Flood Risk Management Requirements
Report #17 for Water Year 2022
Issue Date: 30 Jun 2022

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 (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.
None are currently in effect.

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 June 2022 official forecast is 88,101 kaf. Current forecast is now 98,479 kaf per the NWRFC. All other forecasts can be found in Table 2 or at: https://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: https://www.nwd-wc.usace.army.mil/report/storcorr/

D. System Flood Risk Management Refill Requirement Discussion.
The System Flood Emergency was discontinued on 19 June 2022.

The Initial Controlled Flow (ICF) based on the official May 2022 forecast was 312 kcfs, and the ICF date was 7 May based on the ICF calculated using the official April 2022 forecast. The Flood Risk Management Requirements shown in Table 1 are based on the official June 2022 seasonal runoff volume forecasts and modeling. Refill dates are also listed in Table 1. Discharge at John Day should not exceed 440 kcfs. During the runoff season, guidance and end-of-month reservoir elevation targets may change in response to the shape and timing of 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	Date Refill Starts	31 May[3]	30 Jun[3]	31 Jul[3]
MCDB (kaf)[2]	1609	2810	4080	4080	4080	2 May	2448	286	0
ARDB (ft)[7]	1430.1	1422.9	1414.1	1414.1	1414.1	5 May	1421.4	1438.0	1444.0
DCDB (ft)[5]	1839.3	1812.5[5]	1807.7[5]	1807.7	1807.7	27 Apr	1834.5	1877.3	1892.0
LIB (ft)[4]	2384.6	2363.9	2371.8	2370.7	2370.7	27 Apr	n/a	n/a	2459.0
LIB (kcfs)	n/a	n/a	n/a	n/a	~16	27 Apr	~12.3	~13	n/a
HGH (ft)	3542.2	3539.3	3539.3	3543.4	3542.5	1 May	n/a	n/a	3560.0
HGH (kcfs)	n/a	n/a	n/a	n/a	n/a	1 May	~7.5	~11	n/a
SKQ (ft)	n/a	n/a	n/a	2883.0	n/a	-	2890.0	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	1271.5	1258.2	1250.7	6 May	1260.0	1286.0	1290.0
BRN (ft)	2077.0	2053.7	2059.1	2069.1	2077.0[6]	6 May	2077.0	2077.0	2077.0
DWR (ft)	1527.8	1518.6	1528.6	1559.5	1540.0[6]	6 May	1588.0[6]	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.
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 1807.7 ft by 15 March.
6. Dworshak operated to local FRM requirements for the end of May.
7. Arrow is operating to local FRM requirements for the end of June (per FCOP 6-3). The 30 June system flood control maximum elevation is 1444 ft.

Table 2. Water Supply Forecasts (Kaf)

Project	Forecast Period	Jan	Feb	Mar	Apr	May	Jun	Jun 29th NWRFC	Current month Forecast % of Normal	Residual Runoff[2] (%)
MCDB	Apr-Aug	13115	13050	12846	12727	12507	12344	13266	119%	62%
ARDB	Apr-Aug	25497	25513	24959	24662	24656	24445	24240	110%	54%
DCDB	Apr-Aug	2361	2398	2339	2314	2226	2253	2444	120%	54%
LIB	Apr-Aug	7273	7249	6972	6992	6740	6276	6917	114%	36%
HGH	May-Sep	1920	1810	1700	1600	1910	1900	2272	128%	22%
SKQ[1]	Apr-Jul	5742	5676	6049	6057	5472	5709	7078	115%	20%
ALF[1]	Apr-Jul	11262	11353	11867	11845	10821	11765	13670	111%	18%
GCL[1]	Apr-Aug	60042	61575	61433	61846	57157	59431	66269	114%	39%
BRN[1]	Apr-Jul	5216	3995	3672	3278	3191	3186	3254	63%	19%
DWR	Apr-Jul	3090	2805	2669	2367	2399	2397	2818	114%	10%
TDA[1]	Apr-Aug	91310	88817	86386	86007	83250	88101	98479	110%	34%

Notes:
1. Official water supply forecasts for SKQ, ALF, GCL, BRN and TDA are the ESP 10-day-QPF median values published by the NWRFC on the following days for 2022: Jan 5, Feb 3, Mar 3, Apr 5, May 4, Jun 3.
2. Residual runoff (%) is the percentage of the current month's seasonal volume forecast that has yet to runoff during the forecast period. For example, 36% of the forecasted April through August runoff volume for Libby has yet to runoff. Because of the amount of precipitation not included in the official June forecasts, the residuals are calculated based on daily forecasts.

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