Flood Risk Management Requirements
Report #9 for Water Year 2023
Issue Date: 17 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 end of May 2892.0 ft on 31 May 2023.

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	-	2892.0	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	1283	1288.0	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] (%)
MCDB	Apr-Aug	10326	9647	10096	9933	9230			83	85
ARDB	Apr-Aug	20936	19267	20584	20198	19586			88	81
DCDB	Apr-Aug	1946	1768	1864	1874	1787			88	82
LIB	Apr-Aug	6061	5071	5298	4694	4408			73	72
HGH	May-Sep	1950	1750	1760	1680	1550			88	70
SKQ[1]	Apr-Jul	5105	4997	5088	4714	5215			85	67
ALF[1]	Apr-Jul	9759	9916	10014	10126	11002			89	64
GCL[1]	Apr-Aug	45777	48057	49697	49289	51603			89	72
BRN[1]	Apr-Jul	4916	4194	4302	4934	5496			107	60
DWR[1]	Apr-Jul	2178	2117	2344	2521	2620			106	59
TDA[1]	Apr-Aug	72362	72791	74038	76790	83148			93	69

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, 90% of the forecasted April through August runoff volume for Libby has yet to runoff.

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