

# Blackfoot Water Supply Report

## April 6, 2018

Montana Water Supply Report as of April 1<sup>st</sup>, 2018 (from NRCS):

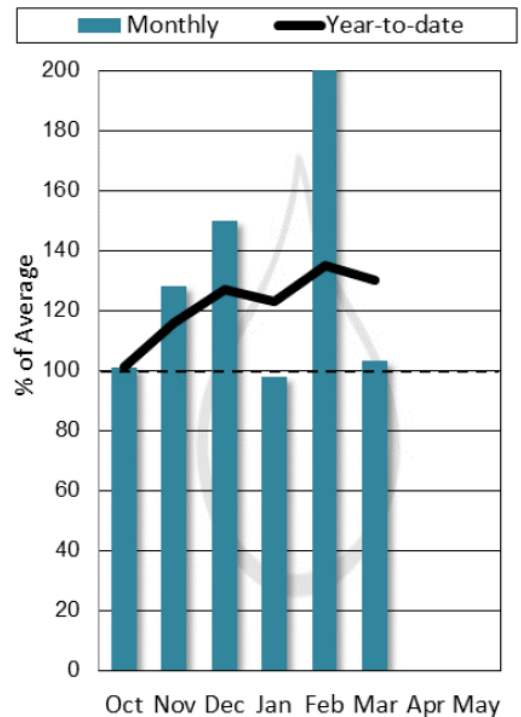
<https://www.nrcs.usda.gov/wps/portal/nrcs/mt/snow/waterproducts/basin/>

### Overview

One thing is for sure; it's been a snowy winter across the state of Montana. Unlike February, snowfall wasn't record-breaking in the state during March, but it was sufficient to keep the snowpack near to well above normal on April 1. A pattern shift occurred over the month weather-wise, with southwest flow finally delivering snowfall to the southwest portion of the state, especially in the Red Rocks River basin, which was the only region that was well below normal last month. Fortunately, conditions improved over the month in this region, and now all river basins across the state have a snowpack that is AT LEAST normal for today's date. Last month, records were set for both monthly totals for February snowfall, and for total snowpack accumulation on March 1. Many snowpack measuring locations that feed Montana's rivers and streams remain record for April 1. 10 SNOwpack TELemetry and snowcourse locations remain the highest on record for this date, and 12 measurement locations are the second highest on record. These sites can be found in the mountains that feed the Upper Yellowstone River, Upper Clark Fork and Missouri Mainstem River basins, where snowfall has been abundant throughout the winter months. There is still a lot more winter yet to come for the mountains across the state, and many measurement locations have already reached, or exceeded, the normal amount of snow water that is typically contained in the snowpack before runoff occurs. How are we comparing to other big snowpack years? A few years that could be referenced as comparable years; 1972, 1997, 2011 and 2014 were all big winters across the state. It is important to note that these year's experienced peak snowpack during late-April to mid-May.

At a few locations in the Clark's Fork of the Yellowstone we have already exceeded the peak snowpack experienced during these years as of April 1st, but in most locations, we still fall below these years with regards to the peak snow water equivalent (SWE). April will be critical in determining how much snow water is available for runoff this spring, and the weather during May and June will largely determine the timing and volumes experienced on a day-to-day and week-by-week basis. Above normal snowpack is great news for long-duration water supply, but water users should be aware that there could be other implications as spring and summer approaches in some basins. The May 1 measurements should provide some insights into what to expect later this runoff season.

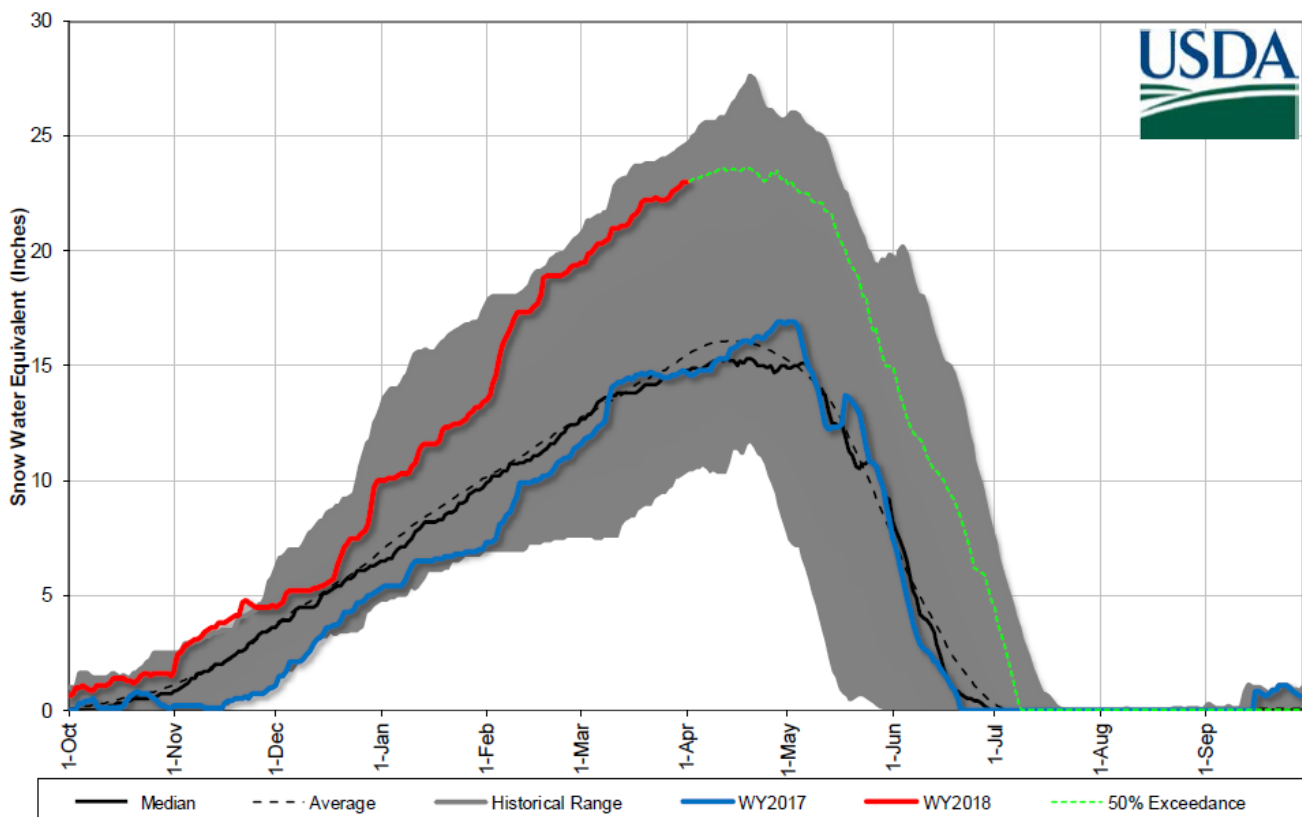
Upper Clark Fork Basin  
Mountain and Valley  
Precipitation



## Upper Clark Fork River Basin Overview

It should be no surprise to residents of the Upper Clark Fork River basin that this winter has brought a significant amount of precipitation. March was actually near average, but overall precipitation has been well above average since October 1. This has resulted in record amounts of snow in some parts of the Upper Clark Fork River basin. Currently, all NRCS snow sites have a well above normal snowpack, and many of the basin's sites have a record snowpack for today's date. Ten Mile Creek Lower Snow Course has its deepest snowpack in 83 years of record. Frohner Meadows SNOTEL south of Helena currently has nearly double the amount of snow water it typically peaks at in mid-April. The snowpack in the basin is currently trending similar to big years such as 1997, 2011, 2014, and is most similar to conditions in 1982. This will no doubt be a big runoff year in the Upper Clark Fork River basin. As of April 1, streamflows are forecasted to be significantly above average this season. The timing of runoff and volume will depend on day-to-day and week-to-week weather, so water users are strongly advised to read the May 1, 2018, NRCS Water Supply Outlook Report.

Upper Clark Fork River Basin Snowpack with Non-Exceedance Projections  
Based on provisional SNOTEL daily data as of 4/1/2018



## Upper Clark Fork River Basin Data Summary

<b>Snowpack</b>	<b>Percent of 1981-2010 Normal (Median)</b>	<b>Last Year Percentage of Normal (Median)</b>
CLARK FORK ab FLINT CREEK	153%	85%
FLINT CREEK	160%	96%
ROCK CREEK	146%	106%
CLARK FORK ab BLACKFOOT	153%	90%
BLACKFOOT	161%	96%
<b>Basin-Wide</b>	<b>156%</b>	<b>92%</b>

<b>Precipitation</b>	<b>Monthly Percentage of Average</b>	<b>WYTD Percentage of 1981-2010 Average*</b>	<b>WYTD Last Year Percentage of Average</b>
Mountain Precipitation	104%	131%	114%
Valley Precipitation	49%	88%	139%
<b>Basin-Wide Precipitation</b>	<b>103%</b>	<b>130%</b>	<b>114%</b>

\*Water Year-to-Date (WYTD) Precipitation is October 1st - Current

### Reservoir Storage

Abundant snowpack in the mountains in many river basins has almost assured average to well above average runoff this spring and summer. The questions that remain are; when will the runoff begin, and how quickly will it melt? The snowpack of 2011 was accompanied by record spring precipitation, which combined with downstream flooding on the Missouri in neighboring states, compounded the reservoir management in Montana. On the other hand, the large snowpack of 2014 experienced runoff in an ideal fashion. Periods of melt were slowed by cool weather, which caused a slow release of the well above normal snowpack into the rivers and streams. With these scenarios in mind, some water managers are opting to take the conservative approach with regards to operations to make sure that agricultural water supply is available when needed but also providing room in the reservoirs to mitigate the impacts of potential high water. Reservoir management is a complicated process with various stakeholders involved. The good news is there will be plenty of water to fill the reservoirs in the state. Managing the inflows and outflows for multiple uses will be the tricky part.

### **End of Month Storage**

	<b>Current (KAF)</b>	<b>Last Year (KAF)</b>	<b>Average (KAF)</b>	<b>Capacity (KAF)</b>	<b>% Average</b>	<b>% Capacity</b>
East Fork Rock Creek Res	9.1	9.0	9.1	15.6	101%	59%
Georgetown Lake	27.0	28.9	27.8	31.0	97%	87%
Lower Willow Creek Reservoir			3.0	4.9		
Nevada Creek Res	8.6	9.8	7.7	12.6	111%	68%







<b>Reservoir Storage</b>	<b>Percentage of Average</b>	<b>Percentage of Capacity (Total)</b>	<b>Last Year Percentage of Average</b>
<b>Basin-Wide Storage</b>	<b>100%</b>	<b>76%</b>	<b>107%</b>

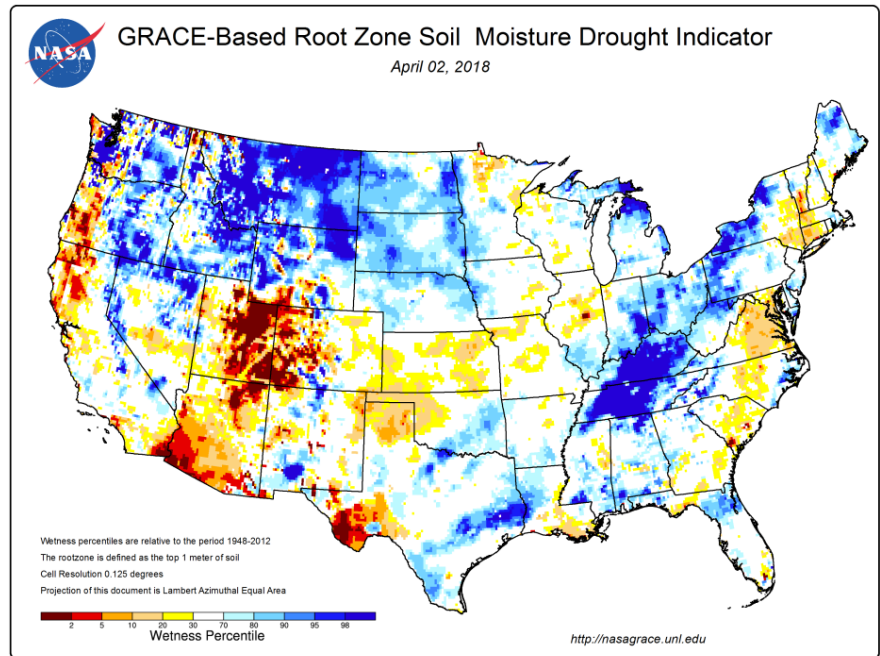
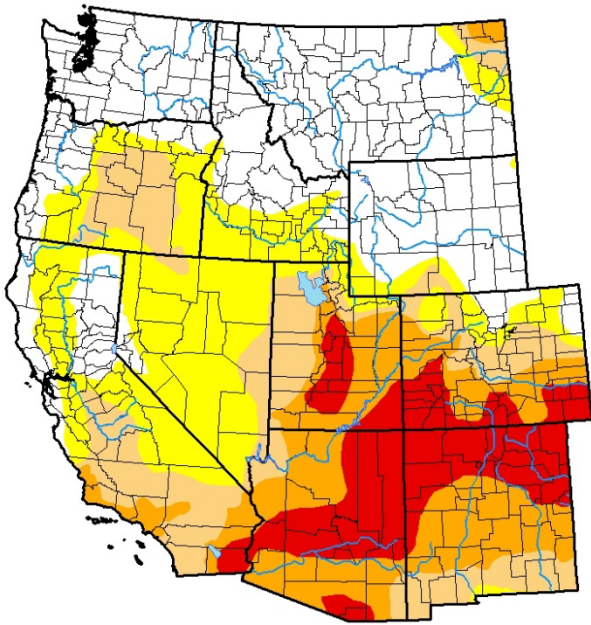
\*See Reservoir Storage Table for storage in individual reservoirs

## Montana Drought Monitor – April 6, 2018

## National Root Zone Soil Moisture–Apr. 6, 2018

### Drought Intensities

-  None: No Drought
-  D0: Abnormally Dry
-  D1: Moderate Drought
-  D2: Severe Drought
-  D3: Extreme Drought
-  D4: Exceptional Drought



## Snow Water Equivalent: April 6, 2018

Montana 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, April 06, 2018							
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
<b>UPPER CLARK FORK RIVER BASIN</b>							
Barker Lakes	8250	20.3	14.5	140	15.5	16.2	96
Basin Creek	7180	11.1	8.0	139	8.8	9.8	90
Black Pine	7210	17.7	9.8	181	19.7	13.4	147
Combination	5600	7.1	3.9	182	12.2	9.0	136
Copper Bottom	5200	13.9	N/A	*	23.5	15.6	151
Copper Camp	6950	42.0	N/A	*	32.7	31.4	104
Lubrecht Flume	4680	8.9	0.7	1271	16.7	10.1	165
Nevada Ridge	7020	26.2	14.3 <sub>c</sub>	183	23.2	15.9 <sub>c</sub>	146
N Fk Elk Creek	6250	19.3	10.8	179	20.5	13.8	149
North Fork Jocko	6330	59.8	41.9	143	68.3	46.7	146
Peterson Meadows	7200	15.9	10.1	157	15.9	11.9 <sub>c</sub>	134
Rocker Peak	8000	22.7	13.1	173	19.8	13.8	143
Skalkaho Summit	7250	30.7	22.1	139	27.2	22.2	123
Stuart Mountain	7400	42.3	31.2 <sub>c</sub>	136	39.9	30.9 <sub>c</sub>	129
Warm Springs	7800	35.7	19.7	181	30.7	22.2	138
<b>Basin Index (%)</b>		<b>159</b>			<b>132</b>		

**April 6, 2018, USGS Real Time Flow Conditions**

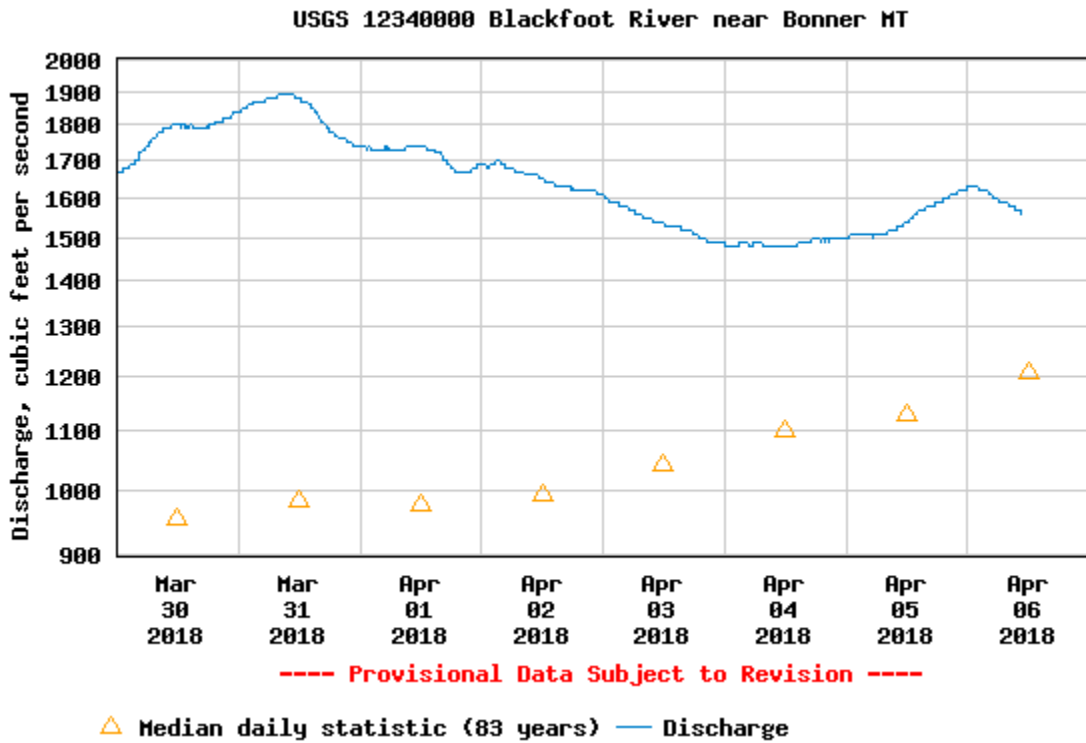
**Nevada Creek (above Reservoir)**

Discharge, cubic feet per second: NO READINGS DUE TO ICE

**Blackfoot River at Bonner**

Discharge, cubic feet per second

Most recent instantaneous value: 1560 04-06-2018 10:45 MDT



Daily discharge, cubic feet per second -- statistics for Apr 6 based on 83 years of record [more](#)

Min (1905)	25th percentile	Median	Mean	Most Recent Instantaneous Value Apr 6	75th percentile	Max (1959)
390	852	1210	1420	1560	1830	3280

# Three-Month Outlook April 6, 2018

From  
National Weather Service Climate Prediction Center  
<http://www.cpc.ncep.noaa.gov/>

Equal chances for above average, below average and normal precipitation for April through June.

Higher chance to experience **below normal** temperatures from April through June.

