United States Department of Agriculture

Natural Resources Conservation Service

Idaho Water Supply Outlook Report
February 1, 2015

NRCS field office staff have a long tradition making snow measurements throughout the western United States. Manually measured snow courses provide valuable and critical information for local water users and forecast hydrologists in elevation or geographic zones not represented by the more modern automated SNOTEL network. Idaho has 98 manual courses in addition to the 82 SNOTEL sites in the state. This year we proudly welcome three brand new NRCS field office folks to the growing family of snow surveyors. One of these is Mike Stoeber, pictured above near Island Park Idaho, who recently returned from the annual 5-day Westwide Snow Survey Training School, the mandatory first stop where new recruits learn survival skills and other topics related to this exciting outdoor work. He and his partner just completed the 80th consecutive year of measurements at the Big Springs snow course in the Henrys Fork basin, one of the longest continuous records in the state. The thick rime icing on the trees makes a nice backdrop, it forms frequently in Idaho during inversion conditions like we've had the last half of January. He obviously looks happy and proud to be following in the tracks of all who have gone before him – welcome Mike!

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

February 1, 2015

SUMMARY

Don't let the valley fog fool you to make you think the winter conditions are present in the mountains too. The inversion and fog that has stretched from the Weiser basin to the Teton valley has kept valley temperature cooler than the mountains which have been warm and had many more clear days. Based on the OSU's PRISM temperature and precipitation maps, http://www.prism.oregonstate.edu/ , Idaho's January mountain temperatures have been 3 - 10 F above normal. This is also reflected in the mountain snowpack which has unusually high densities for early February. In fact, the snowpack is ripe and starting to melt at several sites. Overall, Idaho's snowpack ranges from 60-110% of median, but pockets of above normal and well below normal snowpacks can be found across the state. For more detailed analysis, which include the SNOTEL sites and all manually measured snow courses as mentioned on the cover, users should review the monthly snow summaries and maps at http://www.wcc.nrcs.usda.gov/basin.html rather than reports that may provide just one value for the whole basin. Reservoir operators are storing water where they can to ensure refill, but also looking at possible flood control releases in the Upper Snake after one more big storm or sustained above average precipitation. As we write this report, there is the potential for an Atmospheric River (AKA Pineapple Express) to bring abundant moisture along the West Coast and into central and northern Idaho that could quickly change the outlook in your basin. As of now, potential surface irrigation shortages are possible in the basins with low reservoir storage and snowpacks, namely the Owyhee, Salmon Falls, Oakley, Big Wood, Little Wood Big Lost and Little Lost. Stay tuned to see if the Atmospheric River flows into Idaho in early February and if the temperatures allow some or all of this moisture to fall as rain or snow.

SNOWPACK

Snowpacks range from 60-100% of median for most Idaho basins. Oddly, the lowest snowpack percentages are 50-65% of median in the Panhandle Region and Weiser basin. A few long term Panhandle snow courses dating back nearly 80 years are near record low. The higher snowpacks are average or better in the Upper Snake, Oakley and Salmon Falls basins. Users should view the detailed reports to find where those isolated pockets of good snowfall are hiding like in the Selway and Lemhi, each near 115% of median, and to see that Mountain Meadows in the southern part of the Clearwater basin and Howell Canyon in the Raft River basin are reporting 140%; while several basins in the Upper Snake, Gross Ventre, Hoback and Greys are trying to maintain their 110-120% snowpack. In stark contrast, pockets of low snow can be found on Moscow Mountain, Van Wyck and Long Valley, each about 45% of median. Some of the lower elevation SNOTEL sites started melting in January while higher elevation snowpacks were able to absorb the falling rain. The mid to late January rains fell up to 7,000 to 8,000 feet in elevation in central Idaho and the Clearwater basin.

PRECIPITATION

January mountain precipitation was below normal across the state. Highest percentages were 70-85% of average in the Spokane, Clearwater, Henrys Fork and Snake River headwaters in Wyoming. The least amount fell in the Little Wood and Big Lost basin at only 35% of normal, very similar to last January. Elsewhere, January's amounts were in the 45-65% of average range. Water year to date precipitation varies across the state with only 67% of average falling in the Mud Lake area near the Montana border. Next lowest are Little Wood and Big Lost basins are at only 77% of normal since the water year started October 1, 2014. Most of the rest of the state is 85-105% of average.

RESERVOIRS

Reservoirs and their operations vary across the state based on carryover storage and the amount of snow stored in the mountains above the dam. In the Upper Snake, Palisades Reservoir and Jackson Lake are in good storage shape at 133% of average, 79% of capacity. With near normal snowpacks and streamflow forecasts, operations are suggesting for Palisades Reservoir to start passing inflows soon or may require additional releases after the next major or significant storm event which would increase the snowpack above flood control rule curves. American Falls Reservoir is on schedule to fill around April 1 and water irrigation supplies should be adequate this summer for the Snake River users. Reservoirs that are only 11-23% of capacity and can store more water are (from low to high) Salmon Falls, Owyhee, Wild Horse, Magic and Oakley. Because of the low reservoir storage, these are the basins where irrigation shortages are likely this summer even with near normal snowpacks in a few of these basins. Little Wood and Big Lost water users can also be added to this potential shortage list with Little Wood Reservoir at only 41% full, 75% of average and Mackay Reservoir at 63% full, 107% of average. Bear Lake is just under half full, which is just under average for this time of year, but will be able to provide adequate irrigation supplies to its users even with a streamflow forecast at half of average, which is the amount they got out of last year's snowpack. The Boise and Payette reservoir systems are in good shape should fill on schedule and provide adequate irrigation supplies. Water is slowly being stored in Dworshak Reservoir which is 75% full, 111% of average, to help ensure refill with a snowpack that is only 77% of median and streamflow forecast that calls for 84% of average. Storage in north Idaho's lakes, Pend Oreille, Priest and Coeur d'Alene, are below normal due to the dry winter and waiting for that first rain on snow event which may happen in early February.

STREAMFLOW

Streamflow forecasts decreased from last month across the state and now vary with the snowpack ranging from about 50-115% of median. The lowest streamflow forecasts are Camas Creek near Blaine (Fairfield) and Reynolds Creek in the Owyhee basin at only 37% of average. Much of west-central, central and eastern Idaho streams are forecast at 70-100% of average while southern Idaho streams range from 50-90% of average. The highest forecasts are for the Selway and Clearwater at Orofino, both showing 115% of the 30-year average. January's rain and warm temperatures brought an increase in streamflow to many headwater streams across the state and are now flowing above the long term daily January normals. A few, Big Lost, Little Lost and Teton rivers, are still frozen, which is good until a

warmer spell or another precipitation event occurs. This rain also helped to prime the soils in these lower elevations for when the next precipitation event occurs.
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. Forecasts published in this report are produced by the NRCS with the exception of the NWS main-stem Snake River forecasts.

RECREATION

Don't exchange those powder skis for water skis just yet, but the early season boaters may want to get those boats ready. The atmosphere is very active with the jet stream bringing warmer than normal temperatures to the West, and cold and snow to the mid-west and east. With the potential Atmospheric River projected for early February, we are likely to see some increases in streamflow. Stay tuned to see if this winter season has a Super Bowl ending in your favor, or if we remain under the influence of the high pressure dome.

WHAT'S NEW FOR 2015:

Capacity of Blackfoot Reservoir was Decreased to 333,500 acre-feet from 348,730 acre-feet
A bathymetric survey using LIDAR was conducted by USGS in 2011 to determine the current total storage capacity for Blackfoot Reservoir. The study determined that the newly calculated active capacity is 333,500 AF at a datum of 6,124.0 ft (NAVD 88) and a surcharge capacity of 337,000 AF at a datum of 6,124.2 ft (NAVD 88). In the study, it was found that the spillway is slightly sloped North to South, with an elevation of 6,124.2 ft and 6,124 ft respectively, thus the reasoning for the 3,500 acre-feet of surcharge. The study did not mention any findings on dead storage.

Western Snow Conference
The 83rd annual Western Snow Conference will be in Grass Valley, California. Grass Valley is in the Sierra Nevada foothills and about an hour from the Sacramento Airport. The conference is April 20-23, 2015, please the Western Snow Conference web page for more information:
http://www.westernsnowconference.org/

IDAHO SURFACE WATER SUPPLY INDEX (SWSI) February 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	**Not Available**	**---**	**---**
Spokane	**-1.8**	**1995**	**NA**
Clearwater	**1.3**	**2006**	**NA**
Salmon	**2.3**	**2009**	**NA**
Weiser	**-1.6**	**2004**	**NA**
Payette	**-0.9**	**2000**	**NA**
Boise	**0.7**	**2008**	**-1.5**
Big Wood	**-0.2**	**2010**	**0.6**
Little Wood	**-0.2**	**2010**	**-1.3**
Big Lost	**-0.2**	**2008**	**0.6**
Little Lost	**-0.5**	**2008**	**1.3**
Teton	**0.2**	**2010**	**-3.9**
Henrys Fork	**-0.8**	**2010**	**-3.2**
Snake (Heise)	**1.6**	**2006**	**-1.5**
Oakley	**-0.2**	**2000**	**0.4**
Salmon Falls	**-1.0**	**2008**	**-0.8**
Bruneau	**0.0**	**2008**	**NA**
Owyhee	**-3.3**	**2013**	**-3.2**
Bear River	**-0.5**	**2014**	**-3.7**

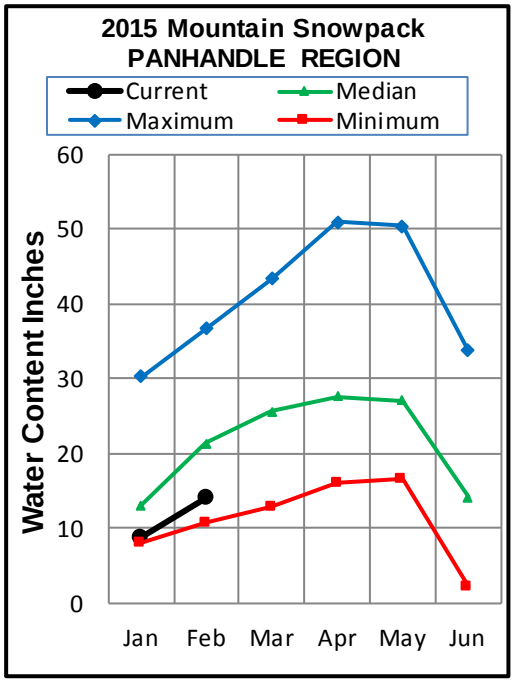
SWSI SCALE, PERCENT CHANCE OF EXCEEDANCE, AND INTERPRETATION

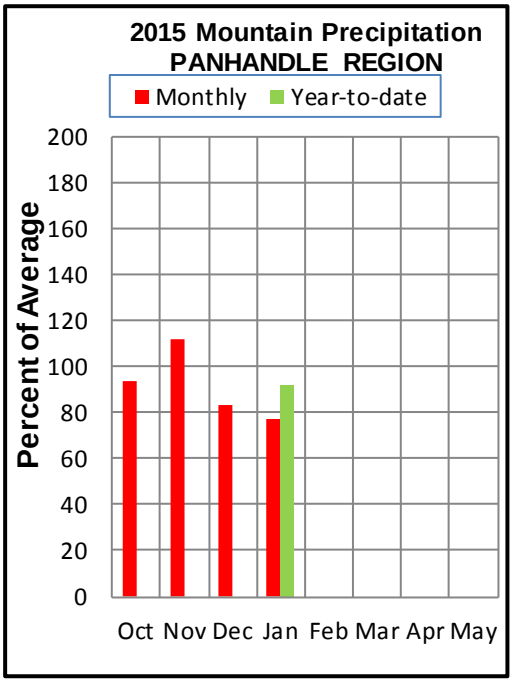
```
 -4      -3      -2      -1       0       1       2       3       4
  |------|------|------|------|------|------|------|------|------|
 99%     87%     75%     63%     50%     37%     25%     13%      1%
-----------------------------------------------------------------------
|Much    | Below      |        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.

PANHANDLE REGION

FEBRUARY 1, 2015





WATER SUPPLY OUTLOOK

The first fourth months of the 2015 water year find precipitation in the Panhandle Region ranging from slightly above average , 105% of average, in the Moyie River drainage to 83% in the Priest River basin. Declines from last month are the result of a dry January that delivered roughly 70% of average precipitation. Snowpack in the Panhandle Region continues to lag behind the rest of Idaho, with the Coeur d' Alene River drainage reporting the lowest percent of normal, 52%, while the Moyie River basin leads the Panhandle Region, with just 80% of normal snowpack. All drainages are behind last year's snowpack percentages, some by as much as 20 percentage points. The lower than normal snowpack numbers are the result of not only low amounts of snow accumulation, but also abnormally high temperatures and unseasonable rain that resulted in snowmelt, particularly in the third week of January. This melt was noticeable when many streams and rivers in the Panhandle Region briefly increased their flows in late January. Flows came back down when colder weather reappeared. The Panhandle's natural lakes are in good shape and just waiting for the first major runoff event of the year to get more water in the system. Forecasted stream flows show a great deal of variability across the Panhandle with the Lake Pend Orielle Inflow and Clark Fork River projected to be slightly above normal at 106%, while most other Panhandle streams are projected to have less than 75% of their average flows, except the Kootenai at 92%. Let's hope that the forecasted early February storms come in as snow to help out the lagging snowpack!

Panhandle Region
Streamflow Forecasts - February 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								
	APR-JUL	183	235	270	72%	305	360	375
	APR-SEP	194	245	285	74%	320	370	385
Kootenai R at Leonia[1,2]								
	APR-JUL	4830	5670	6050	92%	6430	7270	6600
	APR-SEP	5800	6610	6980	92%	7340	8150	7590
Boundary Ck nr Porthill								
	APR-JUL	66	80	89	76%	99	113	117
	APR-SEP	68	83	93	76%	103	117	123
Clark Fork R at Whitehorse Rapids[1,2]								
	APR-JUL	8560	10300	11100	106%	11800	13600	10500
	APR-SEP	9470	11300	12100	105%	12900	14800	11500
Pend Oreille Lake Inflow[2]								
	APR-JUL	10400	11600	12500	106%	13300	14600	11800
	APR-SEP	11300	12600	13500	105%	14400	15700	12800
Priest R nr Priest River[2]								
	APR-JUL	330	475	540	69%	610	755	780
	APR-SEP	345	505	575	69%	650	810	830
NF Coeur dAlene R at Enaville								
	APR-JUL	230	360	445	64%	530	660	700
	APR-SEP	260	385	475	64%	565	690	740
St. Joe R at Calder[2]								
	APR-JUL	575	705	790	75%	875	1010	1050
	APR-SEP	625	755	845	75%	935	1070	1120
Spokane R nr Post Falls[2]								
	APR-JUL	985	1350	1600	67%	1850	2220	2390
	APR-SEP	1040	1410	1660	67%	1910	2280	2480
Spokane R at Long Lake								
	APR-JUL	1150	1550	1830	70%	2110	2510	2620
	APR-SEP	1310	1720	2000	70%	2280	2690	2850

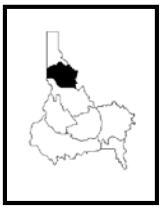
1) 90% and 10% exceedance probabilities are actually 95% and 5%
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
Normals are based on 1981-2010 reference period; streamflow, precipitation and reservoir normals are averages, snow water equivalent are medians.

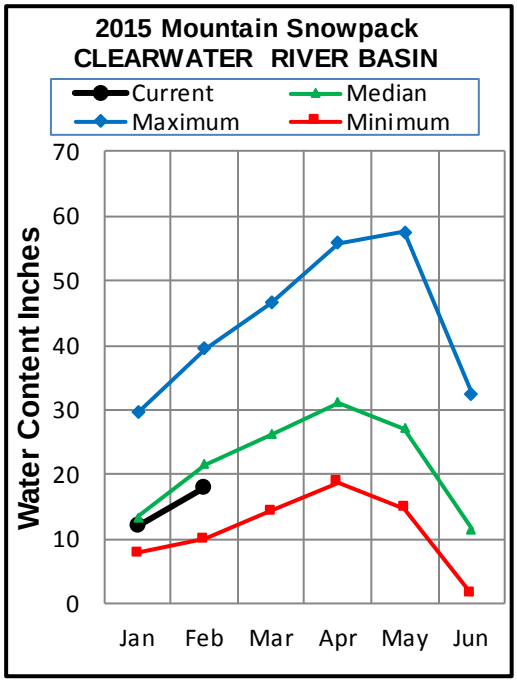
Reservoir Storage End of January, 2015	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Hungry Horse Lake	2973.0	2848.2	2375.0	3451.0
Flathead Lake	925.5	901.5	955.6	1791.0
Noxon Rapids Res	321.9	312.9	315.0	335.0
Lake Pend Oreille	534.8	569.9	753.9	1561.3
Priest Lake	50.4	60.6	56.7	119.3
Lake Coeur d'Alene	154.1	43.4	96.3	238.5
Basin-wide Total	4959.6	4736.5	4552.5	7496.1
# of reservoirs	6	6	6	6

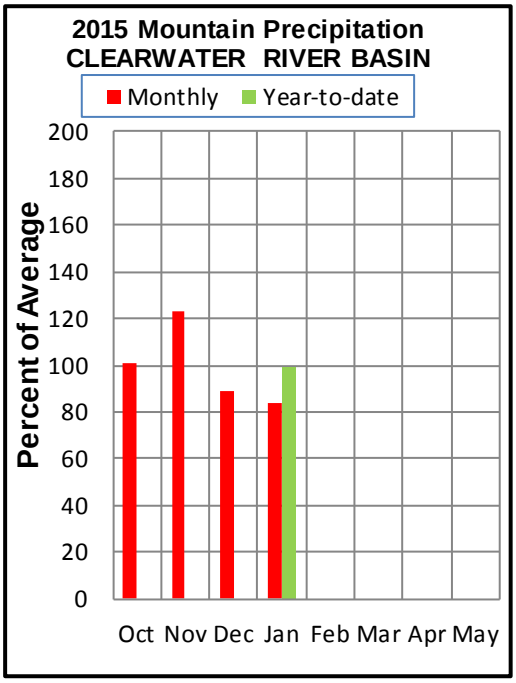
Watershed Snowpack Analysis February 1, 2015	# of Sites	% Median	Last Year % Median
Moyie River	8	78%	87%
Kootenai ab Bonners Ferry	21	75%	92%
Priest River	5	59%	76%
Rathdrum Creek	4	47%	62%
Coeur d' Alene River	6	52%	72%
St. Joe River	4	67%	85%
Spokane River	14	57%	74%
Palouse River	2	44%	69%

CLEARWATER RIVER BASIN

FEBRUARY 1, 2015







WATER SUPPLY OUTLOOK

October through January precipitation in the Clearwater basin was right on target at 100% of average, and well ahead of that received during the same period last year, which was only 79%. More detailed analysis shows that the Selway (127%) and the Lochsa (105%) basins have received above normal precipitation since the beginning of the water year, even though the month of January's precipitation was well below average in the Lochsa River drainage at 62%. The NF Clearwater basin received 84% of average January precipitation, leaving the drainage as a whole at 94% of average precipitation for the water year. February 1st snowpack for the whole Clearwater basin is 83% of normal and slightly below last year's 95%. The Selway leads the Clearwater basin with a snowpack at 115% of median, followed by the Lochsa at 92% while the NF Clearwater lags at only 77%. Dworshak Reservoir is slowing increasing and is at 75% of capacity which is above normal for this time of year. Inflows are projected at below normal at 84% of average for the April-July and April-September forecast periods. The Lochsa, Selway, and the main stem of the Clearwater rivers are anticipated to have 104-116% of normal flows for the forecast period. This is great news for the river runners looking to have another good floating year.

Clearwater River Basin
Streamflow Forecasts - February 1, 2015

CLEARWATER RIVER BASIN	Forecast Period	Forecast Exceedance Probabilities for Risk Assessment Chance that actual volume will exceed forecast 90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Selway R nr Lowell								
	APR-JUL	1840	2070	2230	116%	2380	2620	1920
	APR-SEP	1940	2170	2330	115%	2500	2730	2020
Lochsa R nr Lowell								
	APR-JUL	1170	1340	1460	104%	1570	1740	1410
	APR-SEP	1240	1410	1530	103%	1640	1810	1480
Dworshak Reservoir Inflow[2]								
	APR-JUL	1330	1810	2020	84%	2240	2710	2410
	APR-SEP	1460	1940	2160	84%	2380	2860	2570
Clearwater R at Orofino								
	APR-JUL	3680	4570	4980	116%	5380	6280	4310
	APR-SEP	3860	4780	5200	115%	5620	6540	4540
Clearwater R at Spalding[2]								
	APR-JUL	5190	6570	7200	104%	7830	9220	6890
	APR-SEP	5490	6910	7560	104%	8200	9630	7270

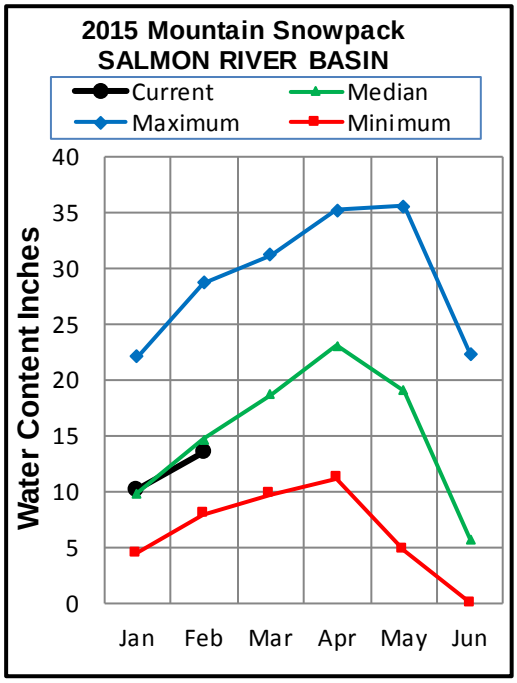
1) 90% and 10% exceedance probabilities are actually 95% and 5%
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
Normals are based on 1981-2010 reference period; streamflow, precipitation and reservoir normals are averages, snow water equivalent are medians.

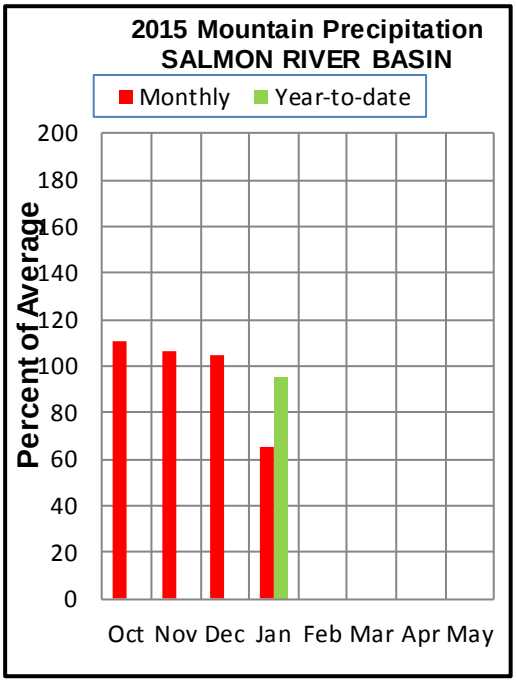
Reservoir Storage **End of January, 2015**	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Dworshak Reservoir	2599.9	2334.6	2335.0	3468.0
Basin-wide Total	2599.9	2334.6	2335.0	3468.0
# of reservoirs	1	1	1	1

Watershed Snowpack Analysis **February 1, 2015**	# of Sites	% Median	Last Year % Median
NF Clearwater River	9	77%	92%
Lochsa River	3	92%	98%
Selway River	4	115%	114%
Clearwater Basin Total	17	83%	95%

SALMON RIVER BASIN

FEBRUARY 1, 2015





WATER SUPPLY OUTLOOK

On the whole, the Salmon River drainage started January at 108% of average precipitation, but lackluster January precipitation (69%) reduced the basin average precipitation to 97%, which is still much better than a year ago. Individual sub-basins show moderate variability with the Lemhi receiving 102%, while the SF Salmon received 84% of average precipitation. February 1st snowpack numbers closely mirror the overall precipitation percentages, with the Salmon River basin at 96% of normal snowpack. The Lemhi drainage tops the list of sub-basins with 111% of median snowpack, while the MF, SF, and Little Salmon rivers all report less than 83%. Reduced snowpack percentages since January have resulted in a minor reduction in forecasted stream flows. All streams are forecast at 77 - 96% of average flows for the April-July period. This will provide adequate floating flows for all, but as you know the spring temperature and precipitation will determine the magnitude of peak flows and timing of this year's snowmelt runoff.

Salmon River
Streamflow Forecasts - February 1, 2015

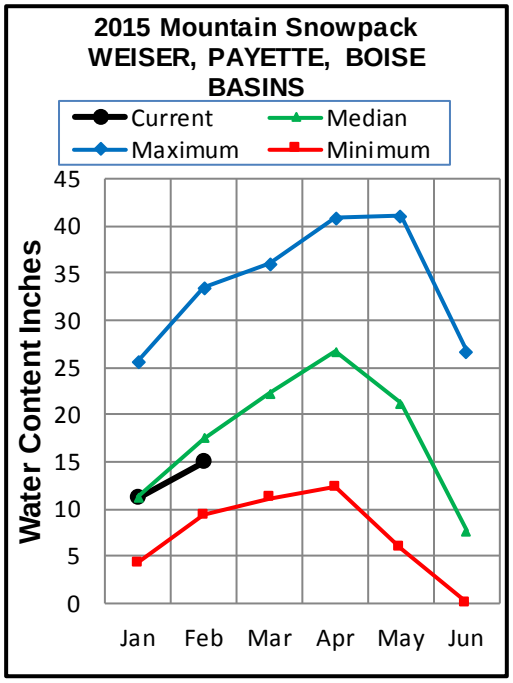
SALMON RIVER	Forecast Period	Forecast Exceedance Probabilities for Risk Assessment Chance that actual volume will exceed forecast 90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Salmon R at Salmon								
	APR-JUL	355	585	690	89%	800	1030	775
	APR-SEP	410	680	805	89%	930	1200	900
Lemhi R nr Lemhi								
	APR-JUL	29	45	57	77%	71	94	74
	APR-SEP	38	56	71	79%	87	113	90
MF Salmon R at MF Lodge								
	APR-JUL	325	485	590	86%	700	860	690
	APR-SEP	365	545	665	86%	785	965	770
Sf Salmon R nr Krassel Ranger Station								
	APR-JUL	142	186	215	80%	245	290	270
	APR-SEP	157	200	230	79%	260	305	290
Johnson Ck at Yellow Pine Id								
	APR-JUL	113	141	160	84%	179	205	191
	APR-SEP	122	151	170	83%	189	220	205
Salmon R at White Bird								
	APR-JUL	3180	4540	5160	96%	5780	7140	5370
	APR-SEP	3530	5030	5710	96%	6400	7900	5940

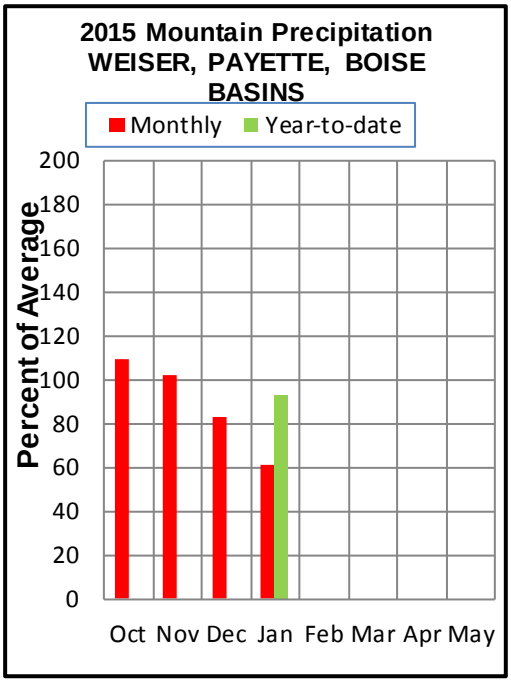
1) 90% and 10% exceedance probabilities are actually 95% and 5%
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
Normals are based on 1981-2010 reference period; streamflow, precipitation and reservoir normals are averages, snow water equivalent are medians.

Watershed Snowpack Analysis February 1, 2015	# of Sites	% Median	Last Year % Median
Salmon River ab Salmon	7	96%	73%
Lemhi River	7	111%	113%
MF Salmon River	3	83%	64%
SF Salmon River	3	82%	63%
Little Salmon River	4	80%	66%
Salmon Basin Total	24	96%	82%

WEST CENTRAL BASINS

FEBRUARY 1, 2015





WATER SUPPLY OUTLOOK

Unfortunately the month of January was none too generous to the West Central Basins, with below average precipitation in the Weiser, Payette and Boise. However, a strong first quarter of the water year mitigated a dry January which allowed us to head into February with 88%, 89% and 100% of average precipitation for the Weiser, Payette, and Boise drainages respectively. Snowpack shows a similar east to west declining trend with the Boise (85%) leading the way, the Payette (78%) in the middle, and the Weiser lagging behind at 65% of median snow pack. While these numbers are slightly disappointing, they are much better than last year when we finished January at 55% (Boise), 59% (Payette), and 39% (Weiser). The Boise River reservoir system is at 113% of average, while the Payette reservoirs are holding 108% of average. Streamflow forecasts for the Weiser River are for 75% of average volume. In the Payette River basin, forecasted streams range from a low of 80% (Deadwood Inflow) to a high of 86% of average on the SF of the Payette at Lowman. In the Boise River basin forecasted flows range from 82% of average for Mores Creek up to 96% on the Boise River near Twin Springs. Irrigation shortages are not expected at this time, but hopefully the predicted early February moisture will bring more snow and less rain to build our snowpacks and get them closer normal or better levels by April 1 which signifies end of the snow accumulation season is near.

West Central Basins
Streamflow Forecasts - February 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]								
	FEB-JUL	235	395	470	87%	545	705	540
	APR-JUL	205	345	410	86%	470	610	475
	APR-SEP	225	370	435	85%	505	650	510
Boise R nr Twin Springs								
	FEB-JUL	400	575	650	96%	730	905	680
	APR-JUL	350	495	555	95%	620	765	585
	APR-SEP	385	535	605	95%	675	830	635
Mores Ck nr Arrowrock Dam								
	FEB-JUL	67	102	130	82%	162	215	159
	APR-JUL	54	79	98	85%	120	155	115
	APR-SEP	57	82	102	86%	124	161	119
Boise R nr Boise[2]								
	FEB-JUL	785	1170	1350	89%	1520	1910	1520
	APR-JUN	670	910	1020	89%	1120	1360	1140
	APR-JUL	650	990	1140	90%	1300	1640	1260
	APR-SEP	740	1080	1240	91%	1390	1730	1360
Lake Fork Payette R nr McCall								
	APR-JUL	52	61	67	84%	74	85	80
	APR-SEP	54	63	70	84%	77	88	83
NF Payette R at Cascade[2]								
	APR-JUL	230	355	410	85%	465	590	485
	APR-SEP	230	360	420	85%	480	610	495
NF Payette R nr Banks[2]								
	APR-JUL	355	455	525	84%	595	695	625
	APR-SEP	355	465	540	84%	615	725	640
SF Payette R at Lowman								
	APR-JUL	250	305	345	86%	385	455	400
	APR-SEP	285	350	390	86%	440	515	455
Deadwood Reservoir Inflow[2]								
	APR-JUL	57	85	98	80%	111	139	123
	APR-SEP	60	91	105	80%	119	150	131
Payette R nr Horseshoe Bend[2]								
	APR-JUL	800	1120	1270	86%	1410	1730	1480
	APR-SEP	830	1210	1390	85%	1570	1950	1630
Weiser R nr Weiser								
	FEB-JUL	182	360	460	75%	570	865	615
	APR-JUL	105	210	270	73%	340	515	370
	APR-SEP	119	230	295	74%	365	545	400

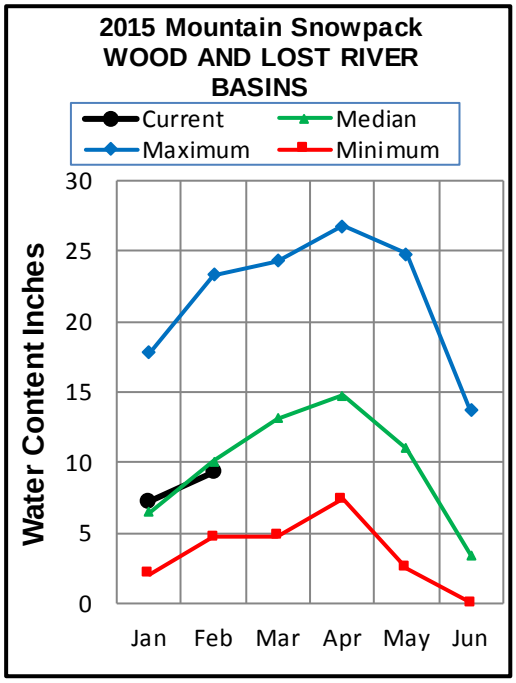
1) 90% and 10% exceedance probabilities are actually 95% and 5%
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
Normals are based on 1981-2010 reference period; streamflow, precipitation and reservoir normals are averages, snow water equivalent are medians.

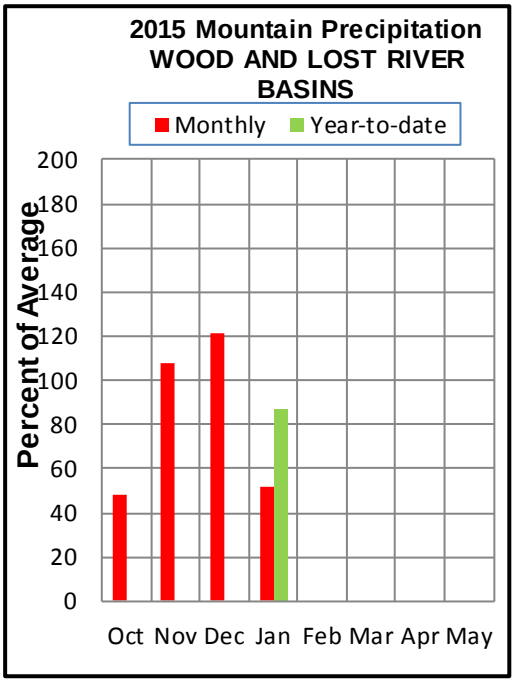
Reservoir Storage End of January, 2015	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Anderson Ranch Reservoir	259.2	132.9	256.4	450.2
Arrowrock Reservoir	246.9	230.0	174.8	272.2
Lucky Peak Reservoir	96.4	92.0	103.5	293.2
Lake Lowell	40.3	37.5	92.8	165.2
Deadwood Reservoir	114.4	80.8	87.9	161.9
Cascade Reservoir	471.2	438.7	455.5	693.2
Mann Creek Reservoir	3.1	0.5	3.6	11.1
Basin-wide Total	1231.4	1012.3	1174.5	2047.0
# of reservoirs	7	7	7	7

Watershed Snowpack Analysis February 1, 2015	# of Sites	% Median	Last Year % Median
SF Boise River	8	88%	52%
MF & NF Boise Rivers	6	91%	65%
Mores Creek	6	91%	65%
Canyon Creek	4	66%	22%
Boise Basin Total	17	85%	55%
NF Payette River	9	78%	60%
SF Payette River	5	81%	62%
Payette Basin Total	16	79%	59%
Mann Creek	1	72%	36%
Weiser Basin Total	7	65%	39%

WOOD and LOST BASINS

FEBRUARY 1, 2015





WATER SUPPLY OUTLOOK

The least amount of January precipitation in the state fell in these central Idaho basins at only a third of normal in the Big Lost and Little Wood basins. A few SNOTEL sites received less than an inch of precipitation in January, normal amounts are 2-3 inches for the month. January precipitation amounts increase to 44% Camas-Beaver Creeks, and to 50-55% in Big Wood, Birch, Medicine Lodge basins. Somehow the Little Lost basin, which is between Birch Creek and the Little Lost River managed to receive 67% of normal amounts in January. Water year to date totals shows similar trends with the least about at only 57% in Camas-Beaver Creeks and increases to 90% in the Little Lost basin. Snowpacks vary in these mountains as well with the Little Lost at normal, followed by the Big Wood above Hailey at 93% and 88% for the Big Wood as a whole. The Birch-Medicine Lodge Creeks are also 92% of median while the Little Wood basin is 83%. Current snowpacks are only 50-60% of the seasonal peaks that occur in early April, so much more snow is needed to mitigate irrigation shortages. Streamflow forecasts call for 70-85% of average except for both Camas creeks which are forecast at less than half of average. Reservoir storage ranges from 20% of capacity for Magic, 41% for Little Wood, and 63% for Mackay. When reservoir storage is combined with projected streamflows, shortages are still expected even when using the 30% Chance of Exceedance Forecasts in the Big Wood and Big Lost basins. Water users should prepare for another tight year or similar to last year if the current precipitation patterns continue the rest of this winter.

Wood And Lost Basins
Streamflow Forecasts - February 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								
	APR-JUL	0.56	5.4	13.6	49%	22	34	28
Little Lost R nr Howe								
	APR-JUL	13.1	19.6	24	86%	28	35	28
	APR-SEP	14.6	23	29	85%	35	43	34
Big Lost R at Howell Ranch								
	APR-JUL	59	102	131	82%	160	205	159
	APR-SEP	66	115	148	82%	182	230	180
Big Lost R bl Mackay Reservoir								
	APR-JUL	21	65	95	77%	125	169	123
	APR-SEP	32	83	117	78%	151	200	150
Little Wood R ab High Five Ck								
	MAR-JUL	8.5	39	59	77%	80	110	77
	MAR-SEP	9.5	42	64	78%	86	119	82
	APR-JUL	3.7	33	53	77%	73	102	69
	APR-SEP	4.5	36	58	77%	79	111	75
Little Wood R nr Carey[2]								
	MAR-JUL	6	40	63	73%	87	121	86
	MAR-SEP	7.4	44	68	74%	93	129	92
	APR-JUL	1.08	34	56	73%	78	111	77
	APR-SEP	2.6	37	61	73%	85	119	83
Big Wood R at Hailey								
	APR-JUL	64	151	191	81%	230	320	235
	APR-SEP	72	170	215	81%	260	360	265
Big Wood R ab Magic Reservoir								
	APR-JUL	11.3	77	121	71%	165	230	170
	APR-SEP	14	83	130	71%	178	245	182
Camas Ck nr Blaine								
	APR-JUL	5	17.5	30	37%	47	77	82
	APR-SEP	5.1	17.8	31	37%	47	78	83
Big Wood R bl Magic Dam [2]								
	APR-JUL	10.2	110	178	71%	245	345	250
	APR-SEP	14.2	118	189	71%	260	365	265

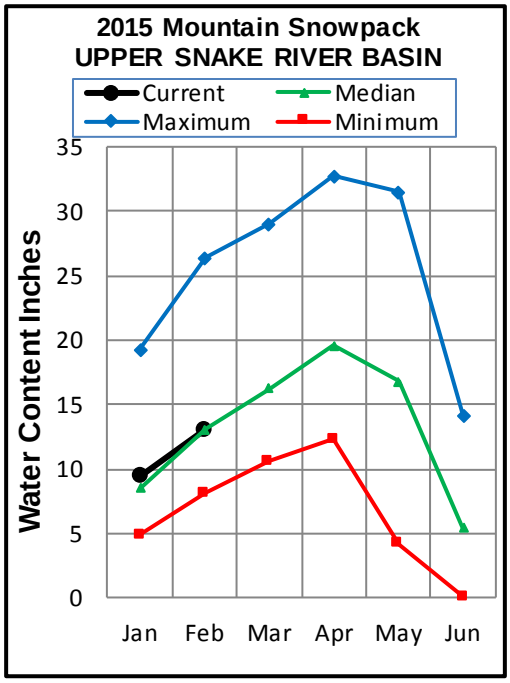
1) 90% and 10% exceedance probabilities are actually 95% and 5%
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
Normals are based on 1981-2010 reference period; streamflow, precipitation and reservoir normals are averages, snow water equivalent are medians.

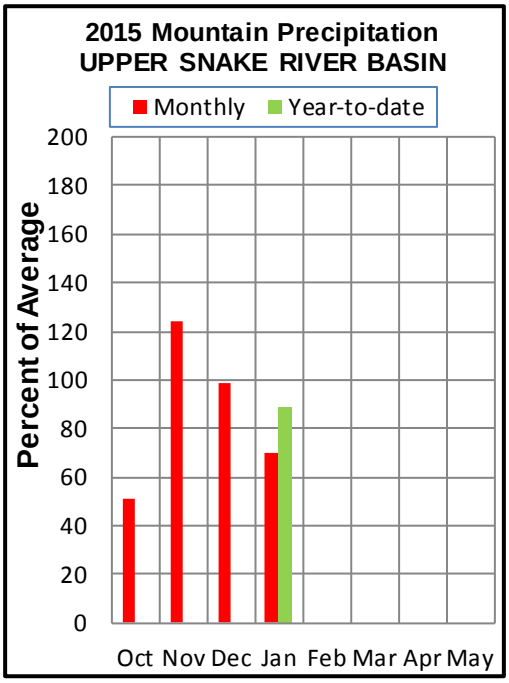
Reservoir Storage **End of January, 2015**	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Mackay Reservoir	27.9	25.4	26.0	44.4
Little Wood Reservoir	12.2	12.0	16.3	30.0
Magic Reservoir	38.1	43.1	68.9	191.5
Basin-wide Total	78.1	80.5	111.2	265.9
# of reservoirs	3	3	3	3

Watershed Snowpack Analysis **February 1, 2015**	# of Sites	% Median	Last Year % Median
Camas-Beaver Creeks	4	72%	51%
Birch-Medicine Lodge Creeks	2	92%	105%
Little Lost River	3	100%	82%
Big Lost River ab Mackay	6	75%	50%
Big Lost Basin Total	7	77%	50%
Fish Creek	3	61%	31%
Little Wood River	4	83%	45%
Big Wood River ab Hailey	7	93%	56%
Camas Creek	8	88%	52%
Big Wood Basin Total	12	88%	47%

UPPER SNAKE RIVER BASIN

FEBRUARY 1, 2015





WATER SUPPLY OUTLOOK

January precipitation ranged from 60-95% of average at the numerous SNOTEL sites across the Upper Snake River basin. The one exception is the Portneuf basin, which only received 39% of average based on the three SNOTEL sites (Oxford Springs, Sedwick Peak and Wildhorse Divide). Overall, the basin received 71% of average in January and stands at 92% of average since the water year started. The lowest water year to date totals are in the Portneuf basin at 76% of average while the highest are about 105% in the Buffalo Fork and Greys basins in Wyoming. Snowpacks mirror this precipitation pattern with Hoback River leading the way at 121% of average followed closely by the Greys basin. Willow Creek hosts the lowest snowpack at 76% of average while the Portneuf basin is 82%. Overall, the Snake basin above Palisades is 107% of average and decreases to 99% above American Falls when you include the lower elevations drainages in eastern Idaho. Reservoir storage is in good shape with the eight major reservoirs in the Upper Snake at 74% of capacity, 118% of average. Most streams are forecast in the 80-100% of average range, the exceptions are Ririe Reservoir inflow at 64% of average and the Portneuf River at 78%. As a result of the promising water supply outlook conditions, releases are being made from American Falls Reservoir and anticipated releases are expected from Palisades Reservoir. Surface water supplies should be adequate for the many Snake River water users.

Upper Snake River Basin
Streamflow Forecasts - February 1, 2015

UPPER SNAKE RIVER BASIN	Forecast Period	Forecast Exceedance Probabilities for Risk Assessment Chance that actual volume will exceed forecast 90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Henrys Fk nr Ashton[2]	APR-JUL	280	365	425	80%	485	570	530
	APR-SEP	400	500	570	80%	640	740	710
Falls R nr Ashton[2]	APR-JUL	235	280	310	85%	340	385	365
	APR-SEP	285	340	375	86%	410	465	435
Teton R nr Driggs	APR-JUL	93	122	142	92%	162	191	154
	APR-SEP	116	153	178	92%	205	240	193
Teton R nr St Anthony	APR-JUL	235	300	345	95%	390	455	365
	APR-SEP	285	360	410	94%	460	535	435
Henrys Fk nr Rexburg[2]	APR-JUL	785	1010	1160	83%	1310	1530	1400
	APR-SEP	965	1250	1450	81%	1650	1930	1790
Snake R at Flagg Ranch	APR-JUL	285	355	400	86%	445	515	465
	APR-SEP	315	390	440	86%	490	565	510
Snake R nr Moran[2]	APR-JUL	415	575	645	84%	715	875	765
	APR-SEP	460	640	720	85%	800	980	845
Pacific Ck at Moran	APR-JUL	110	134	151	92%	168	192	164
	APR-SEP	117	143	160	92%	177	205	173
Buffalo Fk ab Lava Ck nr Moran	APR-JUL	190	230	260	93%	290	330	280
	APR-SEP	220	265	300	94%	335	380	320
Snake R ab Reservoir nr Alpine[2]	APR-JUL	1580	1990	2170	100%	2350	2760	2170
	APR-SEP	1810	2290	2500	100%	2710	3190	2500
Greys R ab Reservoir nr Alpine	APR-JUL	240	290	320	105%	350	400	305
	APR-SEP	285	340	375	104%	415	470	360
Salt R ab Reservoir nr Etna	APR-JUL	182	250	300	100%	345	415	300
	APR-SEP	235	315	370	100%	425	505	370
Snake R nr Irwin [2]	APR-JUL	2070	2710	3000	100%	3290	3930	3010
	APR-SEP	2410	3160	3500	100%	3840	4590	3500
Snake R nr Heise[2]	APR-JUL	2470	2920	3230	100%	3540	3990	3240
	APR-SEP	2900	3430	3790	100%	4150	4680	3780
Willow Ck nr Ririe[2]	MAR-JUL	15.9	31	43	64%	58	84	67
Portneuf R at Topaz	MAR-JUL	30	47	59	78%	71	88	76
	MAR-SEP	37	58	73	78%	88	110	93
Snake R at Neeley[2]	APR-JUL	220	1440	2000	75%	2560	3780	2650

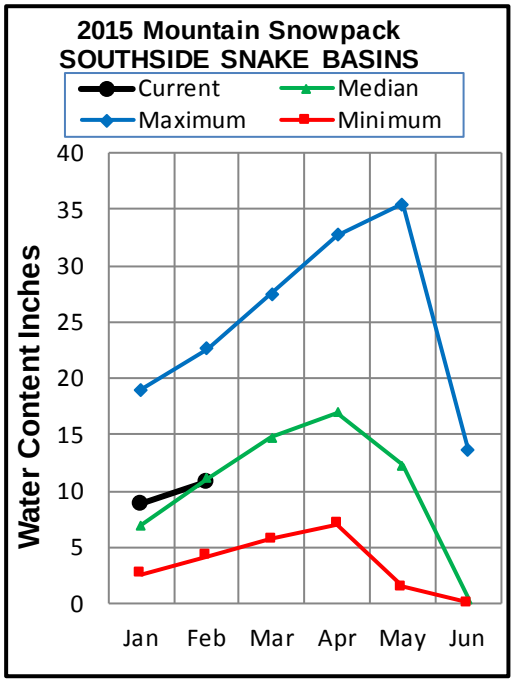
1) 90% and 10% exceedance probabilities are actually 95% and 5%
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
Normals are based on 1981-2010 reference period; streamflow, precipitation and reservoir normals are averages, snow water equivalent are medians.

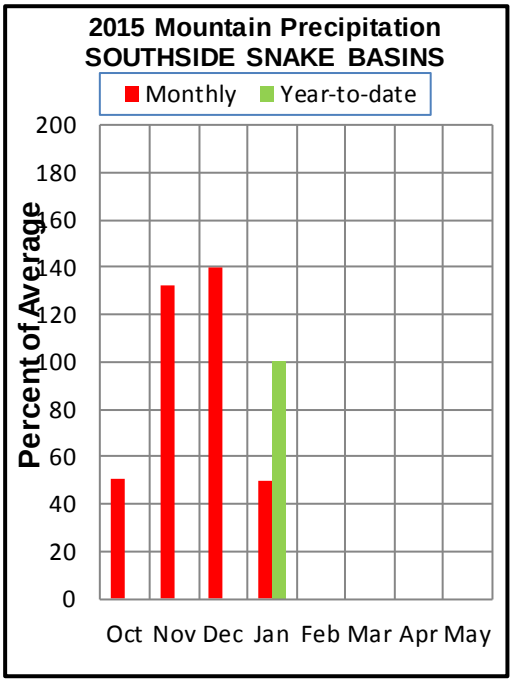
Reservoir Storage End of January, 2015	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Jackson Lake	649.4	200.2	431.2	847.0
Palisades Reservoir	1133.0	482.9	911.2	1400.0
Henrys Lake	88.3	73.4	80.1	90.4
Island Park Reservoir	110.3	85.9	100.0	135.2
Grassy Lake	12.7	13.4	11.9	15.2
Ririe Reservoir	45.5	43.3	38.7	80.5
Blackfoot Reservoir	159.8	155.1	176.3	333.5
American Falls Reservoir	1183.9	943.7	1116.0	1672.6
Basin-wide Total	3382.9	1997.8	2865.4	4574.4
# of reservoirs	8	8	8	8

Watershed Snowpack Analysis February 1, 2015	# of Sites	% Median	Last Year % Median
Henrys Fork-Falls River	8	93%	85%
Teton River	9	104%	88%
Henrys Fork ab Rexburg	17	98%	86%
Snake River ab Jackson Lake	12	98%	85%
Pacific Creek	4	109%	104%
Buffalo Fork	3	118%	98%
Gros Ventre River	4	110%	102%
Hoback River	6	121%	101%
Greys River	4	116%	107%
Salt River	5	103%	105%
Snake ab Palisades Resv	33	106%	93%
Willow Creek	4	116%	107%
Blackfoot River	4	93%	66%
Portneuf River	6	82%	66%
Snake River ab American Falls	52	100%	86%

SOUTHSIDE SNAKE RIVER BASINS

FEBRUARY 1, 2015





WATER SUPPLY OUTLOOK

January precipitation was only half of average in these basins crossing Idaho's southern border, but still stands at near normal since the water year started October 1, 2014. A mid-January snow storm brought snow to the valley floor in south central Idaho but not as much in the higher elevations. Snowpacks are the lowest in the southwest corner with the Owyhee basin at 72% of average and increase to 112% and 117% in the Oakley and Raft basins, respectively. So far the early February storms appears to be hitting and helping these southern Idaho basins. Let's hope the wet trend continues through the month as this region hosts some of the lowest reservoir storage levels in the state. Streamflow forecasts mirror the snowpacks and only call for only 50% of average in the Owyhee watershed, 85% for the Bruneau River and Salmon Falls Creek. Oakley Reservoir Inflow is slightly better at 93%. Three years of drought with well below normal streamflow in these basins is taking its toll on water availability. Normal or better future precipitation is needed to keep these forecasts in this decent water supply zone. Based on the 50% Chance of Exceedance Forecasts, water supplies will be marginal for Oakley, Salmon Falls and Owyhee reservoir water users. Lessons learned from recent dry years: users may wish to use the lower exceedance streamflow forecast to reduce risk of being water short. Stay tuned to see if 2015 becomes the fourth consecutive year with well below normal flows or if the promising Atmospheric River slated to arrive in early February brings abundant moisture to these drought ridden basins.

Southside Snake River Basins
Streamflow Forecasts - February 1, 2015

SOUTHSIDE SNAKE RIVER BASINS	Forecast Period	Forecast Exceedance Probabilities for Risk Assessment Chance that actual volume will exceed forecast 90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Goose Ck abv Trapper Ck nr Oakley								
	MAR-JUL	10	15.6	20	91%	25	34	22
	MAR-SEP	10.4	16.4	21	88%	27	36	24
Trapper Ck nr Oakley								
	MAR-JUL	4	4.9	5.6	95%	6.4	7.6	5.9
	MAR-SEP	5	6	6.8	96%	7.6	8.9	7.1
Oakley Reservoir Inflow								
	MAR-JUL	13.7	20	26	93%	31	41	28
	MAR-SEP	15	22	28	90%	34	45	31
Salmon Falls Ck nr San Jacinto								
	MAR-JUL	41	57	68	84%	82	103	81
	MAR-SEP	44	60	72	85%	85	107	85
Bruneau R nr Hot Spring								
	MAR-JUL	89	139	174	85%	210	260	205
	MAR-SEP	93	146	182	85%	215	270	215
Reynolds Ck at Tollgate								
	MAR-JUL	1.5	2.9	3.1	35%	4.9	7.6	8.8
Owyhee R nr Gold Ck[2]								
	MAR-JUL	7.9	13.1	17.7	63%	23	33	28
	MAR-SEP	6.9	11.6	15.7	58%	21	30	27
	APR-JUL	3.2	7.1	11	50%	16.3	27	22
Owyhee R nr Rome								
	FEB-JUL	99	191	270	47%	365	525	580
	FEB-SEP	108	205	285	48%	380	545	595
	APR-SEP	48	115	176	48%	250	385	365
Owyhee R bl Owyhee Dam[2]								
	FEB-JUL	115	215	305	48%	410	585	635
	FEB-SEP	133	240	330	50%	435	615	665
	APR-SEP	74	147	210	52%	285	415	405
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]								
	APR-JUL	9990	16400	19300	97%	22200	28600	19848
	APR-SEP	11100	18300	21600	97%	24900	32100	22280

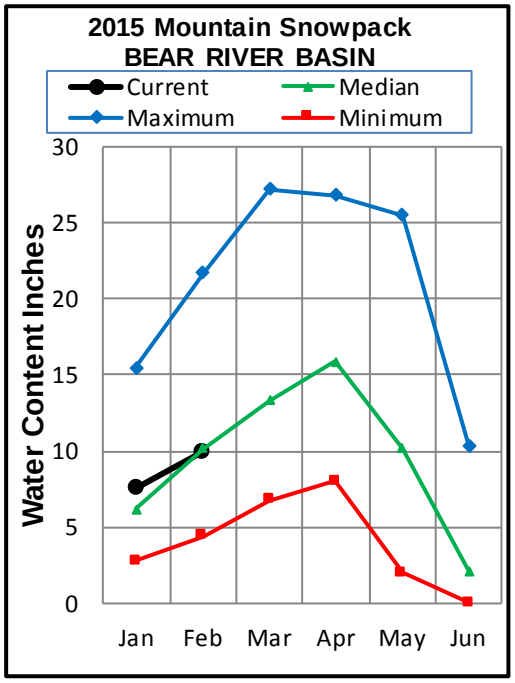
1) 90% and 10% exceedance probabilities are actually 95% and 5%
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
Normals are based on 1981-2010 reference period; streamflow, precipitation and reservoir normals are averages, snow water equivalent are medians.

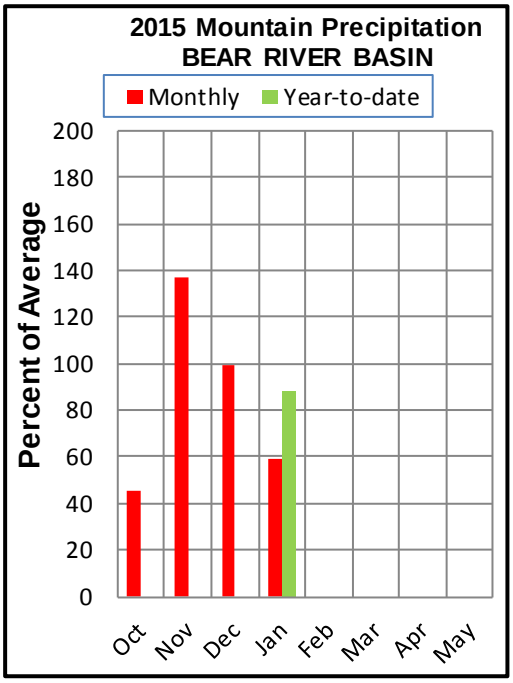
Reservoir Storage **End of January, 2015**	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Oakley Reservoir	17.2	18.1	22.5	75.6
Salmon Falls Reservoir	20.2	14.6	43.3	182.6
Wild Horse Reservoir	12.2	13.0	33.2	71.5
Lake Owyhee	119.7	77.8	345.3	715.0
Brownlee Reservoir	1634.4	1287.4	1189.0	1420.0
Basin-wide Total	1803.7	1410.9	1633.3	2464.7
# of reservoirs	5	5	5	5

Watershed Snowpack Analysis **February 1, 2015**	# of Sites	% Median	Last Year % Median
Raft River	2	117%	59%
Goose-Trapper Creeks	2	112%	55%
Salmon Falls Creek	7	103%	55%
Bruneau River	8	88%	44%
Reynolds Creek	7	81%	46%
Owyhee Basin Total	11	61%	36%
Owyhee Basin Snotel Total	8	68%	42%

BEAR RIVER BASIN

FEBRUARY 1, 2015





WATER SUPPLY OUTLOOK

January precipitation across the Bear River basin was well below normal with some areas receiving only 30% of average. Luckily the rainfall from the first quarter of the water year provided a small buffer, so January ended with water year to date precipitation ranging from a low of 65% in Mink Creek to a high of 99% of average in the Smith-Thomas. February 1st snowpack numbers are slightly better than the precipitation numbers, with Mink Creek reporting 72% of median snowpack, while the Smith-Thomas is at 109%, and the remaining basins are 86-94% of normal snowpack. Bear Lake storage ended January with 548,000 acre-feet of active storage, 42% of capacity, which is slightly below average for this time of year. Montpelier Reservoir is 60% of capacity, which is well above normal, 140%, for this time of year. Streamflow forecasts show a large range of variability with the Little Bear River projected to have only 41% of average flows, while the Smiths Fork River is projected at 100% of flows. The Bear River below Stewart Dam is forecasted at only half of average, which is the runoff amount received last year, but will have adequate irrigation supplies due to Bear Lake storage.

NOTE: the reported capacity of Bear Lake was decreased to 1,302 KAF from 1,421 KAF in order for NRCS to implement its new single, corporate database and centralized reporting tools. It was necessary to have only one capacity for Bear Lake. For more than 25 years, Idaho has reported the Inactive Storage (119 KAF) plus Active Storage (1,302 KAF) for a total Usable Storage of 1,421 KAF. Since 2002 Utah only reported the Active Storage (1,302 KAF). It was decided that a “usable storage” definition would best be used even though the 119 KAF storage can be released and must be filled before water can be allocated. Users should also be aware that the historic reservoir data is rounded up to zero rather than displaying a negative value when storage levels decrease to less than zero Active Storage and into the 119 KAF of Inactive Storage. This has occurred in years 1935-1936 and 2004-2005.

Bear River Basin
Streamflow Forecasts - February 1, 2015

BEAR RIVER BASIN	Forecast Period	Forecast Exceedance Probabilities for Risk Assessment Chance that actual volume will exceed forecast 90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
Bear R nr UT-WY State Line								
	APR-JUL	44	68	85	76%	101	125	112
	APR-SEP	49	75	93	76%	111	138	123
Bear R ab Resv nr Woodruff								
	APR-JUL	3.6	52	90	74%	128	184	121
	APR-SEP	3.8	47	95	74%	143	215	128
Big Ck nr Randolph								
	APR-JUL	0.34	1.63	2.5	66%	3.4	4.7	3.8
Smiths Fk nr Border								
	APR-JUL	52	74	88	99%	102	124	89
	APR-SEP	65	89	105	101%	121	145	104
Bear R bl Stewart Dam[2]								
	FEB-JUL	6.4	50	112	52%	174	266	215
	FEB-SEP	7.2	56	125	52%	194	296	240
	MAR-JUL	4.1	41	102	50%	163	252	205
	MAR-SEP	4.6	47	115	50%	183	283	230
Little Bear at Paradise								
	APR-JUL	0.41	6.8	17	41%	27	42	41
Logan R nr Logan								
	APR-JUL	26	56	76	68%	96	126	111
Blacksmith Fk nr Hyrum								
	APR-JUL	5.7	20	30	70%	40	54	43

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
Normals are based on 1981-2010 reference period; streamflow, precipitation and reservoir normals are averages, snow water equivalent are medians.

Reservoir Storage **End of January, 2015**	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Bear Lake	548.1	536.2	584.8	1302.0
Montpelier Reservoir	2.4	1.2	1.7	4.0
Basin-wide Total	550.5	537.4	586.5	1306.0
# of reservoirs	2	2	2	2

Watershed Snowpack Analysis **February 1, 2015**	# of Sites	% Median	Last Year % Median
Smiths-Thomas Forks	4	109%	100%
Bear River ab WY-ID Line	10	88%	88%
Montpelier Creek	2	88%	79%
Mink Creek	1	72%	61%
Cub River	1	94%	65%
Bear River ab ID-UT Line	18	89%	82%
Malad River	1	86%	66%

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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