USDA United States Department of Agriculture

Natural Resources Conservation Service

Idaho Water Supply Outlook Report

January 1, 2020

Looking southeast from ~8,000 ft. elevation near the East Fork Salmon River, November 10, 2019
Photo courtesy of Danny Tappa

The story to start 2020, at least in terms of snowpack and water supply outlook, is abnormally low precipitation totals since the beginning of the new water-year (Oct. 1). Conveniently, but not coincidentally, Oct. 1 is *generally* the start of the climatological wet season for the Intermountain West. Typically, the necessary combination of precipitation and sustained sub-freezing daily temperatures align in November to start the seasonal snowpack building process across Idaho's mountains (this is in a general sense – the process begins as early as September in the highest elevations). The above picture illustrates the annual snowpack building process started slow – as this high terrain in central Idaho is typically snow-covered by mid-November. Our "wet season", beginning in Autumn and lasting through approximately May, is critical because it delivers life in the arid West water supply security through subsequent hot and dry summer months.

Water Supply Outlook Report
Federal - State – Private Cooperative Snow Surveys

For more water supply and resource management information:

Contact: Your local county Natural Resources Conservation Service Office
Internet Web Address: http://www.id.nrcs.usda.gov/snow/
Natural Resources Conservation Service Snow Surveys
9173 West Barnes Drive, Suite C
Boise, Idaho 83709-1574 (208) 378-5700 ext. 5

To join a free email subscription list contact us by email at: IDBOISE-NRCS-SNOW@one.usda.gov

How forecasts are made

Most of the annual streamflow in the western United States originates as snowfall that has accumulated in the mountains during the winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when the snow melts. Measurements of snow water equivalent at selected manual snow courses and automated SNOTEL sites, along with precipitation, antecedent streamflow, and indices of the El Niño / Southern Oscillation are used in computerized statistical and simulation models to produce runoff forecasts. Unless otherwise specified, all forecasts are for flows that would occur naturally without any upstream influences.

Forecasts of any kind are not perfect. Streamflow forecast uncertainty arises from three primary sources: (1) uncertain knowledge of future weather conditions, (2) uncertainty in the forecasting procedure, and (3) errors in the data. The forecast, therefore, must be interpreted not as a single value but rather as a range of values with specific probabilities of occurrence. The middle of the range is expressed by the 50% exceedance probability forecast, for which there is a 50% chance that the actual flow will be above, and a 50% chance that the actual flow will be below, this value. To describe the expected range around this 50% value, four other forecasts are provided, two smaller values (90% and 70% exceedance probability) and two larger values (30%, and 10% exceedance probability). For example, there is a 90% chance that the actual flow will be more than the 90% exceedance probability forecast. The others can be interpreted similarly.

The wider the spread among these values, the more uncertainty is in the forecast. As the season progresses, forecasts become more accurate, primarily because a greater portion of the future weather conditions become known; this is reflected by a narrowing of the range around the 50% exceedance probability forecast. Users should take this uncertainty into consideration when making operational decisions by selecting forecasts corresponding to the level of risk they are willing to assume about the amount of water to be expected. If users anticipate receiving a lesser supply of water, or if they wish to increase their chances of having an adequate supply of water for their operations, they may want to base their decisions on the 90% or 70% exceedance probability forecasts, or something in between. On the other hand, if users are concerned about receiving too much water (for example, threat of flooding), they may want to base their decisions on the 30% or 10% exceedance probability forecasts, or something in between. Regardless of the forecast value users choose for operations, they should be prepared to deal with either more or less water. (Users should remember that even if the 90% exceedance probability forecast is used, there is still a 10% chance of receiving less than this amount.) By using the exceedance probability information, users can easily determine the chances of receiving more or less water.

Starting in 2020, streamflow forecasts with poor prediction skill (jackknife $r^2 < 0.34$) will no longer be issued. This will primarily affect January and June forecasts, with little change anticipated for February, March, April, and May forecasts. For more information, please contact Danny Tappa (daniel.tappa@usda.gov)

IDAHO WATER SUPPLY OUTLOOK REPORT

January 1, 2020

SUMMARY

Precipitation

December precipitation was significantly below normal (~65 to 75%) for nearly all river basins in Idaho, with a few exceptions in the far north (Kootenai, Priest) and south (Owyhee, Bruneau, Salmon Falls, Oakley) where precipitation totals were ~100 to 115% of normal (**Figure 1**). Poor precipitation totals in December followed a historically dry November when new record low monthly precipitation was observed throughout much of the Idaho SNOTEL network. As a result, water-year precipitation (Oct. 1 to Jan. 1) totals are below normal for all basins in Idaho (**Figure 2**). In the greater-Central Idaho mountains, water-year precipitation is becoming increasingly concerning with totals in the 50 to 60% of normal range for the Weiser, Payette, Boise, Salmon, Wood and Lost River basins. Current 6-10 day and 8-14 day outlooks from NOAA's Climate Prediction Center suggest an increased likelihood of much needed precipitation for Idaho and the Pacific Northwest. The longer water-year precipitation totals remain significantly below normal, the more unlikely it becomes to recover to normal because the deficit continues to increase as we progress through the wet season. Monthly and water-year precipitation data for all basins in Idaho can be accessed in tabular form here.

Snowpack

Snowfall arrived early throughout Idaho's mountains during October, providing a jump-start to the annual snowpack building process. The near complete absence of precipitation during November quickly flipped the script to below normal snowpack conditions by Dec. 1. The less-than optimal start continued through December for nearly all basins in Idaho north of the Snake River Plain, where current snowpack totals range from approximately 50 to 80% of normal (Figure 3). South of the Snake River, snowpack totals are at or above normal and range from ~90 to 110%. The year and decade ended with the arrival of the most productive snowstorm so far this season, with 6 to 18" of new snow (1 to 3" of SWE) falling across Idaho's during the Dec. 30 – Jan. 1 storm. Current weather outlooks suggest conditions look favorable for increased snowfall during the first half of January, including Idaho's lower elevations with temperatures expected to be near or below normal. Therefore, the current thinking is conditions are likely to improve by Feb. 1. See **Figure 3** for a map of basin specific May 1 snowpack conditions, or access the same information in tabular form here.

Reservoirs & Streamflow

The silver lining in Idaho's current water supply outlook is the widespread above normal reservoir storage, resulting from an above normal snowpack and plentiful runoff in 2019. All major reservoir projects in the irrigation-dependent Middle and Upper Snake basins are holding above normal storage for Jan. 1, which in effect provides a buffer for adequate irrigation water supply in 2020. Statewide current reservoir storage can be accessed here. As expected with below normal precipitation amounts and mountain snow, current streamflow forecasts for the spring and summer runoff period are well below normal. Streamflow forecasts for the April through July and September periods are expected to be ~60 to 80% of normal for most of Idaho, full basin specific forecast details can be accessed here.

Note: The streamflow volumes referenced in this report are the 50% Chance of Exceeding Forecast, unless otherwise noted.

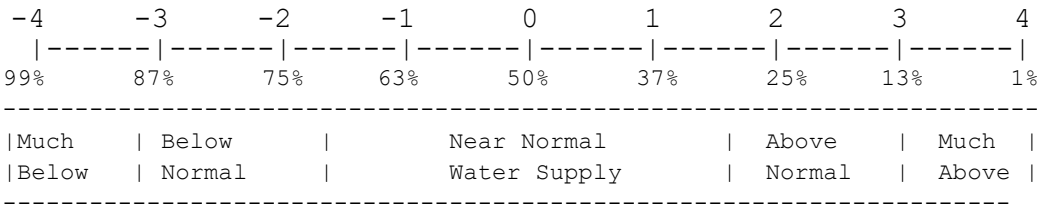
IDAHO SURFACE WATER SUPPLY INDEX (SWSI) January 1, 2020

The Surface Water Supply Index (SWSI) is a predictive indicator of surface water availability within a watershed for the spring and summer water use season. The index is calculated by combining pre-runoff reservoir storage (carryover) with forecasts of spring and summer streamflow. SWSI values are scaled from +4.0 (abundant supply) to -4.0 (extremely dry), with a value of zero indicating a median water supply as compared to historical occurrences. The SWSI analysis period is from 1981 to present.

SWSI values provide a more comprehensive outlook of water availability by combining streamflow forecasts and reservoir storage where appropriate. The SWSI index allows comparison of water availability between basins for drought or flood severity analysis. Threshold SWSI values have been determined for some basins to indicate the potential for agricultural irrigation water shortages.

BASIN or REGION	*SWSI Value*	*Most Recent Year With Similar SWSI Value*	*Agricultural Water Supply Shortage May Occur When SWSI is Less Than*
Spokane	**-1.5**	**1998**	**NA**
Clearwater	**---**	**----**	**NA**
Salmon	**---**	**----**	**NA**
Weiser	**---**	**----**	**NA**
Payette	**---**	**----**	**NA**
Boise	**- 1.5**	**2002**	**- 1.6**
Big Wood above Hailey	**---**	**----**	**- 2.9**
Big Wood	**---**	**----**	**0.5**
Little Wood	**---**	**----**	**- 1.4**
Big Lost	**---**	**----**	**0.5**
Little Lost	**---**	**----**	**1.2**
Teton	**-1.0**	**2015**	**- 3.9**
Henrys Fork	**0.1**	**2010**	**- 1.5**
Snake (Heise)	**- 0.4**	**2010**	**- 1.8**
Oakley	**1.5**	**2007**	**0.7**
Salmon Falls above Jackpot	**0.1**	**2002**	**NA**
Salmon Falls	**1.8**	**2018**	**- 0.7**
Bruneau	**-0.1**	**2008**	**NA**
Owyhee	**1.3**	**1995**	**- 2.0**
Bear River	**2.9**	**2011**	**- 3.9**

SWSI SCALE, PERCENT CHANCE OF EXCEEDANCE, AND INTERPRETATION



NA=Not Available / Not Applicable; Note: The Percent Chance of Exceedance is an indicator of how often a range of SWSI values might be expected to occur. Each SWSI unit represents about 12% of the historical occurrences. As an example of interpreting the above scale, the SWSI can be expected to be greater than -3.0, 87% of the time and less than -3.0, 13% of the time. Half the time, the SWSI will be below and half the time above a value of zero. The interval between -1.5 and +1.5 described as "Near Normal Water Supply," represents three SWSI units and would be expected to occur about one-third (36%) of the time.

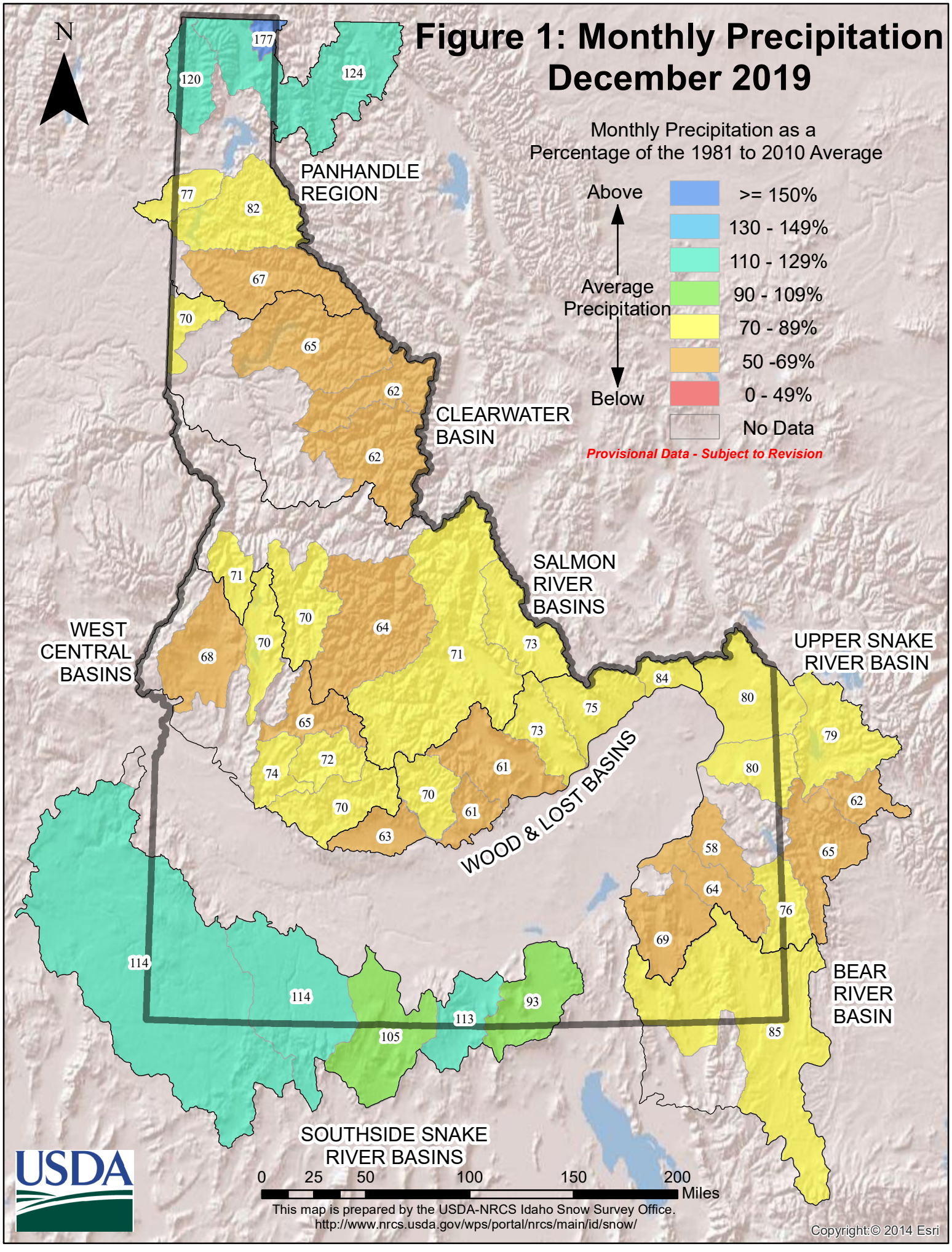

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Figure 1: Monthly Precipitation
December 2019
Monthly Precipitation as a
Percentage of the 1981 to 2010 Average
Above
Average
Precipitation
Below
>= 150%
130 - 149%
110 - 129%
90 - 109%
70 - 89%
50 -69%
0 - 49%
No Data
Provisional Data - Subject to Revision
PANHANDLE
REGION
CLEARWATER
BASIN
SALMON
RIVER
BASINS
WEST
CENTRAL
BASINS
UPPER SNAKE
RIVER BASIN
WOOD & LOST BASINS
BEAR
RIVER
BASIN
SOUTHSIDE SNAKE
RIVER BASINS
177
120
124
77
82
67
70
65
62
62
71
70
64
68
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73
84
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61
80
70
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63
58
65
64
76
69
114
114
93
113
105
85
0 25 50 100 150 200
Miles
This map is prepared by the USDA-NRCS Idaho Snow Survey Office.
http://www.nrcs.usda.gov/wps/portal/nrcs/main/id/snow/
USDA
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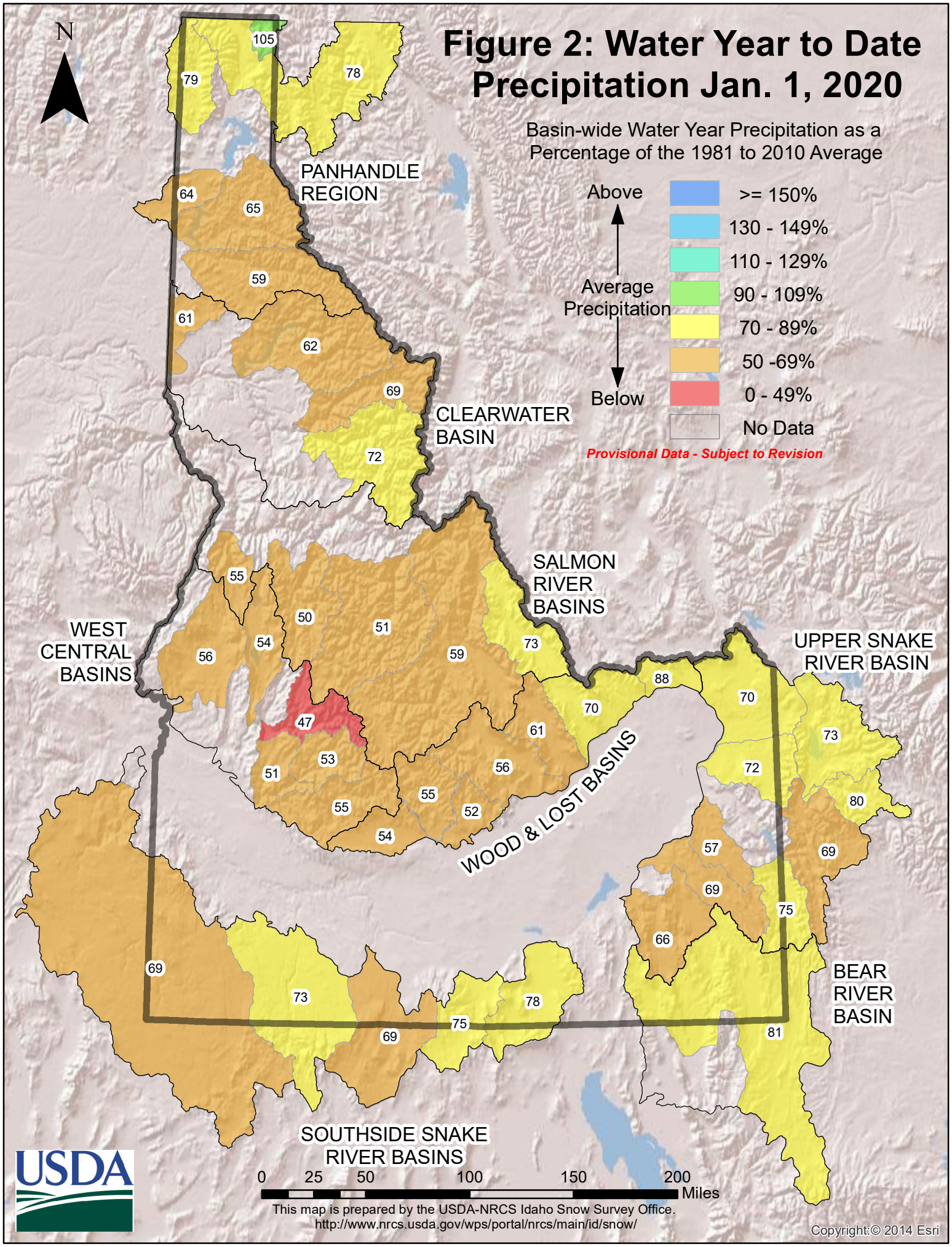
Figure 2: Water Year to Date Precipitation Jan. 1, 2020
Basin-wide Water Year Precipitation as a Percentage of the 1981 to 2010 Average
Above
Average Precipitation
Below
>= 150%
130 - 149%
110 - 129%
90 - 109%
70 - 89%
50 -69%
0 - 49%
No Data
Provisional Data - Subject to Revision
N
PANHANDLE REGION
CLEARWATER BASIN
SALMON RIVER BASINS
WEST CENTRAL BASINS
UPPER SNAKE RIVER BASIN
WOOD & LOST BASINS
BEAR RIVER BASIN
SOUTHSIDE SNAKE RIVER BASINS
105
79
78
64
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59
61
62
69
72
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51
54
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73
88
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54
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73
78
75
69
81
0 25 50 100 150 200
Miles
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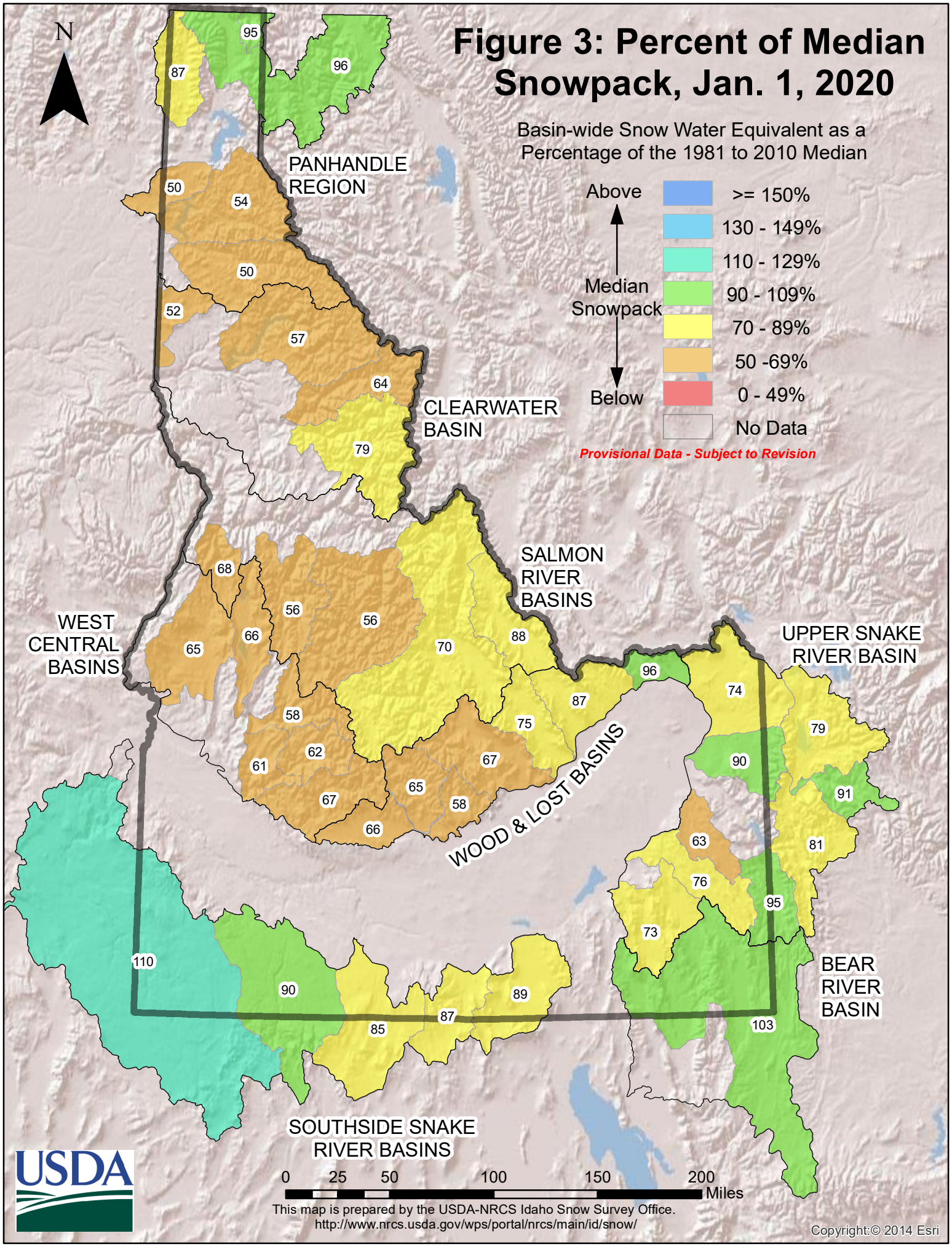
N
Figure 3: Percent of Median Snowpack, Jan. 1, 2020
Basin-wide Snow Water Equivalent as a Percentage of the 1981 to 2010 Median
Above
Median Snowpack
Below
>= 150%
130 - 149%
110 - 129%
90 - 109%
70 - 89%
50 -69%
0 - 49%
No Data
Provisional Data - Subject to Revision
PANHANDLE REGION
CLEARWATER BASIN
SALMON RIVER BASINS
WEST CENTRAL BASINS
UPPER SNAKE RIVER BASIN
WOOD & LOST BASINS
BEAR RIVER BASIN
SOUTHSIDE SNAKE RIVER BASINS
95
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0 25 50 100 150 200
Miles
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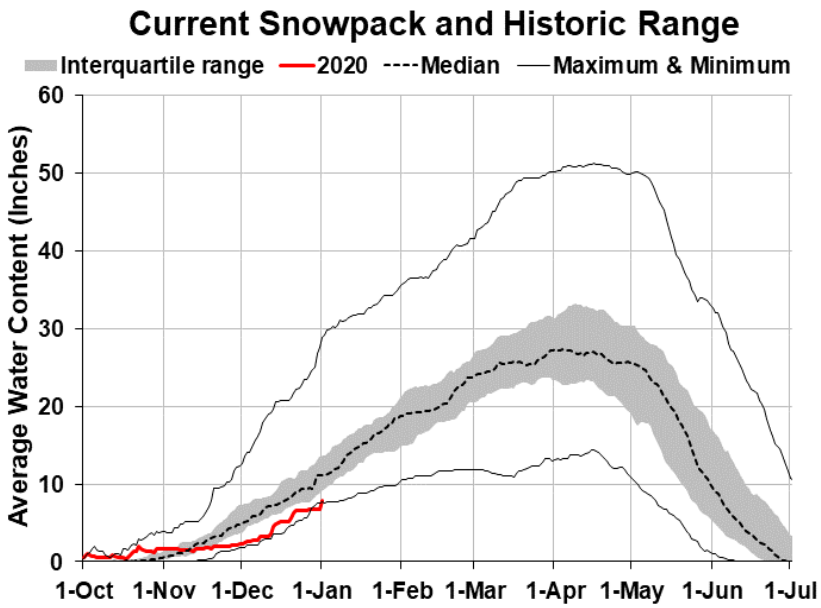
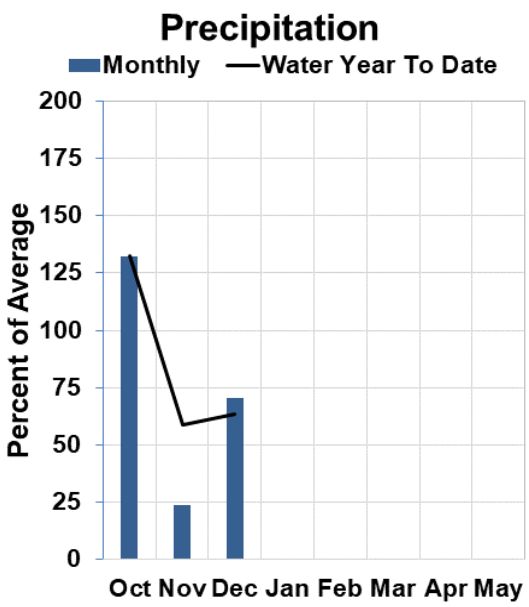
Panhandle Region

January 1, 2020





WATER SUPPLY OUTLOOK

The Panhandle Region started this water year with above normal precipitation in October, but November and December brought below normal precipitation. The lack of precipitation and warmer than average temperatures has led to a below normal Jan. 1 snowpack across the Panhandle. Basin snowpack totals range from 50% of normal in the Rathdrum Creek basin to nearly 100% in the Kootenai basin above Bonner's Ferry. Water-year precipitation in the Rathdrum Creek and Kootenai basins is approximately 75% of normal. The Rathdrum Creek, St. Joe River, Spokane River, and Palouse River basins all have less than 60% of normal snowpack.

Panhandle reservoir levels range from 40% of normal at Lake Coeur d'Alene to 120% at Hungry Horse Lake. Much like precipitation and current snowpack conditions, streamflow forecasts are currently calling for 80 to 90 % of normal volumes during the runoff period. Above normal snowfall during January would help to increase these forecast numbers on Feb. 1.

Panhandle Region Streamflow Forecasts - January 1, 2020

Forecast Point	Forecast Period	Forecast Exceedance Probabilities for Risk Assessment <--Drier----------Projected Volume----------Wetter--> 90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Moyie R at Eastport								
Kootenai R at Leonia 1 & 2	APR-JUL	4120	5420	6010	91%	6600	7900	6600
	APR-SEP	4960	6280	6880	91%	7480	8800	7590
Boundary Ck nr Porthill								
Clark Fork R bl Cabinet Gorge Dam 2	APR-JUL	5020	7610	9370	91%	11100	13700	10300
	APR-SEP	5440	8260	10200	90%	12100	14900	11300
Pend Oreille Lake Inflow 2	APR-JUL	5780	8690	10700	91%	12600	15600	11800
	APR-SEP	6280	9440	11600	91%	13700	16900	12800
Priest R nr Priest River 2	APR-JUL	400	575	695	89%	820	995	780
	APR-SEP	425	610	735	89%	860	1050	830
NF Coeur dAlene R at Enaville								
St. Joe R at Calder 2								
Spokane R nr Post Falls 2	APR-JUL	725	1380	1830	77%	2270	2930	2390
	APR-SEP	770	1440	1890	76%	2340	3000	2480
Spokane R at Long Lake	APR-JUL	930	1610	2080	79%	2540	3230	2620
	APR-SEP	1060	1760	2240	79%	2720	3420	2850

Normals based on 1981-2010 reference period: streamflow, precipitation, & reservoir normals are averages, SWE normals are medians.

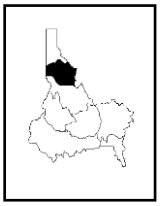
1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

Reservoir Storage (KAF): End of December				
Reservoir Name	Current (KAF)	Last YR	Average (KAF)	Capacity (KAF)
Hungry Horse Lake	3051.2	2944.0	2537.0	3451.0
Flathead Lake	1186.6	1186.6	1158.0	1791.0
Noxon Rapids Reservoir	303.7	313.5	317.9	335.0
Lake Pend Oreille	547.4	567.4	708.2	1561.3
Priest Lake	56.3	50.6	56.5	119.3
Lake Coeur d' Alene	37.5	55.2	93.7	238.5

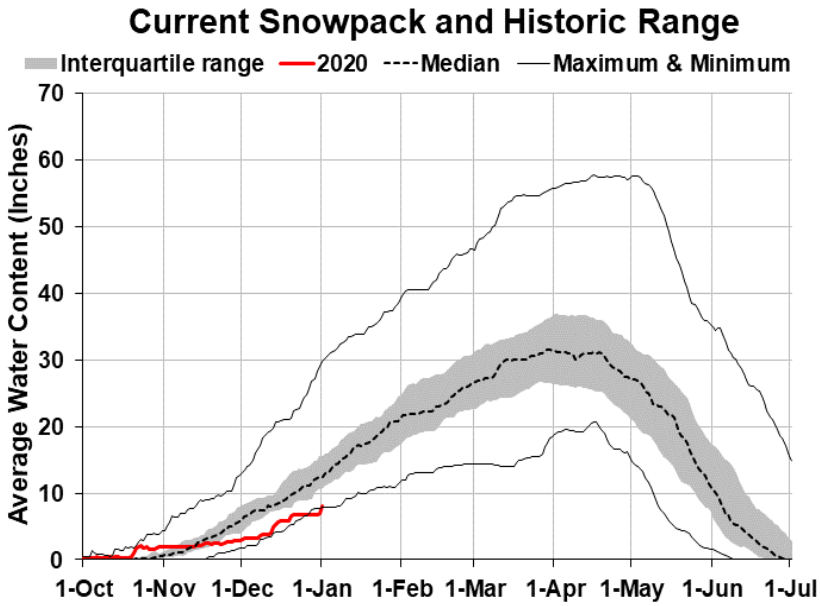
Watershed Snowpack Analysis: January 1, 2020			
Basin Name	# of Sites	% of Median 2020	2019
Moyie River	6	95%	101%
Priest River	5	87%	93%
Rathdrum Creek	3	45%	74%
Coeur d' Alene River	5	54%	87%
St. Joe River	4	50%	87%
Spokane River	12	50%	84%
Palouse River	2	52%	102%
Kootenai ab Bonners Ferry	17	96%	91%

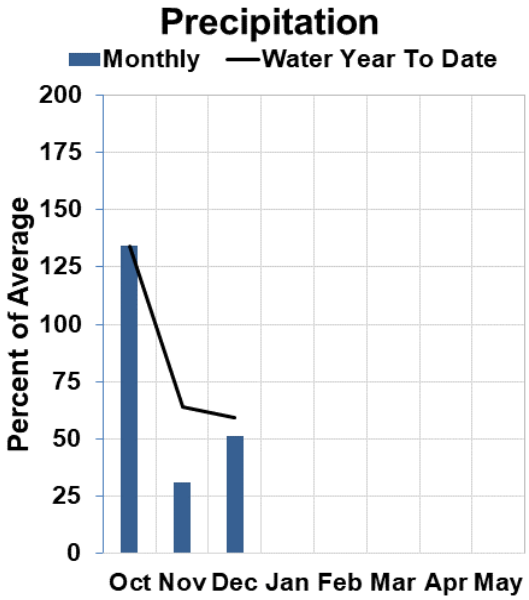
Starting in 2020, streamflow forecasts with poor prediction skill (jackknife r2 < 0.34) will no longer be issued. This will primarily affect January and June forecasts, with little change anticipated for February, March, April, and May forecasts. For more information, please contact Danny Tappa (daniel.tappa@usda.gov)



Clearwater River Basin

January 1, 2020





WATER SUPPLY OUTLOOK

After a wet October and below-normal precipitation in November and December, water-year precipitation for the Clearwater Basin is below normal and ranges between ~60 to 70% of normal. The lack of precipitation and warmer than average temperatures in November and December resulted in ~60 to 80% of normal snowpack levels on Jan. 1 across the Clearwater region. The Selway Basin has received the most precipitation and the snowpack is 79% of normal. The NF Clearwater River Basin currently has the lowest snowpack at 57% of normal.

Dworshak Reservoir Jan. 1 storage is 63% of capacity, which is 91% of normal for this time of year. Across the Clearwater Basin, streamflow forecasts will resume Feb. 1.

Clearwater River Basin Streamflow Forecasts - January 1, 2020

Forecast Point	Forecast Period	Forecast Exceedance Probabilities for Risk Assessment <--Drier----------Projected Volume----------Wetter--> 90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Selway R nr Lowell								
Lochsa R nr Lowell								
Dworshak Reservoir Inflow 2								
Clearwater R at Orofino								
Clearwater R at Spalding 2								

Normals based on 1981-2010 reference period: streamflow, precipitation, & reservoir normals are averages, SWE normals are medians.

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

Reservoir Storage (KAF): End of December

Reservoir Name	Current (KAF)	Last YR	Average (KAF)	Capacity (KAF)
Dworshak Reservoir	2179.5	2255.0	2403.0	3468.0

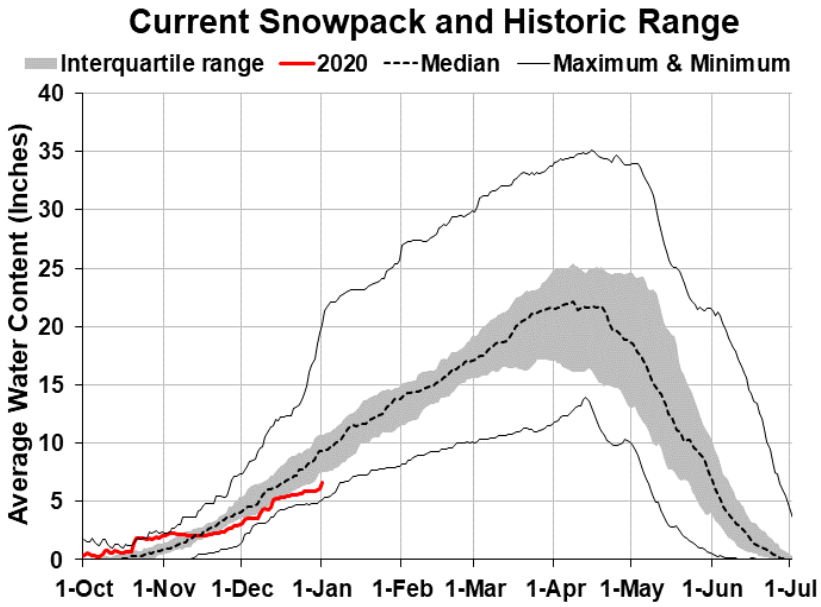
Watershed Snowpack Analysis: January 1, 2020

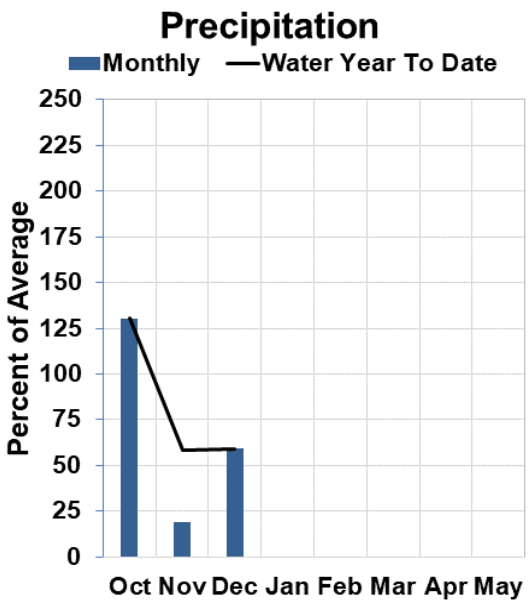
Basin Name	# of Sites	% of Median 2020	% of Median 2019
NF Clearwater River	8	57%	104%
Lochsa River	2	64%	101%
Selway River	4	79%	110%
Clearwater Basin Total	16	62%	105%

Starting in 2020, streamflow forecasts with poor prediction skill (jackknife r2 < 0.34) will no longer be issued. This will primarily affect January and June forecasts, with little change anticipated for February, March, April, and May forecasts. For more information, please contact Danny Tappa (daniel.tappa@usda.gov)

Salmon River Basin

January 1, 2020





WATER SUPPLY OUTLOOK

The Salmon River basin is off to a slow start this winter. October started with below-normal temperatures and above-normal precipitation/snowfall. This was followed by a record dry November and abnormally dry December, during these months the Salmon Basin received only 21% and 69% of normal precipitation, respectively. This contributed to water-year precipitation totals of 60% of average, and a below normal snowpack at 70% of normal. As we typically see in the geographically diverse and expansive Salmon River basin, current snowpack conditions vary considerably between sub-drainages. For example, the MF and SF Salmon River basins are 56% of normal while the Lemhi River Basin is 88%. There is still plenty of time left for snow accumulation; in 2017, for example, Salmon River basins gained an average of 18.8 inches of snow water equivalent after Jan. 1, so these lower-than-normal conditions may not persist.

There are no major reservoirs to report on in the Salmon River watershed. Streamflow forecasts are unavailable Jan. 1 due to poor prediction skill, we will resume issuing forecasts on Feb.1. It's still relatively early in the snow accumulation season, a few months with above normal precipitation will increase streamflow forecasts and improve the overall water outlook.

Salmon River Streamflow Forecasts - January 1, 2020

Forecast Point	Forecast Period	Forecast Exceedance Probabilities for Risk Assessment <--Drier----------Projected Volume----------Wetter--> 90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Salmon R at Salmon								
Lemhi R nr Lemhi								
MF Salmon R at MF Lodge								
SF Salmon R nr Krassel Ranger Station								
Johnson Ck at Yellow Pine								
Salmon R at White Bird								

Normals based on 1981-2010 reference period: streamflow, precipitation, & reservoir normals are averages, SWE normals are medians.

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

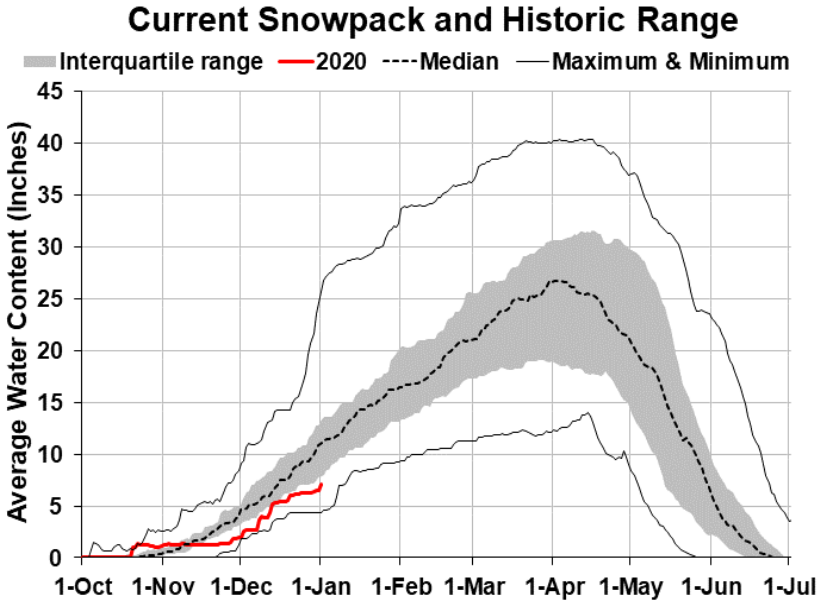
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

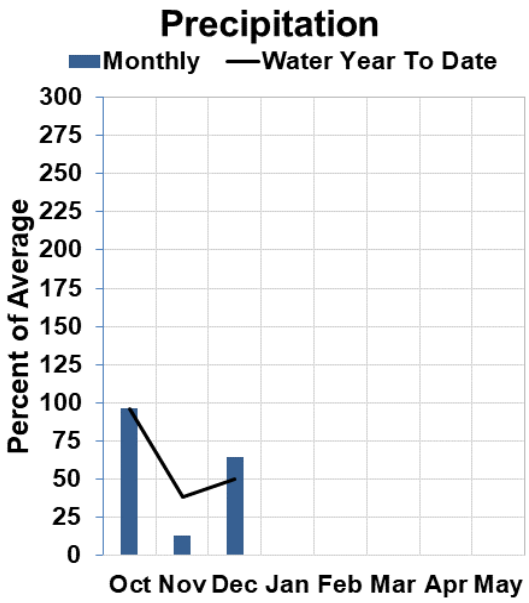
Watershed Snowpack Analysis: January 1, 2020			
Basin Name	# of Sites	% of Median 2020	2019
Salmon River ab Salmon	7	70%	67%
Lemhi River	7	88%	84%
MF Salmon River	3	56%	57%
SF Salmon River	3	56%	63%
Little Salmon River	4	68%	87%
Salmon Basin Total	24	71%	75%

Starting in 2020, streamflow forecasts with poor prediction skill (jackknife r2 < 0.34) will no longer be issued. This will primarily affect January and June forecasts, with little change anticipated for February, March, April, and May forecasts. For more information, please contact Danny Tappa (daniel.tappa@usda.gov)

West Central Basins

January 1, 2020





WATER SUPPLY OUTLOOK

Much like the rest of Idaho, the West Central Basins start 2020 with below normal snowpack and water-year precipitation. October brought below normal temperatures and around average precipitation, but this was followed by a dry November and December. The snowpack ranges from 61% in Mores Creek to 67% of normal in the SF Boise River drainage. Every basin is less than 60% of normal precipitation for the water year and is as low as 47% of normal in the SF Payette River drainage. Snowpack in the Boise, Payette, and Weiser basins is 63%, 62%, and 67% of normal, respectively. Although we are off to a slow start, there is still plenty of time left in winter for conditions to improve.

The combined Boise system (Anderson Ranch + Arrowrock + Lucky Peak) is 58% full and 116% of average. The Payette system (Deadwood + Cascade) is 61% full and 96% of average. Streamflow forecasts range from a low of 62% for the SF Boise, to a high of 73% for the Boise River near Twin Springs. Early season forecasts come with significantly uncertainty, largely because winter weather is unknown at this time. Please see our coming reports as we gain a clearer understanding of conditions and expected water supplies.

West Central Basins Streamflow Forecasts - January 1, 2020

Forecast Point	Forecast Period	Forecast Exceedance Probabilities for Risk Assessment <--Drier----------Projected Volume----------Wetter--> 90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
SF Boise R at Anderson Ranch Dam 2	APR-JUL	46	193	295	62%	395	540	475
	APR-SEP	63	215	320	63%	425	575	510
Boise R nr Twin Springs	APR-JUL	171	325	425	73%	530	680	585
	APR-SEP	196	355	465	73%	575	735	635
Mores Ck nr Arrowrock Dam								
Boise R nr Boise 2	APR-JUL	245	600	845	67%	1090	1440	1260
	APR-SEP	275	655	915	67%	1180	1560	1360
Lake Fork Payette R nr McCall								
NF Payette R at Cascade 2								
NF Payette R nr Banks 2								
SF Payette R at Lowman	APR-JUL	126	225	290	73%	355	450	400
	APR-SEP	152	255	330	73%	400	505	455
Deadwood Reservoir Inflow 2	APR-JUL	33	63	84	68%	104	135	123
	APR-SEP	36	69	91	69%	113	146	131
Payette R nr Horseshoe Bend 2								
Weiser R nr Weiser								

Normals based on 1981-2010 reference period: streamflow, precipitation, & reservoir normals are averages, SWE normals are medians.

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

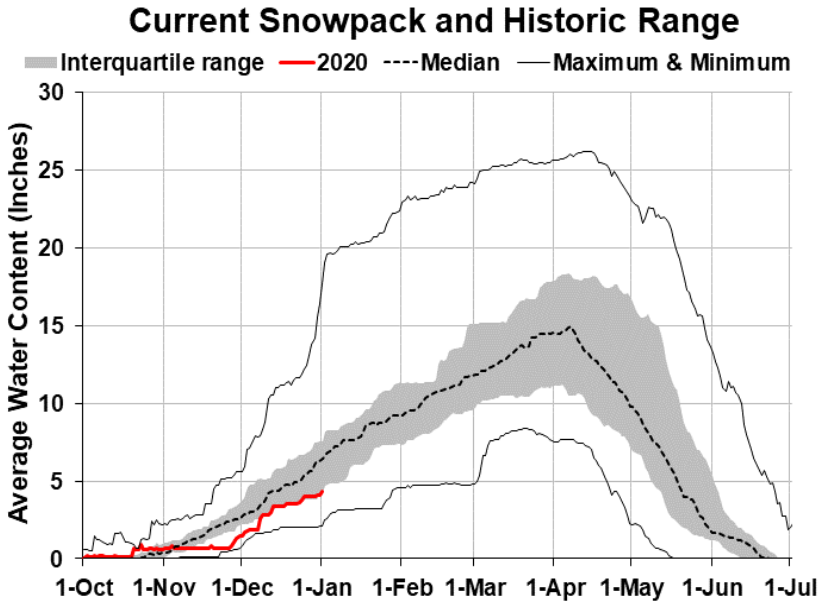
Reservoir Storage (KAF): End of December				
Reservoir Name	Current (KAF)	Last YR	Average (KAF)	Capacity (KAF)
Anderson Ranch Reservoir	315.4	270.8	262.5	450.2
Arrowrock Reservoir	185.1	147.8	146.3	272.2
Lucky Peak Reservoir	89.2	76.3	99.5	293.2
Sub-Basin Total	**589.7**	**494.9**	**508.3**	**1015.6**
Deadwood Reservoir	89.2	85.0	85.4	161.9
Cascade Reservoir	433.2	428.2	456.7	693.2
Sub-Basin Total	**522.4**	**513.2**	**542.1**	**855.1**
Lake Lowell	105.7	94.3	90.6	165.2
Mann Creek Reservoir	2.3	.6	2.6	11.1

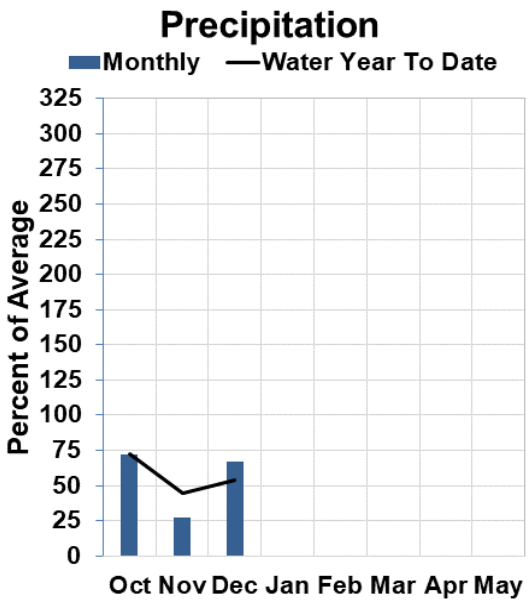
Watershed Snowpack Analysis: January 1, 2020			
Basin Name	# of Sites	% of Median 2020	2019
SF Boise River	8	67%	63%
MF & NF Boise Rivers	6	62%	66%
Mores Creek	3	61%	78%
Canyon Creek	4	78%	75%
Boise Basin Total	16	64%	70%
NF Payette River	7	66%	80%
SF Payette River	4	58%	62%
Payette Basin Total	12	62%	73%
Mann Creek	1	69%	85%
Weiser Basin Total	5	65%	89%

Starting in 2020, streamflow forecasts with poor prediction skill (jackknife r2 < 0.34) will no longer be issued. This will primarily affect January and June forecasts, with little change anticipated for February, March, April, and May forecasts. For more information, please contact Danny Tappa (daniel.tappa@usda.gov)

Wood & Lost River Basin

January 1, 2020





WATER SUPPLY OUTLOOK

In addition to a very dry November, all major basins and sub-drainages in the Wood and Lost River region received below-normal precipitation in October and December. Likewise, these same areas have a below normal snowpack. The current mountain snowpack is 60 to 90% of normal for Jan. 1. Monthly precipitation for this area ranges from 60 to 90% of normal as well, but most sub-basins are below 70% of normal. The silver lining is that these basins are known to pick up snow rapidly with a favorable storm track (generally systems with southwest flow); it only takes a couple of strong storms to increase snowpack conditions to near normal.

Mackay Reservoir is holding 77% of capacity (157% of average), Little Wood is 63% full (136% of average), and Magic is 65% full (192% of average). Streamflow forecasts are unavailable Jan 1 due to poor prediction skill, we will resume issuing forecasts on Feb 1. A few months of above normal precipitation would help mitigate potential water supply shortages for users in the Wood and Lost River basins.

Wood and Lost Basins Streamflow Forecasts - January 1, 2020

Forecast Point	Forecast Period	Forecast Exceedance Probabilities for Risk Assessment <--Drier----------Projected Volume----------Wetter--> 90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Camas Ck at Camas								
Little Lost R bl Wet Ck nr Howe								
Big Lost R at Howell Ranch								
Big Lost R bl Mackay Reservoir								
Little Wood R ab High Five Ck								
Little Wood R nr Carey 2								
Big Wood R at Hailey								
Big Wood R ab Magic Reservoir								
Camas Ck nr Blaine								
Big Wood R bl Magic Dam 2								

Normals based on 1981-2010 reference period: streamflow, precipitation, & reservoir normals are averages, SWE normals are medians.

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

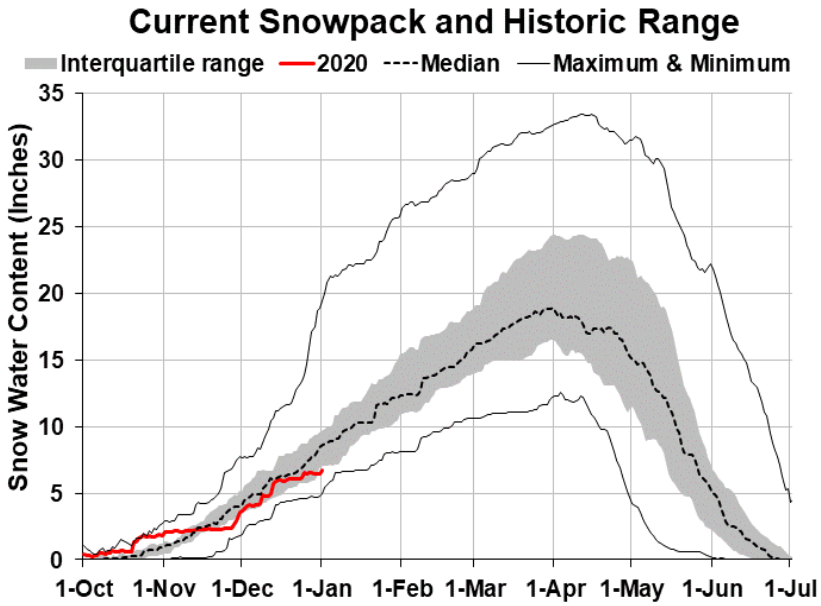
Reservoir Storage (KAF): End of December				
Reservoir Name	Current (KAF)	Last YR	Average (KAF)	Capacity (KAF)
Mackay Reservoir	34.2	30.6	21.8	44.4
Little Wood Reservoir	18.8	18.3	13.8	30.0
Magic Reservoir	123.6	79.9	64.5	191.5

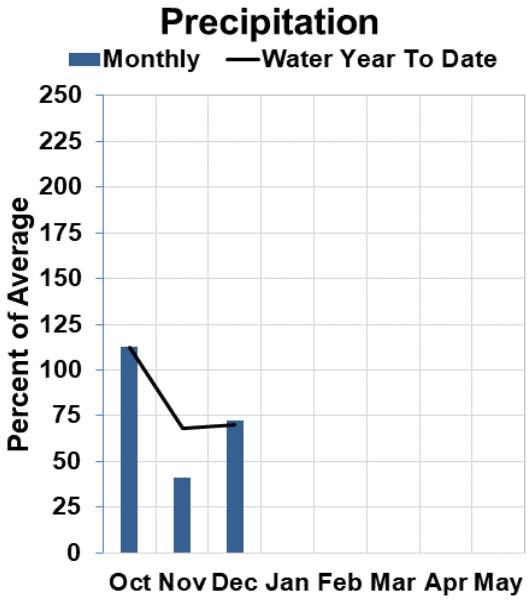
Watershed Snowpack Analysis: January 1, 2020			
Basin Name	# of Sites	% of Median 2020	2019
Camas-Beaver Creeks	4	96%	49%
Birch-Medicine Lodge Creeks	2	87%	67%
Little Lost River	3	75%	67%
Big Lost River ab Mackay	4	64%	49%
Big Lost Basin Total	5	67%	51%
Fish Creek	0		
Little Wood River	3	58%	49%
Big Wood River ab Hailey	6	65%	60%
Camas Creek	5	66%	66%
Big Wood Basin Total	11	65%	62%

Starting in 2020, streamflow forecasts with poor prediction skill (jackknife r2 < 0.34) will no longer be issued. This will primarily affect January and June forecasts, with little change anticipated for February, March, April, and May forecasts. For more information, please contact Danny Tappa (daniel.tappa@usda.gov)

Upper Snake River Basin

January 1, 2020





WATER SUPPLY OUTLOOK

The 2020 water year in the Upper Snake region started with near normal precipitation in October and was followed by a dry November and December. The snowpack in the Upper Snake region is between 63% in the Willow Creek Basin to 95% of normal in the Salt River Basin. Across the whole Upper Snake Basin, the snowpack is around 79% of normal, while water-year precipitation is near 70% of normal.

Jan. 1 storage for the region's eight major reservoirs is a combined 129% of average for this time of year. These totals range from 106% of average at Henry's Lake to 167% at Blackfoot Reservoir. There's healthy storage across the Upper Snake basin. Based on current snowpack and precipitation data, the April-July streamflow forecast for the Snake River near Heise indicates about 80% of average streamflow for this period. Forecasts for points further upstream also predict flows at 70 to 80% of average.

Upper Snake River Basin Streamflow Forecasts - January 1, 2020

Forecast Point	Forecast Period	Forecast Exceedance Probabilities for Risk Assessment <--Drier----------Projected Volume----------Wetter--> 90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Henrys Fk nr Ashton 2	APR-JUL	280	350	400	75%	445	515	530
	APR-SEP	420	500	555	78%	610	690	710
Falls R nr Ashton 2	APR-JUL	220	270	305	84%	345	395	365
	APR-SEP	265	330	370	85%	415	480	435
Teton R nr Driggs	APR-JUL	62	98	122	79%	147	183	154
	APR-SEP	79	124	154	80%	184	230	193
Teton R nr St Anthony	APR-JUL	174	250	300	82%	355	430	365
	APR-SEP	215	300	360	83%	420	510	435
Henrys Fk nr Rexburg 2	APR-JUL	730	945	1090	78%	1230	1450	1400
	APR-SEP	965	1230	1400	78%	1580	1840	1790
Snake R at Flagg Ranch	APR-JUL	220	310	370	80%	435	525	465
	APR-SEP	240	335	405	79%	470	570	510
Snake R nr Moran 2	APR-JUL	345	485	580	76%	675	815	765
	APR-SEP	390	540	640	76%	745	895	845
Pacific Ck at Moran	APR-JUL	56	91	114	70%	137	171	164
	APR-SEP	62	97	121	70%	145	180	173
Buffalo Fk ab Lava Ck nr Moran	APR-JUL	140	190	225	80%	255	305	280
	APR-SEP	158	215	250	78%	290	345	320
Snake R ab Reservoir nr Alpine 2	APR-JUL	1010	1430	1720	79%	2010	2430	2170
	APR-SEP	1180	1660	1980	79%	2300	2770	2500
Greys R ab Reservoir nr Alpine	APR-JUL	158	220	265	87%	305	370	305
	APR-SEP	187	260	310	86%	355	430	360
Salt R ab Reservoir nr Etna	APR-JUL	89	175	235	78%	290	380	300
	APR-SEP	127	225	290	78%	360	460	370
Snake R nr Irwin 2	APR-JUL	1350	1960	2380	79%	2800	3410	3010
	APR-SEP	1600	2300	2770	79%	3240	3940	3500
Snake R nr Heise 2	APR-JUL	1490	2130	2560	79%	2990	3630	3240
	APR-SEP	1790	2510	3000	79%	3500	4220	3780
Willow Ck nr Ririe 2								
Portneuf R at Topaz								
Snake R at Neeley 2	APR-JUL	345	880	1390	52%	2010	3130	2650
	APR-SEP	310	850	1370	49%	2010	3180	2810

Normals based on 1981-2010 reference period: streamflow, precipitation, & reservoir normals are averages, SWE normals are medians.

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

Reservoir Storage (KAF): End of December

Reservoir Name	Current (KAF)	Last YR	Average (KAF)	Capacity (KAF)
Jackson Lake	595.2	652.8	424.1	847.0
Palisades Reservoir	1249.8	1031.9	882.5	1400.0
Sub-Basin Total	**1845.0**	**1684.7**	**1306.6**	**2247.0**
Henrys Lake	84.0	81.6	79.3	90.4
Island Park Reservoir	120.2	119.8	93.5	135.2
Grassy Lake	12.4	12.5	11.6	15.2
Sub-Basin Total	**216.7**	**213.9**	**184.4**	**240.8**
Ririe Reservoir	46.1	45.2	36.0	80.5
Blackfoot Reservoir	285.7	250.8	171.3	337.0
American Falls Reservoir	1019.9	1097.2	948.5	1672.6
Basin-Wide Total	**3413.5**	**3291.8**	**2646.8**	**4577.9**

Watershed Snowpack Analysis: January 1, 2020

Basin Name	# of Sites	% of Median 2020	2019
Henrys Fork-Falls River	8	74%	67%
Teton River	3	90%	93%
Henrys Fork ab Rexburg	11	78%	74%
Snake River ab Jackson Lake	9	79%	75%
Pacific Creek	2	83%	91%
Buffalo Fork	2	97%	84%
Gros Ventre River	4	91%	78%
Hoback River	5	81%	80%
Greys River	4	90%	88%
Salt River	3	95%	90%
Snake ab Palisades Resv	23	84%	79%
Willow Creek - Ririe	7	63%	98%
Blackfoot River	3	76%	97%
Portneuf River	3	73%	76%
Snake River ab American Falls	36	79%	80%

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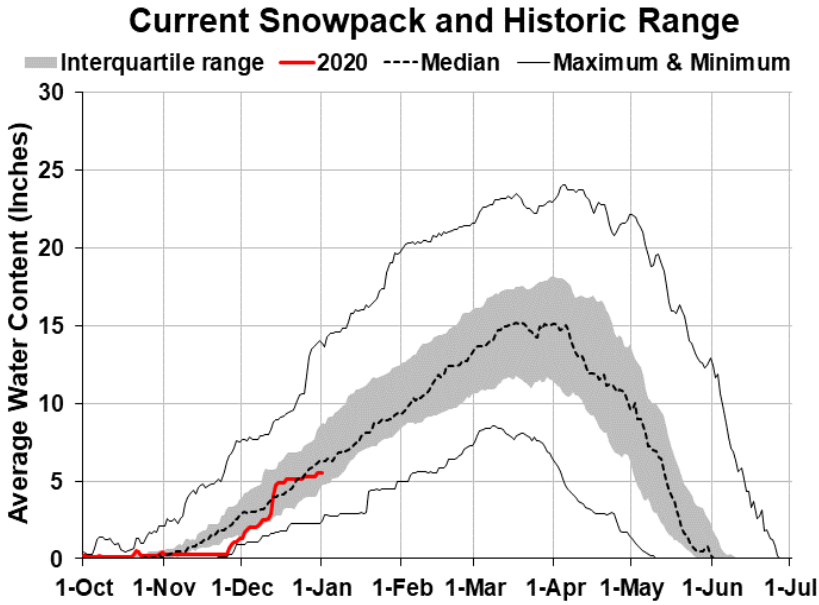
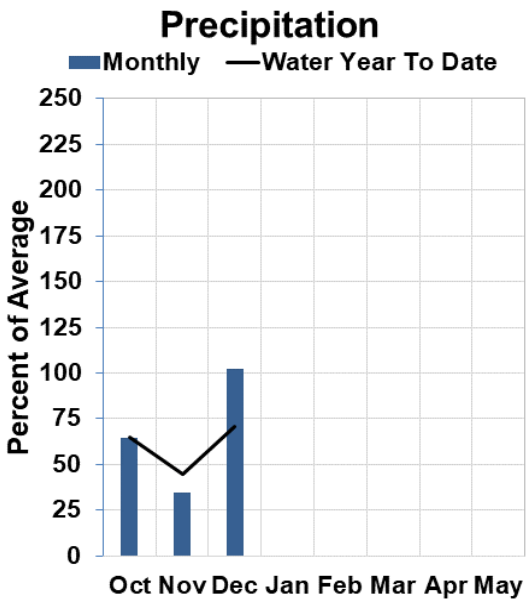
Southside Snake River Basins

January 1, 2020





WATER SUPPLY OUTLOOK

October started strong but ended with below normal precipitation. This was followed by a very dry November, when precipitation totals ranged from 30 to 40% of normal. In December, conditions rebounded, and monthly precipitation totals ended above normal. Current snowpack across the Southside Snake basins is near normal. Current sub-basin snowpacks are: Goose-Trapper Creeks at 87%, Salmon Falls at 85%, Bruneau River at 90%, and Owyhee at 110%.

Current storage expressed as a percent of average is the following for area reservoirs: Oakley 153%, Salmon Falls 196%, Wild Horse 180%, Lake Owyhee 154%. A near normal current snowpack coupled with plentiful reservoir storage bodes well for the many users in these basins.

Southside Snake River Basins Streamflow Forecasts - January 1, 2020

Forecast Point	Forecast Period	Forecast Exceedance Probabilities for Risk Assessment <--Drier----------Projected Volume----------Wetter--> 90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Goose Ck ab Trapper Ck nr Oakley	MAR-JUL	6.3	11.7	16.3	74%	22	31	22
	MAR-SEP	6.6	12.3	17.2	72%	23	33	24
Trapper Ck nr Oakley	MAR-JUL	2.9	3.9	4.7	80%	5.6	7.1	5.9
	MAR-SEP	3.7	4.9	5.8	82%	6.8	8.4	7.1
Oakley Reservoir Inflow	MAR-JUL	8.3	14.8	20	71%	26	37	28
	MAR-SEP	9.4	16.4	22	71%	29	40	31
Salmon Falls Ck nr San Jacinto	MAR-JUL	28	46	60	74%	77	104	81
	MAR-SEP	31	49	64	75%	80	109	85
Bruneau R nr Hot Spring	MAR-JUL	84	129	165	80%	205	270	205
	MAR-SEP	89	135	172	80%	215	280	215
Reynolds Ck at Tollgate	MAR-JUL	1.27	4.3	6.4	71%	8.5	11.6	9
	MAR-SEP	1.09	4.3	6.4	70%	8.6	11.8	9.1
Owyhee R nr Gold Ck 2	MAR-JUL	3.2	9.6	15.9	57%	24	38	28
	APR-JUL	0.8	5.3	10.7	49%	17.9	32	22
Owyhee R nr Rome	FEB-JUL	96	225	345	59%	490	745	580
	FEB-SEP	104	240	360	61%	505	765	595
	APR-JUL	33	112	193	56%	295	485	345
Owyhee R bl Owyhee Dam 2	FEB-JUL	122	265	390	61%	545	815	635
	FEB-SEP	141	290	420	63%	575	845	665
	APR-JUL	48	136	220	59%	325	515	375

Normals based on 1981-2010 reference period: streamflow, precipitation, & reservoir normals are averages, SWE normals are medians.

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

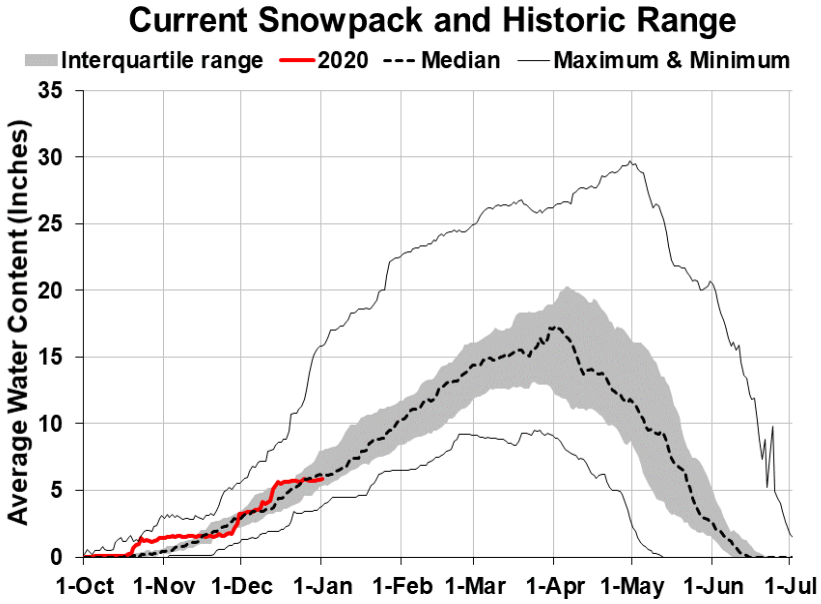
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

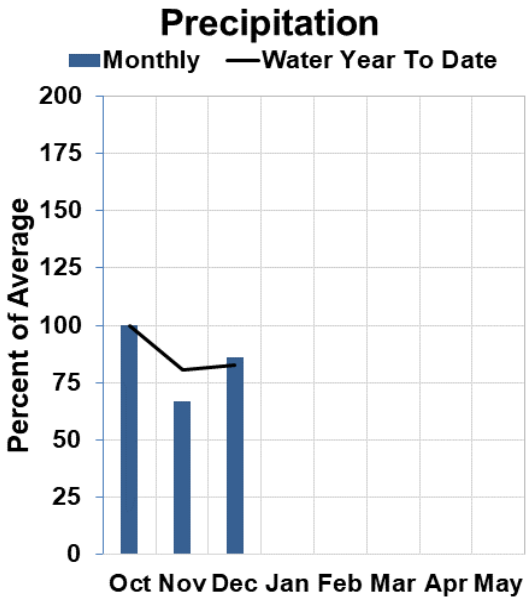
Reservoir Storage (KAF): End of December				
Reservoir Name	Current (KAF)	Last YR	Average (KAF)	Capacity (KAF)
Oakley Reservoir	31.0	17.3	20.3	75.6
Salmon Falls Reservoir	79.7	36.0	40.6	182.6
Wild Horse Reservoir	58.4	48.4	32.4	71.5
Lake Owyhee	481.3	254.0	312.7	715.0
Brownlee Reservoir	1187.7	1228.5	1317.0	1420.0

Watershed Snowpack Analysis: January 1, 2020			
Basin Name	# of Sites	% of Median 2020	2019
Raft River	1	89%	88%
Goose-Trapper Creeks	2	87%	103%
Salmon Falls Creek	6	85%	100%
Bruneau River	5	90%	101%
Reynolds Creek	1	105%	150%
Owyhee Basin Total	8	110%	120%
Owyhee Basin Snotel Total	8	110%	120%

Bear River Basin

January 1, 2020





WATER SUPPLY OUTLOOK

The Bear River Basin is one of the few basins in Idaho with a normal snowpack for this time of year. The water year started with normal precipitation in October, but November and December brought sub-normal precipitation. Resulting, the following sub-basins snowpack with respect to normal are: Smith-Thomas Forks (86%), Malad River (69%), Cub River (113%), Mink Creek (86%), Montpelier Creek (103%). Bear River Basin's water-year precipitation totals range between 70 and 90% of normal.

Bear Lake is 70% full and 157% of average, and Montpelier Reservoir is 46% full and 109% of average. Streamflow forecasts are slightly below normal for the primary runoff period, and range from 85 to 90%.

Bear River Basin Streamflow Forecasts - January 1, 2020

Forecast Point	Forecast Period	Forecast Exceedance Probabilities for Risk Assessment <--Drier----------Projected Volume----------Wetter--> 90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Bear R nr UT-WY State Line	APR-JUL	54	80	98	88%	116	142	112
	APR-SEP	61	89	108	88%	127	156	123
Bear R ab Resv nr Woodruff	APR-JUL	17.6	70	105	87%	140	192	121
	APR-SEP	17.7	73	111	87%	149	205	128
Big Ck nr Randolph	APR-JUL	0.3	1.43	3.4	89%	5.4	8.3	3.8
Smiths Fk nr Border	APR-JUL	39	60	75	84%	89	111	89
	APR-SEP	48	72	88	85%	105	129	104
Bear R bl Stewart Dam 2	FEB-JUL	12.2	118	190	88%	260	370	215
	FEB-SEP	12.8	130	210	88%	290	405	240
	APR-JUL	11	93	160	87%	225	325	183
Little Bear at Paradise	APR-JUL	14.2	33	40	89%	57	76	45
Logan R nr Logan	APR-JUL	50	80	100	90%	120	150	111
Blacksmith Fk nr Hyrum	APR-JUL	16.1	29	38	88%	47	60	43

Normals based on 1981-2010 reference period: streamflow, precipitation, & reservoir normals are averages, SWE normals are medians.

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

Reservoir Storage (KAF): End of December				
Reservoir Name	Current (KAF)	Last YR	Average (KAF)	Capacity (KAF)
Bear Lake	909.6	809.8	580.6	1302.0
Montpelier Reservoir	1.8	1.5	1.7	4.0

Watershed Snowpack Analysis: January 1, 2020			
Basin Name	# of Sites	% of Median 2020	2019
Smiths-Thomas Forks	3	86%	82%
Bear River ab WY-ID Line	9	107%	90%
Montpelier Creek	1	103%	109%
Mink Creek	1	86%	75%
Cub River	1	113%	89%
Bear River ab ID-UT Line	15	103%	87%
Malad River	1	69%	67%

Streamflow Adjustment List for All Forecasts Published in Idaho Water Supply Outlook Report: Streamflow forecasts are projections of runoff volumes that would occur without influences from upstream reservoirs or diversions. These values are referred to as natural, unregulated or adjusted flows. To make these adjustments, changes in reservoir storage, diversions, and inter-basin transfers are added or subtracted from the observed (actual) streamflow volumes. The following list documents the adjustments made for each forecast point. **(Revised Dec. 2018).**

Panhandle Region

Kootenai R at Leonia, MT (2)
+ Lake Koocanusa storage change

Moyie R at Eastport – no corrections

Boundary Ck nr Porthill – no corrections

Clark Fork R bl Cabinet Gorge (2)
+ Hungry Horse storage change
+ Flathead Lake storage change
+ Noxon Res storage change
Whitehorse Rapid gage used create longer term record

Pend Oreille Lake Inflow (2)
+ Pend Oreille R at Newport, WA
+ Hungry Horse Res storage change
+ Flathead Lake storage change
+ Noxon Res storage change
+ Lake Pend Oreille storage change
+ Priest Lake storage change

Priest R nr Priest R (2)
+ Priest Lake storage change

NF Coeur d' Alene R at Enaville - no corrections

St. Joe R at Calder- no corrections

Spokane R nr Post Falls (2)
+ Lake Coeur d' Alene storage change

Spokane R at Long Lake, WA (2)
+ Lake Coeur d' Alene storage change
+ Long Lake, WA storage change

Clearwater River Basin

Selway R nr Lowell - no corrections

Lochsa R nr Lowell - no corrections

Dworshak Res Inflow (2)
+ Clearwater R nr Peck
- Clearwater R at Orofino
+ Dworshak Res storage change

Clearwater R at Orofino - no corrections

Clearwater R at Spalding (2)
+ Dworshak Res storage change

Salmon River Basin

Salmon R at Salmon - no corrections

Lemhi R nr Lemhi – no corrections

MF Salmon R at MF Lodge – no corrections
SF Salmon gage used to create longer term record

SF Salmon R nr Krassel Ranger Station – no corrections

Johnson Creek at Yellow pine – no corrections

Salmon R at White Bird - no corrections

West Central Basins

Boise R nr Twin Springs - no corrections

SF Boise R at Anderson Ranch Dam (2)
+ Anderson Ranch Res storage change

Mores Ck nr Arrowrock Dam – no corrections

Boise R nr Boise (2)
+ Anderson Ranch Res storage change
+ Arrowrock Res storage change
+ Lucky Peak Res storage change

SF Payette R at Lowman - no corrections

Deadwood Res Inflow (2)
+ Deadwood R bl Deadwood Res nr Lowman
+ Deadwood Res storage change

Lake Fork Payette R nr McCall – no corrections

NF Payette R at Cascade (2)
+ Payette Lake storage change
+ Cascade Res storage change

NF Payette R nr Banks (2)
+ Payette Lake storage change
+ Cascade Res storage change

Payette R nr Horseshoe Bend (2)
+ Deadwood Res storage change
+ Payette Lake storage change
+ Cascade Res storage change

Weiser R nr Weiser - no corrections

Wood and Lost Basins

Little Lost R bl Wet Ck nr Howe - no corrections

Big Lost R at Howell Ranch - no corrections

Big Lost R bl Mackay Res nr Mackay (2)
+ Mackay Res storage change

Little Wood R ab High Five Ck – no corrections

Little Wood R nr Carey (2)
+ Little Wood Res storage change

Big Wood R at Hailey - no corrections

Big Wood R ab Magic Res (2)
+ Big Wood R nr Bellevue (1912-1996)
+ Big Wood R at Stanton Crossing nr Bellevue (1997 to present)
+ Willow Ck (1997 to present)

Camas Ck nr Blaine – no corrections

Magic Res Inflow (2)
+ Big Wood R bl Magic Dam
+ Magic Res storage change

Upper Snake River Basin

Falls R nr Ashton (2)
+ Grassy Lake storage change
+ Diversions from Falls R ab nr Ashton

Henrys Fork nr Ashton (2)
+ Henrys Lake storage change
+ Island Park Res storage change

Teton R nr Driggs - no corrections

Teton R nr St. Anthony (2)
- Cross Cut Canal into Teton R
+ Sum of Diversions for Teton R ab St. Anthony
+ Teton Dam for water year 1976 only

Henrys Fork nr Rexburg (2)
+ Henrys Lake storage change
+ Island Park Res storage change
+ Grassy Lake storage change
+ 3 Diversions from Falls R ab Ashton-Chester
+ 6 Diversions from Falls R abv Ashton
+ 7 Diversions from Henrys Fk btw Ashton to St. Anthony
+ 21 Diversions from Henrys Fk btw St. Anthony to Rexburg
Snake R nr Flagg Ranch, WY – no corrections
Snake R nr Moran, WY (2)
+ Jackson Lake storage change
Pacific Ck at Moran, WY - no corrections
Buffalo Fork ab Lava nr Moran, WY - no corrections
Snake R ab Res nr Alpine, WY (2)
+ Jackson Lake storage change
Greys R nr Alpine, WY - no corrections
Salt R nr Etna, WY - no corrections
Palisades Res Inflow (2)
+ Snake R nr Irwin
+ Jackson Lake storage change
+ Palisades Res storage change
Snake R nr Heise (2)
+ Jackson Lake storage change
+ Palisades Res storage change
Ririe Res Inflow (2)
+ Willow Ck nr Ririe
+ Ririe Res storage change
The forecasted natural volume for Willow Creek nr Ririe does not include Grays Lake water diverted from Willow Creek drainage through the Clarks Cut diversion and into Blackfoot Reservoir.
Blackfoot R ab Res nr Henry (2)
+ Blackfoot Res storage change
The forecasted Blackfoot Reservoir Inflow includes Grays Lake water diverted from the Willow Creek drainage through the Clarks Cut diversion and into Blackfoot Reservoir.
Portneuf R at Topaz - no corrections
American Falls Res Inflow (2)
+ Snake R at Neeley
+ Jackson Lake storage change
+ Palisades Res storage change
+ American Falls storage change
+ Teton Dam for water year 1976 only

Southside Snake River Basins

Goose Ck nr Oakley - no adjustments
Trapper Ck nr Oakley - no adjustments
Oakley Res Inflow - *flow does not include Birch Creek*
+ Goose Ck
+ Trapper Ck
Salmon Falls Ck nr San Jacinto, NV - no corrections
Bruneau R nr Hot Springs - no corrections
Reynolds Ck at Tollgate - no corrections
Owyhee R nr Gold Ck, NV (2)
+ Wildhorse Res storage change
Owyhee R nr Rome, OR – no Corrections
Owyhee Res Inflow (2)
+ Owyhee R bl Owyhee Dam, OR
+ Lake Owyhee storage change
+ Diversions to North and South Canals

Bear River Basin

Bear R nr UT-WY Stateline, UT- no corrections
Bear R abv Res nr Woodruff, UT- no corrections
Big Ck nr Randolph, UT - no corrections
Smiths Fork nr Border, WY - no corrections
Bear R bl Stewart Dam (2)
+ Bear R bl Stewart Dam
+ Rainbow Inlet Canal
Little Bear R at Paradise, UT - no corrections
Logan R nr Logan, UT - no corrections
Blacksmith Fk nr Hyrum, UT - no corrections

Reservoir Capacity Definitions (Units in 1,000 Acre-Feet, KAF)

Different agencies use various definitions when reporting reservoir capacity and contents. Reservoir storage terms include dead, inactive, active, and surcharge storage. This table lists the volumes for each reservoir, and defines the storage volumes NRCS uses when reporting capacity and current reservoir storage. In most cases, NRCS reports usable storage which includes active and/or inactive storage. **(Revised Feb. 2015)**

Basin- Lake or Reservoir	Dead Storage	Inactive Storage	Active Storage	Surcharge Storage	NRCS Capacity	NRCS Capacity Includes
Panhandle Region						
Hungry Horse	39.73	---	**3451.00**	---	**3451.0**	Active
Flathead Lake	Unknown	---	**1791.00**	---	**1791.0**	Active
Noxon	Unknown	---	**335.00**	---	**335.0**	Active
Lake Pend Oreille	**406.20**	**112.40**	**1042.70**	**---**	**1561.3**	Dead + Inactive + Active
Lake Coeur d'Alene	Unknown	13.50	**225.00**	**---**	**238.5**	Inactive + Active
Priest Lake	**20.00**	**28.00**	**71.30**	**---**	**119.3**	Dead + Inactive + Active
Clearwater Basin						
Dworshak	Unknown	**1452.00**	**2016.00**	**---**	**3468.0**	Inactive + Active
West Central Basins						
Anderson Ranch	24.90	**37.00**	**413.10**	---	450.1	Inactive + Active
Arrowrock	Unknown	---	**272.20**	**---**	**272.2**	Active
Lucky Peak	Unknown	**28.80**	**264.40**	13.80	**293.2**	Inactive + Active
Lake Lowell	7.90	**5.80**	**159.40**	---	165.2	Inactive + Active
Deadwood	Unknown	---	**161.90**	**---**	**161.9**	Active
Cascade	Unknown	**46.70**	**646.50**	**---**	**693.2**	Inactive + Active
Mann Creek	1.61	0.24	**11.10**	**---**	**11.1**	Active
Wood and Lost Basins						
Mackay	0.13	---	**44.37**	**---**	**44.4**	Active
Little Wood	Unknown	---	**30.00**	**---**	**30.0**	Active
Magic	Unknown	---	**191.50**	**---**	**191.5**	Active
Upper Snake Basin						
Jackson Lake	Unknown	---	**847.00**	**---**	**847.0**	Active
Palisades	44.10	**155.50**	**1200.00**	**---**	**1400.0**	Dead +Inactive +Active
Henrys Lake	Unknown	---	**90.40**	**---**	**90.4**	Active
Island Park	0.40	---	**127.30**	**7.90**	**135.2**	Active + Surcharge
Grassy Lake	Unknown	---	**15.18**	**---**	**15.2**	Active
Ririe	4.00	6.00	**80.54**	10.00	**80.5**	Active
Blackfoot	0.00	---	**333.50**	3.50	**333.50**	Active (rev. 2/1/2015)
American Falls	Unknown	---	**1672.60**	**---**	**1672.6**	Active
Southside Snake Basins						
Oakley	0.00	---	**75.60**	**---**	**75.6**	Active
Salmon Falls	48.00	**5.00**	**182.65**	**---**	**182.6**	Active
Wild Horse	Unknown	---	**71.50**	**---**	**71.5**	Active
Lake Owyhee	406.83	---	**715.00**	**---**	**715.0**	Active
Brownlee	0.45	**444.70**	**975.30**	**---**	**1420.0**	Inactive + Active
Bear River Basin						
Bear Lake	5000.00	119.00	**1302.00**	**---**	**1302.0**	Active:
Capacity does not include 119 KAF that can be used, historic values below this level are rounded to zero						
Montpelier	**0.21**	**---**	**3.84**	**---**	**4.0**	Dead + Active

Interpreting Water Supply Forecasts

Each month, five forecasts are issued for each forecast point and each forecast period. Unless otherwise specified, all streamflow forecasts are for streamflow volumes that would occur naturally without any upstream influences. Water users need to know what the different forecasts represent if they are to use the information correctly when making operational decisions. The following is an explanation of each of the forecasts.

90 Percent Chance of Exceedance Forecast. There is a 90 percent chance that the actual streamflow volume will exceed this forecast value, and there is a 10 percent chance that the actual streamflow volume will be less than this forecast value.

70 Percent Chance of Exceedance Forecast. There is a 70 percent chance that the actual streamflow volume will exceed this forecast value, and there is a 30 percent chance that the actual streamflow volume will be less than this forecast value.

50 Percent Chance of Exceedance Forecast. There is a 50 percent chance that the actual streamflow volume will exceed this forecast value, and there is a 50 percent chance that the actual streamflow volume will be less than this forecast value. Generally, this forecast is the middle of the range of possible streamflow volumes that can be produced given current conditions.

30 Percent Chance of Exceedance Forecast. There is a 30 percent chance that the actual streamflow volume will exceed this forecast value, and there is a 70 percent chance that the actual streamflow volume will be less than this forecast value.

10 Percent Chance of Exceedance Forecast. There is a 10 percent chance that the actual streamflow volume will exceed this forecast value, and there is a 90 percent chance that the actual streamflow volume will be less than this forecast value.

*Note: There is still a 20 percent chance that actual streamflow volumes will fall either below the 90 percent exceedance forecast or above the 10 percent exceedance forecast.

These forecasts represent the uncertainty inherent in making streamflow predictions. This uncertainty may include sources such as: unknown future weather conditions, uncertainties associated with the various prediction methodologies, and the spatial coverage of the data network in a given basin.

30-Year Average. The 30-year average streamflow for each forecast period is provided for comparison. The average is based on data from 1981-2010. The % AVG. column compares the 50% chance of exceedance forecast to the 30-year average streamflow; values above 100% denote when the 50% chance of exceedance forecast would be greater than the 30-year average streamflow.

AF - Acre-feet, forecasted volume of water are typically in thousands of acre-feet (KAF).

These forecasts are given to users to help make risk-based decisions. Users can select the forecast corresponding to the level of risk they are willing to accept in order to minimize the negative impacts of having more or less water than planned for.

To Decrease the Chance of Having Less Water than Planned for
A user might determine that making decisions based on a 50 percent chance of exceedance forecast is too much risk to take (there is still a 50% chance that the user will receive less than this amount). To reduce the risk of having less water than planned for, users can base their operational decisions on one of the forecasts with a greater chance of being exceeded such as the 90 or 70 percent exceedance forecasts.

To Decrease the Chance of Having More Water than Planned for
A user might determine that making decisions based on a 50 percent chance of exceedance forecast is too much risk to take (there is still a 50% chance that the user will receive more than this amount). To reduce the risk of having more water than planned for, users can base their operational decisions on one of the forecasts with a lesser chance of being exceeded such as the 30 or 10 percent exceedance forecasts.

<u>Forecast use example:</u>

Using the 50 Percent Exceedance Forecast. Using the example forecasts shown on the next page, there is a 50% chance that actual streamflow volume at the Henry's Fork near Ashton will be less than 280 KAF between June 1 and Sept. 30. There is also a 50% chance that actual streamflow volume will be greater than 280 KAF.

Using the 90 and 70 Percent Exceedance Forecasts. If an unexpected shortage of water could cause problems (such as irrigated agriculture), users might want to plan on receiving 245 KAF during Jun 1 through September 30 (from the 70 percent exceedance forecast). There is a 30% chance of receiving *less* than 245 KAF.

Alternatively, if users determine the risk of using the 70 percent exceedance forecast is too great, then they might plan on receiving 198 KAF (from the **90** percent exceedance forecast). There is 10% chance of receiving less than 72 KAF.

Using the 30 or 10 Percent Exceedance Forecasts. If an unexpected excess of water could cause problems (such as operating a flood control reservoir), users might plan on receiving 315 KAF between June 1 and Sept. 30 (from the 30 percent exceedance forecast). There is a 30% chance of receiving *more* than 315 KAF.

Alternatively, if users determine the risk of using the 30 percent exceedance forecast is too great, then they might plan on receiving 360 KAF (from the 10 percent exceedance forecast). There is a 10% chance of receiving more than 360 KAF. Users could also choose a volume in between any of these values to reflect their desired risk level.

Upper Snake River Basin Streamflow Forecasts - June 1, 2015

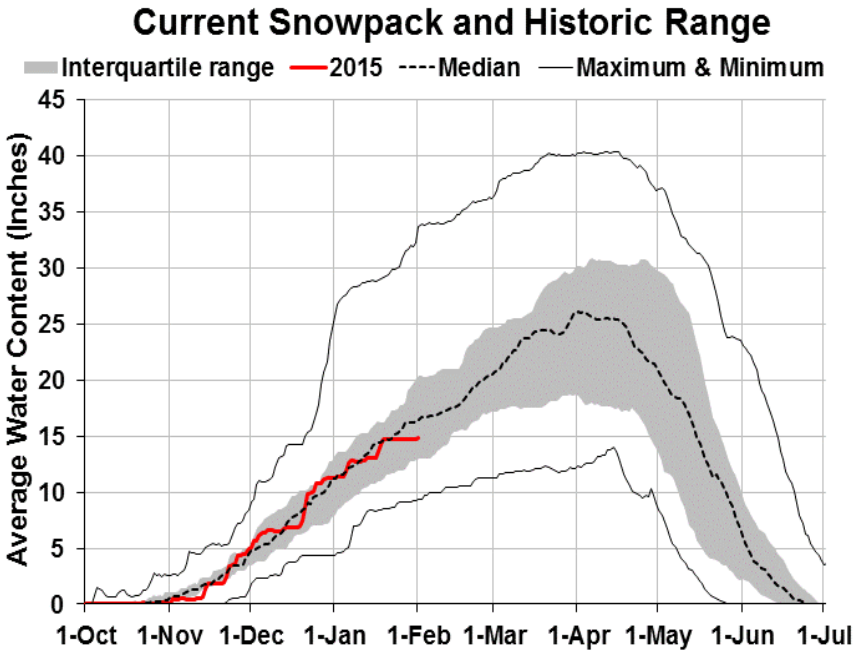
Forecast Point	Forecast Period	Forecast Exceedance Probabilities for Risk Assessment <---Drier----------Projected Volume----------Wetter---> 90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Henrys Fk nr Ashton	JUN-JUL	72	106	129	56	152	186	230
	JUN-SEP	198	245	280	68	315	360	410

Interpreting Snowpack Plots

Basin snowpack plots represent snow water equivalent indices using the average daily SNOTEL data[1] from several sites in or near individual basins. The solid red line (2015), which represents the current water year snowpack water content, can be compared to the normal dashed black line (Median) which is considered "normal", as well as the SNOTEL observed historical snowpack range for each basin. This allows users to gather important information about the current year's snowpack as well as the historical variability of snowpack in each basin.

The gray shaded area represents the interquartile range (also known as the "middle fifty"), which is the 25th to 75th percentiles of the historical daily snowpack data for each basin. Percentiles depict the value of the average snowpack below which the given percent of historical years fall. For example, the top part of the interquartile range (75th percentile) indicates that the snowpack index has been below this line for 75 percent of the period of record, whereas the reverse is true for the lower part of the interquartile range (25th percentile). This means 50 percent of the time the snowpack index is within the interquartile range (gray area) during the period of record.

[1] All data used for these plots come from daily SNOTEL data only and does not include snow course data (collected monthly), whereas the official basin snowpack percent of normal includes both SNOTEL and snow course data, potentially leading to slight discrepancies between plots and official basin percent of normal.



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