United States Department of Agriculture

Note: Corrected forecast tables for Panhandle Region

Natural Resources Conservation Service

Idaho Water Supply Outlook Report

May 1, 2015

End of Season Snow Survey at Mores Creek Summit North of Idaho City in the Boise River Basin

Snowshoes were still used to track to the site on frozen snow, through the brush, over fallen trees from the winter storms, and across flowing creeks to find very dry top soil and forest conditions, and minimal snow to measure. Ron Abramovich, pictured above, and crew measured 14 inches of snow depth that contained 5.9 inches of snow water. Normal May 1 snow water equivalent amounts are 24.2 inches, while the June 1 normal is 2.2 inches. The 5.9 inches measured was the 4th lowest for May 1 since measurement started in 1940. The lowest years in order are 1977, 1992, and 1987. Similar conditions can be found across the state. Basically, our snowpack reached its peaked snow water amount in early March, is melting a month earlier, and the snowpacks are now more typical of June 1 conditions. Read the full report to learn more about the impacts this unique winter is having on Idaho's water supply conditions, streamflow peaks and summer outlook.

Photo: Aviva Braun, Meteorologist, NWS Boise, Idaho

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, of course, 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.

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IDAHO WATER SUPPLY OUTLOOK REPORT
May 1, 2015

SUMMARY

Another dry month compounded with warmer than normal spring temperatures is deteriorating Idaho's water supplies. Snow water content levels peaked a month early and are now melting a month earlier than normal causing streams to peak in early to mid-May rather than mid-May to early June. Moderate snow melt rates and another dry month led to significant decreases in streamflow forecasts from last month. The highest forecast are for 80% of average for the Montana rivers that flow into Idaho and the lowest basically are for baseflow levels for the rest of summer at only 1-30% across basins in northern, central and southern Idaho. With more of the snowmelt water percolating into the ground and not showing up in the rivers, water masters are operating under reduced irrigation allotments. Surface irrigation shortages are expected across southern Idaho. The severity depends on a number of items such as reservoir storage, an early return to baseflow levels, and an unusual early irrigation demand. Irrigator's supplies will be similar or worse than last year and users will be out of water by mid-summer in the Owyhee, Salmon Falls, Big Wood, Little Wood, Big Lost and Little Lost. Water supplies will be marginal at best in the Treasure Valley and Magic Valley as snow melt water from this year's snowpack fails to reach the streams and fill reservoirs. Bear Lake's water users remain the bright spot with the ability to deliver adequate irrigations for users that rely on Bear Lake storage. Any additional May rains would help to stretch this year's supplies as we know our dry summer season will soon be upon us.

SNOWPACK

The best way to think about our May 1 snowpack levels is to imagine it is really June 1. A shift to warmer temperatures caused the mountain snow water content levels to peak in early March rather than early April and start melting much earlier than normal. Current snowpacks are melted out or nearly melted out in the Owyhee, Weiser, Oakley, Little Wood, and lower elevations in eastern Idaho. Snowpacks are only 10-15% in the Little Lost and Mud Lake area and increase to 20-40% across parts of southern, central and northern Idaho. The Salmon and Boise basins snowpacks are 40-50% of median while the highest snowpacks are 50-65% in the Clearwater, Henrys Fork and Snake above Palisades Reservoir.

Another unique scenario for this year is how the snowpack is melting. Most of us living in Idaho get excited when a few inches to several feet of snow falls. We should also get excited when the snow melts, as this is what provides our streamflow and fills our reservoirs. One key to providing streamflow is how fast the water pours out of mountainous snowpack. The warmer than normal March and April temperatures allowed the snow to gradually melt a few tenths per day to an inch per day. At these moderate melt rates and without much spring rain, our soils can absorb the water coming out of the snowpack which means less water reaches the streams. Now that we are in early May, we are more likely to have warmer temperatures in the 75-85 F range, which is what is needed to increase snow melt rates to 1.5 inches or even 2.0 inches per day. This is the equivalent of receiving 1-2 inches a day while the snow is available to melt in the snow covered areas. With only 8-20 inches of snow water at the Boise basin SNOTEL sites, even if high melt rates are reached this year, there isn't enough remaining snow to melt for several days or a week to sustain high stream levels. Additional rain would help with the efficiency of the snowpack to produce streamflow. Melt water going into the ground also benefits the soils, forests and aquifers but is not as obvious as seeing streams increasing from the snowmelt in spring.

PRECIPITATION

April precipitation was below normal across the state and typical of the pattern observed this winter that had a scattering of a few basins where better precipitation amounts fell. The highest April percentages were 90-100% of average in the Owyhee and lower eastern Idaho basins of Willow, Blackfoot and Portneuf basins. The lowest percentages were 40-55% of average in the west central, Big Wood, Oakley and Salmon Falls basins. Elsewhere, April percentages were in the 55-75% of average range.

How the Snow Drought started - back in January water year to date precipitation was looking good at average or above across Idaho and much of the West. However, warm mid-winter temperatures combined with below normal monthly precipitation amounts from January to April took its toll on Idaho's mountainous snowpack. These warmer than normal temperatures allowed moisture to fall as rain in mid-elevation sites and melt intermittently during the season while many higher elevation sites continued to receive snow. This scenario started the departure between accumulative water year to date precipitation and the important measure of the snow water content on the ground in the mountains. Now as of May 1, water year to date precipitation amounts range from a high of 93% of average in the Clearwater basin to only 60-65% of normal in the Mud Lake and Little Wood basins. Snowpacks across Idaho are 0-60% of normal, and now there is minimal snow to melt that provides our spring and summer streamflow for the environment, growing our crops and producing our power. Snowfall is critical in Idaho and the West, as about 75% of annual moisture falls as snow and we know our dry summer season is just around the corner and the impacts will soon be felt from the lack of snow fall this winter.

RESERVOIRS

As mentioned last month, reservoir storage varies across the state and the status of each reservoir filling is a function of which phase of the hydrologic cycle the watershed is in. The story remains the same, there are ones that won't fill, others that will fill but won't be full for long with limited inflows, and others that are already on decline because of the early and high irrigation demand. By summer's end or before, many water storage facilities will be at their minimal storage levels. From north to south, Avista is trying to fill Lake Coeur d'Alene which is at 88% full to help protect fish eggs and maximize their operations. Dworshak Reservoir is 93% full and is on schedule to fill in mid-May. A snowline helicopter flight is planned for May 13th to assist the COE, ensure refill and fill on the reservoir as late in the season as possible. Completing final fill of the reservoir is based on monitoring the remaining snow cover area in the watershed while also monitoring potential impacts from future rains. The Payette and Boise reservoir systems are 90% and 88% full, respectively. Deadwood Reservoir is full and so hopefully, Cascade Reservoir will fill like it normally does. In the Boise basin, Anderson Ranch Reservoir is 83% full, 131% of average, and is not expected to fill with inflows forecast at only 39% of average. Magic Reservoir is the same as a month ago at 43% full and probably reaching its peak for the season with a May-July inflow forecast of only 3% of average into the reservoir. Little Wood Reservoir reached its maximum storage level for the season in mid-April, about three weeks earlier than last spring and is now 70% and on the downhill slide already because its runoff will be near record low this year (see Surface Water Supply Index (SWSI)). Mackay Reservoir is 83% full, and will also see near record low inflows this summer for the May-July period. The Henrys Fork reservoirs (Grassy, Island Park and Henrys) are 91-100% full. Jackson Lake and Palisades Reservoir are both about 85% full. Filling depends on irrigation demand and how fast the snow melts.

Southern Idaho reservoirs – Owyhee Reservoir reached its peak storage and is only 27% full; the reservoir is not empty - there is 406,830 acre-feet of dead storage that remains in the reservoir. Wild Horse Reservoir is only 21% full. Salmon Falls Reservoir is 18% full, reached its peak storage on April 19 which is when irrigation season started. Oakley is 30% full. Bear Lake remains the bright side at 46% full, 92% of average and will provide adequate supplies for its users. Montpelier reservoir is full. The end result is that many reservoirs will not fill or be full for long, as they will be drafted early to meet irrigation demand leaving them at their minimal storage levels before summer's end.

STREAMFLOW

Moderate snow melt rates and another dry month led to streamflow forecasts decreasing again. Keep in mind the forecast period switched from April-July to May-July to reflect the volume still to come. The highest forecasts are 75-80% of average in the northern most part of Idaho and include the major rivers flowing in from Montana. However, the next basin south is the Coeur d'Alene River forecast at 28% of average, while the downstream forecast for Spokane River is forecast at 34%, lowest since 1926. Dworshak Reservoir inflow is forecast at half of average. Forecasts dropped significantly in the Salmon basin and west-central basins and now range from 30-55% of average. Streams in the Upper Snake are forecast at 40-70% of average. Drainages in the Wood and Lost basins are forecast at near record low May-July volumes of 1-35% of averages. Streams across southern Idaho have peaked and many are flowing at just above their minimal levels or summer baseflow levels. May-July volume forecasts are for 10-20% of average in the Owyhee, Salmon Falls, Bruneau, and Oakley basins, while the Bear River at Stewart Dam at 10%.

The warm and dry spring is producing an early irrigation demand to provide much needed water to the crops. This is not good news and does not allow savings of water for our typical dry and hot summer which is predicted to have above normal temperatures and slight chance of above normal precipitation based on the NWS 90-day outlook for May-June-July. Combine this with the well below normal snowpacks, early streamflow runoff and peaks and some streams already at their mid-summer levels, it does not look good for irrigators across southern Idaho and means water supplies will not last as long as expected, unless it rains. Users should still consider using the lesser volume forecast based on the recent dry and warm weather trends we have experienced since January.

Note: The volumes referenced in these narratives are the 50% Chance of Exceeding Forecast, unless otherwise noted. Users may wish to use a different forecast to reduce their risk of having too much or too little water.

RECREATION

Even though it is only May 1, snowmelt is in full swing and streams are rising, while peak flows have already occurred in some basins. River runners should plan ahead by always looking downstream and watching the spring weather. Rain is needed now with snowmelt and some soils still primed; any rain would help our water supplies and keep the headwater streams higher longer. In early May, temperatures reached 80 F in southern Idaho, but have already started to cool down just as snowmelt was increasing. Additional moisture is expected by the weekend and could provide a boost in the streamflow levels depending upon where it falls. Here is a summary of the snowmelt generated streamflow peaks thus far and potential for additional increases from the remaining snow in the basin. Snowmelt streamflow relationship graphs are updated several days a week during the snowmelt season on our Peak Streamflow Information web page.

- Owyhee River near Rome – peaked in early winter, Jan/Feb, from rain on snow event and remains at very low baseflow levels.
- Bruneau River – is now reaching its snowmelt peak in early May, but at very low peak flow levels and will be at low baseflow levels this summer.
- Salmon Falls Creek had its snowmelt streamflow peak and it remains at very low baseflow levels.
- Big Lost River at Howell Ranch – flow is increasing and the peak will occur in early May with Lost-Wood Divide SNOTEL site nearly melted out.
- SF Boise River – flow is increasing and has not reached its snowmelt streamflow peak yet.
- MF Salmon River – with the snowpack at Banner Summit SNOTEL site half depleted means the increase that is happening this week is probably the snowmelt streamflow peak for the season; likewise with SF Salmon River using Big Creek Summit SNOTEL site.
- Selway and Lochsa rivers are still increasing in early May, but with limited snow to melt, this could be the snow dominated streamflow peak. Keep in mind the Selway River usually has a May and June peak, but limited snow and moisture to feed the river, this year this may not happen.
- Moyie River is probably nearing its snowmelt peak with Hawkins Lake SNOTEL beyond 20% melted now in early May.
- Teton River is just now increasing from the snowmelt in the Teton Range and the snowmelt peak flow is just around the corner with Grand Targhee SNOTEL site beginning to melt.

In years like this, when the snow streamflow peaks are low, it is much easier for additional spring rain generated peaks to exceed the snow melt streamflow peak. These snowmelt to peak streamflow relationships and the trends observed over the years can help users monitor the potential for additional increases from the remaining snow. Some good news from the likely low and early peaks is that many streams and rivers that are normally inaccessible to fishing in the spring and early summer will open up much sooner this year. Be safe and enjoy Idaho's backcountry.

IDAHO SURFACE WATER SUPPLY INDEX (SWSI) May 1, 2015

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.

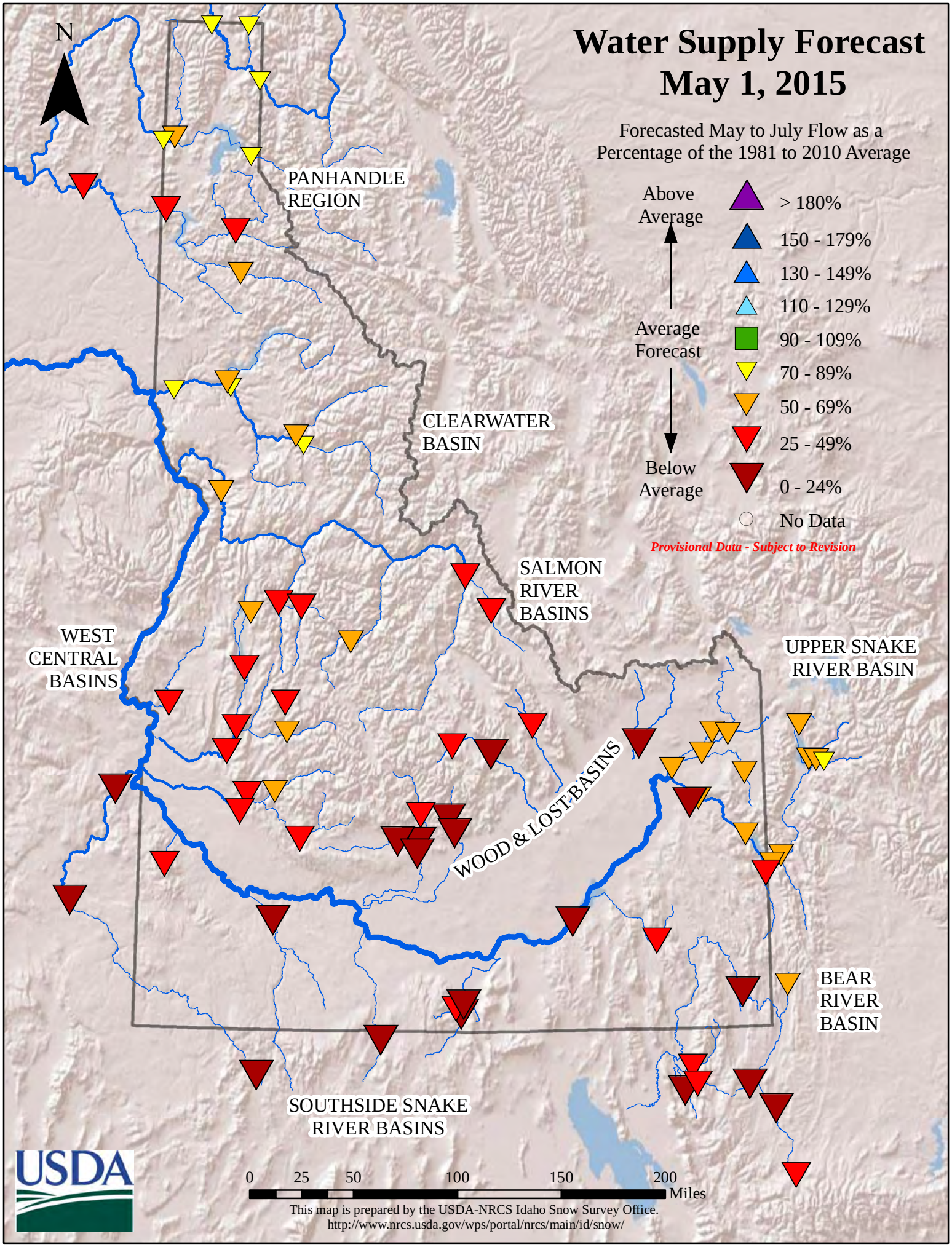
SWSI values provide a more comprehensive outlook of water availability by combining streamflow forecasts and reservoir storage where appropriate. The SWSI index allows comparison of water availability between basins for drought or flood severity analysis. Threshold SWSI values have been determined for 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***
Northern Panhandle	**-2.4**	**1986**	**NA**
Spokane	**-3.6**	**1992**	**NA**
Clearwater	**-2.9**	**2001**	**NA**
Salmon	**-3.1**	**2001**	**NA**
Weiser	**-3.6**	**2001**	**NA**
Payette	**-2.8**	**2013**	**NA**
Boise	**-1.9**	**2002**	**-2.3**
Big Wood	**-3.8**	**2013**	**0.1**
Little Wood	**-4.0**	**1992**	**-1.8**
Big Lost	**-4.0**	**2014**	**-0.1**
Little Lost	**-4.0**	**2004**	**1.3**
Teton	**-3.1**	**1994**	**-3.9**
Henrys Fork	**-3.1**	**2001**	**-3.2**
Snake (Heise)	**-2.4**	**2013**	**-1.5**
Oakley	**-2.9**	**1990**	**0.1**
Salmon Falls	**-3.8**	**2004**	**-0.8**
Bruneau	**-4.0**	**2012**	**NA**
Owyhee	**-3.8**	**2014**	**-3.0**
Bear River	**-0.7**	**2010**	**-3.9**

SWSI SCALE, PERCENT CHANCE OF EXCEEDANCE, AND INTERPRETATION

```
 -4      -3      -2      -1       0       1       2       3       4
  |------|------|------|------|------|------|------|------|------|
 99%     87%     75%     63%     50%     37%     25%     13%     1%
-----------------------------------------------------------------------
|Much    | Below      |        Near Normal        |  Above    |  Much  |
|Below   | Normal     |        Water Supply       |  Normal   |  Above |
-----------------------------------------------------------------------
```

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.


Water Supply Forecast
May 1, 2015
Forecasted May to July Flow as a Percentage of the 1981 to 2010 Average
Above Average
Average Forecast
Below Average
> 180%
150 - 179%
130 - 149%
110 - 129%
90 - 109%
70 - 89%
50 - 69%
25 - 49%
0 - 24%
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
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/
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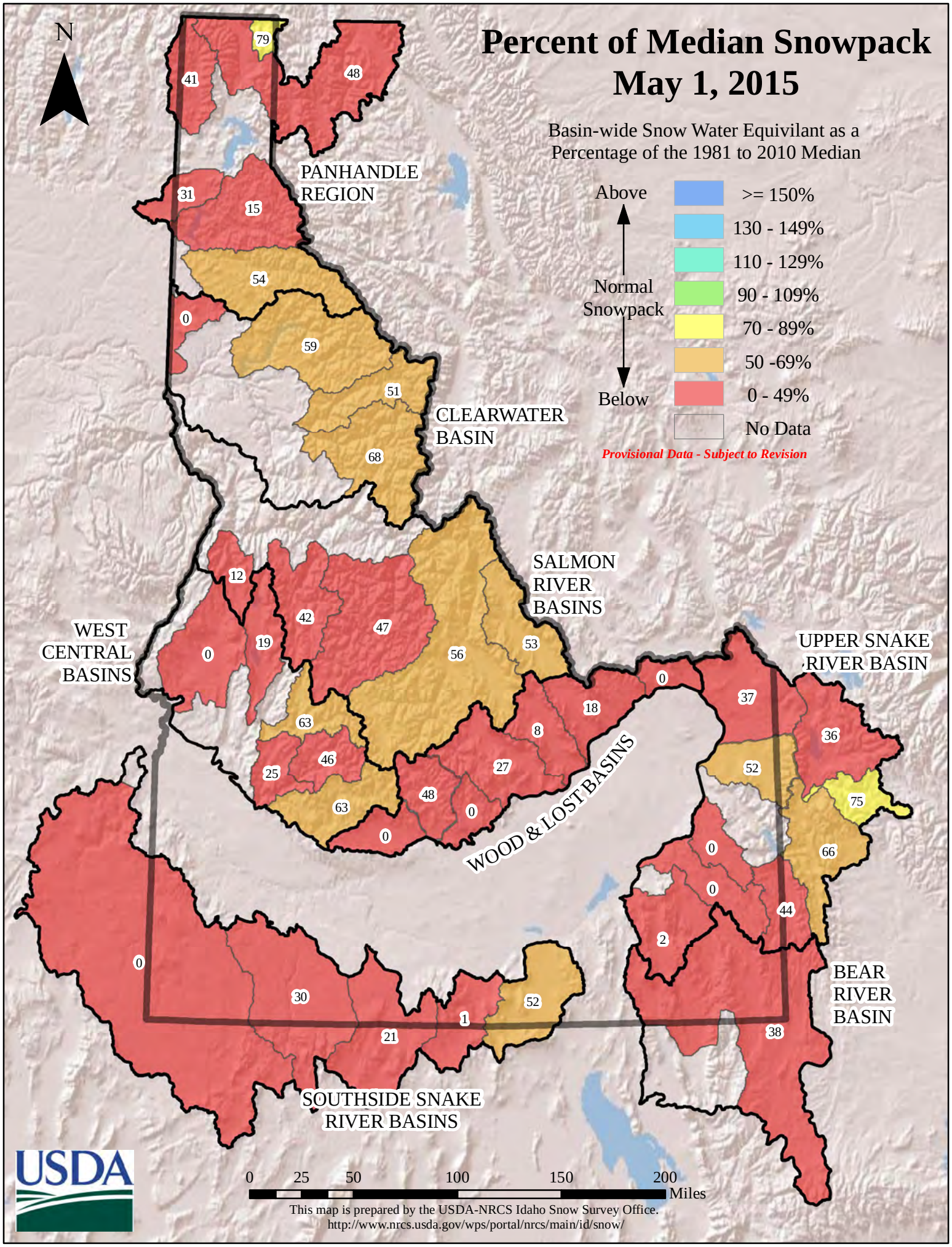
Percent of Median Snowpack
May 1, 2015
Basin-wide Snow Water Equivilant as a Percentage of the 1981 to 2010 Median
Above
Normal Snowpack
Below
>= 150%
130 - 149%
110 - 129%
90 - 109%
70 - 89%
50 -69%
0 - 49%
No Data
Provisional Data - Subject to Revision
N
PANHANDLE REGION
CLEARWATER BASIN
SALMON RIVER BASINS
WEST CENTRAL BASINS
UPPER SNAKE RIVER BASIN
WOOD & LOST BASINS
BEAR RIVER BASIN
SOUTHSIDE SNAKE RIVER BASINS
79
41
48
31
15
54
0
59
51
68
12
42
47
19
0
56
53
0
37
18
63
8
36
46
25
27
52
48
75
63
0
0
66
0
0
44
2
0
30
52
1
21
38
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/
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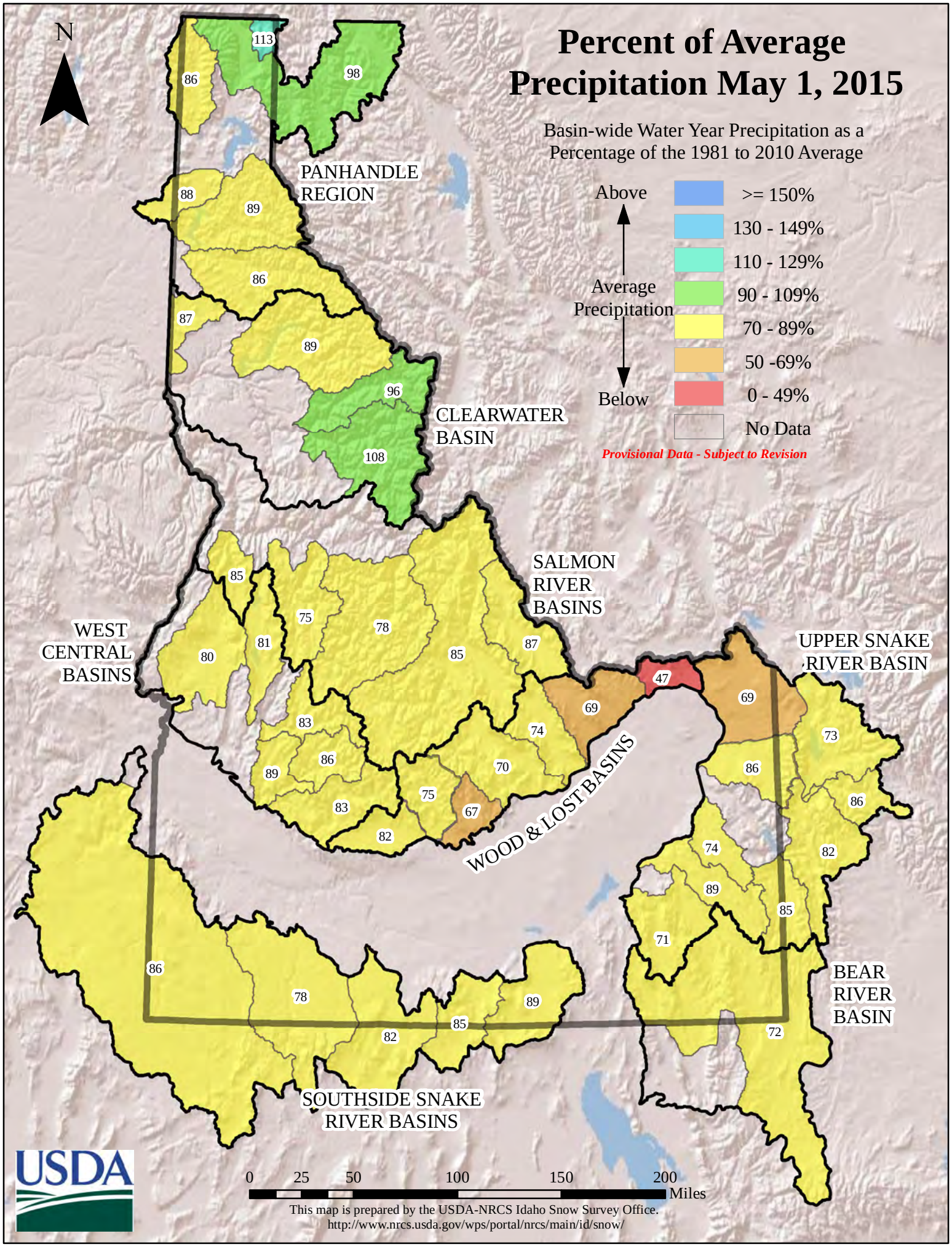
Percent of Average Precipitation May 1, 2015
Basin-wide Water Year Precipitation as a Percentage of the 1981 to 2010 Average
Above
Average Precipitation
Below
>= 150%
130 - 149%
110 - 129%
90 - 109%
70 - 89%
50 -69%
0 - 49%
No Data
Provisional Data - Subject to Revision
N
PANHANDLE REGION
CLEARWATER BASIN
SALMON RIVER BASINS
WEST CENTRAL BASINS
UPPER SNAKE RIVER BASIN
WOOD & LOST BASINS
BEAR RIVER BASIN
SOUTHSIDE SNAKE RIVER BASINS
113
98
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87
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96
108
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75
78
81
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87
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69
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73
83
74
86
89
70
86
75
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71
86
78
89
85
82
72
0 25 50 100 150 200 Miles
USDA
This map is prepared by the USDA-NRCS Idaho Snow Survey Office.
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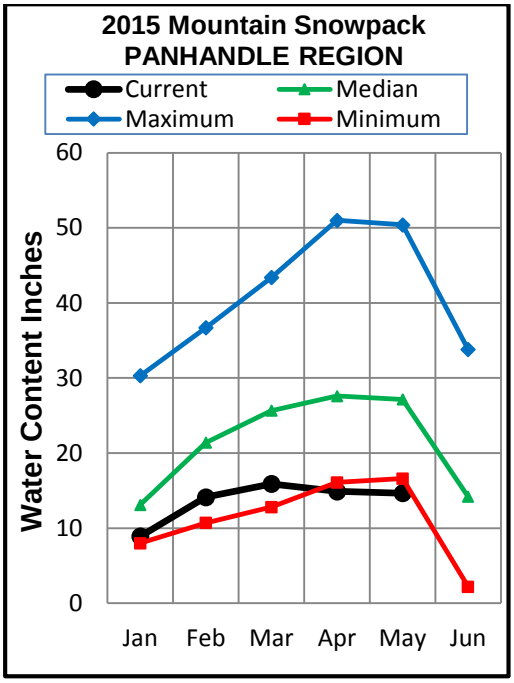
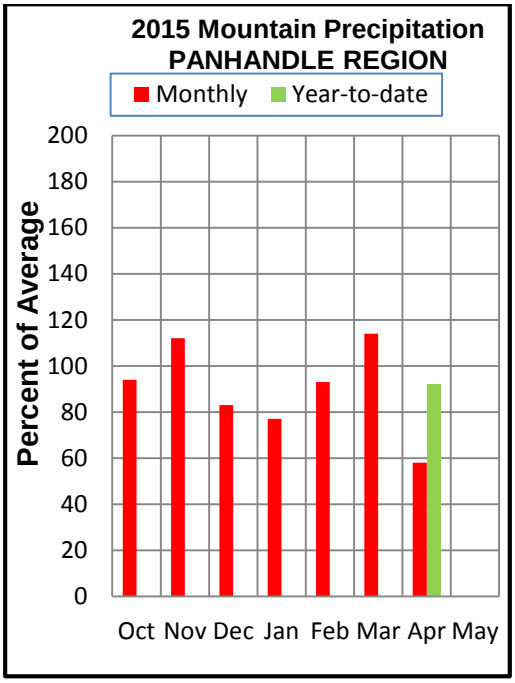
PANHANDLE REGION

MAY 1, 2015





WATER SUPPLY OUTLOOK

After a wet March, precipitation in the Panhandle region was substantially below normal for the month of April, resulting in 58% of the monthly average. The Moyie River drainage received 71% of the monthly average precipitation, while the Coeur d' Alene River drainage only received 42% of normal. Even with the less than stellar precipitation in the Panhandle Region during April, the water year to date precipitation is 92% of average. The Moyie River drainage is still leading the Panhandle Region drainages in water year to date precipitation at 113% of average. Unfortunately, the good news ends with year to date precipitation. An eight station index reveals the May 1st snowpack is the lowest since the indexing began in 1982, the record low May 1st snowpack is also illustrated in the 2015 Mountain Snowpack chart above. The snowpack varies tremendously within individual drainages in the Panhandle Region, with the Moyie River drainage at 79% of normal while the Coeur d' Alene and Palouse drainages are 15% and 0% of normal. Reservoirs in the Panhandle Region are at 116% of average for May 1st, with Hungry Horse Lake the highest at 134% and Priest Lake at 80%. The high reservoir levels continue to reflect the capture of above normal winter runoff from unseasonable rain events. Streamflow volume forecasts for May-July range from a high of 80% of average for Clark Fork, Pend Oreille, and Boundary, to a near record low 28% for the NF Coeur d'Alene River. The Spokane River near Post Falls is forecasted to be 34% of normal during May-July, which would be the lowest measured May-July total volume since 1926. Like most of the state, low streamflow forecasts dominate the Panhandle Region and reflect the abysmal May 1st snowpack.

Panhandle Region
Streamflow Forecasts - May 1, 2015

PANHANDLE REGION	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
		Forecast Exceedance Probabilities for Risk Assessment Chance that actual volume will exceed forecast						
Moyie R at Eastport								
	MAY-JUL	153	194	225	75%	250	290	300
	MAY-SEP	161	205	235	75%	265	310	315
Kootenai R at Leonia[1,2]								
	MAY-JUL	3160	4080	4500	79%	4920	5840	5730
	MAY-SEP	4130	5000	5390	80%	5780	6650	6730
Boundary Ck nr Porthill								
	MAY-JUL	55	68	77	80%	86	99	96
	MAY-SEP	58	72	81	80%	90	104	101
Clark Fork R at Whitehorse Rapids[1,2]								
	MAY-JUL	5130	6400	6970	80%	7540	8810	8740
	MAY-SEP	5740	7170	7820	80%	8470	9900	9760
Pend Oreille Lake Inflow[2]								
	MAY-JUL	6080	7030	7680	79%	8330	9280	9690
	MAY-SEP	6720	7810	8550	80%	9290	10400	10700
Priest R nr Priest River[2]								
	MAY-JUL	117	197	250	43%	305	385	580
	MAY-SEP	137	225	285	45%	345	435	630
NF Coeur dAlene R at Enaville								
	MAY-JUL	38	77	112	28%	153	225	405
	MAY-SEP	51	95	132	30%	175	250	445
St. Joe R at Calder[2]								
	MAY-JUL	142	250	325	42%	400	510	765
	MAY-SEP	183	300	375	45%	455	570	830
Spokane R nr Post Falls[2]								
	MAY-JUL	69	340	525	34%	710	980	1530
	MAY-SEP	79	350	550	34%	750	1050	1620
Spokane R at Long Lake								
	MAY-JUL	137	465	685	40%	905	1230	1710
	MAY-SEP	235	580	815	42%	1050	1400	1950

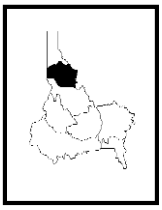
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
3) Median value used in place of average
Normals are based on 1981-2010 reference period; streamflow, precipitation and reservoir normals are averages, snow water equivalent are medians.

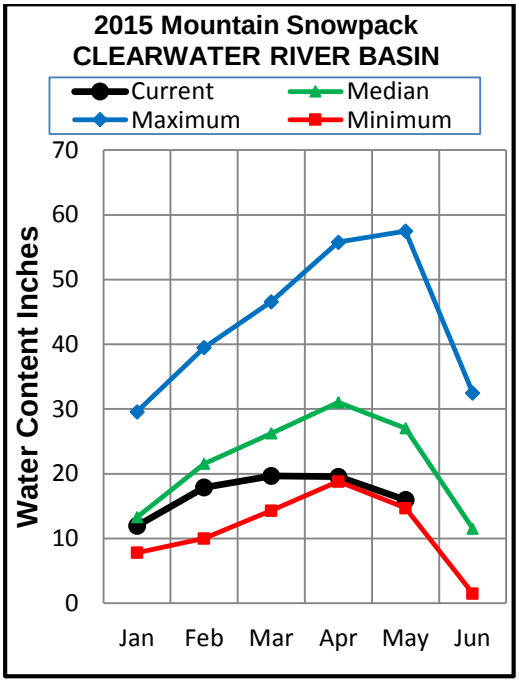
Reservoir Storage End of April, 2015	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Hungry Horse Lake	2941.0	2091.9	2188.0	3451.0
Flathead Lake	1072.8	1101.8	971.5	1791.0
Noxon Rapids Reservoir	318.2	318.9	307.4	335.0
Lake Pend Oreille	851.9	846.5	931.7	1561.3
Priest Lake	81.9	95.9	101.9	119.3
Lake Coeur d' Alene	209.1	238.6	228.0	238.5
Basin-wide Total	5474.9	4693.7	4728.5	7496.1
# of reservoirs	6	6	6	6

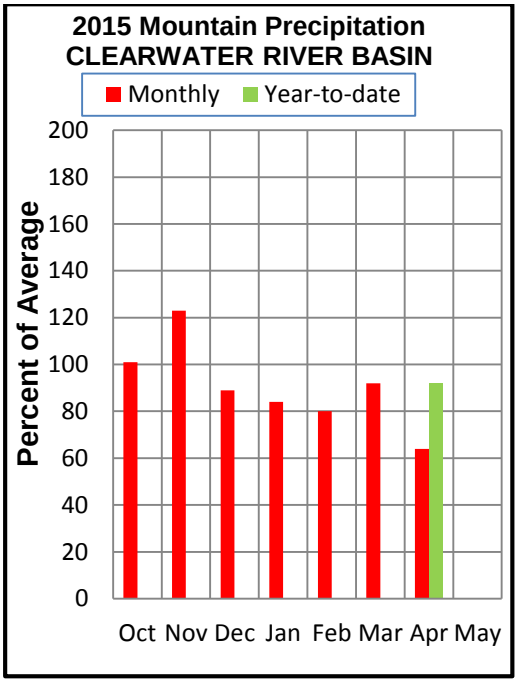
Watershed Snowpack Analysis May 1, 2015	# of Sites	% Median	Last Year % Median
Moyie River	7	73%	128%
Priest River	4	41%	122%
Rathdrum Creek	2	0%	83%
Coeur d' Alene River	7	15%	142%
St. Joe River	4	54%	137%
Spokane River	13	31%	134%
Palouse River	2	0%	16%
Kootenai ab Bonners Ferry	21	48%	143%

CLEARWATER RIVER BASIN

MAY 1, 2015







WATER SUPPLY OUTLOOK

The Clearwater basin received only 65% of the monthly average precipitation compared to the April totals of 90%. The Selway drainage led the way at 71% of monthly average precipitation while its drainage neighbor, the Lochsa, was the lowest in the Clearwater basin at 63%. Water year to date precipitation in the Clearwater basin remains near normal at 93% of average. A thirteen station index reveals the Clearwater basin has the 4th lowest May 1st snowpack, and the lowest since 1994. The index records began in 1961. As a whole, the Clearwater basin snowpack is 59% of normal, marking nearly a 100% point drop relative to the 2014 May 1st snowpack in the Clearwater, which was 156% of normal. As of the beginning of May, the Selway and Lochsa rivers are on the rise. With limited snow to melt, expected streamflow peaks are likely to be low and occur earlier than normal. Dworshak Reservoir is nearly full at 93% of capacity and is expected to fill in mid-May. Reservoir operators will try to safely top off the reservoir as late as possible, helping to supplement the downstream water supply needs associated with the poor projected May-Sep reservoir inflows at 50% of average. On the bright side, river runners can enjoy an early season on the Lochsa and Selway rivers with limited potential for high or extended peak flows.

Clearwater River Basin
Streamflow Forecasts - May 1, 2015

CLEARWATER RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
		Forecast Exceedance Probabilities for Risk Assessment Chance that actual volume will exceed forecast						
Selway R nr Lowell								
	MAY-JUL	895	1040	1140	73%	1240	1390	1570
	MAY-SEP	960	1120	1230	74%	1340	1500	1670
Lochsa R nr Lowell								
	MAY-JUL	625	710	770	68%	830	915	1130
	MAY-SEP	670	765	830	69%	895	990	1210
Dworshak Reservoir Inflow[2]								
	MAY-JUL	590	770	890	50%	1010	1190	1770
	MAY-SEP	695	880	1000	52%	1130	1320	1920
Clearwater R at Orofino								
	MAY-JUL	1860	2210	2440	72%	2670	3020	3400
	MAY-SEP	2030	2400	2650	73%	2900	3270	3630
Clearwater R at Spalding[2]								
	MAY-JUL	2450	2990	3350	64%	3710	4250	5260
	MAY-SEP	2710	3280	3670	65%	4060	4630	5640

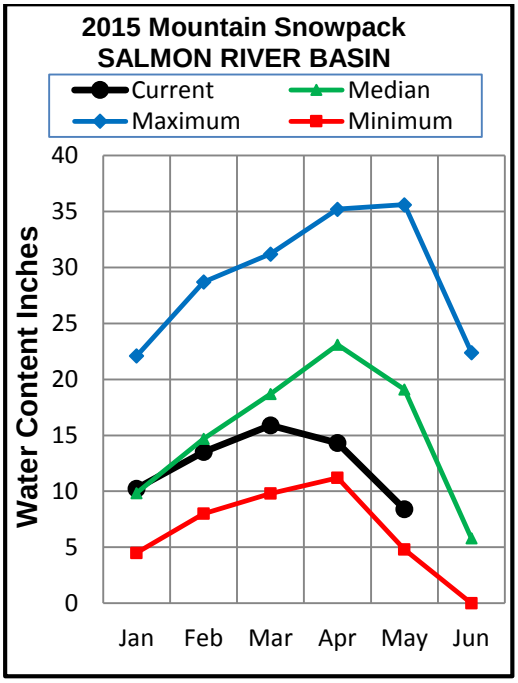
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
3) Median value used in place of average
Normals are based on 1981-2010 reference period; streamflow, precipitation and reservoir normals are averages, snow water equivalent are medians.

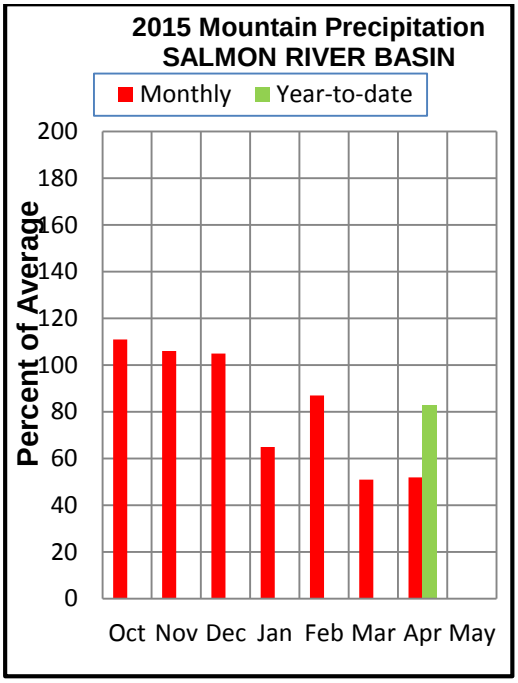
Reservoir Storage End of April, 2015	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Dworshak Reservoir	3218.2	1888.3	2646.0	3468.0
Basin-wide Total	3218.2	1888.3	2646.0	3468.0
# of reservoirs	1	1	1	1

Watershed Snowpack Analysis May 1, 2015	# of Sites	% Median	Last Year % Median
NF Clearwater River	9	59%	149%
Lochsa River	3	51%	185%
Selway River	4	68%	188%
Clearwater Basin Total	17	59%	156%

SALMON RIVER BASIN

MAY 1, 2015





WATER SUPPLY OUTLOOK

During April, the Salmon River basin received 60% of average precipitation as a whole, and ranged from a low of 42% in the SF Salmon River drainage to a high of 73% in the Lemhi River drainage. Two consecutive months with precipitation at 60% or less than monthly averages in the Salmon River basin has dropped the water year to date precipitation to 84% of average. Snowpack in the drainages comprising the Salmon River basin are all between 42% and 56% of average, with the exception of the Little Salmon River drainage at only 12%. As a whole, the Salmon River basin snowpack is 49% of average and there's very little snow left below 7,000 feet. The Vienna Mine SNOTEL site, which is one of the highest elevation sites in the Salmon River Basin at 8,960 feet, was actively melting at the end of April and beginning of May. Short-term weather forecasts of cooler temperatures and precipitation should slow the rapid melt. The Middle Fork is likely approaching its snowmelt peak, but again, additional precipitation and cooler temperatures could extend and delay the snowmelt peak. The Middle Fork Salmon River May-July flow volumes at Middle Fork Lodge are forecasted at about half of average, while the Main Salmon at White Bird is forecasted at 2,640 thousand acre-feet (KAF) or 57% of average. The forecasted May-July volume of 2,640 KAF would be the lowest measured May-July volume since 2001. Benefits of low mountain snow and streamflow forecasts are a longer boating season with limited potential for high peak flows and large beaches.

Salmon River
Streamflow Forecasts - May 1, 2015

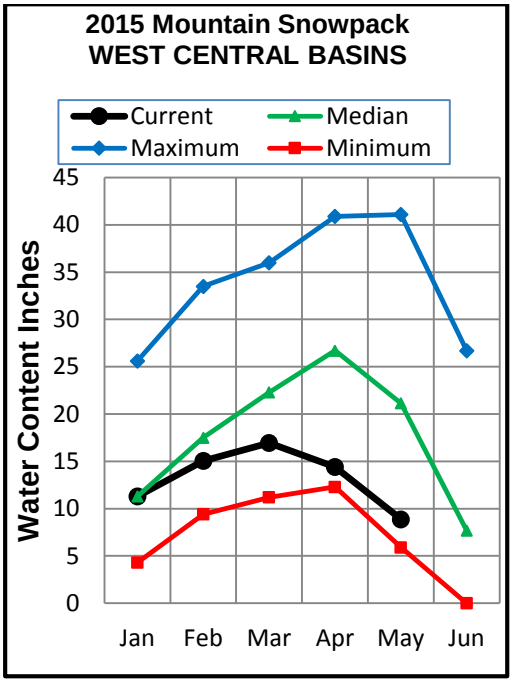
SALMON RIVER	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
		Forecast Exceedance Probabilities for Risk Assessment Chance that actual volume will exceed forecast						
Salmon R at Salmon								
	MAY-JUL	200	260	305	45%	350	430	680
	MAY-SEP	255	325	375	47%	435	525	805
Lemhi R nr Lemhi								
	MAY-JUL	6	12	17.3	28%	24	34	61
	MAY-SEP	10.7	18.6	25	33%	33	46	76
MF Salmon R at MF Lodge								
	MAY-JUL	162	255	315	53%	380	470	600
	MAY-SEP	195	305	380	56%	450	560	675
Sf Salmon R nr Krassel Ranger Station								
	MAY-JUL	59	90	111	49%	132	163	225
	MAY-SEP	69	102	125	51%	147	180	245
Johnson Ck at Yellow Pine Id								
	MAY-JUL	38	62	78	45%	95	119	172
	MAY-SEP	42	68	86	47%	103	129	184
Salmon R at White Bird								
	MAY-JUL	1860	2310	2640	57%	2990	3550	4660
	MAY-SEP	2150	2640	3000	57%	3390	4000	5220

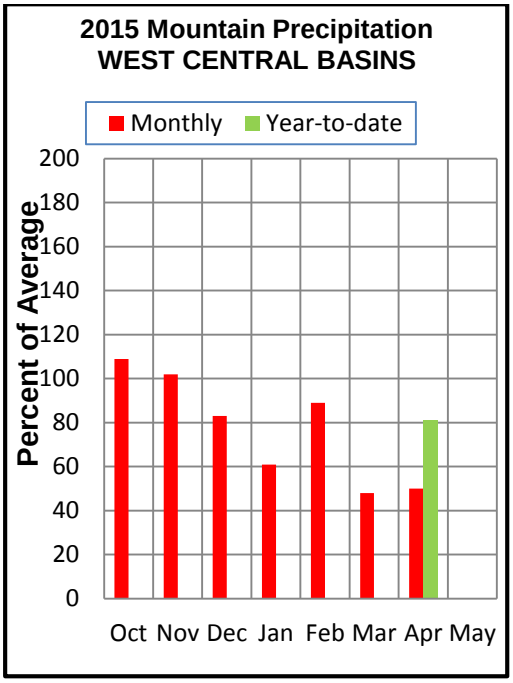
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
3) Median value used in place of average
Normals are based on 1981-2010 reference period; streamflow, precipitation and reservoir normals are averages, snow water equivalent are medians.

Watershed Snowpack Analysis May 1, 2015	# of Sites	% Median	Last Year % Median
Salmon River ab Salmon	7	56%	119%
Lemhi River	7	53%	134%
MF Salmon River	3	47%	120%
SF Salmon River	3	42%	117%
Little Salmon River	4	12%	133%
Salmon Basin Total	24	49%	128%

WEST CENTRAL BASINS

MAY 1, 2015





WATER SUPPLY OUTLOOK

Below average precipitation continues to plague the West Central basins. The Boise, Payette, and Weiser basins received 51%, 48% and 50% of monthly average precipitation, respectively. The near average early season precipitation received is resulting in better water year to date precipitation totals, with the Boise leading at 85%, followed by the Payette and Weiser both at 80%. While water year to date precipitation tells a story of slightly to moderately lower than average precipitation, the current snowpack in the West Central basins (and throughout the state) tell a different story. A seven station index shows the Boise basin May 1st snowpack is the lowest since 1992, and the 4th lowest since the indexing records began in 1961. Similarly, a 9 station index in the Payette River basin reveals the May 1st snowpack is the 3rd lowest since 1961, and the lowest since 1987. Substantially lower than average precipitation and unseasonably warm temperatures during most of March and April has taken its toll on the West Central Basin snowpack. The Boise basin snowpack is 40% of normal, with little to no snow left below 7,000 feet. The Payette basin snowpack is only 26% of normal, while the Weiser drainage is the worst at 0% of normal. The Boise and Payette reservoir systems are at 129% and 127% of average, respectively. Even with the poor snowpack in the West Central basins, proactive reservoir management highlighted by early runoff capture resulted in both systems being about 90% of capacity. The West Central basins forecasted May-July streamflow volumes are all between 30% and 55% of average. The forecasted May-July volume of 495 KAF for the Payette R. near Horseshoe Bend would be the lowest observed flow since 2001. With minimal runoff volumes irrigation supplies will be marginal at best; shortages depend on the summer irrigation demand levels.

West Central Basins
Streamflow Forecasts - May 1, 2015

WEST CENTRAL BASINS	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
		Forecast Exceedance Probabilities for Risk Assessment Chance that actual volume will exceed forecast						
SF Boise R at Anderson Ranch Dam[2]								
	MAY-JUL	87	120	145	39%	172	215	370
	MAY-SEP	102	138	166	41%	196	245	405
Boise R nr Twin Springs								
	MAY-JUL	169	210	240	52%	275	330	460
	MAY-SEP	198	245	275	54%	315	370	510
Mores Ck nr Arrowrock Dam								
	MAY-JUL	9.2	16.2	22	32%	29	41	68
	MAY-SEP	10.2	17.7	24	33%	31	43	72
Boise R nr Boise[2]								
	MAY-JUL	265	360	425	45%	490	585	950
	MAY-SEP	325	425	495	47%	565	665	1050
Lake Fork Payette R nr McCall								
	MAY-JUL	25	31	35	50%	39	46	70
	MAY-SEP	26	32	36	49%	41	48	73
NF Payette R at Cascade[2]								
	MAY-JUL	92	124	149	39%	176	220	380
	MAY-SEP	87	123	151	38%	182	235	395
NF Payette R nr Banks[2]								
	MAY-JUL	61	122	164	35%	205	265	475
	MAY-SEP	56	123	169	34%	215	280	495
SF Payette R at Lowman								
	MAY-JUL	140	168	189	56%	210	245	340
	MAY-SEP	169	200	225	57%	250	290	395
Deadwood Reservoir Inflow[2]								
	MAY-JUL	32	41	47	45%	54	65	104
	MAY-SEP	36	45	52	46%	60	72	112
Payette R nr Horseshoe Bend[2]								
	MAY-JUL	310	420	495	43%	570	680	1160
	MAY-SEP	360	480	565	43%	650	770	1310
Weiser R nr Weiser								
	MAY-JUL	44	64	79	34%	96	125	235
	MAY-SEP	56	78	95	36%	114	144	265

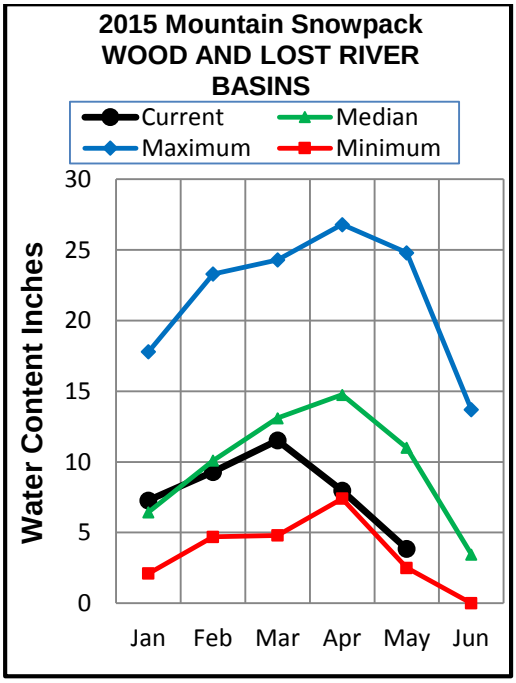
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
3) Median value used in place of average
Normals are based on 1981-2010 reference period; streamflow, precipitation and reservoir normals are averages, snow water equivalent are medians.

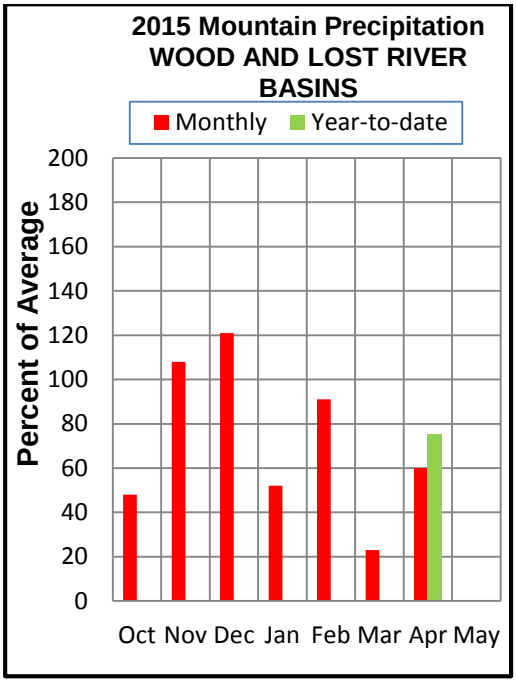
Reservoir Storage **End of April, 2015**	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Anderson Ranch Reservoir	373.0	251.4	284.9	450.2
Arrowrock Reservoir	250.6	239.4	189.0	272.2
Lucky Peak Reservoir	271.3	240.0	219.8	293.2
Lake Lowell	144.4	101.4	125.6	165.2
Deadwood Reservoir	153.7	115.4	105.1	161.9
Cascade Reservoir	616.9	564.8	501.5	693.2
Mann Creek Reservoir	10.2	8.7	10.7	11.1
Basin-wide Total	1820.2	1521.1	1436.6	2047.0
# of reservoirs	7	7	7	7

Watershed Snowpack Analysis **May 1, 2015**	# of Sites	% Median	Last Year % Median
SF Boise River	5	63%	115%
MF & NF Boise Rivers	6	46%	117%
Mores Creek	4	25%	126%
Canyon Creek	1		
Boise Basin Total	13	40%	116%
NF Payette River	9	19%	111%
SF Payette River	5	48%	118%
Payette Basin Total	16	26%	113%
Mann Creek	1	0%	82%
Weiser Basin Total	4	0%	103%

WOOD and LOST BASINS

MAY 1, 2015





WATER SUPPLY OUTLOOK

Precipitation across the Wood and Lost basins was well below average for the month of April, with monthly totals ranging from a low of 25% in Camas Creek to a high of 79% in the Big Lost above Mackay, most basins received about 60% of average. Water year to date totals are slightly better, ranging from a low of 47% for Camas-Beaver Creeks in the east, to a high of 82% for Camas Creek in the west. The downward trends in snowpack that began in March continued through April with Camas-Beaver, Little Lost, and Little Wood basins all reporting less than 10% of normal snowpack. The Big Wood Basin has retained more snowpack than any of the surrounding watersheds, and yet it has just 48% of normal. Looking at data over the last 30 years, 2015 is not quite a record setting year, but in the Wood and Lost basins, 2015 is in the bottom three, with 1977 and 1987 having similar snowpack numbers. Reservoir storage in the Wood and Lost system ranges from a high 113% of average (83% of capacity) in Mackay Reservoir to a low of 64% average in Magic (43% of capacity). These below average reservoir numbers are of particular concern as much of the snowpack has melted and many peak flows have likely passed, or are nearing peak discharges, nearly a month earlier than normal. Forecasted streamflows in the Big Wood River at Hailey are at 33% of average and decline to 3% for Magic Reservoir inflow, while the Little Wood is projected to have 17% of average flows. In the Lost River system, the Big Lost at Howell Ranch is forecasted at 35% of average and decreases to 20% below Mackay Reservoir. The Little Lost River is forecast at 34% of normal, while Camas Creek at Camas is expected to produce just 1% of normal May-July volumes. Users can expect water supplies or shortages to be similar to last year and also the impacts or challenges seen last year in delivering water to downstream users.

Wood And Lost Basins
Streamflow Forecasts - May 1, 2015

WOOD AND LOST BASINS	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
		Forecast Exceedance Probabilities for Risk Assessment Chance that actual volume will exceed forecast						
Camas Ck at Camas								
	MAY-JUL	0	0.06	0.13	1%	0.92	3.4	25
Little Lost R nr Howe								
	MAY-JUL	0.91	5.2	8.2	34%	11.1	15.4	24
	MAY-SEP	0.06	6.3	10.5	35%	14.8	21	30
Big Lost R at Howell Ranch								
	MAY-JUL	12.3	36	52	35%	68	92	148
	MAY-SEP	14.5	42	61	36%	79	107	169
Big Lost R bl Mackay Reservoir								
	MAY-JUL	6.4	14.3	22	20%	30	45	111
	MAY-SEP	15.9	28	38	28%	50	70	138
Little Wood R ab High Five Ck								
	MAY-JUL	3.1	6.8	10	19%	13.9	21	52
	MAY-SEP	3.9	8.2	12	21%	16.5	25	58
Little Wood R nr Carey[2]								
	MAY-JUL	2.8	6.3	9.6	17%	13.5	20	55
	MAY-SEP	3.6	7.8	11.6	19%	16.2	24	61
Big Wood R at Hailey								
	MAY-JUL	41	55	67	33%	79	99	205
	MAY-SEP	48	66	79	34%	93	117	235
Big Wood R ab Magic Reservoir								
	MAY-JUL	0	0.01	1.21	1%	4.5	13	147
	MAY-SEP	0.45	0.73	3.6	2%	8.6	19.9	159
Camas Ck nr Blaine								
	MAY-JUL	0	0.47	2.3	7%	5.5	12.6	35
	MAY-SEP	0	0.57	2.5	7%	5.8	13.2	36
Big Wood R bl Magic Dam [2]								
	MAY-JUL	0.21	1.24	4.8	3%	10.5	23	176
	MAY-SEP	0.07	3.5	8.7	5%	16.3	32	191

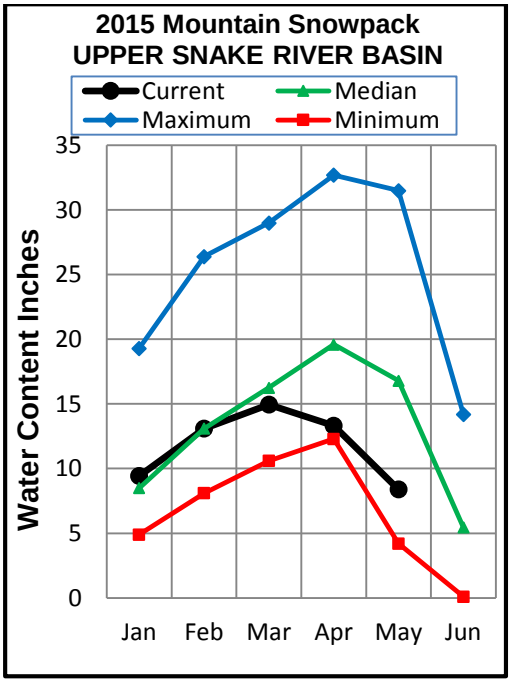
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
3) Median value used in place of average
Normals are based on 1981-2010 reference period; streamflow, precipitation and reservoir normals are averages, snow water equivalent are medians.

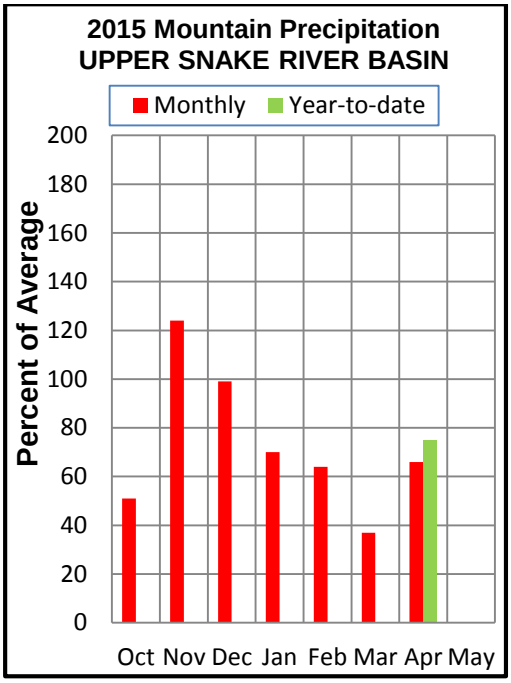
Reservoir Storage End of April, 2015	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Mackay Reservoir	36.9	34.7	32.8	44.4
Little Wood Reservoir	21.0	24.1	25.0	30.0
Magic Reservoir	81.8	93.9	128.0	191.5
Basin-wide Total	139.7	152.7	185.8	265.9
# of reservoirs	3	3	3	3

Watershed Snowpack Analysis May 1, 2015	# of Sites	% Median	Last Year % Median
Camas-Beaver Creeks	2	0%	37%
Birch-Medicine Lodge Creeks	2	18%	129%
Little Lost River	3	8%	106%
Big Lost River ab Mackay	4	31%	73%
Big Lost Basin Total	5	27%	70%
Fish Creek	0		
Little Wood River	3	0%	39%
Big Wood River ab Hailey	6	48%	100%
Camas Creek	2		
Big Wood Basin Total	8	48%	100%

UPPER SNAKE RIVER BASIN

MAY 1, 2015





WATER SUPPLY OUTLOOK

Across the headwaters of the Snake River, April precipitation showed a large amount of variability with many of the southern basins (Willow, Blackfoot, and Portneuf) receiving average precipitation, while further up into Wyoming the Gros Ventre (56%) and Hoback (56%) basins received barely half of average amounts. Water year to date totals range from a low of 69% of average in the Henry's Fork–Falls River area, to a high of 97% in the Buffalo Fork in Wyoming. Despite having the best snowpacks in the Upper Snake and the state, the Greys River is only reporting 83% of median snowpack for May 1, and it appears that seasonal melting of this year's snowpack has commenced about three weeks earlier than normal. On the other end of the spectrum, the Blackfoot and Portneuf basins were melting 4-6 weeks earlier than normal and are nearly snow free. The remaining basins of the Upper Snake Range from 35-75% of average with upper elevation basins tending to be slightly better off than their lower elevation counterparts. In the headwaters of the Snake River, the Snake at Flagg Ranch and Moran are forecast at 52% of average, while the Buffalo Fork and Pacific Creek are forecast at 71% and 61%, respectively. Moving downstream, the Snake near Irwin (55%) and Heise (55%), shows the impacts of flows from the Salt (42%) and Greys River (63%). The Teton River near St. Anthony is forecasted at 60%, while the Falls River and Henry's Fork near Ashton are projected to have 56% and 52% respectively. Lower in the system the Snake River at Neeley (American Falls inflow) is forecast at just 5% of average for the May-July period. A below normal mountain snowpack, a dry spring, early snowmelt and high irrigation demand all add up to less water being available this season and shortages are likely to occur. The severity of shortage depends upon how hot and dry the summer is.

Upper Snake River Basin
Streamflow Forecasts - May 1, 2015

UPPER SNAKE RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
		Forecast Exceedance Probabilities for Risk Assessment Chance that actual volume will exceed forecast						
Henrys Fk nr Ashton[2]	MAY-JUL	142	184	215	52%	250	305	415
	MAY-SEP	265	320	365	61%	410	480	595
Falls R nr Ashton[2]	MAY-JUL	131	158	177	56%	198	230	315
	MAY-SEP	165	198	220	57%	245	285	385
Teton R nr Driggs	MAY-JUL	51	64	73	54%	84	100	134
	MAY-SEP	69	85	97	56%	110	131	173
Teton R nr St Anthony	MAY-JUL	141	170	192	60%	215	251	320
	MAY-SEP	179	214	240	62%	267	310	390
Henrys Fk nr Rexburg[2]	MAY-JUL	457	568	650	56%	738	877	1170
	MAY-SEP	651	803	915	59%	1034	1224	1560
Snake R at Flagg Ranch	MAY-JUL	147	191	220	52%	250	295	425
	MAY-SEP	169	215	250	53%	285	330	470
Snake R nr Moran[2]	MAY-JUL	250	320	365	52%	410	480	700
	MAY-SEP	280	360	415	54%	470	550	775
Pacific Ck at Moran	MAY-JUL	51	76	92	61%	108	133	152
	MAY-SEP	57	82	99	61%	116	141	161
Buffalo Fk ab Lava Ck nr Moran	MAY-JUL	149	173	189	71%	205	230	265
	MAY-SEP	168	196	215	70%	235	260	305
Snake R ab Reservoir nr Alpine[2]	MAY-JUL	885	1040	1150	59%	1260	1420	1960
	MAY-SEP	1010	1200	1320	58%	1440	1630	2280
Greys R ab Reservoir nr Alpine	MAY-JUL	118	147	167	63%	186	215	265
	MAY-SEP	145	179	200	63%	225	260	315
Salt R ab Reservoir nr Etna	MAY-JUL	58	83	102	42%	123	158	245
	MAY-SEP	87	117	140	45%	165	205	310
Snake R nr Irwin [2]	MAY-JUL	1030	1290	1460	55%	1630	1890	2660
	MAY-SEP	1250	1550	1750	56%	1950	2250	3150
Snake R nr Heise[2]	MAY-JUL	1120	1390	1570	55%	1750	2020	2840
	MAY-SEP	1380	1700	1910	56%	2120	2440	3390
Willow Ck nr Ririe[2]	MAY-JUL	0.11	1.81	4.1	10%	7.4	14	43
Portneuf R at Topaz	MAY-JUL	10.9	15.8	19.7	39%	24	31	50
	MAY-SEP	16.2	23	28	42%	34	44	67
Snake R at Neeley[2]	MAY-JUL	0.03	36	99	5%	193	390	2100
	MAY-SEP	1.53	61	150	7%	280	540	2260

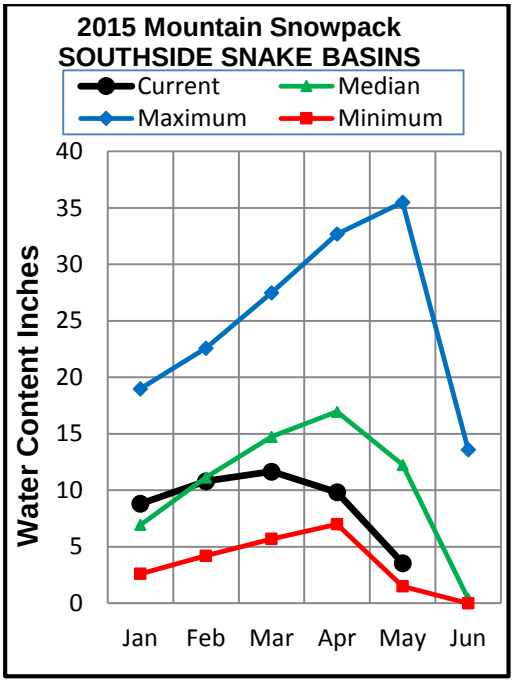
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
3) Median value used in place of average
Normals are based on 1981-2010 reference period; streamflow, precipitation and reservoir normals are averages, snow water equivalent are medians.

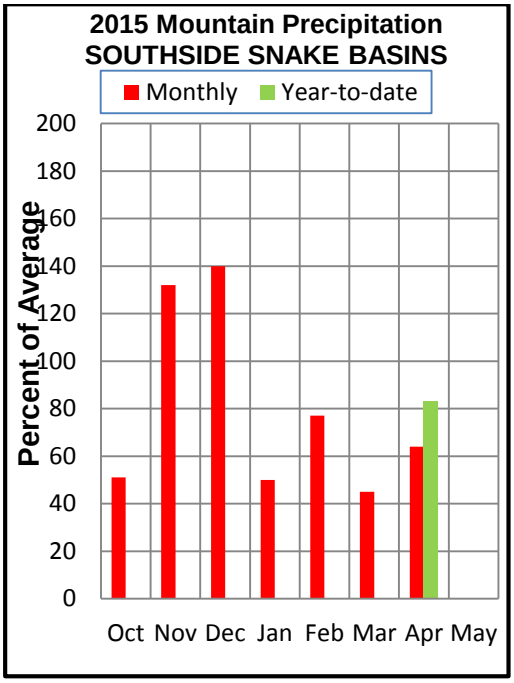
Reservoir Storage End of April, 2015	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Jackson Lake	707.8	297.6	445.7	847.0
Palisades Reservoir	1194.4	509.6	911.7	1400.0
Henrys Lake	88.5	82.8	83.5	90.4
Island Park Reservoir	135.4	122.4	123.8	135.2
Grassy Lake	13.8	14.3	12.8	15.2
Ririe Reservoir	56.8	66.6	58.7	80.5
Blackfoot Reservoir	190.6	202.9	211.3	337.0
American Falls Reservoir	1365.0	1577.3	1528.0	1672.6
Basin-wide Total	3752.2	2873.5	3375.5	4577.9
# of reservoirs	8	8	8	8

Watershed Snowpack Analysis May 1, 2015	# of Sites	% Median	Last Year % Median
Henrys Fork-Falls River	9	37%	129%
Teton River	9	52%	138%
Henrys Fork ab Rexburg	18	44%	133%
Snake River ab Jackson Lake	8	36%	137%
Pacific Creek	2	65%	148%
Buffalo Fork	2	80%	142%
Gros Ventre River	5	75%	144%
Hoback River	6	66%	180%
Greys River	4	83%	169%
Salt River	5	44%	174%
Snake ab Palisades Resv	27	54%	152%
Willow Creek - Ririe	6	0%	94%
Blackfoot River	2	0%	98%
Portneuf River	6	2%	103%
Snake River ab American Falls	44	46%	142%

SOUTHSIDE SNAKE RIVER BASINS

MAY 1, 2015





WATER SUPPLY OUTLOOK

Monthly precipitation south of the Snake River was below average for April, extending the streak to four consecutive months. However, there was a strong geographic component with the Owyhee (west) receiving 91% of average, while precipitation declined precipitously moving east, where the Raft River and Goose-Trapper Creeks received only 38% and 42% of average. Water year to date totals range from a low of 78% of average precipitation in the Bruneau to a high of 89% in the Raft River. Snowpack numbers continued their rapid decline, with Goose-Trapper Creeks, Reynolds Creek, and the Owyhee Basin reporting melted out. Of the watersheds retaining snow, the Raft River leads the way at 52% of normal snowpack, while the Bruneau (30%) and Salmon Falls Creek (21%) continue to rapidly melt out more than a month ahead of schedule. Many basins south of the Snake River are reporting near record low snowpack, with 1977 and 1992 having similar snowpack numbers. With the exception of Brownlee Reservoir at 98% of average, all storage in the Southside Snake River Basins is substantially below average, ranging from a high of 65% at Oakley Reservoir to a low 30% at Wild Horse Reservoir. However, low inflows are expected into Hells Canyon which will result in some challenging water management decisions. Forecasted streamflows closely mirror the dismal state of the snowpack across much of southern Idaho. With the exception of Trapper Creek forecast at 39% of average, all other drainages are projected to have less than 30% of typical runoff volumes. In the Owyhee Basin, the Owyhee River near Rome is expected to have 11% of average May-July volume, while below the dam is forecasted at 18%. The Bruneau River is forecasted at 19% of average, while Salmon Falls Creek and Oakley Reservoir inflows are projected at 10% and 16% of average respectively. Snowmelt streamflow peaks were minimal this year. Supplies will be similar or worse than last year across these Southside Idaho basins.

Southside Snake River Basins
Streamflow Forecasts - May 1, 2015

SOUTHSIDE SNAKE RIVER BASINS	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
		Forecast Exceedance Probabilities for Risk Assessment Chance that actual volume will exceed forecast						
Goose Ck abv Trapper Ck nr Oakley								
	MAY-JUL	0.01	0.49	1.24	9%	2.3	4.5	13.2
	MAY-SEP	0.02	0.61	1.46	10%	2.7	5.1	14.5
Trapper Ck nr Oakley								
	MAY-JUL	0.85	1.18	1.44	39%	1.72	2.2	3.7
	MAY-SEP	1.6	2	2.4	49%	2.7	3.3	4.9
Oakley Reservoir Inflow								
	MAY-JUL	0.37	1.49	2.7	16%	4.2	7.1	16.9
	MAY-SEP	0.86	2.4	3.9	20%	5.7	9	19.4
Salmon Falls Ck nr San Jacinto								
	MAY-JUL	0.79	2.9	5.1	10%	7.8	13	49
	MAY-SEP	1.65	4.3	6.9	13%	10	15.7	53
Bruneau R nr Hot Spring								
	MAY-JUL	8.4	17.8	26	19%	36	54	140
	MAY-SEP	10.2	21	30	20%	40	59	148
Reynolds Ck at Tollgate								
	MAY-JUL	0.4	0.89	1.33	26%	1.85	2.8	5.1
Owyhee R nr Gold Ck[2]								
	MAY-JUL	0.01	0.47	1.5	16%	3.10	6.53	9.6
	MAY-SEP	0.04	0.33	1.2	14%	2.60	5.80	8.3
Owyhee R nr Rome								
	MAY-JUL	0.16	8	20	11%	37	73	188
	MAY-SEP	2.1	14.8	30	15%	50	90	205
Owyhee R bl Owyhee Dam[2]								
	MAY-JUL	9	24	38	18%	55	87	210
	MAY-SEP	22	43	61	25%	83	121	240
Snake R at King Hill								
Snake R nr Murphy								
Snake R at Weiser								
Snake R at Hells Canyon Dam								
Snake R bl Lower Granite Dam[1]								

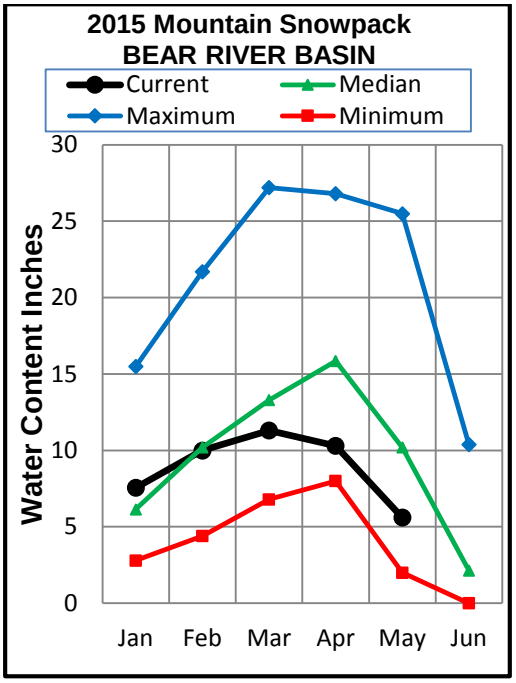
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
3) Median value used in place of average
Normals are based on 1981-2010 reference period; streamflow, precipitation and reservoir normals are averages, snow water equivalent are medians.

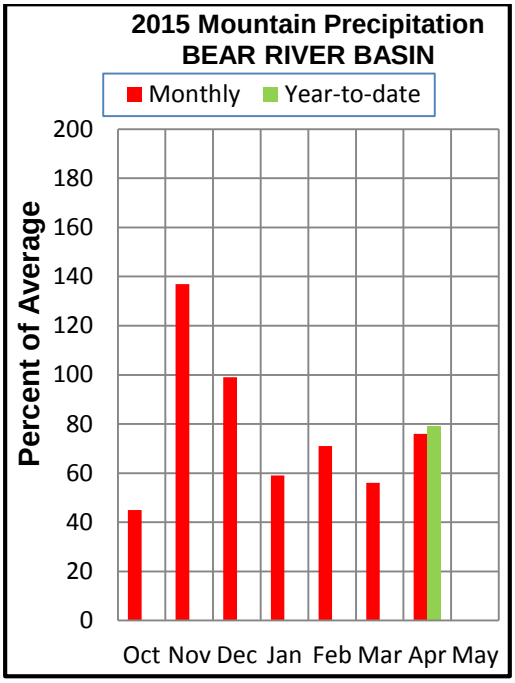
Reservoir Storage End of April, 2015	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Oakley Reservoir	22.4	24.6	34.3	75.6
Salmon Falls Reservoir	33.7	35.9	71.6	182.6
Wild Horse Reservoir	14.7	16.9	49.4	71.5
Lake Owyhee	193.2	184.1	533.1	715.0
Brownlee Reservoir	1133.5	1147.9	1161.0	1420.0
Basin-wide Total	1397.5	1409.4	1849.4	2464.7
# of reservoirs	5	5	5	5

Watershed Snowpack Analysis May 1, 2015	# of Sites	% Median	Last Year % Median
Raft River	1	52%	132%
Goose-Trapper Creeks	2	1%	85%
Salmon Falls Creek	5	21%	62%
Bruneau River	5	30%	52%
Reynolds Creek	1		
Owyhee Basin Total	8	0%	47%
Owyhee Basin Snotel Total	8	0%	47%

BEAR RIVER BASIN

MAY 1, 2015





WATER SUPPLY OUTLOOK

Precipitation across the Bear River basin during April showed a substantial amount of variability, ranging from a high of 100% in the Malad River to a low 60% in the Cub River. Water year precipitation shows less variability with a low of 68% of average occurring in Cub River drainage, while the Smith-Thomas Forks have received 84% of average precipitation. The onset of seasonal snowmelt began about four weeks early and snowpack in the Bear River basin as a whole declined throughout April, with most basins seeing double-digit reductions relative to the median. The Smith-Thomas Forks leads in snowpack at 73% of median followed by Montpelier Creek at 63%; the remaining sub-basins have less than 40%. Since 1961 the Bear River Basin as a whole has only had five years with lower May 1 snowpack. Similar snowpack values were observed in both 2012 and 2007, while the lowest years in 1992 and 1977 were less than half of current values. Storage in the Bear River basin is slightly below normal with Bear Lake at 46% of capacity (92% of average) while Montpelier Reservoir is full and spilling over the spillway. Forecasted April to July flows in the Bear River basin closely mirror the snowpack numbers with the Smiths Fork projection at 56% of average May-July volumes, while the remainder of the forecast points range from a high of 36% for the Logan River near Logan to a low of 10% for the Bear River below Stewart Dam. Despite the dearth of snow, and subsequent low forecasts, it is anticipated that irrigation supplies in the Bear River basin will be adequate for those that rely on Bear Lake storage water while those without will feel the impacts of the low snowfall, runoff volumes, and see an early return to baseflow streamflow levels.

Bear River Basin
Streamflow Forecasts - May 1, 2015

BEAR RIVER BASIN	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
		Forecast Exceedance Probabilities for Risk Assessment Chance that actual volume will exceed forecast						
Bear R nr UT-WY State Line								
	APR-JUL	15	29	38	34%	47	61	112
	APR-SEP	8.9	24	36	29%	44	59	123
	MAY-JUL	7.5	19.7	28	27%	36	49	104
	MAY-SEP	2.8	16.6	26	22%	35	49	116
Bear R ab Resv nr Woodruff								
	APR-JUL	1.21	11.3	24	20%	37	55	121
	APR-SEP	1.28	13.3	26	20%	39	57	128
	MAY-JUL	1.05	9.3	21	20%	33	50	105
	MAY-SEP	2.2	11.3	23	21%	35	52	111
Big Ck nr Randolph								
	APR-JUL	0.461	0.492	0.6	16%	1.18	2	3.8
	MAY-JUL	0.031	0.062	0.17	5%	0.75	1.57	3.1
Smiths Fk nr Border								
	APR-JUL	44.85	52.85	57.85	65%	63.85	71.85	89
	APR-SEP	53.85	63.85	69.85	67%	76.85	85.85	104
	MAY-JUL	32	40	45	56%	51	59	80
	MAY-SEP	41	51	57	60%	64	73	95
Bear R bl Stewart Dam[2]								
	APR-JUL	1.83	5.5	20	11%	55	107	183
	APR-SEP	2	6.2	26	13%	63	118	205
	MAY-JUL	1.46	4.4	15	10%	43	84	146
	MAY-SEP	1.69	5.1	21	12%	54	103	169
Little Bear at Paradise								
	APR-JUL	0.41	1.23	6.2	15%	12.5	22	41
	MAY-JUL	0.28	0.56	2.5	9%	8.4	17.1	28
Logan R nr Logan								
	APR-JUL	17.5	31	40	36%	49	63	111
	MAY-JUL	2.3	15.8	25	26%	34	48	96
Blacksmith Fk nr Hyrum								
	APR-JUL	0.43	4.9	13.6	32%	22	35	43
	MAY-JUL	0.31	1.38	9.3	30%	17.2	29	31

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
3) Median value used in place of average
Normals are based on 1981-2010 reference period; streamflow, precipitation and reservoir normals are averages, snow water equivalent are medians.

Reservoir Storage End of April, 2015	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Bear Lake	596.7	613.6	651.7	1302.0
Montpelier Reservoir	4.1	2.8	2.7	4.0
Basin-wide Total	600.7	616.4	654.4	1306.0
# of reservoirs	2	2	2	2

Watershed Snowpack Analysis May 1, 2015	# of Sites	% Median	Last Year % Median
Smiths-Thomas Forks	4	73%	153%
Bear River ab WY-ID Line	11	42%	121%
Montpelier Creek	2	63%	129%
Mink Creek	1	23%	102%
Cub River	1	35%	91%
Bear River ab ID-UT Line	19	38%	119%
Malad River	1		

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 Feb. 2015).**

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 at Whitehorse Rapids (2)
+ Hungry Horse storage change
+ Flathead Lake storage change
+ Noxon Res storage change
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 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 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 + Inactive
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 used, historic values below this level are rounded to zero						
Montpelier	**0.21**	**---**	**3.84**	**---**	**4.0**	Dead + Active

Interpreting Water Supply Forecasts

Introduction
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.

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.

Using the forecasts - an Example
Using the 50 Percent Exceedance Forecast. Using the example forecasts shown below, there is a 50% chance that actual streamflow volume at the Boise River near Twin Springs will be less than 685 KAF between April 1 and July 31. There is also a 50% chance that actual streamflow volume will be greater than 685 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 610 KAF (from the 70 percent exceedance forecast). There is a 30% chance of receiving *less* than 610 KAF.

Alternatively, if users determine the risk of using the 70 percent exceedance forecast is too great, then they might plan on receiving 443 KAF (from the **90** percent exceedance forecast). There is 10% chance of receiving less than 443 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 760 KAF (from the 30 percent exceedance forecast). There is a 30% chance of receiving *more* than 760 KAF.

Alternatively, if users determine the risk of using the 30 percent exceedance forecast is too great, then they might plan on receiving 927 KAF (from the 10 percent exceedance forecast). There is a 10% chance of receiving more than 927 KAF.

Users could also choose a volume in between any of these values to reflect their desired risk level.

Weiser, Payette, Boise River Basins
Streamflow Forecasts – January 2006

Forecast Point	Forecast Period	Chance of Exceeding * 90% (1000AF)	70% (1000AF)	50% (1000 AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
SF PAYETTE RIVER at Lowman	APR-JUL	329	414	471	109	528	613	432
	APR-SEP	369	459	521	107	583	673	488
BOISE RIVER near Twin Springs (1)	APR-JUL	443	610	685	109	760	927	631
	APR-SEP	495	670	750	109	830	1005	690

*90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table

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