

*Natural Resources Conservation Service*

# Idaho Water Supply Outlook Report

## June 1, 2014



Dollarhide Summit SNOTEL site (elevation 8,420 ft) completely burned but was partially re-installed with snow depth, precipitation and air temperature sensors.

This view on May 15, 2014 looking southwest toward Dollarhide Summit in the upper Warm Springs Creek watershed shows the extent and severity of last year's Beaver Creek fire near Ketchum, Idaho. It also illustrates the climate diversity in Idaho this season. While northern Idaho and the Snake River basin in eastern Idaho had near record high snowpacks, the Wood and Lost basins in the center of the state were the opposite and very dry. Storms coming from the west and northwest lost momentum and gave up their moisture in the west central mountains before reaching Sun Valley. The huge storms from the north blasting Montana and Wyoming were blocked by the Continental divide and never reached over into central Idaho. Meanwhile, storms coming from the southwest and California that usually favor the Wood and Lost were practically non-existent this winter. The result is this area now has only 74% of the total water year-to-date precipitation since October 1, lowest in the state. Streamflows are dropping fast from the dry May weather. Reservoir storage is extremely low in central and southern Idaho from consecutive dry years which will result in short irrigation seasons this summer.

# Basin Outlook Reports and Federal - State - Private Cooperative Snow Surveys

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**Contact: Your local county Natural Resources Conservation Service Office**

**Internet Web Address: <http://www.nrcs.usda.gov/wps/portal/nrcs/main/id/snow/>**

**Natural Resources Conservation Service Snow Surveys**

**9173 West Barnes Drive, Suite C**

**Boise, Idaho 83709-1574 (208) 378-5740**

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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, 2014**

## **SUMMARY**

Too little or just enough water best sums up this year's water supply across the state. The good news is that the numerous Snake River water users in eastern and southern Idaho will have adequate surface irrigation supplies. However, across Idaho's central basins, a dry May which saw no precipitation fall at two central Idaho SNOTEL sites further increased the impacts of a second consecutive low snow year. Some irrigators, with junior water rights, are already being cut off in the Little Wood basin while Mackay Reservoir irrigators will be lucky to have water supplies last until mid-July. These central Idaho streams could see summer runoff volumes approaching record low volumes by summer's end. Shortages are also expected in Oakley, Salmon Falls and Owyhee basins. Wise planning and planting will help stretch this year's limited supplies along with improved irrigation delivery and sprinkler systems that irrigation districts and farmers have been accomplishing over the years.

Good news and in contrast to the way the winter started - Treasure Valley irrigators will have adequate water supplies with residual streamflow volumes at 55-75% of average. Magic Valley users across southern Idaho that rely on western Wyoming snowfall will also have adequate supplies and hopefully a little bonus for next year – better reservoir carryover storage with residual streamflow forecasts at 115-130% of average. More good news for whitewater river runners and water users – rivers are forecast at 100-130% of average in the Clearwater and Panhandle Region while the Salmon River basin will see residual flows in the 70-90% of average range which will provide a long floating season.

## **SNOWPACK**

Snowpacks vary across the state based on elevation in the basin and amount of snow that fell this winter. Many basins have melted out while others that were in this winter's storm track are 100-200% of normal. This does not necessarily mean there is more snow water than earlier in the season, it means the snow water equivalent normals are lower now and the current amount of snow water on the snow pillow measuring device is greater than the June 1<sup>st</sup> 1981-2010 normals. Rather than looking at the percent of normal numbers, a better illustration of the remaining snow water amount, users should view the actual data from the site or comparison graphs on these web links:

[Clickable Map-Based Access to SNOTEL Data](#)

[Basin Projection Graphs](#) - Time series plot of basin snowpack and precipitation with non-exceedence projections

[Basin Comparison Graphs](#) - Time series plot of basin snowpack and precipitation compared with other years

## **PRECIPITATION**

Early May storms brought the majority of the month's moisture to the state but ceased arriving in the second half of the month. Once again, the basins that needed the moisture the most missed out. Big Wood, Little Wood and Big Lost only received 20% of their normal May amounts. Two stations, Lost-Wood Divide and Chocolate Gulch, received no precipitation while their normal May amounts are 2.7

and 2.0 inches, respectively. Ten of the 20 sites in the Wood and Lost basins received less than an inch of precipitation during May. Overall precipitation in these basins was 37% of average for the month of May and currently stands at 74% of the water year to date average. Elsewhere across the state and western Wyoming, May precipitation was 46-82% of average.

Additional spring moisture during the snowmelt season would have benefited Idaho in many ways that include the dryland farmers in eastern Idaho and mid-elevation rangelands across the state. The lack of snow and spring rains in these mid-elevations resulted in limited runoff, a shorter green season as the typical browning of the foothills that is underway, and soil moisture that is already drying out. All eyes will be watching the up-coming fire season especially with a fire already reported in the Stanley area in early June. For central Idaho, this is the second consecutive dry winter, with an early melt and now a very dry spring.

Precipitation since the water year started October 1 still varies across the state. The highest percentages are 115% of average in the Snake River basin above Palisades Reservoir and decreases to only 65% in the Little Wood and Big Lost basins. Interestingly, these amounts equate to 92% of the annual water year total in the Upper Snake but only 52% of the annual precipitation in the Little Wood and Big Lost basins. With the summer dry season now upon us, little hope remains to improve these meager percentages by the end of the water year, September 30, unless a major monsoon season pushes into southern Idaho or a wet September occurs like in 2013.

## **RESERVOIRS**

Reservoir storage varies across the state just like this year's snowpack did. Some reservoir operators are in the process of completing final fill while other reservoirs have peaked and are being drafted. Magic, Mackay and Salmon Falls are likely to run out of irrigation water in July. From poor to good conditions: Owyhee Reservoir peaked with almost 200,000 acre-feet in mid-April and is at 127,600 acre-feet; 18% full, 24% of average. Salmon Falls Reservoir is 19% full, 43% of average, and is hoping to have water last until July 20 compared to August 25 which is when they ran out of water in 2013. Oakley Reservoir is 33% full, 68% of average and received near normal May precipitation but not nearly enough to make-up for the shortages as supplies will be similar to last year. Magic Reservoir is 37% full, half of average and its users will be out of water in mid-July, which is better than last year, but still not a very long growing season. Little Wood Reservoir peaked in early May and is now half full; some users are now being cut off while others will have water until early July depending upon your water right. Mackay Reservoir is 59% full, 78% of average, and has similar dry conditions as in the Little Wood basin – water managers are having a challenging time delivering water to downstream users because of the drought conditions and dry aquifer soaking up so much water. For the Little Wood irrigators, that experienced some shortages last season, this year's conditions are much worse as they will be out of water in July. Bear Lake is 53% full, 92% of average and will provide adequate irrigation water for its users this year, and have some carryover for next season.

Now for better news, the natural lakes and reservoirs elsewhere in the state will fill or come close to filling and should provide adequate irrigation supplies. Carryover storage for next year will depend on summer irrigation demand which is a function of how hot and dry the summer months are, but with El Nino brewing and the potential remains for more wild weather, it may be worth it to try save a little more carryover storage for next year if the opportunity arises. Links to the Surface Water Supply Index and correlations of ENSO and streamflow in the Western US:

[Surface Water Supply Index \(SWSI\)](#) and

[Southern Oscillation Index Statistical Correlation with Spring Runoff in the Western US](#)

## **STREAMFLOW**

Most if not all streams have seen their snowmelt streamflow peak this season. However, current flow levels vary with winter's snowfall, as streams along Idaho's eastern border are all flowing above average while central and southern Idaho streams are at or will be approaching low levels. Here is quick summary of expected residual flows for the June-July period. From north to south: Panhandle streams are forecast at 100-128% of average. Clearwater basin streams are forecast at 125-142% of average. The Salmon River and its tributaries are forecast at 57-95% of average while the streams in the west-central mountains are in the 50-80% range. Wood and Lost basins are forecast at 10-35% of average with some streams predicted at record low volumes. The rivers in western Wyoming are forecast at 115-140% of average while the Henrys, Falls, Willow, Blackfoot and Portneuf rivers are forecast at 70-95%. Across southern Idaho, Oakley basin hosts the highest forecasts with amounts projected at 65-80% of average because of the near normal May precipitation. However, volumes drop considerably with Salmon Falls, Bruneau and Owyhee drainages forecast at 25-50% of average, respectively. Bear River streamflow forecasts vary depending on location ranging from 70-120% of average. Low summer streamflow levels will also be reflected in these small percentages. The extremely dry May weather and observations mentioned by end users are also indicating how dry some of the basins are. In basins with more snow and good streamflows, users might expect these snow fed streams to drop a little faster this year compared to a spring with normal May precipitation.

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**

While many of the main whitewater rivers of Idaho have likely reached their primary snowmelt runoff peaks, the season is still far from over, and some could certainly rise again depending on future weather. The Lochsa and Selway Rivers are still maintaining high flows and are likely to have a relatively long recession period due to the substantial snowpack accumulated this winter. Flows in the Middle Fork and Main Salmon Rivers have started to consistently recede but still remain at above average flows and will remain at higher flows notably longer than was observed in 2013; this is good news for those with late season Middle Fork River permits. The rivers of the Payette system have been flowing at or above normal flows and will likely continue at those levels even with streams forecast at 60-70% of average, thanks to the reservoir releases from Deadwood and Cascade. While reservoirs south of the Snake River and in central Idaho are low and will be running out of water in July, other reservoirs in northern and eastern Idaho will be completing final fill soon and provide ample flat water recreation in the months to come.

As the high elevation snowpack continues to melt out more opportunities for accessing the mountains for a variety of recreational opportunities are becoming available. Many roads and trails in the southern part of the state are already dry and more will continue to become accessible every day. Due to the larger snowpacks in North Idaho, it may be a little longer than usual before certain areas become accessible in that region. When venturing into mountainous areas for the first time of the summer always be aware of the possibility of road and trail blockages due to snow, mud, avalanches, downed trees and washouts from streams. Approach stream crossings with caution as even small streams can be very powerful during runoff season. Have fun, be safe, and enjoy beautiful Idaho!

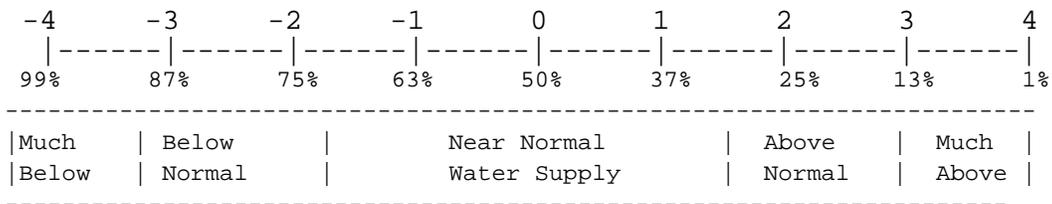
# IDAHO SURFACE WATER SUPPLY INDEX (SWSI) June 1, 2014

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.

<b>BASIN or REGION</b>	<b>SWSI Value</b>	<b>Most Recent Year With Similar SWSI Value</b>	<b>Agricultural Water Supply Shortage May Occur When SWSI is Less Than</b>
Northern Panhandle	0.4	2013	NA
Spokane	0.7	1996	NA
Clearwater	2.1	2010	NA
Salmon	-0.4	2002	NA
Weiser	-2.1	2005	NA
Payette	-1.6	2002	NA
Boise	-0.9	2003/2004	-2.2
Big Wood	-2.6	2013	-0.7
Little Wood	-3.8	2007/1992	-2.0
Big Lost	-4.0	2004/1992	0.2
Little Lost	-4.0	2004/1992	1.0
Teton	0.9	2010	-3.9
Henry's Fork	0.1	2012	-3.7
Snake (Heise)	0.8	2010	-1.2
Oakley	-1.6	2013	0.5
Salmon Falls	-3.3	2003/1991	-1.0
Bruneau	-3.3	2012	NA
Owyhee	-3.8	1988	-3.2
Bear River	0.6	2013	-3.4

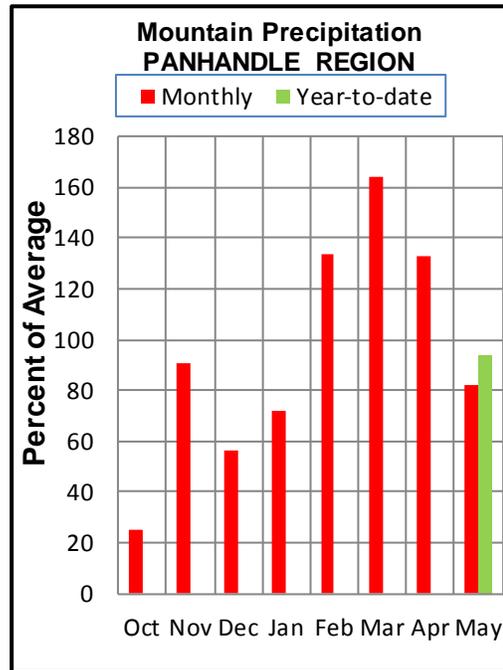
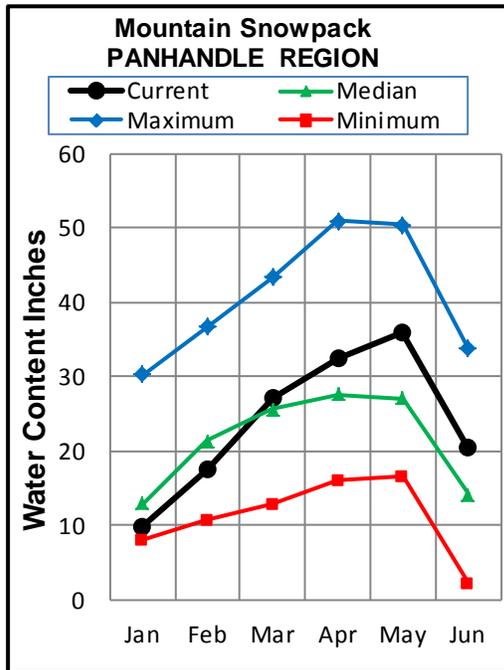
### SWSI SCALE, PERCENT CHANCE OF EXCEEDANCE, AND INTERPRETATION



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

# PANHANDLE REGION

JUNE 1, 2014



## WATER SUPPLY OUTLOOK

Plenty of snow remains in the highest elevations of the mountains in north Idaho, well above the normal amount for June 1. But with mid and low elevation snow-free for most of the last month and the peak streamflows now behind us, the threat of serious high water is considerably reduced unless a big rain event occurs in the next few weeks. High flows will however, persist a few weeks longer than usual this season since the overall snowpack was well above normal when it peaked in mid-April. The precipitation in May was only about 80% of normal in most areas except the far north near Canada where a couple SNOTEL sites received over 115% of the average for May. With the high snowpack and delayed melt, it was actually good that precipitation was below average and did not create the rain-on-snow effect that often results in flooding. The combined reservoir storage in Priest, Pend Oreille, and Coeur d'Alene is 101% of average and 91% of capacity. The remaining space should easily fill as operators await the last flush of the high elevation snow during the next three weeks or so. Streamflow forecasts for the June – July period range from right at normal, 99%, in the Moyie to 123 and 128%, respectively, in the St. Joe and Clark Fork (Pend Oreille inflow). The Kootenai River at 107% and Spokane River near Post Falls at 115% round out the middle. All things point to a very good water supply for the 2014 season. The only potential downside with such high snowpacks at this point is that travel and access in the high country may be difficult and small streams impassable until mid and late July.

PANHANDLE REGION  
Streamflow Forecasts - June 1, 2014

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)
		Chance Of Exceeding *						
		90% (1000AF)	70% (1000AF)	50% (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
Kootenai R at Leonia (1,2)	JUN-JUL	3040	3630	3900	107	4170	4760	3640
	JUN-SEP	3890	4610	4940	106	5270	5990	4640
Moyie R at Eastport	JUN-JUL	88	114	132	99	150	176	133
	JUN-SEP	98	127	146	99	165	194	147
Boundary Ck nr Porthill	JUN-JUL	33	42	48	114	54	63	42
	JUN-SEP	36	46	53	110	60	70	48
Clark Fork at Whitehorse Rpds (1,2)	JUN-JUL	5380	6130	6470	128	6810	7560	5070
	JUN-SEP	6300	7200	7600	125	8000	8900	6090
Pend Oreille Lake Inflow (2)	JUN-JUL	6020	6610	7000	128	7390	7980	5480
	JUN-SEP	6990	7690	8160	125	8630	9330	6520
Priest R nr Priest River (1,2)	JUN-JUL	198	270	300	109	330	400	275
	JUN-SEP	230	310	350	108	390	470	325
NF Coeur d'Alene R at Enaville	JUN-JUL	114	139	157	105	175	200	150
	JUN-SEP	141	172	192	103	210	245	187
St. Joe R at Calder	JUN-JUL	320	380	425	123	470	530	345
	JUN-SEP	385	450	495	121	540	605	410
Spokane R nr Post Falls (2)	JUN-JUL	565	650	710	115	770	855	620
	JUN-SEP	610	725	805	114	885	1000	705
Spokane R at Long Lake (2)	JUN-JUL	720	815	880	111	945	1040	795
	JUN-SEP	885	1020	1110	108	1200	1330	1030

PANHANDLE REGION Reservoir Storage (1000 AF) - End of May					PANHANDLE REGION Watershed Snowpack Analysis - June 1, 2014			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
Hungry Horse Lake	3451.	2641.	3089.	2733.	Kootenai ab Bonners Fer	11	169	161
Flathead Lake	1791.	1589.	1528.	1538.	Moyie River	4	193	93
Noxon Rapids Res	335.0	328.7	325.8	324.2	Priest River	2	108	136
Pend Oreille	1561.	1402.	1294.	1337.	Pend Oreille River	45	177	162
Coeur D'alene	238.5	210.8	232.0	265.5	Rathdrum Creek	2	0	0
Priest Lake Nr Coolin	119.3	140.8	133.4	137.2	Coeur d'Alene River	4	167	260
					St. Joe River	4	168	160
					Spokane River	10	168	171
					Palouse River	2	0	0

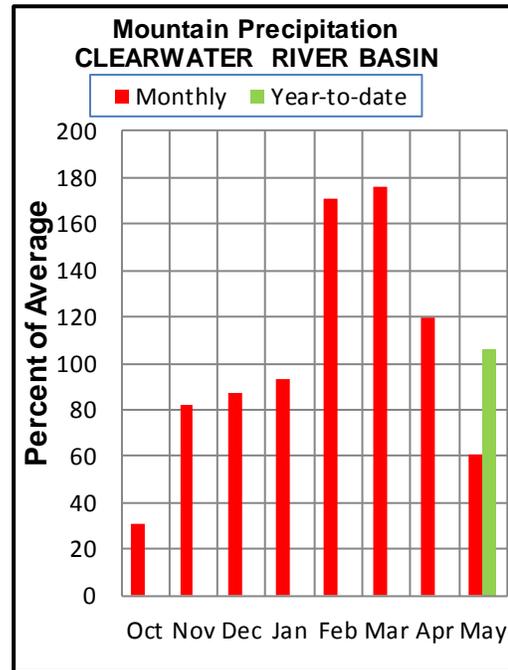
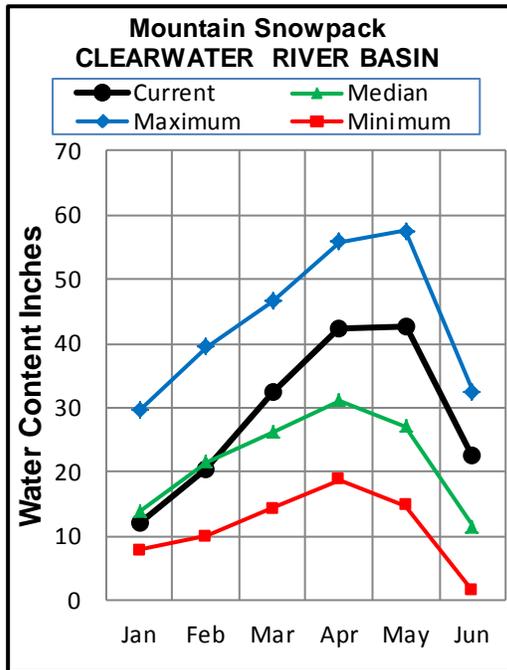
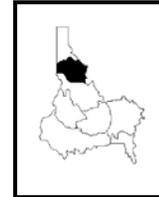
\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1981-2010 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural volume - actual volume may be affected by upstream water management.

# CLEARWATER RIVER BASIN

JUNE 1, 2014



## WATER SUPPLY OUTLOOK

Snow 100 inches deep on June first? You read that right. Lost lake SNOTEL has 100 inches with 46 inches snow water equivalent (SWE) and Cool Creek SNOTEL has 107 inches and 50 inches SWE. These and two other sites that also have over 40 inches SWE, all in the North Fork Clearwater, indicate high water will continue through most of June and remain above normal through the summer months. Whitewater enthusiasts can expect a long and exciting season on the Lochsa and Selway this year with the current snowpack nearly double the normal June 1 level. The Clearwater basin was home to the highest snowpack in Idaho this winter, nearly 140% of normal at its peak, but the concerns about potential flooding were significantly relieved when the month of May received only 61% of average precipitation. Dryland farmers may be lamenting the dry May but the larger flood issues saw it as a blessing in disguise. The Clearwater at Orofino already peaked at 54,700 cfs on May 24 and could have been much higher had May been wetter! Reservoir storage in Dworshak is right where it needs to be, 82% full and 92% of average, to safely handle the 1.2 million acre feet June – July forecasted inflow, 142% of the normal amount. Corps of Engineers experts will be monitoring conditions closely to make sure this is so. Elsewhere in the basin the June – July stream volume forecasts are nearly 130% for the Selway, Lochsa, Clearwater at Orofino.

CLEARWATER RIVER BASIN  
Streamflow Forecasts - June 1, 2014

Forecast Point	Forecast Period	Future Conditions						30-Yr Avg. (1000AF)
		<<===== Drier =====>>		===== Wetter =====>>				
		90% (1000AF)	70% (1000AF)	50% (1000AF)	30% (1000AF)	10% (1000AF)	Chance Of Exceeding * (% AVG.)	
Selway R nr Lowell	JUN-JUL	855	975	1060	129	1140	1270	820
	JUN-SEP	945	1080	1170	128	1260	1400	915
Lochsa R nr Lowell	JUN-JUL	575	660	720	127	780	865	565
	JUN-SEP	635	730	795	124	860	955	640
Dworshak Reservoir Inflow	JUN-JUL	885	1100	1200	142	1300	1520	845
	JUN-SEP	1040	1280	1390	139	1500	1740	1000
Clearwater R at Orofino (1)	JUN-JUL	1540	1980	2180	126	2380	2820	1730
	JUN-SEP	1700	2200	2430	124	2660	3160	1960
Clearwater R at Spalding (1,2)	JUN-JUL	2460	3130	3430	131	3730	4400	2610
	JUN-SEP	2770	3530	3870	129	4210	4970	2990

CLEARWATER RIVER BASIN Reservoir Storage (1000 AF) - End of May					CLEARWATER RIVER BASIN Watershed Snowpack Analysis - June 1, 2014			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
Dworshak	3468.	2856.	3389.	3113.	North Fork Clearwater	8	214	190
					Lochsa River	2	1100	537
					Selway River	4	451	183
					Clearwater Basin Total	15	239	194

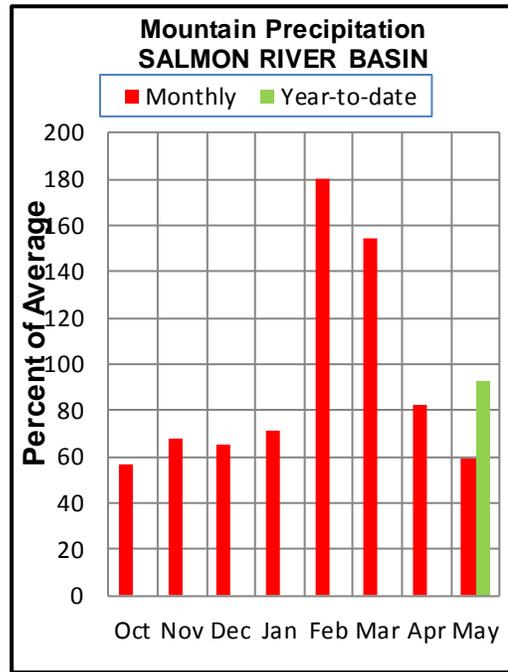
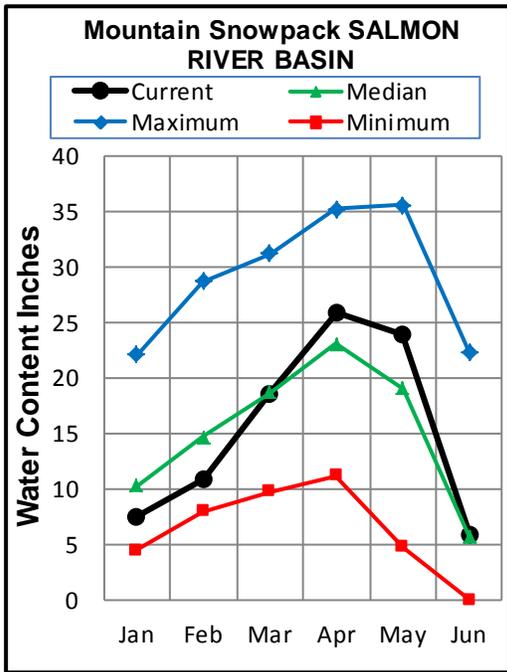
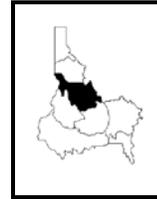
\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1981-2010 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural volume - actual volume may be affected by upstream water management.

# SALMON RIVER BASIN

JUNE 1, 2014



## WATER SUPPLY OUTLOOK

May was warm and mostly dry in the Salmon basin, SNOTEL precipitation for the month was just 59% of average with most sites receiving less than two inches total. Those conditions were ideal to allow the above normal snowpack to melt in an orderly manner that resulted in high streamflows, but without extreme flows or flooding that are possible in years with high snowpacks if hot weather and rain enter the picture. The Salmon at White Bird has been running significantly above normal throughout April, May and early June, reaching the seasonal peak of 67,300 on May 25. The snowpack on June 1 is showing 78, 84 and 98% of normal, respectively, in the upper Salmon, South Fork and Middle Fork; so a mostly normal flow recession is expected for the summer. The actual June – September volume streamflow forecasts are 65% of average for Salmon at Salmon, 96% for Middle Fork Salmon, 78% for South Fork, and overall 86% for the Salmon at White Bird. Whitewater opportunities throughout the basin should be excellent and extend well into the season now that the peak is behind us and still plenty of snow left to melt.

SALMON RIVER BASIN  
Streamflow Forecasts - June 1, 2014

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)
		Chance Of Exceeding *						
		90% (1000AF)	70% (1000AF)	50% (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
Salmon R at Salmon (1)	JUN-JUL	197	265	295	64	325	395	460
	JUN-SEP	250	340	380	65	420	510	585
Lemhi R Nr Lemhi	JUN-JUL	15.1	21	25	57	30	37	44
	JUN-SEP	22	30	35	58	41	50	60
MF Salmon R at MF Lodge	JUN-JUL	200	260	300	95	340	400	315
	JUN-SEP	250	325	375	96	425	500	390
SF Salmon R nr Krassel RS	JUN-JUL	58	79	93	78	107	128	119
	JUN-SEP	81	97	108	78	119	135	138
Johnson Ck at Yellow Pine	JUN-JUL	46	60	70	74	80	94	94
	JUN-SEP	58	71	79	74	87	100	107
Salmon R at White Bird (1)	JUN-JUL	1530	2090	2350	85	2610	3170	2760
	JUN-SEP	1900	2570	2870	86	3170	3840	3330

SALMON RIVER BASIN Reservoir Storage (1000 AF) - End of May					SALMON RIVER BASIN Watershed Snowpack Analysis - June 1, 2014			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
					Salmon River ab Salmon	7	195	78
					Lemhi River	6	133	111
					Middle Fork Salmon Rive	3	212	98
					South Fork Salmon River	3	279	84
					Little Salmon River	4	0	0
					Salmon Basin Total	22	226	108

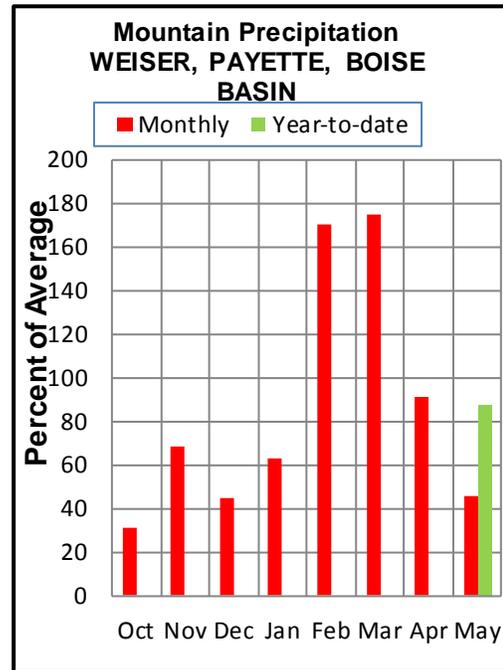
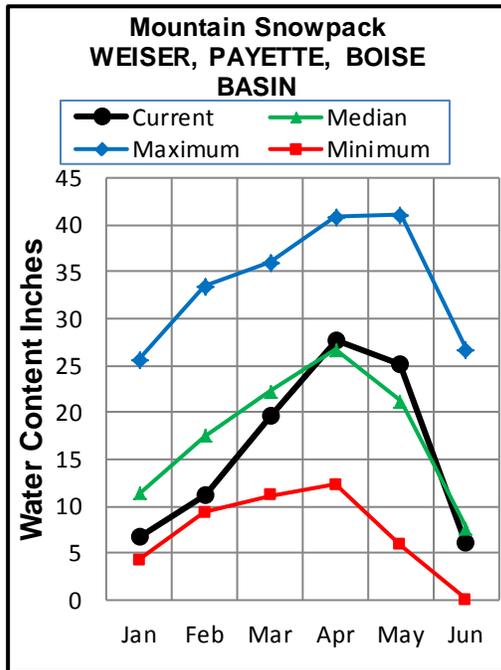
\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1981-2010 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural volume - actual volume may be affected by upstream water management.

# WEISER, PAYETTE, BOISE RIVER BASINS

JUNE 1, 2014



## WATER SUPPLY OUTLOOK

May was warm and quite dry in the west central mountains. Most SNOTEL sites received less than two inches for the month, while three to four is the norm. Overall the region was just 46% of average for the month and the water year-to-date since October 1 has dropped to 87% of average. What snow there was from a month ago is mostly gone except the very highest elevations and streams will be dropping steadily from this point on without additional rain or really hot weather. Reservoir storage in the Payette and Boise is excellent; Cascade, Deadwood, Arrowrock and Lucky Peak are all between 95 and 98% full and should be totally full soon. Anderson Ranch is lagging as a result of the much lower snowpack and precipitation this year as you move eastward across the region toward the Big Wood basin; and is sitting at 86% full. Anderson Ranch will most likely not fill completely this year as the SF Boise River is receding and releases will soon exceed inflow as irrigation demand rises. The remaining seasonal volume streamflow forecast for South Fork Boise is just 52% of normal for the June – September period. The other forecasts in this area are 79% for Boise at Twin Springs, 81% for Deadwood, 64% in the Weiser and 70% for Payette at Horseshoe Bend. The surface water supply index, which accounts both reservoir storage and future streamflow, indicates the remaining season's water supply will be below normal in the Weiser, slightly below on the Payette, and normal in the Boise. Major irrigation shortages are not expected though individual water rights are also a factor and some users without reservoir rights may be impacted somewhat. Excellent boating and other water based recreation opportunities should be the rule this summer, so get out and enjoy it.

WEISER, PAYETTE, BOISE RIVER BASINS  
Streamflow Forecasts - June 1, 2014

Forecast Point	Forecast Period	<<----- Drier ----- Future Conditions ----- Wetter ----->>						30-Yr Avg. (1000AF)
		Chance Of Exceeding *						
		90% (1000AF)	70% (1000AF)	50% (1000AF) (% AVG.)		30% (1000AF)	10% (1000AF)	
Weiser R nr Weiser (1)	JUN-JUL	27	49	61	62	74	108	99
	JUN-SEP	43	68	81	64	95	130	127
SF Payette R at Lowman	JUN-JUL	138	154	166	79	178	196	210
	JUN-SEP	176	196	210	81	225	245	260
Deadwood Resv Inflow (1,2)	JUN-JUL	30	40	44	81	48	58	54
	JUN-SEP	34	46	51	81	56	68	63
Lake Fork Payette R nr McCall	JUN-JUL	16.3	20	23	61	26	31	38
	JUN-SEP	17.8	22	25	61	28	33	41
NF Payette R at Cascade (1,2)	JUN-JUL	49	93	113	63	133	177	179
	JUN-SEP	54	101	122	64	143	190	192
NF Payette R nr Banks (2)	JUN-JUL	39	96	135	61	174	230	220
	JUN-SEP	47	108	149	62	190	250	240
Payette R nr Horseshoe Bend (1,2)	JUN-JUL	250	380	435	70	490	620	625
	JUN-SEP	350	480	540	70	600	730	775
Boise R nr Twin Springs (1)	JUN-JUL	136	170	186	78	200	235	240
	JUN-SEP	169	210	230	79	250	290	290
SF Boise R at Anderson Ranch Dam (1,2)	JUN-JUL	43	76	91	49	106	139	186
	JUN-SEP	58	96	114	52	132	170	220
Mores Ck nr Arrowrock Dam	JUN-JUL	12.8	17.4	21	78	25	31	27
	JUN-SEP	14.8	20	24	77	28	35	31
Boise R nr Boise (1,2)	JUN-JUL	215	285	315	66	345	415	480
	JUN-SEP	270	350	385	66	420	500	580

WEISER, PAYETTE, BOISE RIVER BASINS  
Reservoir Storage (1000 AF) - End of May

WEISER, PAYETTE, BOISE RIVER BASINS  
Watershed Snowpack Analysis - June 1, 2014

Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
Mann Creek	11.1	8.3	9.6	10.5	Mann Creek	1	0	0
Cascade	693.2	660.2	687.9	625.3	Weiser River	4	0	0
Deadwood	161.9	159.2	152.3	145.5	North Fork Payette	6	0	0
Anderson Ranch	450.2	386.7	318.1	375.3	South Fork Payette	4	306	102
Arrowrock	272.2	263.5	152.4	198.1	Payette Basin Total	11	416	90
Lucky Peak	293.2	281.2	284.0	262.1	Middle & North Fork Boise	5	3220	67
Lake Lowell (deer Flat)	165.2	101.4	112.3	122.9	South Fork Boise River	6	218	71
					Mores Creek	2	0	0
					Boise Basin Total	2	318	78
					Canyon Creek	1	0	0

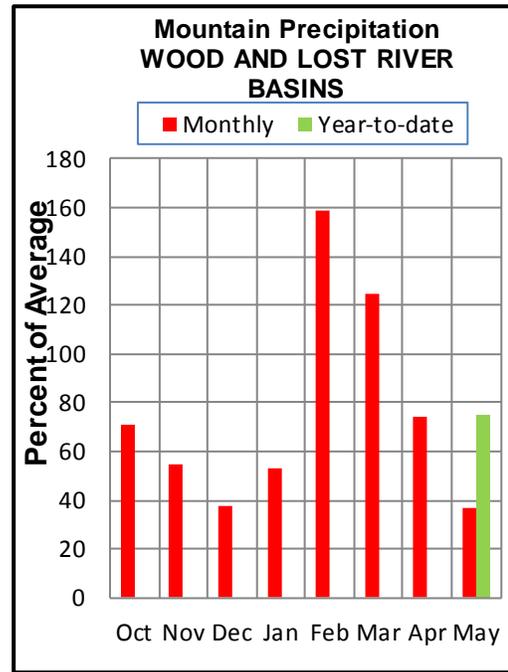
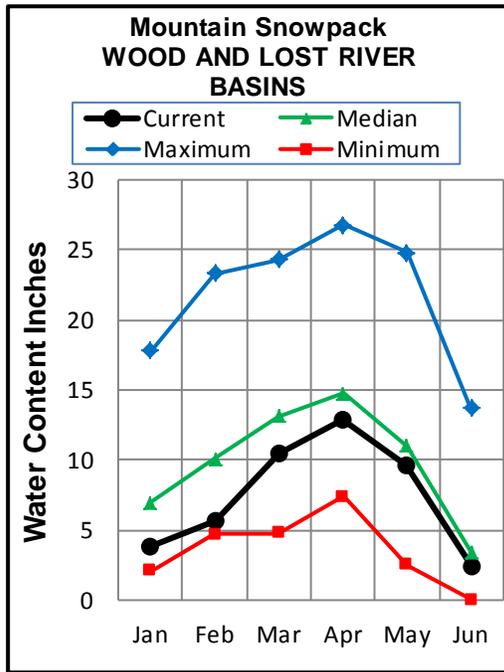
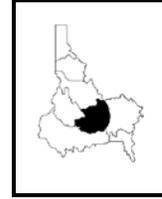
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The average is computed for the 1981-2010 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural volume - actual volume may be affected by upstream water management.

# WOOD and LOST RIVER BASINS

JUNE 1, 2014



## WATER SUPPLY OUTLOOK

The Wood and Lost basins received the least precipitation in the state relative to their normal amounts, at 37% of average. Half of the individual sites in this region received 25% or less of their average precipitation amount. As of June 1<sup>st</sup> these basins were at 74% of average water year to date precipitation and only 52% of the average annual amount for the whole water year. As of June 1<sup>st</sup>, snowpacks across the Wood and Lost basins are 70% of normal, bearing in mind that this metric becomes less reliable as the normal snow water equivalent values decrease during melt season. Magic Reservoir is currently storing 55% of average, only 37% of capacity, and is expected to be out of irrigation water by early July. Little Wood Reservoir is 53% of capacity and is cutting water supplies for the those with junior water rights while others should have water into early July. Normally releases from the power plant gate can meet demand but this year was the first time a release was made from another gate to meet downstream demand because of the high seepage losses to the aquifer below. Mackay Reservoir is 59% full and is situated to have a shorter irrigation season than last year. Mackay Reservoir operators are having a challenging time delivering water to downstream users below the town of Leslie because of high seepage losses in the river to the aquifer below. Streams are forecast at 10-40% of average, which are near or record low volumes. The Little Lost users will see less water than last year with a forecast of only 38% of average. All eyes will be on next season as this irrigation season is nearly over for some users already. Concerns are mounting as residents will be watching this year's fire season after last year's severe forest fire season (see cover image) because of another dry winter, early snow melt, minimal May precipitation, and expected dry weather in early June.

WOOD AND LOST RIVER BASINS  
Streamflow Forecasts - June 1, 2014

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)
		Chance Of Exceeding *						
		90% (1000AF)	70% (1000AF)	50% (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
Big Wood R at Haily (1)	JUN-JUL	9.3	34	45	35	56	81	127
	JUN-SEP	15.1	45	59	38	73	103	155
Big Wood R ab Magic Res	JUN-JUL	0.89	3.6	7.6	9	24	48	89
	JUN-SEP	2.0	6.1	11.9	12	26	47	101
Camas Ck nr Blaine	JUN-JUL	0.000	0.23	1.00	9	2.3	5.2	11.1
	JUN-SEP	0.000	0.37	1.28	11	2.8	5.9	11.7
Big Wood R bl Magic Dam (2)	JUN-JUL	0.97	5.8	12.1	12	27	48	97
	JUN-SEP	1.11	5.6	13.2	12	29	52	111
Little Wood R ab High Five Ck	JUN-JUL	3.4	5.7	7.7	27	10.0	13.8	29
	JUN-SEP	4.8	7.9	10.4	30	13.3	18.2	35
Little Wood R near Carey (2)	JUN-JUL	1.45	4.9	8.1	28	12.9	19.9	29
	JUN-SEP	1.75	6.0	10.4	30	15.7	24	35
Big Lost R at Howell Ranch	JUN-JUL	8.2	19.4	30	29	42	60	102
	JUN-SEP	8.5	21	34	28	49	70	122
Big Lost R Below Mackay Res	JUN-JUL	3.3	12.3	16.2	20	28	44	82
	JUN-SEP	4.4	15.3	27	25	42	64	109
Little Lost R nr Howe	JUN-JUL	3.5	4.9	6.0	39	7.2	9.1	15.5
	JUN-SEP	5.0	6.9	8.4	38	10.0	12.7	22
Camas Ck at Camas	MAY-JUL	2.2	4.2	8.2	33	13.5	21	25
	JUN-JUL	0.86	1.55	2.9	34	5.8	10.0	8.6

WOOD AND LOST RIVER BASINS Reservoir Storage (1000 AF) - End of May					WOOD AND LOST RIVER BASINS Watershed Snowpack Analysis - June 1, 2014			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
Magic	191.5	71.8	54.9	130.3	Big Wood ab Hailey	7	110	70
Little Wood	30.0	16.0	23.3	27.3	Camas Creek	2	0	0
Mackay	44.4	26.1	36.6	34.6	Big Wood Basin Total	9	175	92
					Fish Creek	0		
					Little Wood River	3	0	0
					Big Lost River	5	0	0
					Little Lost River	3	84	70
					Birch-Medicine Lodge Cr	2	84	70
Camas-Beaver Creeks	2	0	0					

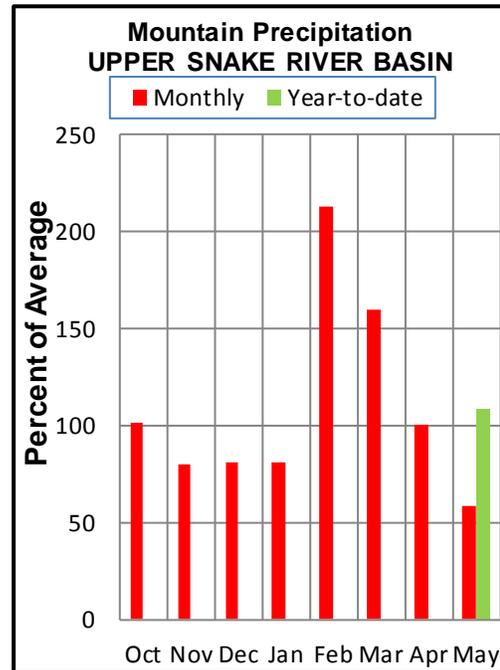
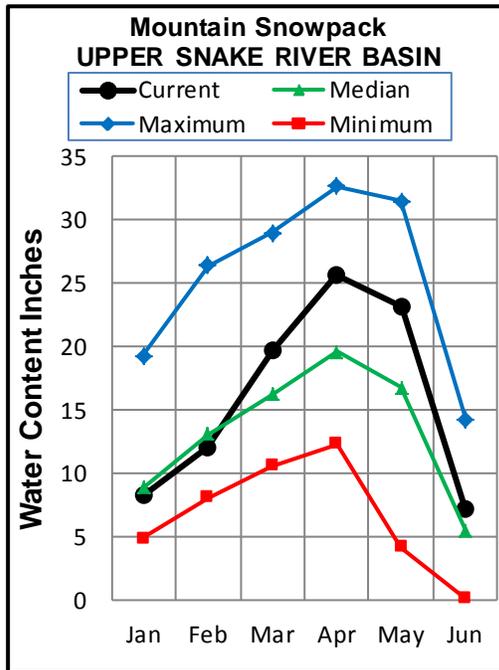
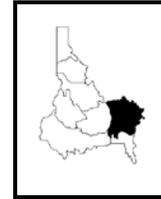
\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1981-2010 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural volume - actual volume may be affected by upstream water management.

# UPPER SNAKE BASIN

JUNE 1, 2014



## WATER SUPPLY OUTLOOK

May precipitation in the Upper Snake basin as a whole was 59% of the 1981-2010 average. Even with May being much less than average the basin still has received 109% of average water year to date precipitation, due to the three preceding months of average to well above average precipitation. With the exception of the three basins where all sites have melted out (Willow, Blackfoot, and Portneuf) snowpack amounts remain at above normal levels throughout all sub-basins of the Upper Snake. While this is a good general indicator that the snowpack is above average it is also good to bear in mind when analyzing the actual numbers that percent of normal values can become easily inflated as SWE values near zero. Most reservoirs in the Upper Snake basin are storing near average amounts with the exception of Palisades which was holding 61% of capacity and 83% of average volume as of June 1<sup>st</sup>. Although this level is low relative to other reservoirs in the system, all streamflow forecast points that flow into Palisades are predicting well above average volumes for the remainder of the snowmelt runoff season. On the low end, Willow Creek, Blackfoot, and Portneuf have forecasts ranging from 70-79% of average volumes. Water supplies will be adequate for the numerous users that rely on the annual winter snowfall.

UPPER SNAKE RIVER BASIN  
Streamflow Forecasts - June 1, 2014

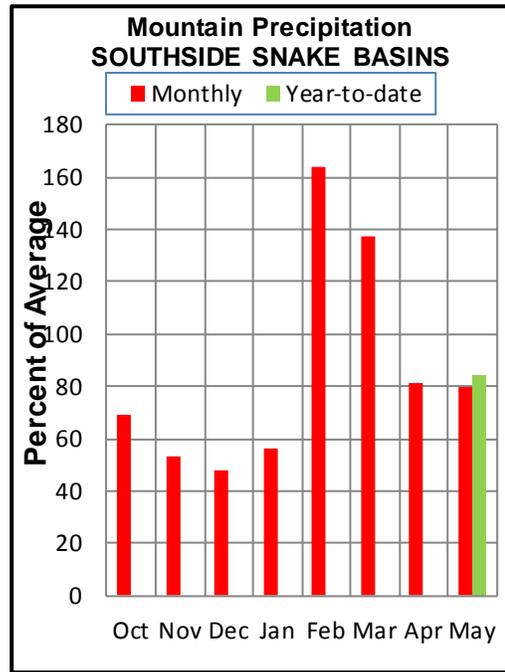
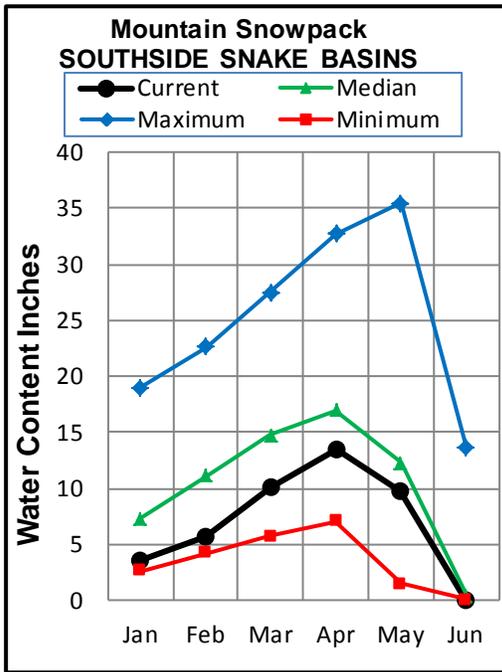
Forecast Point	Forecast Period	<<<<<< Drier ===== Future Conditions ===== Wetter >>>>>>						30-Yr Avg. (1000AF)
		Chance Of Exceeding *						
		90% (1000AF)	70% (1000AF)	50% (1000AF) (% AVG.)		30% (1000AF)	10% (1000AF)	
Henrys Fork nr Ashton (2)	JUN-JUL	153	178	195	85	215	240	230
	JUN-SEP	285	325	350	85	375	420	410
Henrys Fork nr Rexburg (2)	JUN-JUL	585	645	690	97	735	795	710
	JUN-SEP	940	1020	1080	98	1140	1220	1100
Falls R nr Ashton (2)	JUN-JUL	123	149	168	92	188	220	182
	JUN-SEP	174	205	230	92	255	295	250
Teton R nr Driggs	JUN-JUL	94	107	117	117	127	143	100
	JUN-SEP	130	148	162	117	176	198	139
Teton R nr St. Anthony	JUN-JUL	185	210	230	110	250	280	210
	JUN-SEP	250	280	305	109	330	365	280
Snake R at Flagg Ranch	JUN-JUL	235	270	290	123	310	345	235
	JUN-SEP	280	315	340	121	365	400	280
Snake R nr Moran (1,2)	JUN-JUL	385	455	490	115	525	595	425
	JUN-SEP	455	545	585	116	625	715	505
Pacific Ck at Moran	JUN-JUL	91	110	123	143	136	155	86
	JUN-SEP	103	122	136	142	150	169	96
Buffalo Fork ab Lava nr Moran	JUN-JUL	205	230	250	122	270	295	205
	JUN-SEP	240	275	295	123	315	350	240
Snake R nr Alpine (1,2)	JUN-JUL	1250	1430	1510	118	1590	1770	1280
	JUN-SEP	1530	1760	1870	116	1980	2210	1610
Greys R nr Alpine	JUN-JUL	187	200	210	128	220	235	164
	JUN-SEP	240	260	275	128	290	310	215
Salt R nr Etna	JUN-JUL	118	152	175	122	198	230	143
	JUN-SEP	184	230	260	124	290	335	210
Snake R nr Irwin (1,2)	JUN-JUL	1630	1900	2020	119	2140	2410	1700
	JUN-SEP	2140	2440	2580	118	2720	3020	2190
Snake R nr Heise (2)	JUN-JUL	1810	2000	2130	118	2260	2450	1800
	JUN-SEP	2360	2590	2740	117	2890	3120	2350
Willow Ck nr Ririe	JUN-JUL	2.3	6.4	11.0	76	15.6	22	14.4
Blackfoot R ab Res nr Henry	JUN	2.9	7.1	11.0	70	15.8	24	15.7
Snake R nr Blackfoot (1,2)	JUN-JUL	220	690	900	105	1110	1580	855
	JUN-SEP	157	460	750	105	1040	1680	715
Portneuf R at Topaz	JUN-JUL	16.6	19.7	22	79	24	28	28
	JUN-SEP	27	32	35	78	39	44	45
Snake R at Neeley (1,2)	JUN-JUL	560	985	1220	108	1480	2130	1130
	JUN-SEP	680	1140	1390	108	1660	2350	1290

UPPER SNAKE RIVER BASIN Reservoir Storage (1000 AF) - End of May					UPPER SNAKE RIVER BASIN Watershed Snowpack Analysis - June 1, 2014			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
Henrys Lk Nr Lake	90.4	86.3	89.9	85.6	Henrys Fork-Falls River	5	355	110
Island Park	135.2	126.1	135.2	133.4	Teton River	3	167	110
Grassy Lake	15.2	14.3	15.3	14.3	Henrys Fork above Rexbu	8	223	110
Jackson Lake	847.0	636.6	798.5	605.7	Snake above Jackson Lak	5	329	127
Palisades Res Nr Irwin	1400.0	847.3	751.1	1027.0	Pacific Creek	2	193	124
Ririe Lake Nr Ririe	80.5	70.9	67.0	69.6	Gros Ventre River	3	240	143
Blackfoot Res Nr Henry	348.7	217.1	246.5	235.2	Hoback River	5	370	244
American Falls	1672.0	1397.0	1220.0	1459.0	Greys River	4	346	229
					Salt River	3	1300	342
					Snake above Palisades	18	331	162
					Willow Creek	2	0	0
					Blackfoot River	2	0	0
					Portneuf River	3	0	0
					Snake abv American Fall	28	239	133

\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.  
The average is computed for the 1981-2010 base period.  
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.  
(2) - The value is natural volume - actual volume may be affected by upstream water management.

# SOUTHSIDE SNAKE RIVER BASINS

JUNE 1, 2014



## WATER SUPPLY OUTLOOK

Precipitation amounts varied widely throughout the Southside Snake basins in the month of May, from 52-111% of normal amounts, depending on the site. The region as a whole received 80% of the 1981-2010 average precipitation for the month and has received 84% of average water year to date precipitation. As of June 1<sup>st</sup> all SNOTEL sites representing Southside Snake basins had entirely melted out. Reservoir storage in the region reflects the low snowpack that was observed throughout the winter with all reservoirs holding less water than last year, and substantially less than average volumes. Oakley is 33% full and is holding the most water, with respect to capacity, of any Southside reservoir. Wildhorse Reservoir is 24% full while Salmon Falls and Owyhee are least full at 19 and 18% of capacity, respectively. Streamflow forecasts range from a high of 81% of average for Trapper Creek, which flows into Oakley Reservoir, to a low of 23% for the Bruneau. Wise planning, management of water and efficiencies in delivering water in low years like this will help stretch these limited supplies.

SOUTHSIDE SNAKE RIVER BASINS  
Streamflow Forecasts - June 1, 2014

Forecast Point	Forecast Period	<<----- Drier ----- Future Conditions ----- Wetter ----->>						30-Yr Avg. (1000AF)
		Chance Of Exceeding *						
		90% (1000AF)	70% (1000AF)	50% (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
Goose Ck ab Trapper Ck nr Oakley	JUN-JUL	0.34	1.99	3.1	66	4.2	5.9	4.7
	JUN-SEP	0.71	2.7	4.1	68	5.5	7.5	6.0
Trapper Ck nr Oakley	JUN-JUL	0.95	1.28	1.50	81	1.72	2.0	1.85
	JUN-SEP	1.87	2.3	2.6	87	2.9	3.3	3.0
Oakley Reservoir Inflow	JUN-JUL	1.42	3.3	4.6	71	5.9	7.8	6.5
	JUN-SEP	2.7	5.1	6.7	74	8.3	10.7	9.0
Salmon Falls Ck nr San Jacinto	JUN-JUL	1.51	3.1	4.5	23	6.2	9.1	20
	JUN-SEP	2.0	3.8	5.3	22	7.1	10.2	24
Bruneau R nr Hot Springs	JUN-JUL	9.7	15.4	20	30	25	34	66
	JUN-SEP	10.7	16.9	22	29	28	37	75
Reynolds Ck At Tollgate	JUN-JUL	0.030	0.090	0.43	27	0.77	1.28	1.61
	JUN-JUL	11.1	19.4	26	41	34	48	63
	JUN-SEP	19.8	30	39	49	48	64	80
Owyhee R bl Owyhee Dam (2)	JUN-JUL	21	30	38	50	47	61	76
	JUN-SEP	41	53	63	59	73	90	106

SOUTHSIDE SNAKE RIVER BASINS  
Reservoir Storage (1000 AF) - End of May

SOUTHSIDE SNAKE RIVER BASINS  
Watershed Snowpack Analysis - June 1, 2014

Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
Oakley Reservoir	75.6	25.3	28.4	37.4	Raft River	2	0	0
Salmon Falls Reservoir	182.6	35.4	48.3	82.7	Goose-Trapper Creeks	2	0	0
Wild Horse Reservoir	71.5	17.2	28.1	52.0	Salmon Falls Creek	5	0	0
Lake Owyhee	715.0	127.6	287.5	536.2	Bruneau River	5	0	0
Brownlee	1420.	1390.	1398.	1343.	Reynolds Creek	0		
					Owyhee Basin Total	7	0	0
					Owyhee Basin SNOTEL	7	0	0

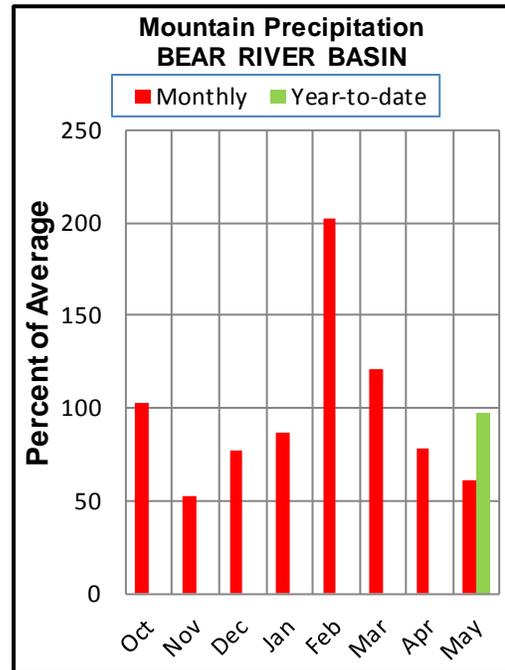
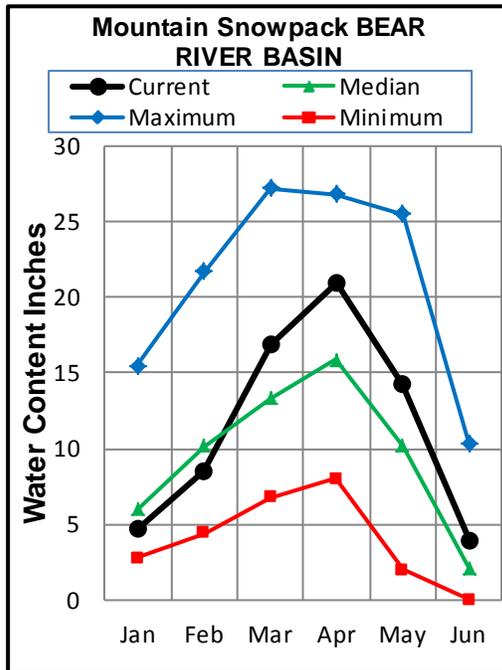
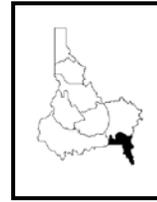
\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1981-2010 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural volume - actual volume may be affected by upstream water management.

# BEAR RIVER BASIN

JUNE 1, 2014



## WATER SUPPLY OUTLOOK

Similar to most other parts of the state the Bear basin received less than normal precipitation amounts in the month of May, at 61% of average. This leaves the basin at 97% of average water year to date precipitation. While the seasonal snowpack has already melted out at most SNOTEL sites representing the Bear basin one relatively high elevation site, Spring Creek Divide, was still holding 21" of SWE compared to the normal 11.5" on June 1<sup>st</sup>. The small Montpelier Creek Reservoir is holding above average storage and 90% of capacity while storage in the much larger Bear Lake is 92% of average and 53% of capacity. Currently there are two forecast points in the Bear River basin that are forecast to have above average June-July streamflow, the Smiths Fork at 124% of average and the Blacksmith Fork at 103% of average. At the opposite end of the spectrum the lowest forecast is for the Little Bear at Paradise, at 62% of average runoff volume while the Bear River at Stewart Dam is forecast at 83%. Overall, water supplies will be better than last year, and Bear Lake should still have some carryover storage for next year when the summer irrigation comes to an end.

BEAR RIVER BASIN  
Streamflow Forecasts - June 1, 2014

Forecast Point	Forecast Period	<<----- Drier ----- Future Conditions ----- Wetter ----->>						30-Yr Avg. (1000AF)
		Chance Of Exceeding *						
		90% (1000AF)	70% (1000AF)	50% (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
Bear R nr UT-WY State Line	APR-JUL	83	95	103	92	111	123	112
	APR-SEP	83	98	115	93	117	131	123
	JUN-JUL	41	51	57	86	64	74	66
	JUN-SEP	49	60	68	87	76	87	78
Bear R ab Res nr Woodruff	APR-JUL	81	100	112	93	125	144	121
	APR-SEP	84	102	115	90	128	146	128
	JUN-JUL	29	41	49	86	58	70	57
	JUN-SEP	22	35	52	81	53	66	64
Big Ck nr Randolph	APR-JUL	2.3	2.7	3.0	79	3.3	3.7	3.8
	JUN-JUL	0.66	1.06	1.36	82	1.66	2.1	1.66
Smiths Fk nr Border	APR-JUL	99	108	107	121	119	128	89
	APR-SEP	107	118	125	121	131	142	104
	JUN-JUL	54	63	62	124	74	83	50
	JUN-SEP	62	73	80	123	86	97	65
Bear R bl Stewart Dam	APR-JUL	30	81	115	63	149	200	183
	APR-SEP	38	95	133	65	171	228	205
	JUN-JUL	5.8	39	62	67	85	118	93
	JUN-SEP	7.0	50	80	70	110	153	115
Little Bear R at Paradise	APR-JUL	13.6	22	28	68	34	42	41
	JUN-JUL	1.60	4.4	6.3	62	8.2	11.0	10.2
Logan R nr Logan	APR-JUL	77	94	105	95	116	133	111
	JUN-JUL	41	49	54	89	59	67	61
Blacksmith Fork nr Hyrum	APR-JUL	23	35	43	100	51	64	43
	JUN-JUL	8.7	13.5	16.7	103	20	25	16.2

BEAR RIVER BASIN Reservoir Storage (1000 AF) - End of May					BEAR RIVER BASIN Watershed Snowpack Analysis - June 1, 2014			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
Bear Lake	1421.	760.0	851.7	710.6	Smiths & Thomas Forks	3	227	182
Montpelier Ck Res	4.0	3.6	3.8	3.4	Bear River ab WY-ID lin	9	211	95
					Montpelier Creek	1	0	0
					Mink Creek	1	0	0
					Cub River	1	0	0
					Bear River ab ID-UT lin	15	211	81
					Malad River	1	0	0

\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1981-2010 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
- (2) - The value is natural volume - actual volume may be affected by upstream water management.

**Streamflow Adjustment List for All Forecasts Published in Idaho Water Supply Outlook Report:** Streamflow forecasts are projections of runoff volumes that would occur without influences from upstream reservoirs or diversions. These values are referred to as natural, unregulated or adjusted flows. To make these adjustments, changes in reservoir storage, diversions, and inter-basin transfers are added or subtracted from the observed (actual) streamflow volumes. The following list documents the adjustments made for each forecast point. **(Revised Dec 2011).**

### **Panhandle River Basins**

Kootenai R at Leonia, MT  
+ Lake Koocanusa storage change  
Moyie R at Eastport – no corrections  
Smith Creek nr Porthill – no corrections  
Boundary Ck nr Porthill – no corrections  
Clark Fork R at Whitehorse Rapids  
+ Hungry Horse storage change  
+ Flathead Lake storage change  
+ Noxon Rapids Res storage change  
Pend Oreille Lake Inflow  
+ Pend Oreille R at Newport, WA  
+ Hungry Horse storage change  
+ Flathead Lake storage change  
+ Noxon Rapids storage change  
+ Pend Oreille Lake storage change  
+ Priest Lake storage change  
Priest R nr Priest R  
+ 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  
+ Coeur d'Alene Lake storage change  
Spokane R at Long Lake, WA  
+ Coeur d'Alene Lake 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  
+ Clearwater R nr Peck  
- Clearwater R at Orofino  
+ Dworshak Res storage change  
Clearwater R at Orofino - no corrections  
Clearwater R at Spalding  
+ 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

### **Weiser, Payette, Boise River Basins**

Weiser R nr Weiser - no corrections  
SF Payette R at Lowman - no corrections

Deadwood Res Inflow  
+ Deadwood R bl Deadwood Res nr Lowman  
+ Deadwood Res storage change  
Lake Fork Payette R nr McCall – no corrections  
NF Payette R at Cascade  
+ Cascade Res storage change  
+ Payette Lake storage change  
NF Payette R nr Banks  
+ Cascade Res storage change  
+ Payette Lake storage change  
Payette R nr Horseshoe Bend  
+ Cascade Res storage change  
+ Deadwood Res storage change  
+ Payette Lake storage change  
Boise R nr Twin Springs - no corrections  
SF Boise R at Anderson Ranch Dam  
+ Anderson Ranch Res storage change  
Mores Ck nr Arrowrock Dam – no corrections  
Boise R nr Boise  
+ Anderson Ranch Res storage change  
+ Arrowrock Res storage change  
+ Lucky Peak Res storage change

### **Wood and Lost River Basins**

Big Wood R at Hailey - no corrections  
Big Wood R ab Magic Res  
+ Big Wood R at Stanton Crossing nr Bellevue  
+ Willow Ck  
Camas Ck nr Blaine – no corrections  
Big Wood R bl Magic Dam nr Richfield  
+ Magic Res storage change  
Little Wood R ab High Five Ck – no corrections  
Little Wood R nr Carey  
+ Little Wood Res storage change  
Big Lost R at Howell Ranch - no corrections  
Big Lost R bl Mackay Res nr Mackay  
+ Mackay Res storage change  
Little Lost R bl Wet Ck nr Howe - no corrections

### **Upper Snake River Basin**

Henrys Fork nr Ashton  
+ Henrys Lake storage change  
+ Island Park Res storage change  
Falls R nr Ashton  
+ Grassy Lake storage change  
+ Diversions from Falls R ab nr Ashton  
Teton R nr Driggs - no corrections  
Teton R nr St. Anthony  
- Cross Cut Canal into Teton R  
+ Sum of Diversions for Teton R ab St. Anthony  
+ Teton Dam for water year 1976 only

- Henry Fork nr Rexburg
  - + Henrys Lake storage change
  - + Island Park Res storage change
  - + Grassy Lake storage change
  - + 7 Diversions from Henrys Fk btw Ashton to St. Anthony
  - + 21 Diversions from Henrys Fk btw St. Anthony to Rexburg
  - + 3 Diversions from Falls R ab Ashton
  - + 6 Diversions from Falls R nr Ashton to Chester

Snake R nr Flagg Ranch, WY – no corrections

Snake R nr Moran, WY

- + Jackson Lake storage change

Pacific Ck at Moran, WY - no corrections

Buffalo Fork ab Lava nr Moran, WY - no corrections

Gros Ventre R at Kelly, WY - no corrections

Snake R ab Res nr Alpine, WY

- + Jackson Lake storage change

Greys R nr Alpine, WY - no corrections

Salt R R nr Etna, WY - no corrections

Snake R nr Irwin

- + Jackson Lake storage change

- + Palisades Res storage change

Snake R nr Heise

- + Jackson Lake storage change

- + Palisades Res storage change

Willow Ck nr Ririe

- + Ririe Res storage change

*The forecasted natural volume for Willow Creek nr Ririe does not include an adjustment for Grays Lake water diverted from Willow Creek drainage through the Clarks Cut diversion and into Blackfoot Reservoir.*

Blackfoot R ab Res nr Henry

- + 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

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

- + Wildhorse Res storage change

Owyhee R nr Rome, OR – no Corrections

Owyhee R bl Owyhee Dam, OR

- + Owyhee Res 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 nr Montpelier

- + 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 these 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 inactive storage. **(Revised Dec 2011)**

<u>Basin/ Reservoir</u>	<u>Dead Storage</u>	<u>Inactive Storage</u>	<u>Active Storage</u>	<u>Surcharge Storage</u>	<u>NRCS Capacity</u>	<u>NRCS Capacity Includes</u>
<b><u>Panhandle Region</u></b>						
Hungry Horse	39.73	---	3451.00	---	3451.0	Active
Flathead Lake	Unknown	---	1791.00	---	1791.0	Active
Noxon Rapids	Unknown	---	335.00	---	335.0	Active
Pend Oreille	406.20	112.40	1042.70	---	1561.3	Dead + Inactive + Active
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
<b><u>Clearwater Basin</u></b>						
Dworshak	Unknown	1452.00	2016.00	---	3468.0	Inactive + Active
<b><u>Weiser/Boise/Payette Basins</u></b>						
Mann Creek	1.61	0.24	11.10	---	11.1	Active
Cascade	Unknown	46.70	646.50	---	693.2	Inactive + Active
Deadwood	Unknown	---	161.90	---	161.9	Active
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
<b><u>Wood/Lost Basins</u></b>						
Magic	Unknown	---	191.50	---	191.5	Active
Little Wood	Unknown	---	30.00	---	30.0	Active
Mackay	0.13	---	44.37	---	44.4	Active
<b><u>Upper Snake Basin</u></b>						
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
Jackson Lake	Unknown	---	847.00	---	847.0	Active
Palisades	44.10	155.50	1200.00	---	1400.0	Dead + Inactive+Active
Ririe	4.00	6.00	80.54	10.00	80.5	Active
Blackfoot	Unknown	---	348.73	---	348.7	Active
American Falls	Unknown	---	1672.60	---	1672.6	Active
<b><u>Southside Snake Basins</u></b>						
Oakley	0.00	---	75.60	---	75.6	Active
Salmon Falls	48.00	5.00	182.65	---	182.6	Active + Inactive
Wildhorse	Unknown	---	71.50	---	71.5	Active
Owyhee	406.83	---	715.00	---	715.0	Active
Brownlee	0.45	444.70	975.30	---	1420.0	Inactive + Active
<b><u>Bear River Basin</u></b>						
Bear Lake	5000.00	119.00	1302.00	---	1421.0	Active + Inactive: includes 119 that can be released
Montpelier Creek	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 *						30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (1000 AF)	(% AVG.)	30% (1000AF)	10% (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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OFFICIAL BUSINESS



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