Flood Risk Management Requirements
Report #4 for Water Year 2014
Issue Date: 11 April 2014

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, BC Hydro, Bureau of Reclamation, Idaho Power, PPL Montana, 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.
A deviation request was approved to maintain current discharge (20 kcfs) from Dworshak Dam during the month of April until the Flood Control Refill Curve is intersected instead of increasing discharge to channel capacity (25 kcfs). Once the Flood Control Refill Curve is intersected the discharge from Dworshak Dam will be reduced to full powerhouse level (10 kcfs) for the balance of the month of April. This deviation operation will be suspended if the water supply forecast increases more than 400 kaf or the Flood Control Refill Curve will not be intercepted during the month of April.

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 April 2014 official forecast is 92057 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. The Initial Controlled Flow (ICF) based on the April forecast is 335.0 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 requirements at this time.

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	30 Apr[4]	31 May[4]	30 Jun[4]	31 Jul[4]
MCDB (kaf)[3]	1662	1840	4080	n/a	4080	2448	286	0
ARDB (ft)	1430.5	1430.1	1414.1	n/a	1414.1	1423.9	1443.2	1444.0
DCDB (ft)	1846.9	1829.4	1826.9	n/a	1817.0	1840.0	1878.6	1892.0
LIB (ft)[4]	2426.7	2436.4	2440.9	n/a	2387.0	Est	Est	2459.0
LIB (kcfs)[5]	n/a	n/a	n/a	n/a	n/a	18	18	n/a
HGH (ft)	3544.4	3539.0	3532.4	3496.4	3495.4	3545.6	3560.0	3560.0
KERM (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)[2]	1290.0	1290.0	1266.8	1250.0	1235.2	1262.1	1289.5	1290.0
BRN (ft)	2077.0	2073.6	2067.3	2056.1	2056.3	2077.0	2077.0	2077.0
DWR (ft)[2]	1546.5	1543.5	1517.6	1492.5	1499.8	1564.2	1598.9	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 Flood Control Refill Curve (FCRC) 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, during the drawdown period releases will be limited to the hydraulic capacity of the powerhouse to the best extent possible.
5. Per the Libby Dam WCM, Rule 8 of the VarQ operating procedures, releases can be adjusted prior to June 30th at Libby Dam to control refill.

Table 2. Water Supply Forecasts (Kaf)

Project	Forecast Period	Jan	Feb	Mar	Apr	May	Jun	Jul	Current month Forecast % of Normal[2]	Residual Runoff[1] as of 1-Apr (%)
MCDB	Apr-Aug	10300	10358	10207	11080				101	
ARDB	Apr-Aug	19678	20003	19926	21761				99	
DCDB	Apr-Aug	1785	1728	1761	1891				94	
LIB	Apr-Aug	5432	5192	5505	6868				117	
HGH	May-Sep	1787	1819	2142	2204				130	
KERM	Apr-Jul	6367	5433	6737	7219				124	
ALF	Apr-Jul	11816	10126	13807	14298				121	
GCL	Apr-Aug	54638	48197	57818	60382				106	
BRN	Apr-Jul	3723	3246	3861	3934				72	
DWR	Apr-Jul	2296	2274	2701	3111				129	
TDA	Apr-Aug	84888	72458	88832	92057				105	

Notes:

1. Residual runoff values are applicable starting April. Residual runoff volume (Maf) is the amount of the current month's seasonal volume forecast that is still left to runoff. The percentage shows the volume that is yet to runoff, divided by the forecasted volume. As an example, at Libby, the residual runoff volume will be the current month's Apr-Aug forecast volume minus the amount of observed runoff since April 1st.
2. Official water supply forecasts for KERM, ALF, GCL, BRN and TDA are the ESP 5-day-QPF median values published by the NWRFC on the following days for 2014: Jan 8, Feb 7, Mar 7, Apr 8, May 7, Jun 6 and Jul 8.

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