Post Creek Water Supply Forecast

March 1, 2023

Snowpack Conditions

Click figures to link to plots

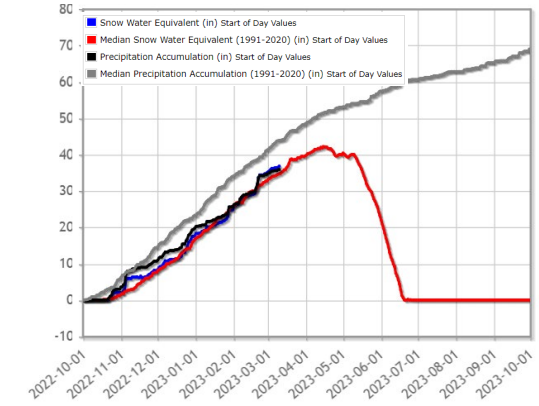


Figure 1: North Fork Jocko (Elev. at 6330 ft) SWE and precipitation.

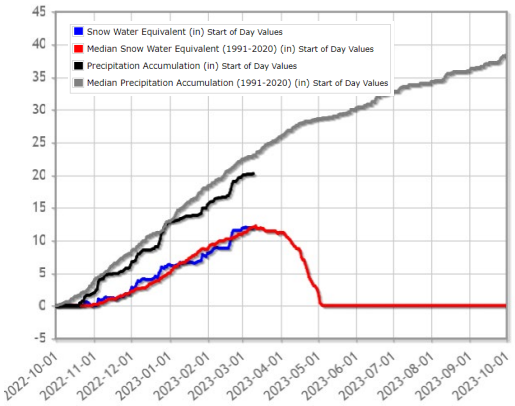


Figure 2: Kraft Creek (Elev. at 4750 ft) SWE and precipitation.

– Snowpack conditions (Snow Water Equivalent or SWE) at the Natural Resource Conservation Service (NRCS) North Fork Jocko and Kraft Creek SNOTEL sites are **trending normal to above normal** as of March 1. **North Fork Jocko is 106% of the median** (Figure 1) and **Kraft Creek is at 99% of the median** (Figure 2). SWE has followed a roughly normal trend this winter. Precipitation started with a similar trend but has been below normal, especially in the North Fork Jocko, following a lapse in snow accumulation in January and February that appears across most of western Montana. Based on snowpack and precipitation, March conditions are looking favorable for normal water supply. As of March 1, the mountains should have accumulated almost (80%) of the winters total snow at higher elevations and will peak likely this month at lower elevations.

Streamflow and Reservoir Conditions

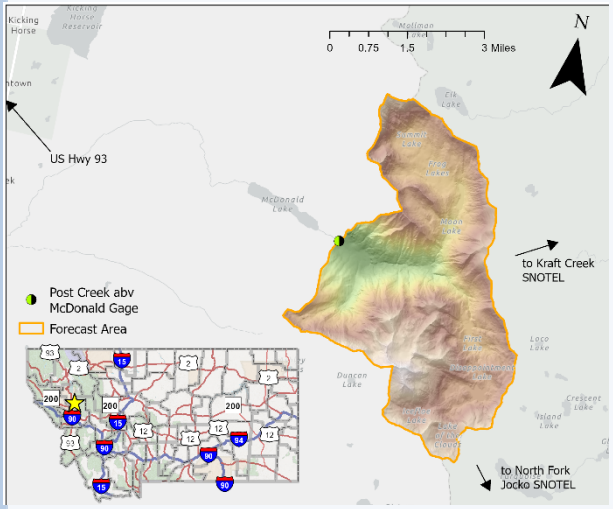
– The Confederated Salish and Kootenai (CSKT) Water Resources Program operates a real-time stream gage on Post Creek, 4860 Post Creek abv McDonald Reservoir. The gage is currently out of service, so no streamflow information is available currently.

- **Active Storage in McDonald Lake is currently 761 / 8258 acre-ft (9%)**

Weather Outlook

– The National Weather Service (NWS) **one-month outlook indicates above normal precipitation and below normal temperatures** for Northwestern Montana. The El Niño Southern Oscillation (ENSO) index, is a measure of whether equatorial Pacific Ocean conditions known as El Niño (warm and dry for Montana) or La Niña (cold and wet) could develop and influence weather much of Montana. Currently, La Niña conditions exist with colder sea surface temperatures. La Niña has contributed to the wet/cold conditions so far this year but is projected (~80-90% chance) to transition to ENSO-neutral in the next two months, meaning **La Niña may continue to influence Montana weather in the near-term but less so into the summer months**.

Forecast Area



Forecast Period is April 1 – July 31

All predicted and displayed values are calculated for this period.

On a **normal year, 33,292 acre-feet of water** flows by the Post Cr abv McDonald gage from April 1 – July 31 (based on the median of the total annual flow from 1991 to 2021). **Approximately 23,199 acre-feet (or 70%) of this flow is from snowmelt** built up at high elevations during the winter and spring. The remainder of flow is from rain events between April 1 and July 31. The normal rainfall in the forecast area during this period is 12.8 inches but can vary considerably. **The median rainfall (12.8 in) produces about 8,226 acre-feet of runoff based on DNRC rainfall runoff model estimates.**

Runoff Forecast

The March 1 water supply forecast predicts an **above normal volume of 25,914 acre-feet** (Figure 3) of water from snowmelt, or 112% of normal. ***This is the estimated flow only from snowmelt***. Current information indicates that the 2023 flow from accumulated snowpack is predicted to be like conditions observed in 2005 and 2006. The uncertainty in the March forecast is generally highest because the mountains can still accumulate snow for the next several months. Based on the uncertainty of the prediction, there is a **90% chance snowmelt runoff will exceed 20,203 acre-feet (87% of normal)** and a **10% chance snowmelt runoff will exceed 34,400 acre-feet (148% of normal).**

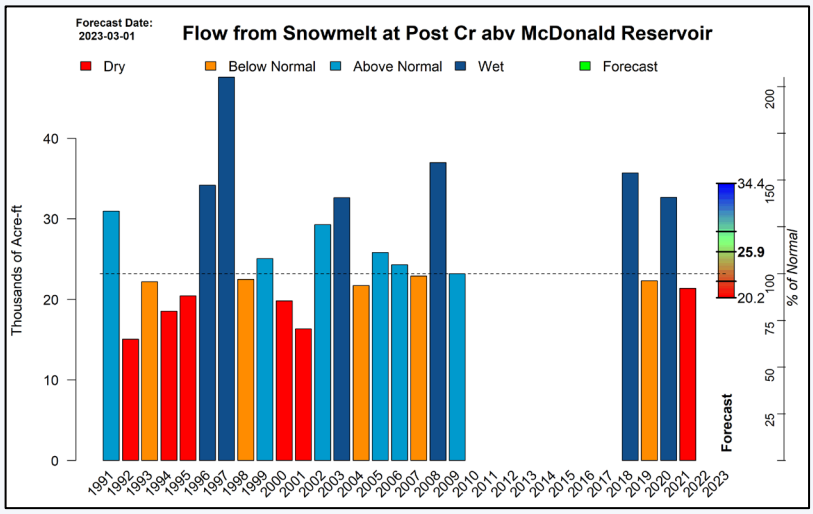


Figure 3: Historical snowmelt runoff and 2023 prediction.

If there is a normal amount (12.8 inches) of rain from April 1 – July 31, the total runoff is predicted to be 34,140 acre-feet. This is **848 acre-feet more than normal.** Any excess rain (more than 12.8 inches) could increase the volume substantially (Figure 4). If it rains 17.8 or more inches during the forecast period, 2023 could be more like 2018 or 2020. The **effects of excess rain are visualized in Figure 4** as inches above normal.

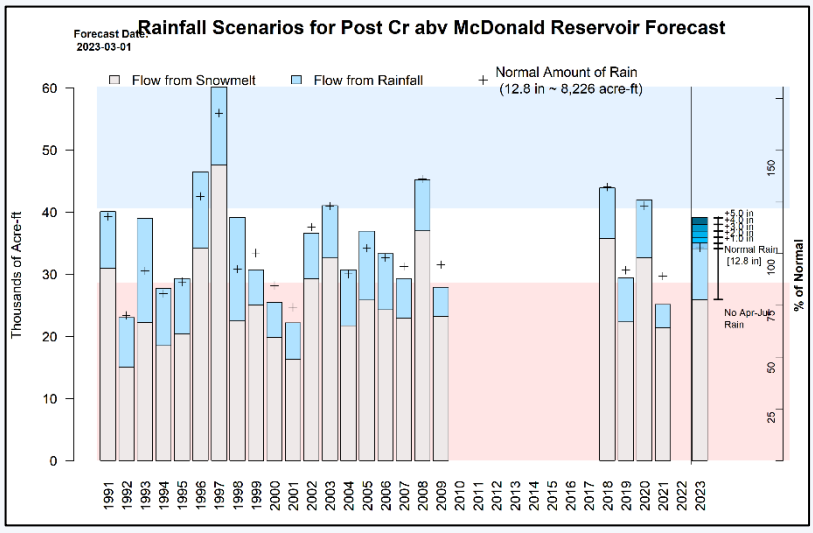


Figure 4: Proportion of flow from snowmelt vs. rain and the effects of April 1 – July 31 rain on predicted flow.

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