

# Libby : April Runoff Forecast & Flood Control Calculation

WY 2014

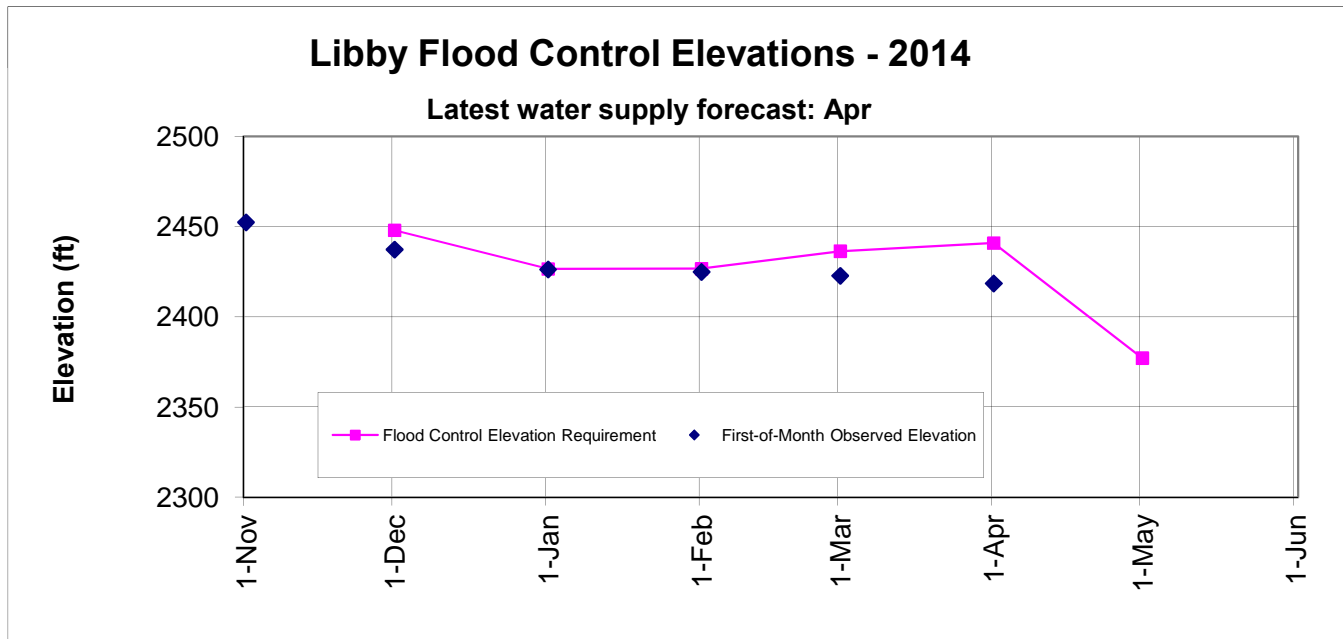
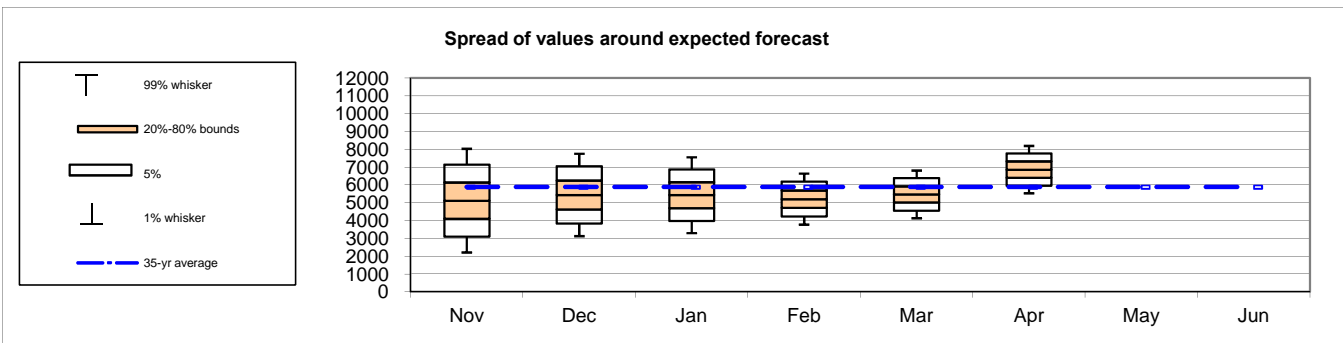
Runoff Forecast and Flood Control			
<b>Most Probable Runoff Volume:</b>	<b>Apr-Aug</b>	<b>6868</b>	<b>KAF</b>
	<b>Apr-Jul</b>	<b>6234</b>	<b>KAF</b>
	<b>May-Jul</b>	<b>5626</b>	<b>KAF</b>
<b>30-Apr Flood Control Space</b>		<b>3063</b>	<b>KAF</b>
<b>30-Apr Flood Control Elevation</b>		<b>2377.2</b>	<b>ft</b>

1981-2010 Average	Percent of Average	1929-2008 Average	Percent of Average
5885	117%	6282	109%
5342	117%	5720	109%
4821	117%	5199	108%

Seasonal Flood Control								
VARQ Flood Control Implemented								
Forecast Date >>	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
<b>Apr-Aug Runoff Forecast</b>	5125	5446	5432	5213	5478	6868		
<b>First-of-Month Elev</b>	2452.5	2437.4	2426.3	2424.9	2422.8	2418.6		

Date >>	30-Nov	31-Dec	31-Jan	28/29-Feb	31-Mar	30-Apr
<b>Flood Control Space</b>	500	1400	1400	1000	809	3063
<b>Flood Control Elevation</b>	2448.0	2426.6	2426.7	2436.4	2440.9	2377.2



**Notes:**

1. 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.
2. 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.

# Libby : April 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		-4.45		-1.8	8.2
PNA	∑Oct:Jan		-1.92		-83.9	161.2
West Glacier, MT	∑Dec:Mar Prcp	inches	14.57	131%	51.3	748.1
Fernie, BC	∑Dec:Mar Prcp	inches	20.76	119%	41.4	859.7
Sunshine Village, AB	1-Apr SWE	inches	23.35	105%	52.4	1224.4
East Creek, BC	1-Apr SWE	inches	35.83	106%	25.8	925.7
Stahl Peak, MT	1-Apr SWE	inches	40.40	116%	27.3	1102.1
Gardiner Creek, AB	1-Apr SWE	inches	29.65	128%	18.1	537.4
Three Isle Lake, AB	1-Apr SWE	inches	20.55	108%	51.2	1052.9
Intercept			1		247.9	247.9
1-Apr Forecast (KAF)					∑	6867.6

## Data used in Libby Water Supply Forecast

	WY 2014									
Climate Data	Jan-13	Feb-13	Mar-13	Jun-13	Jul-13	Oct-13	Nov-13	Dec-13	Jan-14	
SOI				1.20	0.80					
QBO	-6.07	-1.23	2.85							
PNA						-0.21	-1.14	-1.16	0.59	
Precipitation Data	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Units	
Eureka, MT	0.37	1.16	0.77	1.06	0.64				inch	
Libby 1 NE RS, MT	0.59	2.22	1.20	1.08	0.81				inch	
West Glacier, MT	0.55	4.31	2.66	3.37	2.05	6.49			inch	
Fernie, BC	27.50	128.50	210.00	91.50	64.00	161.81			mm	
Snow Water Equiv				1-Jan	1-Feb	1-Mar	1-Apr	1-May	1-Jun	Units
Floe Lake, BC				274	408	517				mm
Sunshine Village, AB				236	329	417	593			mm
East Creek, BC				335	471	578	910			mm
Stahl Peak, MT				15	21	26	40			inch
Gardiner Creek, AB				257	352	489	753			mm
Three Isle Lake, AB				213	279	354	522			mm
Lost Creek South, AB				273	408	538				mm
Morrissey Ridge, BC				286	401	548				mm
Hawkins Lake, MT				8	14	20				inch
Streamflow				Jan	Feb	Mar	Apr	May	Jun	Units
Libby Inflow Volume				190.4	134.1	241.8				KAF
Reservoir Elevation	1-Nov	1-Dec	1-Jan	1-Feb	1-Mar	1-Apr	1-May	1-Jun	Units	
Libby FOM Elev	2452.5	2437.4	2426.3	2424.9	2422.8	2418.6			feet	

Peter F. Brooks, P.E., D. WRE  
 Approving Official  
 Ch., Hydrologic Engineering and Power Branch  
 Northwestern Division

Joel Fenolio, P.E.  
 Upper Columbia Senior Water Manager  
 Seattle District