



United States Department of Agriculture  
Natural Resources Conservation Service

# Idaho Water Supply Outlook Report June 1, 2013



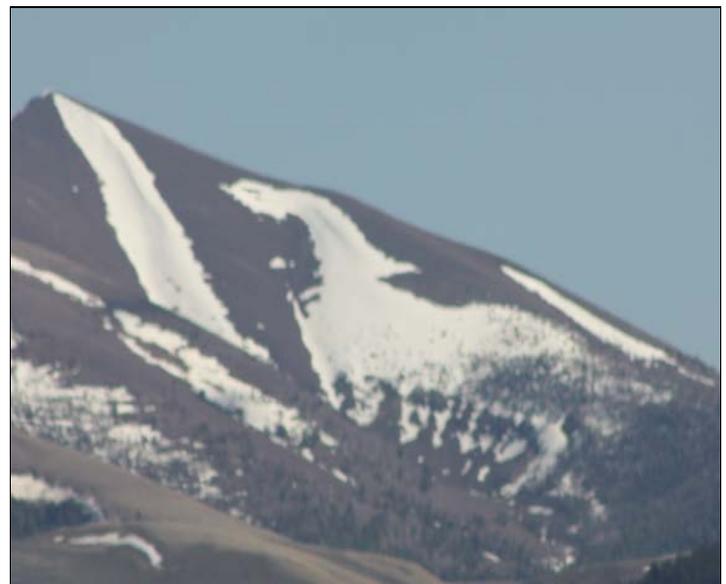
**In search of the Big Lost White Stallion....  
and when you see it, means this year's  
snowmelt streamflow peak has occurred.**

**These images were taken by Ron Abramovich,  
NRCS Snow Survey, on May 25, 2013. After the  
unseasonably warm weather in the first half of  
May, the White Stallion started taking shape as  
the snow melted off the mountain side. Then  
cool weather in the second half of May slowed  
the remaining snow from melting to fully  
develop the stallion but allowed the stallion to  
remain longer on the northeast facing hillside in  
the Big Lost River Range near Mount Borah.**

**For at least the past 20 years, locals have been  
watching to see when the stallion is fully  
developed. The water master watches the image  
daily and noted that in the second image the  
legs are not fully developed as in past years.  
This is because the mid-May cold front had a  
major impact on slowing the melting of the  
mountain snowpack. This major event cooled  
the region from the record high temperatures in  
early May that changed to valley frosts by late  
May. It is also credited with producing the  
snowmelt streamflow peaks across the state  
that occurred around May 14, saving the  
remaining snow to melt in late and early June,  
put a damper on the approaching fire season,  
and reduced irrigation demand!**

**Just a coincidence, but the development of the  
Big Lost White Stallion timing agrees with the  
snowmelt relationship at Lost-Wood Divide  
SNOTEL that shows the snowmelt streamflow  
peak occurs just after the snow has melted at  
this site.**

**For more information and graphs that illustrate  
the snowmelt-streamflow relationships for this  
basin and others, please see the Idaho NRCS  
Peak Streamflow Resources web page:  
[http://www.id.nrcs.usda.gov/snow/watersupply/  
peakflow.html](http://www.id.nrcs.usda.gov/snow/watersupply/peakflow.html)**



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

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or

**Natural Resources Conservation Service  
Snow Surveys  
9173 West Barnes Drive, Suite C  
Boise, Idaho 83709-1574  
(208) 378-5740**

**Internet Web Address**

<http://www.id.nrcs.usda.gov/snow/>

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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, 2013**

## **SUMMARY**

A long downhill slide on skis is fun; unfortunately this year it was Idaho's water supply that slid the farthest. Idaho's dry trend continued through May, making five months of below normal precipitation for most parts of the state. The January-May precipitation set new record low amounts at 19 SNOTEL sites and was second lowest at another 14 sites across the state based on daily SNOTEL precipitation measurements back to the early 1980s. Less snow allowed many SNOTEL sites to melt out three weeks earlier than normal and some sites came within a few days of setting another record. The prolonged dry spell and early snow free ground sets the stage for another potentially extreme fire season. Conditions this year are similar to 2007 when nearly 2 million acres burned in Idaho. For irrigators, initially promising early season forecasts have slipped away and water shortages are now certain in many areas. How severe the shortage will depend upon your water right and water source. More drought declarations to assist irrigators are expected as the dry spell is now taking its toll. The outlook might be grim, but May's weather provided some relief. After a warm start to the month, the good news is that temperatures cooled delaying snowmelt somewhat and decreasing irrigation demand. A little rain, and even a few flurries, over the Memorial Day weekend helped prevent early season human caused wildfires and most of May provided a prolonged period of comfortable spring weather for recreation in both valley and mountain locations.

## **SNOWPACK**

There is still snow on the ground at higher elevations, particularly in Northern Idaho, but those islands of winter will shrink quickly as heat moves back in to Idaho in early June. On June 1 snow was measured at 26 of the 118 SNOTEL sites operated by the Boise snow survey office in Idaho and across Western Wyoming. According to the 1981-2010 medians, 40 sites would still have snow in a typical year. For many stations melt-out was early, particularly at mid-elevation sites which had the most disappointing snowpack this year. For example, Mores Creek Summit SNOTEL in the Boise basin had its third earliest melt-out in the last 32 years; earlier by half a week than the big fire year of 2007. Even at higher elevations melt-out was in the top five to ten years at Trinity Mountain (Boise), Big Creek Summit (Payette), Galena Summit (Big Wood/Salmon Divide) and Lost-Wood Divide, as well as, in Yellowstone NP at Lewis Lake Divide. Only select basins in the Panhandle, including the Pend Oreille, Coeur d'Alene and Spokane basins have above normal snow for this time of year. The Clearwater Basin has about 80% of its normal snow, as does the Lemhi and Little Lost basins. Most Snake River tributaries have 50-65% of normal snow, but not the headwaters above Jackson Lake where snow is 39%. This is because Lewis Lake Divide and Grassy Lake SNOTELs, which normally still have snow, are both melted out. Amounts are 40-50% of normal in the Salmon basin, as well as, the Big Wood, Henrys Fork and the Bear River basin. The Boise, Payette, and Big Lost basins are 20-25% of normal with snow at only a handful of sites. All stations in the remainder of south and central Idaho, including those in the Salmon Falls, Oakley and Weiser basins have already melted out.

## **PRECIPITATION**

May was drier than normal across Idaho ranging from half to three quarters of normal. The Panhandle and Upper Snake basin had the most rainfall in May while the Clearwater, Weiser, Payette, Boise and Southside Snake basins were the driest. Cool, wet weather around Memorial Day may have spoiled camping trips, but it did a little to make up for the dry start to the month. Thanks to abundant fall rains water year to date precipitation remains at 80-90% across Idaho and near average or better in the Clearwater basin and the Panhandle. Since January below normal precipitation has been a persistent problem. The only relief was in April when north Idaho, the Upper Snake and the Bear basins had a month of decent moisture. Overall the five month period from January through May was the driest on record at 19 Idaho SNOTEL since the records start in the early 1980s. Many of these sites have recorded about 50% or less of their normal precipitation since January. Deadwood Summit in the Payette basin is a perfect example; it normally gets 31 inches of precipitation from January to May, but has only had 16 inches this year which means it was 15 inches short. Another 39 sites were second to fifth driest for the period. Most of this near to record breaking dryness is found in central Idaho from the Weiser, Payette and Boise basin to the Upper Salmon, Wood and Lost basins. Combine parched forests with the early snow melt-out and this summer's wildfire danger is especially serious considering that the long range forecasts predict hotter and drier than normal weather for most of Idaho this summer.

## **RESERVOIRS**

The reservoir water storage situation this month is a mixed bag across Idaho and the upper Snake in Wyoming. The Payette system (Deadwood and Cascade) and Dworshak on the Clearwater are nearly full and about to be topped off for the summer. All three reservoirs are at 109% of average, great news for water users now that the threat of snowmelt flooding is over until next year. In the Panhandle, Coeur d'Alene Lake is nearly full, 97% of capacity, but below its June 1 normal at 87%. And Lake Pend Oreille is the opposite, near average storage but only 83% full. Those figures represent different management strategies and better water supplies in this region. In central Idaho, the Boise system is three quarters full which is 90% of average. Lucky Peak will be kept full as long as possible to offer recreational opportunities, but drafting could begin by mid-July. Low stream forecasts mean quicker and deeper drawdowns upstream in Arrowrock and Anderson Ranch as the irrigation season gets into high gear later in June. Magic Reservoir is at its fifth lowest June 1 level ever! Completed in 1911, just 30,000 acre-feet are stored and water managers expect the reservoir allotments to run out by July 15th. Mackay and Little Wood reservoirs are about 80% full, but like elsewhere in this region, low stream forecasts and persistent dry conditions will mean irrigation shortages are likely this year. The upper Snake system above American Falls is in better shape with 92% of normal overall storage for the eight major reservoirs. American Falls is 84% of average, 73% full. Water supplies will be marginally adequate and depends on your specific canal company and water rights. Bear Lake is storing 117% of normal at 68% of useable capacity and is the highest in the state. South of the Snake, reservoirs are all well below normal storage ranging from about 55% of normal for Salmon Falls and Owyhee to 76% in Oakley. With streams already in full recession, irrigation shortages are likely in most areas.

## **STREAMFLOW**

An early warm-up in May set the stage to move water from Idaho's high country to the rivers and reservoirs where it can be utilized by many. Record high temperatures in the low 90s in Boise and 70s in Jackson, Wyoming in early May accelerated the melt. Many streams across our monitoring region reached their season snowmelt peak around May 14. If not for the major cold front that moved into the state, the streams would have kept climbing higher for a few more days until more snow was depleted. Luckily for us in Idaho, but not in the Midwest, the weather pattern changed in mid-month and brought more seasonal temperatures and even snow. These cold fronts slowed the snowmelt and will allow the remaining snow to provide better recession flows in June. Residual streamflows for the June-July period are forecast at 80-100% of average from the Clearwater basin to the Canadian border. Streams in the Salmon, Weiser, Payette, Boise and Upper Snake are forecast at 40-70% of average. The Wood and Lost basins are forecast at 25-50% of average while the high desert streams and the Bear River across the southern Idaho border are forecast at 20-60%. Summer streamflow levels in northern Idaho will be closer to normal levels, but still below normal through the summer months. Streamflow levels in central and southern Idaho are currently near their bottom ten percentile for the lowest daily flows and are expected to remain near record low levels through the summer. Inflows to Brownlee Reservoir in Hells Canyon are projected in the bottom ten percentile since 1960. Night releases starting Sunday evening June 9 will decrease to below 8,500 cfs followed by higher releases during the day. This is the first time releases will be below 8,500 cfs since 2004. Conservation and wise use of this critical resource are the words for this summer.

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**

Patch the rafts, wax the (water) skis, tie some flies, fire up the ATV's, restock the backpacks, maintain the boat and trailer, load the tackle box, get the horses in shape, take a first aid refresher, and head for the great Idaho outdoors! Although the lack of a decent snowpack and a very dry spring this year could have significant economic impacts for Idaho agriculture, the recreation season comes earlier and is now in full swing. Big river whitewater like the Salmon, Selway and Clearwater have already peaked and will provide outstanding access, plenty of thrills and less of the death-defying extremes you see in big snowpack years. Family fun for all and will last well into the summer. Good boating flows will be found on the Payette River due to full reservoirs and irrigation demand. High country trails both motorized and non-motorized are opening sooner due to early snowmelt – only 15% of our SNOTEL sites still have snow to report. For example, Vienna Mine SNOTEL at 8,960 feet in the Sawtooths has just 7.5 inches of snow water content and melting over an inch per day. It will be gone by June 8; its normal meltout is June 28! Stream fisher people should be very excited as the lower clear water will soon be here, making for a long wading season for those hungry trout. Many of the major reservoirs are now at their peaks and the flat water recreation will be great, while supplies last. All in all, high water years or low, most of the Idaho outdoor recreation is inseparably tied to the water cycle and seasonal snowpack. There is never a bad year (or season) to get out and enjoy Idaho!

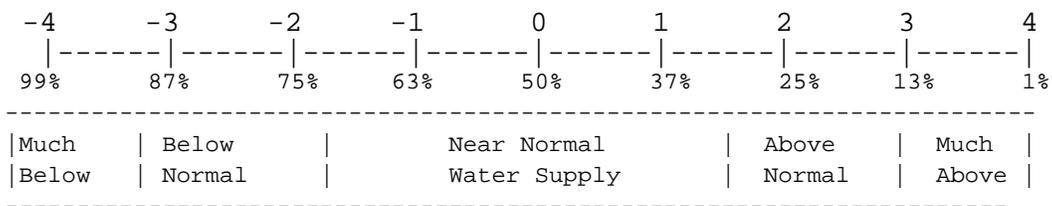
## IDAHO SURFACE WATER SUPPLY INDEX (SWSI) June 1, 2013

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.

<i><b>BASIN or REGION</b></i>	<i><b>SWSI Value</b></i>	<i><b>Most Recent Year With Similar SWSI Value</b></i>	<i><b>Agricultural Water Supply Shortage May Occur When SWSI is Less Than</b></i>
Northern Panhandle	-0.5	2005	NA
Spokane	-1.3	1998	NA
Clearwater	-1.0	2003	NA
Salmon	-2.5	2005	NA
Weiser	-1.5	2012	NA
Payette	-2.3	2005	NA
Boise	-2.5	2007	-2.4
Big Wood	-3.3	2001	-0.9
Little Wood	-2.3	2000	-2.1
Big Lost	-1.5	2000	0.1
Little Lost	-1.8	2000	0.9
Teton	-1.8	2012	-3.9
Henry's Fork	-1.5	2003	-3.4
Snake (Heise)	-2.0	2007	-1.4
Oakley	-1.3	2002	0.4
Salmon Falls	-2.8	2004	-0.9
Bruneau	-2.0	2003	NA
Owyhee	-3.3	2003	-3.4
Bear River	0.4	1989/2000	-3.4

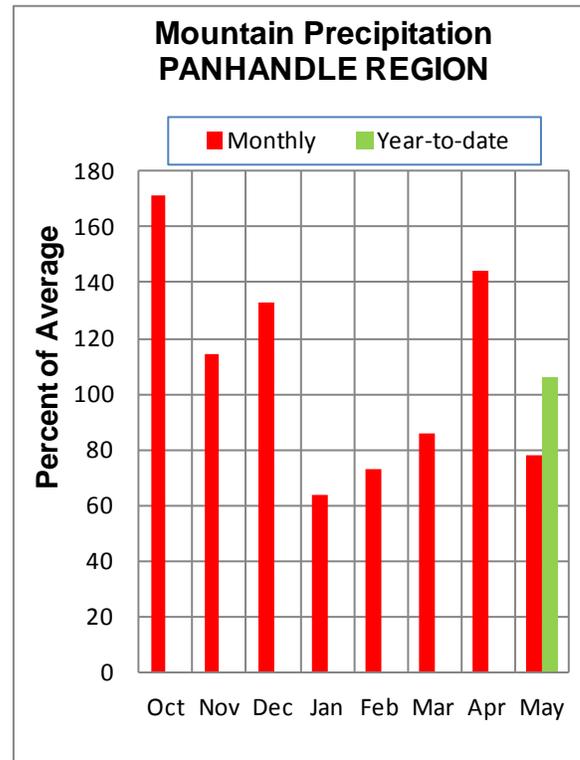
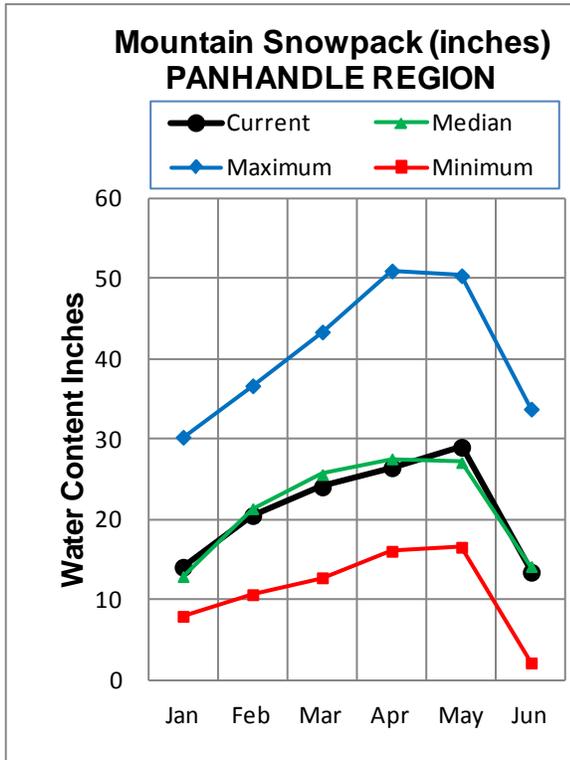
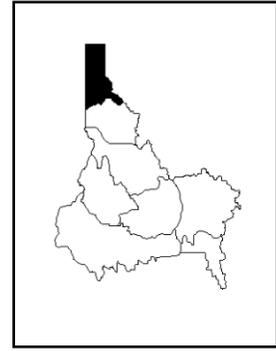
### **SWSI SCALE, PERCENT CHANCE OF EXCEEDANCE, AND INTERPRETATION**



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, 2013



## WATER SUPPLY OUTLOOK

The Panhandle has the best water supply in Idaho. Water year to date precipitation is 112% of average, making the Panhandle the only portion of the state still above normal. The wettest part of Idaho in May was near the Canadian border where Hidden Lake and Myrtle Creek SNOTELs recorded 140-150% their normal amounts for the month. May amounts decreased moving south to the Moscow Mountain SNOTEL which only measured 39% of average. Overall May precipitation across the region was below normal, but was the best in the state at 78% of normal. As for late season snow, all the sites that typically have snow in June still do and many have more than normal. Schweitzer Basin SNOTEL, north of Lake Pend Oreille, has the most snow of all the Idaho measuring sites at 136% of normal, almost 6 feet deep and contains 33.5 inches of snow water on June 1. Region wide the Northern Panhandle and the Spokane basin have slightly more than average snow for June 1. Lake Pend Oreille is 83% full, a near normal amount. Lake Coeur d'Alene is 97% full, 87% of normal. Streamflow forecasts for the rest of the summer range from 80-110% of average, with better amounts to the north. Unlike many other parts of Idaho, the Panhandle will have good water supplies this summer and rivers should continue to flow near to slightly below average.

PANHANDLE REGION  
Streamflow Forecasts - June 1, 2013

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	2440	3030	3300	91	3570	4160	3640
	JUN-SEP	3210	3930	4260	92	4590	5310	4640
Moyie R at Eastport	JUN-JUL	60	86	104	78	122	148	133
	JUN-SEP	69	98	117	80	136	165	147
Boundary Ck nr Porthill	JUN-JUL	25	34	40	95	46	55	42
	JUN-SEP	28	38	45	94	52	62	48
Clark Fork at Whitehorse Rpd (1,2)	JUN-JUL	3360	4110	4450	88	4790	5540	5070
	JUN-SEP	3920	4820	5220	86	5620	6520	6090
Pend Oreille Lake Inflow (2)	JUN-JUL	3800	4390	4780	87	5170	5760	5480
	JUN-SEP	4390	5090	5560	85	6030	6730	6520
Priest R nr Priest River (1,2)	JUN-JUL	225	275	305	111	335	385	275
	JUN-SEP	260	315	355	109	395	450	325
NF Coeur d'Alene R at Enaville	JUN-JUL	90	115	133	89	151	176	150
	JUN-SEP	118	149	169	90	189	220	187
St. Joe R at Calder	JUN-JUL	173	235	280	81	325	385	345
	JUN-SEP	230	295	340	83	385	450	410
Spokane R nr Post Falls (2)	JUN-JUL	370	455	515	83	575	660	620
	JUN-SEP	400	515	595	84	675	790	705
Spokane R at Long Lake (2)	JUN-JUL	510	605	670	84	735	830	795
	JUN-SEP	650	785	875	85	965	1100	1030

PANHANDLE REGION Reservoir Storage (1000 AF) - End of May					PANHANDLE REGION Watershed Snowpack Analysis - June 1, 2013			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
HUNGRY HORSE	3451.0	3089.6	3067.0	2733.0	Kootenai ab Bonners Ferry	7	48	89
FLATHEAD LAKE	1791.0	1528.6	1391.0	1538.0	Moyie River	1	32	11
NOXON RAPIDS	335.0	325.8	328.8	324.2	Priest River	2	56	126
Pend Oreille	1561.3	1294.6	1204.3	1337.0	Pend Oreille River	39	59	94
Coeur d'Alene	238.5	232.0	206.5	265.5	Rathdrum Creek	1	0	0
Priest Lake	119.3	85.4	133.9	137.2	Coeur d'Alene River	4	31	155
					St. Joe River	4	63	95
					Spokane River	9	54	102
					Palouse River	2	0	0

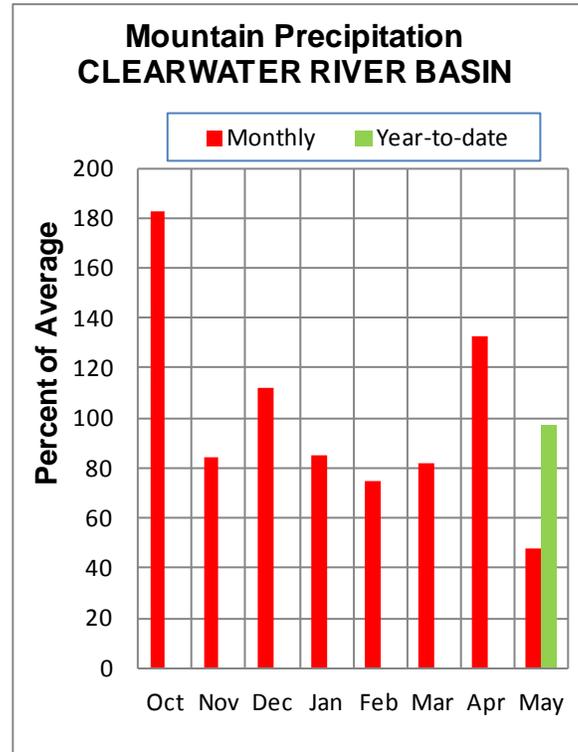
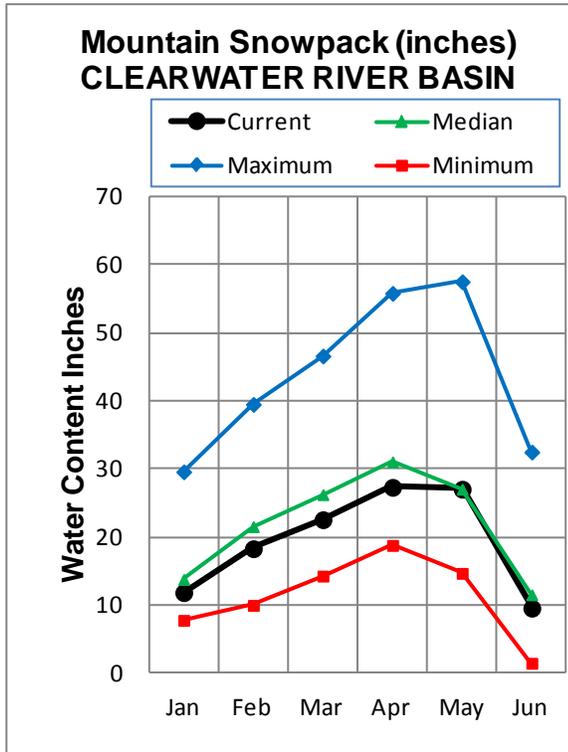
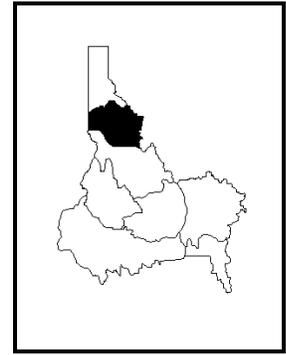
\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

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, 2013



## WATER SUPPLY OUTLOOK

The Clearwater basin's water supply is better than any Idaho basin to its south. Water year to date precipitation is near average, even though January to May was among the ten driest years since records begin in the early 1980s at Elk Butte, Shanghi Summit, Cool Creek and Hemlock Butte SNOTELs. Monthly precipitation in May was about half the normal amount, still better than much of southern Idaho. Snow remains at the highest elevation sites in the basin, and amounts are currently 81% of the 1981-2010 median. On May 31st the Army Corps of Engineers and the NRCS did a helicopter flight in the basin and determined 5% of the basin remained snow-covered with an average snowline of 5,900 feet. These observations help the Corps with Dworshak Reservoir operations and to complete final fill. Dworshak is 98% full, which is 109% of average for June 1. With tight water supplies on Snake River Plain and flows through Hells Canyon forecast at 60% of average, water temperatures will likely be warmer than normal in the Lower Snake River; Dworshak's cold water will play a crucial role in regulating the water temperature of the Lower Snake for salmon and steelhead this summer. The typical summer drawdowns at Dworshak for fish augmentation water will result in recreational impacts for boaters trying to access campsites on Dworshak's shore as summer progresses. June-July streamflow forecasts range from 84-89% of average, with Dworshak inflow forecast at 84%. Water supplies are similar to 2003 and will be adequate, but expect Dworshak to reach its minimum levels by summer's end.

CLEARWATER RIVER BASIN  
Streamflow Forecasts - June 1, 2013

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)	
Selway R nr Lowell	JUN-JUL	490	610	695	85	780	900	820
	JUN-SEP	565	700	790	86	880	1020	915
Lochsa R nr Lowell	JUN-JUL	355	440	500	89	560	645	565
	JUN-SEP	410	505	570	89	635	730	640
Dworshak Res Inflow	JUN-JUL	400	615	710	84	805	1020	845
	JUN-SEP	520	755	860	86	965	1200	1000
Clearwater R at Orofino (1)	JUN-JUL	835	1280	1480	86	1680	2120	1730
	JUN-SEP	985	1480	1710	87	1940	2440	1960
Clearwater R at Spalding (1,2)	JUN-JUL	1230	1900	2200	84	2500	3170	2610
	JUN-SEP	1480	2240	2580	86	2920	3680	2990

CLEARWATER RIVER BASIN  
Reservoir Storage (1000 AF) - End of May

CLEARWATER RIVER BASIN  
Watershed Snowpack Analysis - June 1, 2013

Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
Dworshak	3468.0	3389.1	3081.5	3113.0	North Fork Clearwater	8	56	89
					Lochsa River	2	27	49
					Selway River	4	32	41
					Clearwater Basin Total	15	52	81

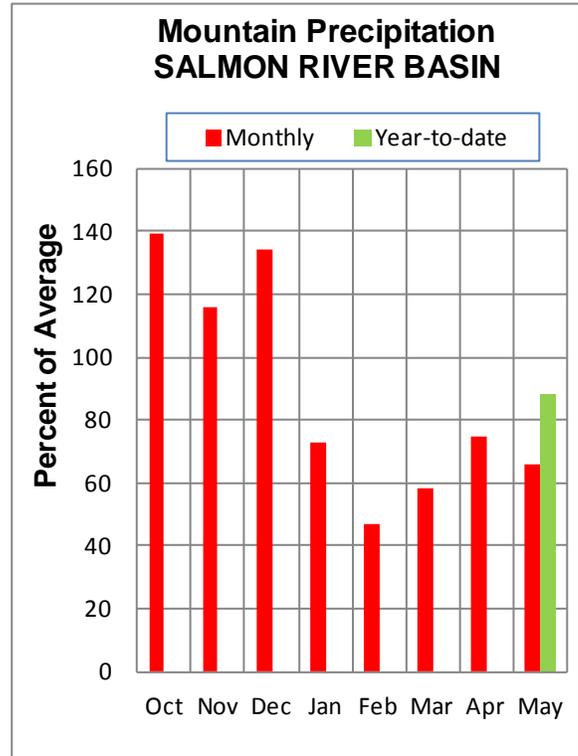
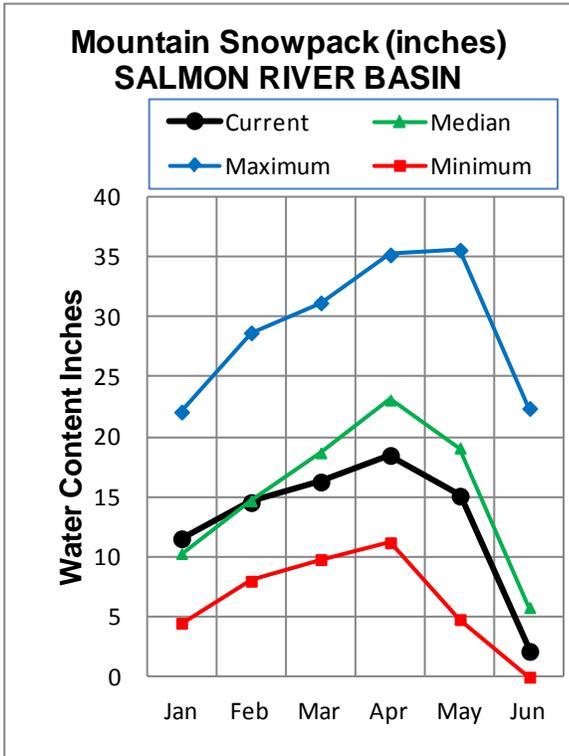
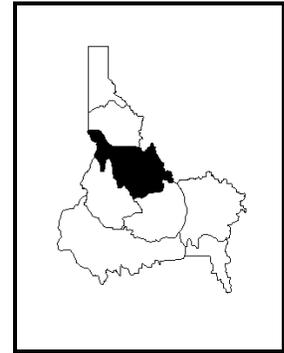
\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

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, 2013



## WATER SUPPLY OUTLOOK

Adding May makes five consecutive months with below normal precipitation in the Salmon basin. The dry trend is likely to continue through August as long range forecasts call for below normal summer precipitation for the next three months. May precipitation was 66% of average, leaving water year to date precipitation at 88%. Summing January - May five month precipitation was the driest ever measured at Banner Summit, Deadwood Summit and Brundage Reservoir SNOTEL sites based on daily data collected since the early 1980s. A total of 15 sites in the basin recorded amounts that ranked their January-May precipitation among the five driest years. As of June first, 6 of the basin's 22 SNOTEL sites still had snow. In a normal year twice as many sites would have snow based on the new 1981-2010 medians. All SNOTELs in the basin should be snow free by June 8th, leaving just the high snow on shady, northern aspects to melt later. This lack of snow means it's a great year to go on an early summer backpacking trip in the Sawtooth Mountains. Also, river flows are already ideal for whitewater trips as rivers are well into recession flows already. The Middle Fork Salmon River peaked on May 14th at 8,700 cfs a few days after Banner Summit reached half melt. Perhaps this year's low snow below 6,500 feet and better higher elevation snow caused the peakflow to occur a little later than normal based on the snow-stream relationship. The summer residual flows for the June-July period are forecast for 62% for the Middle Fork, 55% for Salmon River at Salmon and 59% for Salmon River at White Bird. Our advice is, get out there soon before the scenery gets smoky; this year's dry weather and early melt-out could lead to a busy wildfire season.

SALMON RIVER BASIN  
Streamflow Forecasts - June 1, 2013

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	157	225	255	55	285	355	460
	JUN-SEP	215	305	345	59	385	475	585
Lemhi R nr Lemhi	JUN-JUL	14.4	18.2	21	48	24	29	44
	JUN-SEP	22	28	32	53	36	43	60
MF Salmon R at MF Lodge	JUN-JUL	98	156	196	62	235	295	315
	JUN-SEP	137	210	260	67	310	385	390
SF Salmon R nr Krassel RS	JUN-JUL	30	51	65	55	79	100	119
	JUN-SEP	50	66	77	56	88	104	138
Johnson Ck at Yellow Pine	JUN-JUL	33	47	57	61	67	81	94
	JUN-SEP	38	51	59	55	67	80	107
Salmon R at White Bird (1)	JUN-JUL	810	1370	1630	59	1890	2450	2760
	JUN-SEP	1100	1770	2070	62	2370	3040	3330

SALMON RIVER BASIN Reservoir Storage (1000 AF) - End of May					SALMON RIVER BASIN Watershed Snowpack Analysis - June 1, 2013			
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	36	40
					Lemhi River	6	102	83
					Middle Fork Salmon River	3	35	46
					South Fork Salmon River	3	25	30
					Little Salmon River	4	0	0
					Salmon Basin Total	22	47	48

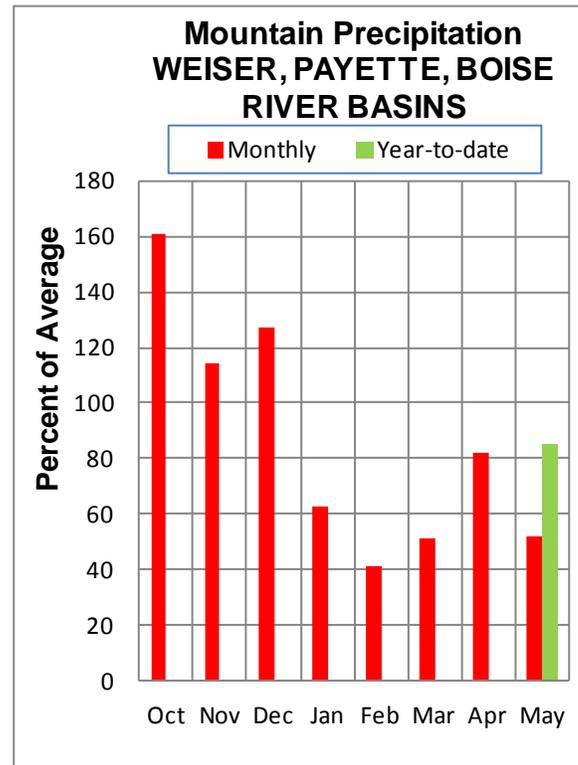
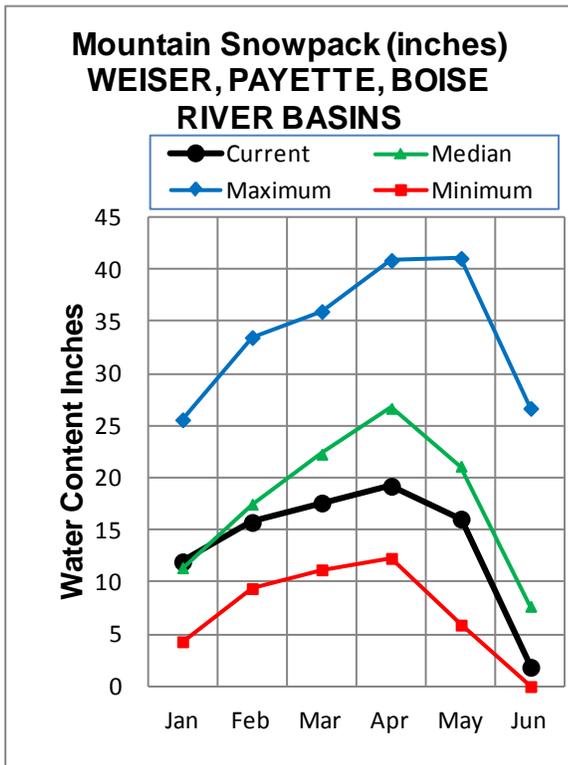
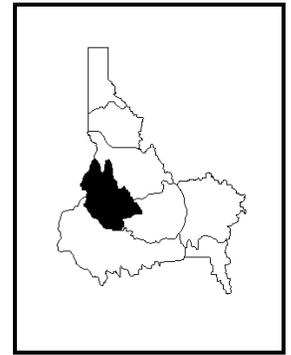
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The average is computed for the 1981-2010 base period.

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# WEISER, PAYETTE, BOISE RIVER BASINS

JUNE 1, 2013



## WATER SUPPLY OUTLOOK

Another month of drier than normal weather in May could make water supplies tight for irrigators growing longer season crops. May precipitation was just 38% of normal in the Boise basin, 56% in the Payette and 72% in the Weiser. It's been five months since these basins received normal monthly amounts of moisture. The January – May period was the driest ever measured since records begin in the early 1980s at 11 SNOTEL sites across these basins. All other SNOTEL sites were within an inch or two inches of setting new records. Most sites missed half or more of their normal amounts during the period; at some sites that was equivalent to missing 10 to 15 inches of moisture. Only the highest and shadiest SNOTEL sites had snow remaining on June 1. Those include Dollarhide, Vienna Mine and Trinity Mountain and all three will be snow free by June 8th. Meltout at other sites was very early this spring. Mores Creek Summit SNOTEL was snow-free on May 10th, within 5 days of the record set in 1992. Trinity Mountain and Big Creek Summit SNOTELs were within two weeks of the earliest melt-out, fifth earliest at both sites. This year's snow-free dates are very similar to 2007, a big wildfire year in the west-central mountains. Reservoirs are near full in the Payette system and 74% of capacity in the Boise. The Boise system will not fill this year and expect earlier than normal drafting. Streamflow forecasts for June-July are about 50% of normal for the mainstem Boise and Payette rivers and 70% for the Weiser. Combining forecasts and reservoir storage using the Surface Water Supply Index indicates Boise water users could be 50,000 acre-feet short based on the 50% exceedance forecast. If the future weather is hot and dry the 90% exceedance forecast predicts shortages near 160,000 acre-feet by the end of September.

WEISER, PAYETTE, BOISE RIVER BASINS  
Streamflow Forecasts - June 1, 2013

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	33	56	69	70	83	119	99
	JUN-SEP	54	81	95	75	110	148	127
SF Payette R at Lowman	JUN-JUL	96	109	119	57	129	145	210
	JUN-SEP	130	147	159	61	172	191	260
Deadwood Resv Inflow (1,2)	JUN-JUL	9.6	19.5	24	44	28	38	54
	JUN-SEP	12.7	25	30	48	35	47	63
Lake Fork Payette R nr McCall	JUN-JUL	21	26	29	76	32	38	38
	JUN-SEP	23	28	31	76	35	40	41
NF Payette R at Cascade (1,2)	JUN-JUL	35	79	99	55	119	163	179
	JUN-SEP	44	91	112	58	133	180	192
NF Payette R nr Banks (2)	JUN-JUL	22	79	118	54	157	215	220
	JUN-SEP	35	96	137	57	178	240	240
Payette R nr Horseshoe Bend (1,2)	JUN-JUL	152	280	335	54	390	520	625
	JUN-SEP	235	365	425	55	485	615	775
Boise R nr Twin Springs (1)	JUN-JUL	64	98	114	48	130	164	240
	JUN-SEP	89	131	150	52	169	210	290
SF Boise R at Anderson Ranch Dam (1,	JUN-JUL	29	62	77	41	92	125	186
	JUN-SEP	43	81	99	45	117	155	220
Mores Ck nr Arrowrock Dam	JUN-JUL	5.9	9.1	11.7	43	14.6	19.6	27
	JUN-SEP	7.4	11.2	14.2	46	17.6	23	31
Boise R nr Boise (1,2)	JUN-JUL	120	189	220	46	250	320	480
	JUN-SEP	180	260	295	51	330	410	580

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

WEISER, PAYETTE, BOISE RIVER BASINS  
Watershed Snowpack Analysis - June 1, 2013

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	9.6	10.7	10.5	Mann Creek	1	0	0
Cascade	693.2	687.9	651.8	625.3	Weiser River	4	0	0
Deadwood	161.9	152.3	142.2	145.5	North Fork Payette	6	0	0
Anderson Ranch	450.2	318.1	426.3	375.3	South Fork Payette	4	29	33
Arrowrock	272.2	152.4	249.5	198.1	Payette Basin Total	11	21	22
Lucky Peak	293.2	284.0	272.9	262.1	Middle & North Fork Boise	5	2	1
Lake Lowell (Deer Flat)	165.2	112.3	140.6	122.9	South Fork Boise River	6	27	26
					Mores Creek	2	0	0
					Boise Basin Total	10	25	23
					Canyon Creek	1	0	0

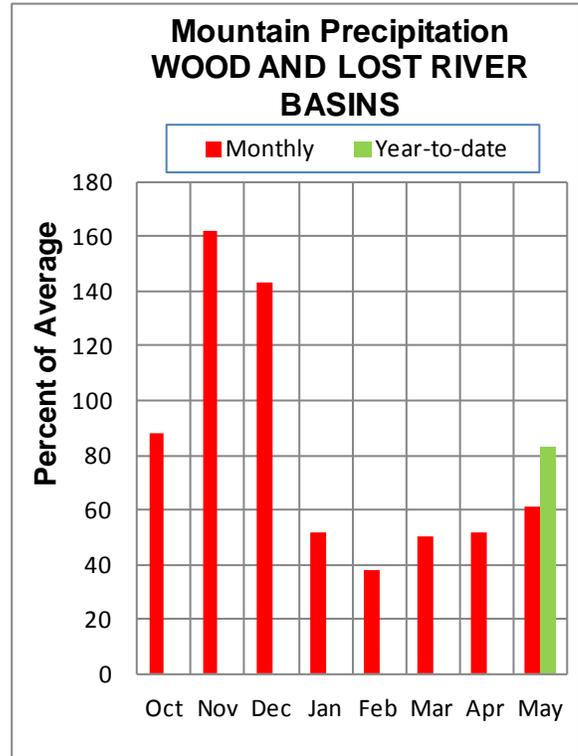
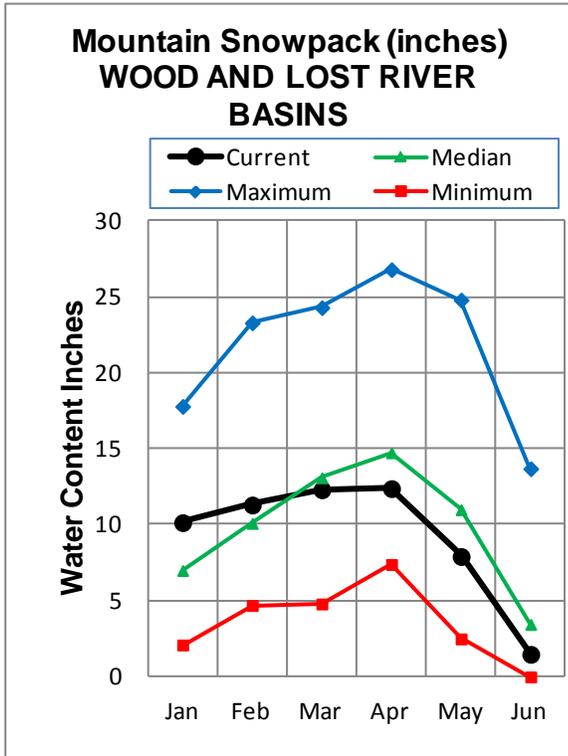
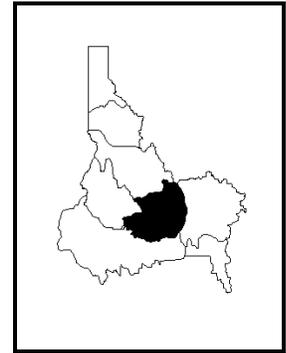
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# WOOD and LOST RIVER BASINS

JUNE 1, 2013



## WATER SUPPLY OUTLOOK

The impacts of the past five months of below normal precipitation that ranged from only 40% of average in February to 60% in May are now being felt. These central mountains are where the majority of SNOTEL sites set new record low totals for the January-May period. Spring flows in the Big and Little Lost basins were primed and in good shape until early winter and provided additional flows until this dry spell. Impacts of reduced spring flows will keep runoff volumes low this year. Mackay Reservoir did not fill and is 82% full, 106% of average. We are confident that the peak flows on the Big Lost River have occurred as illustrated on the cover discussing the relationship with Lost-Wood Divide SNOTEL site being melted out and the 'sighting' of the Big Lost White Stallion. Magic Reservoir is 16% full, 23% of capacity and is projected to run out of water in the first half of July. Water supplies for its users will be similar to 2001 and 2004, the 3rd and 4th lowest year since 1981. Little Camas Flat Reservoir is nearly empty and opened for salvage fishing. The Little Lost River peaked May 18 and is currently within 10% of its historic minimal flow levels in early June. This low to near record streamflow trend is expected to continue because of the lack of snow and rain. Little Lost users will also experience shortages as all five 5 Exceedance Forecasts project below the adequate Surface Water Supply Index threshold of 22,000 acre-feet. Little Wood users may just squeeze by this season based on the 50% Exceedance Forecast, but if the 70% Exceedance Forecast occurs, like they have in other basins, some shortages are likely.

WOOD AND LOST RIVER BASINS  
Streamflow Forecasts - June 1, 2013

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 Hailey (1)	JUN-JUL	31	56	67	53	78	103	127
	JUN-SEP	27	65	82	53	99	137	155
Big Wood R ab Magic Res	JUN-JUL	6.0	12.7	29	33	45	69	89
	JUN-SEP	9.0	19.0	33	33	47	72	101
Camas Ck nr Blaine	JUN-JUL	0.4	1.4	2.5	23	3.9	6.6	11.1
	JUN-SEP	0.5	1.7	2.9	25	4.4	7.3	11.7
Big Wood R bl Magic Dam (2)	JUN-JUL	8.0	19.4	34	35	49	70	97
	JUN-SEP	11.0	20	36	32	52	75	111
Little Wood R ab High Five Ck	JUN-JUL	6.8	10.0	12.6	43	15.4	20	29
	JUN-SEP	9.0	13.1	16.3	47	19.9	26	35
Little Wood R near Carey (2)	JUN-JUL	1.2	8.2	13.0	45	17.8	25	29
	JUN-SEP	3.2	11.0	16.3	47	22	29	35
Big Lost R at Howell Ranch	JUN-JUL	25	43	55	54	67	85	102
	JUN-SEP	30	51	66	54	81	102	122
Big Lost R Below Mackay Res	JUN-JUL	14.0	31	42	51	53	70	82
	JUN-SEP	22	44	59	54	74	96	109
Little Lost R nr Howe	JUN-JUL	6.2	8.0	9.4	61	10.9	13.2	15.5
	JUN-SEP	9.1	11.6	13.5	61	15.5	18.8	22
Camas Ck at Camas	JUN-JUL	0.5	1.5	4.4	51	7.3	11.5	8.6

WOOD AND LOST RIVER BASINS Reservoir Storage (1000 AF) - End of May					WOOD AND LOST RIVER BASINS Watershed Snowpack Analysis - June 1, 2013			
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	29.9	188.8	130.3	Big Wood ab Hailey	7	48	43
Little Wood	30.0	23.3	29.2	27.3	Camas Creek	2	0	0
Mackay	44.4	36.5	44.3	34.6	Big Wood Basin Total	9	48	43
					Fish Creek	0	0	0
					Little Wood River	3	0	0
					Big Lost River	4	0	0
					Little Lost River	3	411	84
					Birch-Medicine Lodge Cree	2	411	84
Camas-Beaver Creeks	2	0	0					

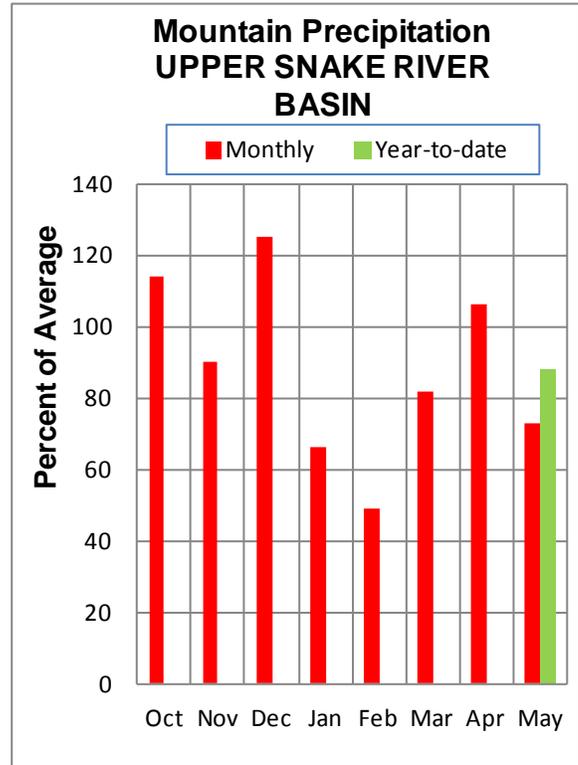
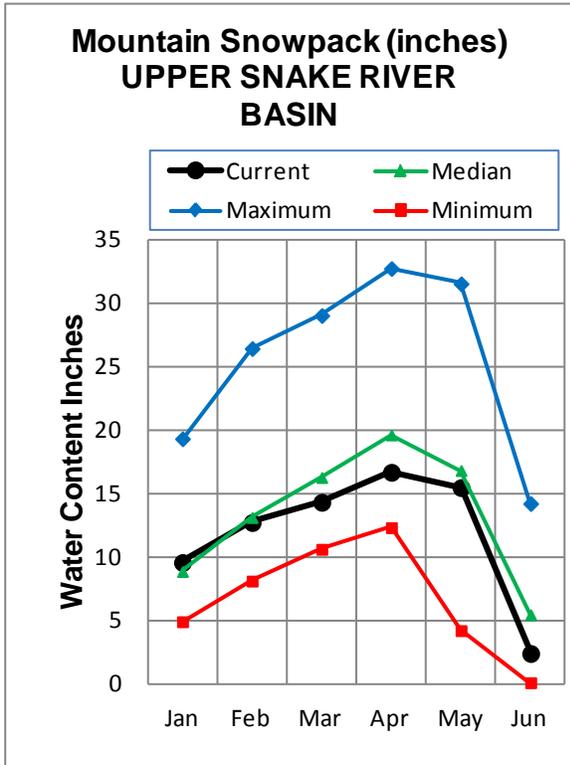
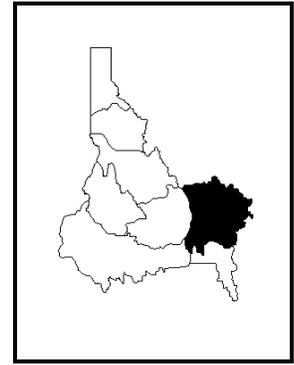
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# UPPER SNAKE BASIN

## JUNE 1, 2013



### WATER SUPPLY OUTLOOK

May precipitation was three quarters of average across the Upper Snake. The only months with normal or better precipitation this water year are October, December and April. When combined with the below normal amounts received in January, February, March and May, puts the water year to date totals at 88% of normal. Only SNOTEL sites above approximately 8,300 feet still have snow in early June. Overall, the snowpack is about half of the new June 1 normals and is about two-thirds of last year's June 1 amounts. Combined Palisades Reservoir and Jackson Lake storage is 1,550 KAF, 69% of capacity, 95% average. This storage is similar to those of the dry years in the early 2000 decade. May 31 combined storage in 2001, 2002 and 2003 ranged from 1,240 KAF to 1,600 KAF. May streamflow was 87% of average for the Snake River near Heise and 76% for the Teton River near Driggs. Based on the Surface Water Supply Index, shortages are expected, how severe depends upon your water right and water source. Projections for Jackson Lake are to keep outflows at 4,000 cfs during the summer which will deplete the lake to less than 20% of capacity by summer's end. Palisades Reservoir will be drafted even more and may end the season just above the minimum storage levels. Additional drought declarations to assist irrigators are expected as the mid-winter dry spell is now taking its toll.

UPPER SNAKE RIVER BASIN  
Streamflow Forecasts - June 1, 2013

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	134	157	173	75	190	217	230
	JUN-SEP	273	309	335	82	362	403	410
Henrys Fork nr Rexburg (2)	JUN-JUL	405	465	510	72	555	615	710
	JUN-SEP	685	770	825	75	880	965	1100
Falls R nr Ashton (2)	JUN-JUL	73	94	109	60	126	152	182
	JUN-SEP	114	140	160	64	181	215	250
Teton R nr Driggs	JUN-JUL	49	59	66	66	74	86	100
	JUN-SEP	71	85	95	68	106	123	139
Teton R nr St. Anthony	JUN-JUL	100	120	134	64	149	173	210
	JUN-SEP	146	171	189	68	210	235	280
Snake R at Flagg Ranch	JUN-JUL	92	124	146	62	168	200	235
	JUN-SEP	130	167	192	69	215	255	280
Snake R nr Moran (1,2)	JUN-JUL	166	235	270	64	305	375	425
	JUN-SEP	210	300	340	67	380	470	505
Pacific Ck at Moran	JUN-JUL	27	46	59	69	72	91	86
	JUN-SEP	34	54	67	70	80	100	96
Buffalo Fork ab Lava nr Moran	JUN-JUL	112	138	156	76	174	200	205
	JUN-SEP	134	166	187	78	210	240	240
Snake R nr Alpine (1,2)	JUN-JUL	575	755	835	65	915	1090	1280
	JUN-SEP	745	985	1090	68	1200	1430	1610
Greys R nr Alpine	JUN-JUL	98	112	121	74	130	144	164
	JUN-SEP	130	150	163	76	176	196	215
Salt R nr Etna	JUN-JUL	40	74	97	68	120	154	143
	JUN-SEP	79	124	155	74	186	230	210
Snake R nr Irwin (1,2)	JUN-JUL	740	1010	1130	67	1250	1520	1700
	JUN-SEP	1080	1380	1520	69	1660	1960	2190
Snake R nr Heise (2)	JUN-JUL	865	1060	1190	66	1320	1510	1800
	JUN-SEP	1250	1480	1630	69	1780	2010	2350
Willow Ck nr Ririe (2)	JUN-JUL	0.2	1.9	6.5	45	11.1	17.8	14.4
Blackfoot R ab Res nr Henry	JUNE	1.6	4.9	8.3	53	12.5	20	15.7
Portneuf R at Topaz	JUN-JUL	15.7	18.8	21	75	23	27	28
	JUN-SEP	25	30	33	73	36	42	45

UPPER SNAKE RIVER BASIN  
Reservoir Storage (1000 AF) - End of May

UPPER SNAKE RIVER BASIN  
Watershed Snowpack Analysis - June 1, 2013

Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
Henrys Lake	90.4	89.9	89.4	85.6	Henrys Fork-Falls River	5	27	31
Island Park	135.2	135.2	133.4	133.4	Teton River	2	164	19
Grassy Lake	15.2	15.3	15.4	14.3	Henrys Fork above Rexburg	7	30	29
Jackson Lake	847.0	798.5	809.1	605.7	Snake above Jackson Lake	5	38	39
Palisades	1400.0	751.1	1180.9	1027.0	Pacific Creek	2	58	64
Ririe	80.5	67.0	81.2	69.6	Gros Ventre River	3	67	60
Blackfoot	348.7	246.5	320.8	235.2	Hoback River	5	66	66
American Falls	1672.6	1220.6	1390.0	1459.0	Greys River	4	83	66
					Salt River	3	0	26
					Snake above Palisades	18	58	49
					Willow Creek	2	0	0
					Blackfoot River	2	0	0
					Portneuf River	3	0	0
					Snake abv American Falls	27	52	49

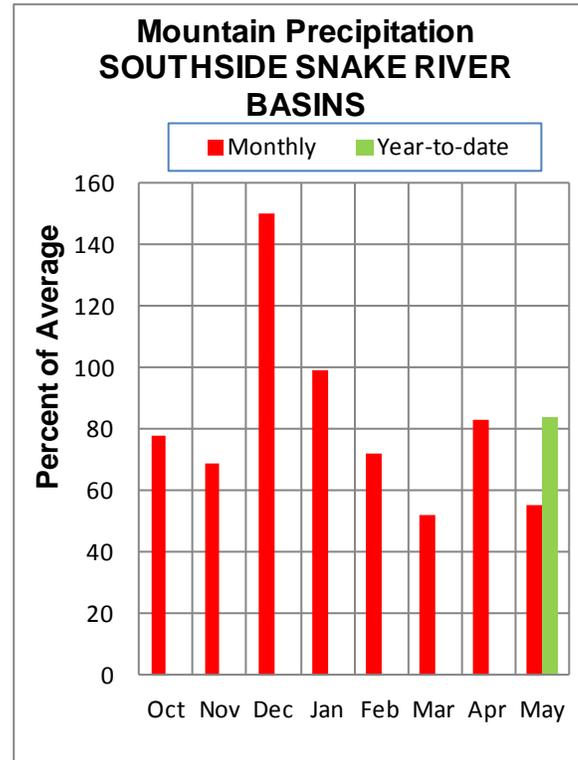
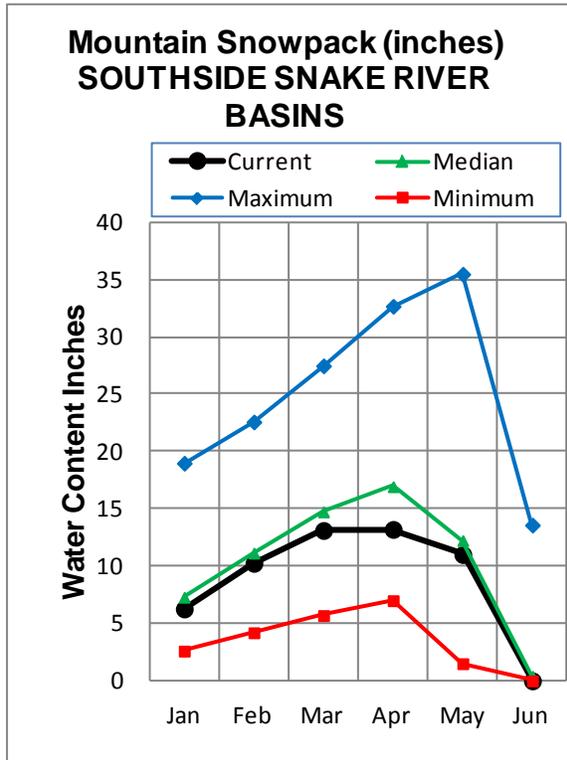
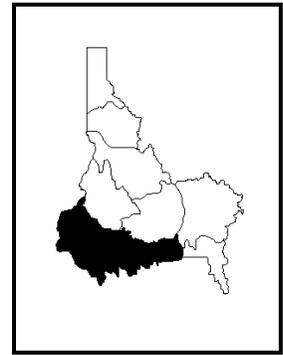
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# SOUTHSIDE SNAKE RIVER BASINS

JUNE 1, 2013



## WATER SUPPLY OUTLOOK

May continued the dry trend across these southern Idaho basins. May precipitation ranged from a third of normal in the Raft and Goose basins, increased to 42% in the Salmon Falls and Bruneau basins, and to 73% in the Owyhee basin. The snow is gone, and runoff was minimal. Streamflow forecasts in this region were in contrast to the stock market's upward trends, and continued to drop during most of the winter as illustrated in the Daily Water Supply Forecasts on our web page. Here is a brief summary from west to east, Owyhee Reservoir is 40% full, 54% of average. Owyhee River streamflows have been near minimal levels since early April and residual volumes are projected at just 25-35% of average. The Bruneau River is flowing near minimal flows and similar to the 2012 and 2007 levels; March-July runoff volumes will only be around half of normal with the June-July volumes predicted at 35% of normal. Salmon Falls Reservoir is 26% full, 58% of average. March-July Salmon Falls Creek streamflows will be about 49% of average, 39 KAF, with the June-July volumes predicted at 30% of normal. Water supply allotments will be less than last year. Oakley Reservoir is 38% full, 76% of average; inflows will only be around 18 KAF for the March-July period, 66% of normal, and similar to last year. This year's concerns are also about cover crops after the money crops are harvested; however, moisture is needed to establish these cover crops in the dry summer months. Unfortunately, these southern Idaho reservoirs will be at minimal storage level by summer's end leading to next year's water supply that will be highly dependent upon the winter snowfall.

SOUTHSIDE SNAKE RIVER BASINS  
Streamflow Forecasts - June 1, 2013

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)				
		90%		70%		50%			30%		10%	
		(1000AF)	(1000AF)	(1000AF)	(% AVG.)	(1000AF)	(1000AF)		(1000AF)	(1000AF)	(1000AF)	(1000AF)
Goose Ck ab Trapper Ck nr Oakley	JUN-JUL	0.1	1.4	2.5	53	3.6	5.3	4.7				
	JUN-SEP	0.1	1.9	3.3	55	4.7	6.7	6.0				
Trapper Ck nr Oakley	JUN-JUL	0.8	1.2	1.4	75	1.6	1.9	1.9				
	JUN-SEP	1.8	2.2	2.5	83	2.8	3.2	3.0				
Oakley Res Inflow (2)	JUN-JUL	0.7	2.6	3.9	60	5.2	7.1	6.5				
	JUN-SEP	1.8	4.2	5.8	64	7.4	9.8	9.0				
Salmon Falls Ck nr San Jacinto	JUN-JUL	2.4	4.4	6.0	30	7.9	11.2	20				
	JUN-SEP	4.0	6.4	8.4	35	10.6	14.3	24				
Bruneau R nr Hot Springs	JUN-JUL	11.9	18.1	23	35	29	38	66				
	JUN-SEP	15.0	22	28	37	34	45	75				
Reynolds Ck at Tollgate	JUN-JUL	0.1	0.3	0.5	30	0.7	1.2	1.6				
Owyhee R nr Rome	JUN-JUL	5.0	6.1	17.4	28	29	45	63				
	JUN-SEP	10.0	15.2	28	35	41	60	80				
Owyhee R bl Owyhee Dam (2)	JUN-JUL	14.1	22	29	38	37	49	76				
	JUN-SEP	32	43	52	49	61	77	106				

SOUTHSIDE SNAKE RIVER BASINS Reservoir Storage (1000 AF) - End of May					SOUTHSIDE SNAKE RIVER BASINS Watershed Snowpack Analysis - June 1, 2013			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
Oakley	75.6	28.4	39.0	37.4	Raft River	1	0	0
Salmon Falls	182.6	48.3	90.9	82.7	Goose-Trapper Creeks	2	0	0
WILDHORSE RESERVOIR	71.5	28.1	51.7	52.0	Salmon Falls Creek	5	0	0
OWYHEE	715.0	287.5	565.6	536.2	Bruneau River	5	0	8
Brownlee	1420.0	1398.0	1272.4	1343.0	Reynolds Creek	0	0	0
					Owyhee Basin Total	7	0	0
					Owyhee Basin SNOTEL	7	0	0

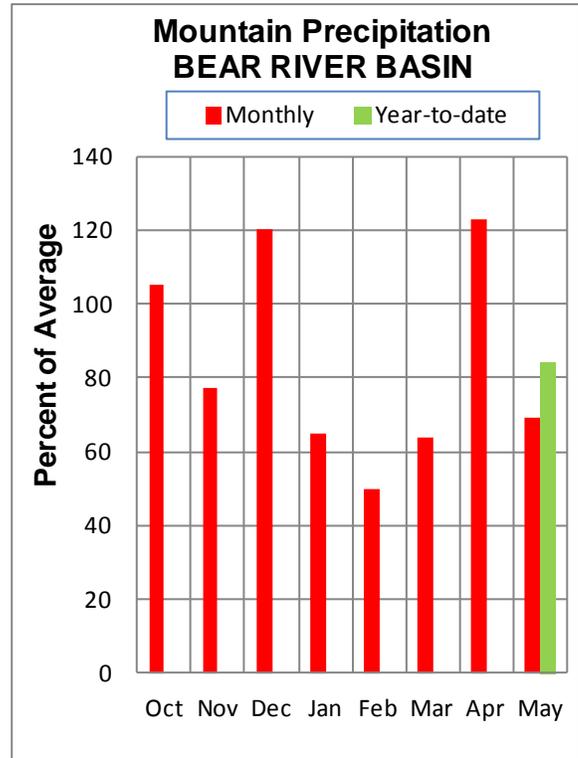
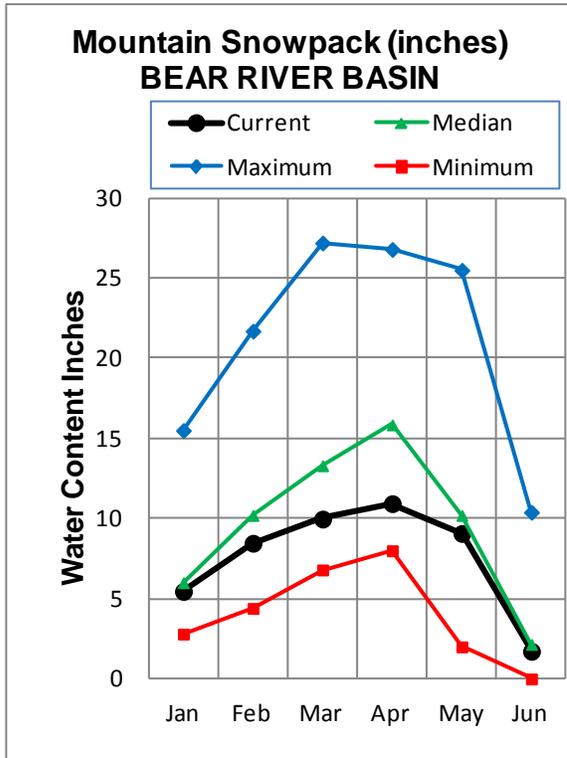
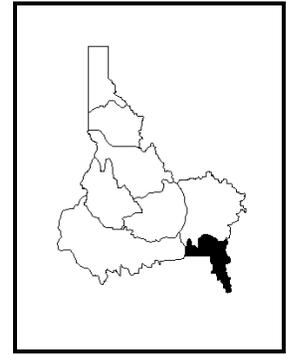
\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

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, 2013



### WATER SUPPLY OUTLOOK

After one good month of precipitation in April, May precipitation was only 69% of average. Monthly precipitation this water year had three months with average or better amounts but five months that received only 50-75% of normal monthly amounts. This puts the water year totals at 84% of average. As a whole, the snow is nearly melted at all sites; only Spring Creek Divide at 9,000 feet still has snow to melt for a few more days in early June. Bear Lake is 68% full, 117% of average and will be the bright spot for irrigation supplies this year, and will have some carryover storage for next year. Irrigation supplies for Bear Lake users should be adequate because of the carryover storage from the 2011 runoff season; however those on natural streamflow water rights will have another tough year, and similar to last year. The April-July streamflow volume for the Bear River below Stewart Dam will be around 20% of normal, very similar to last year. Montpelier Reservoir is 95% full, 112% of average, and will not fill especially now with an increase in irrigation demand in early June. The dry spring only brought a trickle of an increase in these smaller tributaries. Montpelier Reservoir Company set their allotment in late May and is down a bit from last year, which means it will be another tight year for these users with tough decisions to make to conserve water and use the limited water wisely.

BEAR RIVER BASIN  
Streamflow Forecasts - June 1, 2013

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	59	71	79	71	87	99	112
	JUN-JUL	23	33	40	61	46	56	66
	APR-SEP	61	75	85	69	95	109	123
	JUN-SEP	27	38	46	59	54	65	78
Bear R ab Res nr Woodruff	APR-JUL	19.0	37	50	41	63	81	121
	JUN-JUL	1.7	9.5	18.0	32	26	39	57
	APR-SEP	22	40	53	41	66	84	128
	JUN-SEP	0.6	12.0	21	33	30	43	64
Big Ck nr Randolph	APR-JUL	0.8	1.0	1.3	34	1.6	2.0	3.8
	JUN-JUL	0.0	0.2	0.5	30	0.8	1.2	1.7
Smiths Fk nr Border	APR-JUL	43	51	57	64	63	71	89
	APR-SEP	46	56	63	61	70	80	104
	JUN-JUL	16.1	24	30	60	36	44	50
	JUN-SEP	19.1	29	36	56	43	53	65
Bear R bl Stewart Dam	APR-JUL	2.0	5.0	32	18	66	117	183
	APR-SEP	2.0	6.0	36	18	74	131	205
	JUN-JUL	0.9	4.6	19.0	20	42	75	93
	JUN-SEP	1.0	5.0	22	19	52	95	115
Little Bear R at Paradise	APR-JUL	1.2	7.2	13.0	32	18.8	27	41
	JUN-JUL	0.2	1.0	3.0	29	4.8	7.6	10.2
Logan R nr Logan	APR-JUL	22	39	50	45	61	78	111
	JUN-JUL	8.4	15.9	21	34	26	34	61
Blacksmith Fork nr Hyrum	APR-JUL	1.5	13.7	22	51	30	42	43
	JUN-JUL	1.7	6.4	9.7	60	13.0	17.7	16.2

BEAR RIVER BASIN Reservoir Storage (1000 AF) - End of May					BEAR RIVER BASIN Watershed Snowpack Analysis - June 1, 2013			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
Bear Lake	1421.0	969.3	1176.9	829.6	Smiths & Thomas Forks	3	94	80
Montpelier Creek	4.0	3.8	4.0	3.4	Bear River ab WY-ID line	3	94	80
					Montpelier Creek	1	0	0
					Mink Creek	1	0	0
					Cub River	1	0	0
					Bear River ab ID-UT line	9	94	59
					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 1971-2000. 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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