Blackfoot Water Supply Report
June 10th, 2016

Montana Water Supply Report as of June 1st, 2016 (from NRCS):
http://www.nrcs.usda.gov/wps/portal/nrcs/main/mt/snow/waterproducts/basin/

Overview

"According to NRCS, at this time of year 25 to 50 percent of the annual snowpack typically remains to enter the river systems, but this year only 10 to 40 percent of the annual snowpack peak remains on June 1. The early melt has resulted in reservoir storage across the state that is near or above average in all basins, as reservoir managers have been able to capture the snow water runoff in reservoirs. "For irrigators and water users that rely on river systems with reservoir storage this is good news, said Lucas Zukiewicz, NRCS water supply specialist. "However, for water users that rely on naturally flowing streams the early melt has left less water available as we enter summer and stream flows could decline earlier than average due to the lack of available snow water in the 'mountain reservoir.' On these streams summer precipitation will play a critical role in streamflows later this summer."

Those statements sum up our concerns for another drought-impacted summer. Summer precipitation could be critical for the Blackfoot as we look at the potential need for drought response action early in the summer for a second year in a row.

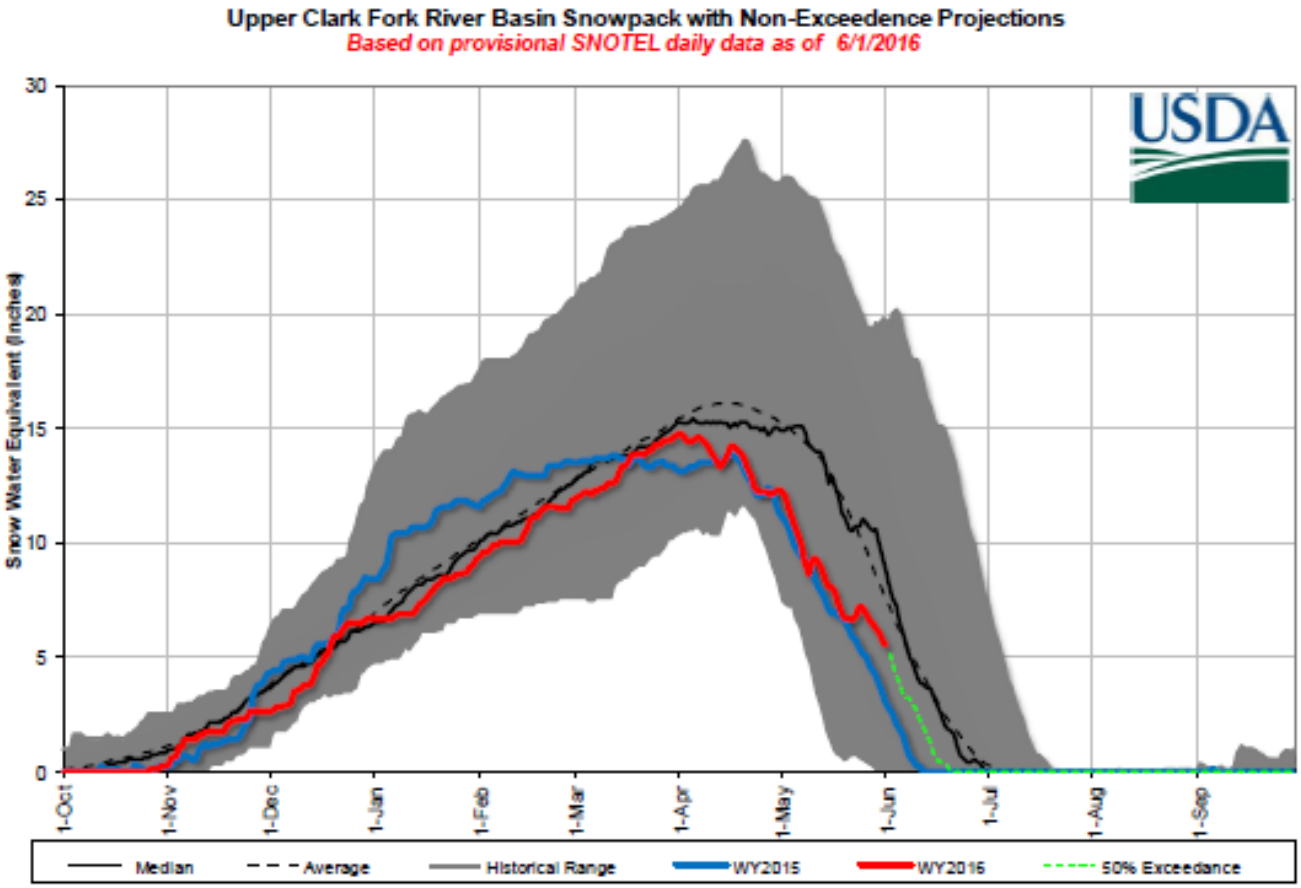
Upper Clark Fork River Basin Overview

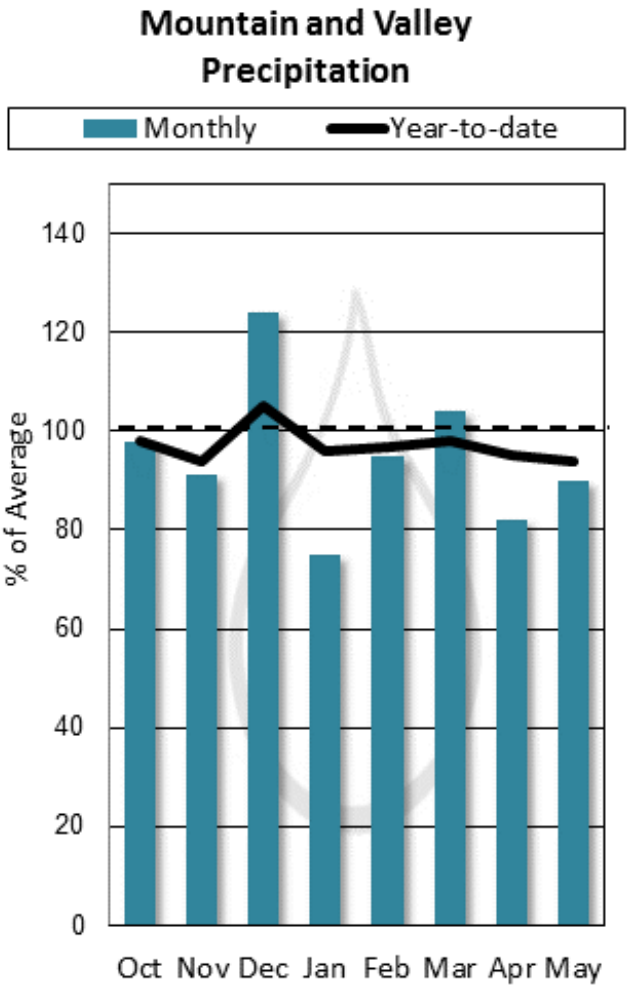
The snowpack in the Upper Clark Fork River basin trended relatively close to normal until about April of this year. After peaking early and experiencing above average temperatures in April the snowpack melted quickly. Several mid- elevation SNOTEL sites were melted out by mid-April. By the end of the first week in May the basin wide snowpack was fairing worse than last year at that time. Fortunately a late May storm delivered significant snow water at high elevations within the basin. North Fork Jocko SNOTEL (6330 ft), near the headwaters of the Clearwater River, received over 2.0 inches of snow water overnight on May 24th.

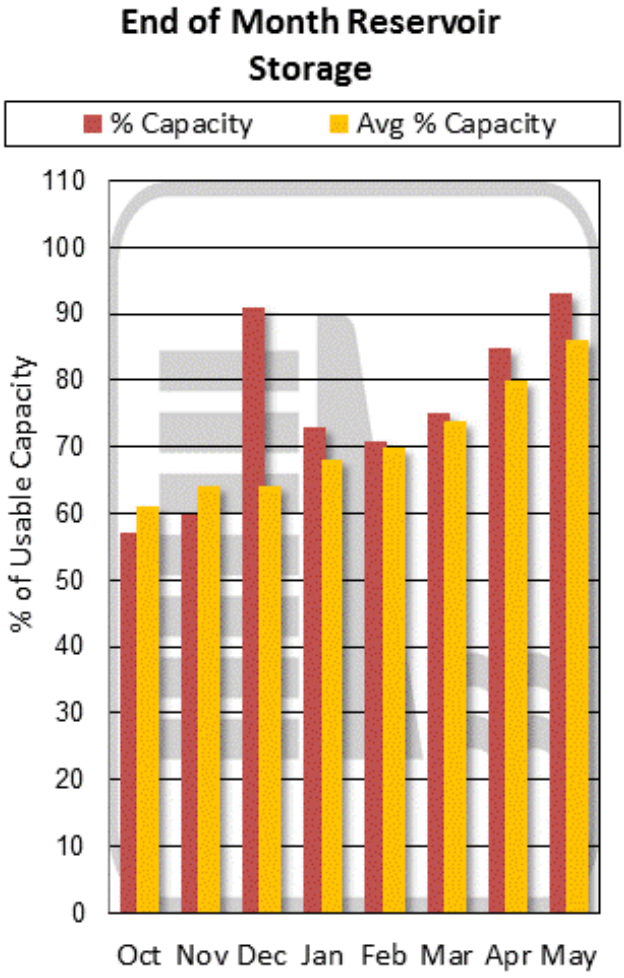
Arriving as snow at upper elevations the late May storm brought rain to lower elevations. Warm Springs SNOTEL (7800 ft) received over 2 inches of rain from May 19th to the 25th. Currently water-year-to date precipitation in the basin is at 94% of average. Mountain SNOTEL sites received 95% of average precipitation for the month of May, while valley weather stations received 37% of average precipitation in the Upper Clark River basin.

Most streams in the Upper Clark Fork River basin experienced a snowmelt driven peak during the last week of April. Streams had a second snowmelt driven peak during second week of May that was in general lower than the earlier peak in April. The Clark Fork River above Missoula had a second and larger peak on May 10th which was snowmelt driven and rain influenced. The high water near the end of May was primarily rain driven. Current basin-wide streamflows for the 50% exceedance are 79% of average for the June-July time period.

Upper Clark Fork Basin







Upper Clark Fork Basin Snowpack Analysis

Watershed Snowpack Analysis June 1, 2016	# of Sites	% Median	Last Year % Median
CLARK FORK ab FLINT CREEK	5	87	56
FLINT CREEK	4	33	0
ROCK CREEK	2	0	0
CLARK FORK ab BLACKFOOT	10	70	44
BLACKFOOT	5	83	39
UPPER CLARK FORK RIVER BASIN	14	78	43

Reservoir Storage

Reservoir storage is above average in the basin for this date, and at or approaching capacity at many reservoirs in the basin.

Reservoir Storage End of May, 2016	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
East Fork Rock Creek Res	13.6	10.8	10.6	15.6
Georgetown Lake	31.2	29.9	29.1	31.0
Lower Willow Creek Reservoir		4.4	4.7	4.9
Nevada Creek Res	10.0	9.9	10.9	12.6
Basin-wide Total	54.8	50.6	50.6	59.2
# of reservoirs	3	3	3	3

Streamflow Forecast

Current basin-wide streamflows for the 50% exceedance are 79% of average for the June-July time period.

Upper Clark Fork River Basin
Streamflow Forecasts - June 1, 2016

Forecast Exceedance Probabilities for Risk Assessment
Chance that actual volume will exceed forecast

UPPER CLARK FORK RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Little Blackfoot nr Garrison								
	JUN-JUL	10.8	19.3	25	86%	31	39	29
	JUN-SEP	14.5	24	31	86%	38	48	36
Flint Ck nr Southern Cross								
	JUN-JUL	2.7	4.9	6.4	94%	7.9	10.1	6.8
	JUN-SEP	3.8	6.8	8.8	98%	10.8	13.8	9
Flint Ck bl Boulder Ck								
	JUN-JUL	15.3	23	29	94%	35	43	31
	JUN-SEP	24	35	42	95%	49	60	44
Lower Willow Ck Reservoir Inflow[2]								
	JUN-JUL	0.26	1.65	2.6	72%	3.5	4.9	3.6
	JUN-SEP	0.81	2.4	3.4	76%	4.5	6	4.5
MF Rock Ck nr Philipsburg								
	JUN-JUL	16.1	24	29	85%	34	41	34
	JUN-SEP	21	30	35	85%	41	49	41
Rock Ck nr Clinton								
	JUN-JUL	60	90	110	84%	131	161	131
	JUN-SEP	81	115	139	85%	162	197	164
Clark Fork R ab Milltown								
	JUN-JUL	105	179	230	85%	280	350	270
	JUN-SEP	154	240	300	85%	360	450	355
Nevada Ck nr Helmville								
	JUN-JUL	0.87	2.3	3.2	55%	4.2	5.6	5.8
	JUN-SEP	1.66	3.3	4.4	61%	5.5	7.1	7.2
Blackfoot R nr Bonner								
	JUN-JUL	163	205	235	72%	265	310	325
	JUN-SEP	225	270	305	75%	335	385	405
Clark Fork R ab Missoula								
	JUN-JUL	290	390	460	77%	530	630	595
	JUN-SEP	405	525	605	79%	685	805	765

1) 90% and 10% exceedance probabilities are actually 95% and 5%
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
3) Median value used in place of average

Snow Water Equivalent: June 10, 2016

Columbia River Basin SNOTEL Snow / Precipitation Update Report

Based on Mountain Data from NRCS SNOTEL Sites

Provisional data, subject to revision

Data based on the first reading of the day (typically 00:00) for Friday, June 10, 2016

Basin Site Name	Elev (ft)	Snow Water Equivalent			Water Year-to-Date Precipitation		
		Current (in)	Median (in)	Pct of Median	Current (in)	Average (in)	Pct of Average
UPPER CLARK FORK RIVER BASIN							
Barker Lakes	8250	1.6	5.3	30	22.0	26.0	85
Basin Creek	7180	0.1	0.0	*	19.5	17.7	110
Black Pine	7210	0.0	0.0	*	18.5	19.6	94
Combination	5600	0.0	0.0	*	12.7	14.2	89
Copper Bottom	5200	0.0	N/A	*	17.3	19.9	87
Copper Camp	6950	0.0	N/A	*	28.4	39.0	73
Lubrecht Flume	4680	0.0	0.0	*	13.7	14.7	93
Nevada Ridge	7020	0.0	0.0C	*	19.9	22.4C	89
N Fk Elk Creek	6250	0.0	0.0	*	17.3	20.1	86
North Fork Jocko	6330	2.9	8.4	35	57.0	57.1	100
Peterson Meadows	7200	0.0	0.0	*	23.6	20.0C	118
Rocker Peak	8000	0.0	5.5	0	20.0	21.7	92
Skalkaho Summit	7250	0.0	2.0	0*	26.1	29.8	88
Stuart Mountain	7400	2.6	12.7C	20	37.1	39.8C	93
Warm Springs	7800	6.3	12.4	51	29.3	31.7	92
Basin Index (%)				**29***			**92**

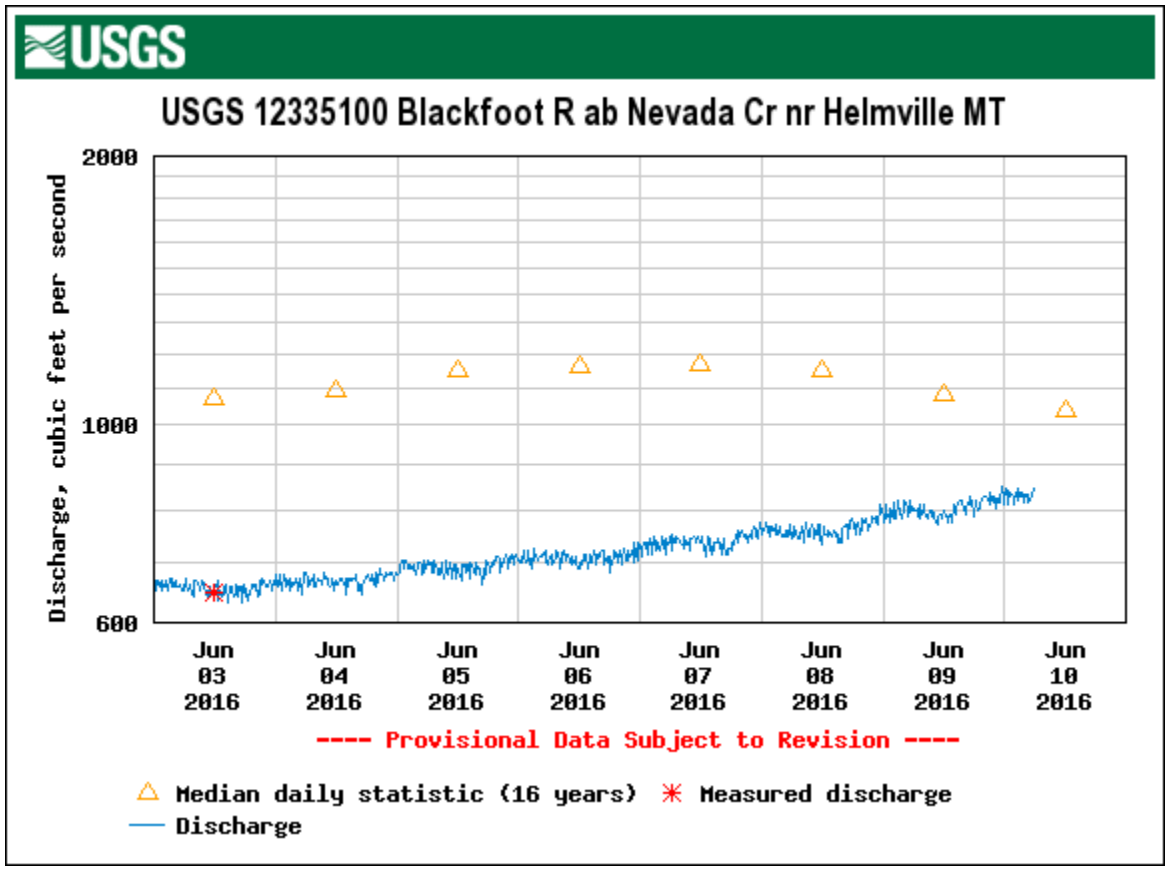
-M = Missing data.
* = Analysis may not provide a valid measure of conditions.
C = Conditional, only 10-19 years of data available.
R = Rough, less than 10 years of data available.

If the Basin Index (%) percent value is flagged as potentially invalid, care should be taken to evaluate if the value is representative of conditions in the basin.
The SNOW WATER EQUIVALENT represents the depth of water in the snowpack, if the snowpack were melted, expressed in inches.

JUNE 10, 2016: USGS Real Time Flow Conditions

Blackfoot River above Nevada Creek Near Helmville

Discharge, cubic feet per second
Most recent instantaneous value: 846 06-10-2016 05:45 MDT



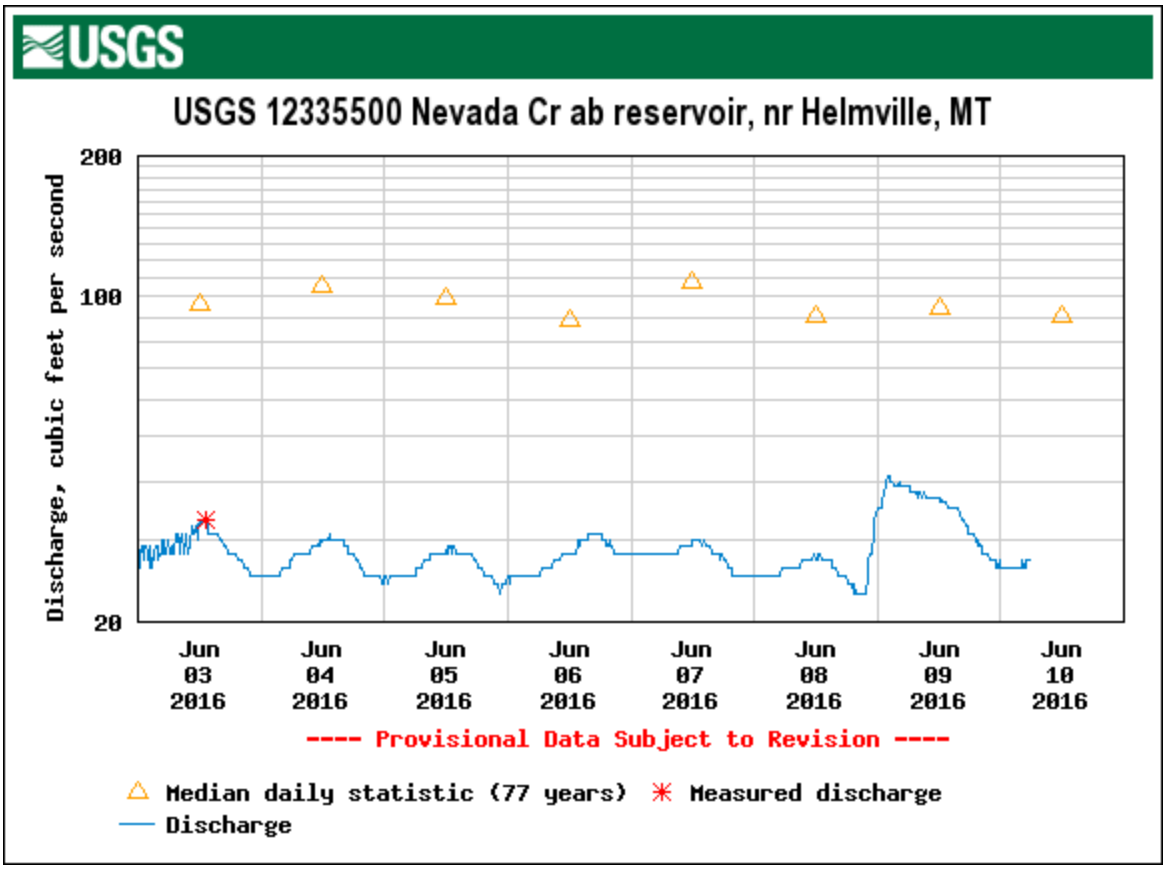
Daily discharge, cubic feet per second -- statistics for Jun 10 based on 16 years of record more

Min (2001)	Most Recent Instantaneous Value Jun 10	25th percen-tile	Median	Mean	75th percen-tile	Max (2011)
541	846	853	1040	1240	1340	4330

Nevada Creek

Discharge, cubic feet per second

Most recent instantaneous value: 27 06-10-2016 05:45 MDT



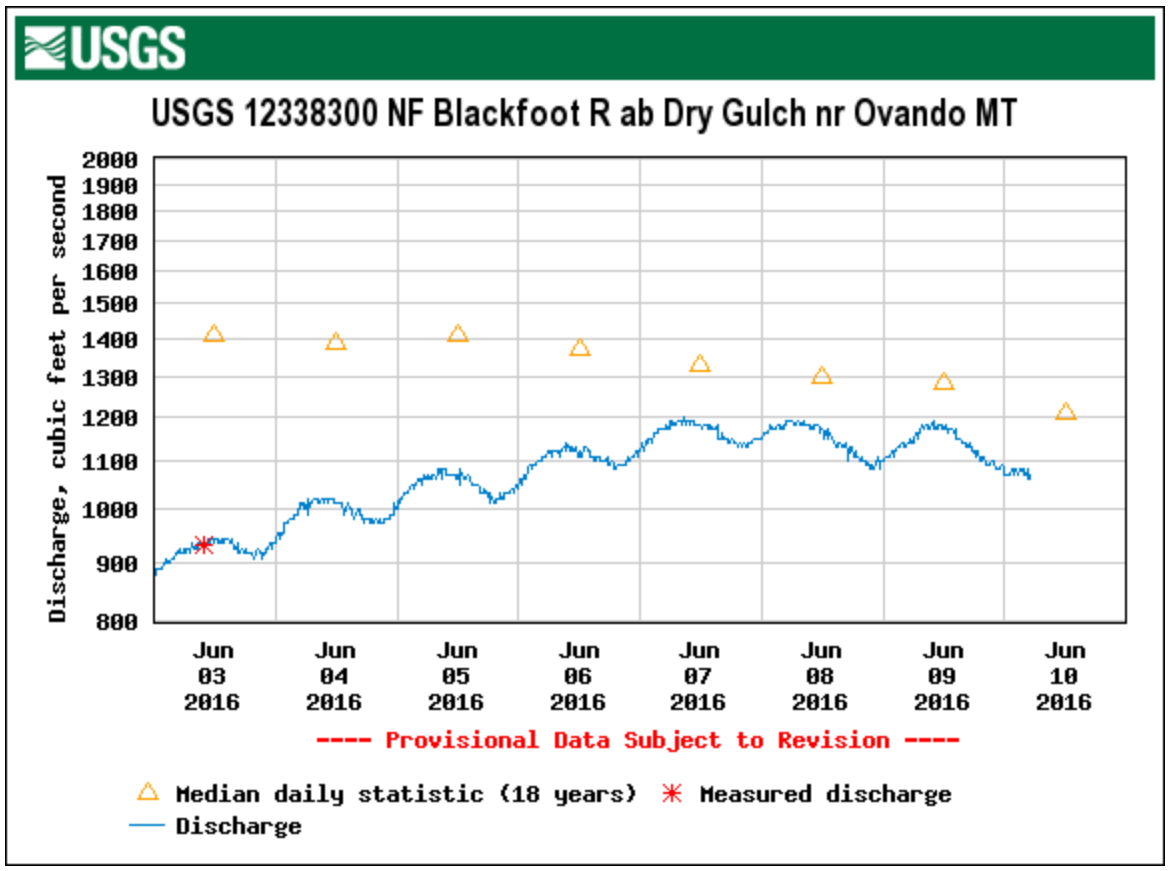
Daily discharge, cubic feet per second -- statistics for Jun 10 based on 77 years of record more

Min (1977)	Most Recent Instantaneous Value Jun 10	25th percen-tile	Median	Mean	75th percen-tile	Max (2011)
11	27	41	91	113	132	628

North Fork Blackfoot

Discharge, cubic feet per second

Most recent instantaneous value: 1,060 06-10-2016 05:00 MDT



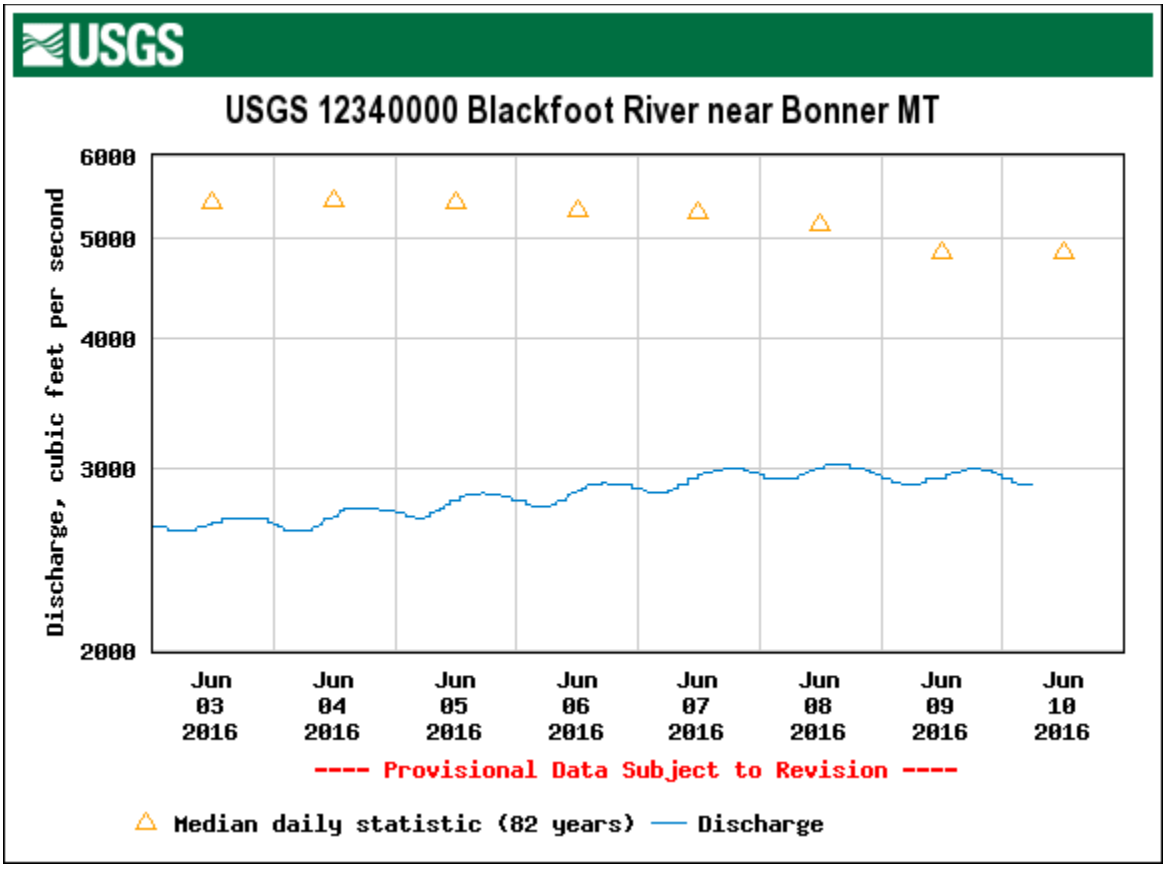
Daily discharge, cubic feet per second -- statistics for Jun 10 based on 18 years of record more

Min (1998)	25th percen-tile	Most Recent Instantaneous Value Jun 10	Median	Mean	75th percen-tile	Max (2011)
649	972	1060	1210	1300	1420	3240

Blackfoot River at Bonner

Discharge, cubic feet per second

Most recent instantaneous value: 2,890 06-10-2016 05:45 MDT



Daily discharge, cubic feet per second -- statistics for Jun 10 based on 82 years of record more

Min (1987)	Most Recent Instantaneous Value Jun 10	25th percen-tile	Median	Mean	75th percen-tile	Max (1964)
1360	2890	3610	4850	5530	6110	18000

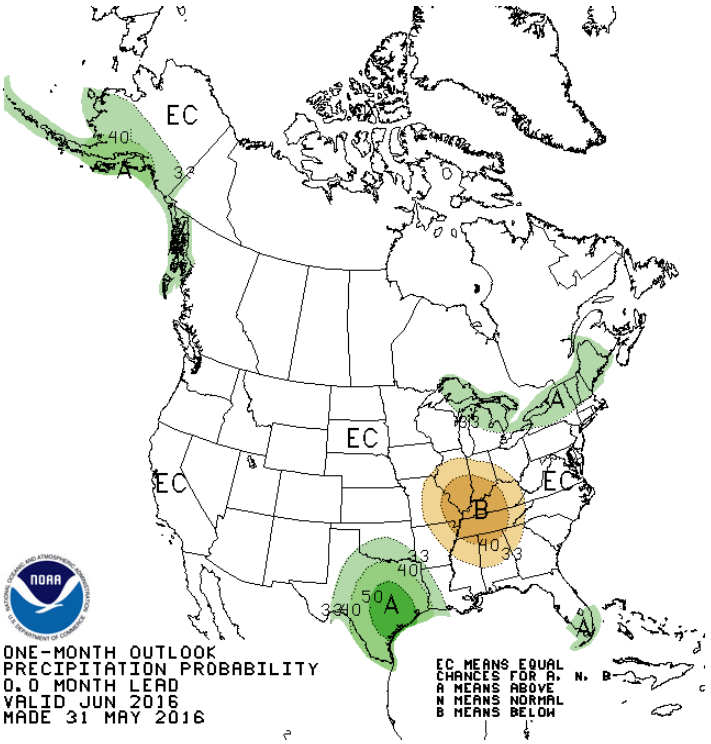
One Month Outlook
June 10th, 2016

From

National Weather Service Climate Prediction Center

http://www.cpc.ncep.noaa.gov/

Equal chance of experiencing above normal, normal, or below normal precipitation for the next 30 days.



High chance to experience above normal temperatures for the next 30 days.