ADJUSTMENT OF SYSTEM REFILL

Flood Risk Management Requirements
Report #10 for Water Year 2018
Issue Date: 18 MAY 2018

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.
There are currently no deviations in place.

C. Flood Risk Management Requirements
Table 1 shows the flood risk management elevations, draft and flow limits for the evacuation, holding and refill periods.

D. System Flood Risk Management Refill Requirement Discussion.
The ICF date was declared as May 6. Based upon refill modeling of the most recent ESP traces, ***the Controlled Flow is still being set to 500 kcfs***. If needed, the Controlled Flow will be further updated as the system is managed for flood risk. The Flood Risk Management Requirements shown in Table 1 for refill are based on the most recent ESP traces and other information.

E. Individual Project Flood Risk Management Requirements Discussion.

Arrow (ARDB) project flows are expected to be maintained at the current discharge flow rate of 43 kcfs until futher notice.

Duncan (DCDB) project will be ramping down 1 kcfs per day and targeting to be operating to minimum flow 100 cfs by May 25, 2018 for local FRM needs on Kootenay Lake in British Columbia.

Table 1. Flood Risk Management Requirements

Project	31Jan	28Feb	31Mar	15 Apr	30 Apr	Date Refill Starts	31 May[3]	30 Jun[3]	31 Jul[3]
MCDB (kaf) [2]	1662	2810.0	3267.0	4080.0	4080.0	01 May	2448.0	286.0	0.0
ARDB (ft)	1430.5	1422.9	1408.5	1414.1	1414.1	04 May	1435.0	1443.2	1444.0
DCDB (ft)	1839.5	1812.5	1807.7	1807.7	1807.7	26 Apr	1845.0	1880.0	1892.0
LIB (ft) [4]	2401.8	2387.7	2358.3	2359.3	2362.4[4]	26 Apr	Est	Est	2459.0
LIB (cfs)	n/a	n/a	n/a	n/a	9.2	26 Apr	~9.2	n/a	n/a
HGH (ft)	3541.5	3529.6	3496.2	3476.6	3475.4	01 May	n/a	3560.0	3560.0
HGH (cfs)[7]	-	-	-	-	-	01 May	~4.2	n/a	n/a
SKQ (ft)[5]	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	1289.6	1256.9	1234.0	1222.7	05 May	1268.0	1289.4	1290.0
BRN (ft)	2077.0	2046.8	2037.2	2025.0	2030.0	05 May	2069.1	2077.0	2077.0
DWR (ft)	1530.5	1516.5	1461.6	1470.0	1500.0[6]	05 May	1583.0[6]	1599.2	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. Sẻliš Ksanka Qĺispė Dam, formerly known as Kerr Dam.
6. Dworshak is filling on its refill guide curve, with end of May FRM of 1583 feet.
7. Hungry Horse VARQ procedures do not specify end of month targets after the start of refill (after May 1 or 10 days before the ICF date). The VARQ flows are meant as a guide for refill and are not to be interpreted as a strict minimum flow.

Table 2. Water Supply Forecasts (Kaf)

Project	Forecast Period	Jan	Feb	Mar	Apr	May	Jun	Jul	Current Month Forecast % of Normal	Residual Runoff[3] (%)
MCDB	Apr-Aug	11117	11334	11753	11727	11406			104	85
ARDB	Apr-Aug	21606	22445	23532	23310	23172			105	80
DCDB	Apr-Aug	1995	2061	2174	2208	2167			108	75
LIB	Apr-Aug	6645	6765	7205	7189	7356			125	75
HGH	May-Sep	1964	2062	2302	2395	2500			148	69
SKQ[1,2]	Apr-Jul	5595	7346	7573	8241	8274			142	63
ALF[1]	Apr-Jul	12382	15152	15578	17016	17558			149	60
GCL[1]	Apr-Aug	55852	64817	65870	68335	71449			126	69
BRN[1]	Apr-Jul	5690	5509	5665	6436	5889			108	52
DWR	Apr-Jul	2941	2849	3093	3040	3032			125	48
TDA[1]	Apr-Aug	87282	94748	98132	103337	106883			122	64

Notes:

1. Official water supply forecasts for SKQ, ALF, GCL, BRN and TDA are the ESP 5-day-QPF median values published by the NWRFC on the following days for 2018: Jan 4, Feb 5, Mar 5, Apr 5, May 3, Jun 5, and Jul 6.
2. Sẻliš Ksanka Qĺispė Dam, formerly known as Kerr Dam.
3. Residual runoff is the percentage of the current month's seasonal volume forecast that has yet to runoff.

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