

# 2015 Libby Dam Sturgeon Flow and Flood Risk Management

KVRI

18 May 2015



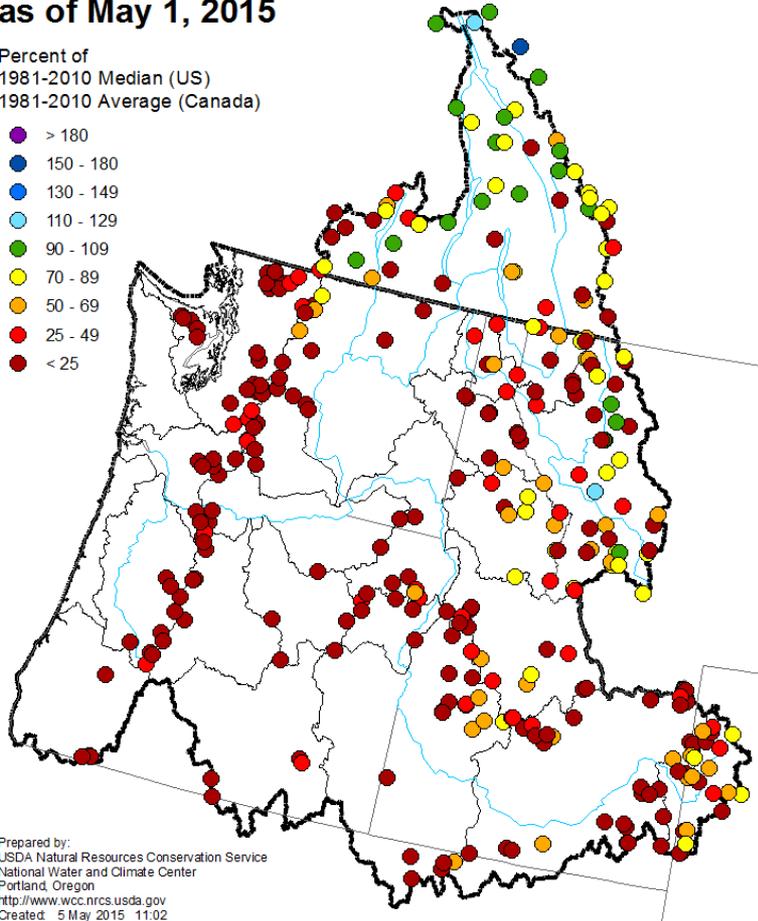
# 2015 Libby Dam Sturgeon Flow and Temperature Operations

## Snow Pack

### Columbia River and Pacific Coastal Basins Mountain Snowpack as of May 1, 2015

Percent of  
1981-2010 Median (US)  
1981-2010 Average (Canada)

- > 180
- 150 - 180
- 130 - 149
- 110 - 129
- 90 - 109
- 70 - 89
- 50 - 69
- 25 - 49
- < 25

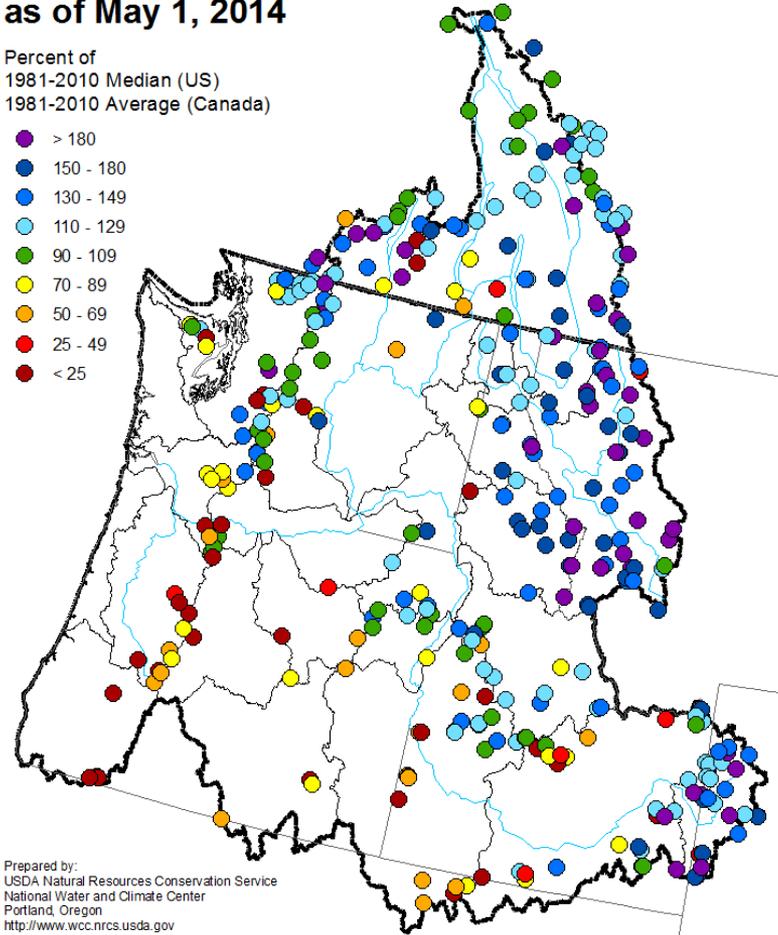


Prepared by:  
USDA Natural Resources Conservation Service  
National Water and Climate Center  
Portland, Oregon  
<http://www.wcc.nrcs.usda.gov>  
Created: 5 May 2015 11:02

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Created: 6 May 2014 13:34

# Libby: May Runoff Forecast & Flood Control Calculation

WY 2015

## Runoff Forecast and Flood Control

Most Probable Runoff Volume:	Apr-Aug	5396	KAF
	Apr-Jul	5334	KAF
	May-Jul	5317	KAF

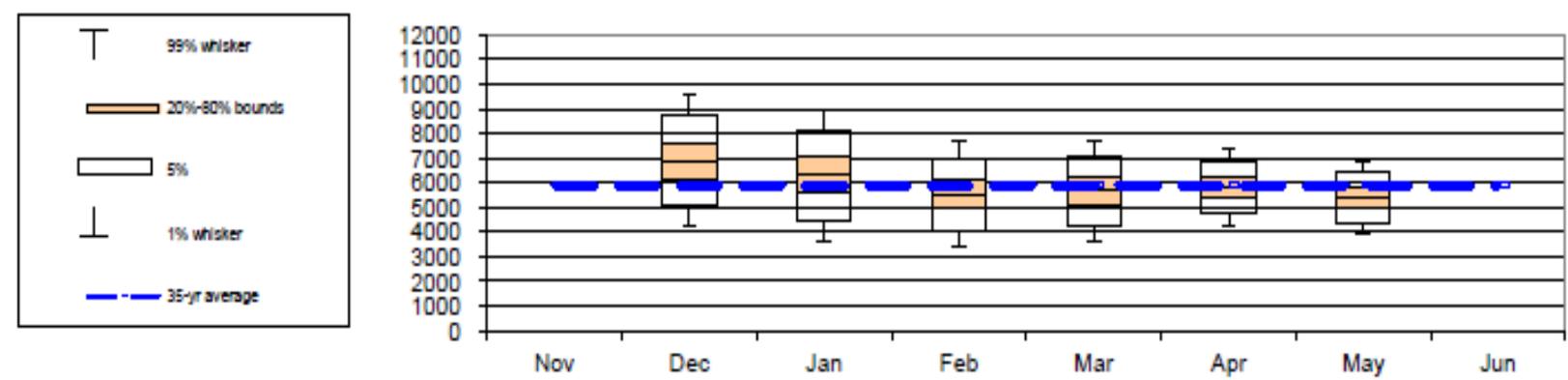
1981-2010 Average	Percent of Average	1929-2008 Average	Percent of Average
5885	92%	6282	86%
5342	100%	5720	93%
4821	110%	5199	102%

## Seasonal Flood Control VARQ Flood Control Implemented

Forecast Date >>	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Apr-Aug Runoff Forecast		6899	6297	5523	5683	5808	5396	
First-of-Month Elev	2448.5	2435.3	2410.6	2409.8	2412.9	2419.2	2420.9	

Date >>	30-Nov	31-Dec	31-Jan	28-Feb	31-Mar	30-Apr
Flood Control Space	500	2000	2037	1032	1112	1324
Flood Control Elevation	2448.0	2411.0	2410.0	2435.7	2433.8	2428.6

Spread of values around expected forecast



United States  
Department of  
Agriculture

Natural Resources  
Conservation  
Service

Water and Climate Center  
Portland, Oregon

S N O W - P R E C I P I T A T I O N U P D A T E

Based on Mountain Data from NRCS SNOTEL Sites  
As of TUESDAY: MAY 12 , 2015

BASIN Data Site Name	ELEV. (Ft)	SNOW WATER EQUIVALENT			TOTAL PRECIPITATION		
		Current	Median	Median %	Current	Average	Avg %
MONTANA							
KOOTENAI RIVER BASIN							
Banfield Mountain	5600	.0	9.6	0	23.3	27.8	84
Bear Mountain	5400	8.4	49.4	17	64.0	71.8	89
Garver Creek	4250	.0	.0	*	19.0	19.4	98
Grave Creek	4300	.0	.0	*	34.3	34.7	99
Hand Creek	5035	.0	.8	0*	16.9	19.3	88
Hawkins Lake	6450	11.6	24.2	48	36.0	33.1	109
Poorman Creek	5100	.0	23.4	0	60.0	58.5	103
Stahl Peak	6030	20.3	35.9	57	38.6	43.2	89
Basin Index (%)					28		95

IDAHO

NORTHERN PANHANDLE REGION

Bear Mountain	5400	8.4	49.4	17	64.0	71.8	89
Bunchgrass Mdw	5000	-M	20.9	*	31.5	39.2	80
Garver Creek	4250	.0	.0	*	19.0	19.4	98
Hawkins Lake	6450	11.6	24.2	48	36.0	33.1	109
Hidden Lake	5040	.3	25.1	1	61.7	58.6	105
Mosquito Ridge	5200	2.5	24.7	10	41.2	47.8	86
Myrtle Creek	3520	.1	.0	*	20.8	22.7	92
Quartz Peak	4700	.0	7.4	0	33.2	36.6	91
Ragged Mountain	4210	.0	1.6	0*	30.6	33.7	91
Schweitzer Basin	6090	18.5	40.4	46	38.3	43.6	88
Basin Index (%)					24		93

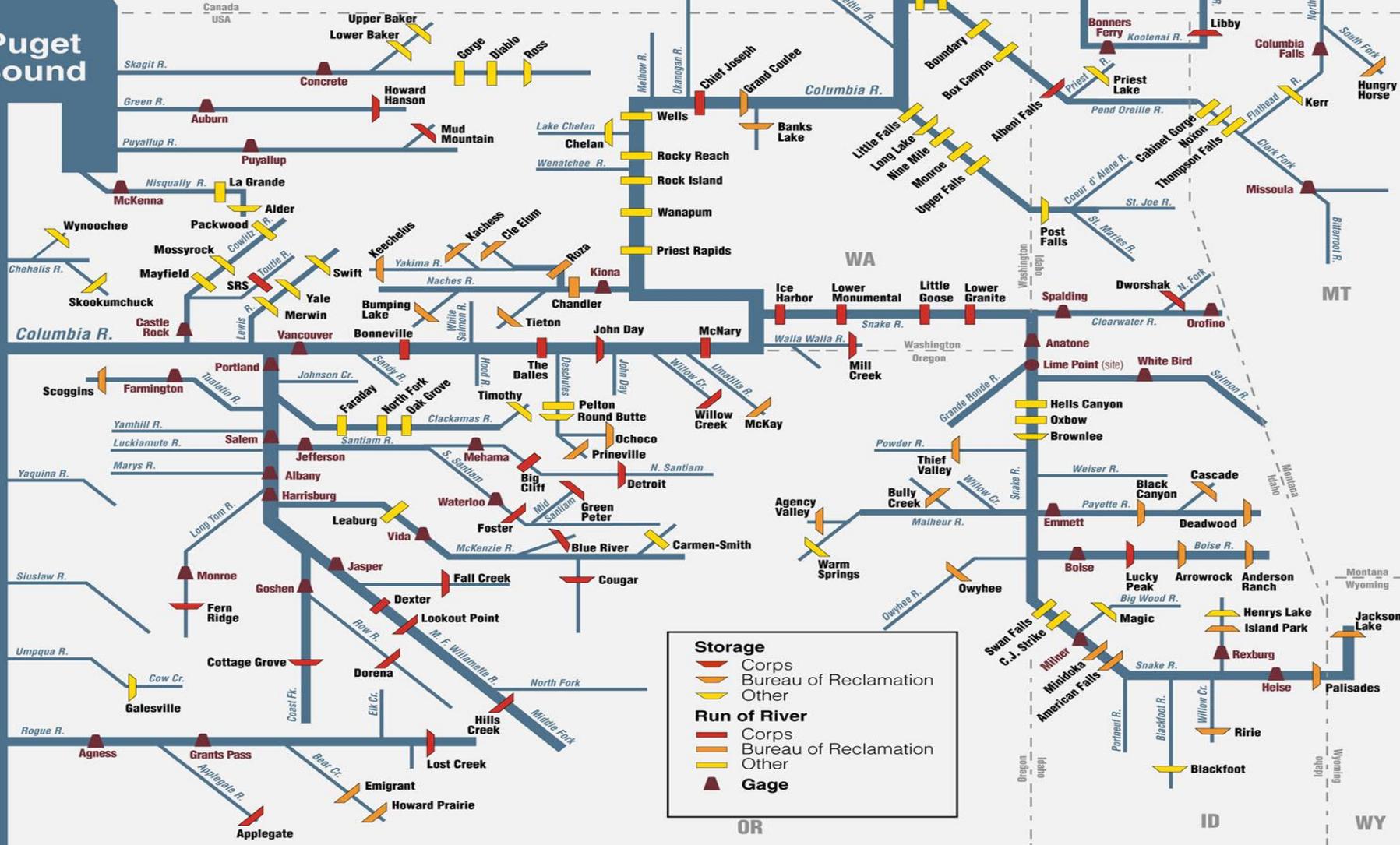
# “Dry Year” at The Dalles

The early runoff in the lower elevation snowpack, combined with below average precipitation in April, has caused the April through August water forecast by the Northwest River Forecast Center to drop to 71 percent of normal, or 62.4 million acre-feet, as published in the official final May forecast used for planning purposes on May 7. One acre-foot is a volume of water equivalent to one acre covered one foot deep with water – it’s a little more than 325,000 gallons. This year became a “dry-year” when the April through August forecast came in under 72.2 maf. What is unusual about this year is the dry year stems from critically low snowpack rather than a dry winter.

# Pacific Northwest Reservoir System

Pacific Ocean

Puget Sound



Storage	
	Corps
	Bureau of Reclamation
	Other
Run of River	
	Corps
	Bureau of Reclamation
	Other
	Gage

OR

ID

WY

WA

MT

Montana Wyoming

Idaho

Wyoming

Canada  
USA

Skagit R.

Green R.

Puyallup R.

Nisqually R.

Chehalis R.

Columbia R.

Yaquina R.

Siuslaw R.

Umpqua R.

Rogue R.

Applegate R.

Applegate

Agness

Grants Pass

Cottage Grove

Galesville

Cow Cr.

Applegate

Upper Baker

Lower Baker

Concrete

Auburn

Puyallup

McKenna

Wynoochee

Castle Rock

Portland

Farmington

Salem

Marys R.

Monroe

Fern Ridge

Cottage Grove

Dorena

Hills Creek

Agness

Grants Pass

Applegate

Gorge

Diablo

Ross

Howard Hanson

Mud Mountain

Alder

La Grande

McKenna

Wynoochee

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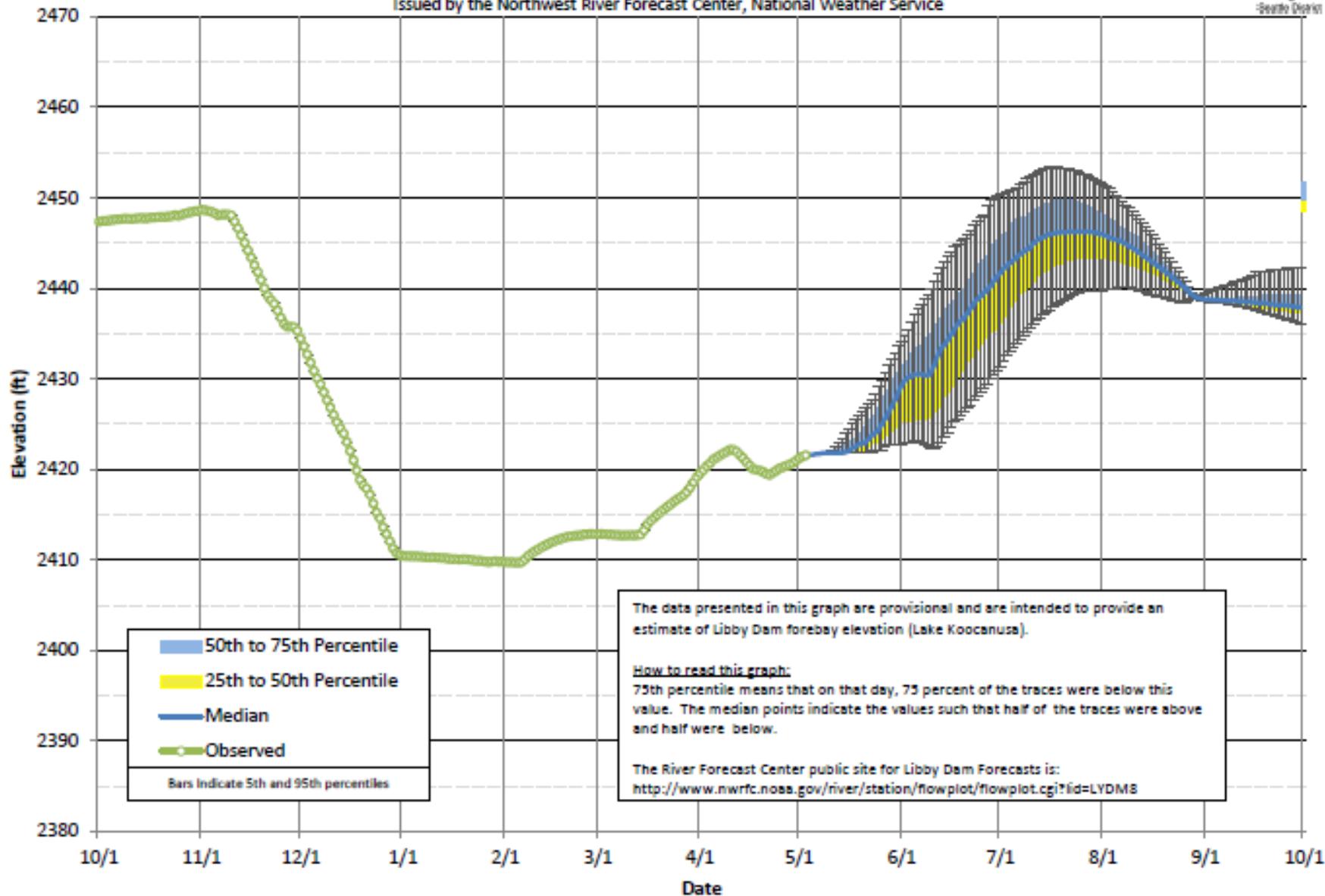
Applegate

### Lake Koocanusa Elevation - Probability Chart

Corps of Engineers Projections Based on the 52 Ensemble Streamflow Prediction Traces  
Issued by the Northwest River Forecast Center, National Weather Service



US Army Corps of Engineers  
Seattle District



50th to 75th Percentile  
25th to 50th Percentile  
Median  
Observed  
Bars Indicate 5th and 95th percentiles

The data presented in this graph are provisional and are intended to provide an estimate of Libby Dam forebay elevation (Lake Koocanusa).

How to read this graph:  
75th percentile means that on that day, 75 percent of the traces were below this value. The median points indicate the values such that half of the traces were above and half were below.

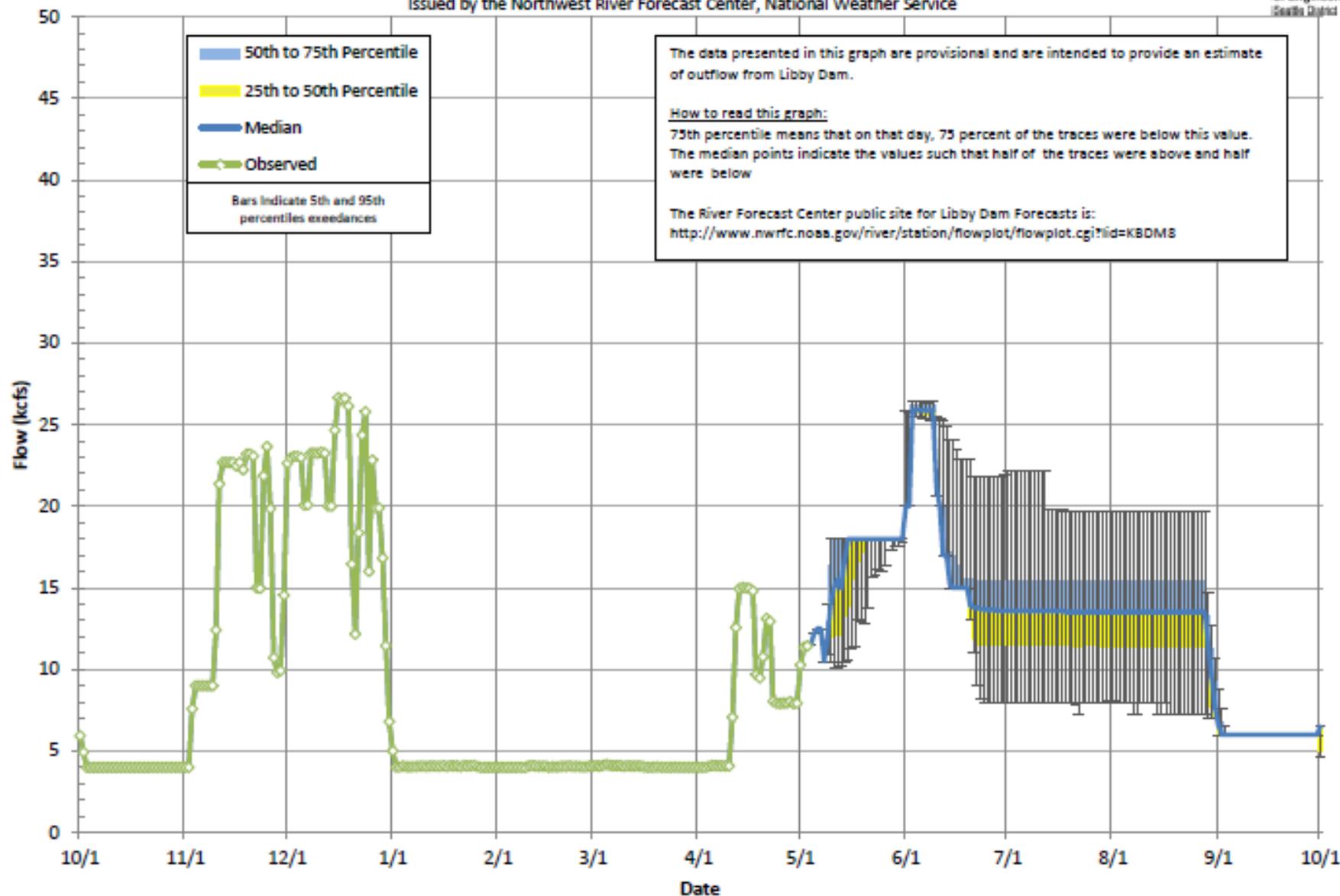
The River Forecast Center public site for Libby Dam Forecasts is:  
<http://www.nwrfc.nwsa.gov/river/station/flowplot/flowplot.cgi?lid=LYDMS>

# Libby Dam Outflow - Probability Chart

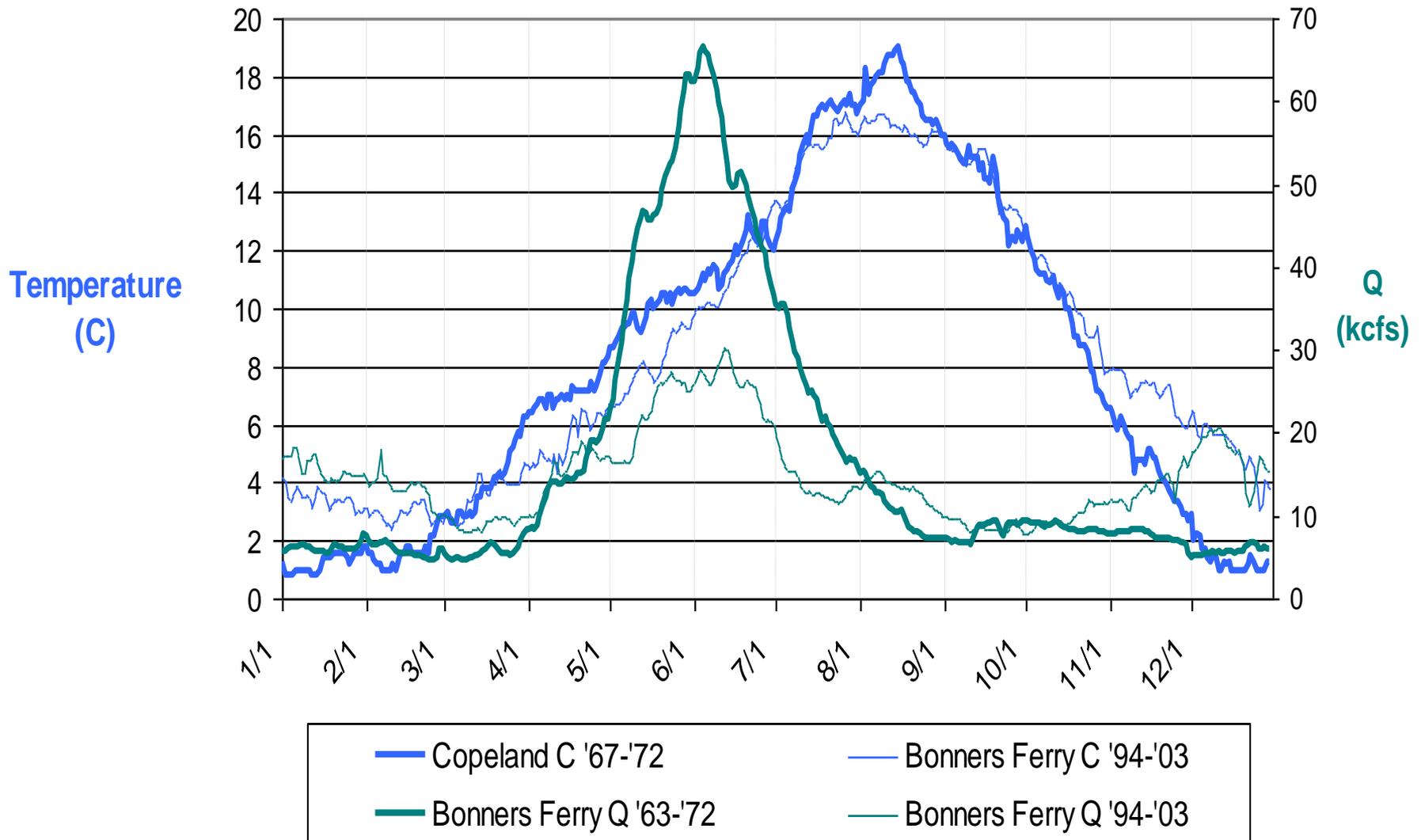
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US Army Corps of Engineers  
 Seattle District

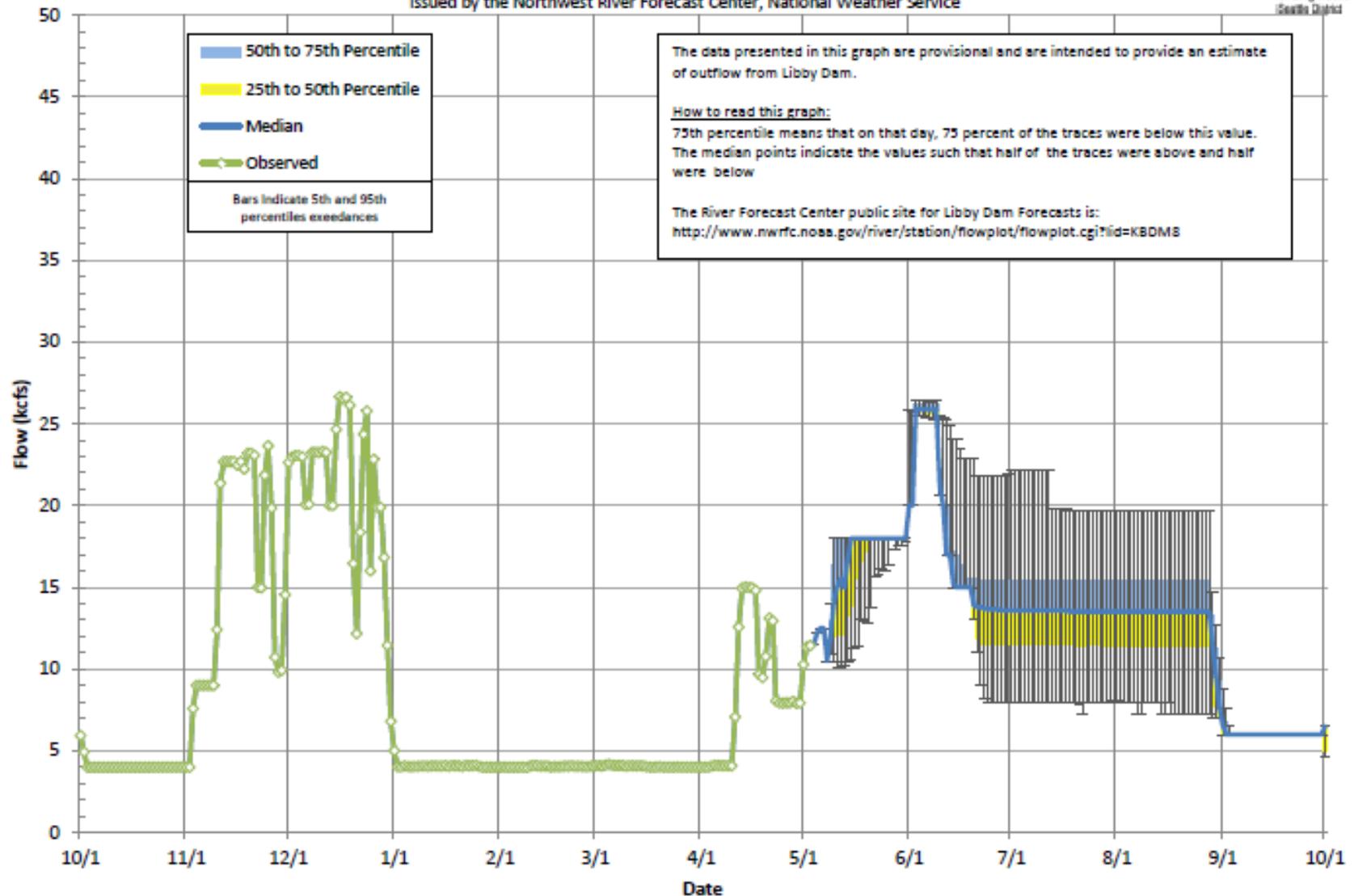


# Kootenai River Temperature and Flow Pre-Libby Dam vs Post-Libby Dam



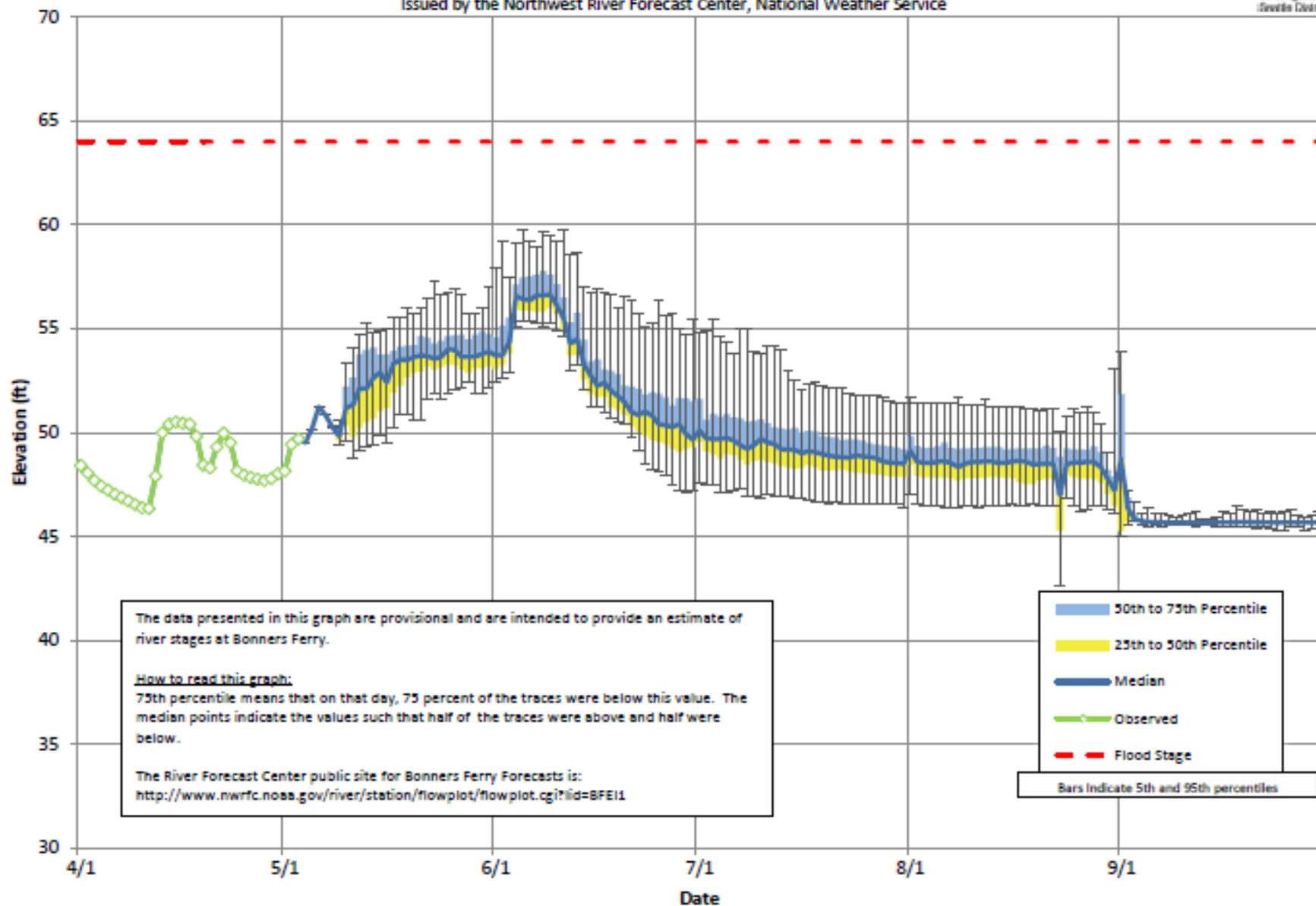
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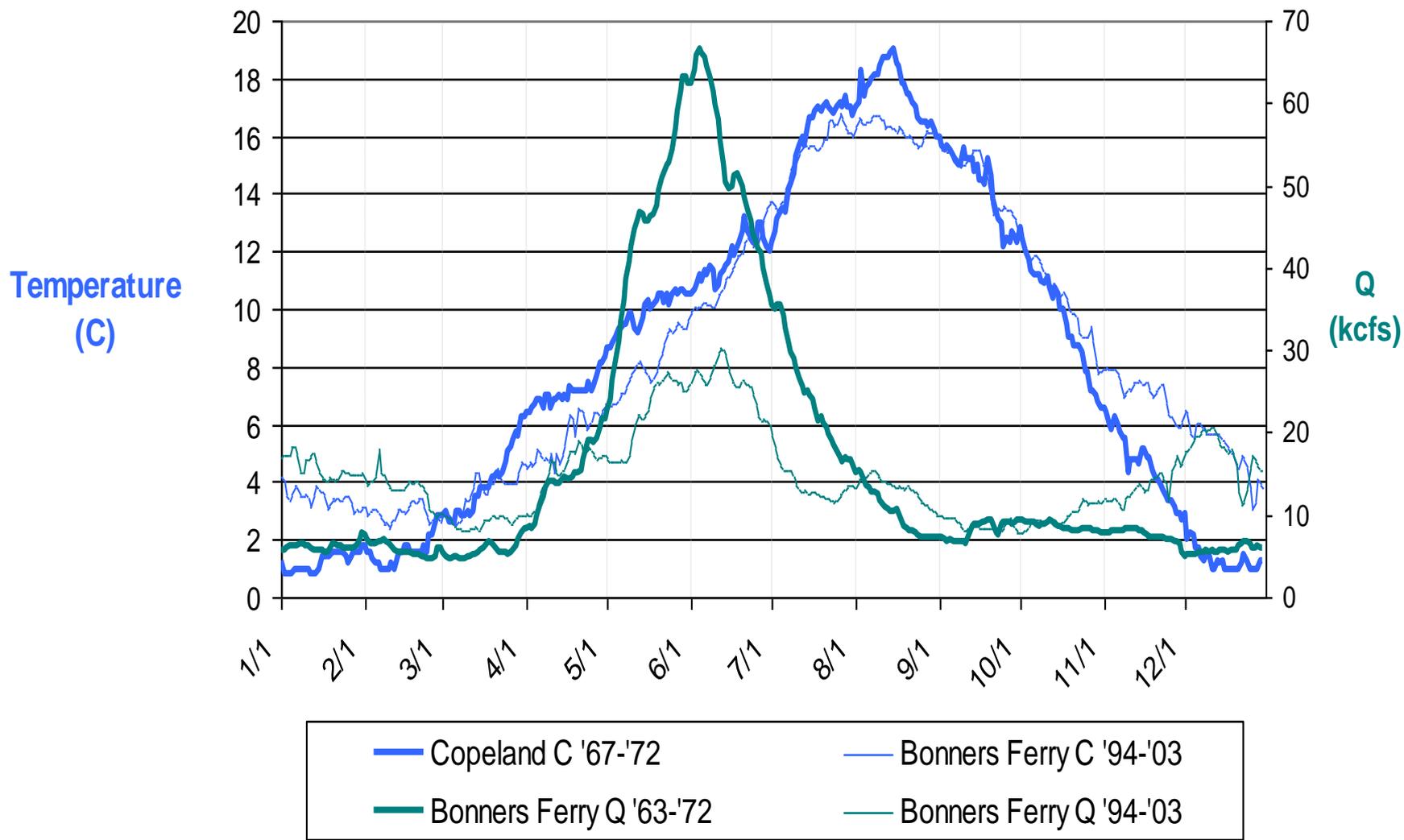


### Bonniers Ferry Stage

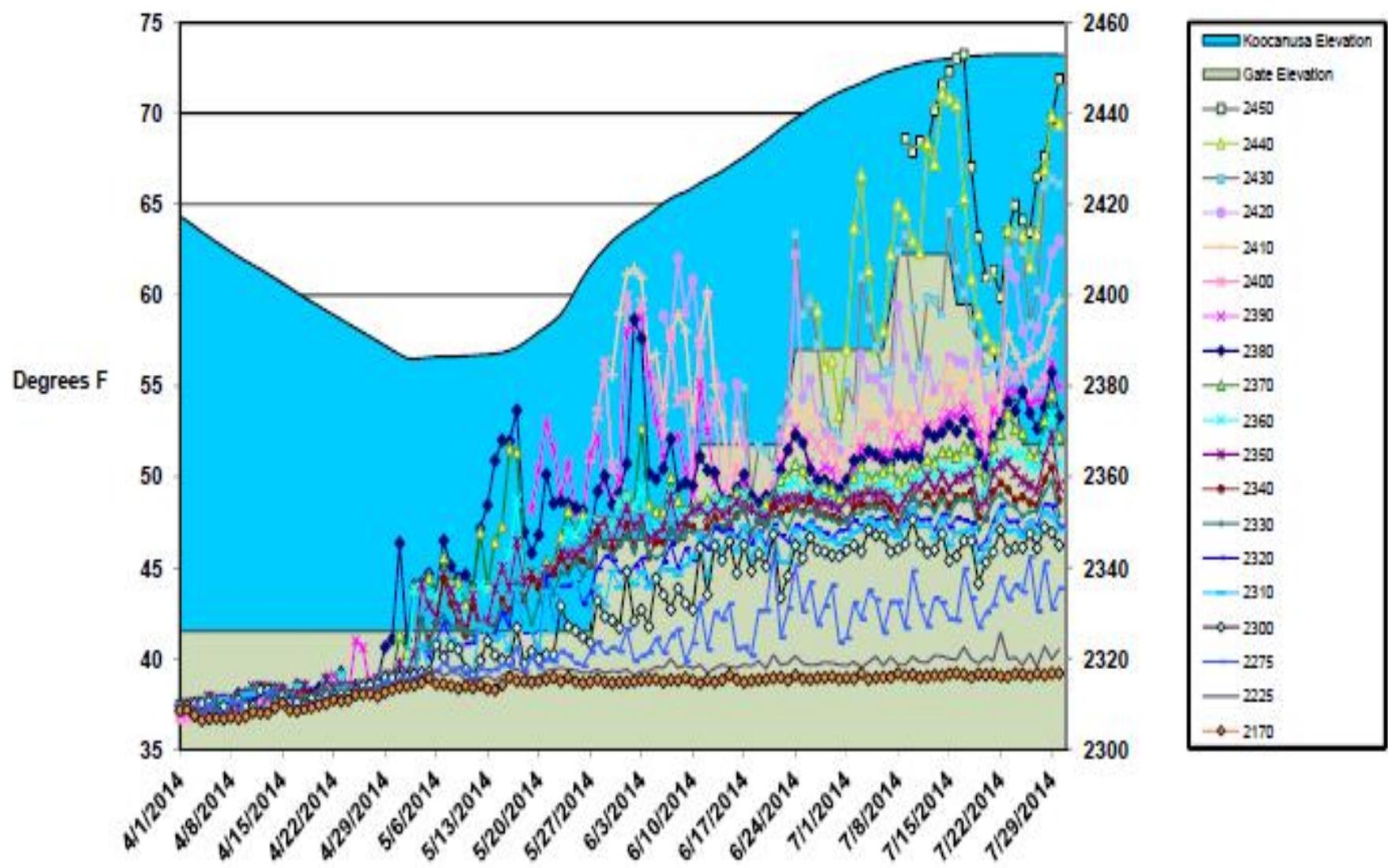
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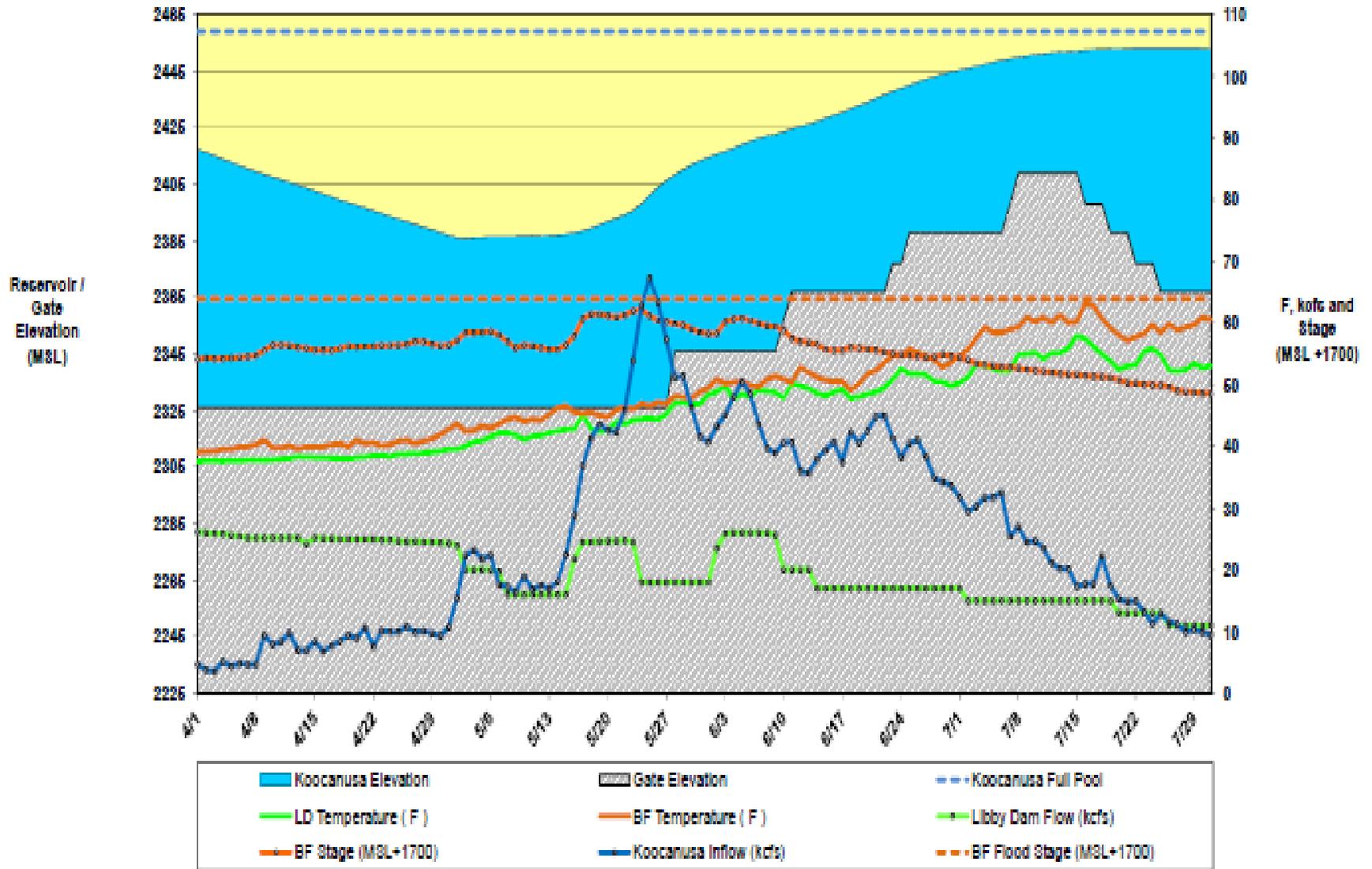
# Kootenai River Temperature and Flow Pre-Libby Dam vs Post-Libby Dam



### Koocanusa Reservoir Temperatures 2014 Sturgeon (1 April - 31 July)



### Kootenai River and Kootenai Reservoir Temperatures 2014 Sturgeon (1 April - 31 July)



Kootenai River and Koocanusa Reservoir  
Flow and Elevation  
2006 - 2014

