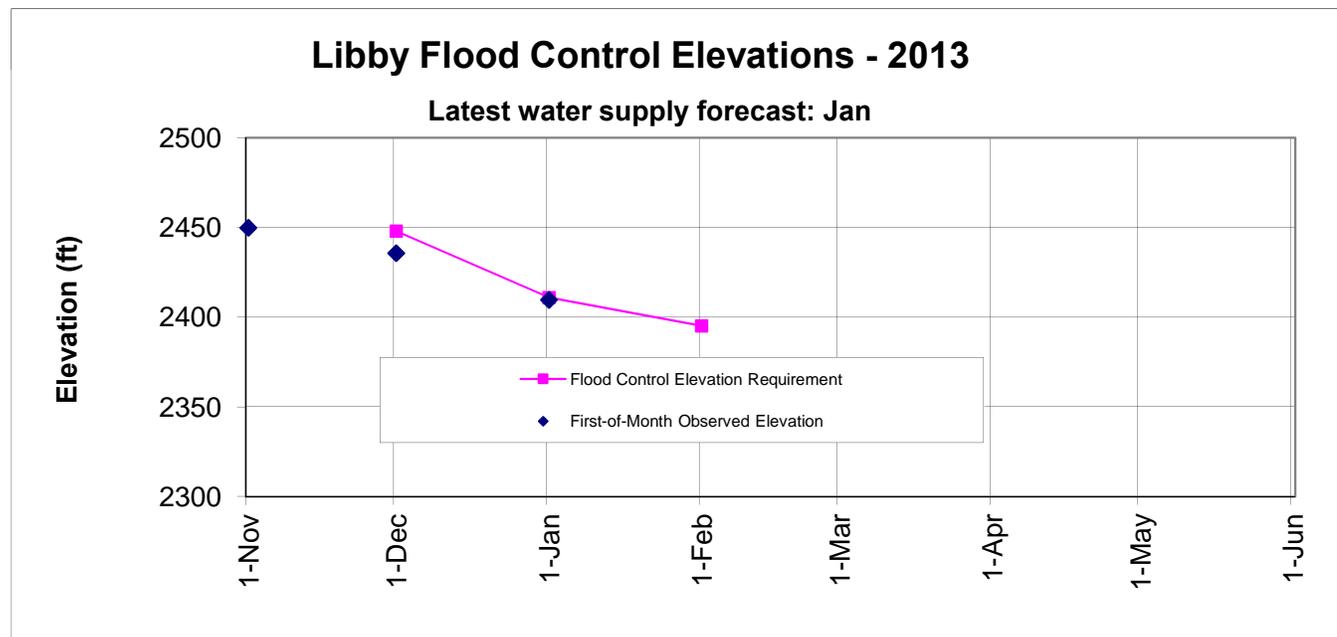
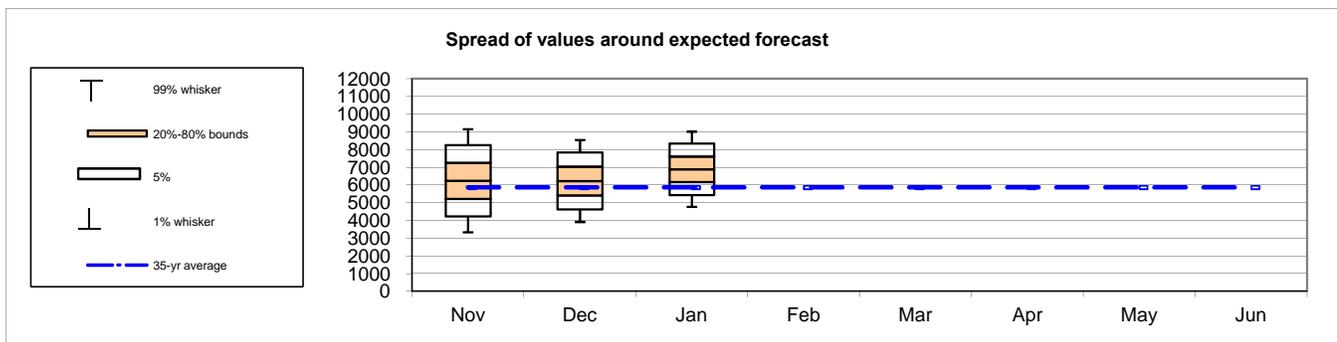


Libby : January Runoff Forecast & Flood Control Calculation

WY 2013

Runoff Forecast and Flood Control				1975-2009 Average	Percent of Average	1929-1999 Average	Percent of Average	
Most Probable Runoff Volume:	Apr-Aug	6898	KAF	5865	118%	6337	109%	
	Apr-Jul	6237	KAF	5303	118%	5771	108%	
	May-Jul	5642	KAF	4797	118%	5247	108%	
31-Jan Flood Control Space		2534	KAF					
31-Jan Flood Control Elevation		2395.2	ft					
Seasonal Flood Control VARQ Flood Control Implemented								
Forecast Date >>	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Apr-Aug Runoff Forecast	6245	6238	6898					
First-of-Month Elev	2449.9	2435.7	2409.7					
Date >>	30-Nov	31-Dec	31-Jan	28-Feb	15-Mar	31-Mar	15-Apr	30-Apr
Flood Control Space	500	2000	2534					
Flood Control Elevation	2448.0	2411.0	2395.2					



- Notes:
- The given forecast is the official Corps of Engineers forecast for Libby. If you have any questions please contact Joel Fenolio (206) 764-6683, Kevin Shaffer (206) 764-3660, Adam Price (206) 764-3604, or Kristian Mickelson (206) 764-6927.
 - If a prior month's forecast as published in this document is different than what was originally published in the issue month, then the earlier forecast has been adjusted to reflect updated values for precipitation or streamflow.
 - Extreme observed precipitation in October was reduced so that the forecast would reflect realistic physical conditions. Observed values for October were replaced with average values + 1/2 standard deviation from the forecast training period (1975-2010).
 - Morrissey Ridge SWE was missing during the month of December and on January 1. It was estimated using a 3-way regression with Moyie Mt., Flattop Mt, and South Racehorse Creek. The regression had a combined adjusted r-square value of 0.93.
 - 12 days of December precipitation data were missing at Fernie B.C. The monthly total was adjusted by scaling so that the ratio of precipitation on observed days to total precip matched that same ratio at two nearby gages (Morrissey Junction and Sparwood.)

Libby : January Runoff Forecast & Flood Control Calculation

Apr-Aug Runoff Forecast Calculation:						
Variable	Month(s)	Units	Observed Value	Percent of Average	Regression Coefficient	Marginal Runoff (KAF)
			A		B	=A*B
QBO	∑Jan:Mar		-48.06		-7.4	356.3
Eureka, MT	∑Oct,Nov,Dec Prcp	inches	3.21	94%	77.3	248.1
Libby 1 NE RS, MT	∑Oct,Nov,Dec Prcp	inches	8.85	146%	60.7	537.3
West Glacier, MT	∑Oct,Nov,Dec Prcp	inches	12.16	136%	31.8	386.8
Fernie, BC	∑Oct,Nov,Dec Prcp	inches	18.73	115%	13.3	249.0
Floe Lake, BC	1-Jan SWE	inches	16.89	120%	9.4	158.8
Sunshine Village, AB	1-Jan SWE	inches	12.56	117%	24.3	305.5
East Creek, BC	1-Jan SWE	inches	18.07	107%	5.8	105.3
Stahl Peak, MT	1-Jan SWE	inches	13.60	83%	22.6	307.0
Gardiner Creek, AB	1-Jan SWE	inches	14.37	159%	21.8	313.3
Three Isle Lake, AB	1-Jan SWE	inches	9.80	107%	28.7	281.1
Lost Creek South, AB	1-Jan SWE	inches	13.98	125%	17.8	248.4
Morrissey Ridge, BC	1-Jan SWE	inches	13.03	112%	24.4	318.5
Hawkins Lake, MT	1-Jan SWE	inches	14.30	132%	36.5	521.3
Intercept			1		2561.5	2561.5
1-Jan Forecast (KAF)					∑	6898.1

Data used in Libby Water Supply Forecast

	WY							Jul-05		
Climate Data	Jan-12	Feb-12	Mar-12	Jun-12	Jul-12	Oct-12	Nov-12	Dec-12	Jan-13	
SOI				-0.40	0.00					
QBO	-16.07	-15.25	-16.74							
PNA						-1.13	-1.06			
Precipitation Data	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Units	
Eureka, MT	1.24	0.76	1.21						inch	
Libby 1 NE RS, MT	1.94	2.52	4.39						inch	
West Glacier, MT	3.06	4.59	4.51						inch	
Fernie, BC	136.60	153.20	186.00						mm	
Snow Water Equiv				1-Jan	1-Feb	1-Mar	1-Apr	1-May	1-Jun	Units
Floe Lake, BC				429						mm
Sunshine Village, AB				319						mm
East Creek, BC				459						mm
Stahl Peak, MT				14						inch
Gardiner Creek, AB				365						mm
Three Isle Lake, AB				249						mm
Lost Creek South, AB				355						mm
Morrissey Ridge, BC				331						mm
Hawkins Lake, MT				14						inch
Streamflow				Jan	Feb	Mar	Apr	May	Jun	Units
Libby Inflow Volume										KAF
Reservoir Elevation	1-Nov	1-Dec	1-Jan	1-Feb	1-Mar	1-Apr	1-May	1-Jun	Units	
Libby FOM Elev	2449.9	2435.7	2409.7						feet	