BONNEVILLE POWER ADMINISTRATION

2020 Level Modified Streamflow:
Seasonal Volumes and Statistics

1928-2018

Grand Coulee Net Pumping Removed

DOE/BP-4985
October 2020

Section 1. Introduction

This supplemental report provides users with a set of commonly used streamflow volumes and statistics at 29 selected sites in the Columbia River Basin that may be compared with NOAA/National Weather Service Northwest River Forecast Center (NWRFC) volume forecasts. The volume data contained herein are calculated from the same modified flows (*M*) as defined in the main report *2020 Level Modified Streamflow* with one main difference. At Grand Coulee Dam and sites downstream, net pumping from Franklin D. Roosevelt Lake (FDR) to Banks Lake is not included. This new dataset, which removes the effect of net pumping at Grand Coulee, is created so that comparisons can be made with the NWRFC volume forecasts which also do not include pumping at Grand Coulee. It should be noted that although the volumes are comparable with the NWRFC forecasts, the statistics provided are not. NWRFC statistics are based on 30-year climate normals whereas the statistics listed in this document are for a 90-year record (1928-2018).

The seasonal volumes in this report are calculated by accumulating daily flows over various time-frames, and by converting the data from cubic-feet per second (cfs) to thousands of acre-feet (kaf). The statistics presented are mean, median and standard deviation, where the median of the 90-year data set is the average of the ranked data of years 45 and 46. Leap years were taken into account (by weighted averaging) in the calculation of February mean monthly values and annual average values.

Section 2. Creation of No Pump Data

Of the 29 selected sites in this report, the following five sites are affected by the removal of net pumping at Grand Coulee:

- Grand Coulee (GCL)
- Chief Joseph (CHJ)
- Priest Rapids (PRD)
- McNary (MCN)
- The Dalles (TDA)

Since the modified flow dataset subtracts water from FDR to account for the current level of net pumping to Banks Lake, **it is necessary to add this water back into FDR to remove the effects of net pumping**. The current level of net pumping is described in Section 3.3.3 of the main report. The 14-period net pumping values are added back to the modified flow dataset at Grand Coulee Dam and sites downstream to create the seasonal volumes and statistics found in this report.

Section 3. Limitations of Data Usage

It is important to consider that the distribution in time of the volumes presented in this report do not reflect a natural or pre-project condition because the attenuation by natural lakes such as Flathead Lake and Pend Oreille Lake is removed. In many cases, the storage change in natural lakes is large enough to delay runoff volume across the seasonal volume boundaries as shown in this report. Therefore, it is recommended that the volumes in this report not be compared with “natural” or “pre-project” data if the time distribution of the runoff is an important consideration.

It is also important to note that Brownlee, Lower Granite, Ice Harbor, and The Dalles sites reflect a regulated condition, rather than the unregulated condition of the other sites. The Brownlee, Lower Granite, and Ice Harbor sites include the storage regulation of the 2020 level operation for all the sites on the Snake River basin above Brownlee Dam. The Dalles site includes the storage regulation of a 2020 level operation for both the Yakima and Deschutes River basins as well as the regulations for the Snake River basin.

Another important consideration is the difference between this report and the companion report, *2020 Level Modified Streamflow*. The streamflows at the Grand Coulee, Chief Joseph, Priest Rapids and The Dalles sites in the companion report are lower by the amount of the 2020 level net pumping out of Franklin D. Roosevelt Lake. The data used in this report do not include net pumping at Franklin D. Roosevelt Lake.

Section 4. Organization of Report

The 29 sites in this report are presented in upstream to downstream order, while the online database is presented in alphabetical order. Below are descriptions of the various tables.

For each location, there are twelve tables of data:

- Table 1a. Chronological: October through September monthly streamflows (cfs)
- Table 1b. Ranked: October through September monthly streamflows (cfs)
- Table 2a. Chronological: August through July monthly streamflows (cfs)
- Table 2b. Ranked: August through July monthly streamflows (cfs)
- Table 3a. Chronological: August to Date, January to Date and Water Year volumes (kaf)
- Table 3b Ranked: August to Date, January to Date, and Water Year volumes (kaf)
- Table 4a. Chronological: Date to December and Date to July volumes (kaf)
- Table 4b Ranked: Date to December and Date to July volumes (kaf)
- Table 5a. Chronological: Date to March and Date to August volumes (kaf)
- Table 5b Ranked: Date to March and Date to August volumes (kaf)
- Table 6a. Chronological: Date to March and Date to September volumes (kaf)
- Table 6b Ranked: Date to March and Date to September volumes (kaf)

All data is posted electronically, in Excel Spreadsheet format, on the external BPA website. Data tables in .pdf format will be attached to cover report cover at a later date.