at Buffalo Bill Reservoir. Reservoir inflow in the Bighorn basin was below average, ranging from 56 percent of average at Bull Lake Reservoir to 88 percent of average at Buffalo Bill Reservoir. Storage in the Bighorn Basin is above average, ranging from 108 percent of average at Bull Lake Reservoir to 111 percent of average at Buffalo Bill Reservoir.

CORPS OF ENGINEERS REPORT

Higher-than-average releases from all Missouri River Mainstem System projects, including Gavins Point, will continue through the fall. In response to this year's high runoff and the excess water currently in the reservoirs, Gavins Point releases will target near 58,000 cubic feet per second (cfs) for the remainder of the navigation season to ensure evacuation of all stored flood waters prior to the 2019 runoff season.

However, in response to recent heavy rains and runoff in Kansas and Missouri, the Corps of Engineers will be reducing releases from Fort Randall Dam and Gavins Point Dam. Gavins Point releases will be reduced from 58,000 cubic feet per second (cfs) to 46,000 cfs over a two-day period, starting at noon on Sunday, Oct 7. Fort Randall releases will be decreased from 55,000 cfs to 43,000 cfs over the same two-day period. The Corps will maintain Gavins Point releases at 46,000 cfs until the heavy rains in the lower basin have subsided.

The 2018 runoff forecast in the Missouri River Basin above Sioux City, Iowa is 40.6 million acre feet, 160 percent of average. The September runoff summation above Sioux City was 1.7 MAF, 151 percent of average. The September runoff above Gavins Point Dam was about 80 percent of average. Due to heavy September rainfall, the runoff in the unregulated reach from Gavins Point Dam to Sioux City was 0.8 MAF, which is about eight times the average September runoff, and the highest September runoff in 120 years of record-keeping (1898-2017).

The Missouri River Mainstem reservoir system storage was 62.2 MAF as of October 1, occupying 6.1 MAF of the 16.3 MAF flood control zone. System storage declined 2.5 MAF in September and will continue to gradually decline in October. System storage peaked on July 8 at 68.4 MAF, occupying 12.3 MAF of the designated 16.3 MAF of flood control storage.

Based on the September 1 System storage, winter releases from Gavins Point will be at least 17,000 cfs. Based on the latest reservoir studies, there will be a ten-day extension to navigation flow support and a Gavins Point winter release ranging from 17,000 to 22,000 cfs depending on runoff. Navigation flow support at the mouth of the Missouri River will end on December 11.

The six mainstem power plants generated 1,222 million kWh of electricity in September. Typical energy generation for September is 895 million kWh. The power plants are projected to generate 12.6 billion kWh of electricity this year, 135 percent of the long-term average, 9.3 billion kWh.

Reservoir Forecasts

- **Gavins Point Dam** releases averaged 56,100 cfs during September. Releases will remain near 58,000 cfs during October, downstream conditions permitting. The Gavins Point reservoir ended September at elevation 1207.6 feet. The reservoir will end October near 1207.5 feet.
- **Fort Randall Dam** releases averaged 52,600 cfs in September. Releases will be adjusted as necessary to maintain the desired reservoir elevation at Gavins Point. Releases are being made from both the powerhouse and outlet tunnels. The reservoir ended September at elevation 1352.6 feet, falling 4.6 feet during the month. The reservoir will gradually fall to near 1345.0 feet during October. The reservoir is normally drawn down to 1337.5 feet in the fall to provide space for winter hydropower generation at Oahe and Big Bend. The annual drawdown will continue through November.
- **Big Bend Dam** releases averaged 43,200 cfs in September. Releases are expected to average 46,100 cfs and the reservoir will remain near is normal elevation of 1420.0 feet during October.
- **Oahe Dam** releases averaged 47,800 cfs during September. Releases are expected to average 45,500 cfs in October. Releases will continue to be made from both the powerhouse and the outlet tunnels. Releases from the outlet tunnels are required due to scheduled maintenance on the hydropower units and the need to continue evacuating stored runoff. The reservoir ended September at elevation 1614.0 feet, decreasing 1.9 feet during the month. Levels will continue to decline during October with a projected end-of-month elevation near 1611.0 feet.
- **Garrison Dam** releases were stepped down from 46,000 to 31,000 cfs during September averaging 37,300 cfs during the month. Releases will be reduced to 29,000 in early October. The reservoir ended September at 1843.5 feet, down 3.0 feet during the month. The reservoir is expected to continue falling ending October near 1841.3 feet.

- **Fort Peck Dam** releases averaged 14,300 cfs during September. Releases were reduced to 12,000 cfs in mid-September and will remain at 12,000 cfs during October. Due to scheduled maintenance on the hydropower units, releases are currently being made through the powerhouse and spillway. The reservoir ended September at elevation 2241.4 feet, declining 2.1 feet during the month. The reservoir is expected to continue falling ending October at 2239.6 feet.