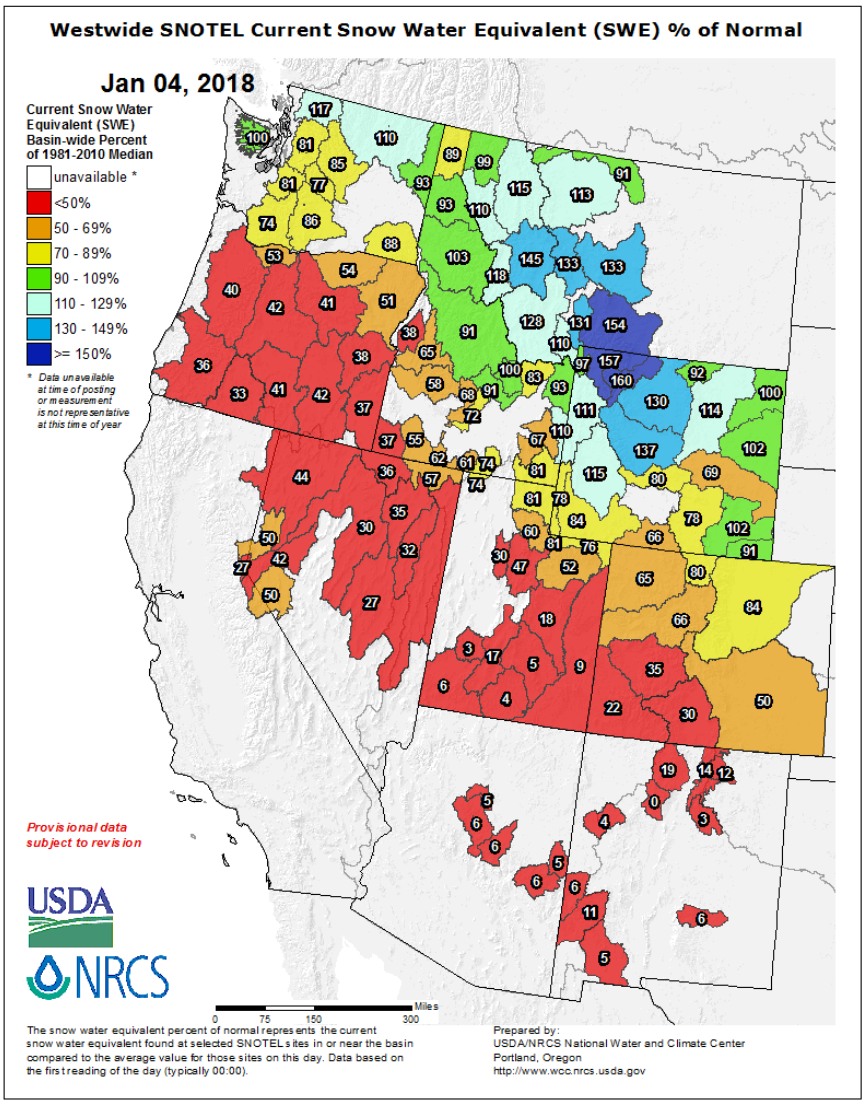
NRCS Natural Resources Conservation Service

USDA

Montana
Water Supply Outlook Report
January 1st, 2018



Compared the rest of the Western United States right now the snowpack in Montana is looking very, very good. Snowpack totals for January 1st, 2018 from snow courses and SNOTEL sites in Montana and the rivers that feed Wyoming are near to well above normal in all basins of the state. Late December snowfall raised basin percentages west of the Divide from below normal to well above from December 15th-January 1st. While this a great start to winter for the water users in the state, it is important to remember that only 30-50% of our seasonal snowfall has occurred by January 1. There is still a lot of winter left for conditions to change, but for now we're off to a great start. Best in the West!

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Montana Water Supply Outlook Report as of January 1st, 2018

How Forecasts Are Made

Most of the annual streamflow in the Western United States originates as snowfall that has accumulated high in the mountains during winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Predictions are based on careful measurements of snow water equivalent at selected index points. Precipitation, temperature, soil moisture and antecedent streamflow data are combined with snowpack data to prepare runoff forecasts. Streamflow forecasts are coordinated by Natural Resources Conservation Service and National Weather Service hydrologists. This report presents a comprehensive picture of water supply conditions for areas dependent upon surface runoff. It includes selected streamflow forecasts, summarized snowpack and precipitation data, reservoir storage data, and narratives describing current conditions.

Snowpack data are obtained by using a combination of manual and automated SNOTEL measurement methods. Manual readings of snow depth and water equivalent are taken at locations called snow courses on a monthly or semi-monthly schedule during the winter. In addition, snow water equivalent, precipitation and temperature are monitored on a daily basis and transmitted via meteor burst telemetry to central data collection facilities. Both monthly and daily data are used to project snowmelt runoff.

Forecast uncertainty originates from two sources: (1) uncertainty of future hydrologic and climatic conditions, and (2) error in the forecasting procedure. To express the uncertainty in the most probable forecast, four additional forecasts are provided. The actual streamflow can be expected to exceed the most probable forecast 50% of the time. Similarly, the actual streamflow volume can be expected to exceed the 90% forecast volume 90% of the time. The same is true for the 70%, 30%, and 10% forecasts. Generally, the 90% and 70% forecasts reflect drier than normal hydrologic and climatic conditions; the 30% and 10% forecasts reflect wetter than normal conditions. As the forecast season progresses, a greater portion of the future hydrologic and climatic uncertainty will become known and the additional forecasts will move closer to the most probable forecast.

Snowpack – Overview

It's with great joy that we can safely sat that Montana and Wyoming have be the best snowpack in the Western United States! Many mountain ranges in Colorado, New Mexico, Arizona, Utah, Nevada and California are experiencing the lowest or second lowest snowpack at SNOTEL sites for the January 1st, 2018 reading. However, all major river basins across the state of Montana are near to above normal for snowpack totals for January 1, with many across the state well above normal (>130%).

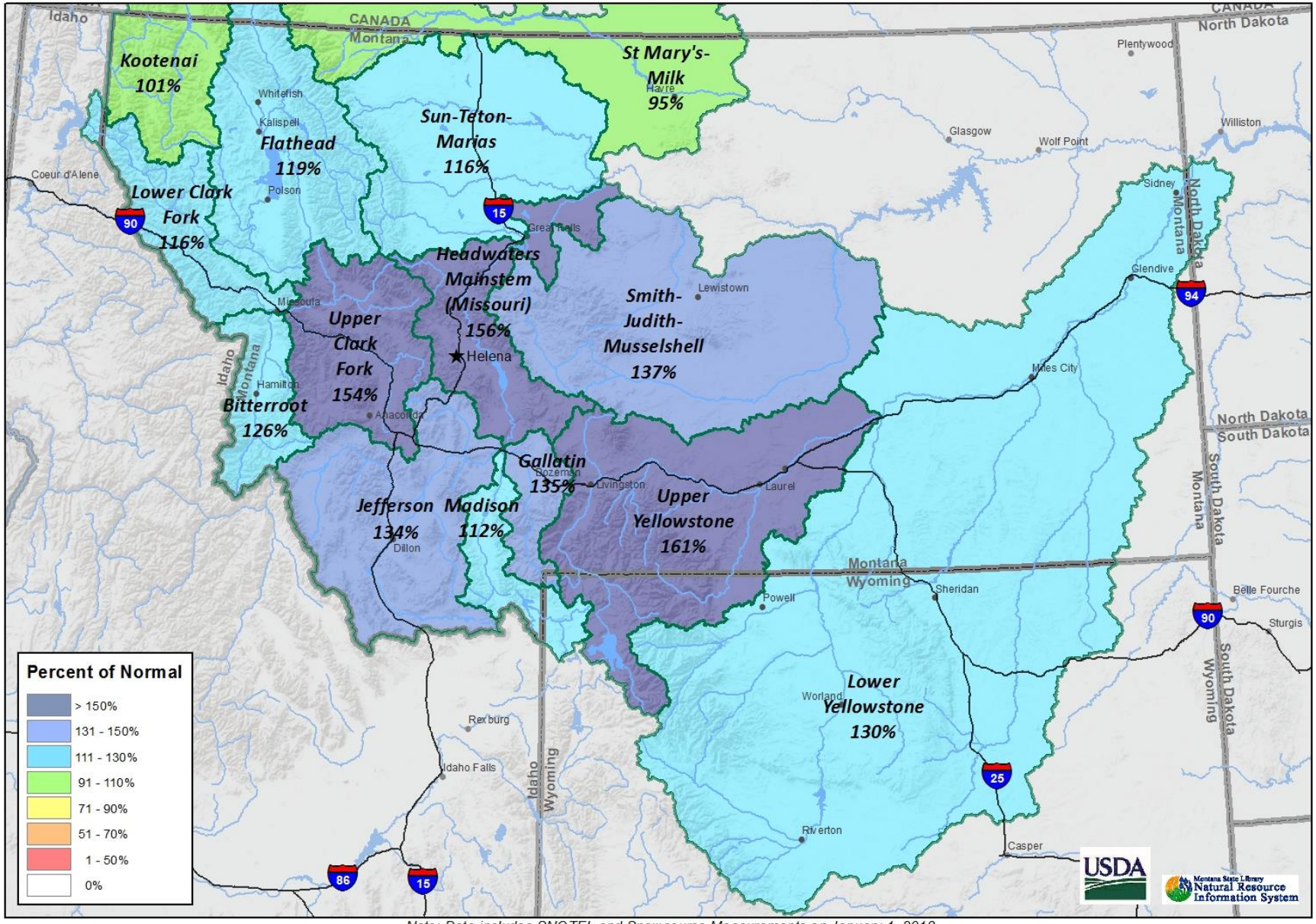
Seasonal snowpack started at high elevations this year sometime between late September and early October, nearly a month earlier than last year in some locations where well above average temperatures and below normal precipitation during the month of November resulted in well below normal snowpack totals on January 1st, 2017. Consistent snowfall across the state during the first three weeks of November gave way to warm and dry weather during the last week of the month, but a return to favorable weather patterns in mid-December resulted in impressive snow totals across the state between December 15th and January 1st. Almost all SNOTEL sites in the state received above normal to well above normal snowfall for the month of December, with most of that falling in the last two weeks. During December a few locations in the Upper Blackfoot River and Flathead River basins experienced the second highest increase in Snow Water Equivalent (SWE) in 35 years of record. Only one area in the Upper Red Rocks River basin in southwest Montana has a snowpack that is below normal for this date. Typically around 30-50% of our total snowfall has occurred by January 1st, so there is a lot of winter left to come. But, it's fair to say that the snowpack across the state is off to a good start.

Snow Water Equivalent

1/1/2018	***% Normal***	***% of Last Year***
Columbia River Basin	126	142
Kootnenai in Montana	101	109
Flathead in Montana	119	124
Upper Clark Fork	154	188
Bitterroot	126	143
Lower Clark Fork	116	135
Missouri River Basin	126	158
Jefferson	134	172
Madison	112	140
Gallatin	135	173
Headwaters Mainstem	156	184
Smith-Judith-Musselshell	137	228
Sun-Teton-Marias	116	121
St. Mary-Milk	95	93
Yellowstone River Basin	145	133
Upper Yellowstone	161	156
Lower Yellowstone	130	113

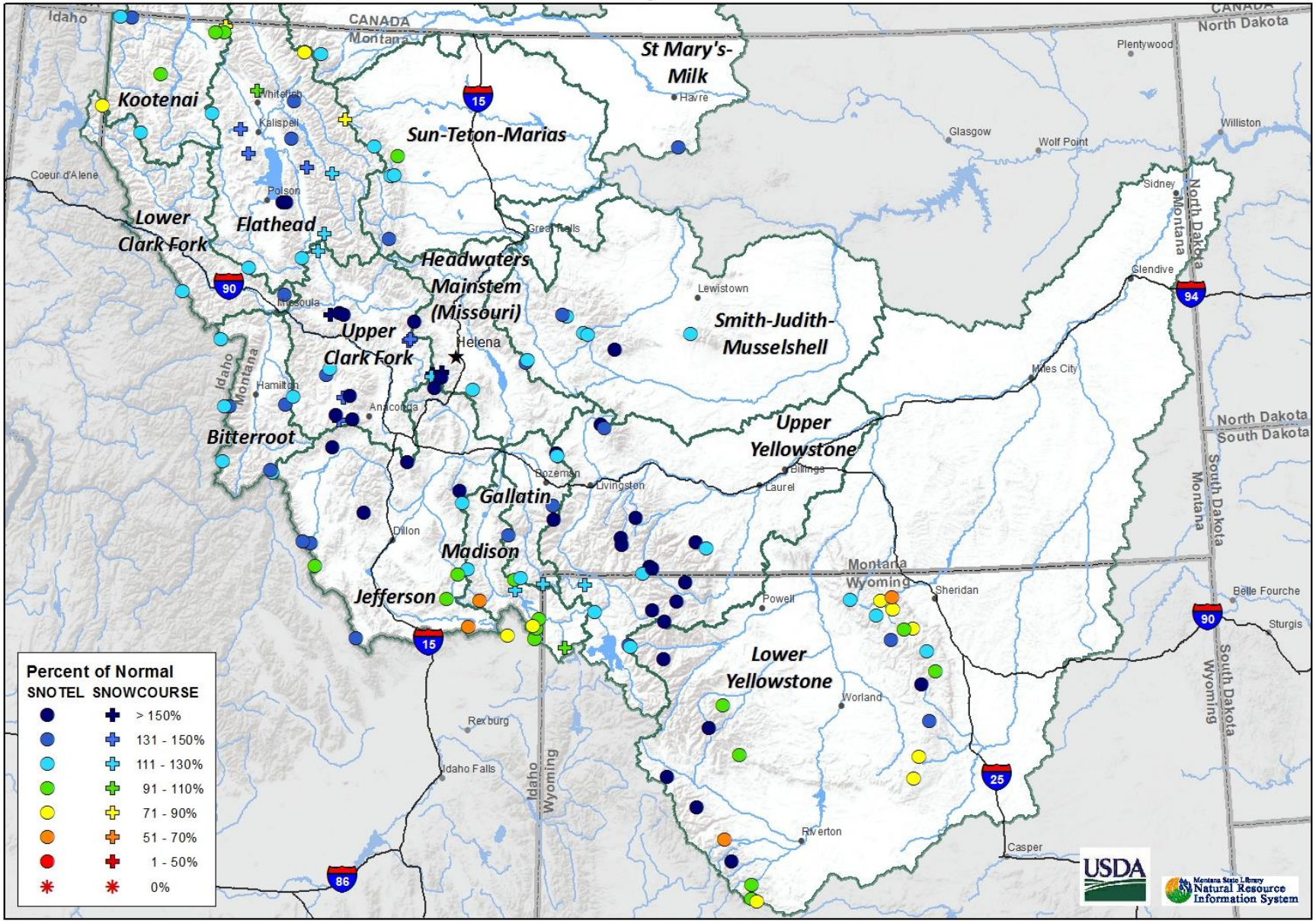
West of Divide	126	142
East of Divide	133	140
Montana State-Wide	130	149

Montana Data Collection Office
Current Snow Water Equivalent
Basin Percentage of Normal - January 1, 2018



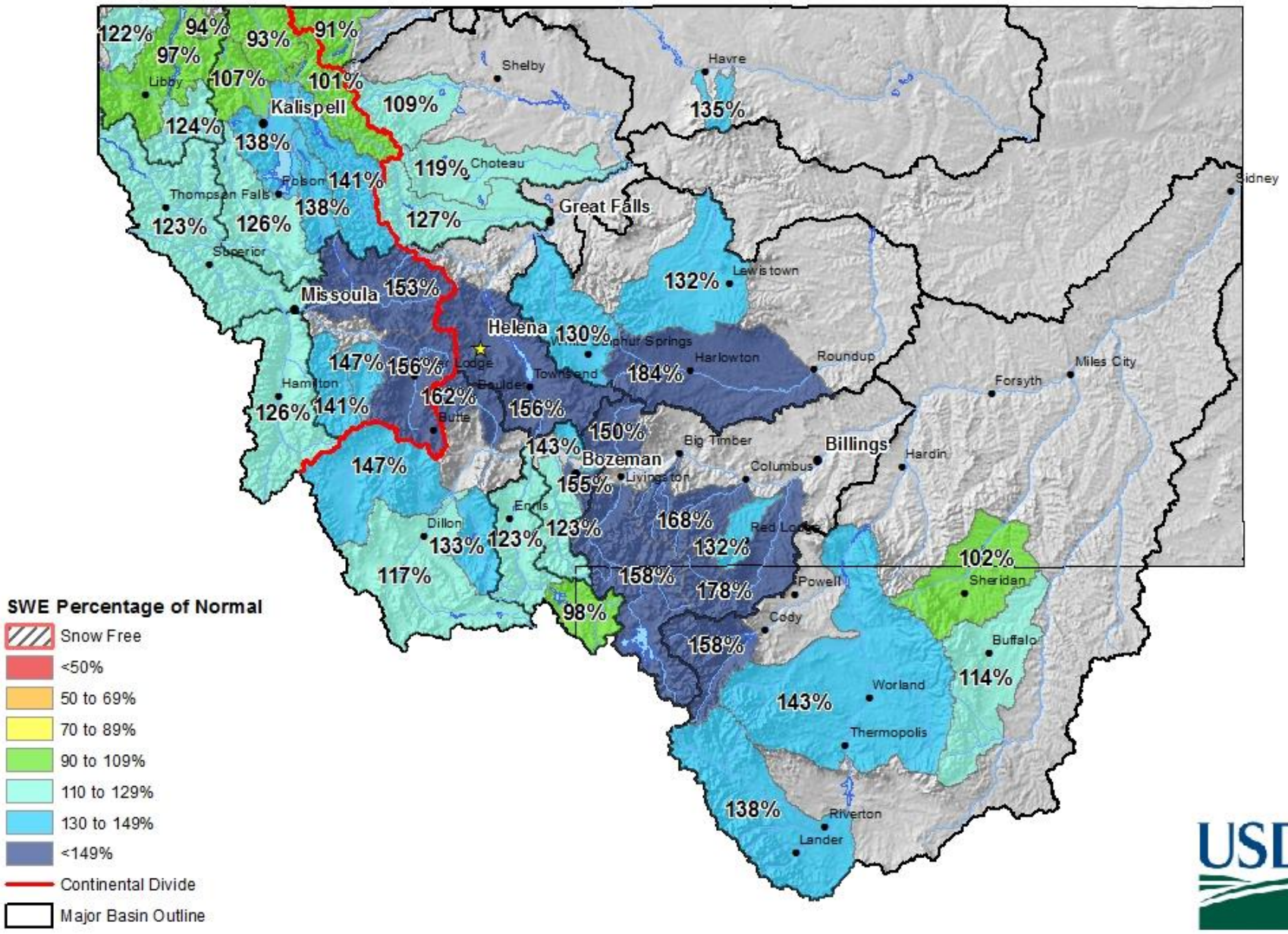
Note: Data includes SNOTEL and Snowcourse Measurements on January 1, 2018

Montana Data Collection Office
Current Snow Water Equivalent
January 1, 2018



Montana Data Collection Office

Sub-Basin Snow Water Equivalent - January 1st, 2018



Precipitation - Overview

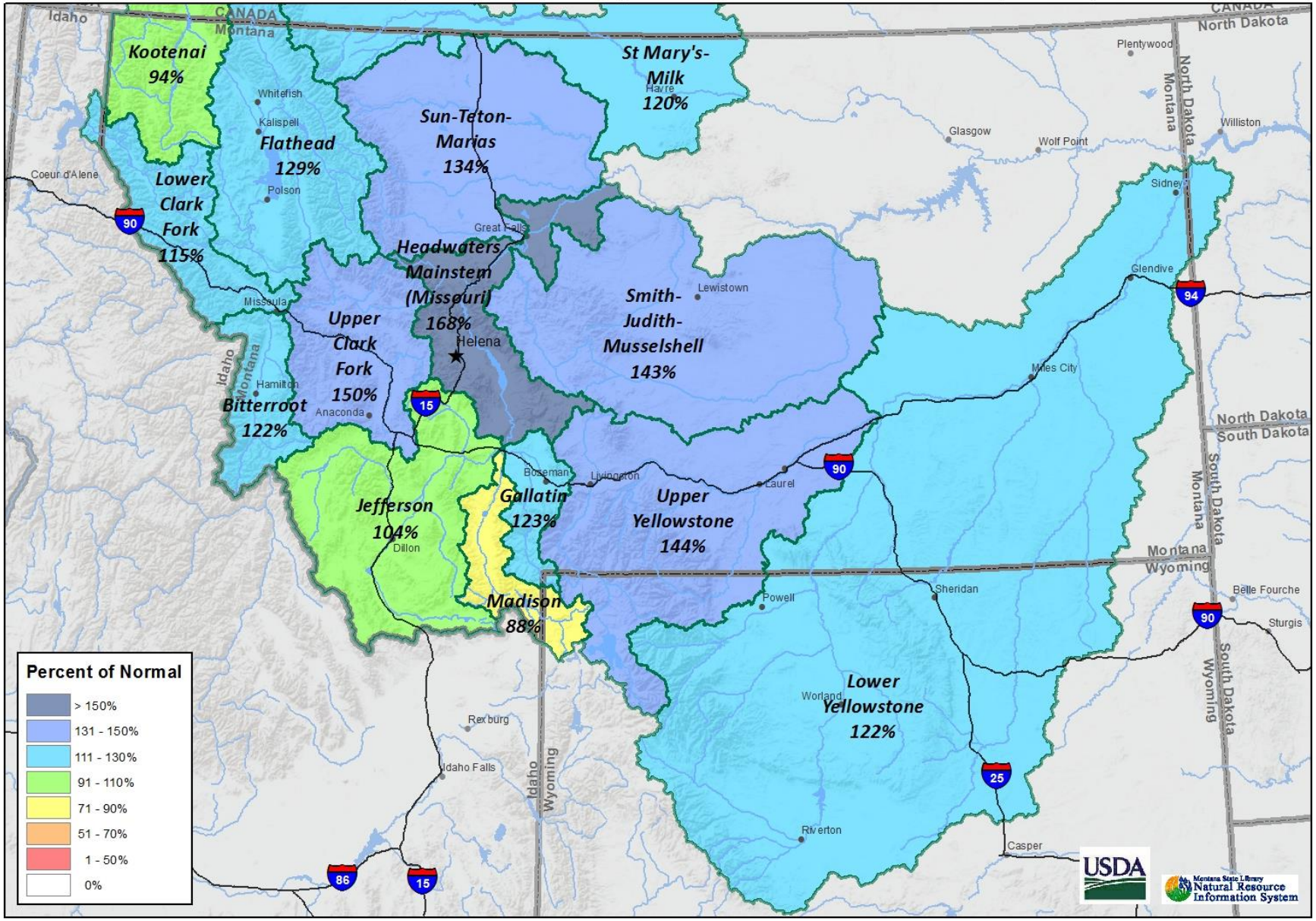
Below average precipitation during the summer months of 2017 caused issues with wildfires and drought across the state of Montana this past year, but fortunately for water users in the state the long warm and dry spell ended in mid to late September. A storm at the end of the month that dropped snow at high elevations and rain at lower elevations put many fires out across the state, but in the case of the Badger Pass SNOTEL site this was 3 days too late, and the site burned in the Strawberry Creek Fire west of Swift Reservoir in the Rocky Mountain Front. The New Water Year started on October 1st and precipitation totals for the Oct 1 – Jan 1 time period have been near to well above average across most of the state. Only one region of the state in eastern Montana has received below normal precipitation this water year. One additional positive sign is that SNOTEL sites where soil moisture is measured showed an increase in soil moisture with the rain and snow in September and October. This is important in both mountain and valley locations as the antecedent soil moisture in the fall plays a role in the efficiency of runoff in the spring. This increase before the seasonal snowpack started will certainly put us in a better position that we would have been in if warm and dry conditions persisted.

Precipitation

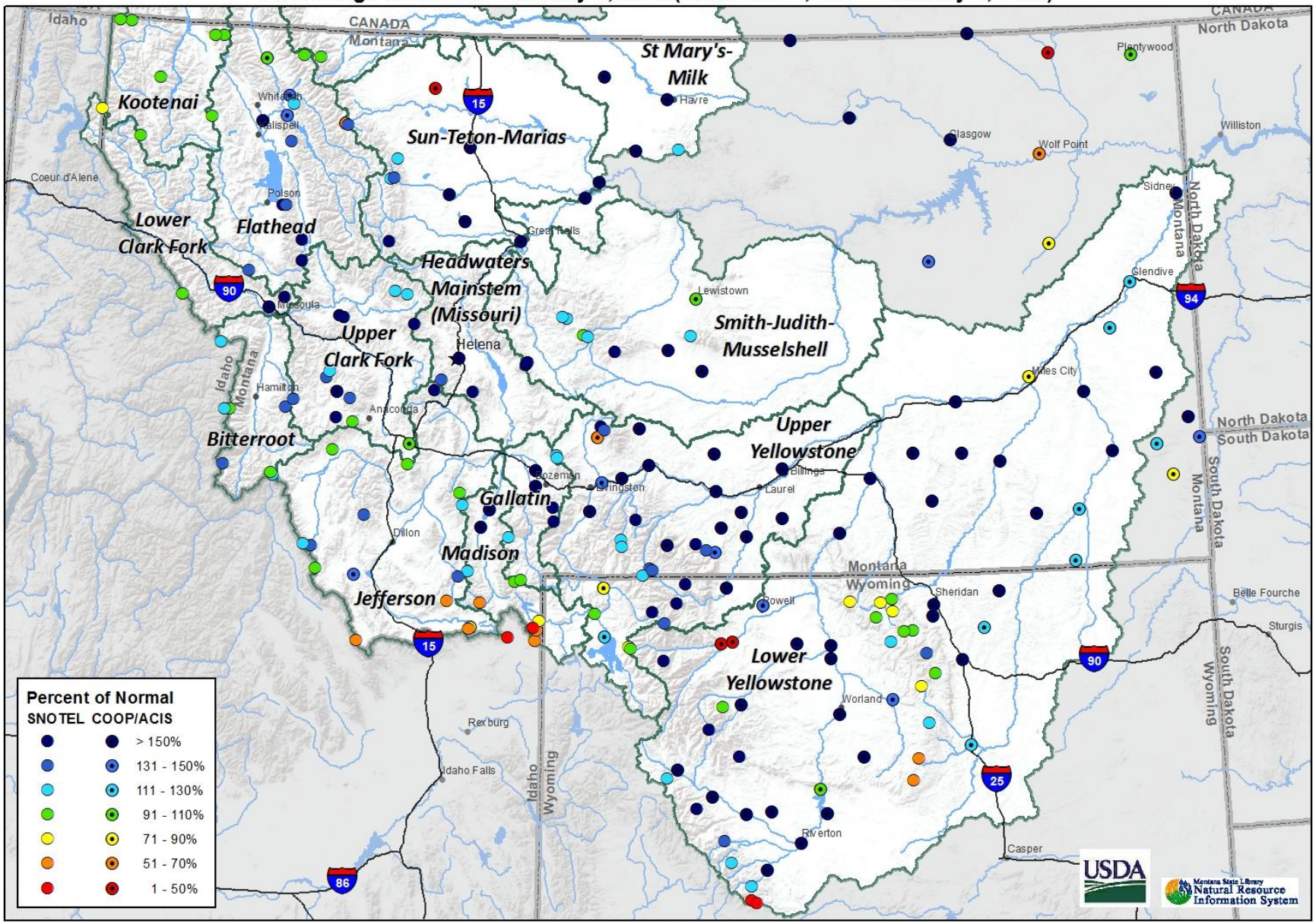
1/1/2018	***Monthly % Avg***	***Water Year % Avg***	***WY % of Last Year***
Columbia River Basin	123	119	94
Kootnenai in Montana	94	106	74
Flathead in Montana	129	122	88
Upper Clark Fork	150	127	117
Bitterroot	122	112	106
Lower Clark Fork	115	117	92
Missouri River Basin	118	112	85
Jefferson	104	101	88
Madison	88	102	73
Gallatin	123	120	90
Headwaters Mainstem	168	136	121
Smith-Judith-Musselshell	143	117	103
Sun-Teton-Marias	134	127	105
St. Mary-Milk	120	128	75
Yellowstone River Basin	135	118	86
Upper Yellowstone	144	137	97
Lower Yellowstone	122	103	75

West of Divide	123	119	94
East of Divide	123	115	87
Montana State-Wide	127	118	91

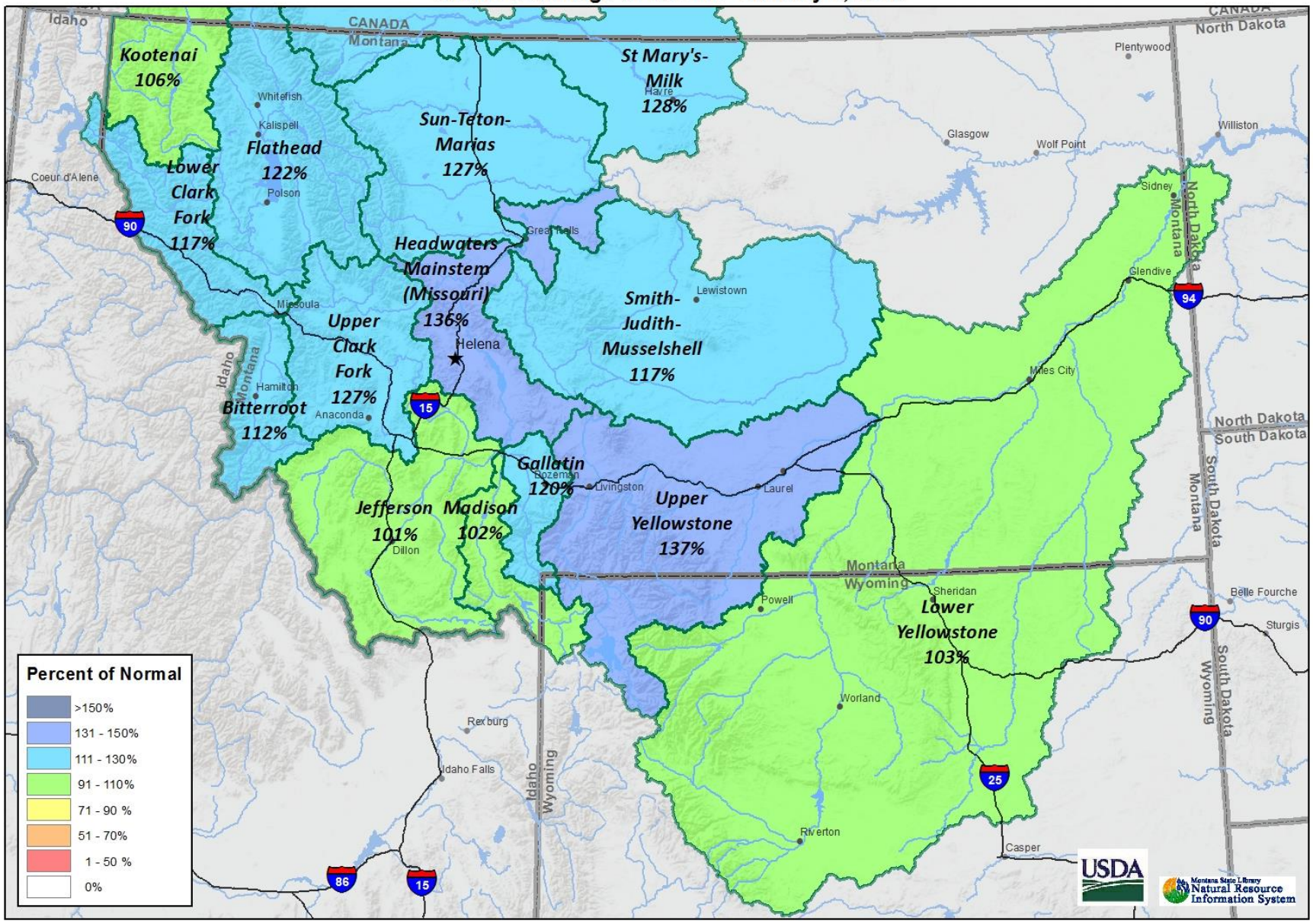
Montana Data Collection Office
Monthly Precipitation
Basin Percentage of Normal - January 1, 2018 (December 1, 2017 - January 1, 2018)



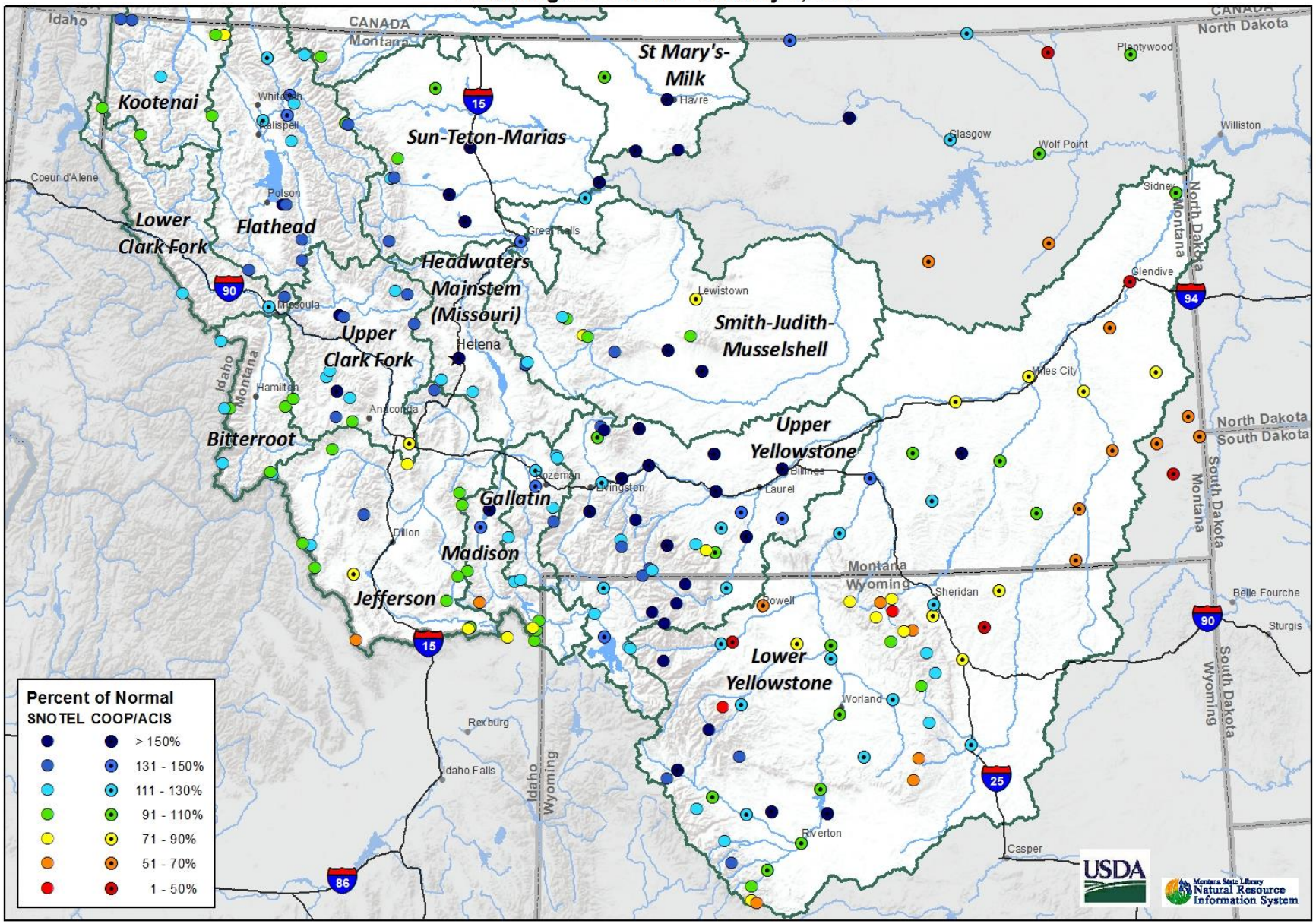
Montana Data Collection Office
Monthly Precipitation
Percentage of Normal - January 1, 2018 (December 1, 2017 - January 1, 2018)



Montana Data Collection Office
Water Year to Date Precipitation
Basin Percentage of Normal - January 1, 2018



Montana Data Collection Office
Water Year to Date Precipitation
Percentage of Normal - January 1, 2018



Reservoirs - Overview

Many reservoirs across the state have near to slightly above average reservoir storage for January 1st. There are however some regions where storage is well below average due to increased demand due to lack of summer precipitation last year. Gibson (35%) and Pishkun (19%) Reservoirs in the Sun River basin have storage that is well below average for Jan 1st. Further east on the Milk River system both Fresno and Nelson have below average on Jan 1.

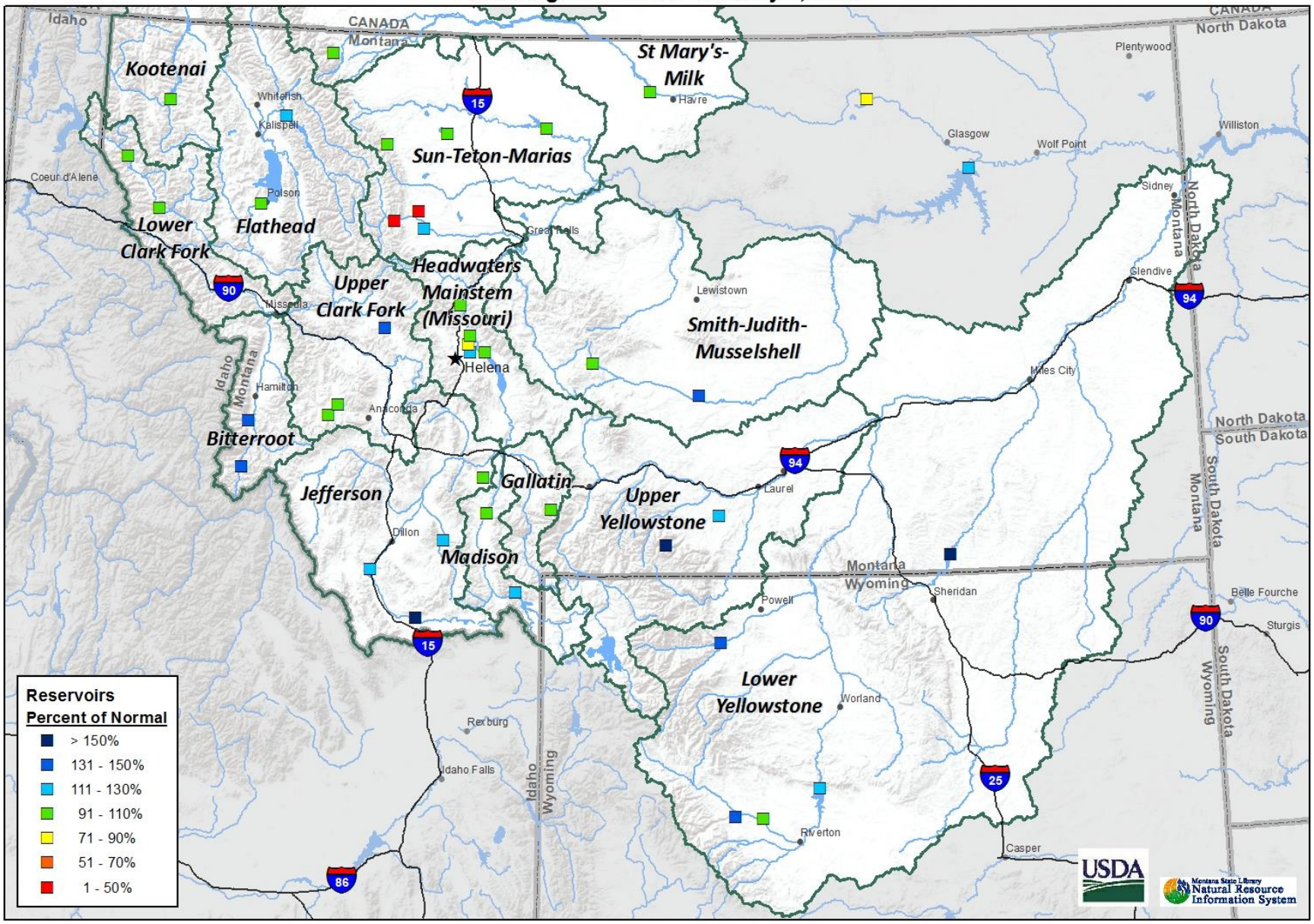
Please view the individual basin reports for detailed reservoir content information.

Reservoir Storage

1/1/2018	***% Average***	***% Capacity***	***% Last Year***
Columbia River Basin	111	72	97
Kootnenai in Montana	109	65	100
Flathead in Montana	113	79	95
Upper Clark Fork	105	70	106
Bitterroot	147	34	104
Lower Clark Fork	99	94	97
Missouri River Basin	113	78	103
Jefferson	128	55	151
Madison	116	86	105
Gallatin	104	52	97
Headwaters Mainstem	117	81	103
Smith-Judith-Musselshell	137	68	123
Sun-Teton-Marias	100	52	103
St. Mary-Milk	95	37	86
Yellowstone River Basin	108	67	100
Upper Yellowstone	138	70	109
Lower Yellowstone	107	67	99

West of Divide	111	72	97
East of Divide	113	77	103
Montana State-Wide	112	76	101

Montana Data Collection Office
Reservoir Levels
Percentage of Normal - January 1, 2018



Kootenai River Basin

Water year-to-date precipitation in the Kootenai River basin is currently slightly above average. The basin received several September snowstorms and the permanent-seasonal snowpack was in place prior to October 1st at some of the basin's SNOTEL sites, which was a good start to the water year and something that hasn't happened since October 2013. Snow continued to pile up in both the mountains and in the valleys of the Kootenai River basin through November, but it wasn't until mid-December that the majority of the existing snow arrived. From December 17th to the 31st it snowed 47 inches (8.2 inches of SWE) at Poorman Creek SNOTEL, about 130% of its typical December snow water accumulation. Since October monthly precipitation has been near to above average in the Kootenai River basin and as of January 1st the basin-wide snowpack is at near normal conditions.

Kootenai River Basin Data Summary

Snowpack	**Percent of 1981-2010 Normal (Median)**	**Last Year Percentage of Normal (Median)**
KOOTENAY in CANADA	82%	80%
KOOTENAI MAINSTEM	97%	79%
TOBACCO	94%	112%
FISHER	124%	107%
YAAK	122%	89%
KOOTENAI RIVER BASIN in MONTANA	101%	93%
KOOTENAI ab BONNERS FERRY	102%	96%
Basin-Wide Snowpack	**101%**	**93%**

Precipitation	**Monthly Percentage of Average**	**WYTD Percentage of 1981-2010 Average***	**WYTD Last Year Percentage of Average**
Mountain Precipitation	94%	106%	143%
Valley Precipitation	%	%	%
Basin-Wide Precipitation	**94%**	**106%**	**143%**

**WYTD Precipitation is October 1st- Current*

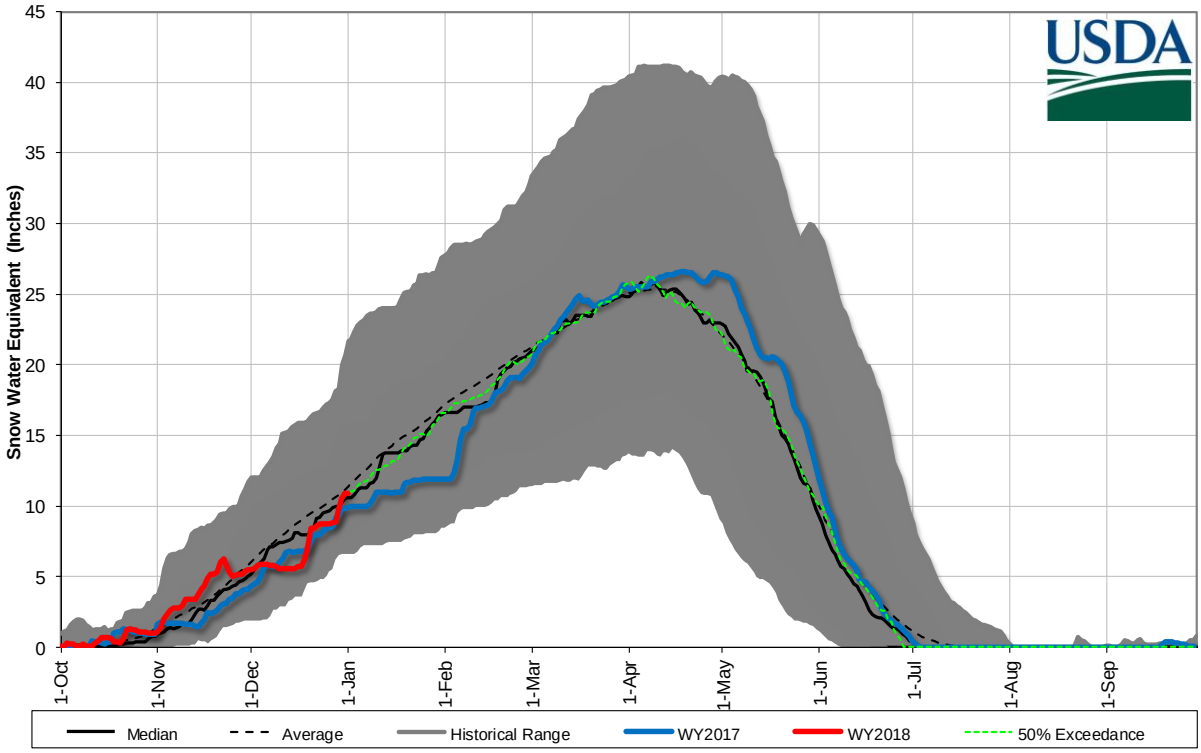
Reservoir Storage	**Percentage of Average**	**Percentage of Capacity (Total)**	**Last Year Percentage of Average**
Basin-Wide Reservoir Storage	**109%**	**65%**	**109%**

**See Reservoir Storage Table for storage in individual reservoirs*

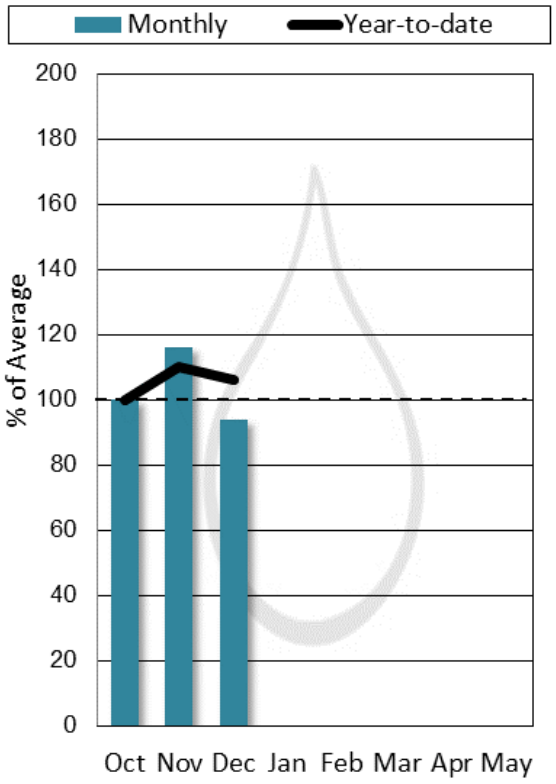
End of Month Storage	**Current (KAF)**	**Last Year (KAF)**	**Average (KAF)**	**Capacity (KAF)**	**% Average**	**% Capacity**
Lake Koocanusa	3731.8	3739.0	3417.0	5748.0	**109%**	**65%**

Kootenai River Basin Snowpack with Non-Exceedence Projections

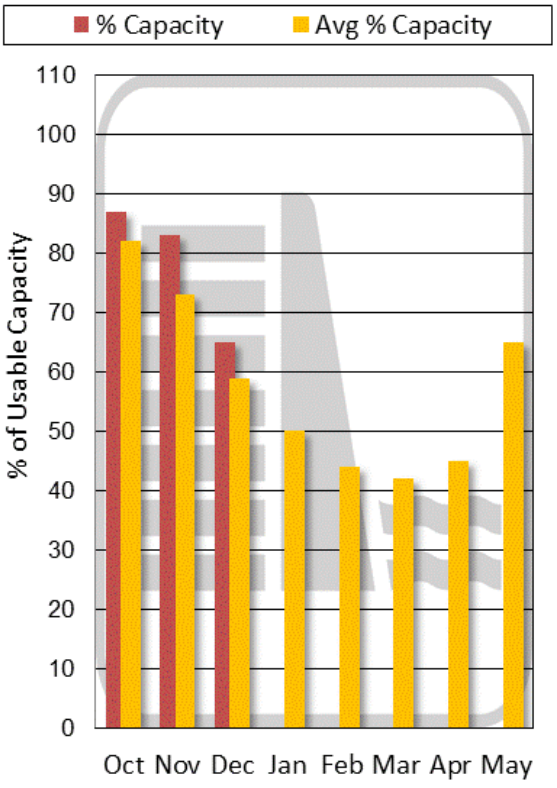
Based on provisional SNOTEL daily data as of 1/1/2018



Mountain and Valley Precipitation



End of Month Reservoir Storage



Storage above is averaged for all reservoirs in the basin. For individual reservoirs see table below.

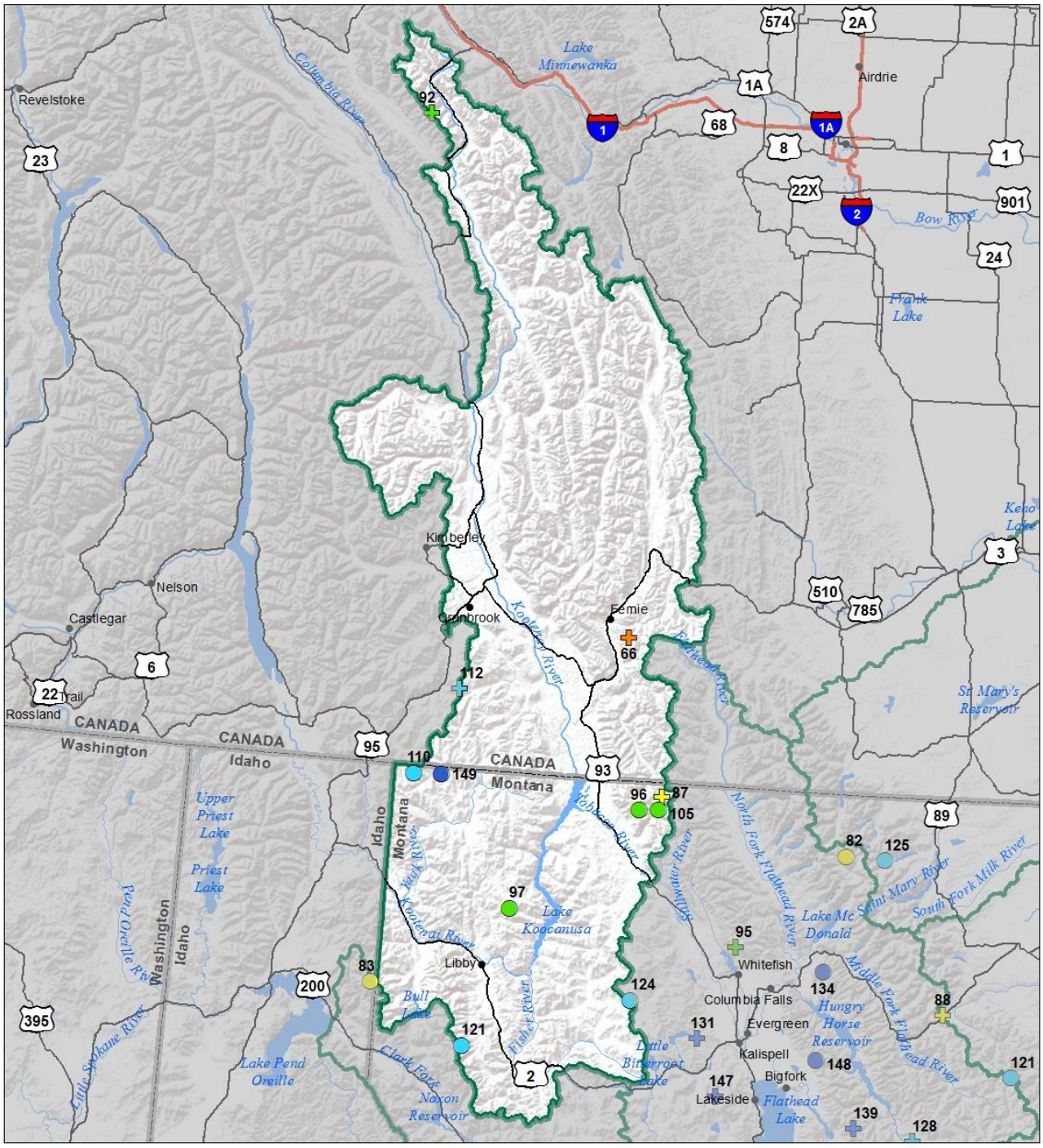
Kootenai River Basin

Forecast Point	Forecast Period	Chance Actual Volume Will Exceed Forecasted Volume: 90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Tobacco R nr Eureka	0	0	0	0	*#DIV/0!*	0	0	0
	0	0	0	0	*#DIV/0!*	0	0	0
Libby Reservoir Inflow[1]	0	0	0	0	*#DIV/0!*	0	0	0
	0	0	0	0	*#DIV/0!*	0	0	0
Fisher R nr Libby	0	0	0	0	*#DIV/0!*	0	0	0
	0	0	0	0	*#DIV/0!*	0	0	0
Yaak R nr Troy	0	0	0	0	*#DIV/0!*	0	0	0
	0	0	0	0	*#DIV/0!*	0	0	0
Kootenai R at Leonia[1,2]	0	0	0	0	*#DIV/0!*	0	0	0
	0	0	0	0	*#DIV/0!*	0	0	0

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

Kootenai River Basin
Snow Water Equivalent
Percentage of Normal
January 1, 2018



Snow Water Equivalent
Percent of Normal

SNOTEL				Snowcourse			
> 150%	71 - 90%			> 150%	71 - 90%		
131 - 150%	51 - 70%			131 - 150%	51 - 70%		
111 - 130%	1 - 50%			111 - 130%	1 - 50%		
91 - 110%	0%			91 - 110%	0%		

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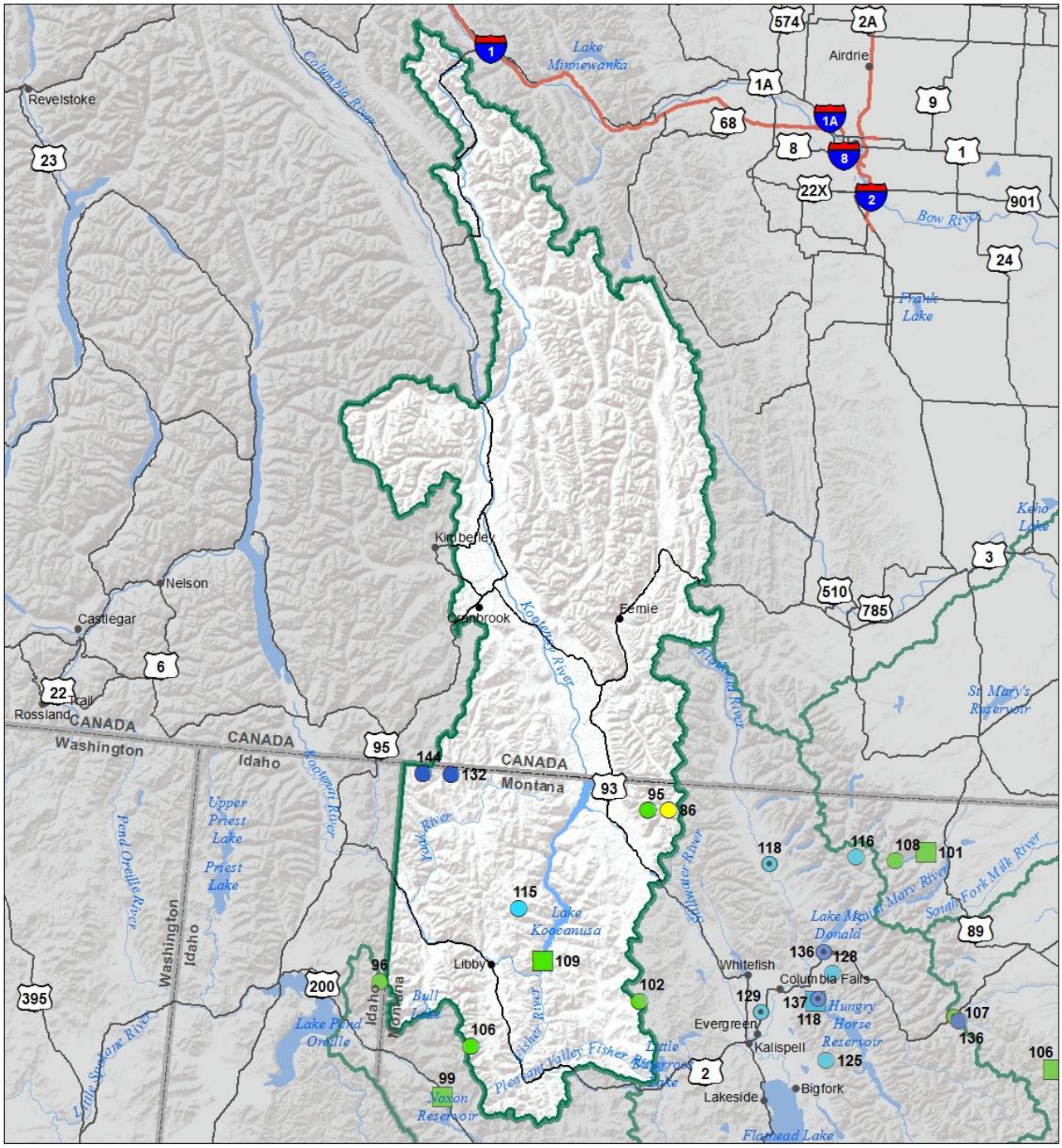
Kootenai River Basin
Water Year to Date Precipitation and Reservoir Levels
Percentage of Normal
January 1, 2018



Precipitation
Percent of Normal

SNOTEL		COOP/ACIS	
> 150%	71 - 90%	> 150%	71 - 90%
131 - 150%	51 - 70%	131 - 150%	51 - 70%
111 - 130%	1 - 50%	111 - 130%	1 - 50%
91 - 110%		91 - 110%	

Reservoirs
Percent of Normal

- > 150%
- 131 - 150%
- 111 - 130%
- 91 - 110%
- 71 - 90%
- 51 - 70%
- 1 - 50%

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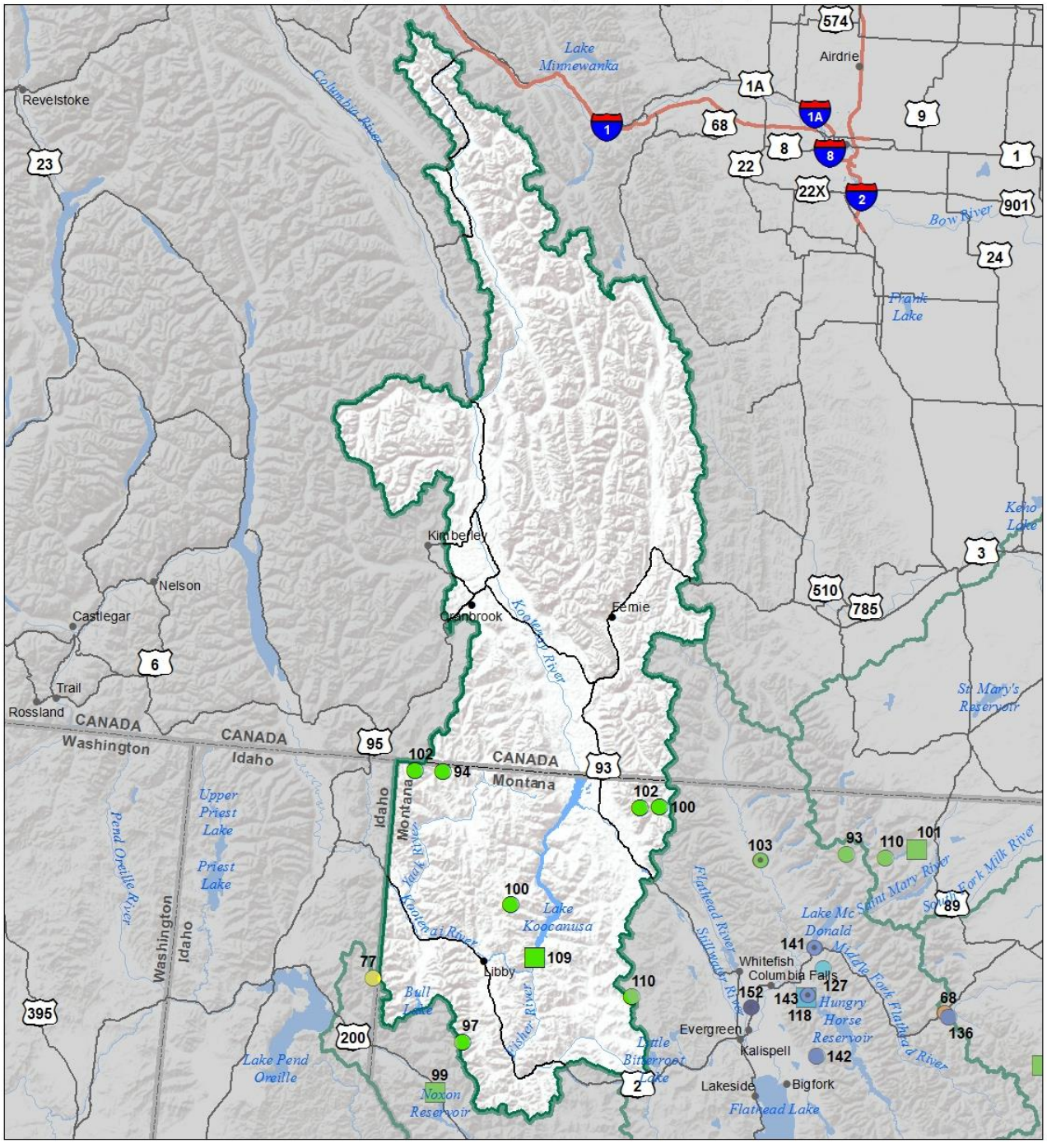
Montana State Library Natural Resource Information System

Kootenai River Basin
Monthly Precipitation and Reservoir Levels
Percentage of Normal
January 1, 2018 (December 1, 2017 - January 1, 2018)



Precipitation
Percent of Normal

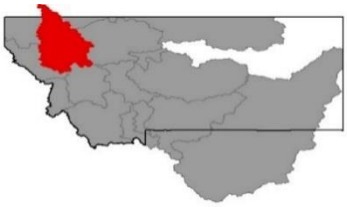
SNOTEL		COOP/ACIS	
> 150%	71 - 90%	> 150%	71 - 90%
131 - 150%	51 - 70%	131 - 150%	51 - 70%
111 - 130%	1 - 50%	111 - 130%	1 - 50%
91 - 110%		91 - 110%	

Reservoirs
Percent of Normal

- > 150%
- 131 - 150%
- 111 - 130%
- 91 - 110%
- 71 - 90%
- 51 - 70%
- 1 - 50%

USDA

Montana State Library Natural Resource Information System



Flathead River Basin

October 1st marked the day the Flathead River basin's permanent-seasonal snowpack started this water year when upper elevations within the basin received over 10 inches of snow in several days. Unfortunately this precipitation arrived several days too late for the Badger Pass SNOTEL site, which burned in the Strawberry Creek Fire in late September. Snow continued to accumulate in the Flathead basin during October and November, but the basin's largest storm so far this water year arrived mid-December. From December 15th to the 31st it snowed 53 inches (11.6 inches of SWE) at Noisy Basin SNOTEL, about 140% of its typical December snow water accumulation. Since October monthly precipitation has been above average in the Flathead River basin and as of January 1st the basin-wide snowpack is at above normal conditions.

Flathead River Basin Data Summary

Snowpack	**Percent of 1981-2010 Normal (Median)**	**Last Year Percentage of Normal (Median)**
NF FLATHEAD in CANADA	%	%
NF FLATHEAD in MONTANA	93%	105%
MIDDLE FORK FLATHEAD	101%	100%
SOUTH FORK FLATHEAD	137%	91%
STILLWATER-WHITEFISH	107%	98%
SWAN	136%	89%
MISSION VALLEY	161%	99%
LITTLE BITTERROOT-ASHLEY	138%	113%
JOCKO	126%	82%
FLATHEAD in MONTANA	119%	96%
Basin-Wide Snowpack	***119%***	***96%***

Precipitation	**Monthly Percentage of Average**	**WYTD Percentage of 1981-2010 Average***	**WYTD Last Year Percentage of Average**
Mountain Precipitation	129%	122%	137%
Valley Precipitation	152%	129%	181%
Basin-Wide Precipitation	**129%**	**122%**	**138%**

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

Reservoir Storage	**Percentage of Average**	**Percentage of Capacity (Total)**	**Last Year Percentage of Average**
Basin-Wide Reservoir Storage	113%	79%	119%

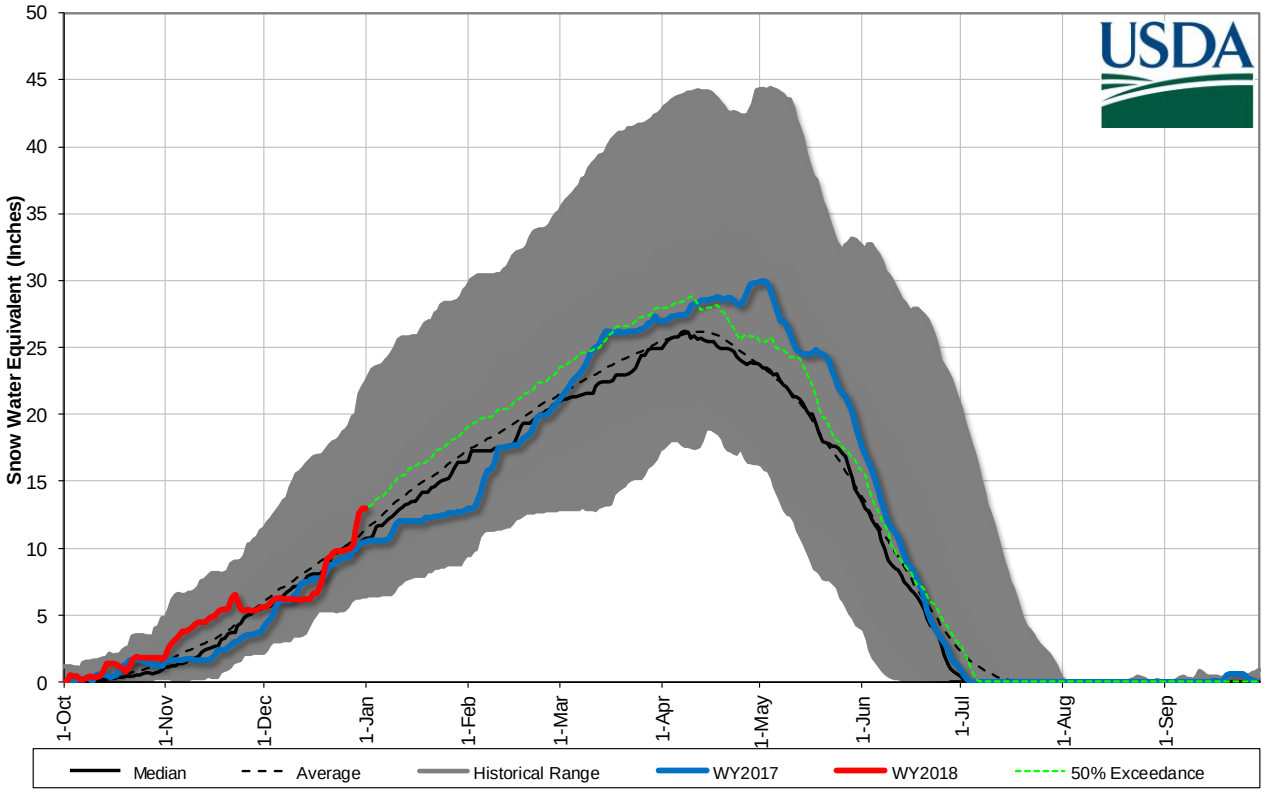
**See Reservoir Storage Table for storage in individual reservoirs*

End of Month Storage

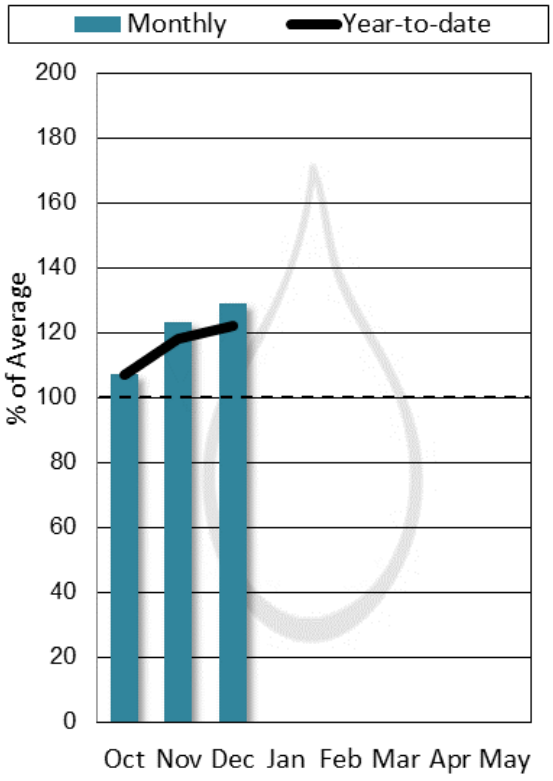
	Current (KAF)	**Last Year (KAF)**	**Average (KAF)**	**Capacity (KAF)**	**% Average**	**% Capacity**
Camas (4)		16.9	17.4	45.2		
Lower Jocko Lake		0.0	0.0	6.4		
Mission Valley (8)		29.4	30.0	100.0		
Hungry Horse Lake	3000.5	3114.1	2537.0	3451.0	**118%**	**87%**
Flathead Lake	1161.1	1297.7	1158.0	1791.0	**100%**	**65%**

Flathead River Basin Snowpack with Non-Exceedence Projections

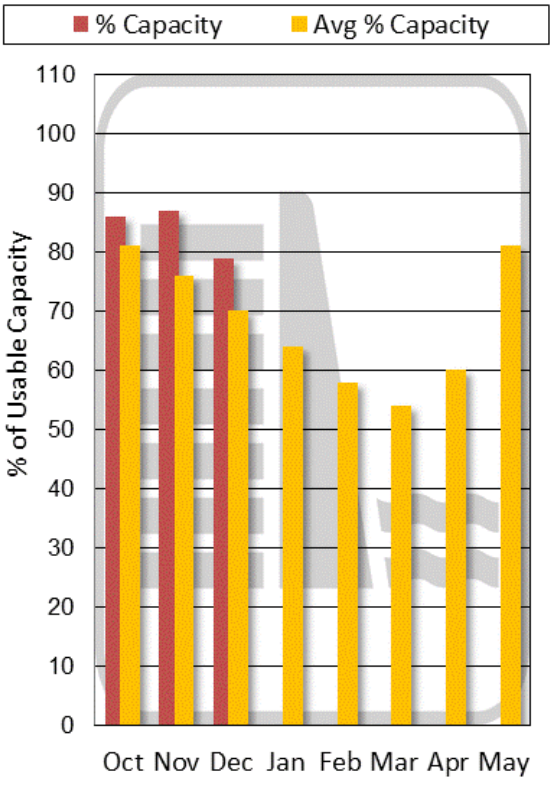
Based on provisional SNOTEL daily data as of 1/1/2018



Mountain and Valley Precipitation



End of Month Reservoir Storage



Storage above is averaged for all reservoirs in the basin. For individual reservoirs see table below.

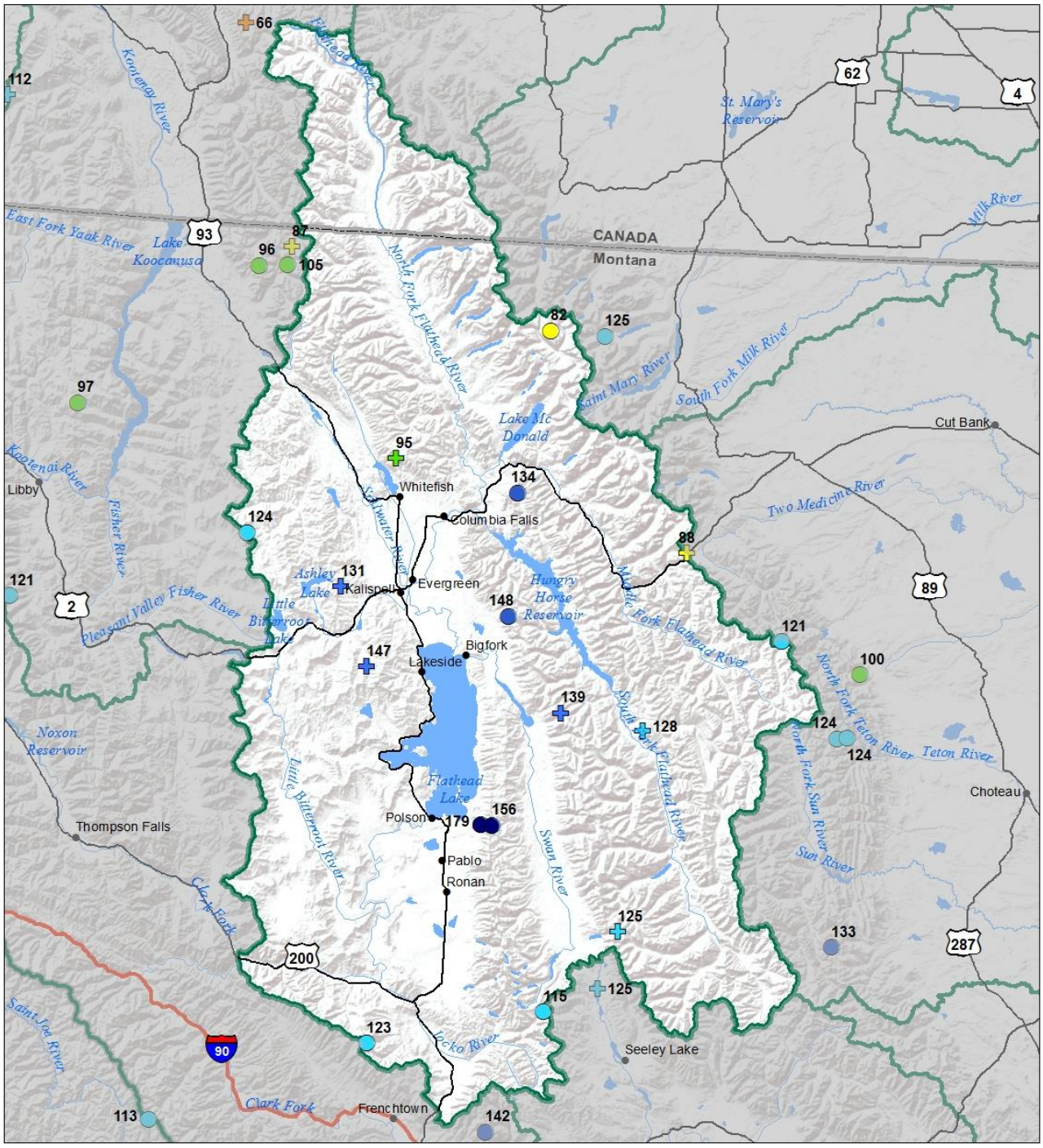
Flathead River Basin

Forecast Point	Forecast Period	Chance Actual Volume Will Exceed Forecasted Volume: 90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
NF Flathead R nr Columbia Falls	0	0	0	0	*#DIV/0!*	0	0	0
	0	0	0	0	*#DIV/0!*	0	0	0
MF Flathead R nr West Glacier	0	0	0	0	*#DIV/0!*	0	0	0
	0	0	0	0	*#DIV/0!*	0	0	0
Sf Flathead R nr Hungry Horse	0	0	0	0	*#DIV/0!*	0	0	0
	0	0	0	0	*#DIV/0!*	0	0	0
Hungry Horse Reservoir Inflow[1,2]	0	0	0	0	*#DIV/0!*	0	0	0
	0	0	0	0	*#DIV/0!*	0	0	0
Flathead R at Columbia Falls[2]	0	0	0	0	*#DIV/0!*	0	0	0
	0	0	0	0	*#DIV/0!*	0	0	0
Ashley Ck nr Marion[2]	0	0	0	*0*	*#DIV/0!*	0	0	0
	0	0	0	0	*#DIV/0!*	0	0	0
Swan R nr Bigfork	0	0	0	0	*#DIV/0!*	0	0	0
	0	0	0	0	*#DIV/0!*	0	0	0
Flathead Lake Inflow[1,2]	0	0	0	0	*#DIV/0!*	0	0	0
	0	0	0	0	*#DIV/0!*	0	0	0
Mill Ck ab Bassoo ck nr Niarada	0	0	0	0	*#DIV/0!*	0	0	0
	0	0	0	0	*#DIV/0!*	0	0	0
South Crow Ck nr Ronan	0	0	0	0	*#DIV/0!*	0	0	0
	0	0	0	0	*#DIV/0!*	0	0	0
Mission Ck nr St. Ignatius	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)	*#VALUE!*	0	0	0
		16.867	17.4	45.2	*#DIV/0!*	0	0	0
SF Jocko R nr Arlee		29.362	30	100	*#DIV/0!*	0	0	0
	3000.493	3114.116	2537	3451	*#DIV/0!*	0	0	0
NF Jocko R bl Tabor Feeder Canal	4161.6	4411.8	3695	5242	*#DIV/0!*	0	0	0
	2	2	2	2	*#DIV/0!*	0	0	0

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

Flathead River Basin
Snow Water Equivalent
Percentage of Normal
January 1, 2018



Snow Water Equivalent
Percent of Normal

SNOTEL				Snowcourse			
> 150%	71 - 90%			> 150%	71 - 90%		
131 - 150%	51 - 70%			131 - 150%	51 - 70%		
111 - 130%	1 - 50%			111 - 130%	1 - 50%		
91 - 110%	0%			91 - 110%	0%		

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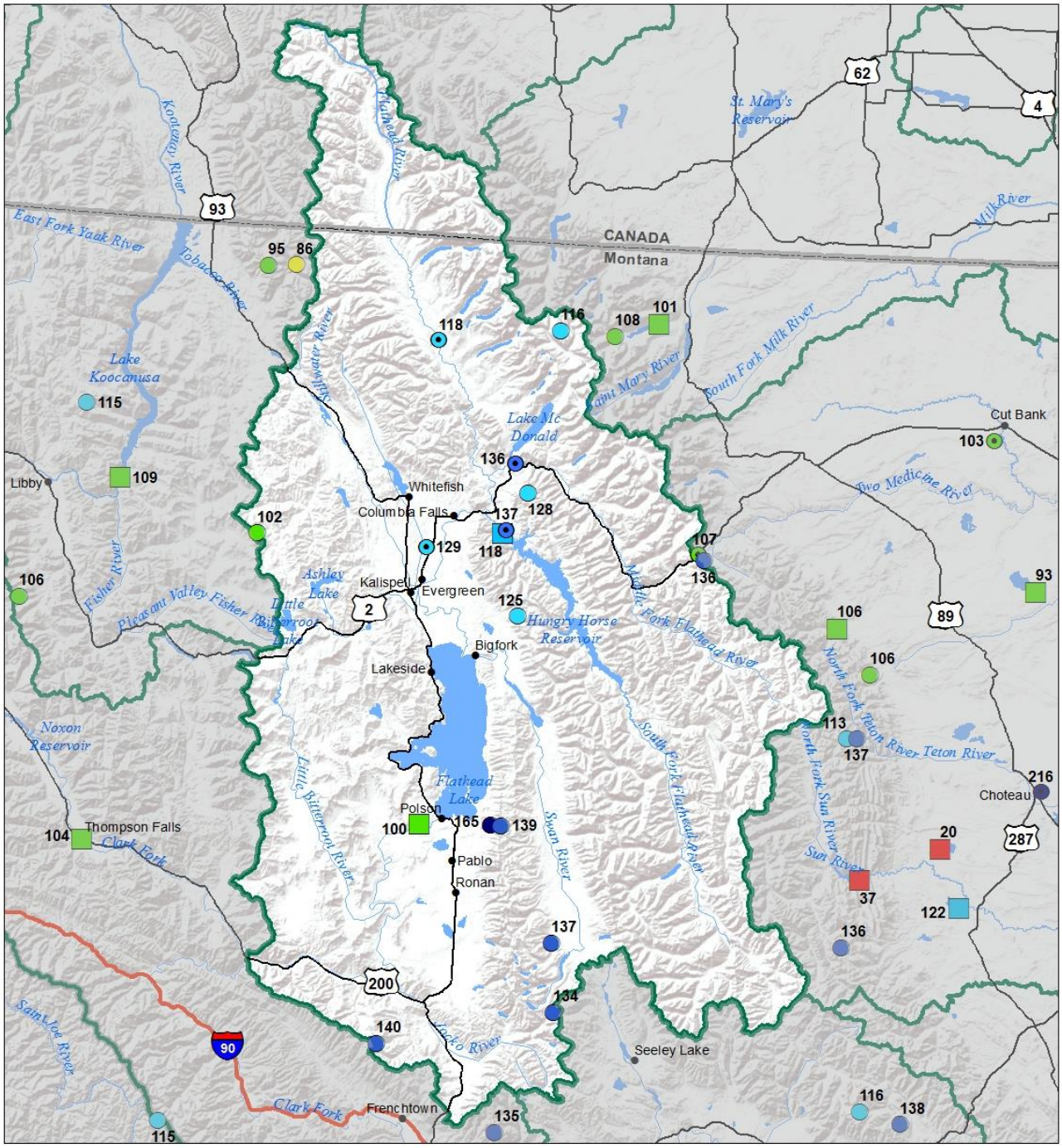
Flathead River Basin
Water Year to Date Precipitation and Reservoir Levels
Percentage of Normal
January 1, 2018



Precipitation
Percent of Normal

SNOTEL		COOP/ACIS	
> 150%	71 - 90%	> 150%	71 - 90%
131 - 150%	51 - 70%	131 - 150%	51 - 70%
111 - 130%	1 - 50%	111 - 130%	1 - 50%
91 - 110%		91 - 110%	

Reservoirs
Percent of Normal

- > 150%
- 131 - 150%
- 111 - 130%
- 91 - 110%
- 71 - 90%
- 51 - 70%
- 1 - 50%

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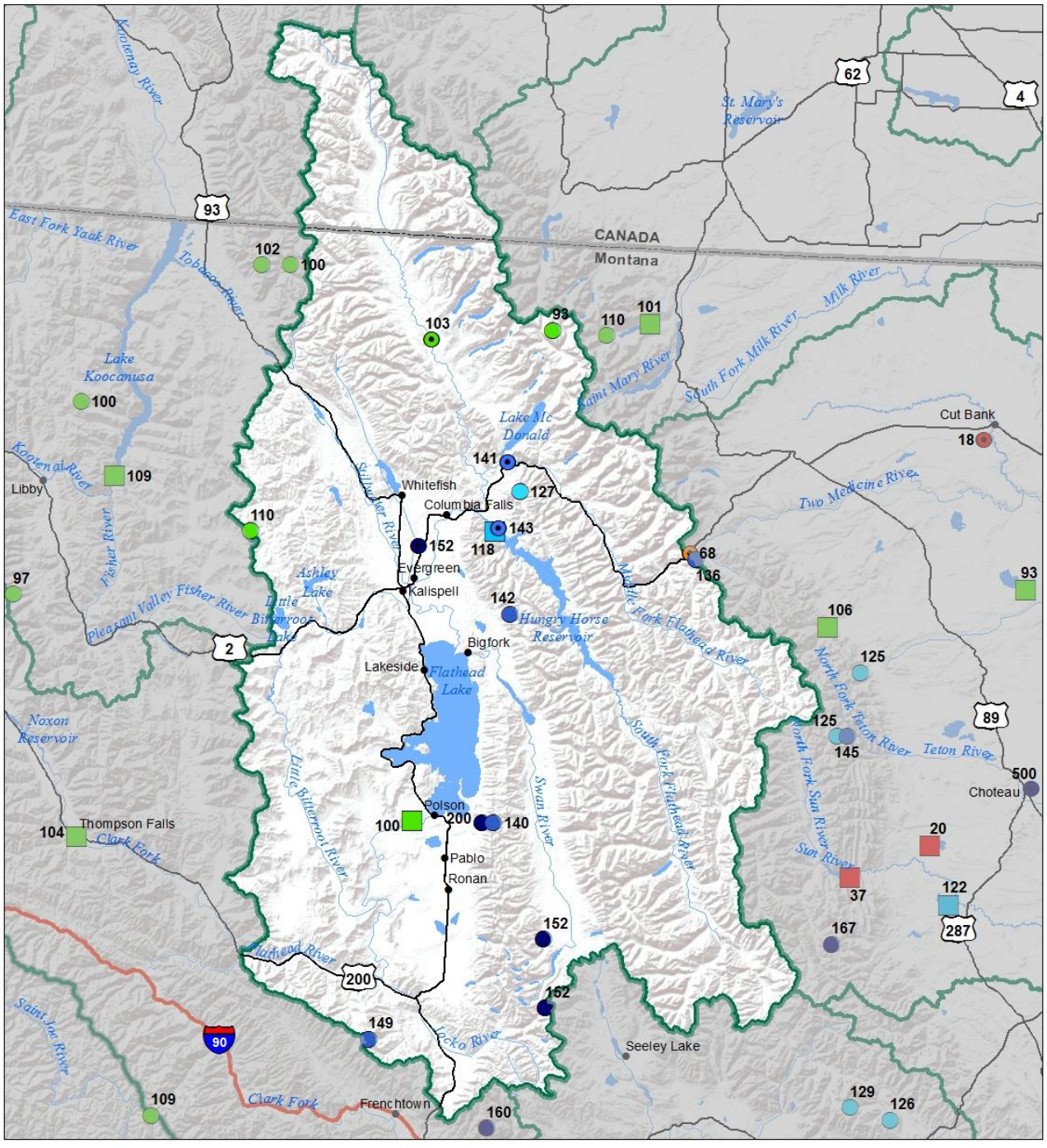
Flathead River Basin
Monthly Precipitation and Reservoir Levels
Percentage of Normal
January 1, 2018 (December 1, 2017 - January 1, 2018)



Precipitation
Percent of Normal

SNOTEL		COOP/ACIS	
> 150%	71 - 90%	> 150%	71 - 90%
131 - 150%	51 - 70%	131 - 150%	51 - 70%
111 - 130%	1 - 50%	111 - 130%	1 - 50%
91 - 110%		91 - 110%	

Reservoirs
Percent of Normal

- > 150%
- 131 - 150%
- 111 - 130%
- 91 - 110%
- 71 - 90%
- 51 - 70%
- 1 - 50%

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Upper Clark Fork River Basin

The Upper Clark Fork River Basin was favored by the mid-September storm that brought snow to much of Montana, and its upper elevations started the new water year with snow. On October 1st Barker Lakes SNOTEL in the Pintler Range had 9 inches of snow (3.4 inches SWE), which was the most snow of all NRCS sites west of the divide in Montana. This snow stayed at upper elevations, but melted out at lower elevations. The permanent-seasonal snowpack at the lower elevation SNOTEL sites within the basin started during a storm over the first week of November, which is normal. The Upper Clark Fork River basin was also slammed by the mid-December storm that graced the region. Warm Springs SNOTEL received 33 inches of snow (5.8 inches of SWE) from December 12th to the 31st and made for some great Christmas time recreation. Overall, the basin wide snowpack is currently well above normal.

Upper Clark Fork River Basin Data Summary

Snowpack	**Percent of 1981-2010 Normal (Median)**	**Last Year Percentage of Normal (Median)**
CLARK FORK ab FLINT CREEK	166%	80%
FLINT CREEK	147%	78%
ROCK CREEK	141%	68%
CLARK FORK ab BLACKFOOT	156%	79%
BLACKFOOT	153%	88%
Basin-Wide	**154%**	**82%**

Precipitation	**Monthly Percentage of Average**	**WYTD Percentage of 1981-2010 Average***	**WYTD Last Year Percentage of Average**
Mountain Precipitation	151%	128%	108%
Valley Precipitation	104%	76%	170%
Basin-Wide Precipitation	**150%**	**127%**	**109%**

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

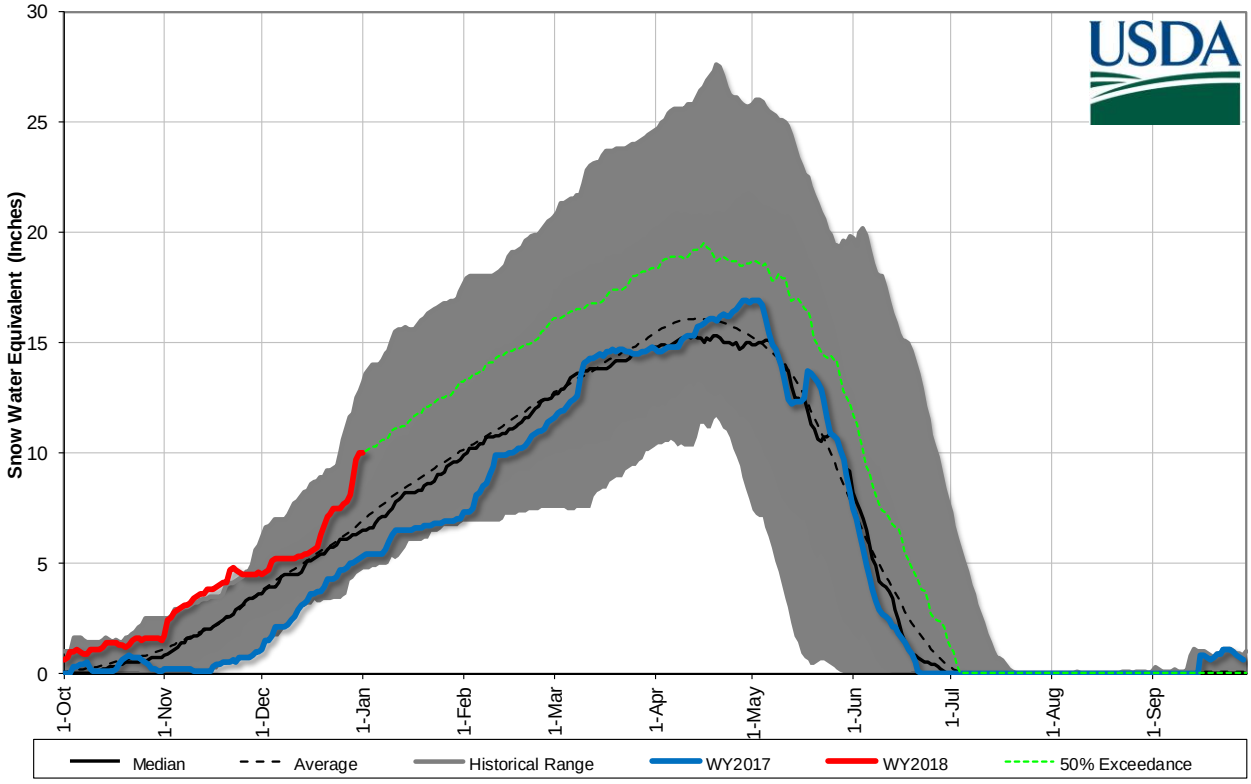
Reservoir Storage	**Percentage of Average**	**Percentage of Capacity (Total)**	**Last Year Percentage of Average**
Basin-Wide Storage	**105%**	**70%**	**99%**

**See Reservoir Storage Table for storage in individual reservoirs*

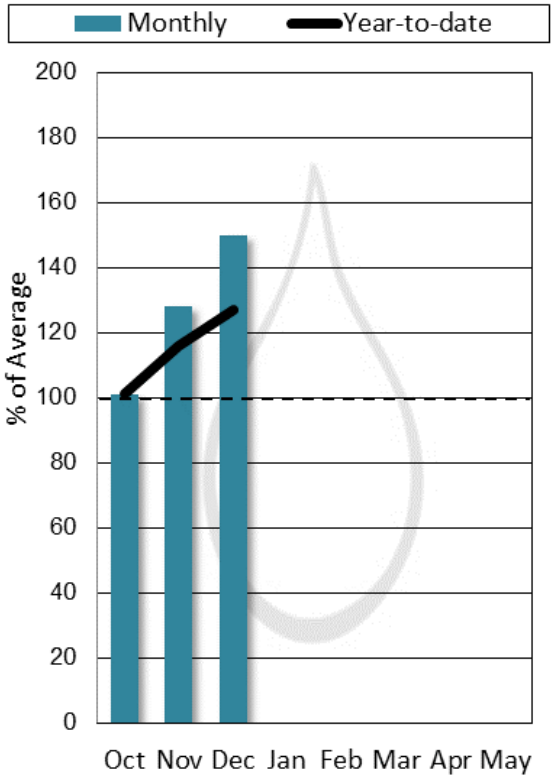
End of Month Storage	**Current (KAF)**	**Last Year (KAF)**	**Average (KAF)**	**Capacity (KAF)**	**% Average**	**% Capacity**
East Fork Rock Creek Res	7.3	7.6	7.0	15.6	**104%**	**46%**
Georgetown Lake	28.2	28.3	27.8	31.0	**101%**	**91%**
Lower Willow Creek Reservoir			1.7	4.9		
Nevada Creek Res	6.2	3.2	4.7	12.6	**131%**	**49%**

Upper Clark Fork River Basin Snowpack with Non-Exceedence Projections

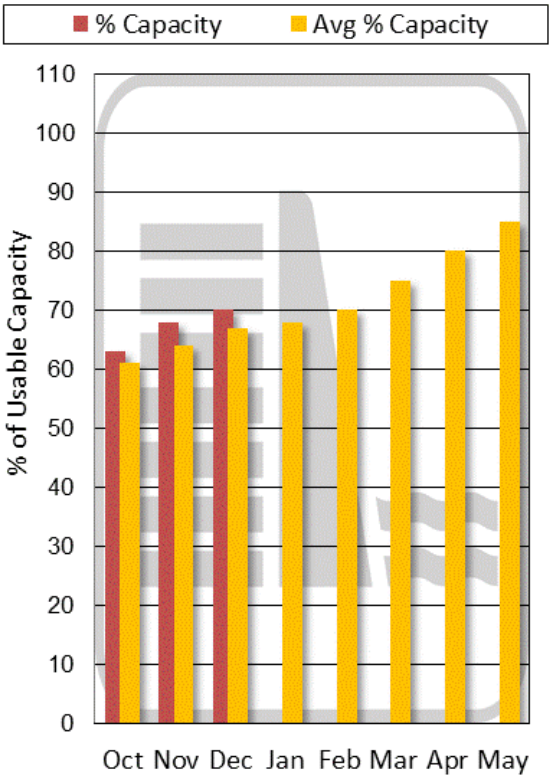
Based on provisional SNOTEL daily data as of 1/1/2018



Mountain and Valley Precipitation



End of Month Reservoir Storage



Storage above is averaged for all reservoirs in the basin. For individual reservoirs see table below.

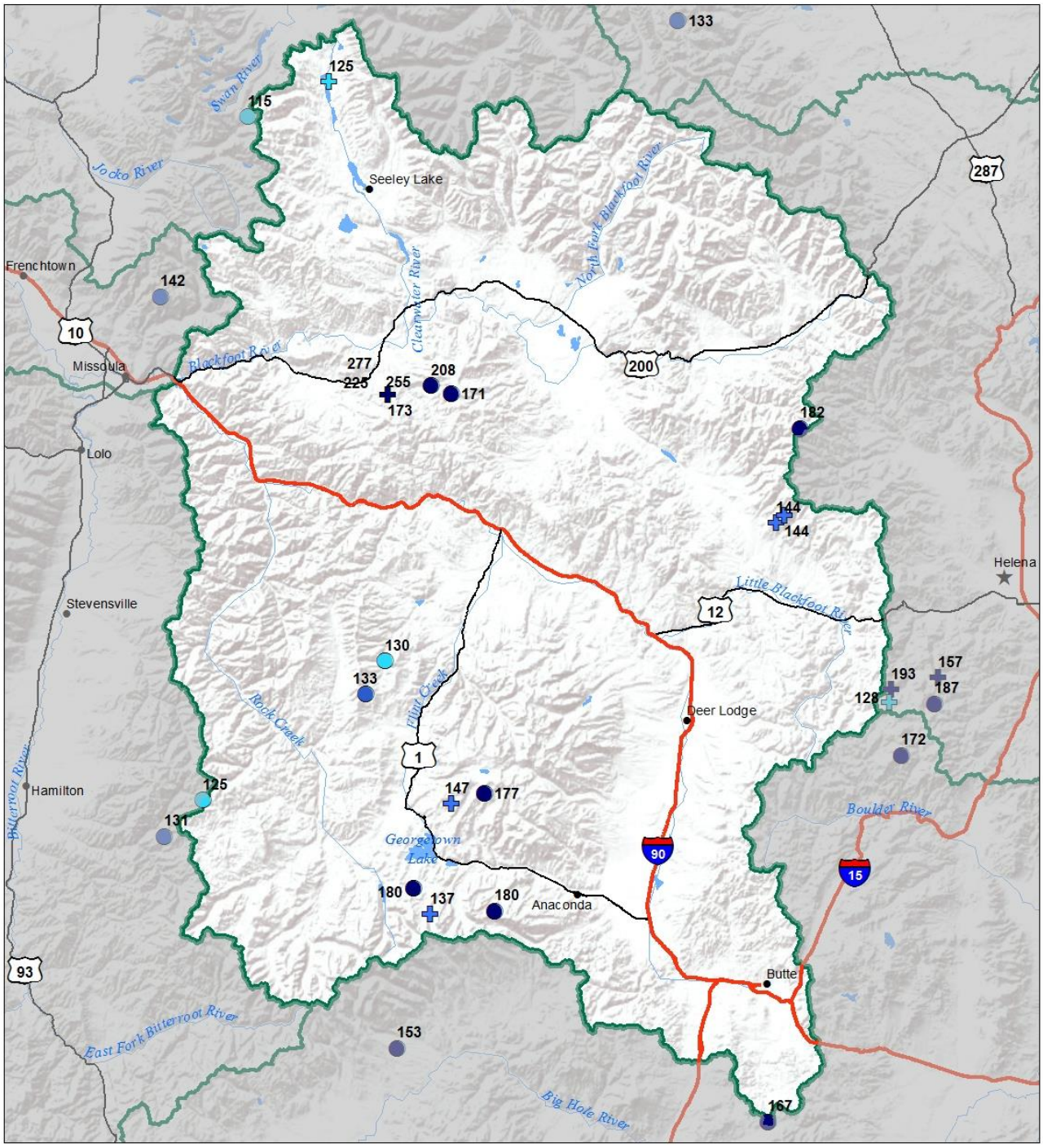
Upper Clark Fork River Basin

Forecast Point	Forecast Period	Chance Actual Volume Will Exceed Forecasted Volume: 90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Little Blackfoot nr Garrison	0	0	0	0	*#DIV/0!*	0	0	0
	0	0	0	0	*#DIV/0!*	0	0	0
Flint Ck nr Southern Cross	0	0	0	0	*#DIV/0!*	0	0	0
	0	0	0	0	*#DIV/0!*	0	0	0
Flint Ck bl Boulder Ck	0	0	0	0	*#DIV/0!*	0	0	0
	0	0	0	0	*#DIV/0!*	0	0	0
Lower Willow Ck Reservoir Inflow[2]	0	0	0	0	*#DIV/0!*	0	0	0
	0	0	0	0	*#DIV/0!*	0	0	0
MF Rock Ck nr Philipsburg	0	0	0	0	*#DIV/0!*	0	0	0
	0	0	0	0	*#DIV/0!*	0	0	0
Rock Ck nr Clinton	*0*	0	0	0	*#DIV/0!*	0	0	0
	0	0	0	0	*#DIV/0!*	0	0	0
Clark Fork R ab Milltown	0	0	0	0	*#DIV/0!*	0	0	0
	0	0	0	0	*#DIV/0!*	0	0	0
Nevada Ck nr Helmville	0	0	0	0	*#DIV/0!*	0	0	0
	0	0	0	0	*#DIV/0!*	0	0	0
	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)				
Blackfoot R nr Bonner					*#VALUE!*	0	0	0
	7.251	7.599	7	15.6	*#DIV/0!*	0	0	0
Clark Fork R ab Missoula			1.65	4.9	*#DIV/0!*	0	0	0
	6.164	3.245	4.7	12.6	*#DIV/0!*	0	0	0

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

Upper Clark Fork River Basin
Snow Water Equivalent
Percentage of Normal
January 1, 2018



Snow Water Equivalent
Percent of Normal

SNOTEL		Snowcourse	
> 150%	71 - 90%	> 150%	71 - 90%
131 - 150%	51 - 70%	131 - 150%	51 - 70%
111 - 130%	1 - 50%	111 - 130%	1 - 50%
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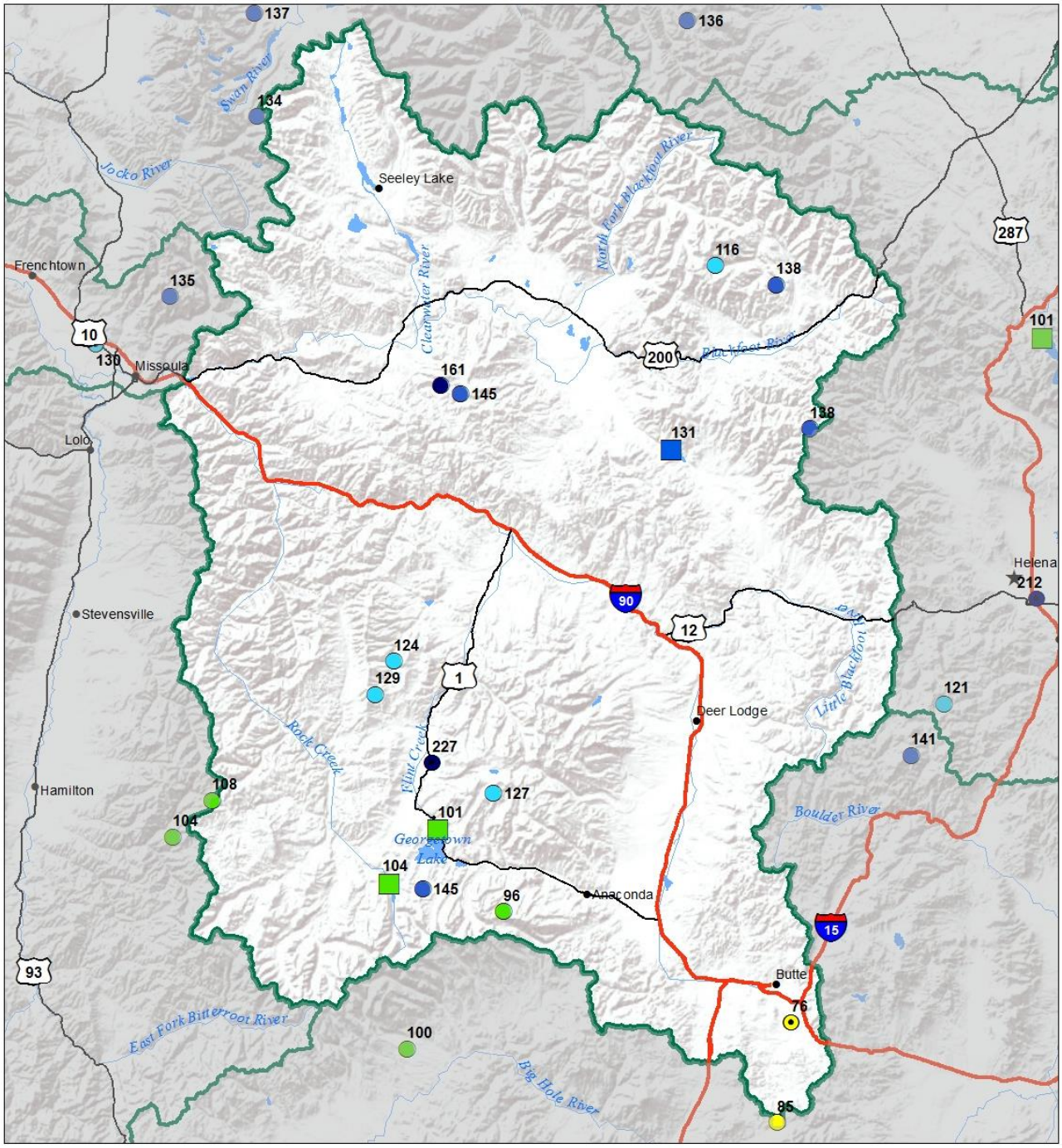
Upper Clark Fork River Basin
Water Year to Date Precipitation and Reservoir Levels
Percentage of Normal
January 1, 2018



Precipitation
Percent of Normal

SNOTEL		COOP/ACIS	
> 150%	71 - 90%	> 150%	71 - 90%
131 - 150%	51 - 70%	131 - 150%	51 - 70%
111 - 130%	1 - 50%	111 - 130%	1 - 50%
91 - 110%		91 - 110%	

Reservoirs
Percent of Normal

- > 150%
- 131 - 150%
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- 91 - 110%
- 71 - 90%
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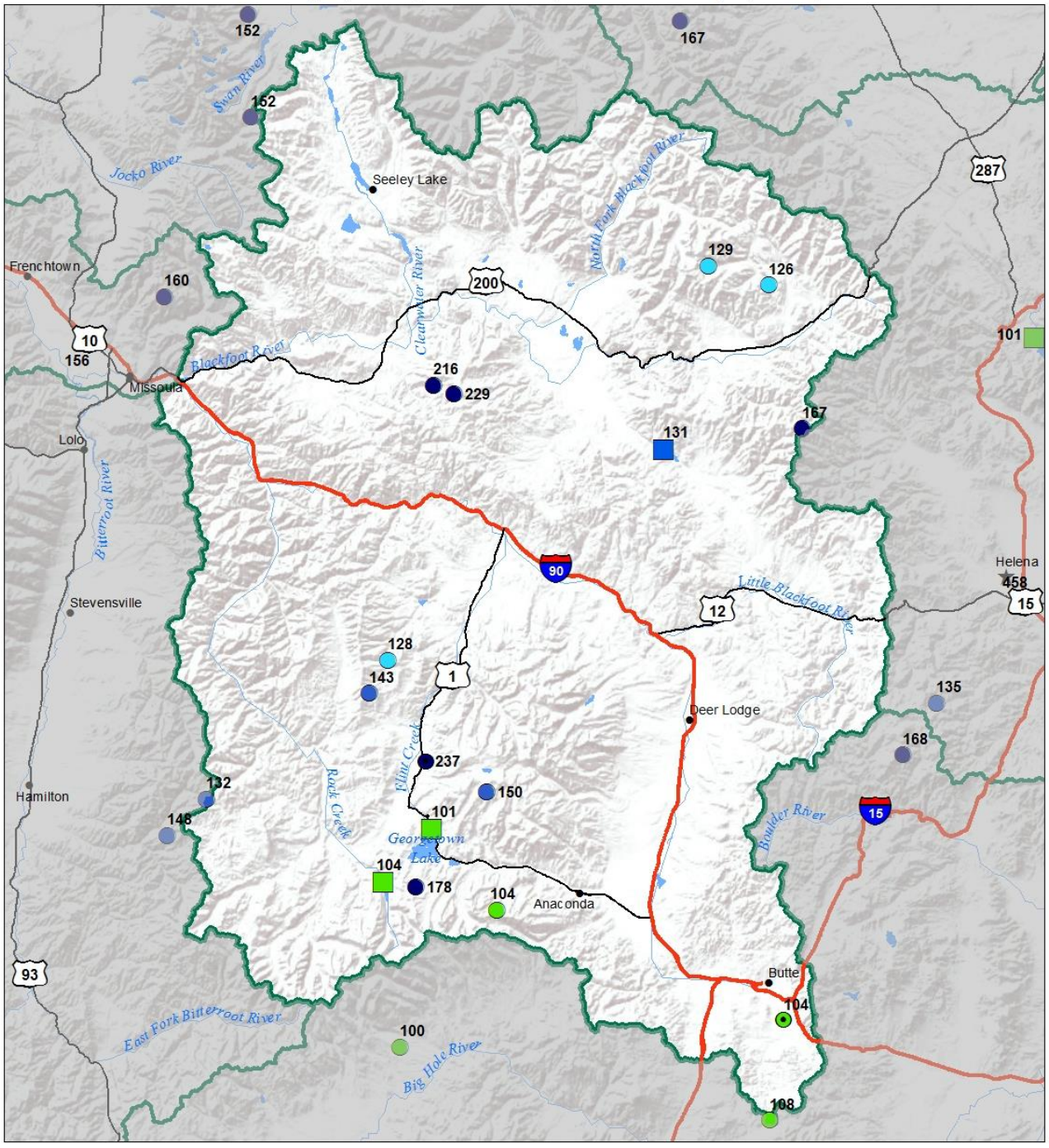
Upper Clark Fork River Basin
Monthly Precipitation and Reservoir Levels
Percentage of Normal
January 1, 2018 (December 1, 2017 - January 1, 2018)

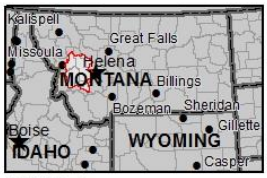


Precipitation
Percent of Normal

SNOTEL		COOP/ACIS	
> 150%	71 - 90%	> 150%	71 - 90%
131 - 150%	51 - 70%	131 - 150%	51 - 70%
111 - 130%	1 - 50%	111 - 130%	1 - 50%
91 - 110%		91 - 110%	

Reservoirs
Percent of Normal

- > 150%
- 131 - 150%
- 111 - 130%
- 91 - 110%
- 71 - 90%
- 51 - 70%
- 1 - 50%



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Bitterroot River Basin

Upper elevations within the Bitterroot River basin typically start a permanent-seasonal snowpack in mid-October. Snow arrived early this year and the basin started the new water year with several inches at upper elevations. This was due to a mid-September storm that brought about 9 inches of snow to the basin's high elevation SNOTEL sites. Monthly precipitation has been above average, but it was a mid-December storm that brought the most moisture so far this water year. Twin Lakes SNOTEL was the largest benefactor from this storm. From December 13th to the 31st it received 54 inches of snow (11.2 inches of SWE), which is about 137% of its typical December snow water accumulation. Overall, the basin wide snowpack in the Bitterroot River basin is currently near normal.

Bitterroot River Basin Data Summary

Snowpack	**Percent of 1981-2010 Normal (Median)**	**Last Year Percentage of Normal (Median)**
WEST FORK BITTERROOT	133%	87%
EAST SIDE BITTERROOT	135%	76%
WEST SIDE BITTERROOT	123%	93%
Basin-Wide	**126%**	**88%**

Precipitation	**Monthly Percentage of Average**	**WYTD Percentage of 1981-2010 Average***	**WYTD Last Year Percentage of Average**
Mountain Precipitation	122%	112%	106%
Valley Precipitation	%	%	%
Basin-Wide Precipitation	**122%**	**112%**	**106%**

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

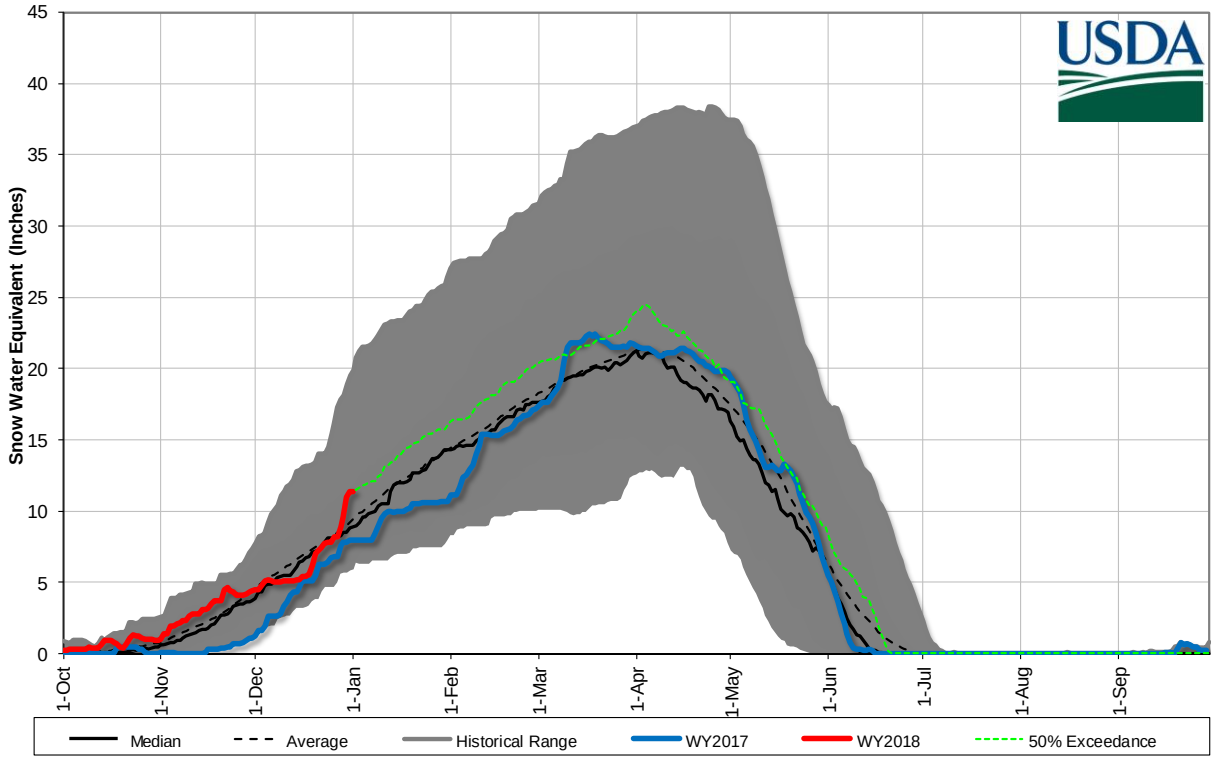
	Percentage of Average	**Percentage of Capacity (Total)**	**Last Year Percentage of Average**
Basin-Wide Storage	**147%**	**34%**	**142%**

**See Reservoir Storage Table for storage in individual reservoirs*

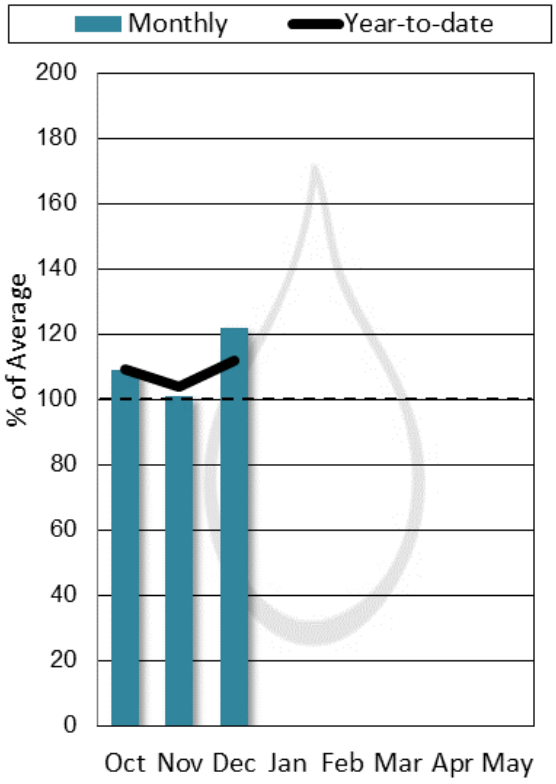
End of Month Storage	**Current (KAF)**	**Last Year (KAF)**	**Average (KAF)**	**Capacity (KAF)**	**% Average**	**% Capacity**
Painted Rocks Lake	9.1	6.7	6.2	31.7	**146%**	**29%**
Lake Como	13.9	15.4	9.4	34.9	**148%**	**40%**

Bitterroot River Basin Snowpack with Non-Exceedence Projections

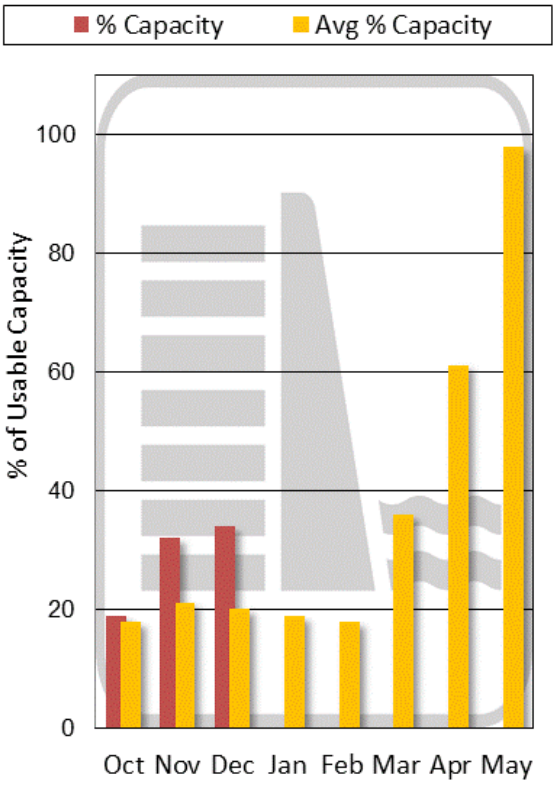
Based on provisional SNOTEL daily data as of 1/1/2018



Mountain and Valley Precipitation



End of Month Reservoir Storage



Storage above is averaged for all reservoirs in the basin. For individual reservoirs see table below.

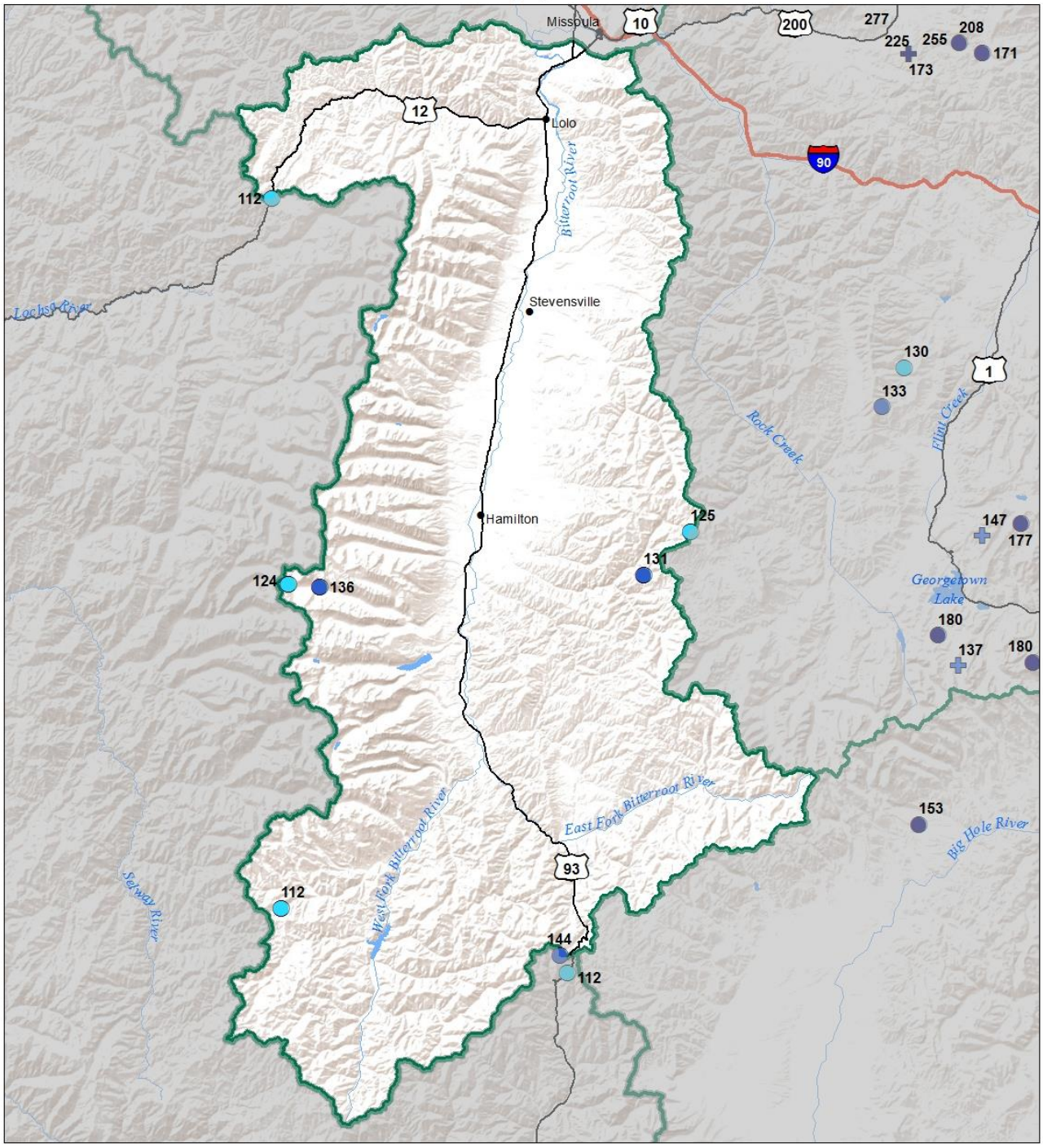
Bittterroot River Basin

		Chance Actual Volume Will Exceed Forecasted Volume						
Forecast Point	**#REF!**	**#REF!**	**#REF!**	**#REF!**	***#REF!***	**#REF!**	**#REF!**	**#REF!**
WF Bitterroot R Nr Conner[2]	#REF!	#REF!	#REF!	#REF!	*#REF!*	#REF!	#REF!	#REF!
	#REF!	#REF!	#REF!	#REF!	*#REF!*	#REF!	#REF!	#REF!
Bitterroot R Nr Darby	#REF!	#REF!	#REF!	#REF!	*#REF!*	#REF!	#REF!	#REF!
	#REF!	#REF!	#REF!	#REF!	*#REF!*	#REF!	#REF!	#REF!
Como Reservoir Inflow2	#REF!	#REF!	#REF!	#REF!	*#REF!*	#REF!	#REF!	#REF!
	#REF!	#REF!	#REF!	#REF!	*#REF!*	#REF!	#REF!	#REF!
Bitterroot R nr Missoula	#REF!	#REF!	#REF!	#REF!	*#REF!*	#REF!	#REF!	#REF!
	#REF!	#REF!	#REF!	#REF!	*#REF!*	#REF!	#REF!	#REF!

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

Bitterroot River Basin
Snow Water Equivalent
Percentage of Normal
January 1, 2018



Snow Water Equivalent
Percent of Normal

SNOTEL				Snowcourse			
> 150%	71 - 90%			> 150%	71 - 90%		
131 - 150%	51 - 70%			131 - 150%	51 - 70%		
111 - 130%	1 - 50%			111 - 130%	1 - 50%		
91 - 110%	0%			91 - 110%	0%		

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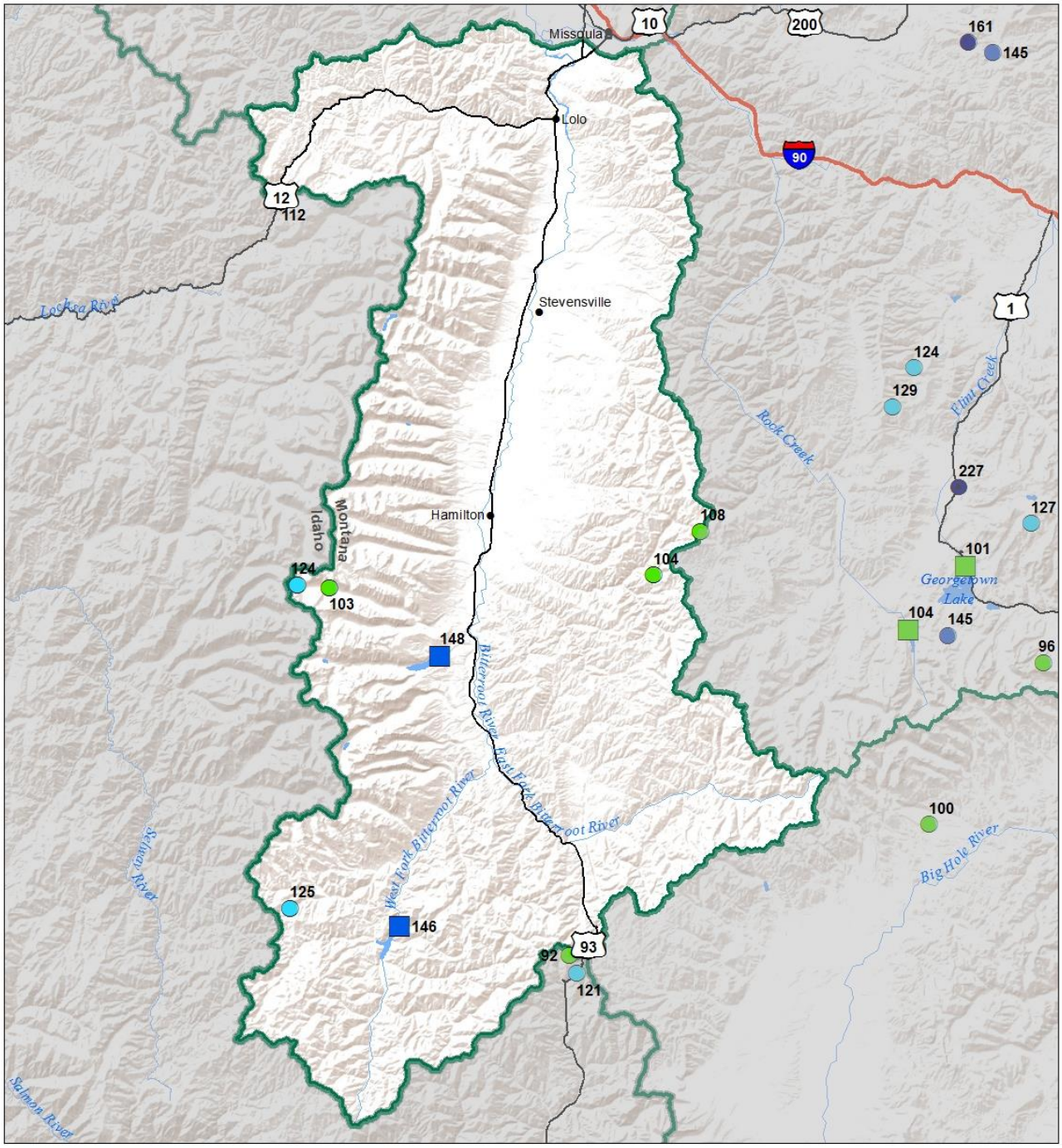
Bitterroot River Basin
Water Year to Date Precipitation and Reservoir Levels
Percentage of Normal
January 1, 2018



Precipitation
Percent of Normal

SNOTEL			COOP/ACIS		
> 150%	71 - 90%		> 150%	71 - 90%	
131 - 150%	51 - 70%		131 - 150%	51 - 70%	
111 - 130%	1 - 50%		111 - 130%	1 - 50%	
91 - 110%			91 - 110%		

Reservoirs
Percent of Normal

- > 150%
- 131 - 150%
- 111 - 130%
- 91 - 110%
- 71 - 90%
- 51 - 70%
- 1 - 50%

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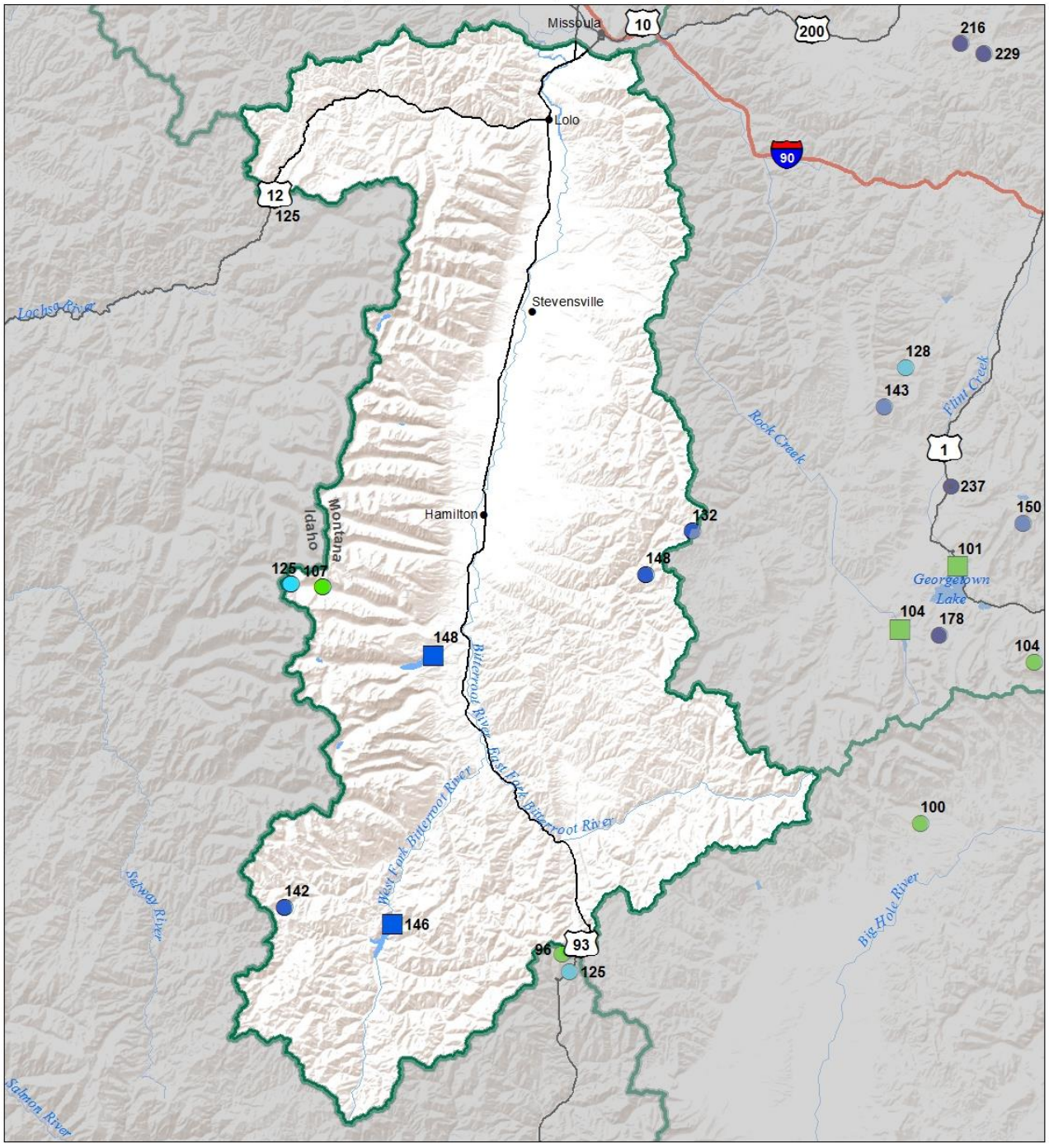
Natural Resource Information System

Bitterroot River Basin
Monthly Precipitation and Reservoir Levels
Percentage of Normal
January 1, 2018 (December 1, 2017 - January 1, 2018)



Precipitation
Percent of Normal

SNOTEL		COOP/ACIS	
> 150%	71 - 90%	> 150%	71 - 90%
131 - 150%	51 - 70%	131 - 150%	51 - 70%
111 - 130%	1 - 50%	111 - 130%	1 - 50%
91 - 110%		91 - 110%	

Reservoirs
Percent of Normal

- > 150%
- 131 - 150%
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- 1 - 50%

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Lower Clark Fork River Basin

A mid-September storm brought several inches of snow to the Lower Clark Fork River basin, but it wasn't until October 1st that SNOTEL sites within basin started accumulating their permanent-seasonal snowpack this water year. Snow trickled in through October and November and most of the basin's SNOTEL sites had an above normal snowpack going into December. As with the rest of the region a mid-December storm brought significant snowfall to Lower Clark Fork River basin. Stuart Mountain SNOTEL was favored the most by this storm. From December 15th to the 31st Stuart Mountain received 55 inches of snow (10.4 inches of SWE). As of January 1st all SNOTEL sites within the Lower Clark Fork River basin, with the exception of Lookout SNOTEL, had an above normal snowpack. Overall, the basin wide snowpack is currently above normal.

Lower Clark For River Basin Data Summary

Snowpack	**Percent of 1981-2010 Normal (Median)**	**Last Year Percentage of Normal (Median)**
LOWER CLARK FORK RIVER BASIN	116%	86%
Basin-Wide	**116%**	**86%**

Precipitation	**Monthly Percentage of Average**	**WYTD Percentage of 1981-2010 Average***	**WYTD Last Year Percentage of Average**
Mountain Precipitation	114%	117%	126%
Valley Precipitation	156%	130%	159%
Basin-Wide Precipitation	**115%**	**117%**	**127%**

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

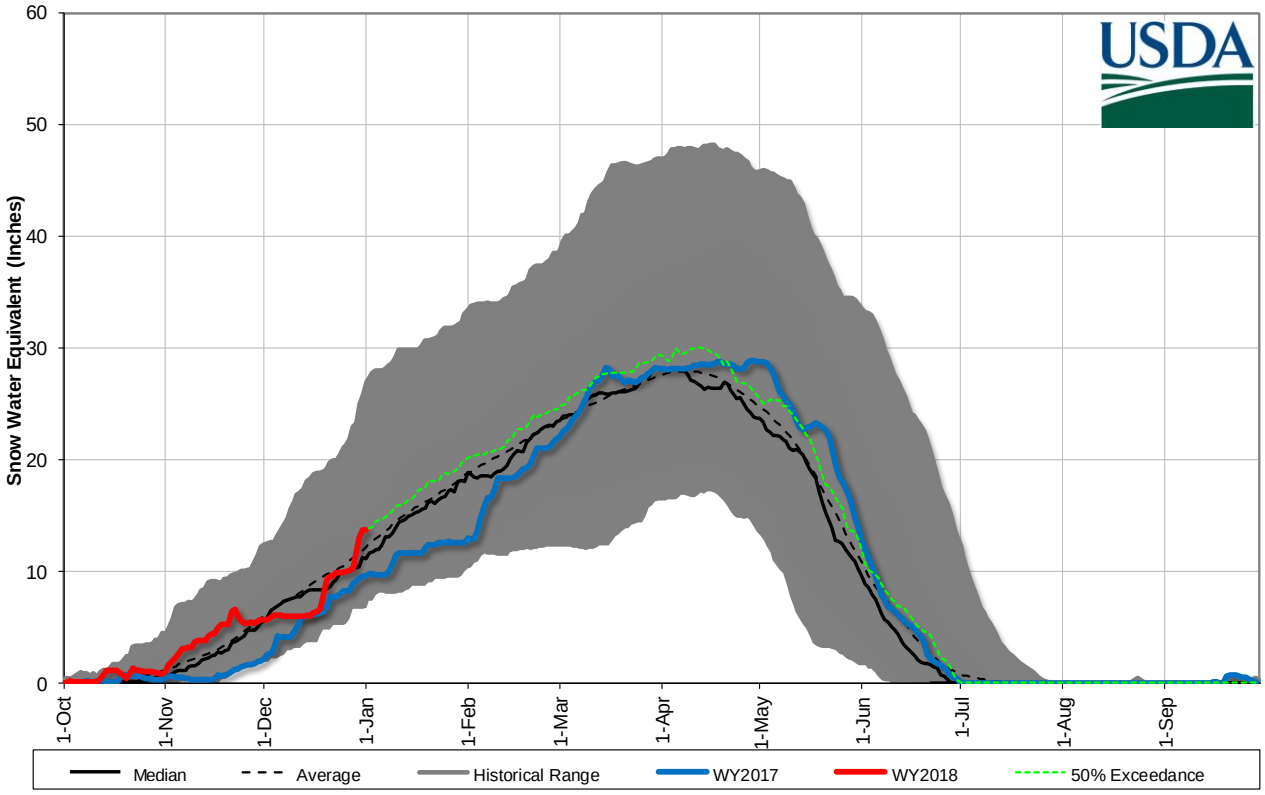
Reservoir Storage	**Percentage of Average**	**Percentage of Capacity (Total)**	**Last Year Percentage of Average**
Basin-Wide Storage	**99%**	**94%**	**102%**

**See Reservoir Storage Table for storage in individual reservoirs*

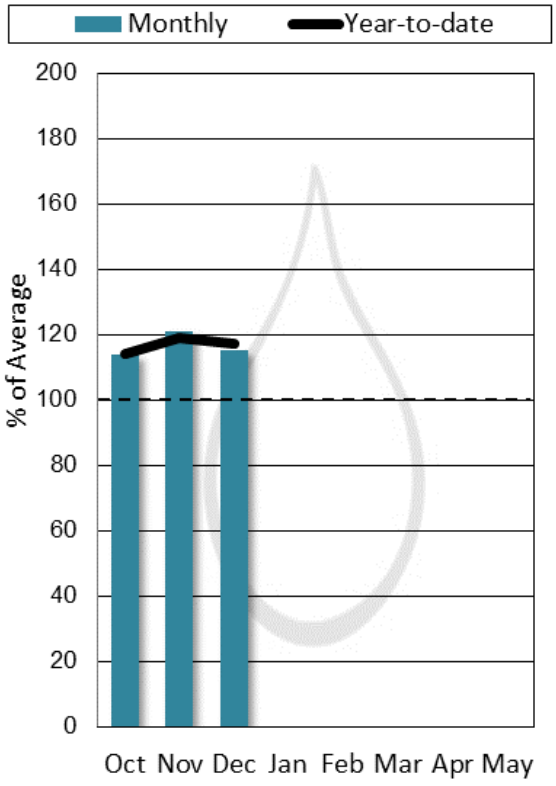
End of Month Storage	**Current (KAF)**	**Last Year (KAF)**	**Average (KAF)**	**Capacity (KAF)**	**% Average**	**% Capacity**
Noxon Rapids Reservoir	314.1	323.7	317.9	335	**99%**	**94%**

Lower Clark Fork River Basin Snowpack with Non-Exceedence Projections

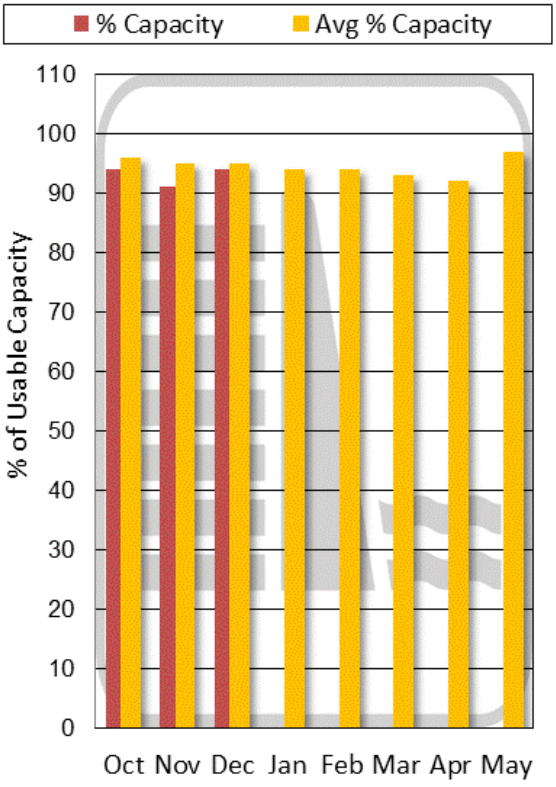
Based on provisional SNOTEL daily data as of 1/1/2018



Mountain and Valley Precipitation

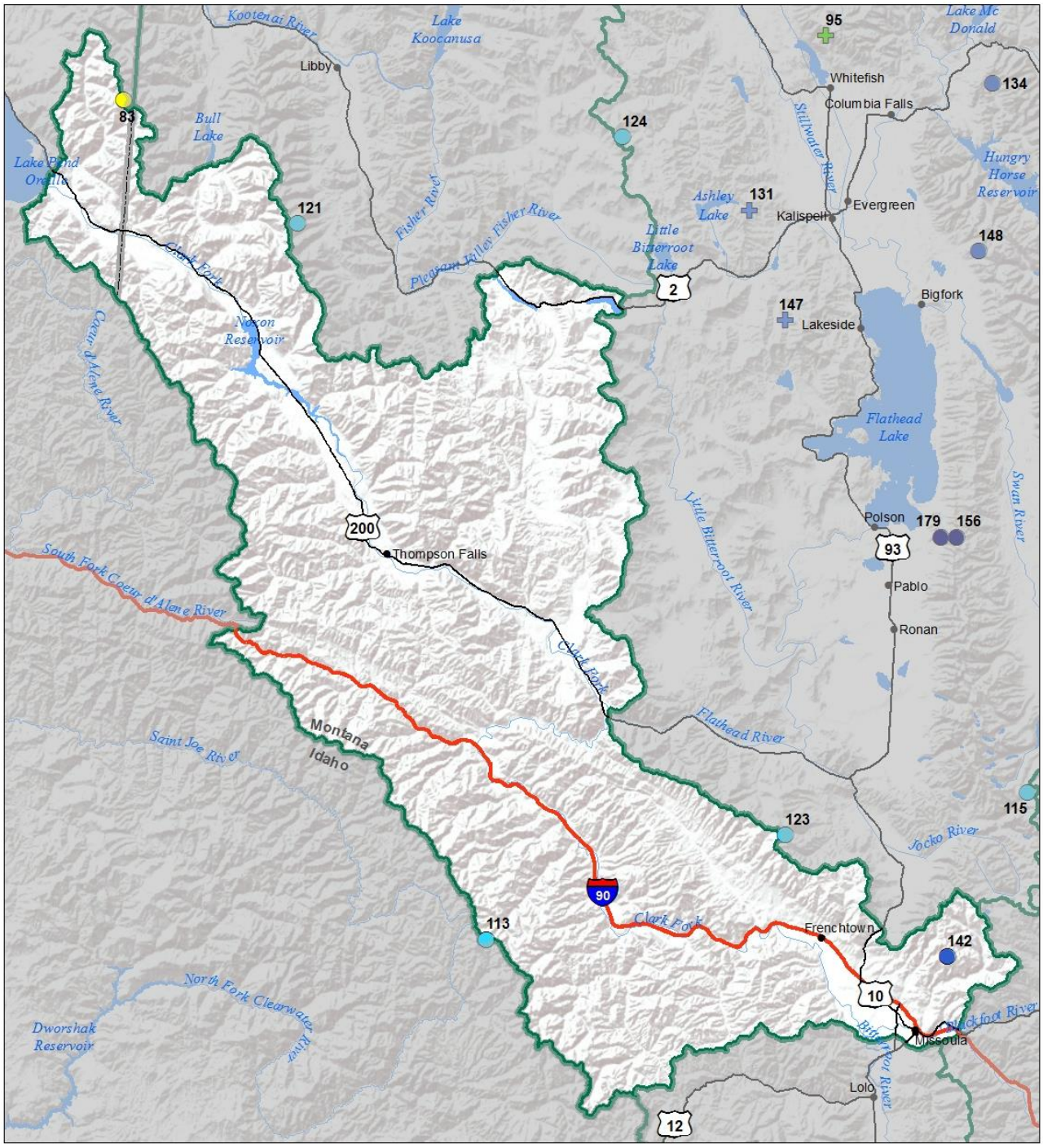


End of Month Reservoir Storage



Storage above is averaged for all reservoirs in the basin. For individual reservoirs see table below.

Lower Clark Fork River Basin
Snow Water Equivalent
Percentage of Normal
January 1, 2018



Snow Water Equivalent
Percent of Normal

SNOTEL				Snowcourse			
> 150%	71 - 90%			> 150%	71 - 90%		
131 - 150%	51 - 70%			131 - 150%	51 - 70%		
111 - 130%	1 - 50%			111 - 130%	1 - 50%		
91 - 110%	0%			91 - 110%	0%		

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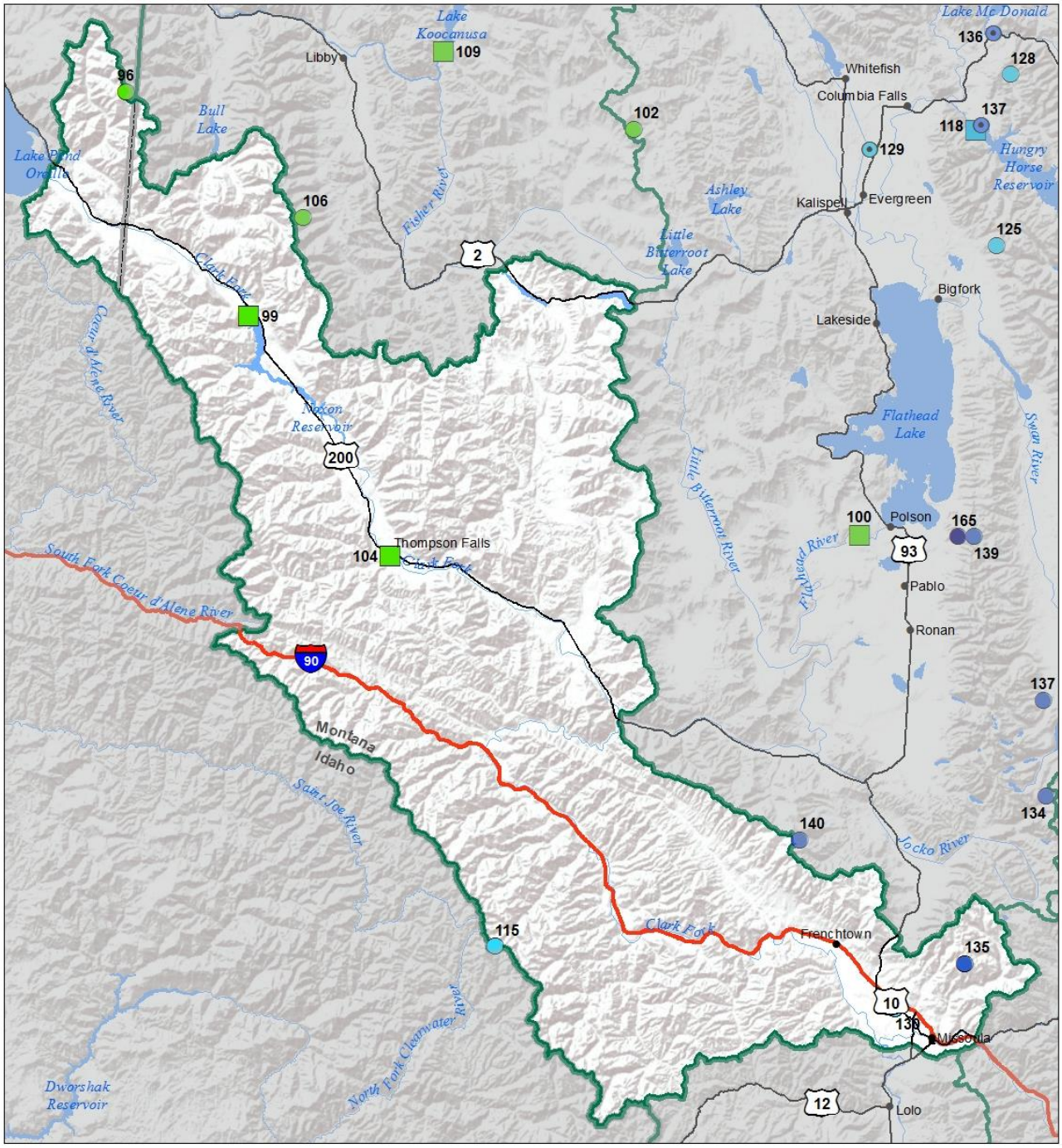
Lower Clark Fork River Basin
Water Year to Date Precipitation and Reservoir Levels
Percentage of Normal
January 1, 2018



Precipitation
Percent of Normal

SNOTEL		COOP/ACIS	
> 150%	71 - 90%	> 150%	71 - 90%
131 - 150%	51 - 70%	131 - 150%	51 - 70%
111 - 130%	1 - 50%	111 - 130%	1 - 50%
91 - 110%		91 - 110%	

Reservoirs
Percent of Normal

- > 150%
- 131 - 150%
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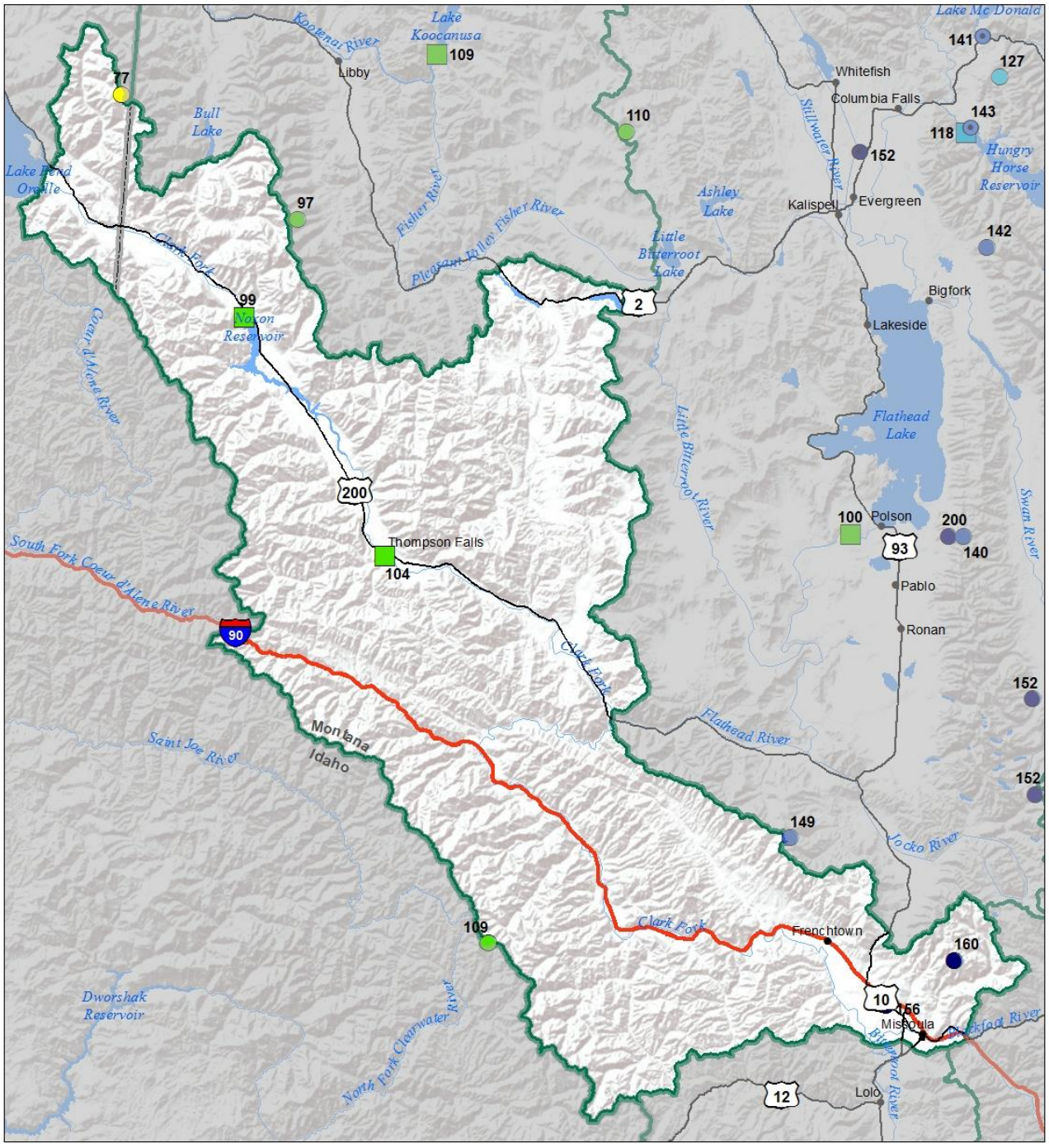
Montana State Library Natural Resource Information System

Lower Clark Fork River Basin
Monthly Precipitation and Reservoir Levels
Percentage of Normal
January 1, 2018 (December 1, 2017 - January 1, 2018)



Precipitation
Percent of Normal

SNOTEL		COOP/ACIS	
> 150%	71 - 90%	> 150%	71 - 90%
131 - 150%	51 - 70%	131 - 150%	51 - 70%
111 - 130%	1 - 50%	111 - 130%	1 - 50%
91 - 110%		91 - 110%	

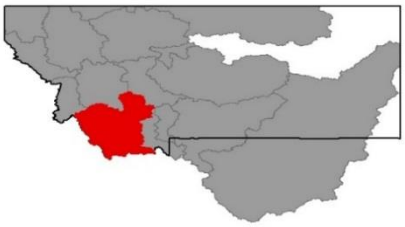
Reservoirs
Percent of Normal

- > 150%
- 131 - 150%
- 111 - 130%
- 91 - 110%
- 71 - 90%
- 51 - 70%
- 1 - 50%

USDA

Montana State Library Natural Resource Information System

Jefferson River Basin



Compared to last year on January 1st the Jefferson River basin is looking good, and has snowpack basin-wide that is above normal to well above normal. Last year, basin-wide snowpack was record low on January 1st, a direct result of the lack of precipitation and well above average temperatures experienced during the month of November. This year is a different story, many high elevation SNOTEL sites began the water year (October 1st) with snowpack already in place. The first three months of November brought consistent snowfall to the basin, before a brief lull which lasted until mid-December. Snowfall since mid- December favored the northern end of the Jefferson River basin, but almost all area received some snow from the passing storms. Only two low to mid elevation SNOTEL sites in the Upper Red Rocks basin have a snowpack that is below normal for this date, the storms so far this winter have dropped less than average in the headwaters of this basin. There is not a lot of snow monitoring in the high elevations of the Centennial Range, but the high elevation White Elephant site on the Idaho (south) side of the range is reporting above normal snowpack for this date. On January 1st, about 30 to 40% of the seasonal snowfall has accumulated, leaving a lot of time for improvement in this region.

Jefferson River Basin Data Summary

Snowpack	**Percent of 1981-2010 Normal (Median)**	**Last Year Percentage of Normal (Median)**
BEAVERHEAD	117%	88%
RUBY	133%	63%
BIGHOLE	147%	82%
BOULDER	162%	77%
Basin-Wide	**134%**	**78%**

Precipitation	**Monthly Percentage of Average**	**WYTD Percentage of 1981-2010 Average***	**WYTD Last Year Percentage of Average**
Mountain Precipitation	104%	102%	113%
Valley Precipitation	145%	90%	219%
Basin-Wide Precipitation	**104%**	**101%**	**115%**

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

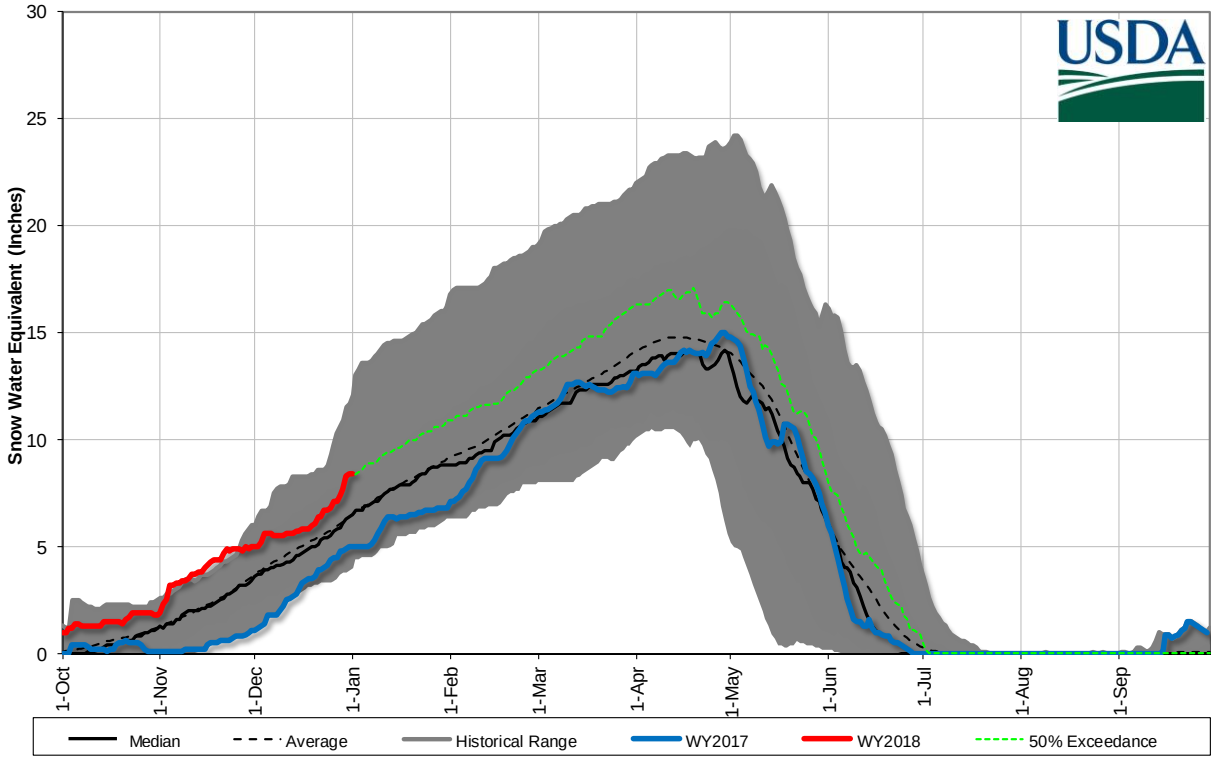
Reservoir Storage	**Percentage of Average**	**Percentage of Capacity (Total)**	**Last Year Percentage of Average**
Basin-Wide Storage	**128%**	**55%**	**85%**

**See Reservoir Storage Table for storage in individual reservoirs*

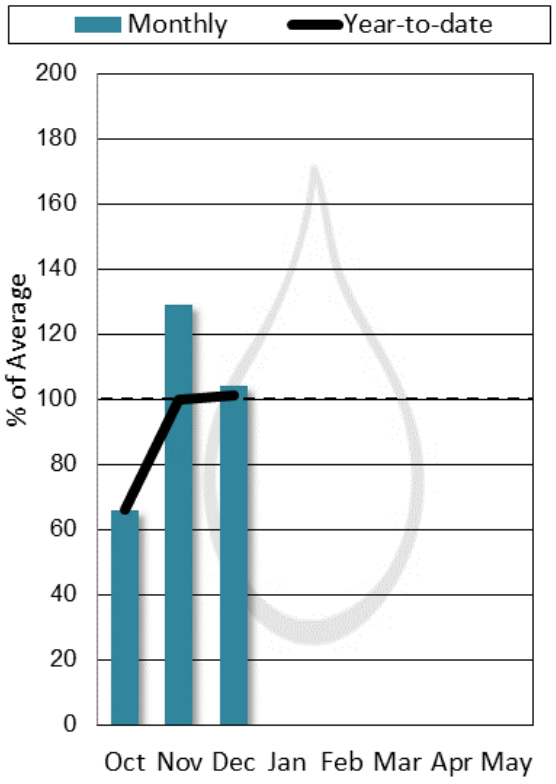
End of Month Storage	**Current (KAF)**	**Last Year (KAF)**	**Average (KAF)**	**Capacity (KAF)**	**% Average**	**% Capacity**
Lima Reservoir	51.4	33.5	27.4	84.0	**187%**	**61%**
Clark Canyon Res	134.6	83.9	116.7	255.6	**115%**	**53%**
Ruby River Reservoir	23.5	22.3	20.1	38.8	**117%**	**61%**

Jefferson River Basin Snowpack with Non-Exceedence Projections

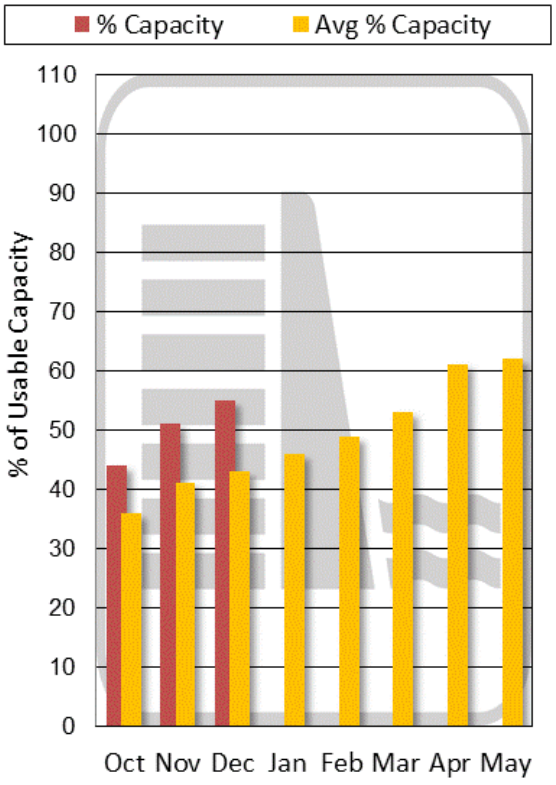
Based on provisional SNOTEL daily data as of 1/1/2018



Mountain and Valley Precipitation

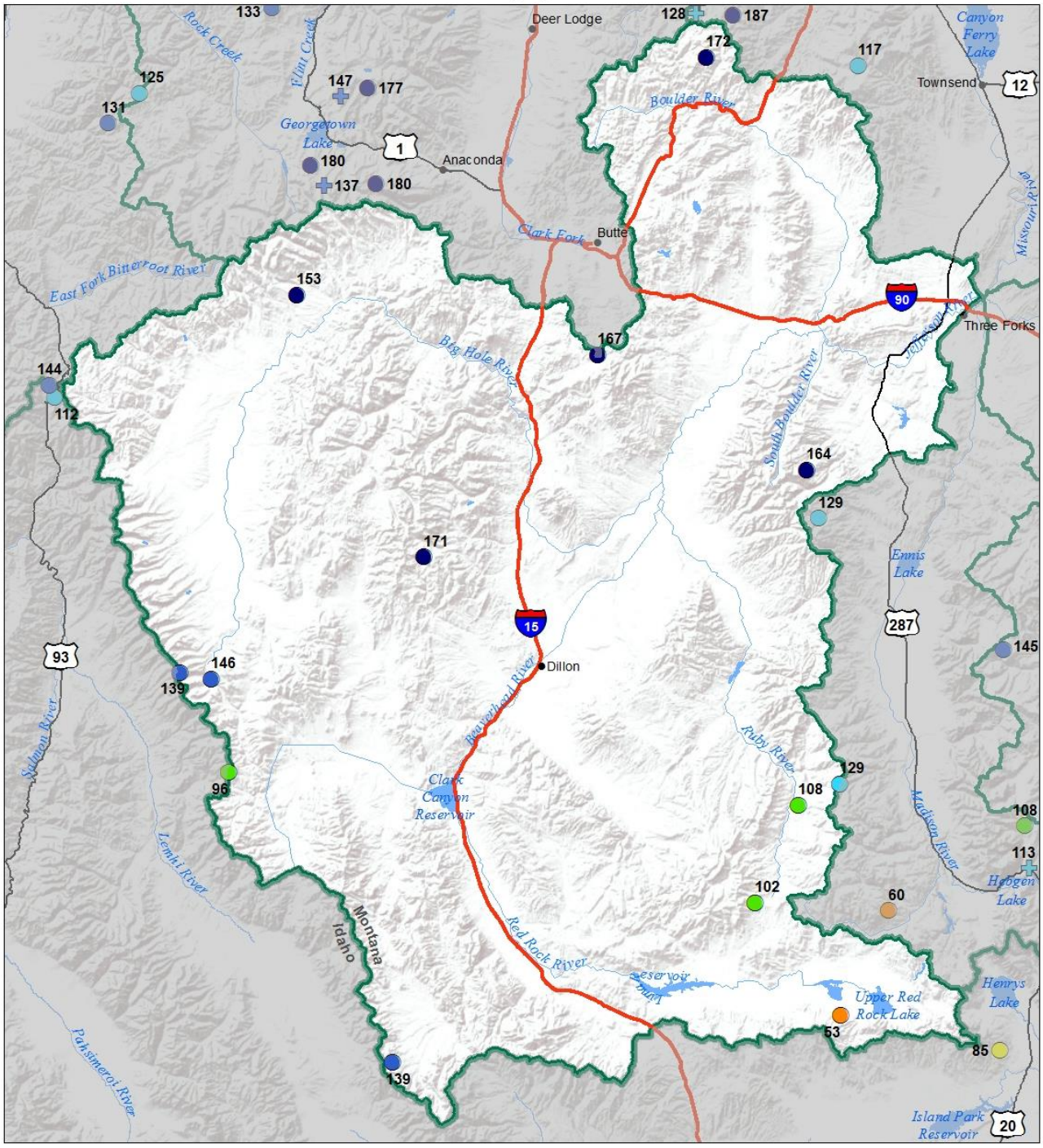


End of Month Reservoir Storage



Storage above is averaged for all reservoirs in the basin. For individual reservoirs see table below.

Jefferson River Basin
Snow Water Equivalent
Percentage of Normal
January 1, 2018



Snow Water Equivalent
Percent of Normal

SNOTEL				Snowcourse			
> 150%	71 - 90%			> 150%	71 - 90%		
131 - 150%	51 - 70%			131 - 150%	51 - 70%		
111 - 130%	1 - 50%			111 - 130%	1 - 50%		
91 - 110%	0%			91 - 110%	0%		

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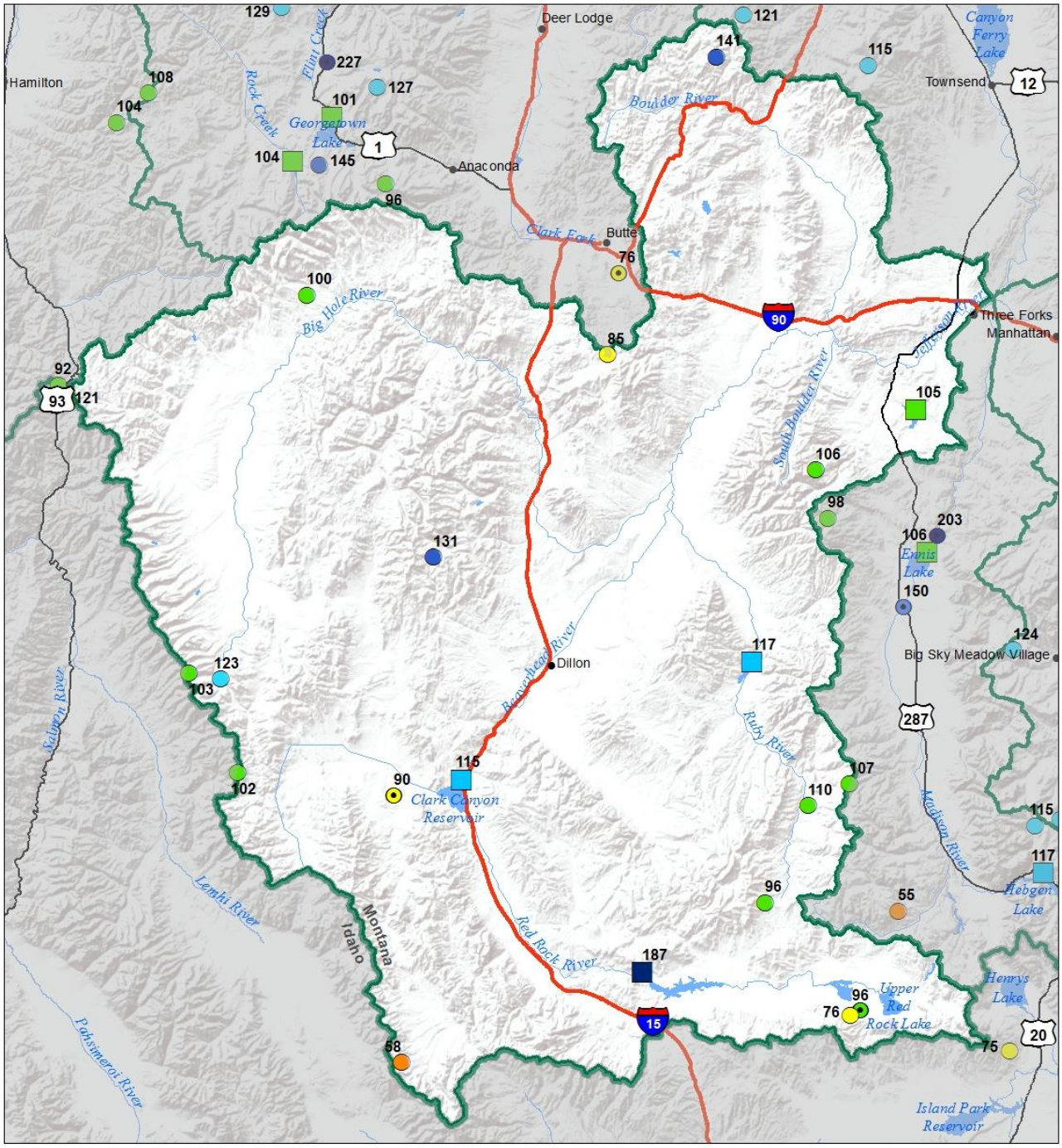
Jefferson River Basin
Water Year to Date Precipitation and Reservoir Levels
Percentage of Normal
January 1, 2018



Precipitation
Percent of Normal

SNOTEL		COOP/ACIS	
> 150%	71 - 90%	> 150%	71 - 90%
131 - 150%	51 - 70%	131 - 150%	51 - 70%
111 - 130%	1 - 50%	111 - 130%	1 - 50%
91 - 110%		91 - 110%	

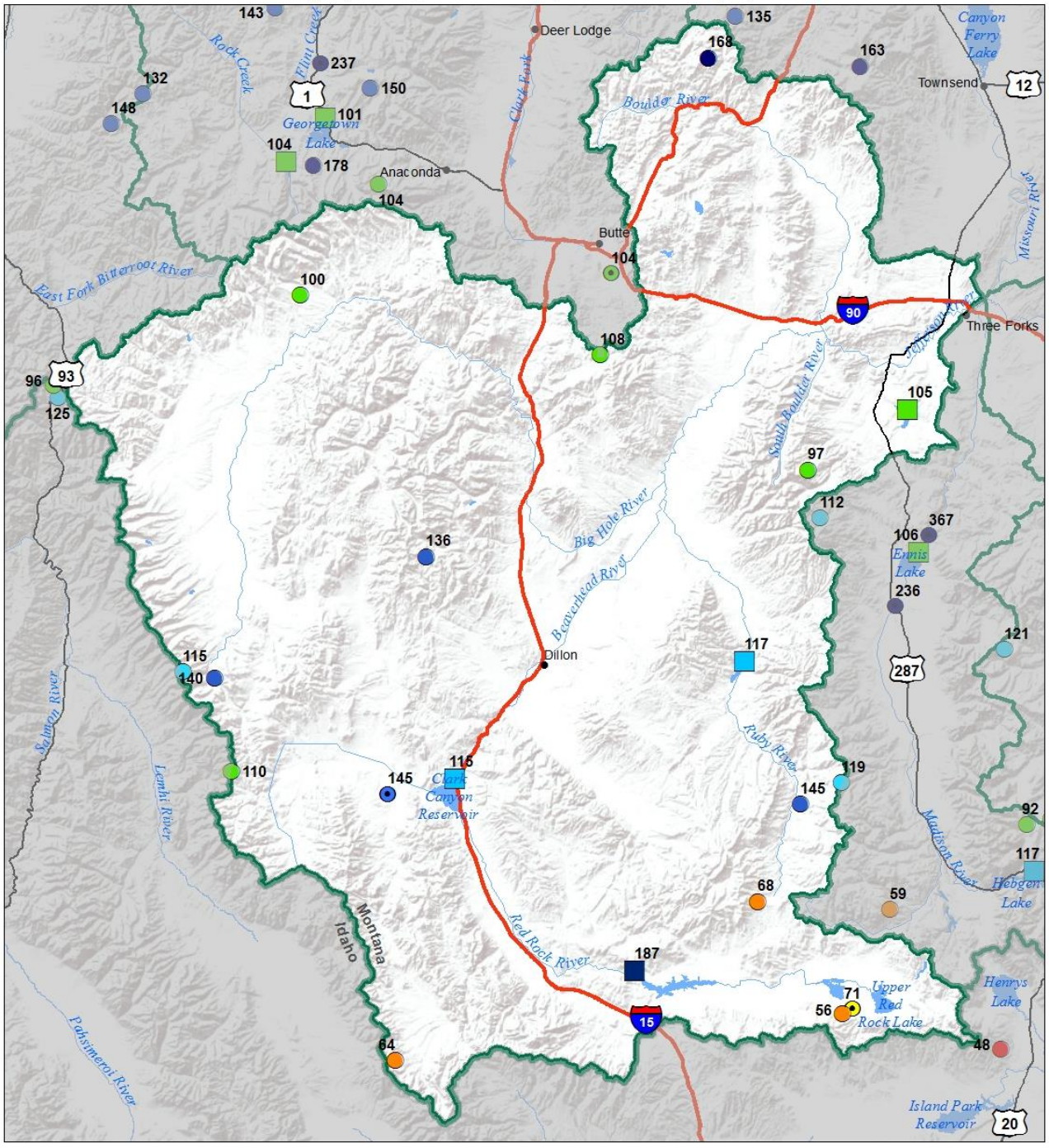
Reservoirs
Percent of Normal

- > 150%
- 131 - 150%
- 111 - 130%
- 91 - 110%
- 71 - 90%
- 51 - 70%
- 1 - 50%

USDA

Montana State Library Natural Resource Information System

Jefferson River Basin
Monthly Precipitation and Reservoir Levels
Percentage of Normal
January 1, 2018 (December 1, 2017 - January 1, 2018)



Precipitation
Percent of Normal

SNOTEL		COOP/ACIS	
> 150%	71 - 90%	> 150%	71 - 90%
131 - 150%	51 - 70%	131 - 150%	51 - 70%
111 - 130%	1 - 50%	111 - 130%	1 - 50%
91 - 110%		91 - 110%	

Reservoirs
Percent of Normal

- > 150%
- 131 - 150%
- 111 - 130%
- 91 - 110%
- 71 - 90%
- 51 - 70%
- 1 - 50%

USDA

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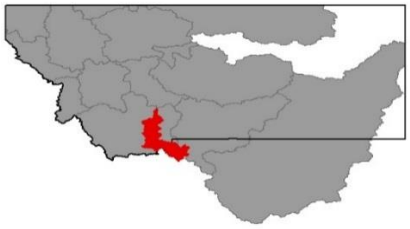
Madison River Basin



Like many of the other southwest river basins, the Madison River basin has snowpack last year on January 1st, 2017 that was near record low in many locations. Thankfully, this year has been different and snowpack totals are near to above normal for January 1st, 2018. Snowfall began in the basin in late September at high elevations, and many of the high elevation SNOTEL sites had a snowpack in place on October 1st when we entered the new water year. Snowfall was consistent through the month of November, before a lull that lasted through early December into mid-month. Between December 15th and Jan 1st 1.5" of 3.5" of snow water was added to the basin snowpack, a productive storm which helped to end the year on the right track. Snowpack totals are the best in the northern end of the Madison River basin where the SNOTEL sites in the Tobacco Root range are reporting 129 to 162% of normal snowpack for this date. The Upper Madison above Hebgen Lake has the lowest snow totals, but they still range from 82 to 104%.

Madison River Basin Data Summary

Snowpack	**Percent of 1981-2010 Normal (Median)**	**Last Year Percentage of Normal (Median)**
MADISON abv HEBGEN LAKE	98%	94%
MADISON blw HEBGEN LAKE	123%	70%
Basin-Wide	**112%**	**80%**

Precipitation	**Monthly Percentage of Average**	**WYTD Percentage of 1981-2010 Average***	**WYTD Last Year Percentage of Average**
Mountain Precipitation	82%	99%	138%
Valley Precipitation	307%	180%	185%
Basin-Wide Precipitation	**88%**	**102%**	**140%**

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

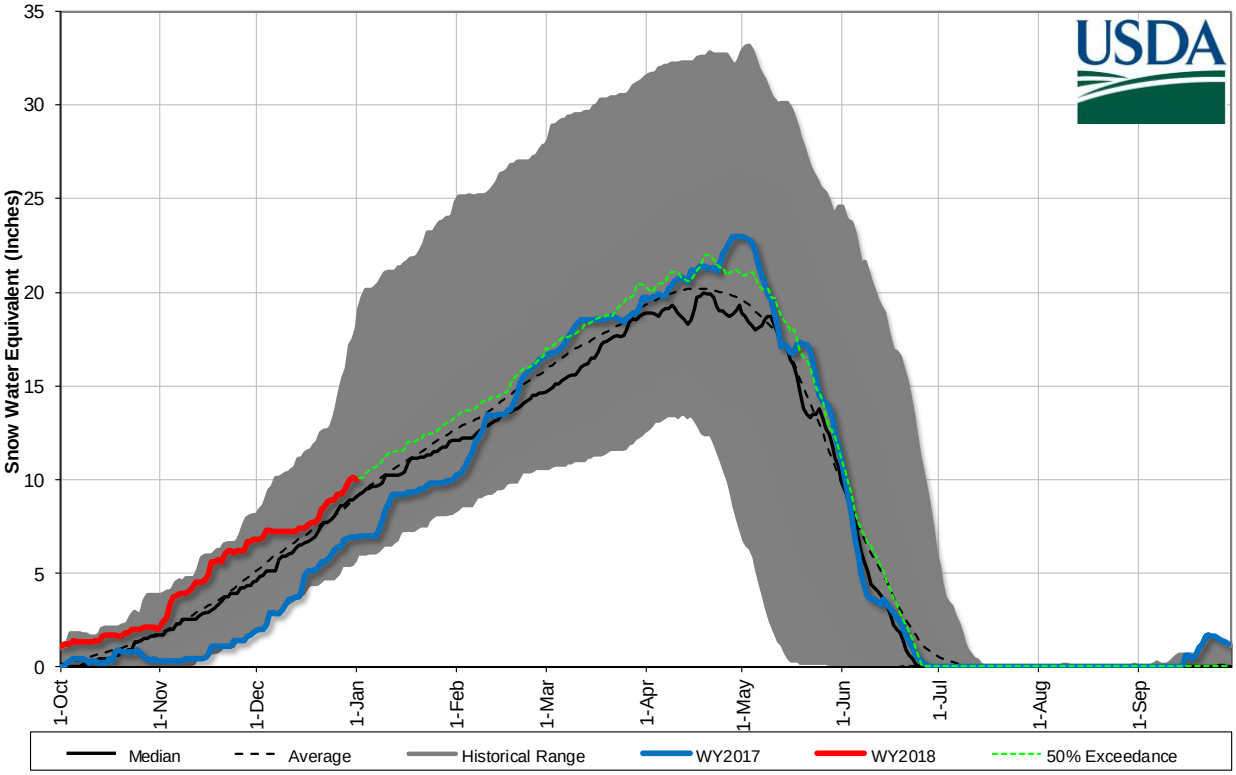
Reservoir Storage	**Percentage of Average**	**Percentage of Capacity (Total)**	**Last Year Percentage of Average**
Basin-Wide Storage	**116%**	**86%**	**110%**

**See Reservoir Storage Table for storage in individual reservoirs*

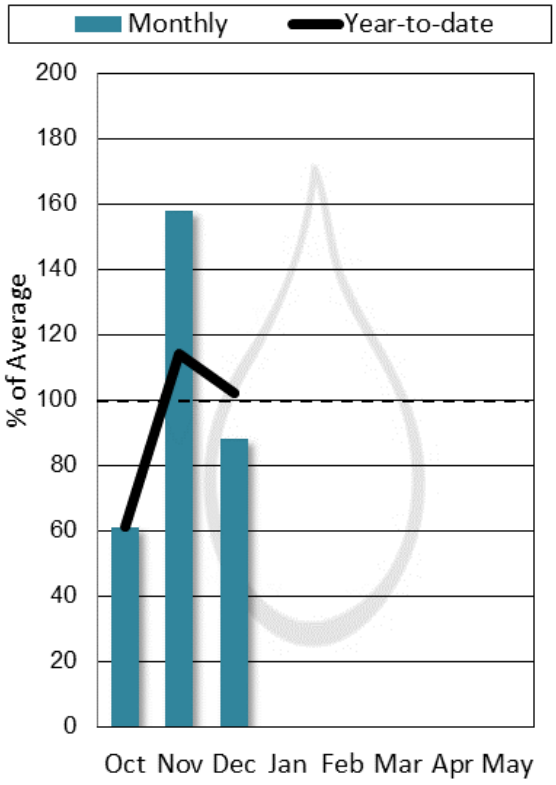
End of Month Storage	**Current (KAF)**	**Last Year (KAF)**	**Average (KAF)**	**Capacity (KAF)**	**% Average**	**% Capacity**
Ennis Lake	31.8	28.5	30.0	41.0	**106%**	**77%**
Hebgen Lake	330.2	316.7	283.2	378.8	**117%**	**87%**

Madison River Basin Snowpack with Non-Exceedence Projections

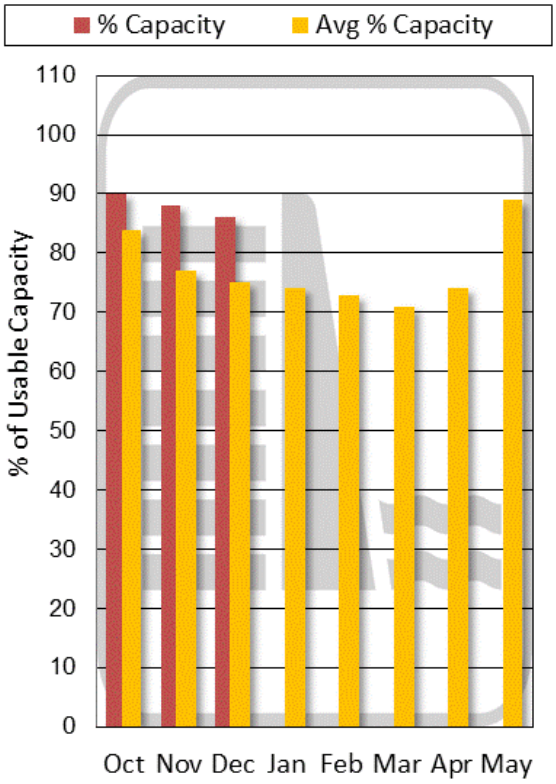
Based on provisional SNOTEL daily data as of 1/1/2018



Mountain and Valley Precipitation

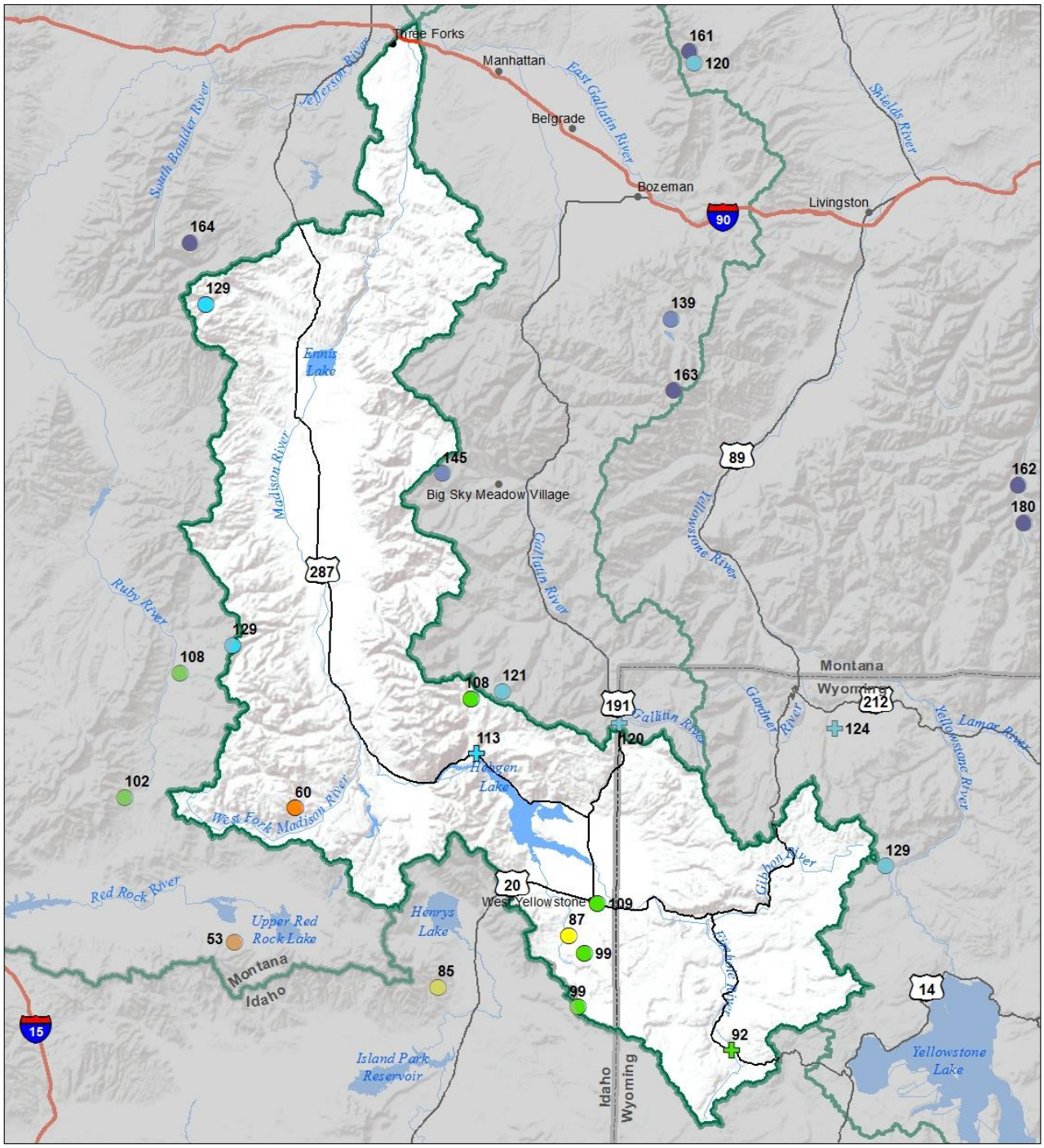


End of Month Reservoir Storage



Storage above is averaged for all reservoirs in the basin. For individual reservoirs see table below.

Madison River Basin
Snow Water Equivalent
Percentage of Normal
January 1, 2018



Snow Water Equivalent
Percent of Normal

SNOTEL				Snowcourse			
> 150%	71 - 90%			> 150%	71 - 90%		
131 - 150%	51 - 70%			131 - 150%	51 - 70%		
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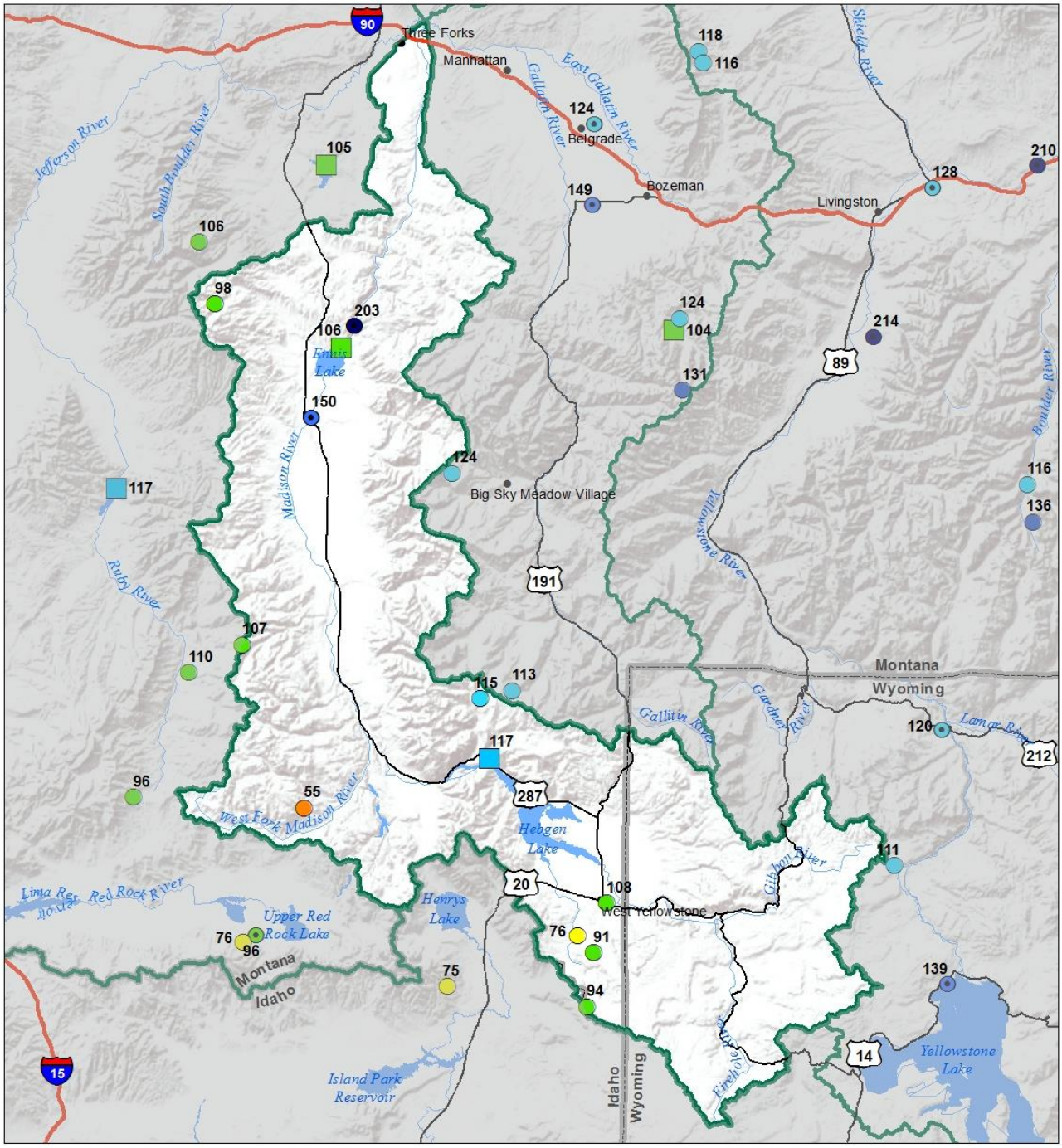
Madison River Basin
Water Year to Date Precipitation and Reservoir Levels
Percentage of Normal
January 1, 2018



Precipitation
Percent of Normal

SNOTEL		COOP/ACIS	
> 150%	71 - 90%	> 150%	71 - 90%
131 - 150%	51 - 70%	131 - 150%	51 - 70%
111 - 130%	1 - 50%	111 - 130%	1 - 50%
91 - 110%		91 - 110%	

Reservoirs
Percent of Normal

- > 150%
- 131 - 150%
- 111 - 130%
- 91 - 110%
- 71 - 90%
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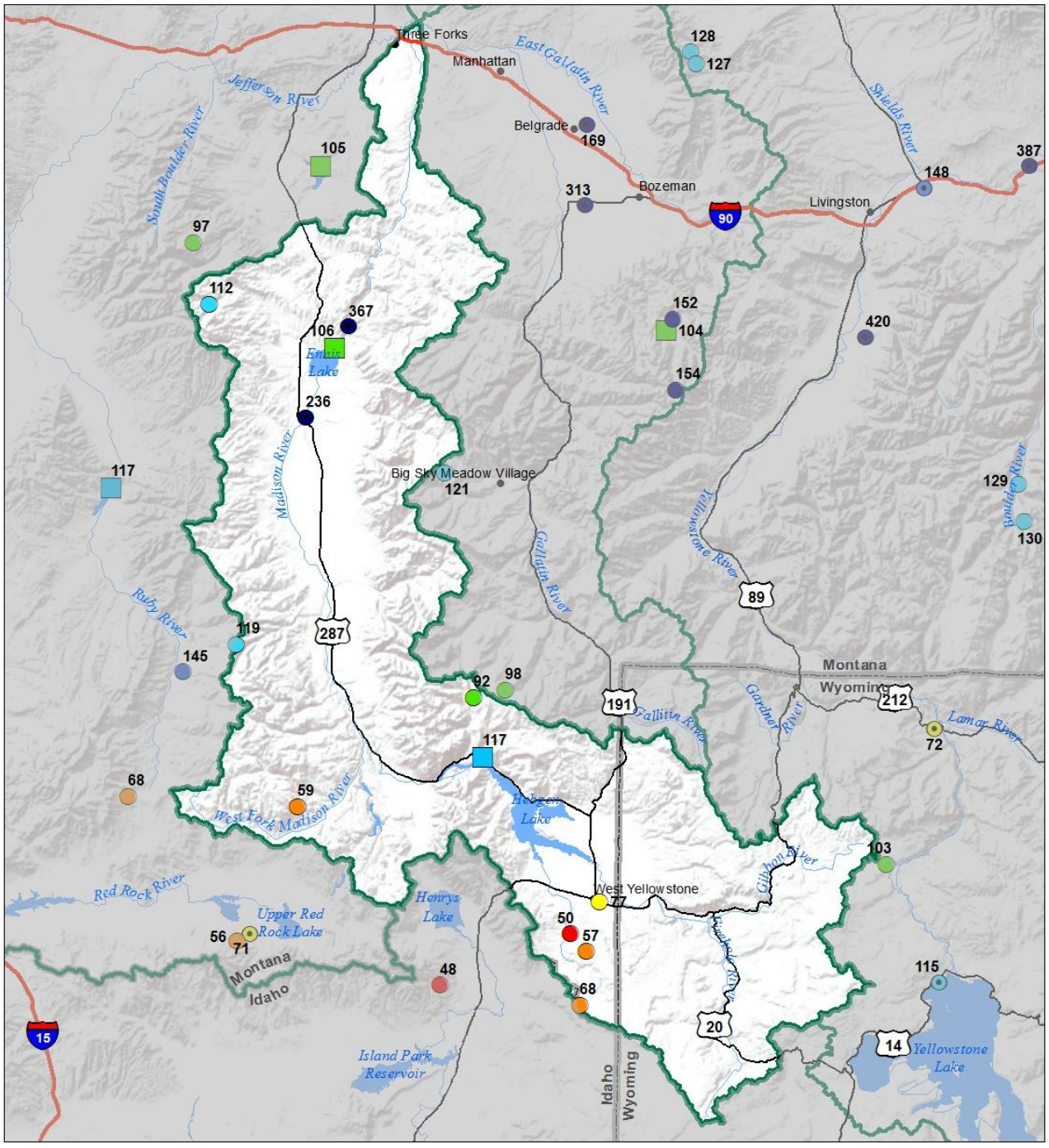
Madison River Basin
Monthly Precipitation and Reservoir Levels
Percentage of Normal
January 1, 2018 (December 1, 2017 - January 1, 2018)



Precipitation
Percent of Normal

SNOTEL		COOP/ACIS	
> 150%	71 - 90%	> 150%	71 - 90%
131 - 150%	51 - 70%	131 - 150%	51 - 70%
111 - 130%	1 - 50%	111 - 130%	1 - 50%
91 - 110%		91 - 110%	

Reservoirs
Percent of Normal

- > 150%
- 131 - 150%
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- 91 - 110%
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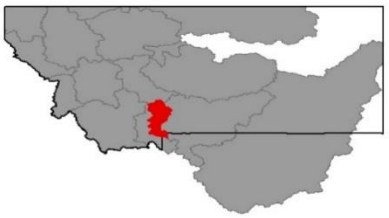
USDA

Montana State Library Natural Resource Information System



Gallatin River Basin

It's always nice to start the new Water Year (October 1st) with snow on the ground in the high country and that is exactly what happened this year in the Gallatin River basin. A late September storm dropped 1.8" of snow water equivalent (SWE) at the high elevation Shower Falls SNOTEL site in the Hyalite drainage, and 1.5" of SWE at the Carrot Basin SNOTEL sites in the southern Madison Range. The month of November continued to bring snow to the region and consistent snowfall through the end of the month left snowpack totals near record high for many SNOTEL sites on Dec 1. After a brief lull during the first half of December, more favorable storm patterns moved back into place which dropped 20 to 30" of snow depth and up to 4.1" of SWE in the mountains of the basin between December 15th and January 1st. The tractors, snow blowers and shovels were out across the valley through the holidays, and skiers and riders delighted in the low density snow that fell at the local ski hills and in the backcountry. Above normal snowpack on January 1st may give us bragging rights right now when looking across the rest of the west, but in terms of water supply snow totals are much more important on May 1st in this area. 30 to 40% of the seasonal snowfall has typically occurred on Jan 1st, so there is a lot more winter, and critical spring snowfall months, left to come.

Gallatin River Basin Data Summary

Snowpack	**Percent of 1981-2010 Normal (Median)**	**Last Year Percentage of Normal (Median)**
UPPER GALLATIN	123%	78%
HYALITE	155%	76%
BRIDGER	143%	78%
Basin-Wide	**135%**	**78%**

Precipitation	**Monthly Percentage of Average**	**WYTD Percentage of 1981-2010 Average***	**WYTD Last Year Percentage of Average**
Mountain Precipitation	122%	120%	134%
Valley Precipitation	169%	124%	140%
Basin-Wide Precipitation	**123%**	**120%**	**134%**

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

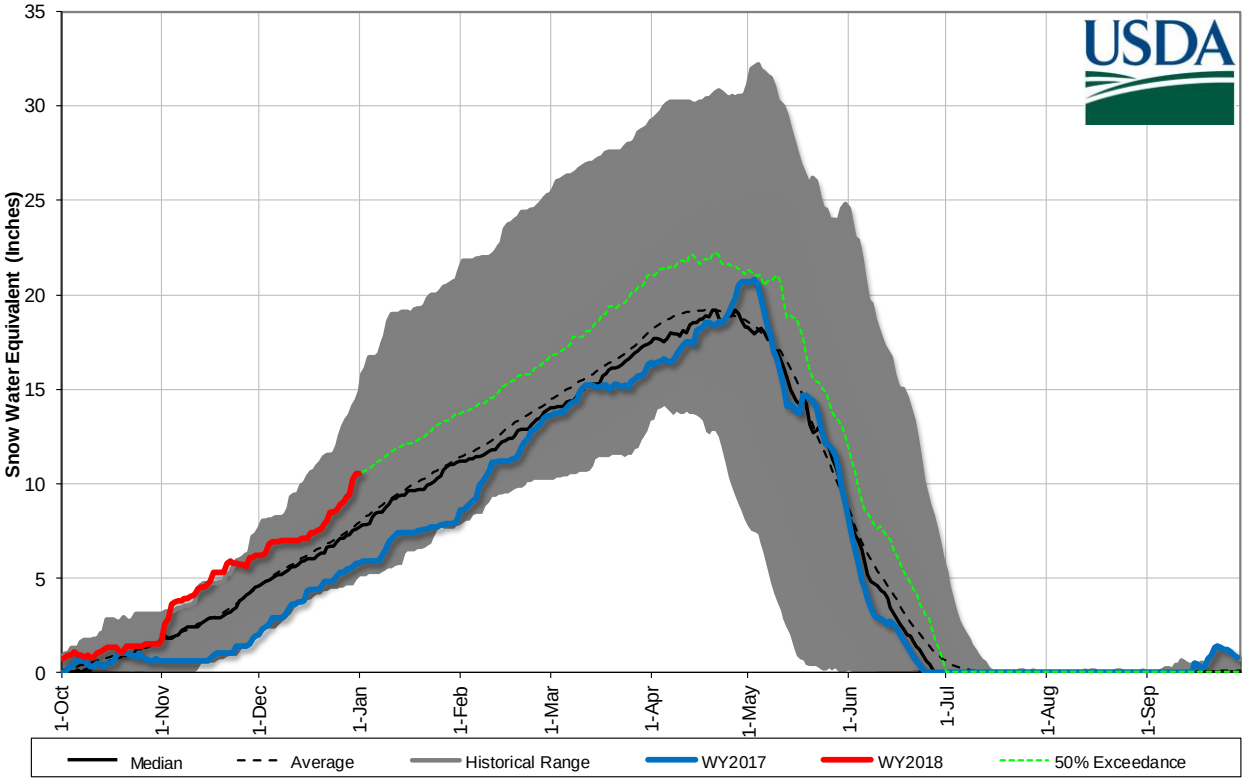
Reservoir Storage	**Percentage of Average**	**Percentage of Capacity (Total)**	**Last Year Percentage of Average**
Basin-Wide Storage	**104%**	**52%**	**107%**

**See Reservoir Storage Table for storage in individual reservoirs*

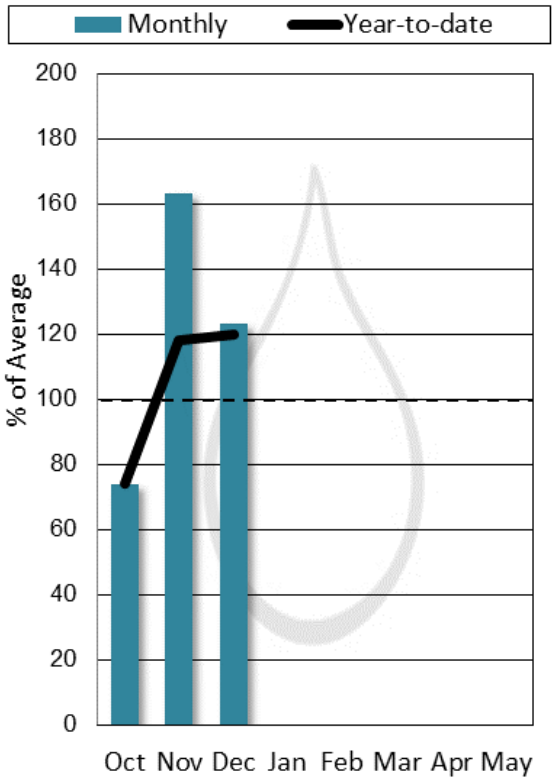
End of Month Storage	**Current (KAF)**	**Last Year (KAF)**	**Average (KAF)**	**Capacity (KAF)**	**% Average**	**% Capacity**
Middle Creek Res	5.3	5.4	5.1	10.2	**104%**	**52%**

Gallatin River Basin Snowpack with Non-Exceedence Projections

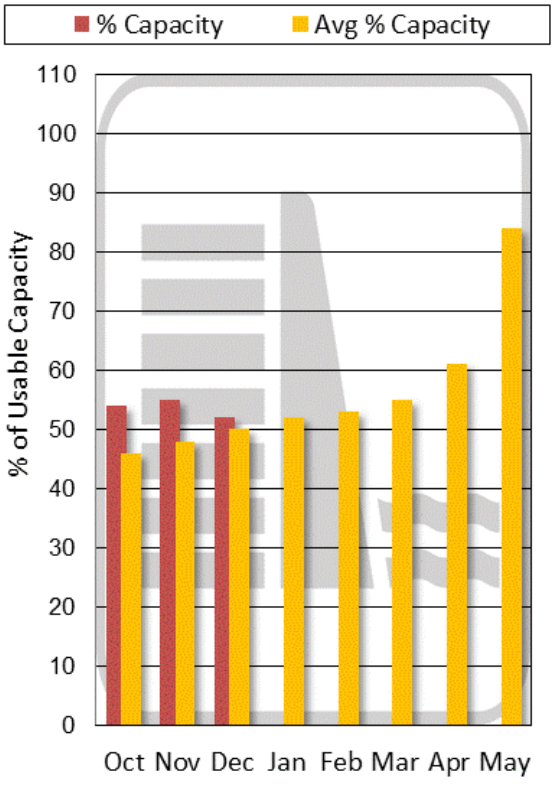
Based on provisional SNOTEL daily data as of 1/1/2018



Mountain and Valley Precipitation

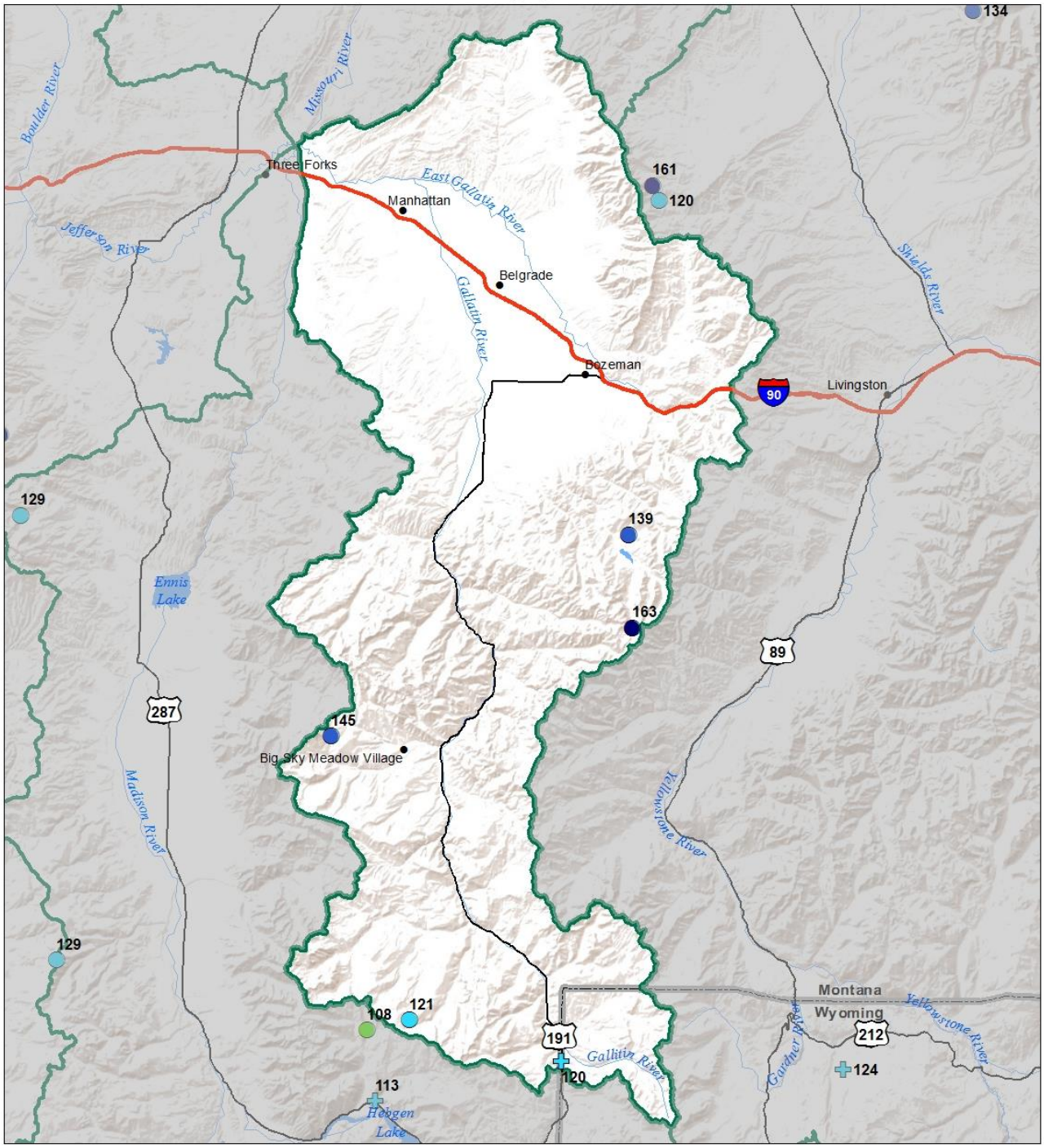


End of Month Reservoir Storage



Storage above is averaged for all reservoirs in the basin. For individual reservoirs see table below.

Gallatin River Basin
Snow Water Equivalent
Percentage of Normal
January 1, 2018



Snow Water Equivalent
Percent of Normal

SNOTEL				Snowcourse			
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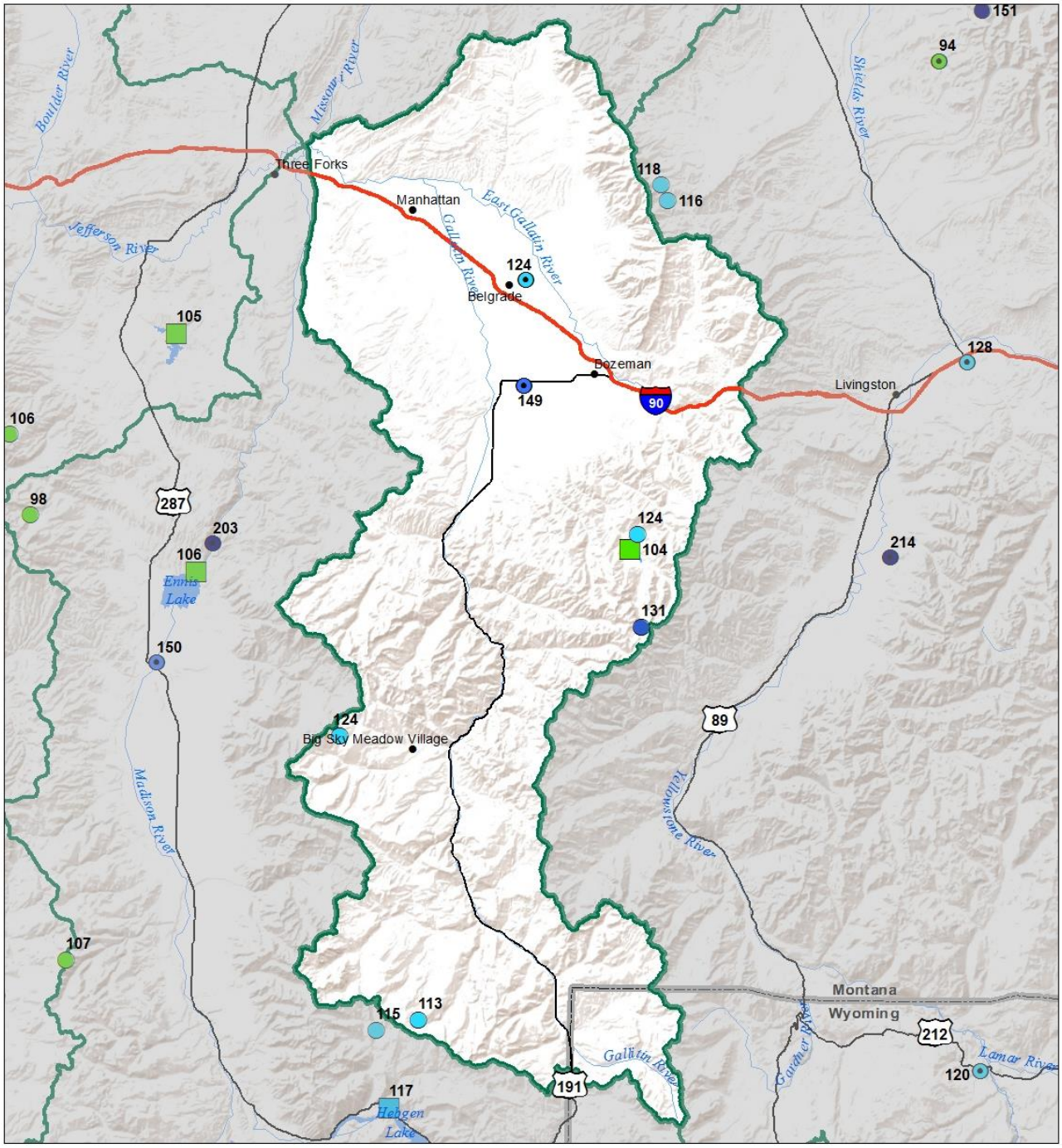
Montana State Library
Natural Resource Information System

Gallatin River Basin
Water Year to Date Precipitation and Reservoir Levels
Percentage of Normal
January 1, 2018



Precipitation
Percent of Normal

SNOTEL		COOP/ACIS	
> 150%	71 - 90%	> 150%	71 - 90%
131 - 150%	51 - 70%	131 - 150%	51 - 70%
111 - 130%	1 - 50%	111 - 130%	1 - 50%
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Reservoirs
Percent of Normal

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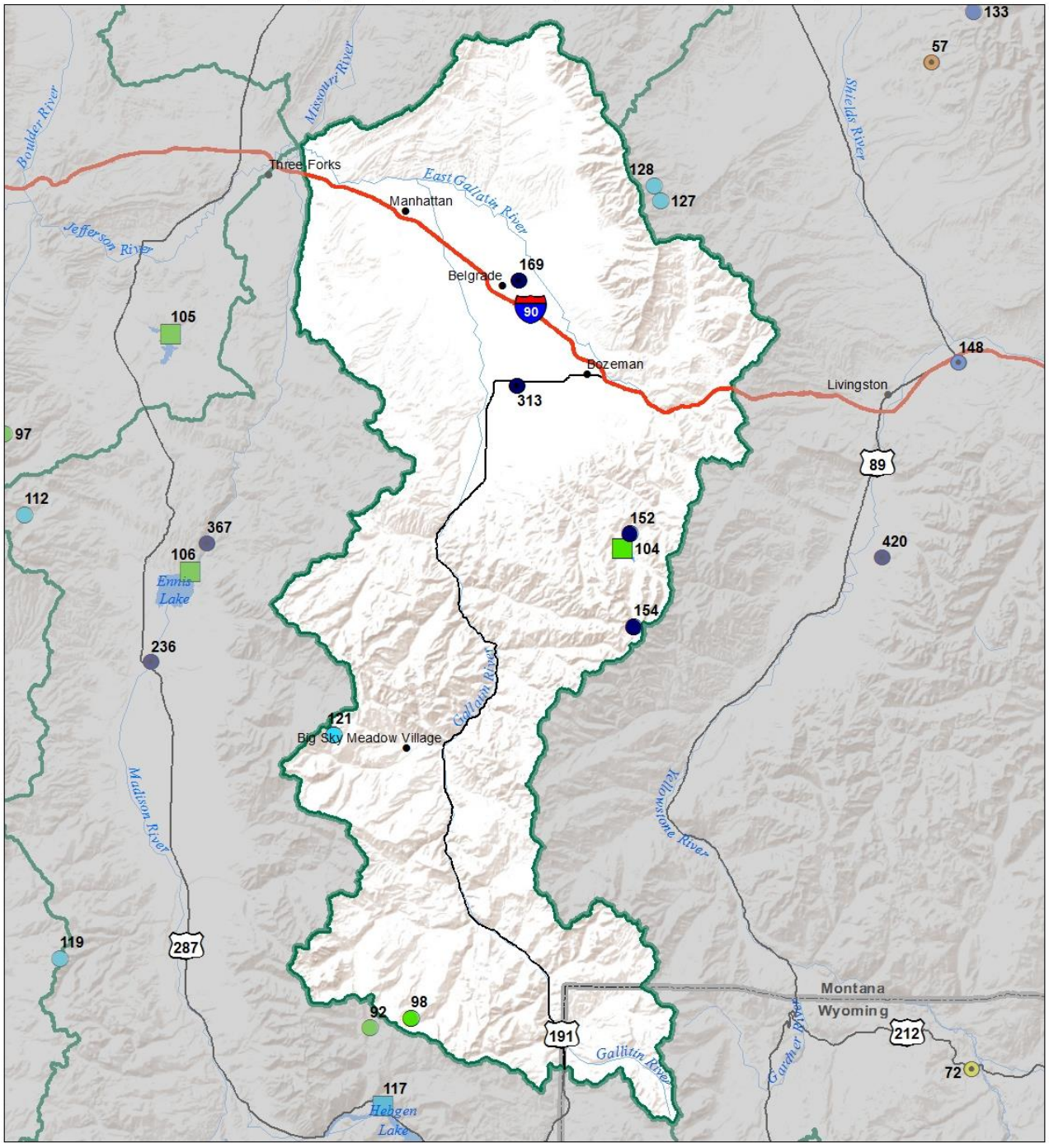
Montana State Library
Natural Resource Information System

Gallatin River Basin
Monthly Precipitation and Reservoir Levels
Percentage of Normal
January 1, 2018 (December 1, 2017 - January 1, 2018)



Precipitation
Percent of Normal

SNOTEL		COOP/ACIS	
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111 - 130%	1 - 50%	111 - 130%	1 - 50%
91 - 110%		91 - 110%	

Reservoirs
Percent of Normal

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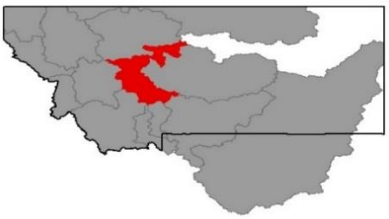
Montana State Library Natural Resource Information System



Headwaters Mainstem (Missouri) River Basin

After a dismal start to the water year last year in 2017 with record low snowpack recorded through mid-November, the 2018 water year is off to a great start with well above normal snowpack for January 1st, 2018. Seasonal snowcover started in the basin at the beginning of October at all but the lowest of elevations, which began accumulating snow during the consistent snowfall in November. Snowfall during the month of November gave way to a warm and dry pattern for a short time before snowfall from mid-December on blanketed the valleys and mountains of the basin. Frohner Meadow SNOTEL, located southwest of Helena is currently reporting the second highest snowpack totals for January 1st in 46 years of record. Snowpack for the date ranges from 117% of normal to 172% of normal for this time, well above normal. Only 30 to 40% of the seasonal snow has fallen so far, so there is a long way to go. For now it's on the right track.

Headwaters Missouri Mainstem River Basin Data Summary

Snowpack	**Percent of 1981-2010 Normal (Median)**	**Last Year Percentage of Normal (Median)**
HEADWATERS MAINSTEM	156%	85%
SMITH-JUDITH-MUSSELSHELL	137%	60%
SUN-TETON-MARIAS	116%	96%
MAINSTEM ab FT PECK RES	136%	81%
MILK RIVER BASIN	135%	105%
Basin-Wide	**136%**	**81%**

Precipitation	**Monthly Percentage of Average**	**WYTD Percentage of 1981-2010 Average***	**WYTD Last Year Percentage of Average**
Mountain Precipitation	159%	132%	109%
Valley Precipitation	458%	212%	190%
Basin-Wide Precipitation	**168%**	**136%**	**112%**

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

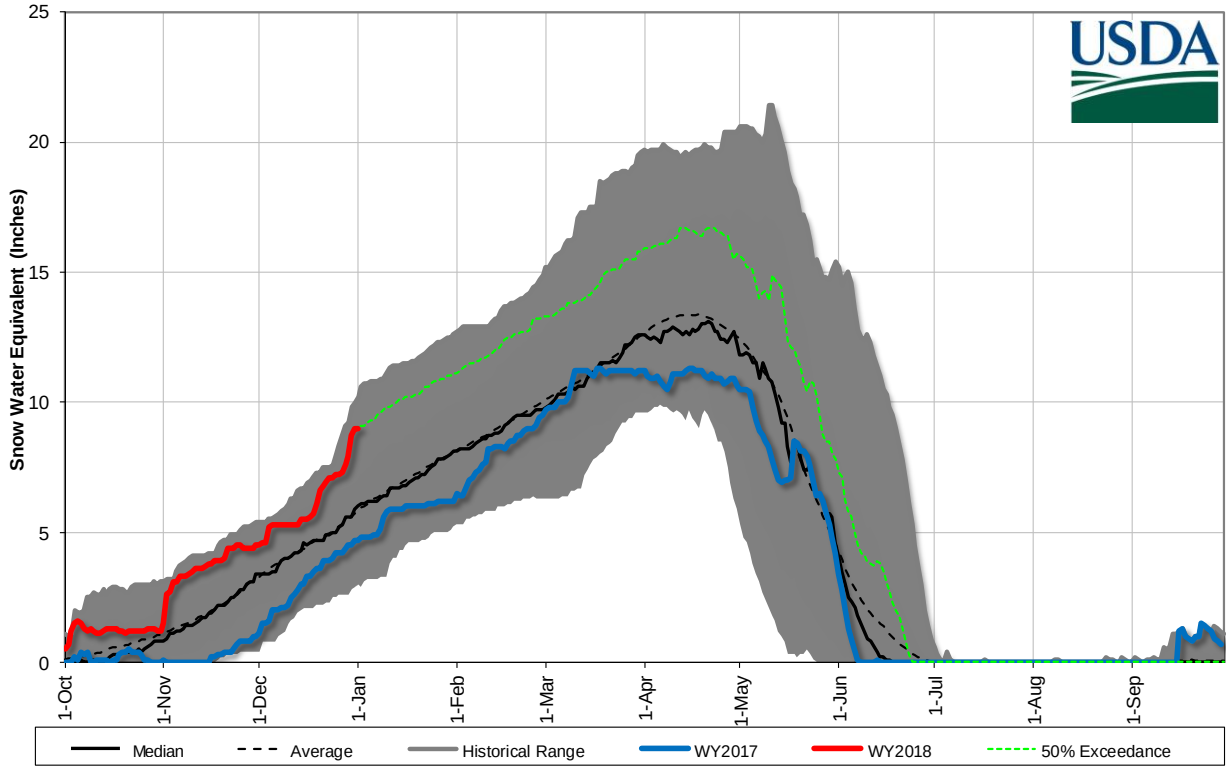
Reservoir Storage	**Percentage of Average**	**Percentage of Capacity (Total)**	**Last Year Percentage of Average**
Basin-Wide Storage	**114%**	**80%**	**112%**

**See Reservoir Storage Table for storage in individual reservoirs*

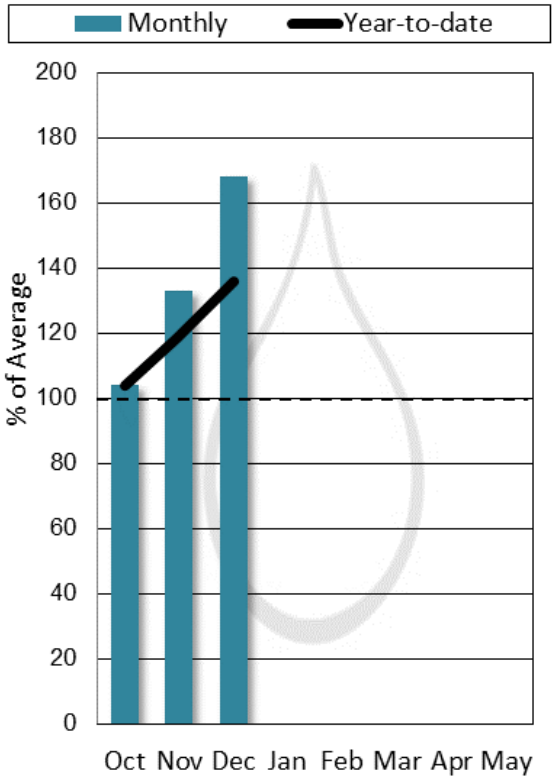
End of Month Storage	**Current (KAF)**	**Last Year (KAF)**	**Average (KAF)**	**Capacity (KAF)**	**% Average**	**% Capacity**
Canyon Ferry Lake	1492.3	1448.8	1598.0	2043.0	**93%**	**73%**
Helena Valley Reservoir	6.2	6.7	5.1	9.2	**121%**	**67%**
Lake Helena	9.9	10.0	10.9	12.7	**90%**	**78%**
Hauser Lake & Lake Helena	70.0	70.6	73.8	74.6	**95%**	**94%**
Holter Lake	81.1	81.0	80.5	81.9	**101%**	**99%**
Fort Peck Lake	15339.3	15012.1	13143.0	18910.0	**117%**	**81%**

Missouri River Basin below Toston above Smith River Inflow Snowpack with Non-Exceedence Projections

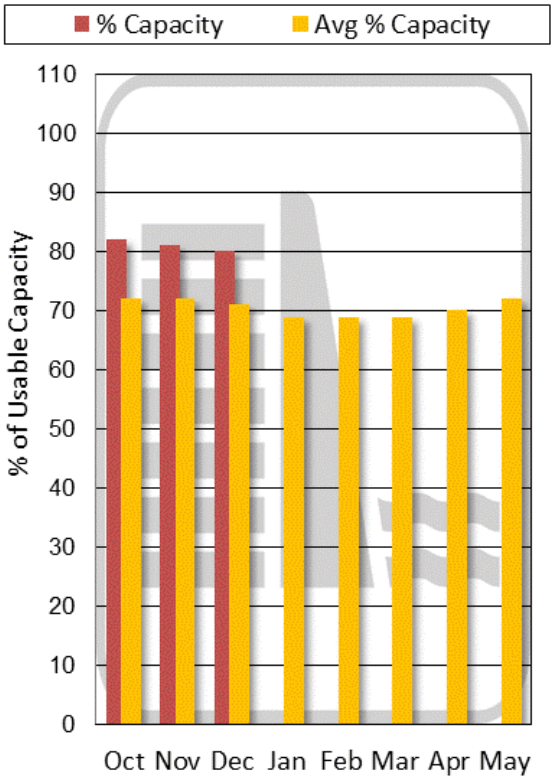
Based on provisional SNOTEL daily data as of 1/1/2018



Mountain and Valley Precipitation

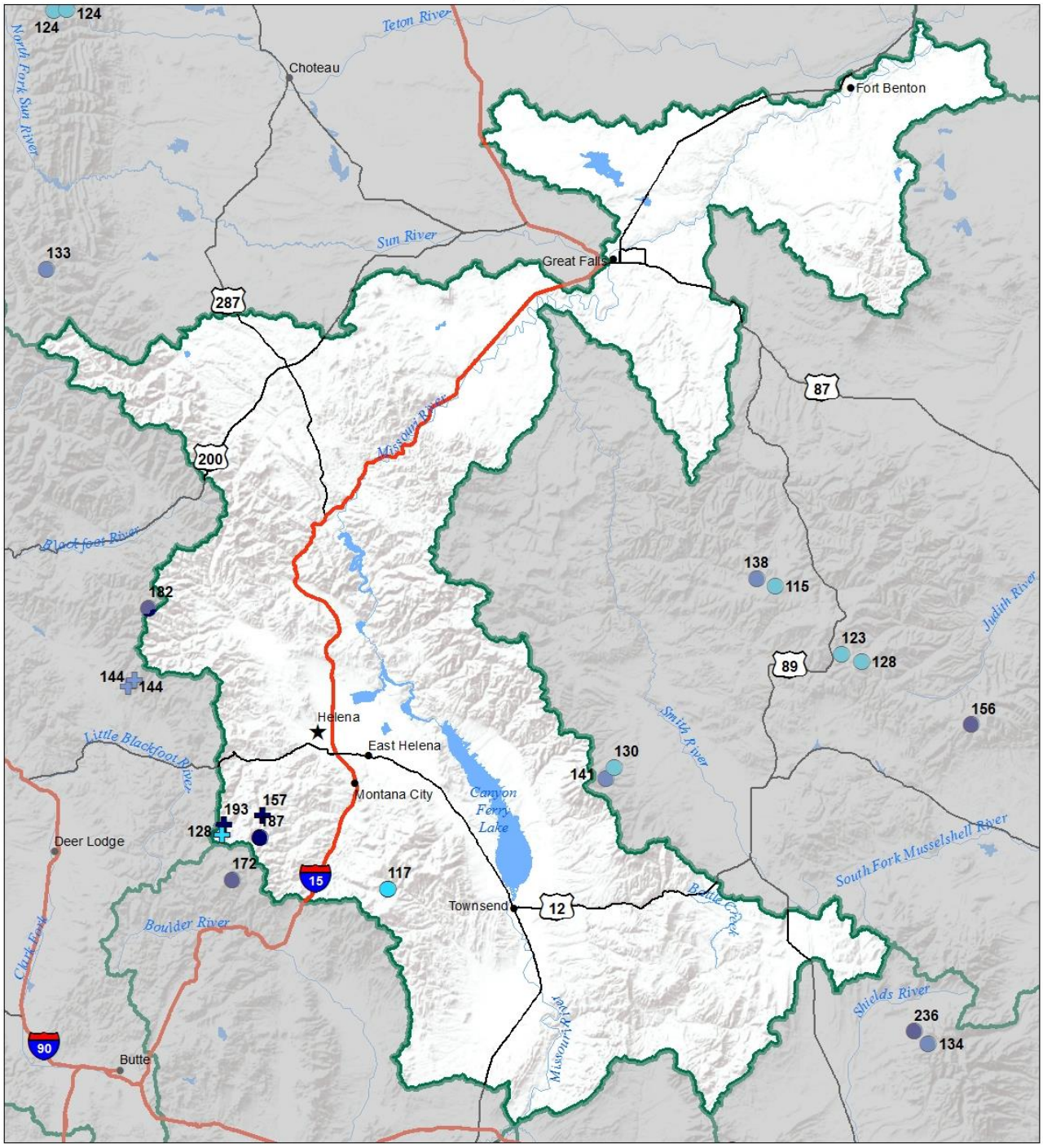


End of Month Reservoir Storage



Storage above is averaged for all reservoirs in the basin. For individual reservoirs see table below.

Headwaters Mainstem (Missouri) River Basin
Snow Water Equivalent
Percentage of Normal
January 1, 2018



Snow Water Equivalent
Percent of Normal

SNOTEL				Snowcourse			
> 150%	71 - 90%			> 150%	71 - 90%		
131 - 150%	51 - 70%			131 - 150%	51 - 70%		
111 - 130%	1 - 50%			111 - 130%	1 - 50%		
91 - 110%	0%			91 - 110%	0%		

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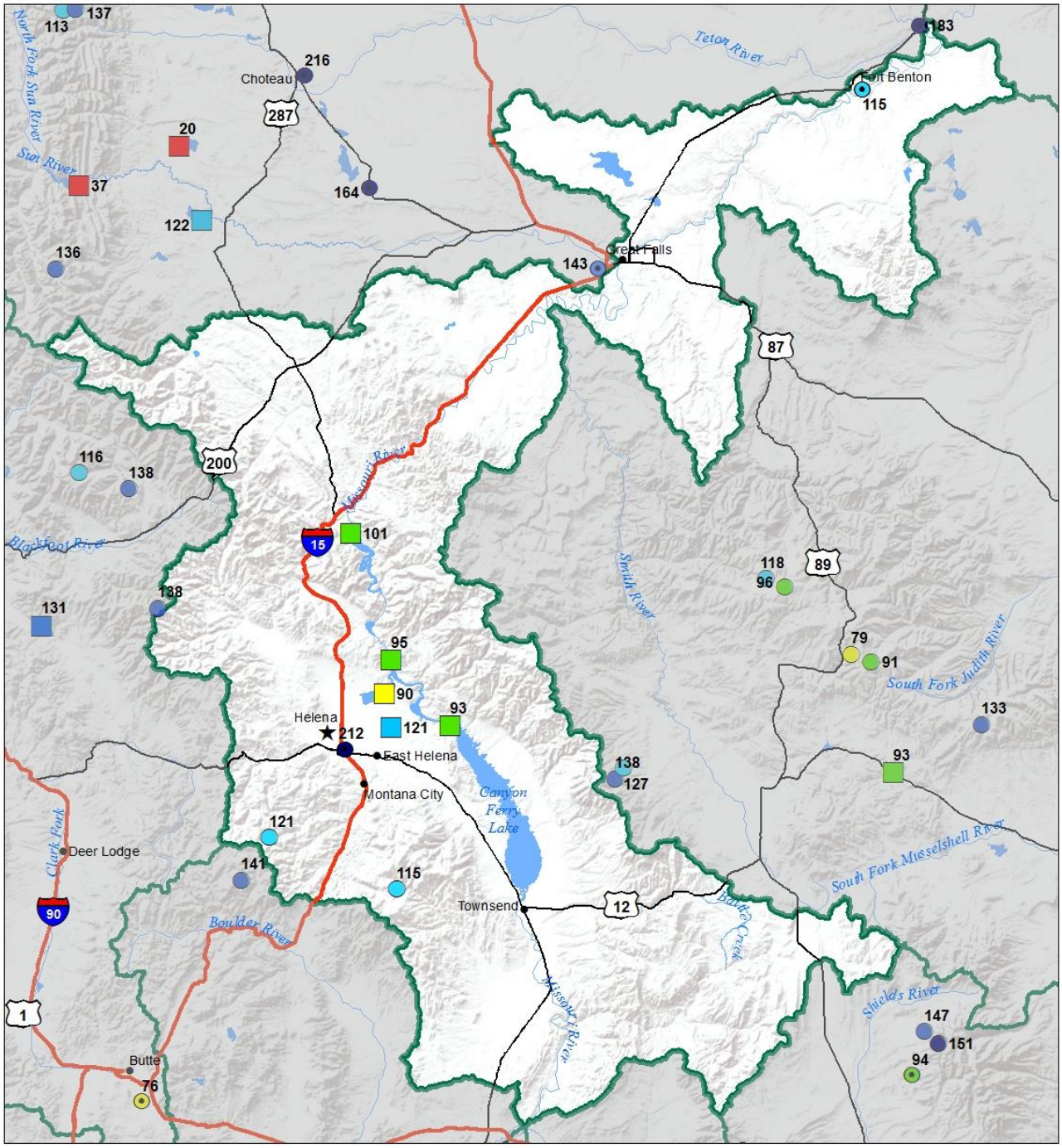
Headwaters Mainstem (Missouri) River Basin
Water Year to Date Precipitation and Reservoir Levels
Percentage of Normal
January 1, 2018



Precipitation
Percent of Normal

SNOTEL		COOP/ACIS	
> 150%	71 - 90%	> 150%	71 - 90%
131 - 150%	51 - 70%	131 - 150%	51 - 70%
111 - 130%	1 - 50%	111 - 130%	1 - 50%
91 - 110%		91 - 110%	

Reservoirs
Percent of Normal

- > 150%
- 131 - 150%
- 111 - 130%
- 91 - 110%
- 71 - 90%
- 51 - 70%
- 1 - 50%

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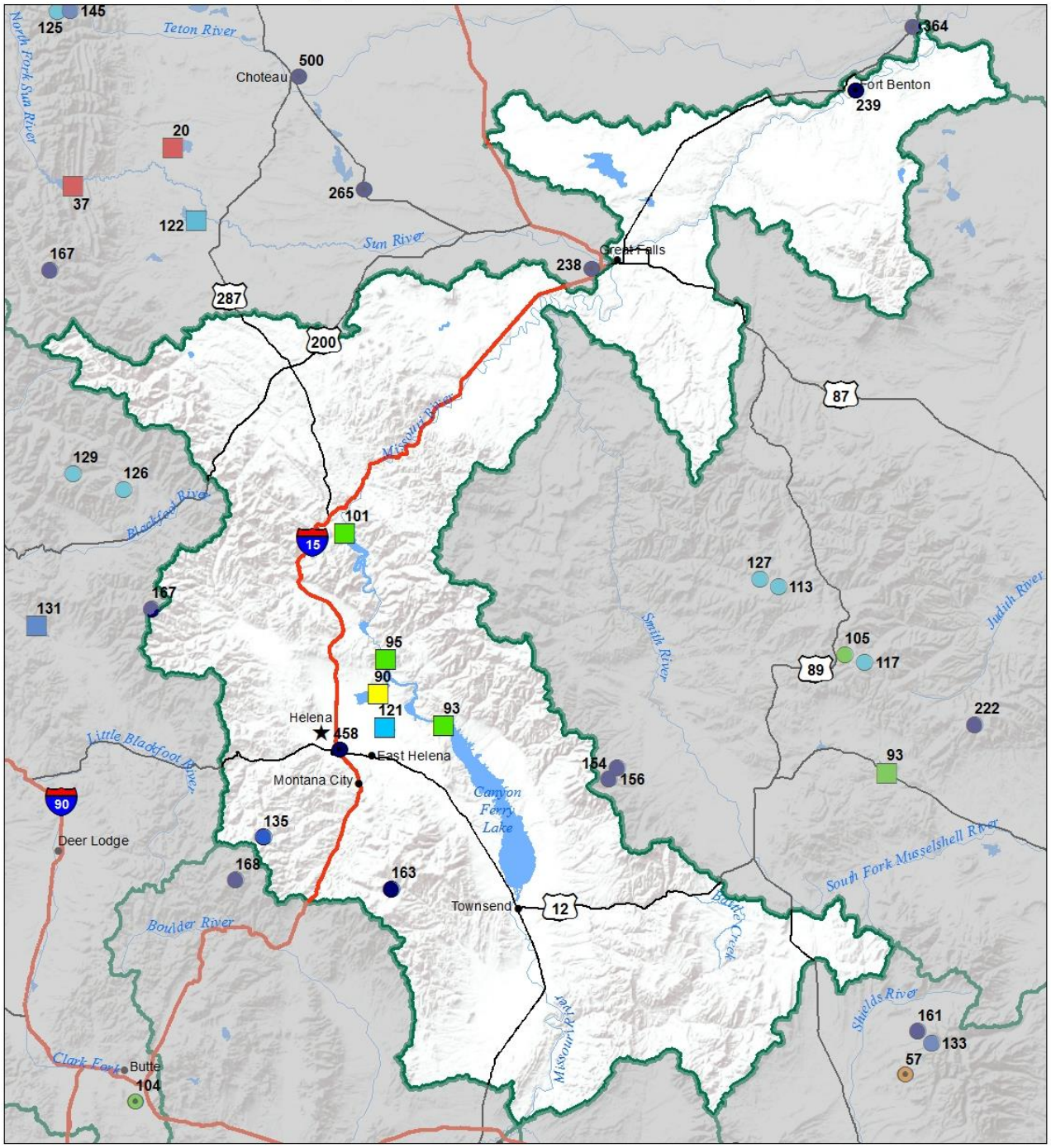
Headwaters Mainstem (Missouri) River Basin
Monthly Precipitation and Reservoir Levels
Percentage of Normal
January 1, 2018 (December 1, 2017 - January 1, 2018)



Precipitation
Percent of Normal

SNOTEL		COOP/ACIS	
> 150%	71 - 90%	> 150%	71 - 90%
131 - 150%	51 - 70%	131 - 150%	51 - 70%
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Reservoirs
Percent of Normal

- > 150%
- 131 - 150%
- 111 - 130%
- 91 - 110%
- 71 - 90%
- 51 - 70%
- 1 - 50%

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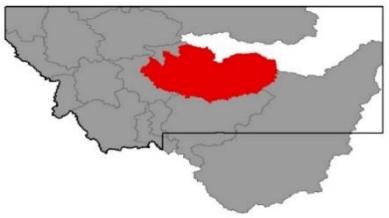
Smith-Judith-Musselshell River Basin



Last winter the Smith-Judith-Musselshell River basin had the lowest basin-wide snowpack totals on record from November 1st, 2017 until around the end of February. This year a rosier picture has been painted with above normal snowpack for this date, and basin-wide snowpack on January 1st that is higher than it was at the end of February last year. Consistent snowfall during the month of November and latter half of December favored this central basin and all basins received significant snow through the end of the year. Currently, snowpack is best in the Musselshell River basin (184%), but the Smith and Judith basins also have snowpack that is above normal for this date. The river basin typically receives the bulk of its precipitation during the March-May time period, meaning snow totals are more meaningful on May 1st. For now the basin is off to a great start.

Smith Judith Musselshell River Basin Data Summary

Snowpack	**Percent of 1981-2010 Normal (Median)**	**Last Year Percentage of Normal (Median)**
SMITH	130%	60%
HIGHWOOD	%	%
JUDITH	132%	62%
MUSSELSHELL	184%	52%
Basin-Wide	**137%**	**60%**

Precipitation	**Monthly Percentage of Average**	**WYTD Percentage of 1981-2010 Average***	**WYTD Last Year Percentage of Average**
Mountain Precipitation	138%	115%	107%
Valley Precipitation	222%	141%	202%
Basin-Wide Precipitation	**143%**	**117%**	**114%**

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

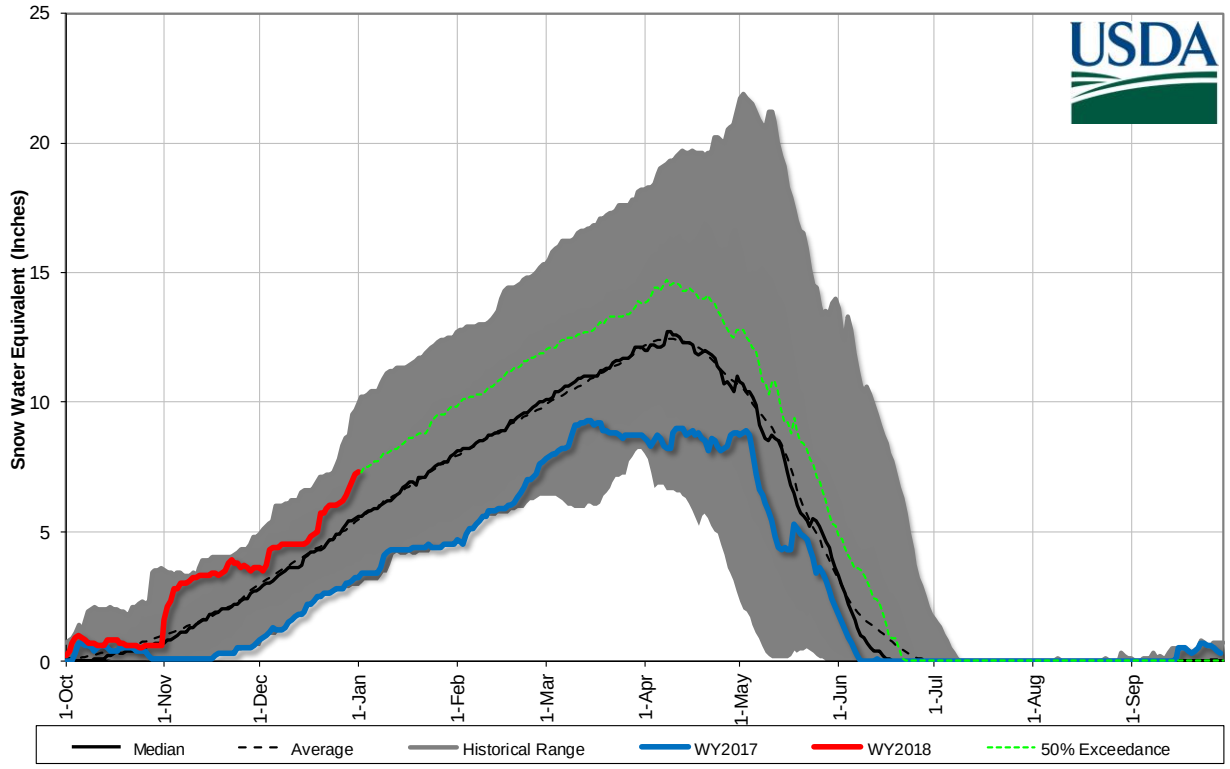
Reservoir Storage	**Percentage of Average**	**Percentage of Capacity (Total)**	**Last Year Percentage of Average**
Basin-Wide Storage	**137%**	**68%**	**111%**

**See Reservoir Storage Table for storage in individual reservoirs*

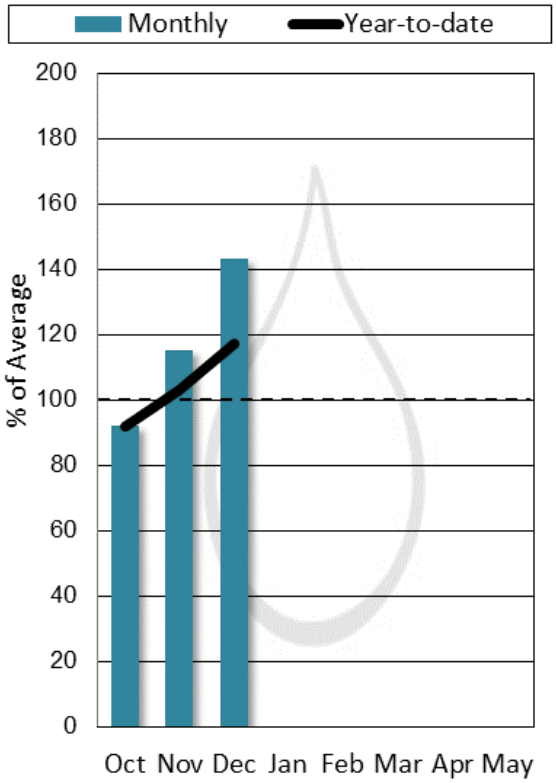
End of Month Storage	**Current (KAF)**	**Last Year (KAF)**	**Average (KAF)**	**Capacity (KAF)**	**% Average**	**% Capacity**
Smith River Res		4.8	5.0	10.6		
Ackley Lake		3.6	2.5	7.0		
Bair Res	2.5	3.2	2.7	7.0	**93%**	**36%**
Martinsdale Res		5.7	7.7	23.1		
Deadman's Basin Res	51.7	40.7	37.0	72.2	**140%**	**72%**

Smith-Judith-Musselshell River Basin Snowpack with Non-Exceedence Projections

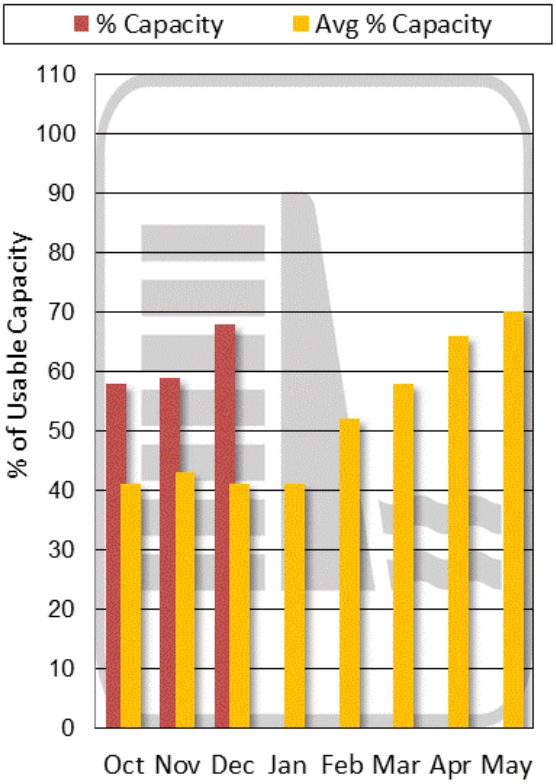
Based on provisional SNOTEL daily data as of 1/1/2018



Mountain and Valley Precipitation

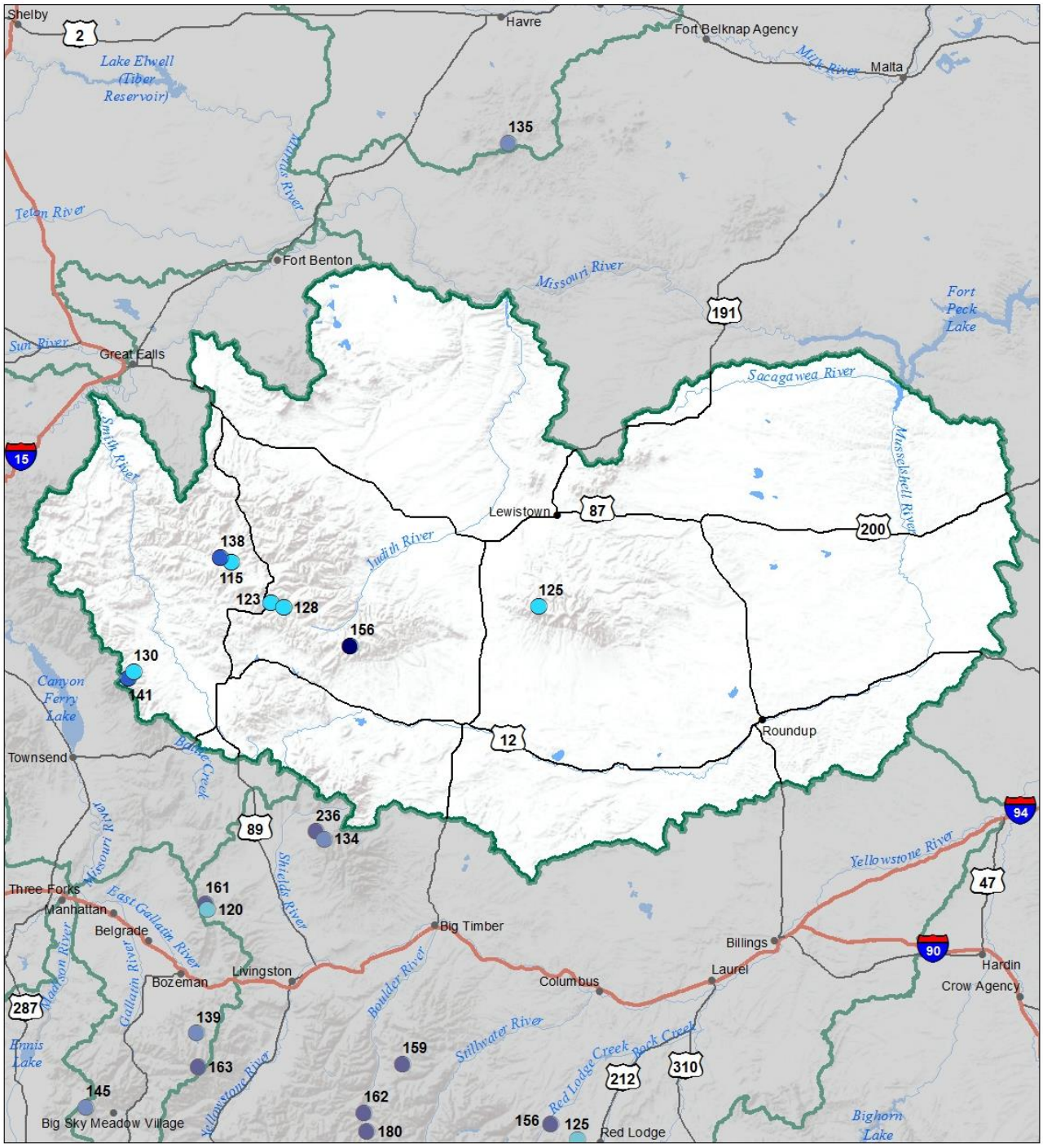


End of Month Reservoir Storage



Storage above is averaged for all reservoirs in the basin. For individual reservoirs see table below.

Smith-Judith-Musselshell River Basin
Snow Water Equivalent
Percentage of Normal
January 1, 2018



Snow Water Equivalent
Percent of Normal

SNOTEL		Snowcourse	
> 150%	71 - 90%	> 150%	71 - 90%
131 - 150%	51 - 70%	131 - 150%	51 - 70%
111 - 130%	1 - 50%	111 - 130%	1 - 50%
91 - 110%	0%	91 - 110%	0%

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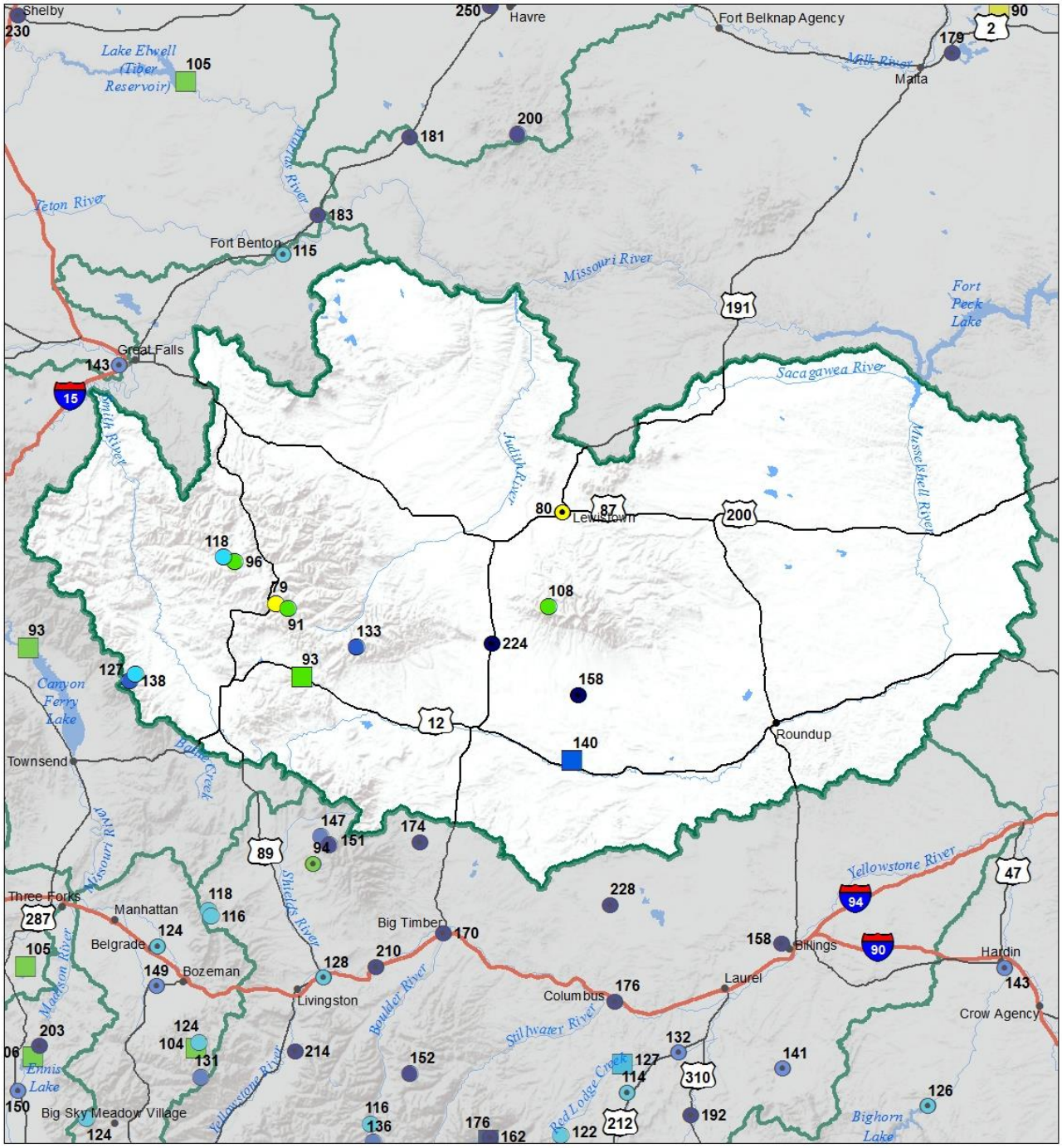
Smith-Judith-Musselshell River Basin
Water Year to Date Precipitation and Reservoir Levels
Percentage of Normal
January 1, 2018



Precipitation
Percent of Normal

SNOTEL		COOP/ACIS	
> 150%	71 - 90%	> 150%	71 - 90%
131 - 150%	51 - 70%	131 - 150%	51 - 70%
111 - 130%	1 - 50%	111 - 130%	1 - 50%
91 - 110%		91 - 110%	

Reservoirs
Percent of Normal

- > 150%
- 131 - 150%
- 111 - 130%
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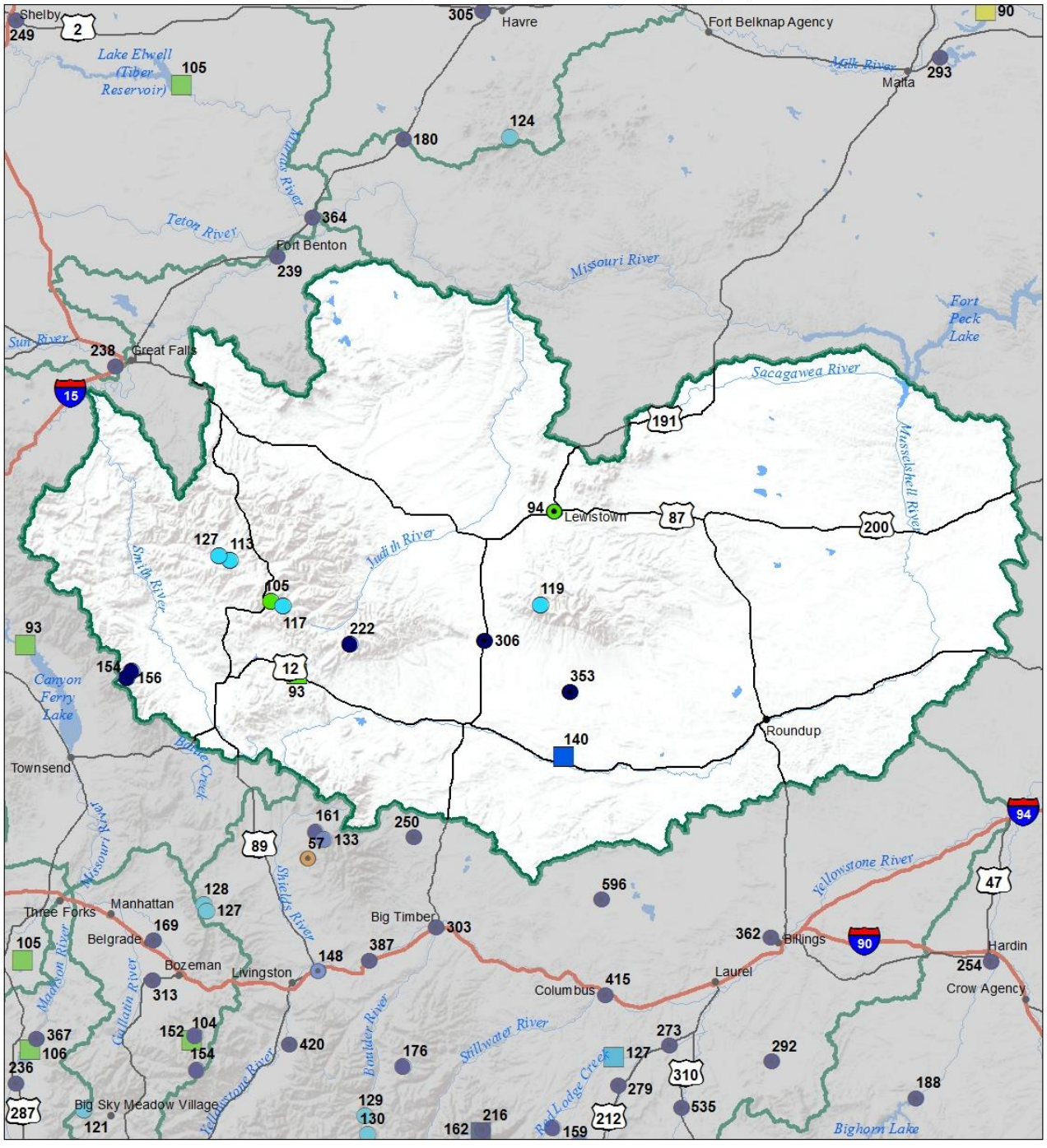
Smith-Judith-Musselshell River Basin
Monthly Precipitation and Reservoir Levels
Percentage of Normal
January 1, 2018 (December 1, 2017 - January 1, 2018)



Precipitation
Percent of Normal

SNOTEL		COOP/ACIS	
> 150%	71 - 90%	> 150%	71 - 90%
131 - 150%	51 - 70%	131 - 150%	51 - 70%
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Reservoirs
Percent of Normal

- > 150%
- 131 - 150%
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- 91 - 110%
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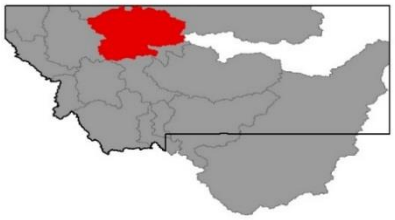
Sun-Teton-Marias River Basin



The Rocky Mountain Front is off to a good start this year with regards to snow totals, all river basins are reporting above normal snowpack conditions for January 1st. Seasonal snowfall began at the end of September, however this was a few days too late, as the Strawberry fire burning west of Swift Reservoir burned the Badger Pass SNOTEL site, which was completely destroyed in the fire. The Montana Snow Survey staff worked hard to try to re-install the site, hoping the snow would melt out (we rarely say that) and provide a weather window to do the work, but we were unable to get into the site due to the snowfall and weather patterns. The site will be measured monthly via helicopter for water users in the basin, and the data will be available online and in this report. On a more positive note, the weather patterns that kept our staff from performing the work dropped a significant amount of snow in November and December across the basin, resulting in good snowpack totals for Jan 1st. Like many of the central basins this region is favored during the spring months for snowfall, and only 30 to 40% of the seasonal snowpack has typically accumulated as of Jan 1st. That leaves plenty of time for conditions to further improve, or decline. So far, so good.

Sun-Teton-Marias River Basin Data Summary

Snowpack	**Percent of 1981-2010 Normal (Median)**	**Last Year Percentage of Normal (Median)**
SUN	127%	96%
TETON	119%	99%
MARIAS	109%	92%
Basin-Wide	**116%**	**96%**

Precipitation	**Monthly Percentage of Average**	**WYTD Percentage of 1981-2010 Average***	**WYTD Last Year Percentage of Average**
Mountain Precipitation	138%	127%	119%
Valley Precipitation	116%	129%	130%
Basin-Wide Precipitation	**134%**	**127%**	**121%**

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

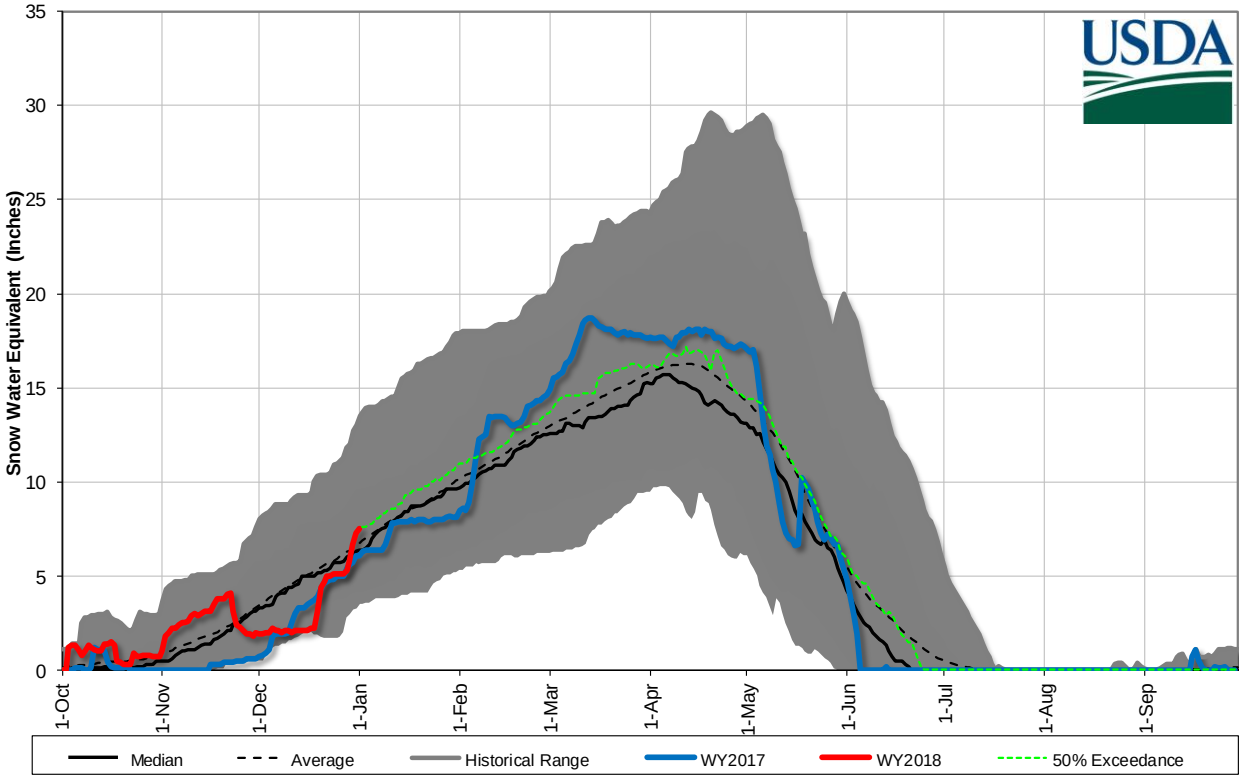
Reservoir Storage	**Percentage of Average**	**Percentage of Capacity (Total)**	**Last Year Percentage of Average**
Basin-Wide Storage	**100%**	**52%**	**97%**

**See Reservoir Storage Table for storage in individual reservoirs*

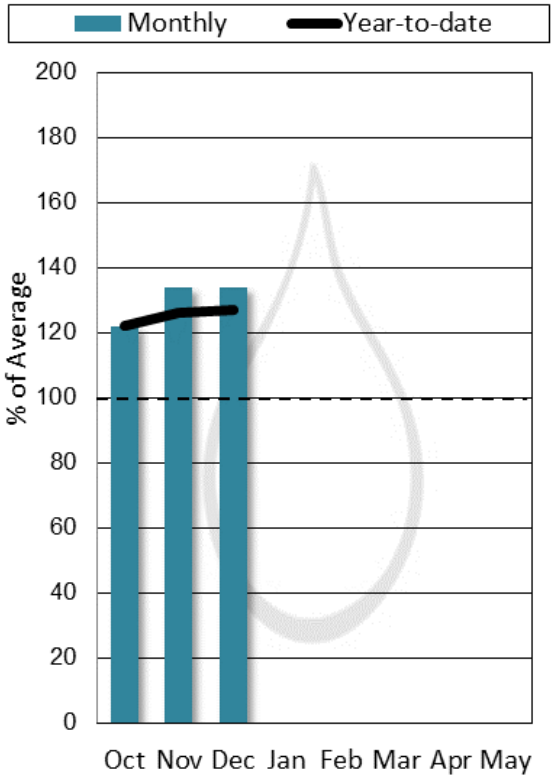
End of Month Storage	**Current (KAF)**	**Last Year (KAF)**	**Average (KAF)**	**Capacity (KAF)**	**% Average**	**% Capacity**
Gibson Res	13.6	29.1	36.4	99.1	**37%**	**14%**
Pishkun Res	3.6	4.3	17.7	32.0	**20%**	**11%**
Willow Creek Res - Augusta	27.5	27.6	22.5	32.2	**122%**	**85%**
Lower Two Medicine Lake		8.2	8.1	11.9		
Four Horns Lake		12.5	10.4	19.2		
Swift Res	14.6	9.8	13.8	30.0	**106%**	**49%**
Lake Frances	53.5	39.1	57.6	112.0	**93%**	**48%**
Lake Elwell (Tiber)	749.8	726.5	715.9	1347.0	**105%**	**56%**
Nilan Reservoir		5.8	5.9	11.0		

Sun-Teton-Marias River Basin Snowpack with Non-Exceedence Projections

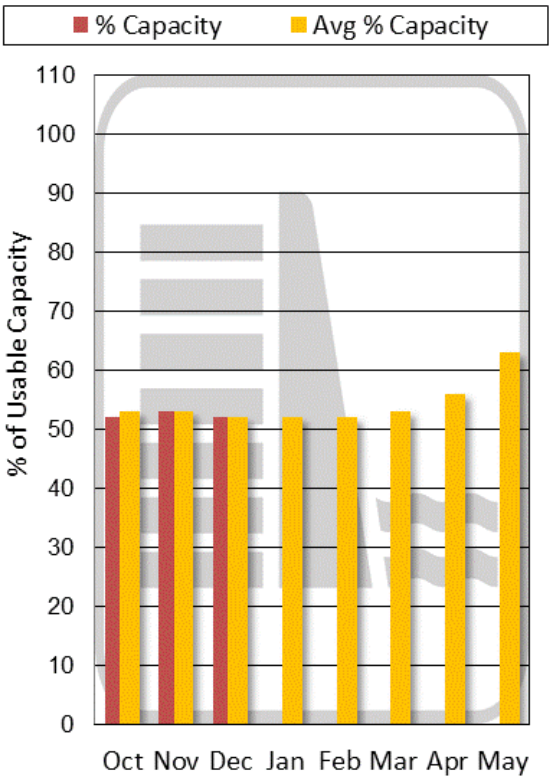
Based on provisional SNOTEL daily data as of 1/1/2018



Mountain and Valley Precipitation

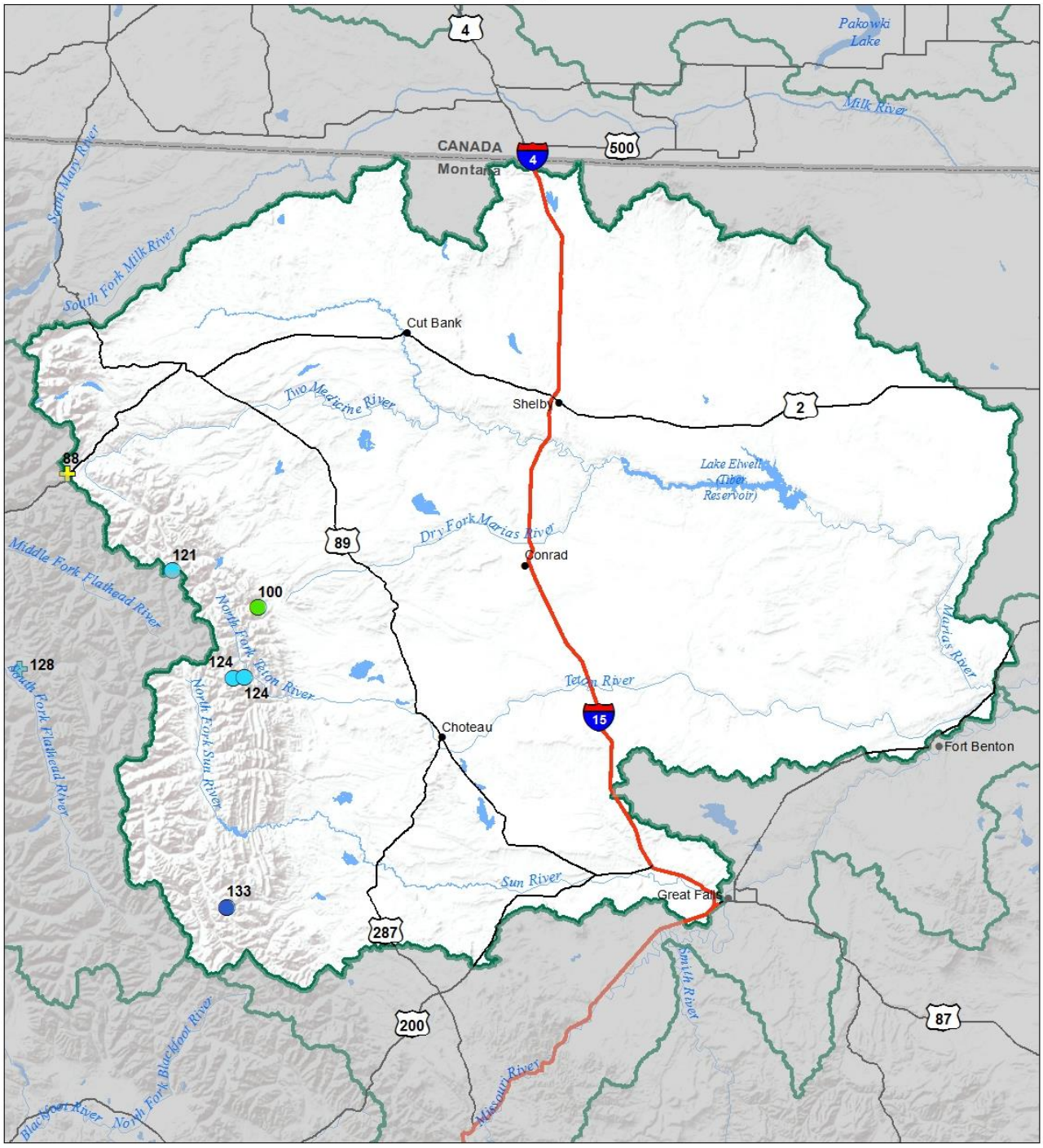


End of Month Reservoir Storage



Storage above is averaged for all reservoirs in the basin. For individual reservoirs see table below.

Sun-Teton-Marias River Basin
Snow Water Equivalent
Percentage of Normal
January 1, 2018



Snow Water Equivalent
Percent of Normal

SNOTEL				Snowcourse			
> 150%	71 - 90%			> 150%	71 - 90%		
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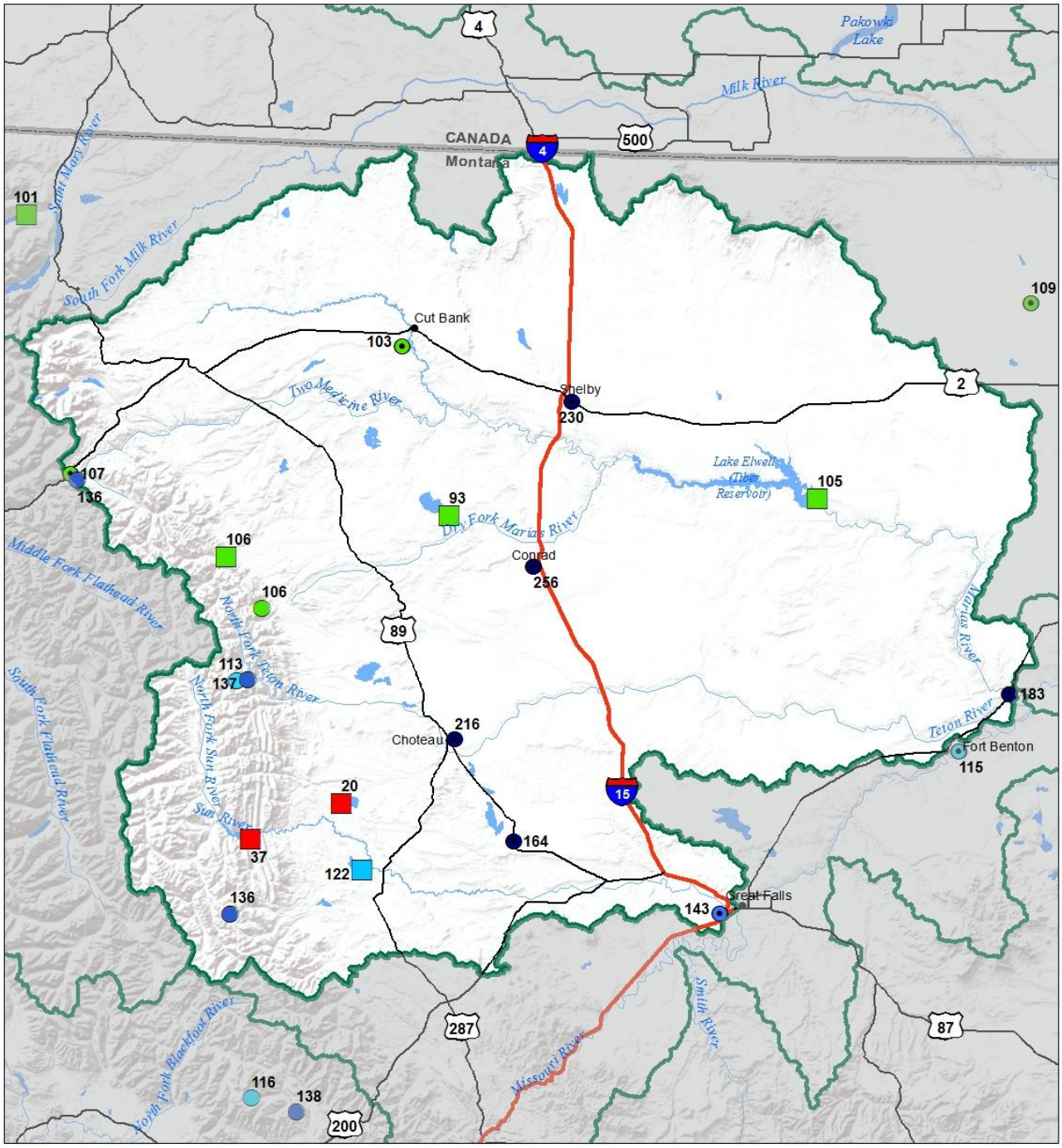
Sun-Teton-Marias River Basin
Water Year to Date Precipitation and Reservoir Levels
Percentage of Normal
January 1, 2018



Precipitation
Percent of Normal

SNOTEL		COOP/ACIS	
> 150%	71 - 90%	> 150%	71 - 90%
131 - 150%	51 - 70%	131 - 150%	51 - 70%
111 - 130%	1 - 50%	111 - 130%	1 - 50%
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Reservoirs
Percent of Normal

- > 150%
- 131 - 150%
- 111 - 130%
- 91 - 110%
- 71 - 90%
- 51 - 70%
- 1 - 50%

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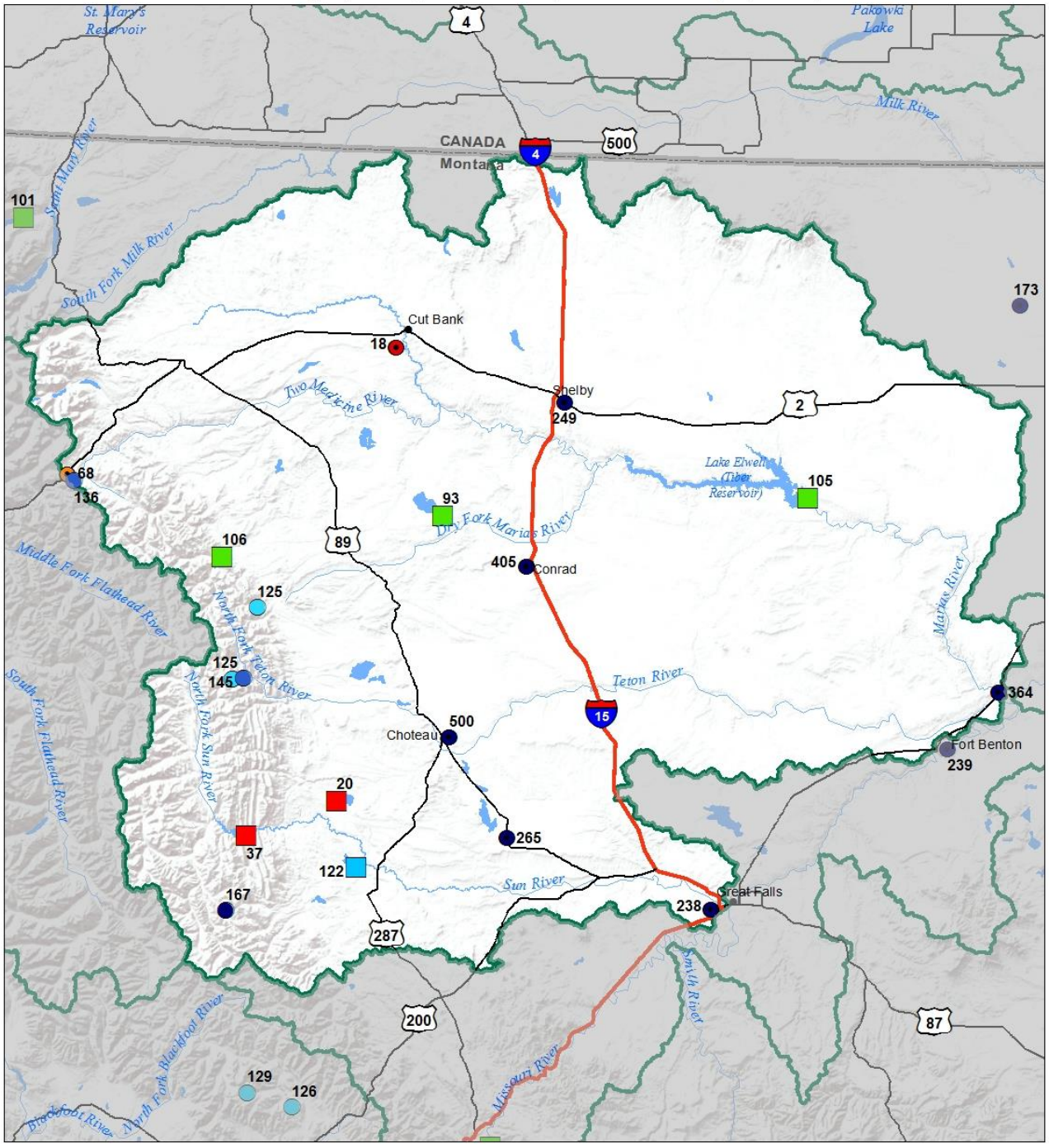
Sun-Teton-Marias River Basin
Monthly Precipitation and Reservoir Levels
Percentage of Normal
January 1, 2018 (December 1, 2017 - January 1, 2018)



Precipitation
Percent of Normal

SNOTEL		COOP/ACIS	
> 150%	71 - 90%	> 150%	71 - 90%
131 - 150%	51 - 70%	131 - 150%	51 - 70%
111 - 130%	1 - 50%	111 - 130%	1 - 50%
91 - 110%		91 - 110%	

Reservoirs
Percent of Normal

- > 150%
- 131 - 150%
- 111 - 130%
- 91 - 110%
- 71 - 90%
- 51 - 70%
- 1 - 50%

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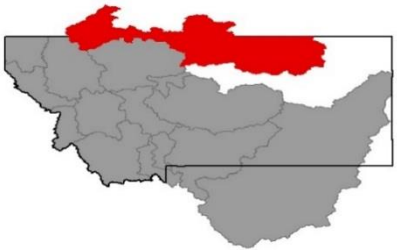
Montana State Library Natural Resource Information System

St. Mary-Milk River Basin



Snowpack in the combined St. Mary and Milk River basins is slightly below normal (95%) for January 1st, but made significant recoveries at the end of December to get to this point. The two SNOTEL sites in Glacier National Park began accumulating snow at the beginning of the new water year on October 1st, but only a few small storms impacted the basin during the month. In November, more storms rolled through the basin, but unlike the rest of the state accumulations were not significant here. In late November, all sites in the basin saw a reduction in snow totals from the sunny and warm days, resulting in snowmelt at both SNOTEL sites in GNP. The significant storm event at the end of the month helped the St. Mary basin to recover as 4 to 7" of snow water was added to the snowpack. Further east in the Bearpaw Range the Rocky Boy SNOTEL site entered the water year with 4" of snow water already on the ground, a significant storm in later September blanketed the region with 20 to 30" of snow. The snow was short lived and melted through October, and small accumulations at the sites melted at the end of November. The beginning of the seasonal snowpack this year looks to have occurred at the beginning of December, and consistent snowfall through the month has resulted in snowpack totals that are above normal for this date.

St. Mary-Milk River Basin Data Summary

Snowpack	**Percent of 1981-2010 Normal (Median)**	**Last Year Percentage of Normal (Median)**
ST. MARY	91%	102%
BEARPAW MOUNTAINS	135%	105%
CYPRESS HILLS, CANADA	%	%
MILK RIVER BASIN	135%	105%
Basin-Wide	**95%**	**102%**

Precipitation	**Monthly Percentage of Average**	**WYTD Percentage of 1981-2010 Average***	**WYTD Last Year Percentage of Average**
Mountain Precipitation (St. Mary)	99%	112%	134%
Mountain Precipitation (Bearpaw Mtns)	124%	200%	222%
Valley Precipitation	264%	155%	318%
Basin-Wide Precipitation	**120%**	**128%**	**171%**

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

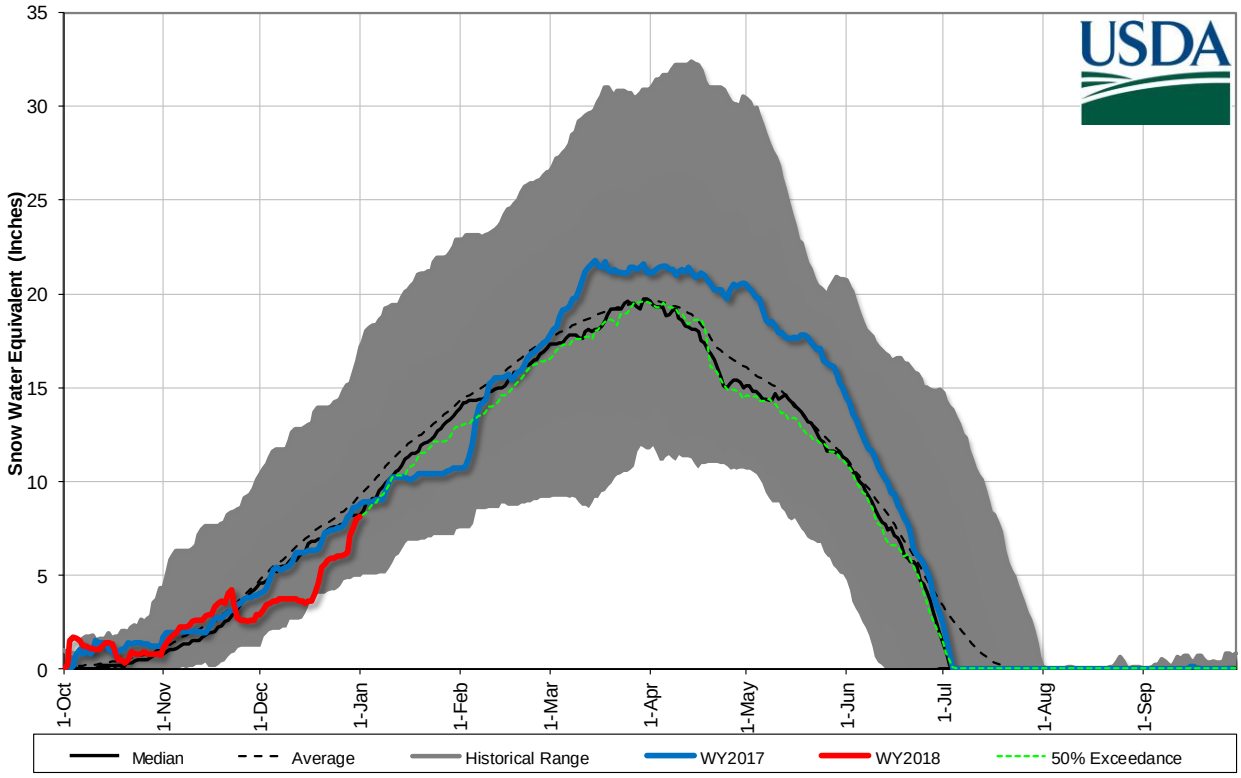
Reservoir Storage	**Percentage of Average**	**Percentage of Capacity (Total)**	**Last Year Percentage of Average**
Basin-Wide Storage	**95%**	**37%**	**110%**

**See Reservoir Storage Table for storage in individual reservoirs*

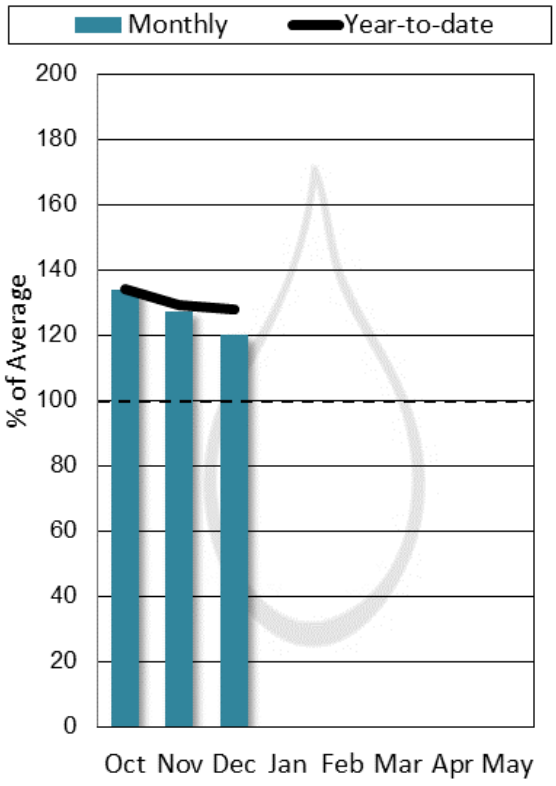
End of Month Storage	**Current (KAF)**	**Last Year (KAF)**	**Average (KAF)**	**Capacity (KAF)**	**% Average**	**% Capacity**
Lake Sherburne	25.9	44.7	25.5	64.3	**101%**	**40%**
Fresno Res	41.0	56.5	43.2	127.0	**95%**	**32%**
Nelson Res	29.6	10.8	33.0	66.8	**90%**	**44%**

Saint Mary-Milk River Basin Snowpack with Non-Exceedence Projections

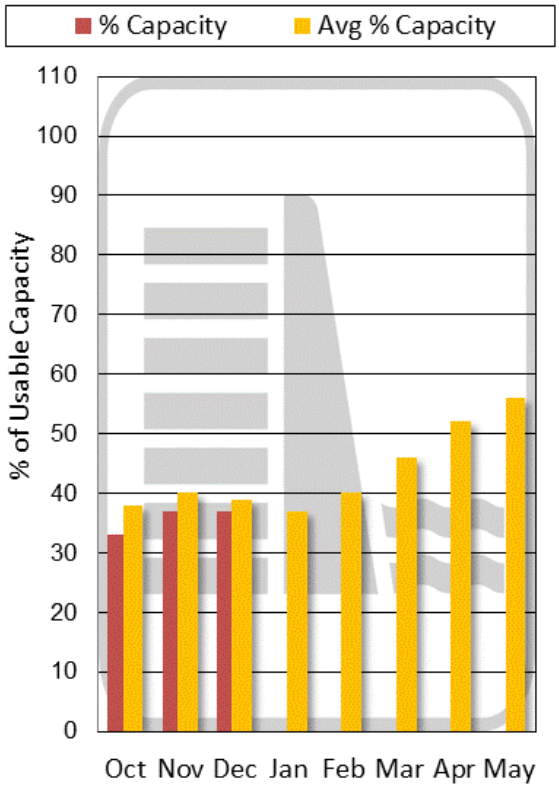
Based on provisional SNOTEL daily data as of 1/1/2018



Mountain and Valley Precipitation

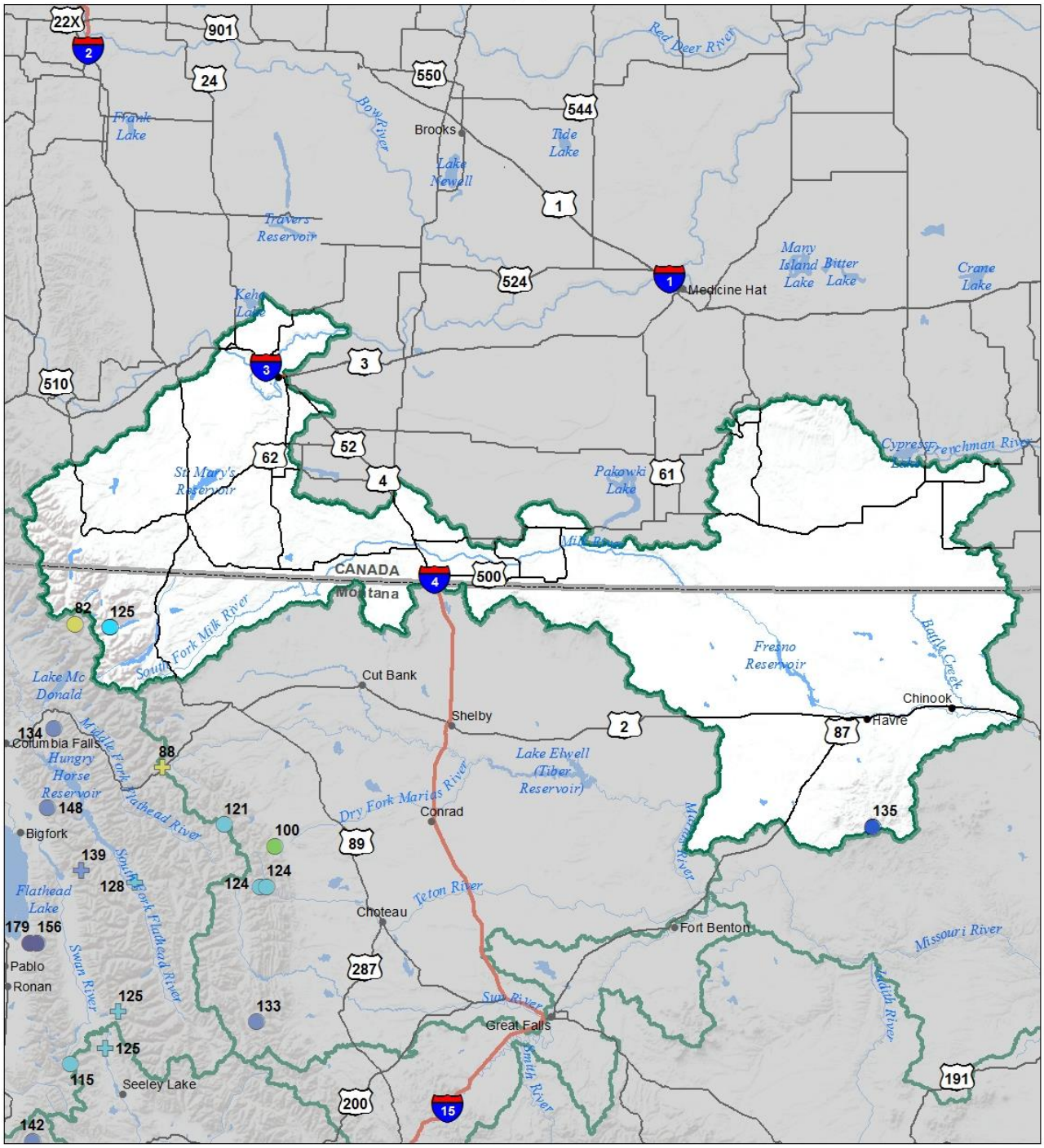


End of Month Reservoir Storage



Storage above is averaged for all reservoirs in the basin. For individual reservoirs see table below.

St Mary's-Milk River Basin
Snow Water Equivalent
Percentage of Normal
January 1, 2018



Snow Water Equivalent
Percent of Normal

SNOTEL				Snowcourse			
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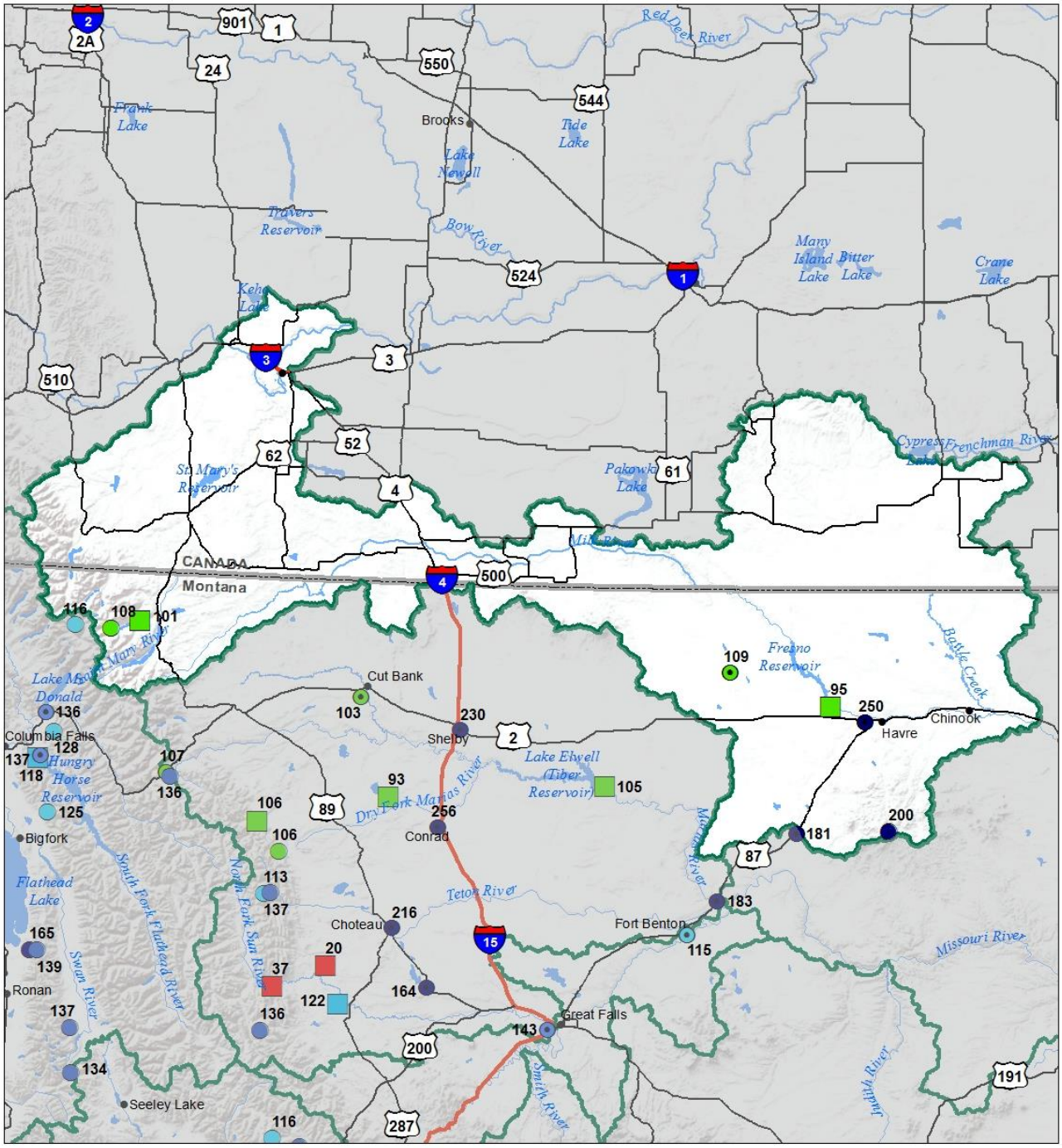
St Mary's-Milk River Basin
Water Year to Date Precipitation and Reservoir Levels
Percentage of Normal
January 1, 2018



Precipitation
Percent of Normal

SNOTEL		COOP/ACIS	
> 150%	71 - 90%	> 150%	71 - 90%
131 - 150%	51 - 70%	131 - 150%	51 - 70%
111 - 130%	1 - 50%	111 - 130%	1 - 50%
91 - 110%		91 - 110%	

Reservoirs
Percent of Normal

- > 150%
- 131 - 150%
- 111 - 130%
- 91 - 110%
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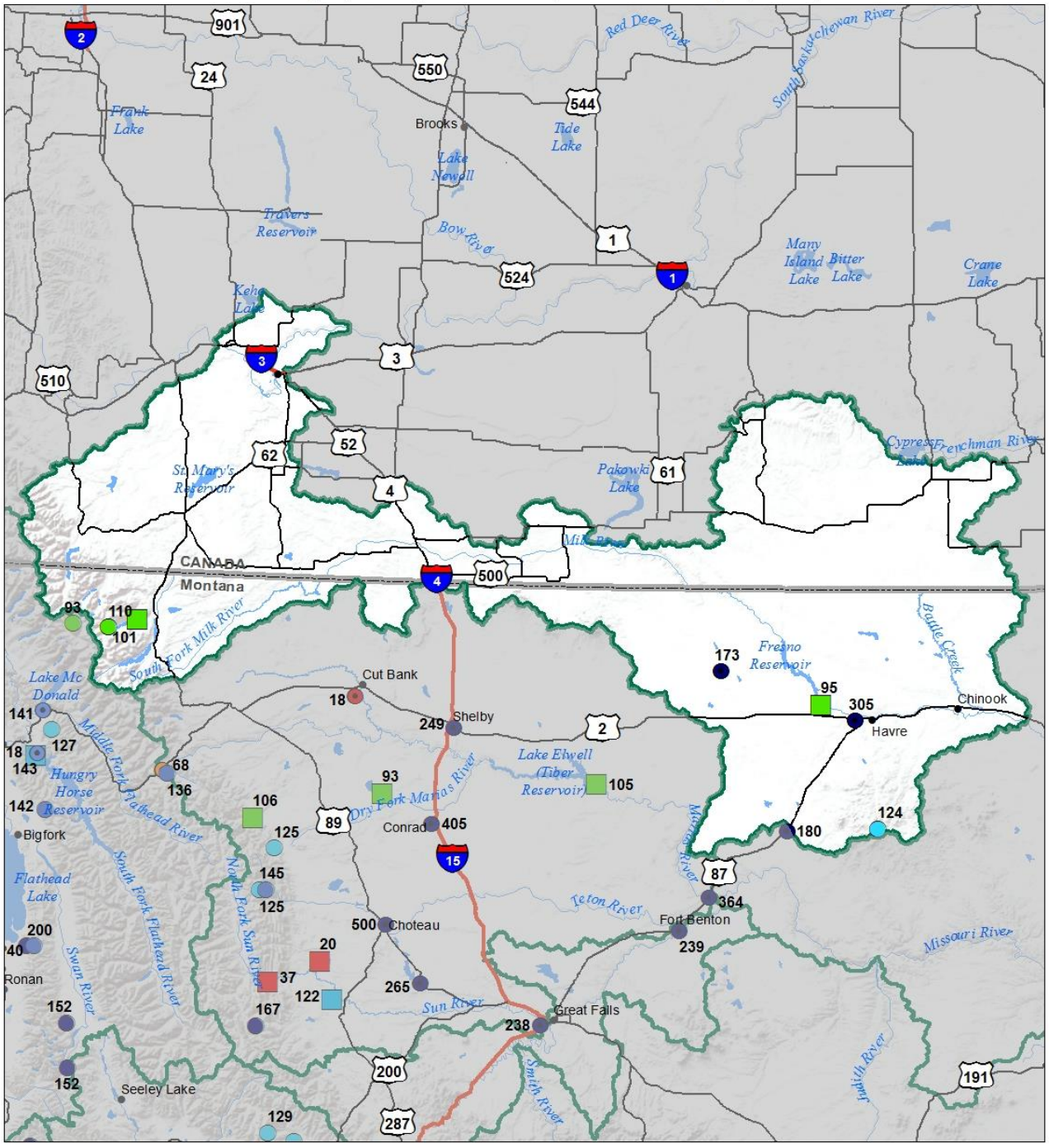
Montana State Library Natural Resource Information System

St Mary's-Milk River Basin
Monthly Precipitation and Reservoir Levels
Percentage of Normal
January 1, 2018 (December 1, 2017 - January 1, 2018)



Precipitation
Percent of Normal

SNOTEL		COOP/ACIS	
> 150%	71 - 90%	> 150%	71 - 90%
131 - 150%	51 - 70%	131 - 150%	51 - 70%
111 - 130%	1 - 50%	111 - 130%	1 - 50%
91 - 110%		91 - 110%	

Reservoirs
Percent of Normal

- > 150%
- 131 - 150%
- 111 - 130%
- 91 - 110%
- 71 - 90%
- 51 - 70%
- 1 - 50%

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Montana State Library Natural Resource Information System

Upper Yellowstone River Basin

The 2018 water year began with snow on the ground at nearly all SNOTEL sites located above 8000 feet in the basin. The exception was the South Fork Shields SNOTEL site at 8100 feet in the Crazy Mountain Range, which reported 0 inches on October 1st. Although this was a great way to start things off it was followed by below normal precipitation in the mountains and the valley throughout October. The effects of a dry month were short lived as conditions in November rebounded in a big way! The first winter storm of the season hit the region during the first week in November. This boosted snowpack totals for the basin to 254% of the median by November 7th and set new record maximum snowpack totals for the basin for nearly the entire month. Valley and mountain weather stations recorded well above normal precipitation for the month with many stations reporting the highest or second highest November precipitation totals for their period of records. Snow accumulation during December may not have set any records but it was still well above normal. In summary the snowpack in the Upper Yellowstone is in excellent shape as of January 1st with all sub-basins well above normal for this time of year.

Upper Yellowstone River Basin Data Summary

Snowpack	**Percent of 1981-2010 Normal (Median)**	**Last Year Percentage of Normal (Median)**
YELLOWSTONE ab LIVINGSTON	158%	106%
SHIELDS	150%	63%
BOULDER-STILLWATER	168%	77%
RED LODGE-ROCK CREEK	132%	110%
CLARK'S FORK	178%	115%
Basin-Wide	**161%**	**103%**

Precipitation	**Monthly Percentage of Average**	**WYTD Percentage of 1981-2010 Average***	**WYTD Last Year Percentage of Average**
Mountain Precipitation	132%	134%	136%
Valley Precipitation	277%	155%	176%
Basin-Wide Precipitation	**144%**	**137%**	**141%**

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

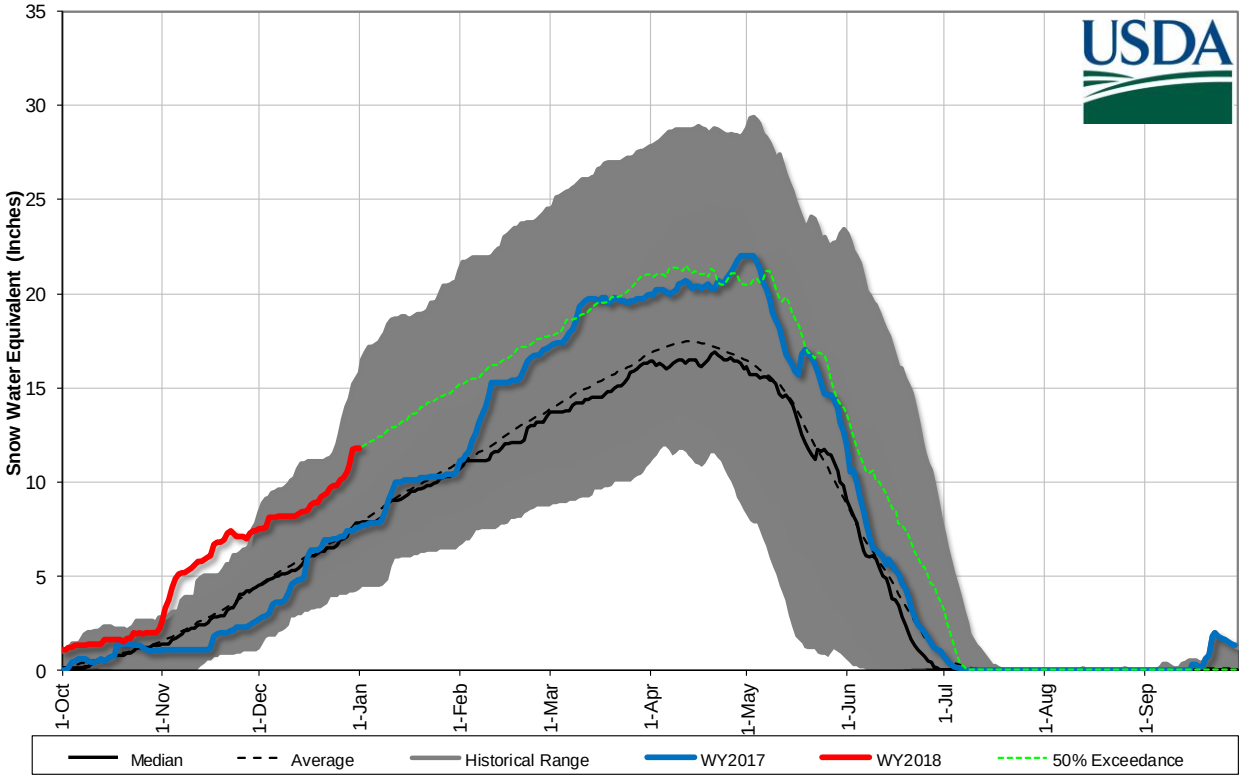
Reservoir Storage	**Percentage of Average**	**Percentage of Capacity (Total)**	**Last Year Percentage of Average**
Basin-Wide Storage	**138%**	**70%**	**127%**

**See Reservoir Storage Table for storage in individual reservoirs*

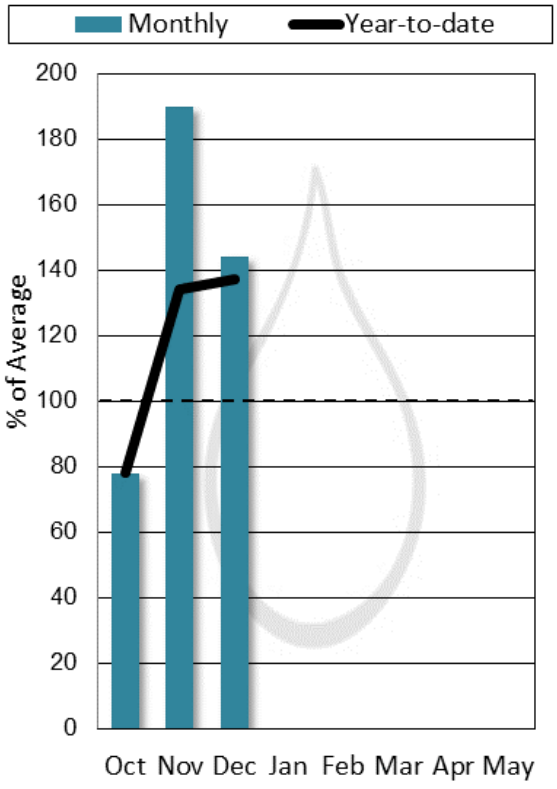
End of Month Storage	**Current (KAF)**	**Last Year (KAF)**	**Average (KAF)**	**Capacity (KAF)**	**% Average**	**% Capacity**
Mystic Lake	12.8	13.2	7.9	21.0	**162%**	**61%**
Cooney Res	21.0	18.0	16.6	27.4	**127%**	**77%**

Upper Yellowstone River Basin Snowpack with Non-Exceedence Projections

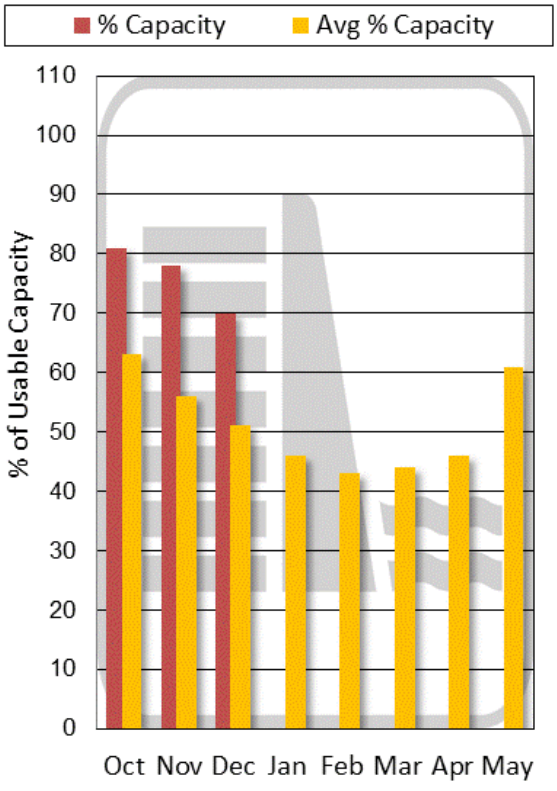
Based on provisional SNOTEL daily data as of 1/1/2018



Mountain and Valley Precipitation

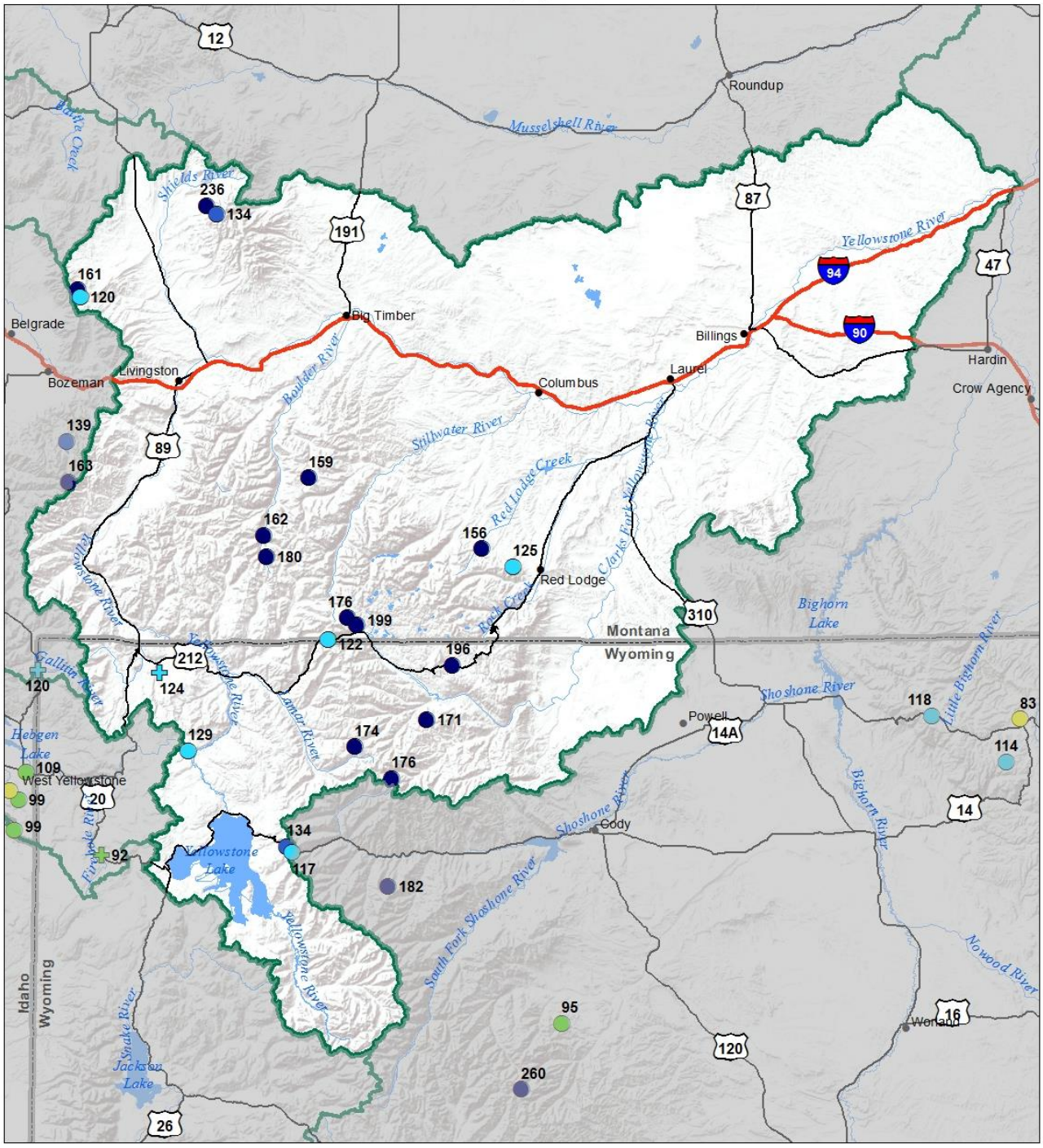


End of Month Reservoir Storage



Storage above is averaged for all reservoirs in the basin. For individual reservoirs see table below.

Upper Yellowstone River Basin
Snow Water Equivalent
Percentage of Normal
January 1, 2018



Snow Water Equivalent
Percent of Normal

SNOTEL		Snowcourse	
> 150%	71 - 90%	> 150%	71 - 90%
131 - 150%	51 - 70%	131 - 150%	51 - 70%
111 - 130%	1 - 50%	111 - 130%	1 - 50%
91 - 110%	0%	91 - 110%	0%

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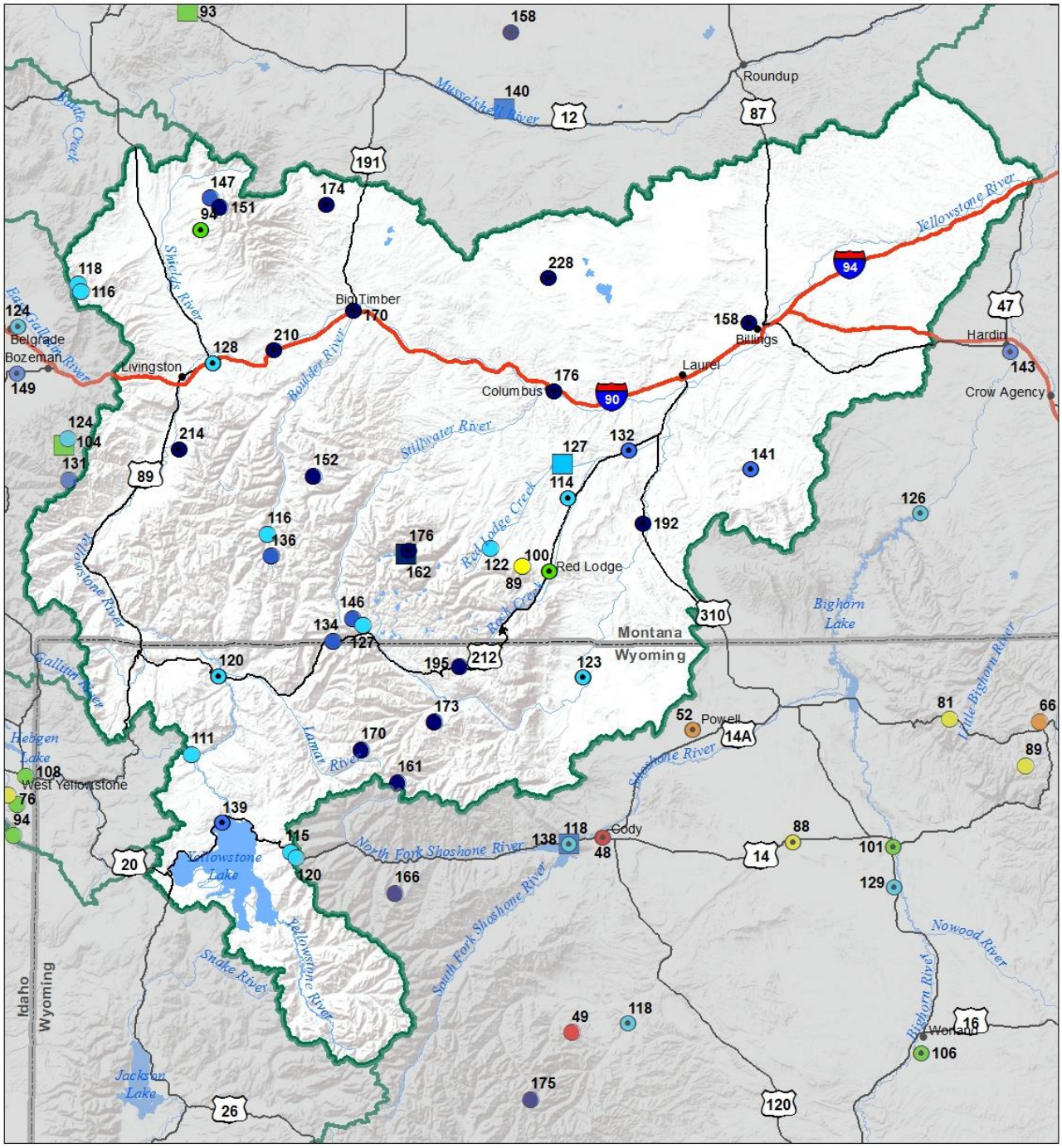
Upper Yellowstone River Basin
Water Year to Date Precipitation and Reservoir Levels
Percentage of Normal
January 1, 2018



Precipitation
Percent of Normal

SNOTEL		COOP/ACIS	
> 150%	71 - 90%	> 150%	71 - 90%
131 - 150%	51 - 70%	131 - 150%	51 - 70%
111 - 130%	1 - 50%	111 - 130%	1 - 50%
91 - 110%		91 - 110%	

Reservoirs
Percent of Normal

- > 150%
- 131 - 150%
- 111 - 130%
- 91 - 110%
- 71 - 90%
- 51 - 70%
- 1 - 50%

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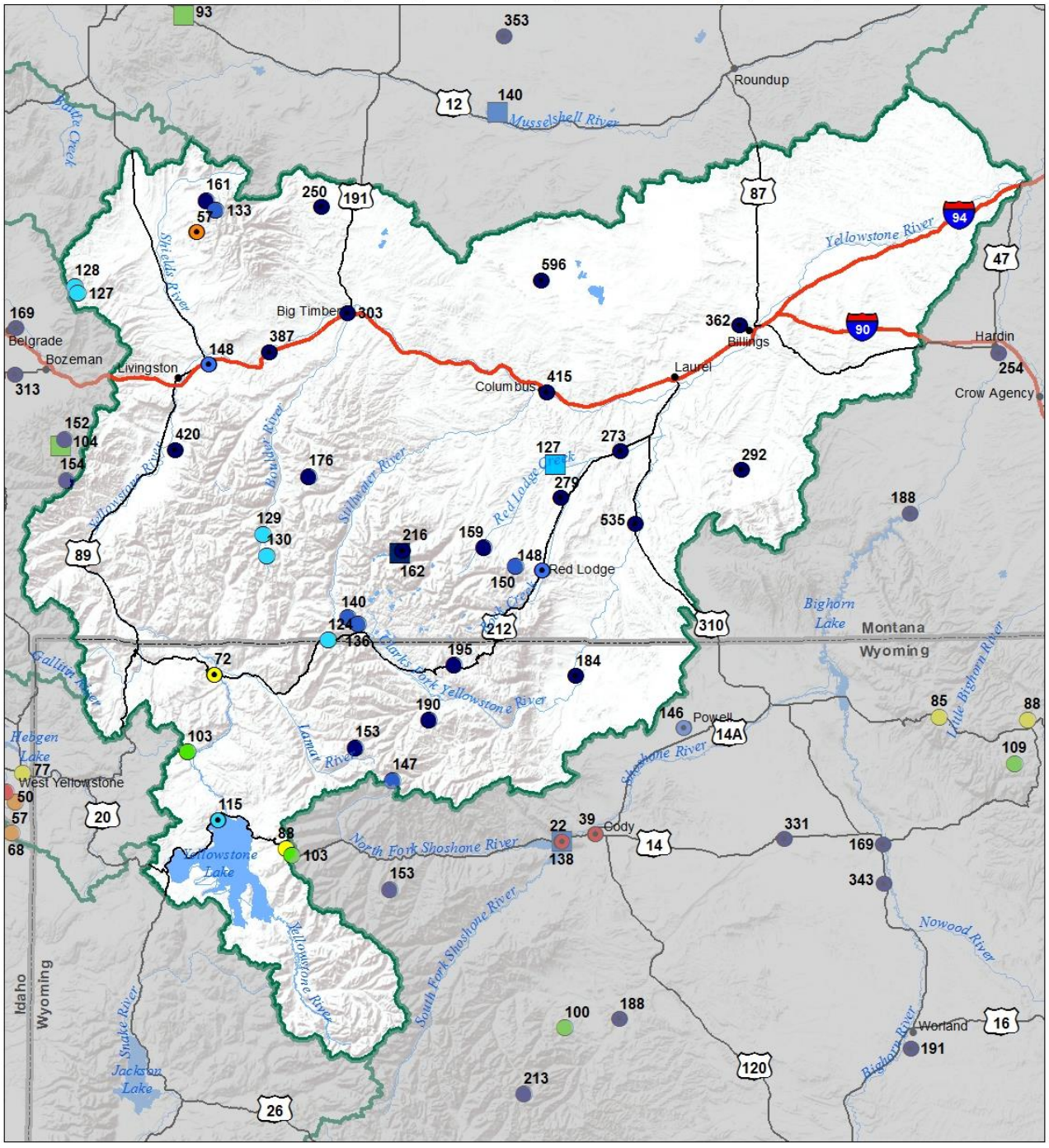
Upper Yellowstone River Basin
Monthly Precipitation and Reservoir Levels
Percentage of Normal
January 1, 2018 (December 1, 2017 - January 1, 2018)



Precipitation
Percent of Normal

SNOTEL		COOP/ACIS	
> 150%	71 - 90%	> 150%	71 - 90%
131 - 150%	51 - 70%	131 - 150%	51 - 70%
111 - 130%	1 - 50%	111 - 130%	1 - 50%
91 - 110%		91 - 110%	

Reservoirs
Percent of Normal

- > 150%
- 131 - 150%
- 111 - 130%
- 91 - 110%
- 71 - 90%
- 51 - 70%
- 1 - 50%

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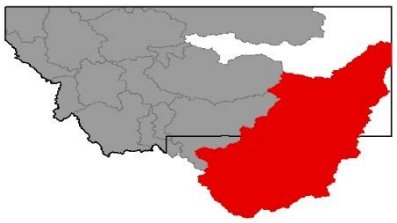


Lower Yellowstone River Basin

The water year got off to a slow start in the Lower Yellowstone River basin with all sub-basins receiving below average precipitation in October. Thankfully conditions improved substantially during November. A significant storm system moved through the region on Halloween night and continued to accumulate snow throughout the entire first week of November. This Halloween blaster was followed by another storm a week later and by December 1st the snowpack in the basin was 137% of the median! December saw normal precipitation as well as snow accumulation across the basin. Though storms have generally favored the western mountains the Big Horn Mountains have not been left out; benefitting greatly from the storm in early November and continuing average snow accumulation for this time of year. As of January 1st all sub-basins are reporting above normal snowpack totals.

Lower Yellowstone River Basin Data Summary

Snowpack	**Percent of 1981-2010 Normal (Median)**	**Last Year Percentage of Normal (Median)**
WIND RIVER BASIN	142%	124%
SHOSHONE RIVER BASIN	158%	127%
BIGHORN RIVER BASIN	143%	115%
LITTLE BIGHORN BASIN	105%	111%
TONGUE RIVER BASIN	103%	107%
POWDER RIVER BASIN	114%	82%
Basin-Wide	**130%**	**115%**

Precipitation	**Monthly Percentage of Average**	**WYTD Percentage of 1981-2010 Average***	**WYTD Last Year Percentage of Average**
Mountain Precipitation	106%	105%	129%
Valley Precipitation	169%	99%	155%
Basin-Wide Precipitation	**122%**	**103%**	**138%**

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

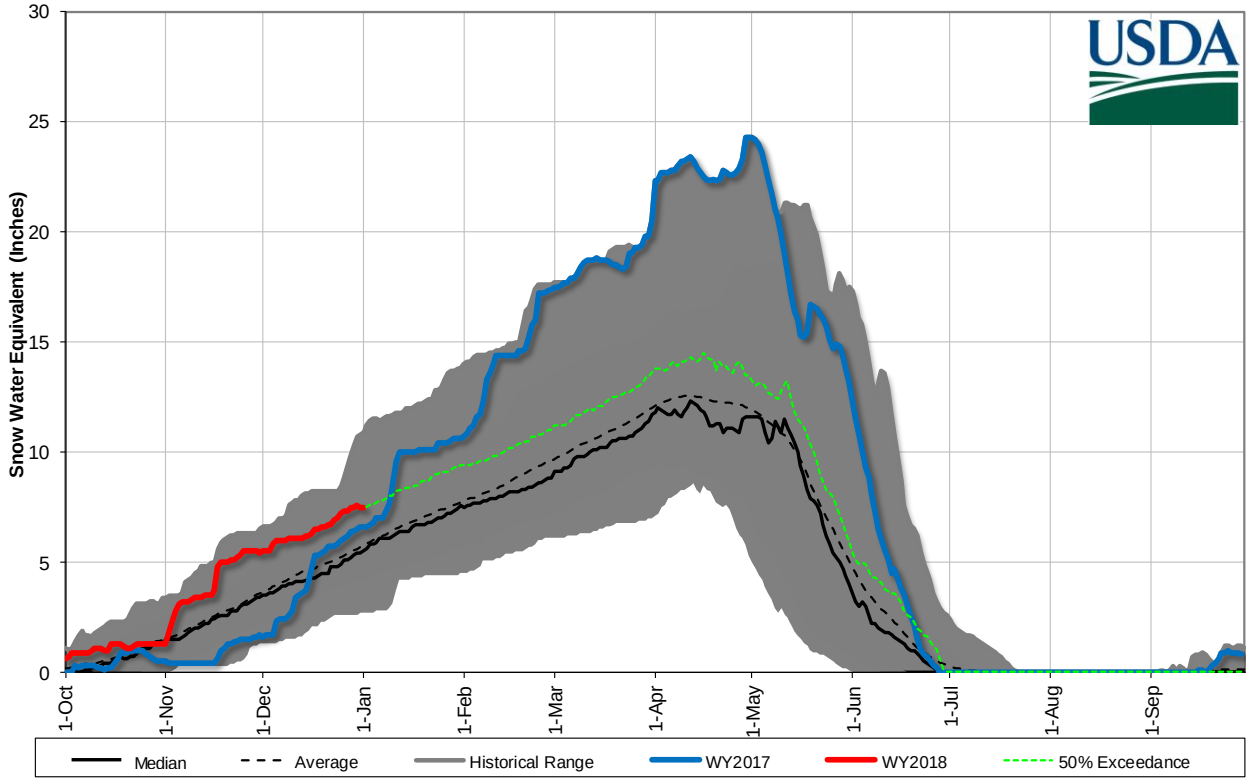
Reservoir Storage	**Percentage of Average**	**Percentage of Capacity (Total)**	**Last Year Percentage of Average**
Basin-Wide Storage	**107%**	**67%**	**108%**

**See Reservoir Storage Table for storage in individual reservoirs*

End of Month Storage	**Current (KAF)**	**Last Year (KAF)**	**Average (KAF)**	**Capacity (KAF)**	**% Average**	**% Capacity**
Bighorn Lake	912.0	919.1	871.2	1356.0	**105%**	**67%**
Tongue River Res	48.2	49.9	26.4	79.1	**183%**	**61%**

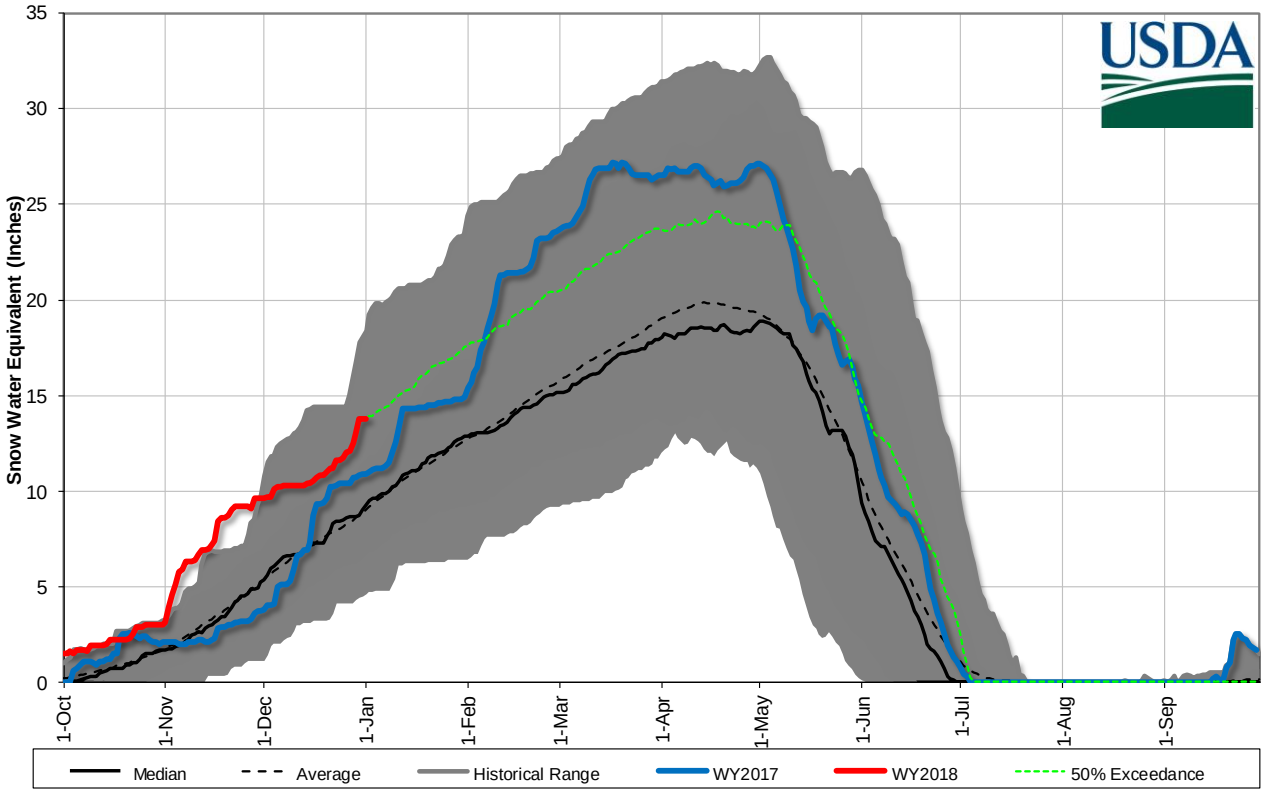
Wind River Basin Snowpack with Non-Exceedence Projections

Based on provisional SNOTEL daily data as of 1/1/2018



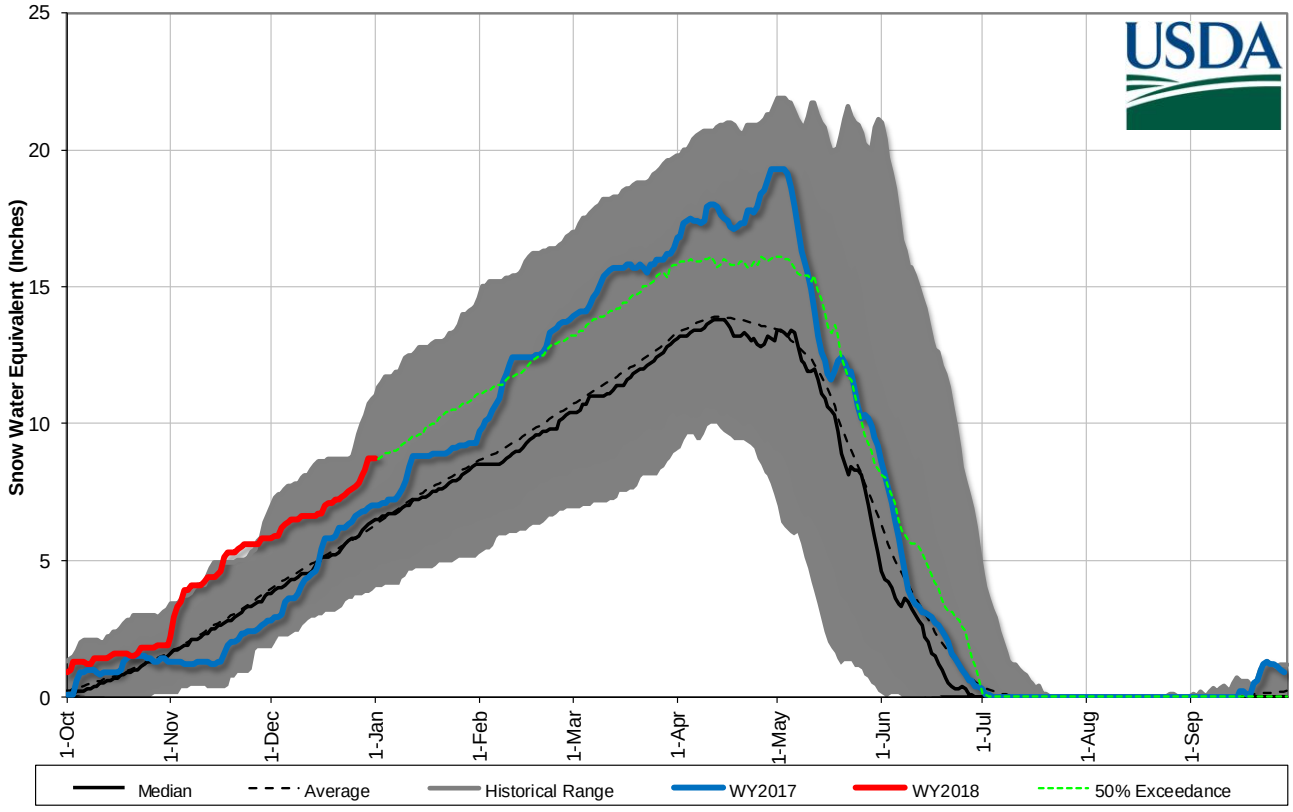
Shoshone River Basin Snowpack with Non-Exceedence Projections

Based on provisional SNOTEL daily data as of 1/1/2018



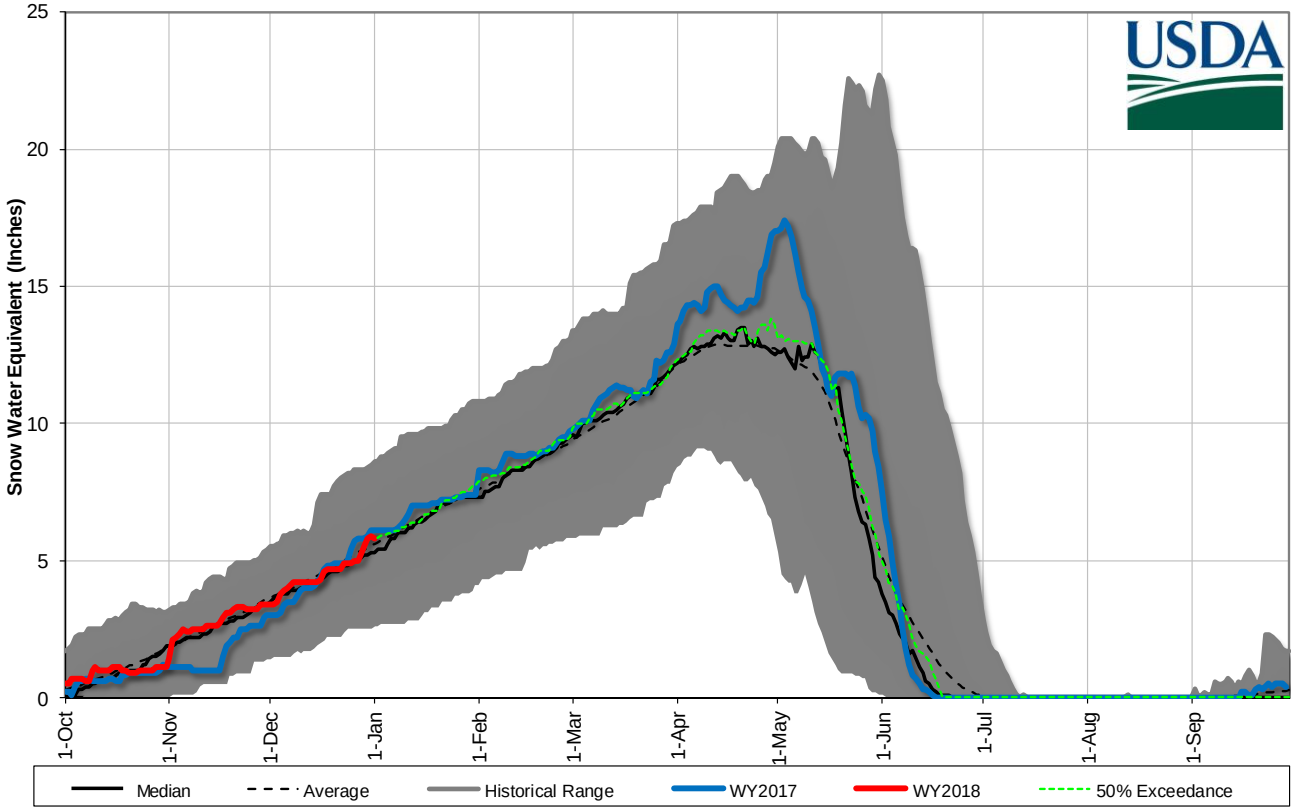
Bighorn River Basin Snowpack with Non-Exceedence Projections

Based on provisional SNOTEL daily data as of 1/1/2018



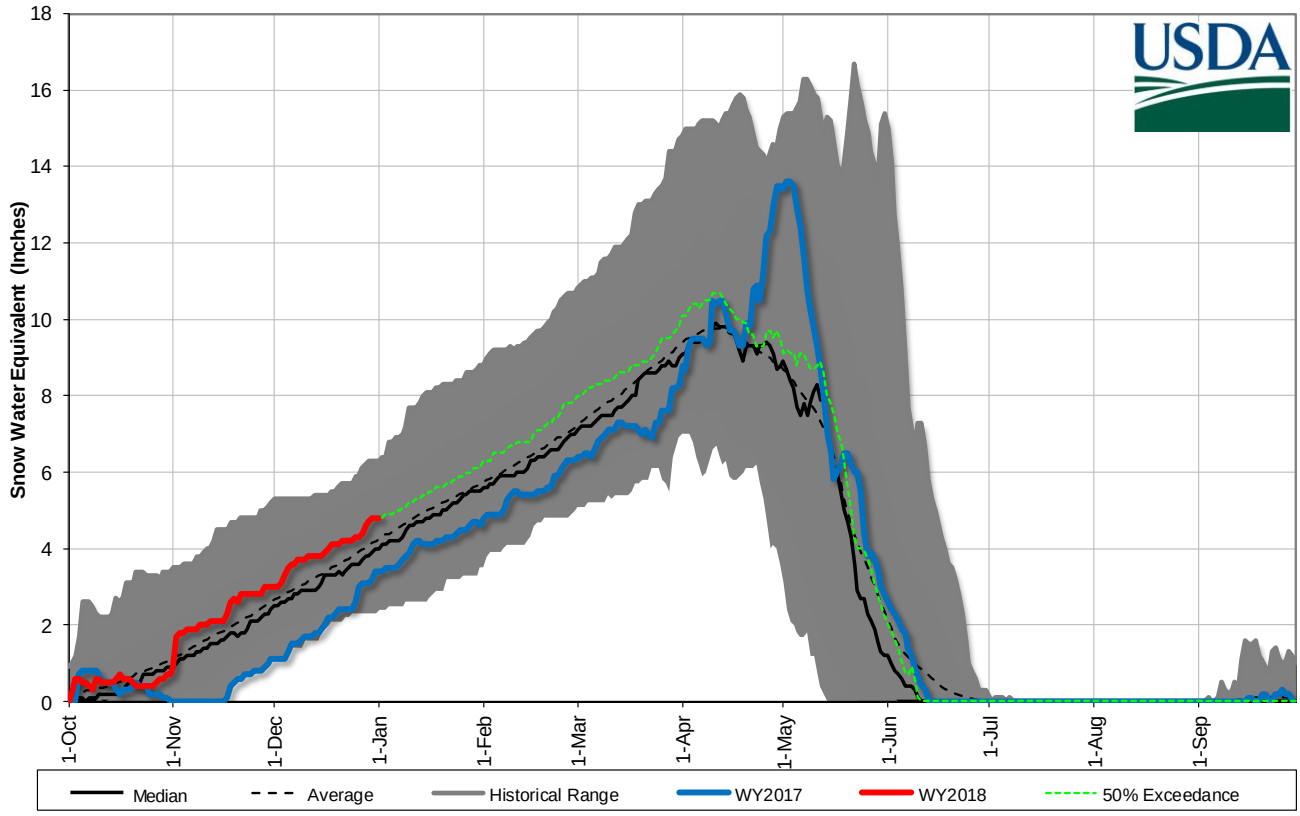
Tongue River Basin Snowpack with Non-Exceedence Projections

Based on provisional SNOTEL daily data as of 1/1/2018

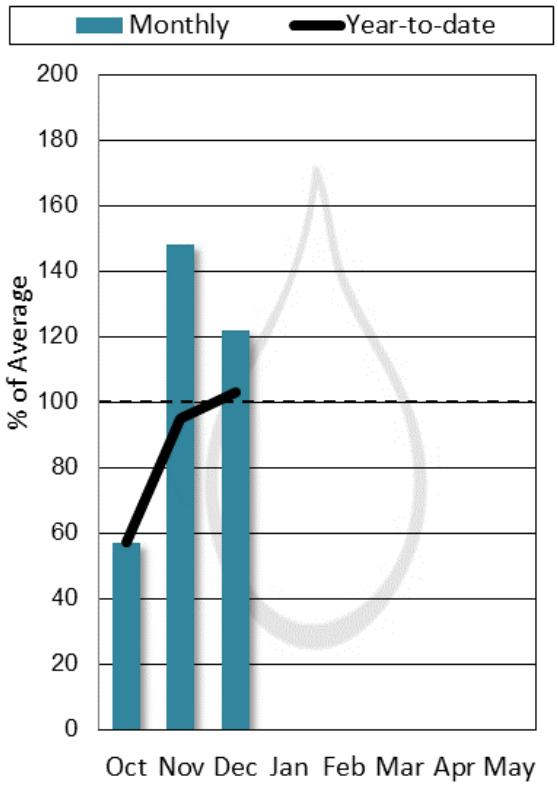


Powder River Basin Snowpack with Non-Exceedence Projections

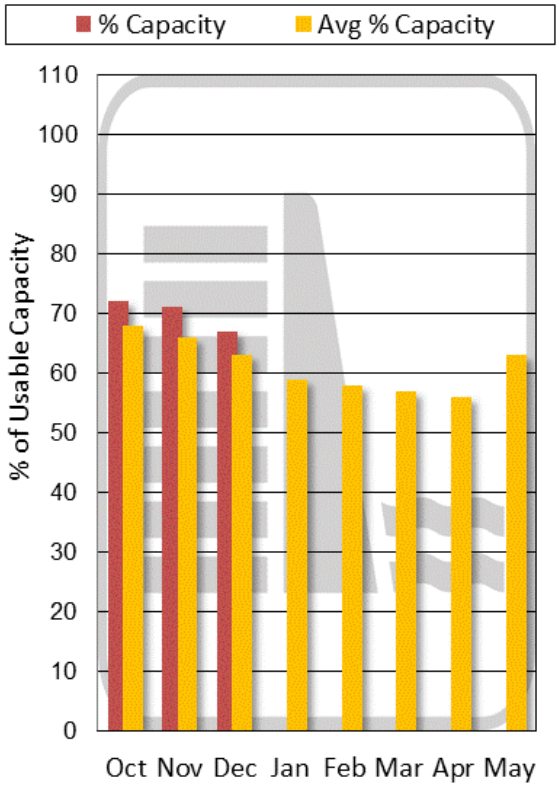
Based on provisional SNOTEL daily data as of 1/1/2018



Mountain and Valley Precipitation



End of Month Reservoir Storage



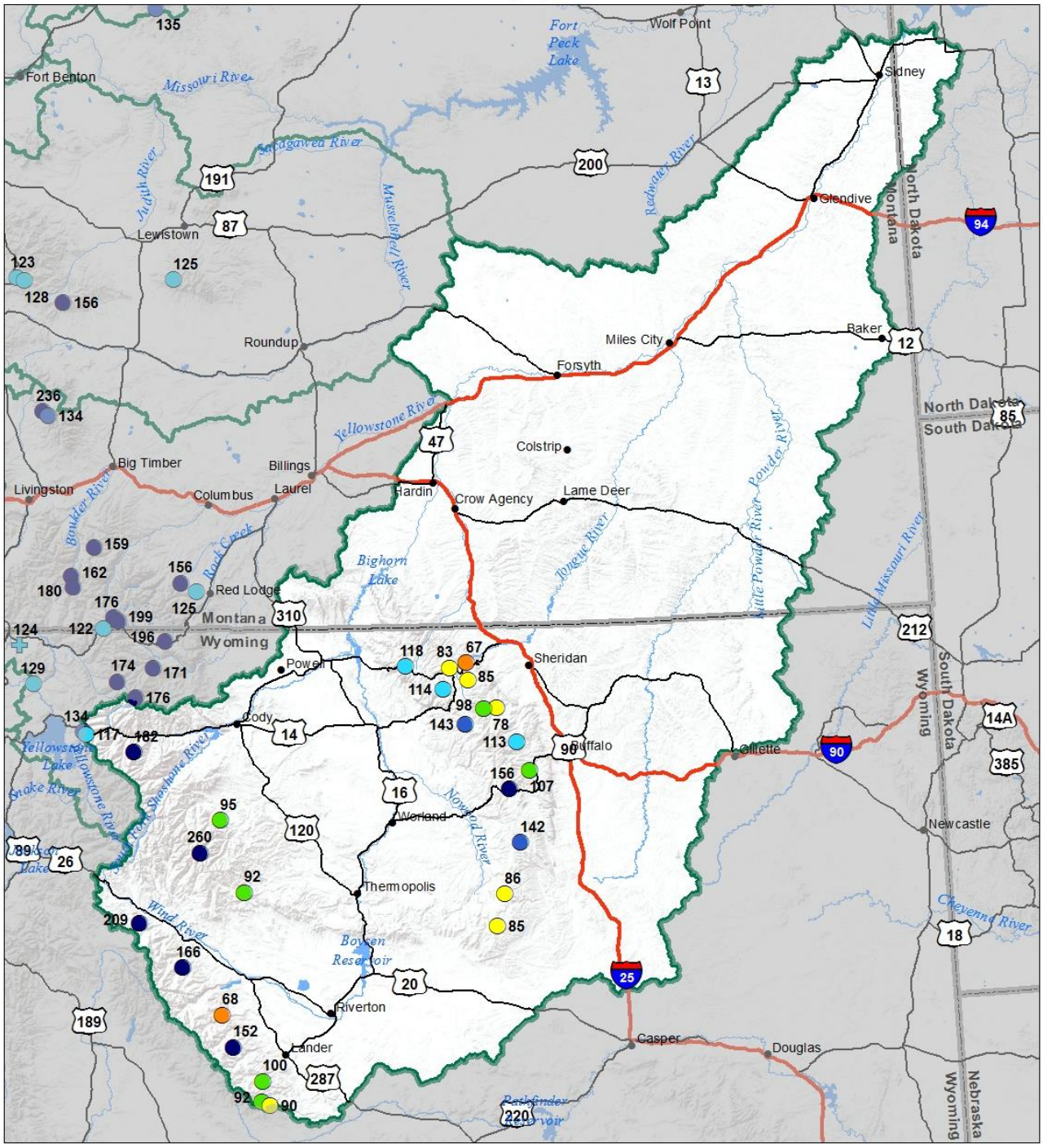
Storage above is averaged for all reservoirs in the basin. For individual reservoirs see table below.

Lower Yellowstone River Basin

Forecast Point	Forecast Period	Chance Actual Volume Will Exceed Forecasted Volume: 90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Bighorn R nr St. Xavier[2]	0	0	0	0	#DIV/0!	0	0	0
	0	0	0	0	#DIV/0!	0	0	0
Little Bighorn R nr Hardin	0	0	0	0	#DIV/0!	0	0	0
	0	0	0	0	#DIV/0!	0	0	0
Tongue R nr Dayton[2]	0	0	0	0	#DIV/0!	0	0	0
	0	0	0	0	#DIV/0!	0	0	0
Big Goose Ck nr Sheridan	0	0	0	0	#DIV/0!	0	0	0
	0	0	0	0	#DIV/0!	0	0	0
Little Goose Ck nr Bighorn	0	0	0	0	#DIV/0!	0	0	0
	0	0	0	0	#DIV/0!	0	0	0
Tongue River Reservoir Inflow[2]	0	0	0	0	#DIV/0!	0	0	0
	0	0	0	0	#DIV/0!	0	0	0
Yellowstone R at Miles City[2]	0	0	0	0	#DIV/0!	0	0	0
	0	0	0	0	#DIV/0!	0	0	0
Powder R at Moorehead	0	0	0	0	#DIV/0!	0	0	0
	0	0	0	0	#DIV/0!	0	0	0
Powder R nr Locate	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)	#VALUE!	0	0	0
	912.017	919.105	871.2	1356	#DIV/0!	0	0	0
Yellowstone R nr Sidney[2]	960.2	969	897.6	1435.1	#DIV/0!	0	0	0
	2	2	2	2	#DIV/0!	0	0	0

1) 90% and 10% exceedance probabilities are actually 95% and 5%

Lower Yellowstone River Basin
Snow Water Equivalent
Percentage of Normal
January 1, 2018



Snow Water Equivalent
Percent of Normal

SNOTEL				Snowcourse			
> 150%	71 - 90%			> 150%	71 - 90%		
131 - 150%	51 - 70%			131 - 150%	51 - 70%		
111 - 130%	1 - 50%			111 - 130%	1 - 50%		
91 - 110%	0%			91 - 110%	0%		

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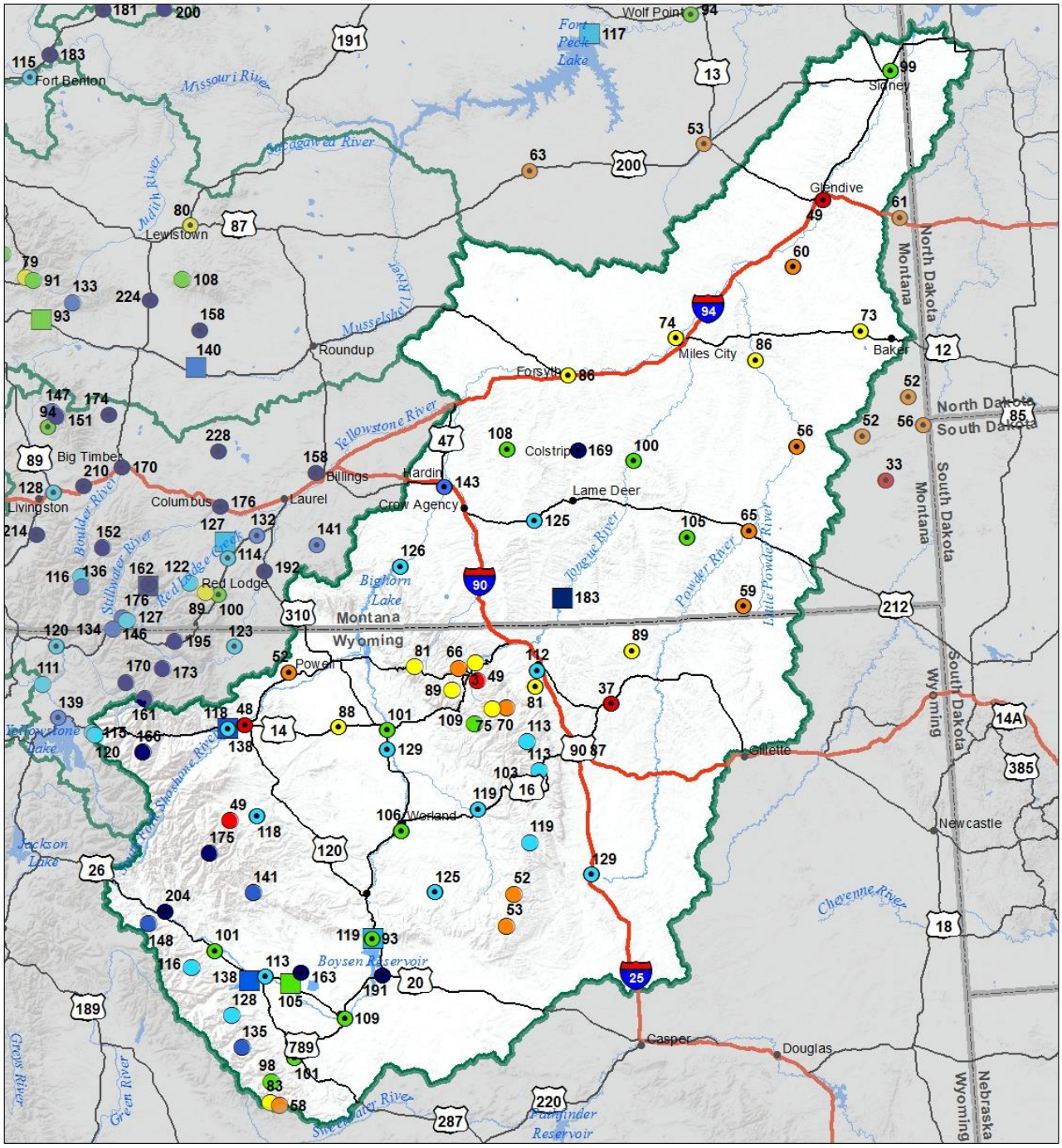
Lower Yellowstone River Basin
Water Year to Date Precipitation and Reservoir Levels
Percentage of Normal
January 1, 2018



Precipitation
Percent of Normal

SNOTEL		COOP/ACIS	
> 150%	71 - 90%	> 150%	71 - 90%
131 - 150%	51 - 70%	131 - 150%	51 - 70%
111 - 130%	1 - 50%	111 - 130%	1 - 50%
91 - 110%		91 - 110%	

Reservoirs
Percent of Normal

- > 150%
- 131 - 150%
- 111 - 130%
- 91 - 110%
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- 51 - 70%
- 1 - 50%

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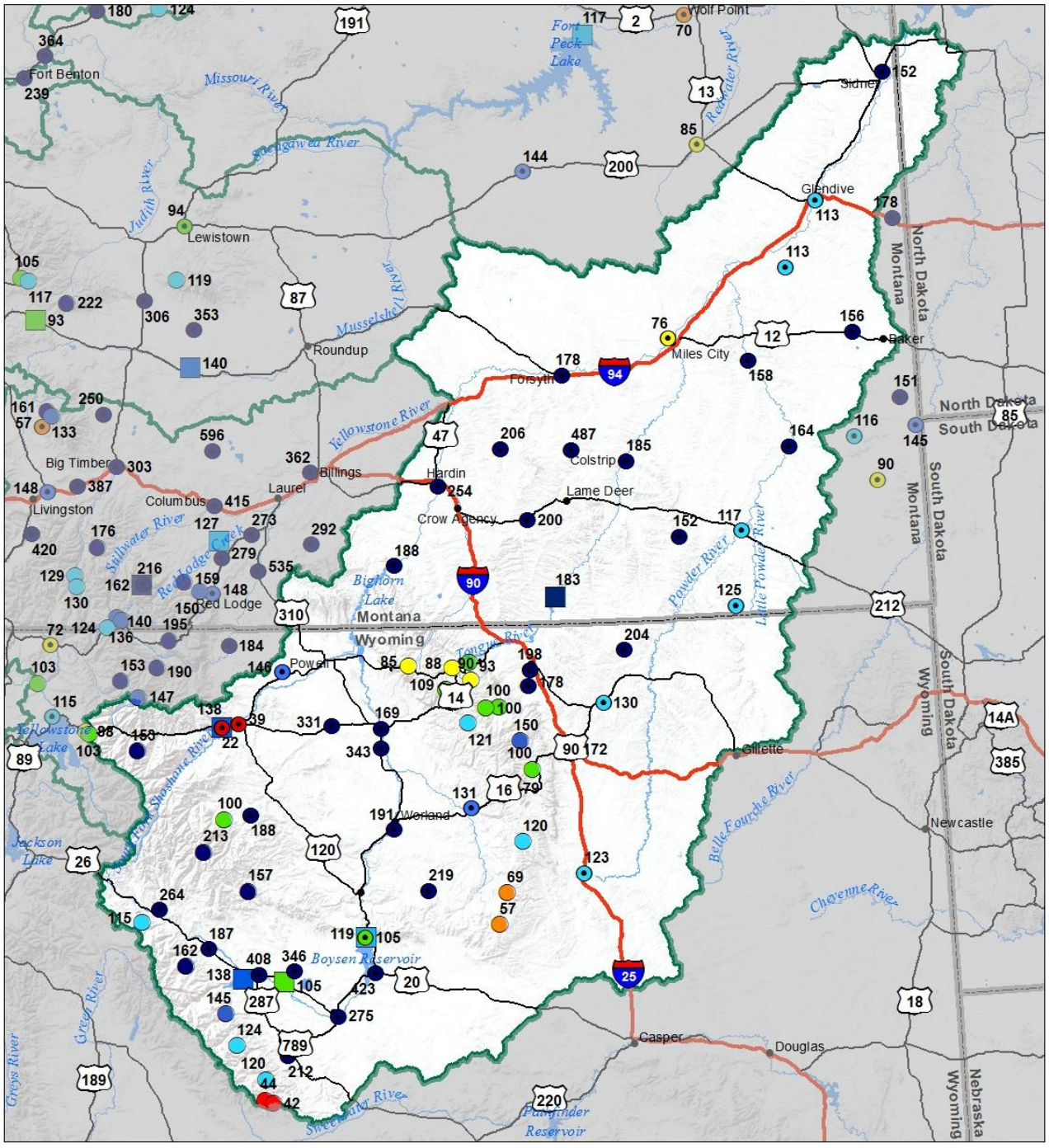
Lower Yellowstone River Basin
Monthly Precipitation and Reservoir Levels
Percentage of Normal
January 1, 2018 (December 1, 2017 - January 1, 2018)



Precipitation
Percent of Normal

SNOTEL		COOP/ACIS	
> 150%	71 - 90%	> 150%	71 - 90%
131 - 150%	51 - 70%	131 - 150%	51 - 70%
111 - 130%	1 - 50%	111 - 130%	1 - 50%
91 - 110%		91 - 110%	

Reservoirs
Percent of Normal

- > 150%
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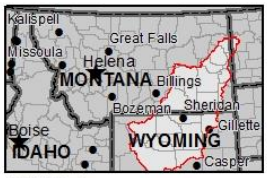

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Montana State Library Natural Resource Information System

Data Summary (SNOTEL and Snowcourse)

Montana Snow Sites	Network	Elevation (ft)	Depth (in)	SWE (in)	Median (in)	% Median	Last Year SWE (in)	Last Year % Median
Albro Lake	SNOTEL	8300	42	12.8	7.8	164	5.4	69
Ambrose	SC	6480						
Arch Falls	SC	7350						
Ashley Divide	SC	4820	19	3.4	2.6	131	3.2	123
Badger Pass	SNOTEL	6900		15.1	12.5	121	12.4	99
Banfield Mountain	SNOTEL	5600	40	7.6	7.8	97	5.3	68
Baree Creek	SC	5500						
Baree Midway	SC	4600						
Baree Trail	SC	3800						
Barker Lakes	SNOTEL	8250	40	10.6	5.9	180	3.6	61
Basin Creek	SNOTEL	7180	24	6	3.6	167	1.9	53
Bassoo Peak	SC	5150						
Beagle Springs	SNOTEL	8850	22	5.3	3.8	139	4.3	113
Bear Basin	SC	8150						
Bear Mountain	SNOTEL	5400	72	18.9	22.9	83	16.4	72
Beartooth Lake	SNOTEL	9360	86	19.6	10	196	11.9	119
Beaver Creek	SNOTEL	7850	43	8.4	7.8	108	5.3	68
Big Snowy	SC	7150						
Bisson Creek	SNOTEL	4920		7	3.9	179	3.2	82
Black Bear	SNOTEL	8170	68	17.7	17.8	99	15.8	89
Black Mountain	SC	7750						
Black Pine	SNOTEL	7210	27	5.6	4.2	133	4.8	114
Blacktail	SC	5650			5.4		3.4	63
Blacktail Mtn	SNOTEL	5650	29	4.9			4.6	
Bloody Dick	SNOTEL	7600	34	7.3	5	146	4.8	96
Bots Sots	SC	7750						
Boulder Mountain	SNOTEL	7950	52	13.1	9.3	141	4.7	51
Box Canyon	SNOTEL	6670	29	6	3.7	162	2.9	78
Boxelder Creek	SC	5100			2.5		1.1	44
Brackett Creek	SNOTEL	7320	45	11.3	7	161	5.2	74
Bristow Creek	SC	3900						
Brush Creek Timber	SC	5000						
Bull Mountain	SC	6600						
Burnt Mtn	SNOTEL	5880	16	2.8	1.8	156	3.7	206
Cabin Creek	SC	5200						
Calvert Creek	SNOTEL	6430	27	5.2	3.4	153	3.5	103
Camp Senia	SC	7890						
Canyon	SNOTEL	7870	34	7.1	5.5	129	6.8	124
Carrot Basin	SNOTEL	9000	59	14.9	12.3	121	9.9	80
Chessman Reservoir	SC	6200	16	2.2	1.4	157	2.4	171
Chicago Ridge	SC	5800						

Chicken Creek	SC	4060						
Clover Meadow	SNOTEL	8600	42	10.1	7.8	129	5	64
Cole Creek	SNOTEL	7850	31	7.9	6.3	125	5.2	83
Combination	SNOTEL	5600	13	2.6	2	130	2.2	110
Copper Bottom	SNOTEL	5200	30	4.5			4.8	
Copper Camp	SNOTEL	6950	63	15			14.1	
Copper Mountain	SC	7700						
Cottonwood Creek	SC	6400						
Coyote Hill	SC	4200	24	4	3.2	125		
Crevice Mountain	SC	8400						
Crystal Lake	SNOTEL	6050	26	6.4	5.1	125	3.7	73
Dad Creek Lake	SC	8800						
Daisy Peak	SNOTEL	7600	32	6.4	4.1	156	1.7	41
Daly Creek	SNOTEL	5780	27	5.9	4.5	131	3.8	84
Darkhorse Lake	SNOTEL	8600	65	17.9	12.9	139	13.8	107
Deadman Creek	SNOTEL	6450	24	4.9	4	123	2.1	53
Desert Mountain	SC	5600						
Discovery Basin	SC	7050	29	5.6	3.8	147	2.1	55
Divide	SNOTEL	7800	22	4.5	4.4	102	2.6	59
Dix Hill	SC	6400	29	5.6	3.9	144	3.6	92
Dupuyer Creek	SNOTEL	5750	27	3.4	3.4	100	2.8	82
Eagle Creek	SC	7000						
East Boulder Mine	SNOTEL	6335	16	3.7			3	
El Dorado Mine	SC	7800						
Elk Horn Springs	SC	7800						
Elk Peak	SNOTEL	7600	46	14.6			5.5	
Elk Peak	SC	8000						
Emery Creek	SNOTEL	4350	40	7.9	5.9	134	5.5	93
Fatty Creek	SC	5500						
Fish Creek	SC	8000			3.6			
Fisher Creek	SNOTEL	9100	94	25.9	14.7	176	13.5	92
Flattop Mtn.	SNOTEL	6300	73	15.1	18.5	82	19.9	108
Fleecer Ridge	SC	7500						
Foolhen	SC	8280						
Forest Lake	SC	6400						
Four Mile	SC	6900						
Freight Creek	SC	6000						
Frohner Meadow	SNOTEL	6480	27	5.8	3.1	187	3.7	119
Garver Creek	SNOTEL	4250	34	7	4.7	149	3.3	70
Gibbons Pass	SC	7100						
Goat Mountain	SC	7000						
Government Saddle	SC	5270						
Grave Creek	SNOTEL	4300	35	6.9	6.6	105	6	91
Griffin Creek Divide	SC	5150						
Hand Creek	SNOTEL	5035	26	5.2	4.2	124	4.5	107
Hawkins Lake	SNOTEL	6450	52	11.5	10.5	110	10.3	98
Haymaker	SC	8050						

Hebgen Dam	SC	6550	16	4.5	4	113	3.4	85
Hell Roaring Divide	SC	5770	44	10.5	11	95	9.8	89
Herrig Junction	SC	4850						
Highwood Divide	SC	5650						
Highwood Station	SC	4600						
Holbrook	SC	4530			3.2			
Hoodoo Basin	SNOTEL	6050	79	18.7	16.6	113	11.9	72
Humboldt Gulch	SNOTEL	4250	32	6.8	5.7	119	5.8	102
Jakes Canyon	SC	9040						
Johnson Park	SC	6450			2		2	100
Kishenehn	SC	3890						
Kraft Creek	SNOTEL	4750	42	8.1			6	
Lake Camp	SC	7780			4			
Lakeview Canyon	SC	6930						
Lakeview Ridge	SNOTEL	7400	12	2.6	4.9	53	3.1	63
Lemhi Ridge	SNOTEL	8100	21	4.3	4.5	96	4.3	96
Lick Creek	SNOTEL	6860	27	6.1	4.4	139	3	68
Little Park	SC	7400						
Logan Creek	SC	4300						
Lolo Pass	SNOTEL	5240	58	12.3	11	112	10	91
Lone Mountain	SNOTEL	8880	42	11.2	7.7	145	5.6	73
Lookout	SNOTEL	5140	49	10.3	11.9	87	8.7	73
Lower Twin	SNOTEL	7900	42	10.6	8.2	129	4.7	57
Lubrecht Flume	SNOTEL	4680	29	5	2.4	208	2.3	96
Lubrecht Forest No 3	SC	5450	24	3.8	2.2	173	2.2	100
Lubrecht Forest No 4	SC	4650	18	2.7	1.2	225	1.2	100
Lubrecht Forest No 6	SC	4040	24	3.6	1.3	277	2.1	162
Lubrecht Hydroplot	SC	4200	27	5.1	2	255	1.8	90
Lupine Creek	SC	7380	18	4.2	3.4	124		
Madison Plateau	SNOTEL	7750	41	10.2	10.3	99	9.2	89
Many Glacier	SNOTEL	4900	46	6.5	5.2	125	4.3	83
Marias Pass	SC	5250	27	5.1	5.8	88	4.7	81
Mineral Creek	SC	4000						
Monument Peak	SNOTEL	8850	66	15.8	8.8	180	7.2	82
Moss Peak	SNOTEL	6780	83	22.3	14.3	156	14.8	103
Moulton Reservoir	SC	6850			2.8			
Mount Allen No 7	SC	5700						
Mount Lockhart	SNOTEL	6400	49	9.9	8	124	7.7	96
Mudd Lake	SC	7650						
Mule Creek	SNOTEL	8300	45	10.8	6.3	171	5.8	92
N Fk Elk Creek	SNOTEL	6250	41	7.7	4.5	171	3	67
Nevada Ridge	SNOTEL	7020	44	10.2	5.6	182	6.1	109
New World	SC	6900						
Nez Perce Camp	SNOTEL	5650	32	6.5	5.8	112	6.4	110
Noisy Basin	SNOTEL	6040	85	23.8	16.1	148	14.5	90
Norris Basin	SC	7550			4.3			
North Fork Jocko	SNOTEL	6330	82	20.3	17.6	115	13.2	75

Northeast Entrance	SNOTEL	7350	25	5	4.1	122	4.6	112
Onion Park	SNOTEL	7410	30	6.2	5.4	115	2.7	50
Ophir Park	SC	7150	38	8.2	5.7	144	5.6	98
Parker Peak	SNOTEL	9400	66	17.2	9.9	174	12.2	123
Peterson Meadows	SNOTEL	7200	34	7.2	4	180	3.1	78
Pickfoot Creek	SNOTEL	6650	30	6.1	4.7	130	4	85
Pike Creek	SNOTEL	5930	37	6			1.7	
Pipestone Pass	SC	7200			1.6			
Placer Basin	SNOTEL	8830	57	13	8.2	159	5.9	72
Poorman Creek	SNOTEL	5100	67	15.3	12.6	121	12.5	99
Porcupine	SNOTEL	6500	23	5.2	2.2	236	1.6	73
Potomageton Park	SC	7150						
Revais	SC	4800						
Rock Creek Mdws	SC	3400						
Rocker Peak	SNOTEL	8000	47	10.3	6	172	4.5	75
Rocky Boy	SNOTEL	4700	14	2.7	2	135	2.1	105
Roland Summit	SC	5120						
S Fork Shields	SNOTEL	8100	33	8.7	6.5	134	2	31
Sacajawea	SNOTEL	6550	29	6.6	5.5	120	4.6	84
Saddle Mtn.	SNOTEL	7940	63	15.1	10.5	144	7.8	74
Short Creek	SNOTEL	7000	13	2.7	2.5	108	1.7	68
Shower Falls	SNOTEL	8100	60	14.7	9	163	7.2	80
Skalkaho Summit	SNOTEL	7250	50	10.9	8.7	125	6.3	72
Sleeping Woman	SNOTEL	6150	37	7.5	6.1	123	5.6	92
Slide Rock Mountain	SC	7100						
Spotted Bear Mountain	SC	7000		6.8	5.3	128	5.4	102
Spur Park	SNOTEL	8100	50	11.5	9	128	6.2	69
Stahl Peak	SNOTEL	6030	59	14.5	15.1	96	20.5	136
Stemple Pass	SC	6600						
Storm Lake	SC	7780	33	7	5.1	137	2.7	53
Stringer Creek	SNOTEL	6550	27	5.5	4	138	2.2	55
Stryker Basin	SC	6180						
Stuart Mountain	SNOTEL	7400	81	19	13.4	142	11.7	87
Taylor Road	SC	4080			1		1.7	170
Ten Mile Lower	SC	6600	29	5.2	2.7	193	2.8	104
Ten Mile Middle	SC	6800	30	5.5	4.3	128	3	70
Tepee Creek	SNOTEL	8000	21	3.7	6.2	60	4.1	66
Timberline Creek	SC	8850						
Tizer Basin	SNOTEL	6880	24	5.5	4.7	117	4.3	91
Trinkus Lake	SC	6100		23.5	16.9	139	15.5	92
Truman Creek	SC	4060	18	2.8	1.9	147	1.9	100
Twelvemile Creek	SNOTEL	5600	40	9	6.6	136	8	121
Twenty-One Mile	SC	7150	34	7.1	5.9	120	5.6	95
Twin Lakes	SNOTEL	6400	78	20	16.1	124	13.4	83
Upper Holland Lake	SC	6200		16.3	13	125	11.2	86
Waldron	SNOTEL	5600	30	5.1	4.1	124	4.8	117
Warm Springs	SNOTEL	7800	66	15.2	8.6	177	6.1	71

Weasel Divide	SC	5450	43	11	12.6	87	11.8	94
West Yellowstone	SNOTEL	6700	21	5.1	4.7	109	5.3	113
Whiskey Creek	SNOTEL	6800	26	5.8	6.7	87	5.9	88
White Elephant	SNOTEL	7710	39	9.8	11.5	85	8.2	71
White Mill	SNOTEL	8700	75	19.7	9.9	199	11.3	114
Wolverine	SNOTEL	7650	31	8.2	4.8	171	7.2	150
Wood Creek	SNOTEL	5960	34	4.4	3.3	133	3.1	94
Wrong Creek	SC	5700						
Wrong Ridge	SC	6800						
Younts Peak	SNOTEL	8350			7		8	114

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Montana Water Supply Outlook Report

Natural Resources Conservation Service