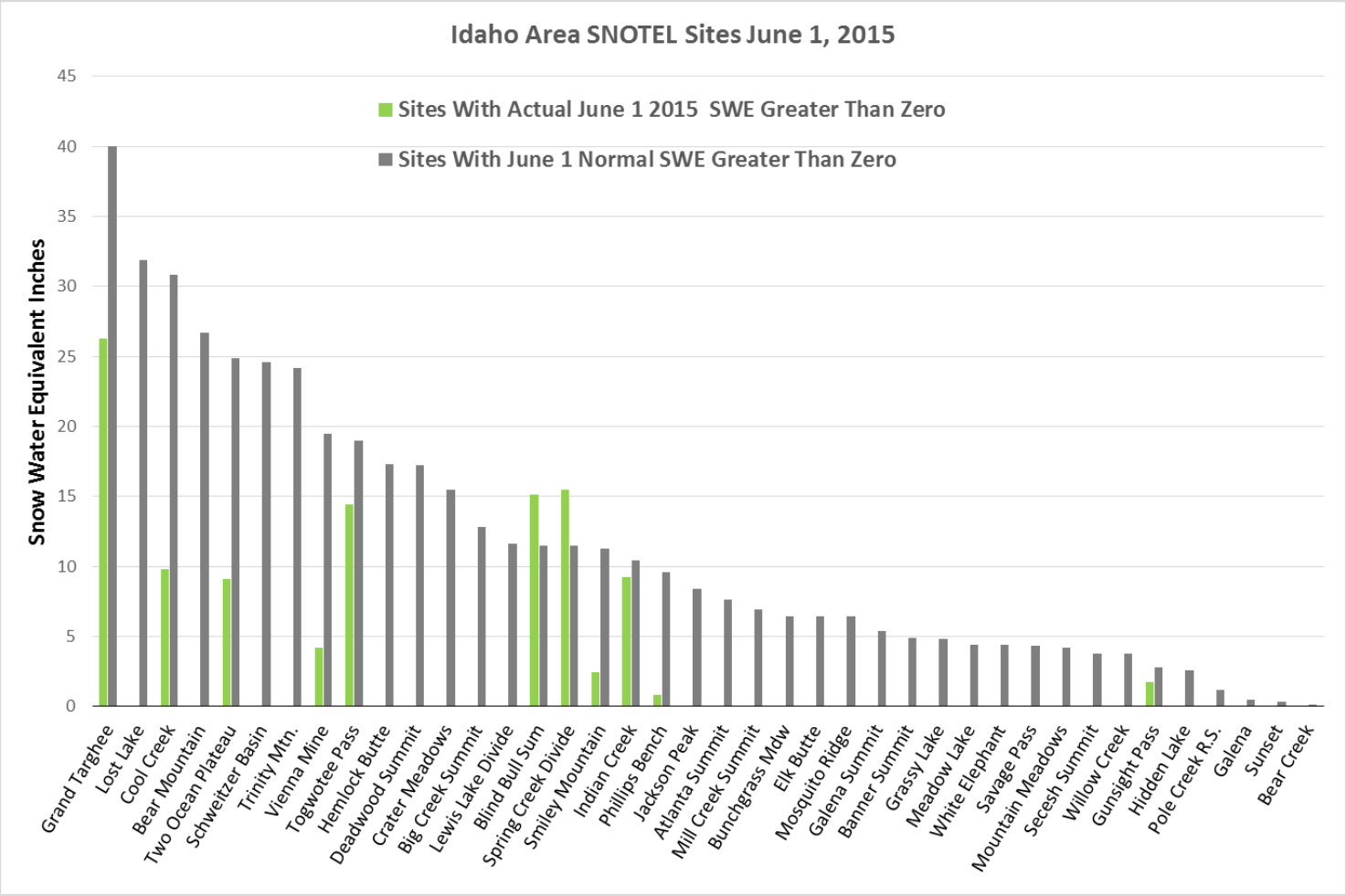
United States Department of Agriculture

Natural Resources Conservation Service

Idaho Water Supply Outlook Report
June 1, 2015



Summer streamflow in Idaho depends on the high mountain snowpack that normally persists through June and early July. The Boise NRCS Snow Survey office maintains 120 total SNOTEL sites, mostly in Idaho and western Wyoming, with a few in northern Nevada and eastern Washington. Out of the 120 sites, 41 would normally have snow remaining on June 1, with some at the high elevations still holding a considerable amount. This winter, however, was far from normal in the snowpack department and the graph shows only 11sites total even have snow this June! The result of this historic lack of winter snow is the predicted summer streamflow volumes for the June – September period are well below normal across the region, with some basins forecast at near record lows. Water users should prepare for significant shortages this summer although a few areas have decent reservoir carryover storage from last year that will mitigate the overall effect of the low stream flows projected. Conditions vary around the state, so read the full report to assess your particular area of interest.

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

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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
June 1, 2015

SUMMARY
A change in the weather pattern in May brought much needed moisture south of the Salmon River, but left northern Idaho out to dry with only half the normal May amounts falling. Combining this lack of spring precipitation in the Idaho Panhandle Region with the warm and dry winter, and early melt, set the stage for many northern Idaho rivers that are now flowing at or just above their historic minimums for this time of year. Some of these streamflow measuring stations stretch back nearly 100 years. Spring precipitation is the final piece of the water supply puzzle that can make a difference in our water supply outlook, and it did. Summer precipitation can help but usually is not enough to change the water supply outlook. During May, the West-Central Mountains that make up the Payette River drainage were on the edge of receiving the benefits of May's precipitation but only received 55-70% of normal May amounts. Idaho's central and southern basins were the big winners receiving one to two times their normal amounts because of the weather pattern that brought moisture from the south to the north. This May weather pattern was nearly 180 degrees opposite the winter's jet stream track that avoided the Pacific Northwest and brought moisture south along the continental divide and into the Midwest.

SNOWPACK

For a June 1 Snowpack report, this is going to be a pretty boring section. Usually, Idaho mountain snowpack is in full swing with snowmelt water gushing out of the mountain snowpack and filling our streams and reservoirs, but not this year. Across the state, the warm and dry winter has taken its toll on our snowpack and the impacts are now being felt. Of the 137 SNOTEL stations in and around Idaho that are used to inventory Idaho's regional snowpack, only 16 sites still have any snow water equivalent (SWE) to measure. Normally 55 of the 137 SNOTEL sites have a June 1 SWE normal greater than zero for the 1981-2010 period. Only 3 of the 16 sites are in Idaho, which means most of the remaining snow is in the higher elevations along the Idaho/Montana border and Upper Snake in Wyoming. From north to south, these 16 sites are: Hoodoo Basin, Cool Creek, Darkhorse Lake, Saddle Mountain, Jackson Peak, Vienna Mine, Smiley Mountain, Black Bear, Grand Targhee, Phillips Bench, Blind Bull Summit, Gunsight Pass, Spring Creek Divide, Togwotee Pass, Two Ocean and Trial Lake in Utah. For those still watching the snowpack, you should look at and use the actual data from the site as snowpack percentages can be misleading in a year like this. Historic June 1 snow indexes are on our **Historic Data** page and can be used to find other similar low snow years.

PRECIPITATION

The highest May precipitation amounts received were 7-10 inches across southern and eastern Idaho and in the 250% of average range. Northern Idaho amounts were only in the 1-3 inch range and about 40-60% of average. Water year to date precipitation amounts remain encouraging across most of the state but do not actually reflect the current water supply outlook picture. With more of this winter's moisture falling as rain except in the highest elevations, most of the benefits of the moisture are now behind us. Without mountain snow to melt and feed the streams this summer, streamflow levels will continue dropping. Additional rain or summer monsoons would help ease the low streamflow levels, which would assist in meeting irrigation demand. Keep in mind most rain runoff events are flashy runoff events and do not increase streamflows for an extended period of time like snowmelt does. However, the intense August 2014 monsoons did provide much needed moisture in the middle of summer and there's a chance that could repeat this year.

RESERVOIRS

As mentioned every month this season, reservoir storage varies across the state and the status of each reservoir is a function of which phase of the hydrologic cycle the watershed is in, the remaining snow in the basin, and now, the benefits of the May rains across southern Idaho. The common thread for all the reservoirs this year is that with limited inflows, drafting will occur earlier than normal which will put many water storage facilities at their minimal storage levels by summer's end or before. The unknown variable at this time is summer's temperatures and precipitation patterns which directly determine summer's irrigation demand. Persistence still seems to be the best forecast as we enter our typical drier summer months, and it looks like the May weather pattern observed will still be around until mid-June when dry conditions associated with high pressure will likely begin to set up for the summer months.

Reservoir status from north to south:

- Priest Lake is full but with June-July inflows forecast at only half of average is now turning out to be one of the drier years on record in the Panhandle Region.
- Lake Pend Oreille is 89% full, inflows from Montana and Canadian streams are projected at 60-80% of average.
- Lake Coeur d'Alene was within three inches of filling in May. Avista, like all power companies, not only operates their facilities for power production but also for fisheries and is still maintaining at least 3,600 cfs out of the lake to keep fish eggs covered though June 7th. However, because of the record low inflows in May on the St Joe and Coeur d'Alene rivers, the lake dipped to six inches below full on June 1. After the critical June 7th date, Avista will decrease outflows with hopes to bring Lake Coeur d'Alene back to full.
- Similar operations occurred in May with Dworshak Reservoir. Water was released for fish flows which made it a challenge to fill Dworshak in mid-May. The reservoir is now 99% full, 110% of average but with the inflow forecast at only half of average, the reservoir won't be full for long this year.
- The Payette system is now full in early June even though the Payette is experiencing one of its lower runoff years, lowest since 2007.
- The Boise reservoir system is 93% full with Lucky Peak nearly full at 99%, Arrowrock Reservoir (the middle reservoir) at 79% full, and Anderson Ranch Reservoir nearly full at 97%.
- Magic Reservoir is currently 42% full, slightly better than last year and temporarily shut off irrigation flows out of the dam during the wet May spell to save water.
- Little Wood Reservoir is 2/3 full and will be out of water by mid to late July or early August even for senior water right users for the second consecutive year.
- Mackay Reservoir is 80% full but with near record low inflows predicted this summer will result in shortages similar to or worse than last year.
- The Henrys Fork storage facilities (Henrys Lake, Island Park Reservoir and Grassy Lake) are 99% full and on the divide with drier basins to west (Mud Lake area) and wetter areas to the east (Upper Snake area in Wyoming).
- Jackson Lake is full while Palisades Reservoir is 85% full. Combined they are 91% full, which is 125% of average. The wet May helped to reduce the unusually high irrigation demand by saving water in the reservoir but the Snake River near Heise is still only forecast at 62% of average for the June-September period.
- Oakley Reservoir increased 2,000 acre-feet from a month ago and is now 32% full.

- Salmon Falls Reservoir also benefited from the May rains after the reservoir gates were opened in mid-April. The reservoir actually had two storage peaks with the current June 1 storage of 20% full nearly equaling the April 18 peak storage.
- Wild Horse Reservoir is 23% full and storing 1,600 acre-feet more than a month ago.
- Lake Owyhee peaked in storage at 200,000 acre-feet in mid-April, just slightly better than last year but is currently only 21% full, 29% of average.
- Brownlee Reservoir is nearly full but with limited inflows from the middle and upper Snake this year, Idaho Power will be monitoring outflows very close to maximize its operations.
- Montpelier Reservoir is full for the second consecutive month, spilling over the spillway and has 500 acre-feet more than a year ago!
- Bear Lake is another bright spot in the state with the lake half full which is 90% of average and will provide adequate irrigation supplies for the Bear Lake water users.

STREAMFLOW

Overall, the water supply outlook didn't change a whole lot from what was mentioned in previous months. The warm and dry months of March and April created an unusually high and early irrigation demand. A return to more normal temperatures combined with several weeks of precipitation helped tremendously by reducing irrigation demand and putting more water in storage. The rains provided a bonus and pushed the streamflow hydrograph out to be higher for an extended period. Our streamflow forecast equations do not use future precipitation but for the 50% Chance of Exceedance Forecast to occur normal spring precipitation is needed.

Current streamflow forecasts for the June-September period vary across the state and range from 20-70% of average across the region. See individual sections for specific forecasts. Surface irrigation shortages are still expected in the Big Wood, Little Wood, Big Lost, Little Lost, Oakley, Salmon Falls, and Owyhee basins. Wise use and planning of water will stretch water supplies for the Snake and Boise water users with hope to make it through the irrigation season for most users.

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

As mentioned last month, in years like this when the snow streamflow peaks are low, it is easier for spring rain generated peaks to exceed the snow melt streamflow peak, and it happened. Most of Idaho's streams had their snowmelt streamflow peaks and a bonus rain generated another peak for many. Snowmelt alone was not enough to generate very high flows this year, however the benefits of May's rains were noticeable in streams across southern Idaho. There would not have been much of a bump in the streamflow hydrographs in the Owyhee, Bruneau, Salmon Falls, Goose and Bear drainages if it were not for the May rain. Central Idaho streams and streams in the Upper Snake also benefited from the additional moisture. The rain helped to sustain flows right when the snow melt peak flows were occurring. This was especially noticeable in the MF Salmon River and will benefit river runners by keeping the flows higher a little longer. The last major stream to have its snowmelt streamflow peak is the Teton River and will happen in early June. With low summer streamflow forecasts across most of the state, river runners and water users can expect very low streamflow levels this summer, especially in northern Idaho. Snowmelt streamflow relationship graphs are updated several days a week during the snowmelt season on our Peak Streamflow Information web page.

IDAHO SURFACE WATER SUPPLY INDEX (SWSI) June 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.

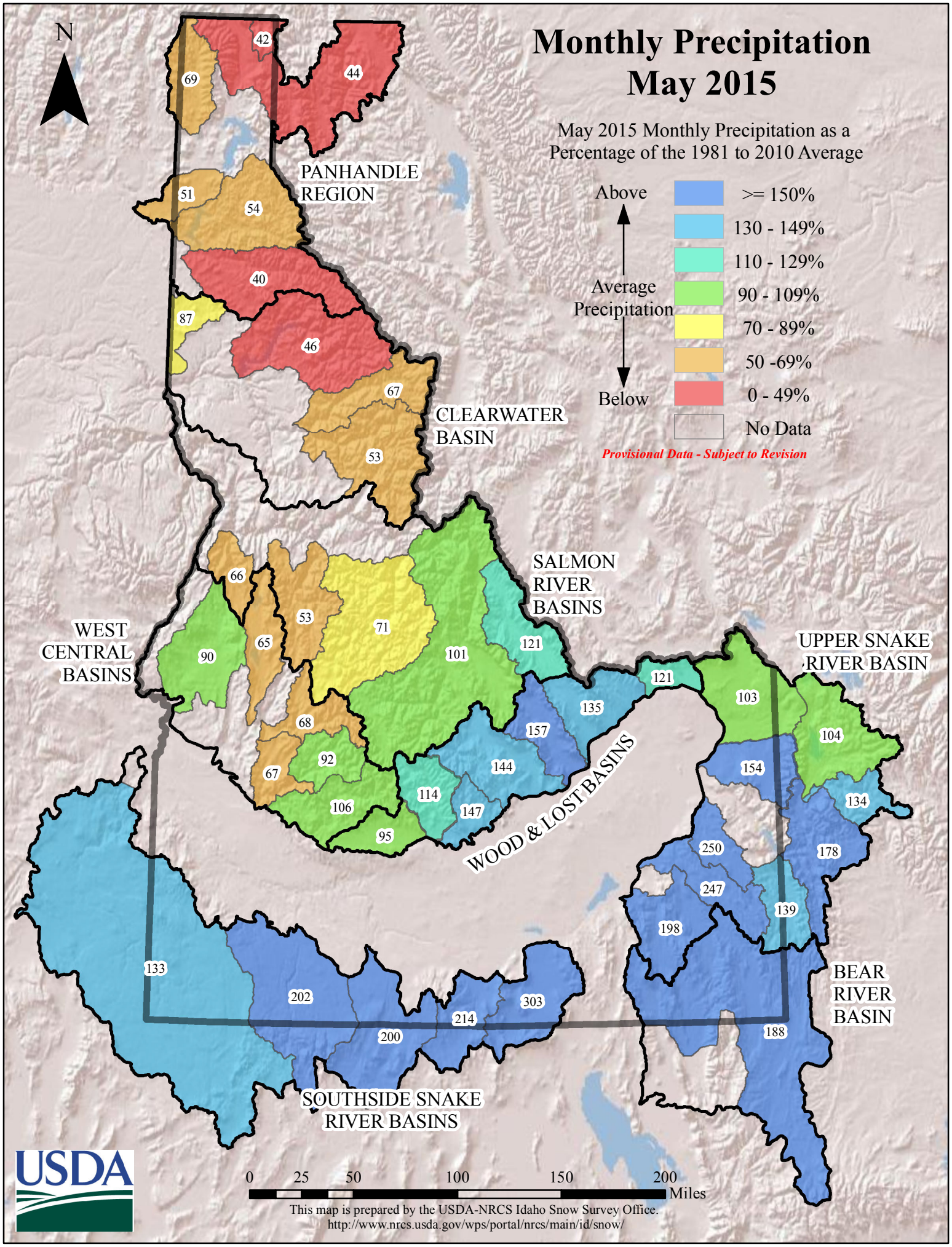
SWSI values provide a more comprehensive outlook of water availability by combining streamflow forecasts and reservoir storage where appropriate. The SWSI index allows comparison of water availability between basins for drought or flood severity analysis. Threshold SWSI values have been determined for 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	**-2.9**	**2014**	**NA**
Spokane	**-4.0**	**1994**	**NA**
Clearwater	**-1.9**	**2006**	**NA**
Salmon	**-2.6**	**2013**	**NA**
Weiser	**-2.4**	**2013**	**NA**
Payette	**-2.8**	**2007**	**NA**
Boise	**-1.5**	**2005**	**-2.3**
Big Wood	**-2.1**	**2013**	**-0.6**
Little Wood	**-3.3**	**2014**	**-1.8**
Big Lost	**-3.1**	**2014**	**0.4**
Little Lost	**-3.3**	**2001**	**1.1**
Teton	**-2.6**	**2003**	**-3.9**
Henrys Fork	**NA**	**NA**	**NA**
Snake (Heise)	**-1.2**	**2005**	**-1.3**
Oakley	**-2.4**	**2004**	**0.6**
Salmon Falls	**-3.3**	**2014**	**-0.8**
Bruneau	**-2.9**	**2007**	**NA**
Owyhee	**-3.6**	**2014**	**-3.2**
Bear River	**-0.5**	**2014**	**-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.


Monthly Precipitation
May 2015
May 2015 Monthly Precipitation as a Percentage of the 1981 to 2010 Average
Above
Average Precipitation
Below
>= 150%
130 - 149%
110 - 129%
90 - 109%
70 - 89%
50 -69%
0 - 49%
No Data
Provisional Data - Subject to Revision
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
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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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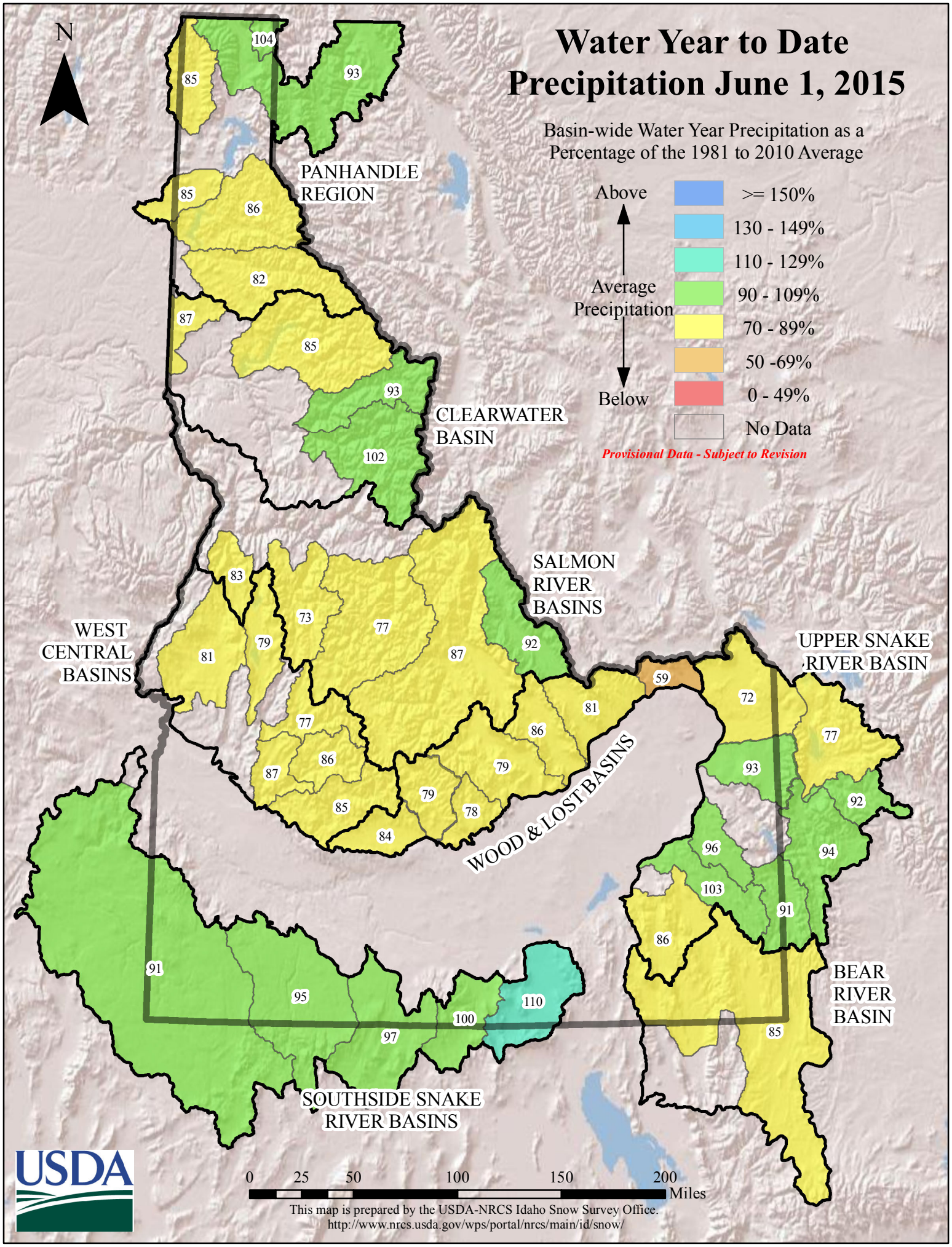
Water Year to Date
Precipitation June 1, 2015
Basin-wide Water Year Precipitation as a
Percentage of the 1981 to 2010 Average
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Precipitation
Below
>= 150%
130 - 149%
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Provisional Data - Subject to Revision
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Miles
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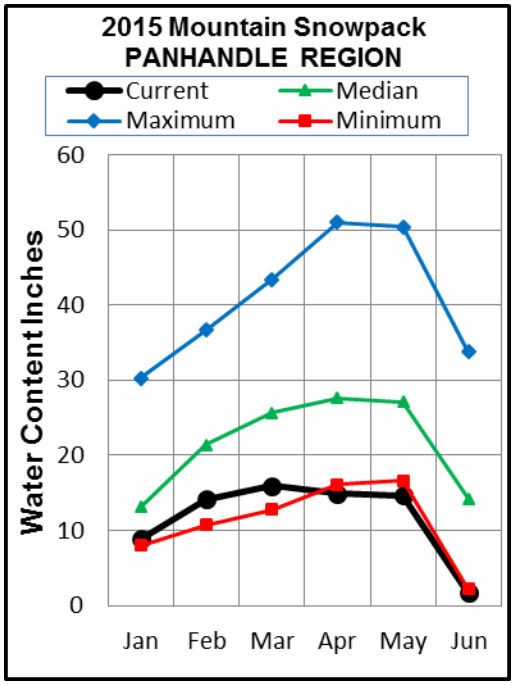
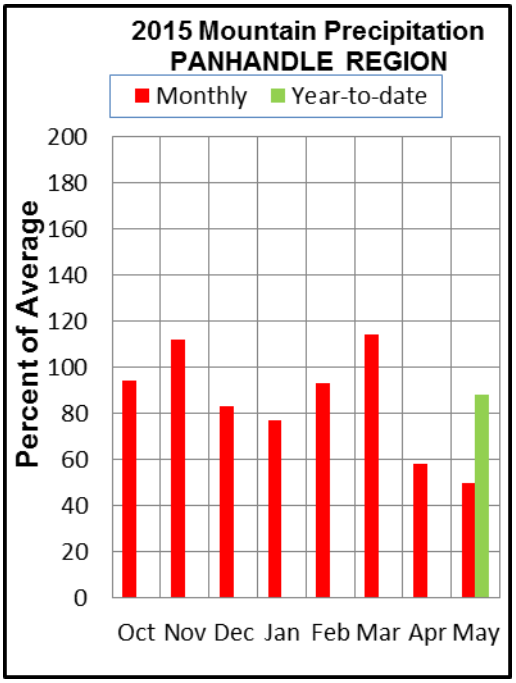
PANHANDLE REGION

JUNE 1, 2015





WATER SUPPLY OUTLOOK

May precipitation in the Panhandle region was similar to April, amounts were again below historical averages in all major drainages for the month. Panhandle region-wide month to date and water year to date precipitation are 50% and 88% of average, respectively. The consistently active weather pattern that benefitted the southern half of the state was less impactful in the Panhandle region; however, the active pattern is forecast to continue and shift north to begin June which should bring some much needed precipitation. Priest River, Rathdrum Creek and Palouse River led the Panhandle region drainages at about 70-85% of monthly average precipitation. The remainder of the Panhandle region drainages were 55% or lower than the average May amounts. The scattered nature of the precipitation events, which is more common this time of year with increased thunderstorm activity, is revealed by the Myrtle Creek and Hidden Lake SNOTEL precipitation data. These sites are in the Kootenai drainage and are separated by less than 20 miles, yet Hidden Lake (5,040 ft) received 0.7" in May while Myrtle Creek (3,520 ft) received 2.5". Of the 34 SNOTEL sites in the Panhandle region drainages, 15 sites normally still have snow on June 1st, this year only 3 sites reported snow as of June 1st. Little to no snow remains but reservoir operators were able to capture earlier than normal runoff and reservoirs in the Panhandle region are 90-100% of capacity. Streamflow volume forecasts for June-September range from a low of 26% of average for the Spokane River near Post Falls to a high of 75% of average for the Kootenai River at Leonia.

Panhandle Region
Streamflow Forecasts - June 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								
	JUN-JUL	38	64	82	62%	100	126	133
	JUN-SEP	46	75	94	64%	114	142	147
Kootenai R at Leonia[1,2]								
	JUN-JUL	1730	2320	2590	71%	2860	3460	3640
	JUN-SEP	2430	3150	3480	75%	3810	4530	4640
Boundary Ck nr Porthill								
	JUN-JUL	13.1	22	28	67%	34	43	42
	JUN-SEP	16	26	33	69%	39	49	48
Clark Fork R at Whitehorse Rapids[1,2]								
	JUN-JUL	1880	2630	2970	59%	3310	4060	5070
	JUN-SEP	2350	3240	3640	60%	4050	4940	6090
Pend Oreille Lake Inflow[2]								
	JUN-JUL	2180	2760	3150	57%	3550	4130	5480
	JUN-SEP	2660	3360	3830	59%	4310	5010	6520
Priest R nr Priest River[2]								
	JUN-JUL	41	88	120	44%	152	199	275
	JUN-SEP	57	113	151	46%	189	245	325
NF Coeur dAlene R at Enaville								
	JUN-JUL	9.6	35	53	35%	71	96	150
	JUN-SEP	22	53	73	39%	93	124	187
St. Joe R at Calder[2]								
	JUN-JUL	0.43	64	107	31%	150	215	345
	JUN-SEP	47	114	159	39%	205	270	410
Spokane R nr Post Falls[2]								
	JUN-JUL	16.4	102	160	26%	220	305	620
	JUN-SEP	70	134	186	26%	265	380	705
Spokane R at Long Lake								
	JUN-JUL	130	225	290	36%	355	450	795
	JUN-SEP	210	340	430	42%	520	655	1030

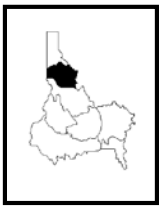
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
3) Median value used in place of average
Normals are based on 1981-2010 reference period; streamflow, precipitation and reservoir normals are averages, snow water equivalent are medians.

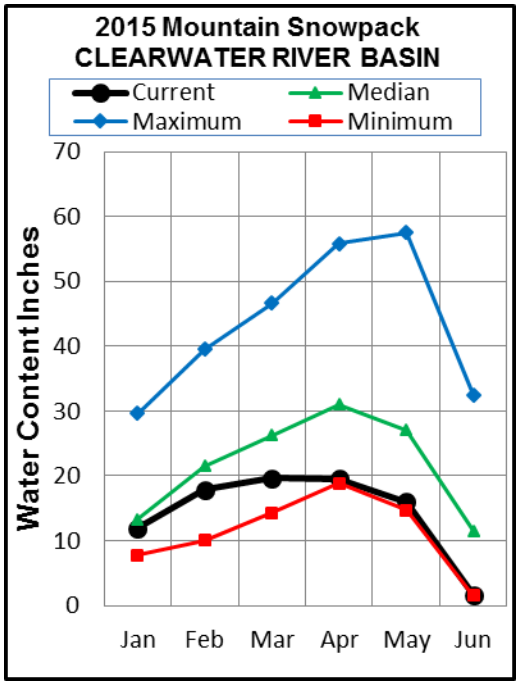
Reservoir Storage End of May, 2015	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Hungry Horse Lake	3048.6	2641.7	2733.0	3451.0
Flathead Lake	1584.4	1589.4	1538.0	1791.0
Noxon Rapids Reservoir		328.7	324.2	335.0
Lake Pend Oreille	1388.7	1402.4	1337.0	1561.3
Priest Lake	123.0	140.8	137.2	119.3
Lake Coeur d' Alene	216.7	210.8	265.5	238.5
Basin-wide Total	6361.3	5985.0	6010.7	7161.1
# of reservoirs	5	5	5	5

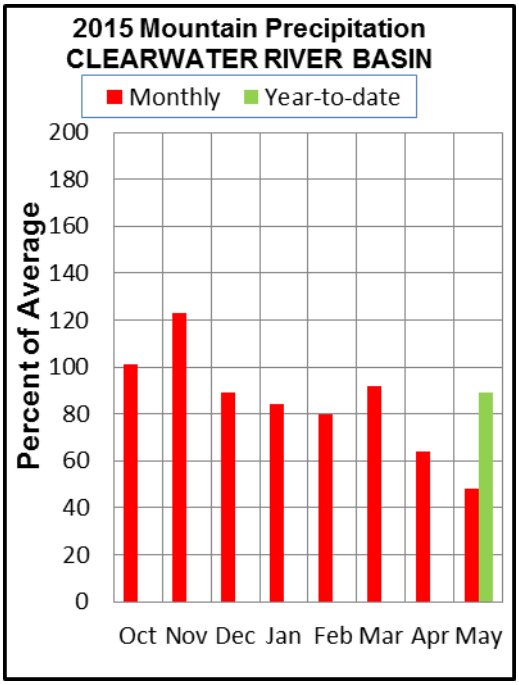
Watershed Snowpack Analysis June 1, 2015	# of Sites	% Median	Last Year % Median
Moyie River	1	0%	93%
Priest River	2	0%	136%
Rathdrum Creek	2		
Coeur d' Alene River	4	0%	260%
St. Joe River	4	19%	160%
Spokane River	10	17%	171%
Palouse River	2		
Kootenai ab Bonners Ferry	9	13%	154%

CLEARWATER RIVER BASIN

JUNE 1, 2015







WATER SUPPLY OUTLOOK

Another month and another similar result for the Clearwater basin, May precipitation was about half of the 30 year monthly average which marks the second consecutive month of low precipitation. Water year to date precipitation is still near 90% of average, in spite of the dry spring. The lack of precipitation this spring took its toll on the Clearwater snowpack. Lost Lake SNOTEL site, which has a median SWE (snow water equivalent) of 31.9" on June 1st, melted out a few days before June 1st this year. Meanwhile, Cool Creek SNOTEL site only received 1.2" of precipitation in May, which is the lowest May total in the period of record since the site was installed in 1984. Some good news is that there's still snow to melt above 6,000 feet, the bad news is there's not much, with about 10" of SWE left at Cool Creek and Hoodoo Basin as of June 1st. The Selway and Lochsa rivers likely experienced their seasonal peak flows in mid-May. The Selway often has two spring streamflow peaks, but with limited snow left to melt a second peak is unlikely without additional precipitation. As of June 1st, Dworshak Reservoir is at 99% of capacity. Operators topped off the reservoir earlier than normal this year because of the lower than normal runoff, Dworshak inflow is forecast at 56% (555 KAF [thousands of acre-feet]) of average for June-September reflecting the poor winter snowpack.

Clearwater River Basin
Streamflow Forecasts - June 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								
	JUN-JUL	435	555	640	78%	720	845	820
	JUN-SEP	505	640	730	80%	825	955	915
Lochsa R nr Lowell								
	JUN-JUL	250	335	395	70%	455	540	565
	JUN-SEP	300	395	460	72%	525	615	640
Dworshak Reservoir Inflow[2]								
	JUN-JUL	175	320	420	50%	520	665	845
	JUN-SEP	285	445	555	56%	665	825	1000
Clearwater R at Orofino								
	JUN-JUL	820	1120	1320	76%	1520	1820	1730
	JUN-SEP	975	1310	1540	79%	1760	2100	1960
Clearwater R at Spalding[2]								
	JUN-JUL	960	1410	1710	66%	2010	2460	2610
	JUN-SEP	1220	1720	2070	69%	2410	2920	2990

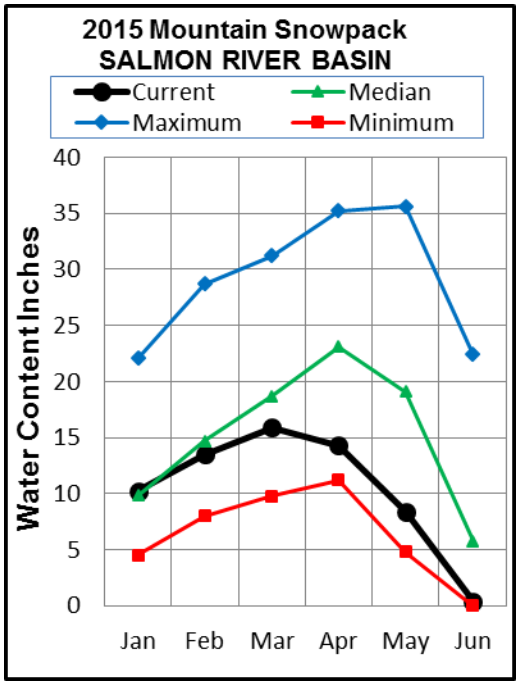
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
3) Median value used in place of average
Normals are based on 1981-2010 reference period; streamflow, precipitation and reservoir normals are averages, snow water equivalent are medians.

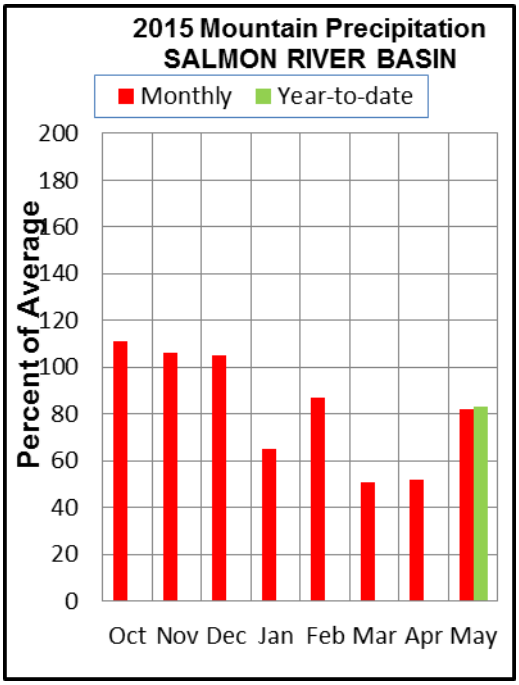
Reservoir Storage End of May, 2015	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Dworshak Reservoir	3420.3	2856.8	3113.0	3468.0
Basin-wide Total	3420.3	2856.8	3113.0	3468.0
# of reservoirs	1	1	1	1

Watershed Snowpack Analysis June 1, 2015	# of Sites	% Median	Last Year % Median
NF Clearwater River	8	16%	190%
Lochsa River	2	0%	537%
Selway River	4	0%	183%
Clearwater Basin Total	15	14%	194%

SALMON RIVER BASIN

JUNE 1, 2015





WATER SUPPLY OUTLOOK

The Salmon River basin received about 90% of monthly average precipitation during May, marking a monthly precipitation divide between the dryer than average northern part of the state and the much wetter than average southern part of the state. Water year to date precipitation is 85% of average. Of the sub-drainages that make up the Salmon River basin, precipitation in the Lemhi River drainage was the most abundant relative to monthly averages, at 121% of average. There's some snow left in the Salmon River basin above 8,500 feet, but as the snow graph above illustrates, the majority of sites in the basin have already melted out. The Middle Fork Salmon, South Fork Salmon, and Little Salmon River drainages received about 55-70% of monthly average precipitation for May. Streamflow forecasts in the Salmon River basin are about 40-55% of average for June-September. The Middle Fork Salmon River likely peaked in early May and flows will continue to recede to baseflow conditions as the warm season progresses; however, any meaningful precipitation in the near-term should prolong the runoff season. Cooler temperatures throughout the month of May led to relatively low snowmelt rates. Additionally, consistent low to moderate precipitation events have resulted in flows on the Middle Fork that have been relatively stable since mid-May, but conditions can change rapidly with additional precipitation, especially with thunderstorm activity. The same can be said for the South Fork Salmon River. A good resource with updated river conditions for boaters preparing for the Middle Fork can be found here.

Salmon River
Streamflow Forecasts - June 1, 2015

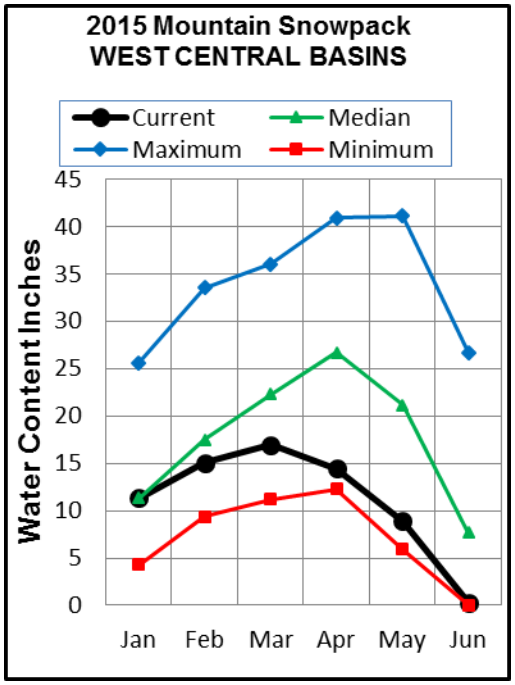
SALMON RIVER	Forecast Period	90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	30yr Avg (KAF)
		Forecast Exceedance Probabilities for Risk Assessment Chance that actual volume will exceed forecast						
Salmon R at Salmon								
	JUN-JUL	162	205	235	51%	270	310	460
	JUN-SEP	220	280	325	56%	365	425	585
Lemhi R nr Lemhi								
	JUN-JUL	12.9	18.5	23	52%	28	35	44
	JUN-SEP	22	29	35	58%	41	51	60
MF Salmon R at MF Lodge								
	JUN-JUL	33	92	132	42%	172	230	315
	JUN-SEP	66	139	189	48%	240	310	390
Sf Salmon R nr Krassel Ranger Station								
	JUN-JUL	18	39	53	45%	67	88	119
	JUN-SEP	34	51	62	45%	73	89	138
Johnson Ck at Yellow Pine Id								
	JUN-JUL	13.6	28	38	40%	48	62	94
	JUN-SEP	22	34	42	39%	51	63	107
Salmon R at White Bird								
	JUN-JUL	850	1230	1480	54%	1740	2120	2760
	JUN-SEP	1160	1610	1910	57%	2210	2660	3330

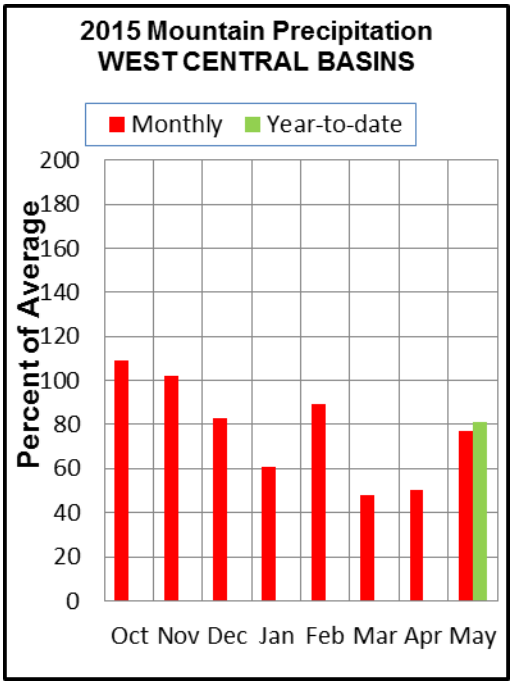
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
3) Median value used in place of average
Normals are based on 1981-2010 reference period; streamflow, precipitation and reservoir normals are averages, snow water equivalent are medians.

Watershed Snowpack Analysis June 1, 2015	# of Sites	% Median	Last Year % Median
Salmon River ab Salmon	6	11%	79%
Lemhi River	7	66%	111%
MF Salmon River	3	0%	98%
SF Salmon River	3	0%	84%
Little Salmon River	4		
Salmon Basin Total	23	22%	108%

WEST CENTRAL BASINS

JUNE 1, 2015





WATER SUPPLY OUTLOOK

May precipitation in the West Central basins was variable, with the Boise and Weiser basins receiving near monthly average at 101% and 90%, respectively; while the Payette basin received 73% of average. Water year to date precipitation reveals the Boise basin is at 87% of average while the Weiser and Payette basins are both about 80% of average. Of the 23 SNOTEL sites in the West Central basins, 11 sites normally still have snow remaining on June 1st; however, this year only 1 SNOTEL site (Vienna Mine at 8,960 feet) still has snow as of June 1st. There's little to no snow left in the West Central basins, but capture of earlier than normal runoff and carryover storage resulted in the Boise (93% of capacity) and Payette (98%) reservoir systems near full. The lack of remaining snow is revealed in the streamflow forecasts for the region, as all forecast points range from 35-60% of average for the June-September period. The NF Payette River, Deadwood Reservoir inflow, and SF Boise River are the lowest forecast points in the West Central basin at about 35% of average total volume streamflow for June-September period. The Boise River near Boise is forecast to be 47% (270 KAF) of average during June-September, and water supplies are continuing to look marginally adequate for the Boise system users.

West Central Basins
Streamflow Forecasts - June 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]								
	JUN-JUL	17.8	40	55	30%	70	92	186
	JUN-SEP	32	58	76	35%	93	119	220
Boise R nr Twin Springs								
	JUN-JUL	71	94	110	46%	126	149	240
	JUN-SEP	100	128	147	51%	166	194	290
Mores Ck nr Arrowrock Dam								
	JUN-JUL	7	10.5	13.3	49%	16.4	22	27
	JUN-SEP	8.7	12.7	16	52%	19.6	26	31
Boise R nr Boise[2]								
	JUN-JUL	116	162	193	40%	225	270	480
	JUN-SEP	180	235	270	47%	305	360	580
Lake Fork Payette R nr McCall								
	JUN-JUL	12.9	16.4	19	50%	22	26	38
	JUN-SEP	14.3	18	21	51%	24	28	41
NF Payette R at Cascade[2]								
	JUN-JUL	27	47	64	36%	83	116	179
	JUN-SEP	22	45	65	34%	89	132	192
NF Payette R nr Banks[2]								
	JUN-JUL	32	57	78	35%	102	143	220
	JUN-SEP	33	60	84	35%	112	159	240
SF Payette R at Lowman								
	JUN-JUL	96	110	119	57%	130	145	210
	JUN-SEP	128	145	157	60%	170	189	260
Deadwood Reservoir Inflow[2]								
	JUN-JUL	6.2	12.9	17.4	32%	22	28	54
	JUN-SEP	9.5	17.5	23	37%	28	36	63
Payette R nr Horseshoe Bend[2]								
	JUN-JUL	131	215	270	43%	330	415	625
	JUN-SEP	205	290	350	45%	410	500	775
Weiser R nr Weiser								
	JUN-JUL	27	40	51	52%	64	84	99
	JUN-SEP	44	60	72	57%	85	107	127

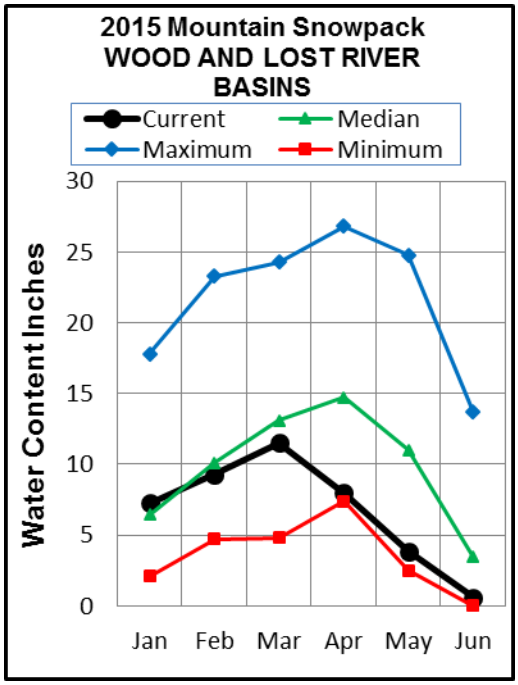
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
3) Median value used in place of average
Normals are based on 1981-2010 reference period; streamflow, precipitation and reservoir normals are averages, snow water equivalent are medians.

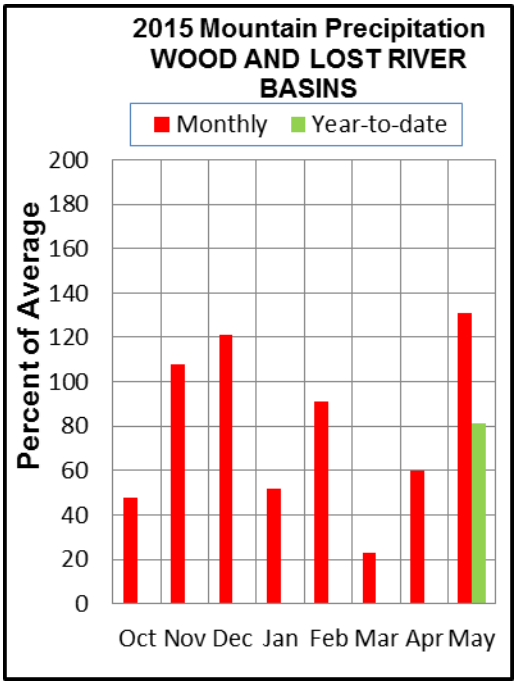
Reservoir Storage End of May, 2015	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Anderson Ranch Reservoir	436.3	386.7	375.3	450.2
Arrowrock Reservoir	214.1	263.5	198.1	272.2
Lucky Peak Reservoir	290.7	281.5	262.1	293.2
Lake Lowell	144.7	101.4	122.9	165.2
Deadwood Reservoir	156.4	159.2	145.5	161.9
Cascade Reservoir	683.7	660.2	625.3	693.2
Mann Creek Reservoir	8.3	8.3	10.5	11.1
Basin-wide Total	1934.2	1860.8	1739.7	2047.0
# of reservoirs	7	7	7	7

Watershed Snowpack Analysis June 1, 2015	# of Sites	% Median	Last Year % Median
SF Boise River	5	8%	71%
MF & NF Boise Rivers	5	0%	63%
Mores Creek	1		
Canyon Creek	1		
Boise Basin Total	9	7%	73%
NF Payette River	6	0%	67%
SF Payette River	4	0%	94%
Payette Basin Total	11	0%	85%
Mann Creek	1		
Weiser Basin Total	4		

WOOD and LOST BASINS

JUNE 1, 2015





WATER SUPPLY OUTLOOK

On the whole, precipitation across the Wood and Lost basins was well above average for the month of May, with monthly totals ranging from a low of 95% in Camas Creek to a high of 157% in the Little Lost basin. Other basins received greater than 120% of average. The wet May helped improve water year to date totals from the previous month, which now range from a low of 59% for Camas-Beaver Creeks in the east, to a high of 86% in the Little Lost. By June 1st many lower elevation basins in this area have typically melted out, and this year is no exception. Meanwhile, the upper elevation portions of basins that typically hold snow are well below average, with the Big Wood holding on to just 17% of normal snowpack, and Big Lost showing just 21%. The above average precipitation during May helped reservoirs in the Wood and Lost basins by decreasing the early drawdown that was occurring due to the early irrigation demand. Reservoir storage in the Wood and Lost basins remained nearly constant during May, and ranges from a high 103% of average (80% of capacity) in Mackay Reservoir to a low of 61% of average in Magic (42% of capacity). Forecasted streamflow volumes are well below average throughout the area, but the recent rains resulted in some improvements since the May 1st forecasts. The lowest elevation watersheds, Camas Creek at Camas, Camas Creek near Blaine and Big Wood below Magic are projected to be about 10% of average. Moving up in elevation shows the Big Lost River near Mackay and Howell forecasted at 36% and 37% of average June to September volumes, while the Big Wood River at Hailey is also projected at 37%. Despite the ample rains, water shortages are anticipated across most of the Wood and Lost basins.

Wood And Lost Basins
Streamflow Forecasts - June 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								
	JUN-JUL	0	0.13	0.9	10%	2.3	5.7	8.6
Little Lost R nr Howe								
	JUN-JUL	3.8	5.4	6.6	43%	7.9	10	15.5
	JUN-SEP	5.3	7.8	9.7	44%	11.8	15.4	22
Big Lost R at Howell Ranch								
	JUN-JUL	16.2	26	35	34%	44	60	102
	JUN-SEP	22	34	45	37%	56	75	122
Big Lost R bl Mackay Reservoir								
	JUN-JUL	9	16	21	26%	27	37	82
	JUN-SEP	21	31	39	36%	48	62	109
Little Wood R ab High Five Ck								
	JUN-JUL	4.2	7	9.4	32%	12.1	16.6	29
	JUN-SEP	5.8	9.3	12.1	35%	15.4	21	35
Little Wood R nr Carey[2]								
	JUN-JUL	3.9	6.8	9.2	32%	12	16.8	29
	JUN-SEP	5.5	9	11.9	34%	15.2	21	35
Big Wood R at Hailey								
	JUN-JUL	25	35	43	34%	52	66	127
	JUN-SEP	34	47	57	37%	68	86	155
Big Wood R ab Magic Reservoir								
	JUN-JUL	0.1	2.3	5.4	6%	10	20	89
	JUN-SEP	0.9	4.8	9.1	9%	15	26	101
Camas Ck nr Blaine								
	JUN-JUL	0	0.13	0.77	7%	1.95	4.7	11.1
	JUN-SEP	0	0.24	1.03	9%	2.4	5.4	11.7
Big Wood R bl Magic Dam [2]								
	JUN-JUL	1.6	5.3	9.2	9%	14	23	97
	JUN-SEP	4.5	10	15.2	14%	21	32	111

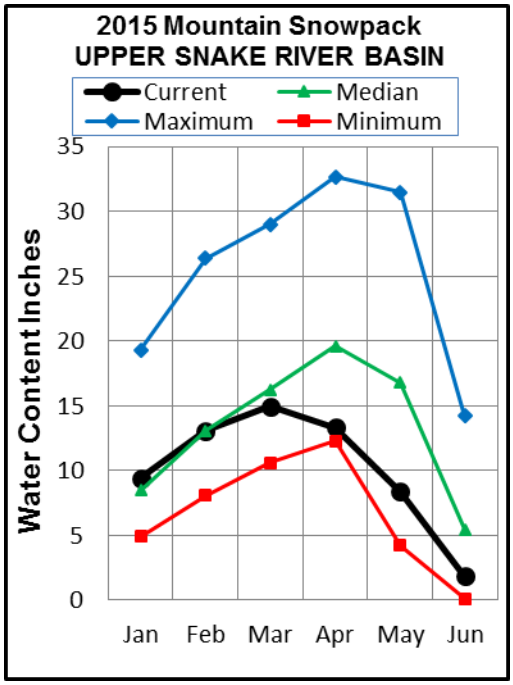
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
3) Median value used in place of average
Normals are based on 1981-2010 reference period; streamflow, precipitation and reservoir normals are averages, snow water equivalent are medians.

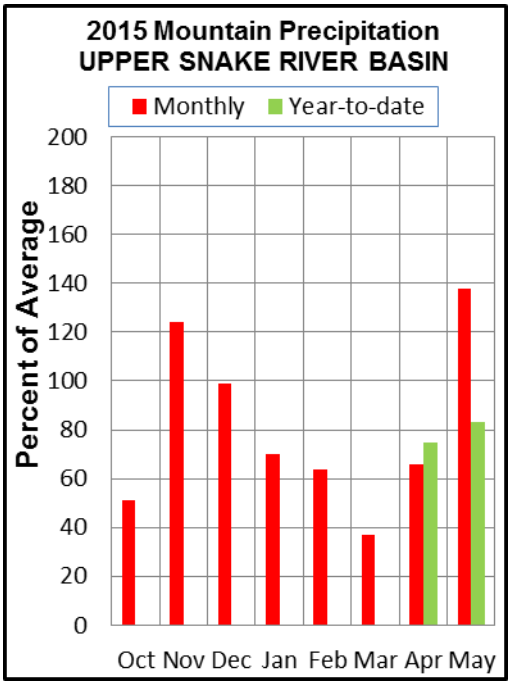
Reservoir Storage End of May, 2015	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Mackay Reservoir	35.6	26.1	34.6	44.4
Little Wood Reservoir	19.9	16.0	27.3	30.0
Magic Reservoir	80.1	71.8	130.3	191.5
Basin-wide Total	135.6	113.8	192.2	265.9
# of reservoirs	3	3	3	3

Watershed Snowpack Analysis June 1, 2015	# of Sites	% Median	Last Year % Median
Camas-Beaver Creeks	2		
Birch-Medicine Lodge Creeks	2	0%	70%
Little Lost River	3	0%	70%
Big Lost River ab Mackay	4	21%	0%
Big Lost Basin Total	5	21%	0%
Fish Creek	0		
Little Wood River	3		
Big Wood River ab Hailey	6	17%	70%
Camas Creek	2		
Big Wood Basin Total	8	17%	70%

UPPER SNAKE RIVER BASIN

JUNE 1, 2015





WATER SUPPLY OUTLOOK

Across the headwaters of the Snake River, May precipitation showed a large amount of variability with many of the southern basins (Willow, Blackfoot, and Portneuf) receiving twice their average precipitation, while further north the Henrys Fork (103%), Pacific Creek (89%), and Buffalo Fork (103%) basins received typical May precipitation. Water year to date totals range from a low of 72% of average in the Henry's Fork–Falls River area, to a high of 95% in the Buffalo Fork, Hoback and Greys drainages. In general the basins in the Upper Snake have melted out, or are on schedule to melt out 3-4 weeks ahead of their typical dates. As a result most watersheds, especially in the lower elevations, are snow free. Watersheds with remaining snowpack, such as the Teton River and upper portions of the Henrys Fork and the Snake will melt out soon. Basin wide summaries should be used with caution this late in the year, a better strategy is to compare to similar years such as 1992, 1987, and 1977. Early runoff and heavy rainfall have left the reservoirs of the Upper Snake at or above average levels, with the exception of Ririe and Blackfoot reservoirs which hold 90% and 85% of typical June 1st volumes. Heavy May rains improved forecasted flows in many basins relative to their May 1st forecasts, though most basin forecasts remain well below average for the June to September period. In the headwaters of the Snake River, the Snake at Flagg Ranch and Moran are forecasted 42% and 38% of average, while the Buffalo Fork and Pacific Creek are forecasted at 65% and 48% respectively. Moving downstream, the Snake near Irwin (61%) and Heise (62%), shows the impacts of flows from the Salt (57%) and Greys rivers (75%), both of which received generous May precipitation. The Teton River near St. Anthony is forecasted at 64%, while the Falls River and Henry's Fork near Ashton are projected to have 57% and 68% respectively. Lower in the system the Snake River at Neeley is forecasted at just 13% of average for the June to September period. Analysis of reservoir storage and projected streamflows shows that good water management should yield marginally adequate irrigation supplies for this summer.

Upper Snake River Basin
Streamflow Forecasts - June 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]	JUN-JUL	72	106	129	56%	152	186	230
	JUN-SEP	198	245	280	68%	315	360	410
Falls R nr Ashton[2]	JUN-JUL	53	78	96	53%	113	139	182
	JUN-SEP	90	122	143	57%	165	197	250
Teton R nr Driggs	JUN-JUL	34	48	57	57%	66	80	100
	JUN-SEP	53	71	83	60%	95	113	139
Teton R nr St Anthony	JUN-JUL	71	104	126	60%	149	181	210
	JUN-SEP	113	151	178	64%	205	240	280
Henrys Fk nr Rexburg[2]	JUN-JUL	215	315	385	54%	455	555	710
	JUN-SEP	400	555	655	60%	760	910	1100
Snake R at Flagg Ranch	JUN-JUL	23	56	79	34%	102	135	235
	JUN-SEP	46	82	107	38%	132	168	280
Snake R nr Moran[2]	JUN-JUL	68	122	158	37%	195	250	425
	JUN-SEP	101	165	210	42%	250	315	505
Pacific Ck at Moran	JUN-JUL	10.4	27	38	44%	49	66	86
	JUN-SEP	17.2	34	46	48%	58	75	96
Buffalo Fk ab Lava Ck nr Moran	JUN-JUL	91	114	129	63%	144	167	205
	JUN-SEP	111	138	156	65%	174	200	240
Snake R ab Reservoir nr Alpine[2]	JUN-JUL	615	730	805	63%	880	995	1280
	JUN-SEP	825	960	1050	65%	1140	1270	1610
Greys R ab Reservoir nr Alpine	JUN-JUL	95	110	120	73%	130	145	164
	JUN-SEP	128	147	160	74%	173	192	215
Salt R ab Reservoir nr Etna	JUN-JUL	29	52	68	48%	84	107	143
	JUN-SEP	71	100	119	57%	138	167	210
Snake R nr Irwin [2]	JUN-JUL	730	880	980	58%	1080	1230	1700
	JUN-SEP	1030	1210	1330	61%	1460	1640	2190
Snake R nr Heise[2]	JUN-JUL	795	950	1050	58%	1160	1310	1800
	JUN-SEP	1140	1320	1450	62%	1580	1770	2350
Willow Ck nr Ririe[2]	JUN-JUL	0.53	2.4	4.4	31%	7	12	14.4
Portneuf R at Topaz	JUN-JUL	7.8	13.2	16.8	60%	20	26	28
	JUN-SEP	13.5	22	28	62%	34	43	45
Snake R at Neeley[2]	JUN-JUL	-285	0.49	195	17%	390	675	1130
	JUN-SEP	-430	-73	172	13%	415	775	1290

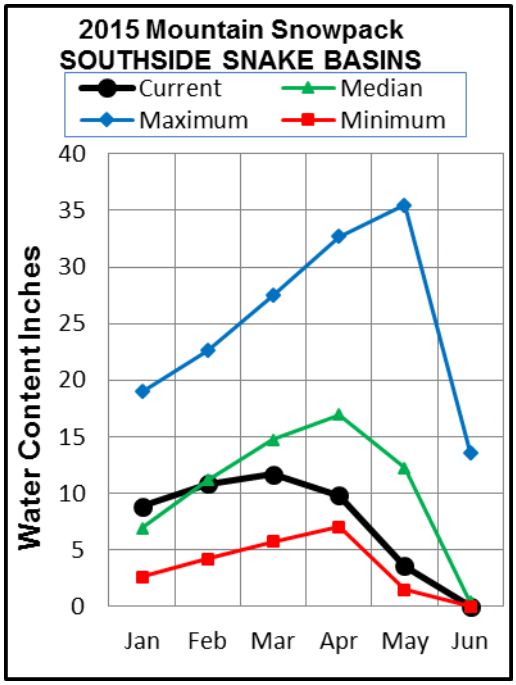
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions
3) Median value used in place of average
Normals are based on 1981-2010 reference period; streamflow, precipitation and reservoir normals are averages, snow water equivalent are medians.

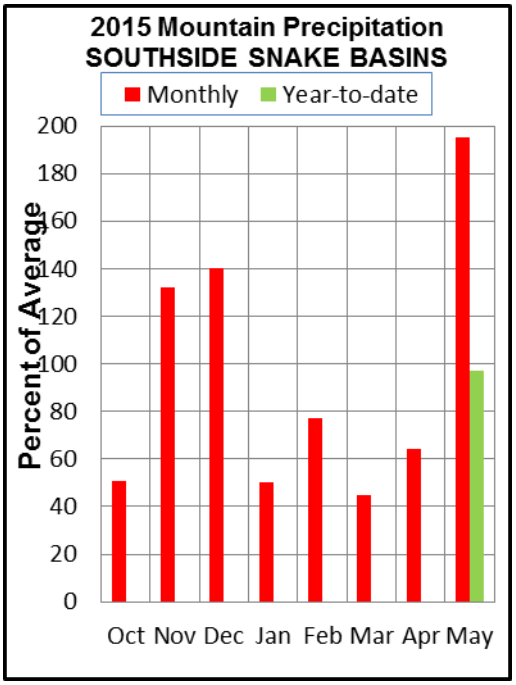
Reservoir Storage End of May, 2015	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Jackson Lake	847.5	636.9	605.7	847.0
Palisades Reservoir	1194.1	847.6	1027.0	1400.0
Henrys Lake	89.8	87.6	85.6	90.4
Island Park Reservoir	132.8	126.2	133.4	135.2
Grassy Lake	15.4	14.3	14.3	15.2
Ririe Reservoir	62.9	70.9	69.6	80.5
Blackfoot Reservoir	199.7	217.1	235.2	337.0
American Falls Reservoir	1420.4	1392.7	1459.0	1672.6
Basin-wide Total	3962.5	3393.2	3629.8	4577.9
# of reservoirs	8	8	8	8

Watershed Snowpack Analysis June 1, 2015	# of Sites	% Median	Last Year % Median
Henrys Fork-Falls River	5	2%	110%
Teton River	3	55%	110%
Henrys Fork ab Rexburg	8	30%	110%
Snake River ab Jackson Lake	5	22%	127%
Pacific Creek	2	37%	124%
Buffalo Fork	1	76%	120%
Gros Ventre River	3	74%	143%
Hoback River	5	131%	244%
Greys River	4	114%	229%
Salt River	3	0%	342%
Snake ab Palisades Resv	18	57%	162%
Willow Creek - Ririe	2		
Blackfoot River	2		
Portneuf River	3		
Snake River ab American Falls	27	45%	144%

SOUTHSIDE SNAKE RIVER BASINS

JUNE 1, 2015





WATER SUPPLY OUTLOOK

May precipitation across southern Idaho was well above average, especially in the central and eastern portions of the state. The Raft River, Goose-Trapper Creeks, Salmon Falls Creek, and the Bruneau River all received at least twice the average May rainfall, while the Owyhee Basin received 133%. Water year to date precipitation totals range from a high of 110% of average in the Raft River to a low of 91% in the Owyhee. The wet May has helped to sustain reservoir storage at a time when substantial drawdowns would likely have occurred in the absence of a snowmelt runoff. Brownlee Reservoir is at 98% of capacity, which is 103% of average for this time of year. The remaining reservoirs show the impacts of sustained below average snowpack with Oakley (65%), Salmon Falls Reservoir (44%), Wild Horse Reservoir (31%), and Lake Owyhee (29%) all being substantially below their typical levels. Forecasted streamflows have received a substantial boost since the May 1st forecast due to the recent rains, however a majority of basins are still likely to have less than 60% of average June to September flows. In the Owyhee basin, the Owyhee at Rome is expected to have 43% of average June-September volume, while below the dam is forecasted to have 55%. The Bruneau is forecasted at 35% of average, while Salmon Falls Creek and Oakley Reservoir Inflows are projected to be 25% and 37% respectively. The highest forecast among the Southside Snake basins is for Trapper Creek, projected at 70% of typical June-September flows. Due to poor reservoir storage and below average flow, widespread irrigation shortages are expected across these southern Idaho basins.

Southside Snake River Basins
Streamflow Forecasts - June 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								
	JUN-JUL	0.03	0.34	0.75	16%	1.3	2.4	4.7
	JUN-SEP	0.11	0.6	1.16	19%	1.89	3.3	6
Trapper Ck nr Oakley								
	JUN-JUL	0.73	0.97	1.15	62%	1.35	1.67	1.85
	JUN-SEP	1.53	1.86	2.1	70%	2.4	2.8	3
Oakley Reservoir Inflow								
	JUN-JUL	0.72	1.35	1.9	29%	2.5	3.7	6.5
	JUN-SEP	1.62	2.5	3.3	37%	4.1	5.6	9
Salmon Falls Ck nr San Jacinto								
	JUN-JUL	0.89	2.3	3.7	19%	5.4	8.4	20
	JUN-SEP	2.3	4.4	6.1	25%	8.2	11.7	24
Bruneau R nr Hot Spring								
	JUN-JUL	10.3	16.4	21	32%	27	36	66
	JUN-SEP	13.7	21	26	35%	33	43	75
Reynolds Ck at Tollgate								
	JUN-JUL	0.2	0.4	0.6	37%	0.8	1.2	1.61
Owyhee R nr Gold Ck[2]								
Owyhee R nr Rome								
	JUN-JUL	7.8	14.8	21	33%	28	40	63
	JUN-SEP	13	24	34	43%	45	65	80
Owyhee R bl Owyhee Dam[2]								
	JUN-JUL	16.6	25	33	43%	41	54	76
	JUN-SEP	37	49	58	55%	68	84	106
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]								

1) 90% and 10% exceedance probabilities are actually 95% and 5%
3) Median value used in place of average

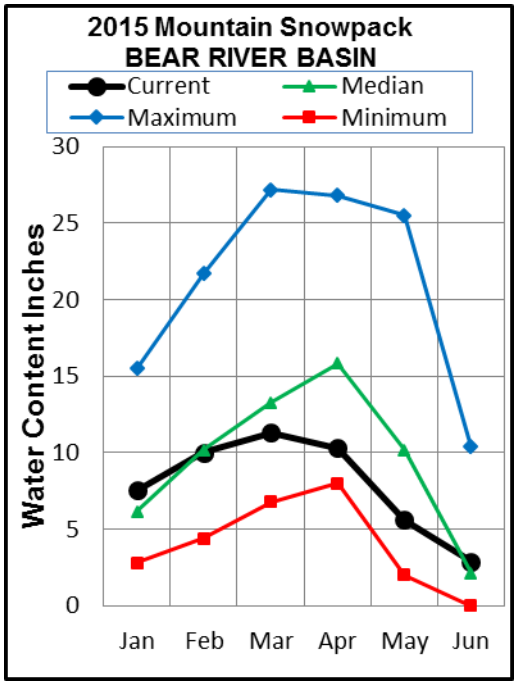
Normals are based on 1981-2010 reference period; streamflow, precipitation and reservoir normals are averages, snow water equivalent are medians.

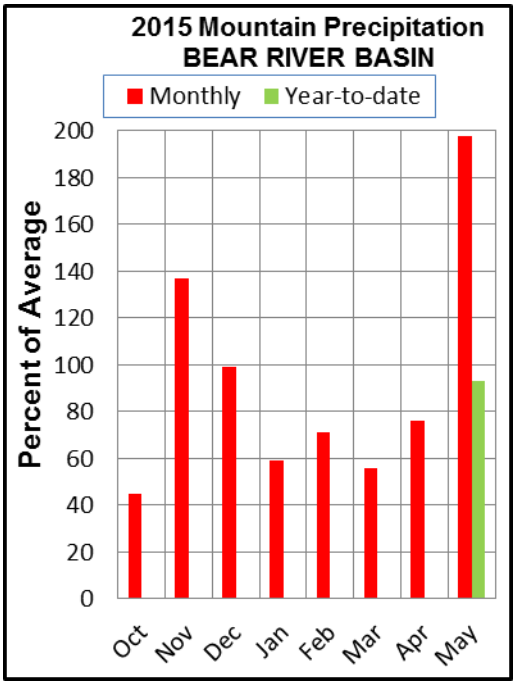
Reservoir Storage End of May, 2015	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Oakley Reservoir	24.3	25.3	37.4	75.6
Salmon Falls Reservoir	36.1	35.4	82.7	182.6
Wild Horse Reservoir	16.3	17.2	52.0	71.5
Lake Owyhee	153.4	127.6	536.2	715.0
Brownlee Reservoir	1386.5	1390.7	1343.0	1420.0
Basin-wide Total	1616.7	1596.2	2051.3	2464.7
# of reservoirs	5	5	5	5

Watershed Snowpack Analysis June 1, 2015	# of Sites	% Median	Last Year % Median
Raft River	1		
Goose-Trapper Creeks	2		
Salmon Falls Creek	5	0%	0%
Bruneau River	5	0%	0%
Reynolds Creek	1		
Owyhee Basin Total	8		
Owyhee Basin Snotel Total	8		

BEAR RIVER BASIN

JUNE 1, 2015





WATER SUPPLY OUTLOOK

May precipitation across the Bear River Basin was voluminous, with many basins receiving almost twice the average amount of water. At the back of the pack, the Cub River reported 168% of average May precipitation, while both the Malad and Montpelier basins reported well over 200%. The wet May buoyed year to date totals which range from a low of 78% average for the Cub River to a high of 108% for Montpelier Creek. By June 1st many lower elevation basins in this area have typically melted out, a trend which was hastened this year due to the early onset of snowmelt. Of the four SNOTEL sites that typically have June 1st snowpack, only two report remaining snow, including Spring Creek Divide at 135% of median snowpack. This high elevation site is biasing the snowpack statistics of several basins including the Bear River, for this reason the June basin snowpack summaries should be looked at with a particularly critical eye. The wet May helped to sustain reservoir storage in the Bear River basin which is slightly below normal on the whole. Bear Lake is at 49% of capacity (90% of average) and Montpelier Reservoir is full and passing water over the spillway. The strong precipitation numbers have also yielded increases in forecasted volumes with most basins showing marked improvements over the May 1st numbers, however all basins are still projected to have well below average runoff through the summer. The lowest forecasted flows are for the Bear River below Stewart Dam, which is projected at 10% of average for the June to September period. On the opposite end of the spectrum the Smiths Fork is projected at 65% of normal June to September flows, while the remaining basins are generally forecast between 30-50% of average. Despite the low forecasts, irrigation supplies will be adequate for the Bear Lake water users, but tight or similar to last year for the natural flow water users.

Bear River Basin
Streamflow Forecasts - June 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	39	51	59	53%	67	79	112
	APR-SEP	42	56	66	54%	76	90	123
	JUN-JUL	10.3	20	27	41%	33	43	66
	JUN-SEP	14.9	26	34	44%	42	53	78
Bear R ab Resv nr Woodruff								
	APR-JUL	22	41	53	44%	66	85	121
	APR-SEP	28	46	59	46%	72	90	128
	JUN-JUL	0.57	1.71	11	19%	14.5	27	57
	JUN-SEP	0.64	4	13	20%	22	35	64
Big Ck nr Randolph								
	APR-JUL	1.207	1.22	1.5	39%	1.78	2.2	3.8
	JUN-JUL	0.017	0.03	0.31	19%	0.59	1.01	1.66
Smiths Fk nr Border								
	APR-JUL	60.32	68.72	74.72	84%	80.72	88.72	89
	APR-SEP	69.72	79.72	86.72	83%	93.72	103.72	104
	JUN-JUL	15.6	24	30	60%	36	44	50
	JUN-SEP	25	35	42	65%	49	59	65
Bear R bl Stewart Dam[2]								
	APR-JUL	3.7	24	58	32%	92	143	183
	APR-SEP	4.1	24	62	30%	100	157	205
	JUN-JUL	0.93	2.8	7	8%	30	63	93
	JUN-SEP	1.15	3.4	11	10%	41	84	115
Little Bear at Paradise								
	APR-JUL	1.23	8.2	14	34%	19.8	28	41
	JUN-JUL	0.2	1.81	3.7	36%	5.6	8.4	10.2
Logan R nr Logan								
	APR-JUL	24	41	52	47%	63	80	111
	JUN-JUL	13.4	21	26	43%	31	39	61
Blacksmith Fk nr Hyrum								
	APR-JUL	0.86	8.7	17	40%	25	37	43
	JUN-JUL	0.162	4.8	8	49%	11.2	16	16.2

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 May, 2015	Current (KAF)	Last Year (KAF)	Average (KAF)	Capacity (KAF)
Bear Lake	640.3	638.3	710.6	1302.0
Montpelier Reservoir	4.1	3.6	3.4	4.0
Basin-wide Total	644.4	641.9	714.0	1306.0
# of reservoirs	2	2	2	2

Watershed Snowpack Analysis June 1, 2015	# of Sites	% Median	Last Year % Median
Smiths-Thomas Forks	3	135%	182%
Bear River ab WY-ID Line	9	79%	95%
Montpelier Creek	1		
Mink Creek	1		
Cub River	1	0%	0%
Bear River ab ID-UT Line	15	68%	81%
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

USDA Natural Resources Conservation Service
9173 West Barnes Drive, Suite C
Boise ID 83709-1574

OFFICIAL BUSINESS

Issued by
Jason Weller, Chief
Natural Resources Conservation Service
Washington, DC

Released by
Curtis Elke, State Conservationist
Bruce Sandoval, State Conservationist Engineer
Natural Resources Conservation Service
Boise, Idaho

Prepared by
Idaho Snow Survey Staff
Ron Abramovich, Water Supply Specialist
Philip Morrisey, Data Collection Officer
Ivan Geroy, Hydrologist
Danny Tappa, Hydrologist
Jeff Graham, Electronics Technician
Alex Rebentisch, Electronics Technician

Forecasts and Assistance provided by
Rashawn Tama, Forecast Hydrologist
Jolyne Lea, Forecast Hydrologist
NRCS, National Water and Climate Center, Portland, Oregon

Numerous other groups and agencies provide funding and/or cooperative support for the collection, operation and maintenance of the Cooperative Idaho Snow Survey Program. Your cooperation is greatly appreciated.