Flood Risk Management Requirements
Report #5 for Water Year 2017
Issue Date: 21 April 2017

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.
Grand Coulee (GCL): On Monday, April 17, 2017, a request was made by Washington Emergency Management and the Colville Tribes to hold the GCL pool above 1232 feet to keep the Inchelium-Gifford Ferry in service. Runoff in the region near the ferry has resulted in multiple washouts of primary roads which has cause an immediate impact to the local residents in need of access to emergency and medical services. FRM elevations for GCL will be maintained above 1232 feet through the 2017 spring freshet season.

C. Flood Risk Management Requirements
These requirements (shown in Table 1) have been prepared using the most recent official seasonal volume forecasts. The April-August volume forecast at The Dalles Dam based on the April 2017 official forecast is 105,039 kaf. All other water supply 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. The Initial Controlled Flow (ICF) based on the April forecast is 368 kcfs. 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.
No system refill requirements at this time. ICF date appears to be in early May.

E. Individual Project Flood Risk Management Requirements Discussion.
Dworshak: Dworshak is operating to its refill guide curve. End of April FRM elevation is at 1530 feet.
Libby: Libby is operating at full powerhouse (23.2 kcfs) until futher notice. Estimated end of April elevation is 2359 feet.
Grand Coulee: Per deviation operation, Grand Coulee is to keep pool elevations above 1232 feet to maintain ferry operations through April 30 and into May. Pool elevations will range between 1232-1234 feet)

Table 1. Flood Risk Management Requirements

Project	31Jan	28Feb	15Mar	31Mar	15 Apr	30 Apr[3]	31 May[3]	30 Jun[3]	31 Jul[3]
MCDB (kaf) [2]	1662	2810	n/a	4080	4080	4080	*2448*	*286*	0
ARDB (ft)	1430.5	1422.9	n/a	1414.1	1414.1	1414.1	*1423.9*	*1443.2*	1444.0
DCDB (ft)	1839.3	1815.3	1812.8	1812.8	1807.7	1807.7	*1834.5*	*1877.3*	1892.0
LIB (ft) [4]	2396.2	2433.7	n/a	2382.1	2325.4	2325.4[4]	*2411.6*	*2459.0*	2459.0
LIB (cfs)	n/a	n/a	n/a	n/a	n/a	n/a	*n/a*	*n/a*	n/a
HGH (ft)	3543.8	3549.0	n/a	3539.8	3533.6	3531.3	*3553.2*	*3560.0*	3560.0
SKQ (ft)[5]	n/a	n/a	n/a	n/a	2883.0	n/a	*2890.0*	*2893.0*	2893.0
ALF (ft) [1]	2060.0	2060.0	n/a	2056.0	n/a	2056.0	*2062.5*	*2062.5*	2062.5
GCL (ft)	1290.0	1290.0	n/a	1267.1	1234.0	1232[6]	*1259.5*	*1289.4*	1290.0
BRN (ft)	2077.0	2048.3	n/a	2036.0	2024.0	2012.6	*2069.0*	*2077.0*	2077.0
DWR (ft)	1528.3	1531.1	n/a	1493.1	1471.1	1530[7]	*1556.8*	*1596.2*	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 historical 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. Estimated end of April elevation is approximately 2359 feet.
5. Sèliš Ksanka Qĺispė Dam, formerly known as Kerr Dam.
6. Grand Coulee is operating per a deviation request (see discussion above). Minimum pool is 1232 feet.
7. Dworshak is filling on its refill guide curve, with end of April FRM elevation at 1530 feet.

Table 2. Water Supply Forecasts (Kaf)

Project	Forecast Period	Jan	Feb	Mar	Apr	May	Jun	Jul	Current month Forecast % of Normal
MCDB	Apr-Aug	11569	10737	10798	11503				98
ARDB	Apr-Aug	23045	21065	21248	22530				100
DCDB	Apr-Aug	2010	1954	1942	2036				99
LIB	Apr-Aug	6861	5583	6783	7654				130
HGH	May-Sep	1828	1489	1691	1769				105
SKQ[1,2]	Apr-Jul	5649	5790	6327	7364				127
ALF[1]	Apr-Jul	11413	11505	12255	14894				126
GCL[1]	Apr-Aug	54930	53656	57336	64955				114
BRN[1]	Apr-Jul	4801	5327	7560	10845				198
DWR	Apr-Jul	3055	2541	2867	2984				122
TDA[1]	Apr-Aug	84945	82821	92337	105039				120

Notes:
1. Official water supply forecasts for SKQ (KERM), ALF, GCL, BRN and TDA are the ESP 5-day-QPF median values published by the NWRFC on the following days for 2017: Jan 5, Feb 3, Mar 3, Apr 5, May 3, Jun 5, and Jul 8.
2. Sèliš Ksanka Qĺispė Dam, formerly known as Kerr Dam.

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