

Flood Risk Management Requirements
Report #10 for Water Year 2023
Issue Date: 24 May 2023

A. Purpose of Flood Risk Management Requirements. These requirements provide maximum end-of-month reservoir elevations and/or minimum outflows for flood risk management projects in the Columbia River Basin. These requirements are for use by U.S. Army Corps of Engineers, Bureau of Reclamation, Idaho Power, Energy Keepers, BC Hydro and Bonneville Power Administration for operations planning and include all formally approved deviations to date. Any deviation from the flood risk management requirements herein will require approval from the Chief, Columbia Basin Water Management Division (CBWM) per the Northwestern Division's (NWD) Deviation Policy (NWDR 1110-2-6). Requirements are in accordance with the Columbia River Treaty Flood Control Operating Plan (FCOP) and any project-specific water control manuals, with variations as described below. These flood risk management requirements will be revised and re-issued as new information becomes available.

B. List of Approved Flood Deviations from Water Control Manuals.

- Implementation of CRSO EIS operations at Libby (sliding scale measure and modified project flood risk management draft)
- SKQ has been released from its end of May FRM requirement and Energy Keepers is refilling Flathead Lake to pool elevation 2893 feet by mid-June per their water control plan.

C. Flood Risk Management Requirements

These requirements have been prepared using the most recent official seasonal volume forecasts. The April-August volume forecast at The Dalles Dam based on the May 2023 official forecast is 83,148 kaf kaf. All other forecasts can be found in Table 2 or at:

<http://www.nwd-wc.usace.army.mil/report/colsum/>

Table 1 shows the flood risk management elevations, draft and flow limits for the evacuation, holding and refill periods. See the FCOP for how the ICF is computed. More details on the values used can be found at:

<http://www.nwd-wc.usace.army.mil/report/storcorr/>

D. System Flood Risk Management Refill Requirement Discussion.

The Control Flow (CF) target is 410 kcfs. Coordinate any necessary exceedance of an instantaneous max flow of 420 kcfs at John Day with NWD-RCC. The ICF date was 02 May based on the ICF of 261 kcfs calculated using the official April forecast. The Flood Risk Management Requirements shown in Table 1 are based on the official May seasonal runoff volume forecasts and modeling. During the refill season, end-of-month reservoir elevation targets and control flow may change in response to the shape and timing of the runoff.

E. Individual Project Flood Risk Management Requirements Discussion.

No specific individual requirements at this time.

Table 1. Flood Risk Management Requirements

| Project | 31 Jan | 28 Feb | 31 Mar | 15 Apr | 30 Apr ³ | Date Refill Started | 31 May ³ | 30 Jun ³ | 31 Jul ³ |
|-------------------------|--------|--------|--------|--------|---------------------|---------------------|---------------------|---------------------|---------------------|
| MCDB (kaf) ² | 1146 | 1882 | 2910 | 3450 | 3450 | 27 Apr | 2448 | 286 | 0 |
| ARDB (ft) | 1434.2 | 1429.8 | 1423.1 | 1419.0 | 1419.0 | 30 Apr | 1439 | 1442.0 | 1444.0 |
| DCDB (ft) ⁵ | 1841.3 | 1826.5 | 1819.1 | 1818.3 | 1818.3 | 27 Apr | 1857 | 1879.8 | 1892.0 |
| LIB (ft) ⁴ | 2409.5 | 2419.6 | 2415.9 | 2425.6 | 2426.2 | 01 May ⁶ | n/a | n/a | 2459.0 |
| LIB (kcfs) | n/a | n/a | n/a | n/a | n/a | - | 4.0 | 4.0 | n/a |
| HGH (ft) | 3541.7 | 3541.2 | 3536.4 | 3538.8 | 3537.3 | 01 May | n/a | n/a | 3560.0 |
| HGH (kcfs) | n/a | n/a | n/a | n/a | n/a | - | 3.3 | 3.3 | n/a |
| SKQ (ft) | n/a | n/a | n/a | 2883.0 | n/a | - | - | 2893.0 | 2893.0 |
| ALF (ft) ¹ | 2060.0 | 2060.0 | 2056.0 | n/a | 2056.0 | - | 2062.5 | 2062.5 | 2062.5 |
| GCL (ft) | 1290.0 | 1290.0 | 1281.9 | 1278.1 | 1280.5 | 01 May | 1285 | 1290.0 | 1290.0 |
| BRN (ft) | 2077.0 | 2060.5 | 2067.6 | 2063.1 | 2069.3 | 01 May | 2077 | 2077.0 | 2077.0 |
| DWR (ft) | 1549.5 | 1550.8 | 1550.5 | 1548.2 | 1520.9 | 01 May | 1590 | 1600.0 | 1600.0 |

Notes:

1. Albeni Falls flood risk management elevations are based on readings at the Hope gage.
2. KAF units refer to required flood risk management space (draft) in the reservoir.
3. Flood risk management requirements for May, June and July are based on estimated normal runoff shape. Under certain circumstances, the Refill Guide Curve (also known as Flood Control Refill Curve) procedure may be used to determine when refill is to begin at each project where applicable and affect the 30 Apr elevations.
4. Per the Libby Dam WCM, Rule 1 of the VarQ operating procedures, releases will be limited to the hydraulic capacity of the powerhouse to the best extent possible.
5. Per the Duncan Storage Resevation Diagram, Duncan Reservoir is required to achieve its full flood risk management draft requirement of 1826.5 ft by 15 March (currently same as end of February FRM).
6. Per the Libby Water Control Manual, when the official Libby Water Supply Forecast released at the start of April is less than 6.9 MAF, refill is initiated on May 1.

Table 2. Water Supply Forecasts (Kaf)

| Project | Forecast Period | Jan | Feb | Mar | Apr | May | Jun | Jul | Current month Forecast % of Normal | Residual Runoff ² 05-23 (%) |
|------------------|-----------------|-------|-------|-------|-------|-------|-----|-----|------------------------------------|--|
| MCDB | Apr-Aug | 10326 | 9647 | 10096 | 9933 | 9230 | | | 83 | 73 |
| ARDB | Apr-Aug | 20936 | 19267 | 20584 | 20198 | 19586 | | | 88 | 69 |
| DCDB | Apr-Aug | 1946 | 1768 | 1864 | 1874 | 1787 | | | 88 | 69 |
| LIB | Apr-Aug | 6061 | 5071 | 5298 | 4694 | 4408 | | | 73 | 55 |
| HGH | May-Sep | 1950 | 1750 | 1760 | 1680 | 1550 | | | 88 | 51 |
| SKQ ¹ | Apr-Jul | 5105 | 4997 | 5088 | 4714 | 5215 | | | 85 | 53 |
| ALF ¹ | Apr-Jul | 9759 | 9916 | 10014 | 10126 | 11002 | | | 89 | 50 |
| GCL ¹ | Apr-Aug | 45777 | 48057 | 49697 | 49289 | 51603 | | | 89 | 58 |
| BRN ¹ | Apr-Jul | 4916 | 4194 | 4302 | 4934 | 5496 | | | 107 | 50 |
| DWR ¹ | Apr-Jul | 2178 | 2117 | 2344 | 2521 | 2620 | | | 106 | 45 |
| TDA ¹ | Apr-Aug | 72362 | 72791 | 74038 | 76790 | 83148 | | | 93 | 56 |

Notes:

1. Official water supply forecasts for SKQ, ALF, GCL, BRN, DWR and TDA are the ESP 10-day-QPF median values published by the NWRFC on the following days for 2023: Jan 5, Feb 3, Mar 3, Apr 5, May 3, Jun 5.
2. Residual runoff values are applicable starting in April. Residual runoff (%) is the percentage of the current month's seasonal volume forecast that has yet to runoff during the forecast period. For example, 55% of the forecasted April through August runoff volume for Libby has yet to runoff.

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