ADJUSTMENT OF SYSTEM REFILL

Flood Risk Management Requirements
Report #8 for Water Year 2019
Issue Date: 22 MAY 2019

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.
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 May 2019 official forecast is 82,415 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 ICF date was declared as April 22, for an ICF of 300 kcfs. The ICF flow rate was based on the official April 2019 seasonal runoff volume forecast. Based upon refill modeling of the most recent ESP traces, ***the Controlled Flow (CF) is approximately 300 kcfs with potential for a rapid recession***. If needed, the Controlled Flow will be further updated as the system is managed for flood risk. The Flood Risk Management Requirements for refill are shown in Table 1 and are based on modeling of the most recent ESP traces and other information.

E. Individual Project Flood Risk Management Requirements Discussion.
No specific individual requirements at this time.

Table 1. Flood Risk Management Requirements

Project	31Jan	28Feb	31Mar	15 Apr	Date Refill Starts	30 Apr	31 May[3]	30 Jun[3]	31 Jul[3]
MCDB (kaf) [2]	1662	2206	3420	3212	17 Apr	3212	2448	286	0
ARDB (ft)	1430.5	1427.3	1419.2	1420.8	20 Apr	1420.8	1434.0	1443.2	1444.0
DCDB (ft)	1840.9	1812.5	1807.7	1816.8	12 Apr	1816.8	1839.9	1879.0	1892.0
LIB (ft) [4]	2422.2	2436.4	2441.3	2449.7	12 Apr	2453.0	-	2459.0	2459.0
LIB (kcfs)	-	-	-	-	12 Apr	-	~18	-	-
HGH (ft)	3548.5	3548.7	3545.1	3553.1	01 May	3553.6	-	3560.0	3560.0
HGH (kcfs)	-	-	-	-		-	~5-6	-	-
SKQ (ft)	-	-	-	2883.0	-	-	2890.0	2893.0	2893.0
ALF (ft) [1]	2060.0	2060.0	2056.0	-	-	2056.0	2062.5	2062.5	2062.5
GCL (ft)	1290.0	1290.0	1283.3	1283.3	21 Apr	1278.9	1284.2	1289.5	1290.0
BRN (ft)	2077.0	2060.6	2049.3	2061.3	21 Apr	2068.7	2075.7	2077.0	2077.0
DWR (ft)	1547.9	1558.6	1559.0	1573.8	21 Apr	1573.8	1596.0	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 and June are based on numerical modeling.
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.

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	10560	11079	10972	10252	9696			88	84
ARDB	Apr-Aug	21643	22302	21323	19774	18468			84	79
DCDB	Apr-Aug	1956	2030	2007	1893	1771			88	79
LIB	Apr-Aug	5639	5318	5478	4752	4983			85	77
HGH	May-Sep	1533	1500	1580	1400	1460			86	71
SKQ[1]	Apr-Jul	5123	4845	4560	4310	4952			85	58
ALF[1]	Apr-Jul	11057	10420	9848	9714	11032			94	52
GCL[1]	Apr-Aug	55941	51352	48998	47853	48664			86	66
BRN[1]	Apr-Jul	4383	4160	5863	5450	7275			133	47
DWR	Apr-Jul	2239	1951	2142	1964	2438			101	36
TDA[1]	Apr-Aug	83322	75301	76636	75577	82415			94	58

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 2019: Jan 4, Feb 5, Mar 5, Apr 3, May 3, Jun 5, and Jul 6.
2. Residual runoff is the percentage of the current month's seasonal volume forecast that has yet to runoff.

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