

# Idaho Water Supply Outlook Report April 1, 2007



## **Fish Lake Snow Angel - Clearwater River Basin**

**NRCS snow surveyors Mary Bodley and Lisa Cole sent in this picture from their helicopter snow survey in the Clearwater Basin. This flight is often complicated by winter weather that makes flying challenging. Often the pilot has had to dodge clouds to get in and out of landing spots so that Mary and Lisa could make their measurements. It's good to see there is a guardian angel protecting them.**

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

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**<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 it 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 prepare runoff forecasts. These forecasts are coordinated between hydrologists in the Natural Resources Conservation Service and the National Weather Service. 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 uncertain 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***

***April 1, 2007***

## **SUMMARY**

What happened to winter? Warm, dry conditions in March resulted in sharp declines in snowpack percentages compared to a month ago across all of Idaho and western Wyoming. Not only was there a significant lack of precipitation in most areas, much of what fell was in the form of rain and did not add to the snow water content except at the highest elevation sites. Additionally, the unusually warm temperatures actually caused snowmelt to begin and streams to rise, something that normally starts in April. Many basins showed a net overall decrease in snow water content from March 1 to April 1. This is extremely rare in the higher elevation basins, and has occurred only a few times in the previous 40 years! So while we were hopefully optimistic last month that a bountiful March would salvage the marginal year thus far, a warm and dry March removed all hopes of a near normal runoff season in 2007. Water users without the benefit of the above normal reservoir storage carried over from last year will see earlier and much lower summer streamflows this season, namely the Weiser, Bruneau, Lemhi and Lost River basins. Surface irrigators on the Owyhee, Payette, Salmon Falls and Oakley basins will have adequate supplies due to good carryover reservoir storage. Surface irrigation supplies will be just marginally adequate in the Boise, Little Wood, Upper Snake, Big Wood and Bear River basins. Most severe surface irrigation shortages are expected in the Big Lost and Little Lost basins; irrigators should plant and plan accordingly. These projections are based on the 50% Chance of Exceedance Forecast and given the likelihood of below normal precipitation in April based on a dry start in the first half of the month.

## **SNOWPACK**

Snowpacks are down 10 to 30 percentage points from last month! April 1 is normally the peak of the snow accumulation season, so this is really bad news throughout the region. The warm dry conditions during March started snow melting early and added very little additional accumulation, resulting in the unusually large drop in percentages. The snowpacks in most basins range from just 40% to 70% of average across Idaho and the upper Snake in Wyoming. The best snowpack is in the northern Panhandle area which received the benefit of the major storm track last month, but even so, it is about 80% of normal overall. The Clearwater basin is next highest at 74% of average. The lowest areas are the Owyhee, Camas (Fairfield), and Little Wood, all less than 40% of average. All other basins including the Bear and Upper Snake are about 60–65% of average, except the Bruneau and Big Wood at about 52%, the Big Lost at 45%, and the Salmon at 70%. What a difference a year makes; the snowpack is only about half of last year in all areas south of the Clearwater.

## **PRECIPITATION**

Another month of below normal precipitation makes four out of six in most parts of the state since the water year began October 1. Only the Panhandle and Clearwater basins are still reporting water year to date percentages above average, mostly a result of the extremely wet November. The Southside Snake River basins only had two months of below average precipitation and the water year total is

near normal at 93%. However, due to warmer than usual conditions off and on throughout this season, more rain occurred and kept snowpacks below 70% of average. Elsewhere, monthly precipitation at SNOTEL sites during March ranged from 40% or less of average in the Weiser, Payette, Boise, Wood, Lost and Upper Snake; 48% in the Salmon and 64% in the Bear River basin. One positive aspect of the milder fall, winter and spring is the soil moisture profiles are nearly at field capacity to the 20 inch level as shown by the 35 SNOTEL sites that have soil moisture sensors. Good soil moisture should help increase the runoff efficiency since less of the initial snowmelt is required to wet the soils before the rest runs off into the streams.

## **RESERVOIRS**

How do you spell relief for this year's water supply situation? Carryover storage. Last year the above average temperatures in May flushed the above average snowpack right out of the mountains and straight into the streams and reservoirs. The result of the weather event kept reservoir operators on their toes and water users happy. Most of the reservoirs in Idaho and western Wyoming are storing above average water, thanks to last years excellent runoff. It is no surprise that the Panhandle Region has plenty of water in the Reservoirs. Coeur d'Alene Lake, Priest and Pend Oreille are storing above average amounts. Coeur d'Alene Lake is the highest in the state at 177% of average and a result of high runoff in March! Northern Idaho is not the only place with ample water storage. The second anomalous reservoir in Idaho is Montpelier Creek in the Bear River drainage at 153% of average. Palisades Reservoir and Jackson Lake have a combined storage of 81% of capacity, 127% of average. Timing of runoff and demand will determine if Jackson Lake fills or not. The Weiser, Payette and Boise reservoirs are about 80% of capacity, 130% of average. Storage in Oakley, Salmon Falls, Wildhorse and Owyhee reservoirs are average or better and will provide adequate irrigation supplies even if spring rains fail to show up this year. However, with the lack of snow and runoff this year, most reservoirs will drain by summer's end and make water users highly dependent on ample snowpacks next year.

Note: NRCS reports reservoir information in terms of usable volumes, which includes both active, inactive and in some cases, dead storage. Other operators may report reservoir contents in different terms. For additional information, see the reservoir definitions in this report.

## **STREAMFLOW**

Summer streamflow forecasts decreased this month due to low precipitation and warm temperatures. These warm, and at times, record breaking temperatures melted snow, starting earlier than normal runoff. March streamflow was more than 125% of average in many rivers across the state including the Boise, Payette, Salmon, Selway, Lochsa and Clearwater. Above average March flows also occurred in the Henrys Fork, Teton, and Snake River at Heise. With snow coming off prematurely expect earlier and shorter duration peak flows. Streamflow forecasts are best in the Panhandle Region at 85-110% of average, followed closely by the Clearwater, Lochsa and Selway rivers, all at about 83%. Moving south the decreasing trend continues with the Salmon forecast at about 70% of average. Smaller volumes are forecast for the rivers of the west-central mountains; the Weiser River is forecast at 64% of average, the Payette near Horseshoe Bend at 68% and the Boise River near Boise at 60%. The Big and Little Lost volumes should also be close to 60% of average, but the Little Wood, Owyhee and lower Big Wood rivers are forecasted for less than 40% and are almost the lowest in the state; the exception is Camas Creek which had its snowmelt peak in March and is forecasted for only

22% of average. Forecasts for the Upper Snake basins are mostly in the 50-80% range, with the Snake River near Heise forecast at 66% of average. The Southside Snake basins show a decreasing trend from east to west with Oakley inflow forecast at 69% of average, Salmon Falls Creek at 60%, Bruneau River at 53% and the Owyhee drainages at less than 40%. The Bear River forecasts are 67% of average in the headwaters and decrease to 32% at Stewart Dam. With all but a couple of weeks of winter behind us, the streamflow picture is becoming more clear, however volatile springtime weather may produce changes in the forecasts which can be monitored using the Daily Guidance Streamflow Forecasts on our Idaho "Water Supply" webpage: <http://www.id.nrcs.usda.gov/snow/watersupply/>. In addition, the Big Wood River at Hailey trend model is updated several times a week along with recession graphs.

Note: Forecasts published in this report are NRCS guidance forecasts. NRCS is using SNOTEL data in a timely manner to provide timely streamflow forecast for users. Official jointly coordinated and published forecasts by the USDA Natural Resources Conservation Service and the US Department of Commerce, NOAA, National Weather Service are available from the joint west-wide Water Supply Outlook for the Western US at <http://www.wcc.nrcs.usda.gov/wsf/westwide.html>. The forecast numbers mentioned in the narrative are the volume under the 50% Chance of Exceeding, which means there is a 50% chance the volume will be greater or less than the given value. Water users may wish to use a lesser exceedance forecast to reduce the risk of coming up water short.

## **RECREATION**

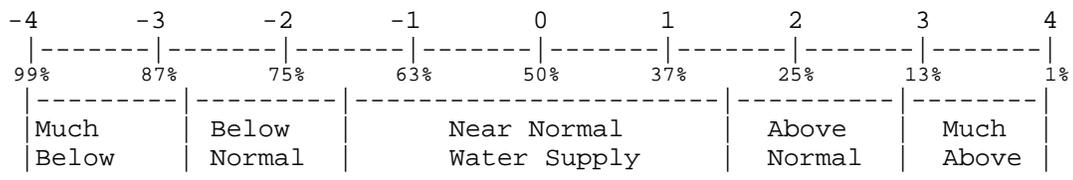
Early melting snowpacks are disappointing for the avid snow sports enthusiast. However, there are numerous other recreational benefits to an earlier spring. Dry and snow-free ground means earlier mountain biking, hiking, backpacking, camping, horseback riding, four-wheeling, rock climbing, picnicking, wild flower viewing and even earlier river sports. Idaho rivers will not experience the large volumes of water moving through their channels like in 2006. The lower streamflow is good news for fishermen and women who have already been able to fish streams that were too high at this time last year. Even with smaller volumes the rafting season will still be here all summer! The lower magnitude of peak flows will be more tolerable for families as giant trees will probably not pass you in a rapid this year. The river put-ins will be accessible and not under several feet of snow or fast moving water. Snowmelt peak flows in southern Idaho will be of short duration while central and northern Idaho rivers will have more sustained flows. Volumes are forecast at near 80% of average for the Selway and Lochsa rivers, and nearly 100% in the Priest and Kootenai rivers, and 110% in northern Boundary County on the Moyie River. Rivers will return to below normal levels after their peak streamflow due to lower snowpacks this year. River runners should have their gear ready and watch the weather, which will govern the rate and timing of the snowmelt for those annual peak flows.

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 1971 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>BASIN or REGION</i>	<i>SWSI Value</i>	<i>Most Recent Year With Similar SWSI Value</i>	<i>Agricultural Water Supply Shortage May Occur When SWSI is Less Than</i>
PANHANDLE	-1.6	1998	NA
CLEARWATER	-1.0	2000	NA
SALMON	-1.8	1991	NA
WEISER	-2.0	2004	NA
PAYETTE	-1.4	2004	NA
BOISE	-1.4	1979	-2.0
BIG WOOD	-0.9	2005	-0.7
LITTLE WOOD	-1.8	2004	-2.0
BIG LOST	-1.8	2003	-0.2
LITTLE LOST	-2.7	2001,1988	0.5
HENRYS FORK	-1.9	2004	-3.3
SNAKE (HEISE)	-1.4	1990	-1.6
OAKLEY	0.5	1979,1978	-1.1
SALMON FALLS	0.0	1995	-1.6
BRUNEAU	-2.3	2003	NA
BEAR RIVER	-1.8	2002	-3.3

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

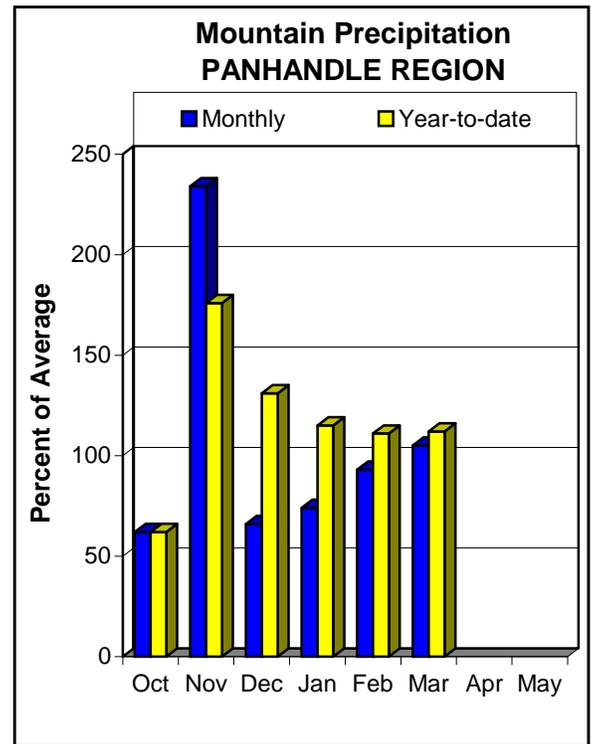
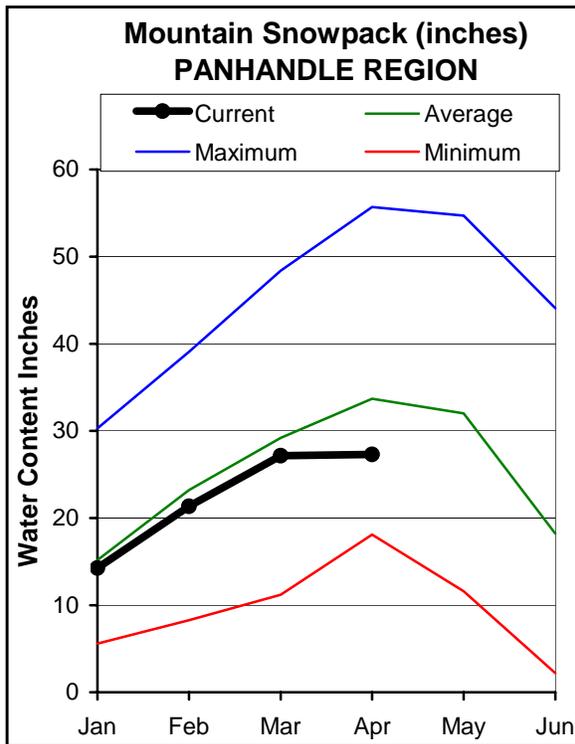
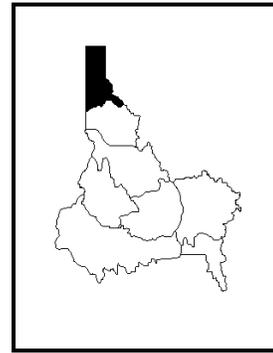


NA = Not Applicable

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

## APRIL 1, 2007



## WATER SUPPLY OUTLOOK

The Panhandle region earned its snowpack bragging rights, relative to the rest of the state. However, the snow dropped from 93% of normal on March 1 to 81% by April 1 for the entire region. Usually, the Panhandle does not show a drop in percentages such as this until May. The best snowpack is in the Moyie River headwaters in northeastern Boundary County along the Montana-Idaho border at 113% of average. The lowest snow is in the Rathdrum creek drainage at 61% of average. Interestingly, the mountains received 105% of average precipitation for the month but it fell in the form of rain instead of snow. The water year to date precipitation is above normal, which will help the soils to efficiently deliver the snowmelt into the streams and lakes. Coeur d'Alene, Pend Oreille and Priest lakes are storing above average amounts. Stream forecasts range from 85% of normal on the Spokane River near Spokane to 110% on the Moyie River. Water supplies will be similar but slightly less than last year.

PANHANDLE REGION  
Streamflow Forecasts - April 1, 2007

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)				
		90% (1000AF)		70% (1000AF)		Chance Of Exceeding * 50% (1000AF) (% AVG.)			30% (1000AF)		10% (1000AF)	
KOOTENAI at Leonia (1,2)	APR-JUL	5140	6270	6750	96	7250	8450	7040				
	APR-SEP	6250	7390	7850	97	8360	9500	8120				
MOYIE RIVER at Eastport	APR-JUL	365	415	445	110	475	525	405				
	APR-SEP	375	425	460	110	495	545	420				
SMITH CREEK	APR-JUL	102	116	126	102	136	152	123				
	APR-SEP	107	122	133	103	144	162	129				
BOUNDARY CREEK	APR-JUL	108	119	126	102	133	145	123				
	APR-SEP	114	125	132	102	140	151	129				
CLARK FK at Whitehorse Rpds (1,2)	APR-JUL	7500	9160	9910	88	10700	12300	11300				
	APR-SEP	8350	10200	11000	88	11800	13700	12500				
PEND OREILLE Lake Inflow (2)	APR-JUL	9050	10300	11100	87	11900	13100	12700				
	APR-SEP	10100	11400	12300	89	13200	14500	13900				
PRIEST near Priest River (1,2)	APR-JUL	640	720	780	96	840	935	815				
	APR-SEP	680	770	830	95	895	995	870				
NF COEUR D'ALENE RIVER AT ENAVILLE	APR-JUL	480	570	635	86	705	810	740				
	APR-SEP	515	610	675	87	745	855	780				
ST. JOE at Calder	APR-JUL	840	930	995	87	1060	1160	1140				
	APR-SEP	900	995	1060	88	1130	1230	1200				
SPOKANE near Post Falls (2)	APR-JUL	1670	1950	2140	84	2330	2610	2550				
	APR-SEP	1730	2020	2220	84	2420	2710	2650				
SPOKANE at Long Lake (2)	APR-JUL	1850	2190	2420	85	2650	2990	2850				
	APR-SEP	2020	2380	2620	85	2860	3220	3070				

PANHANDLE REGION Reservoir Storage (1000 AF) - End of March					PANHANDLE REGION Watershed Snowpack Analysis - April 1, 2007			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
HUNGRY HORSE		NO REPORT			Kootenai ab Bonners Ferry	35	91	91
FLATHEAD LAKE		NO REPORT			Moyie River	9	121	113
NOXON RAPIDS		NO REPORT			Priest River	5	70	85
PEND OREILLE	1561.3	800.3	862.6	763.6	Pend Oreille River	102	73	74
COEUR D'ALENE	238.5	300.6	132.9	169.5	Rathdrum Creek	2	50	61
PRIEST LAKE	119.3	108.6	54.2	65.5	Hayden Lake	2	81	84
					Coeur d'Alene River	10	79	80
					St. Joe River	6	81	78
					Spokane River	16	77	76
					Palouse River	2	56	42

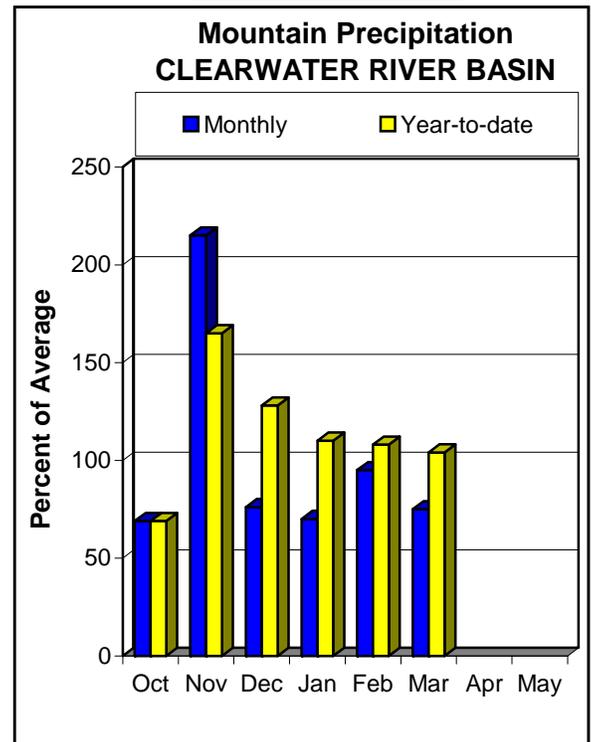
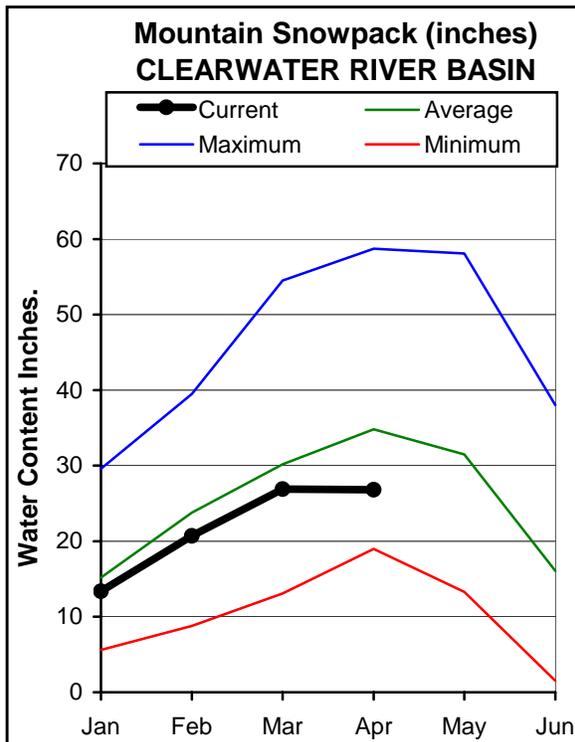
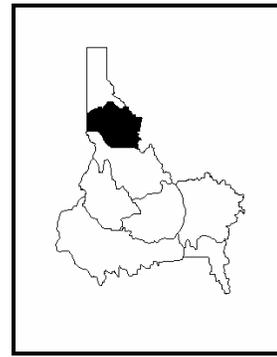
\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 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

## APRIL 1, 2007



## WATER SUPPLY OUTLOOK

March was a critical month for obtaining an average snowpack, but the snow just did not fall and even some of the lower elevation sites melted out in mid-March, which is unusual. On March 1, the snowpack was 88% of normal and by April 1, the Clearwater basin snowpack was down to 74%. The snow water content this year is 50% more than what it was in 2005, but only three-quarters of last year. The range of snow water content is from 71% of normal in the Selway basin to 78% in the North Fork Clearwater drainage. Water year to date precipitation is above average thanks to those fall rains. Dworshak Reservoir storage is 127% of average with the inflow forecast at 84% of average. The streams and rivers will not experience the same volumes of water moving through their channels as last year, but the forecast still calls for the Clearwater River and its tributaries to flow near 80% of average this spring and summer. River runners will not have the high peak flows like last year but should have adequate flows for most of the summer, providing it rains a little. Let's hope for a wet spring!

CLEARWATER RIVER BASIN  
Streamflow Forecasts - April 1, 2007

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)		
		90%		70%		50%			10%	
		(1000AF)	(1000AF)	(1000AF)	(% AVG.)	(1000AF)	(1000AF)		(1000AF)	(1000AF)
SELWAY near Lowell	APR-JUL	1450	1590	1690	82	1790	1950	2060		
	APR-SEP	1520	1670	1780	82	1890	2060	2170		
LOCHSA near Lowell	APR-JUL	1110	1220	1290	84	1360	1480	1530		
	APR-SEP	1170	1270	1350	84	1430	1550	1610		
DWORSHAK RESV INFLOW (1,2)	APR-JUL	1820	2050	2210	84	2380	2640	2640		
	APR-SEP	1950	2190	2360	84	2540	2810	2800		
CLEARWATER at Orofino (1)	APR-JUL	3280	3620	3860	83	4110	4490	4650		
	APR-SEP	3480	3840	4090	84	4350	4750	4900		
CLEARWATER at Spalding (1,2)	APR-JUL	5280	5800	6170	83	6540	7210	7430		
	APR-SEP	5570	6120	6550	83	6990	7610	7850		

CLEARWATER RIVER BASIN Reservoir Storage (1000 AF) - End of March					CLEARWATER RIVER BASIN Watershed Snowpack Analysis - April 1, 2007			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
DWORSHAK	3468.0	2803.4	2401.9	2205.4	North Fork Clearwater	9	80	78
					Lochsa River	4	73	75
					Selway River	6	65	71
					Clearwater Basin Total	19	74	74

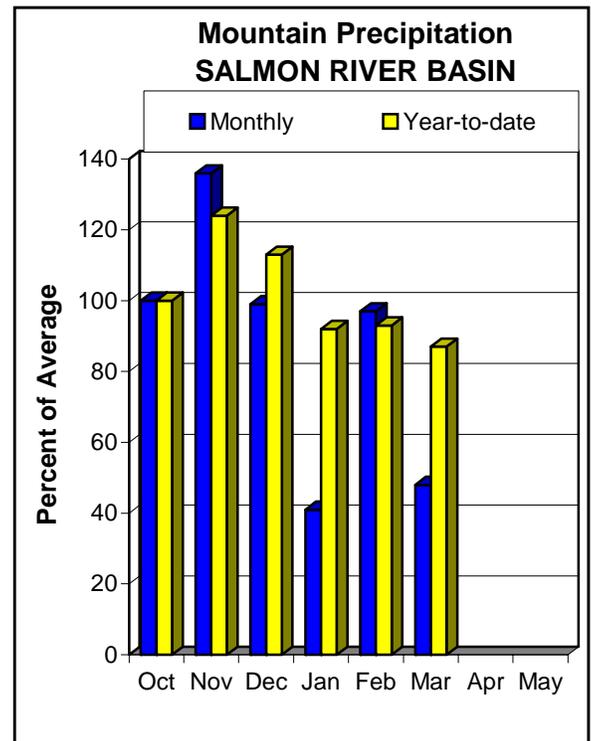
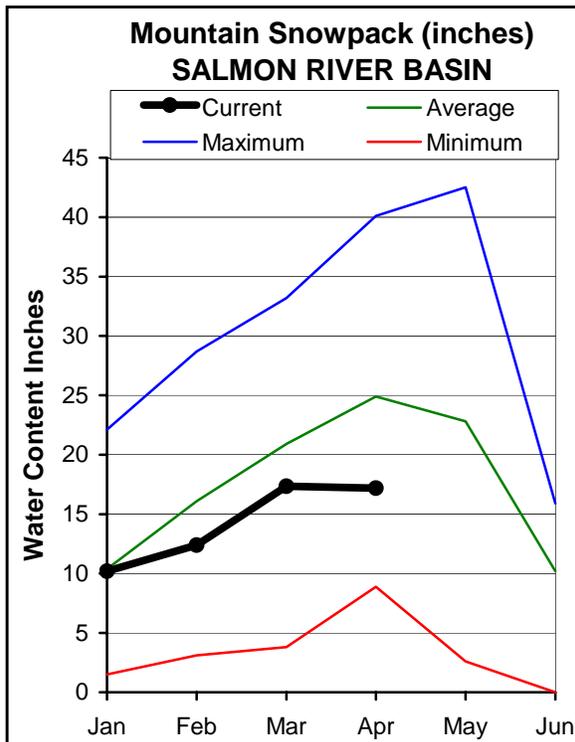
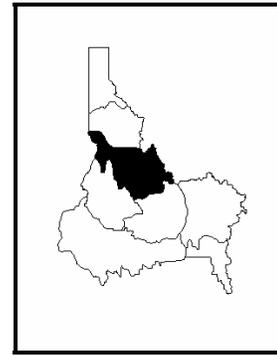
\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

The average is computed for the 1971-2000 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

## APRIL 1, 2007



## WATER SUPPLY OUTLOOK

Since 1963, there have been nine years with lower April 1 snowpacks than this year. Historically, the 1970s proved to be a decade for extreme winters in the Salmon basin. 1974 had the best snowpack on record, while 1977 had the lowest. This year, the snow water equivalent reached its peak about one month too early and dropped 14 percentage points from last month to only 70% of normal for April 1. The unusually dry month of March brought precipitation that was only 48% of normal; less than half of the basin's average allotment for March! Water-poor March left the water year to date precipitation below average at 87% of normal. As a result, the Salmon River at White Bird and the Middle Fork Salmon River are forecast at near 70% of normal, while the Lemhi River is only projected at 64%. Even with a below normal snowpack, the whitewater will still be decent, but the duration of peak flows will be short-lived because of the low snow. The magnitude and timing of peak streamflows will depend on the climatic conditions that govern the snowmelt. You'll want to watch the weather and be ready to go to catch the high water this year.

SALMON RIVER BASIN  
Streamflow Forecasts - April 1, 2007

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)
		90%		50%		10%		
		(1000AF)	(1000AF)	(1000AF)	(% AVG.)	(1000AF)	(1000AF)	
SALMON at Salmon (1)	APR-JUL	470	540	595	70	650	735	855
	APR-SEP	550	635	700	70	765	870	1000
Lemhi River nr Lemhi	APR-JUL	35	45	53	62	62	75	86
	APR-SEP	42	56	67	64	79	97	105
MF Salmon at MF Lodge	APR-JUL	394	478	540	69	605	708	785
	APR-SEP	447	541	610	70	683	798	875
SALMON at White Bird (1)	APR-JUL	3170	3630	3970	68	4320	4860	5850
	APR-SEP	3560	4070	4440	69	4820	5420	6480

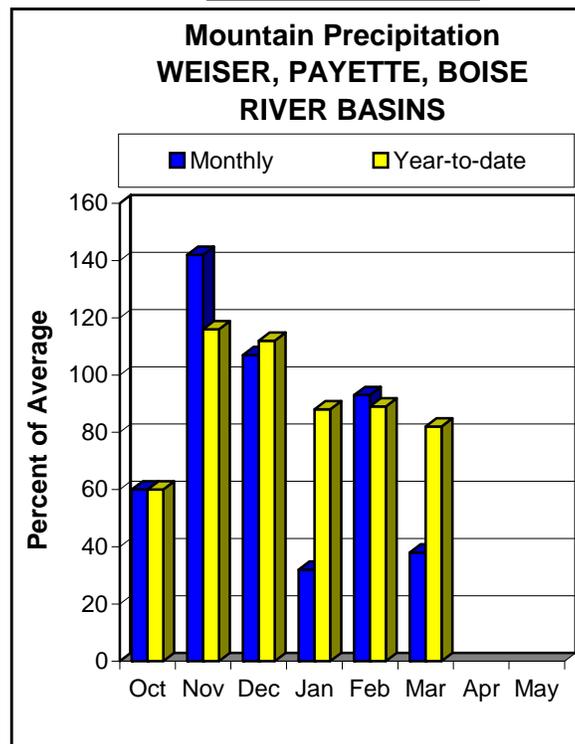
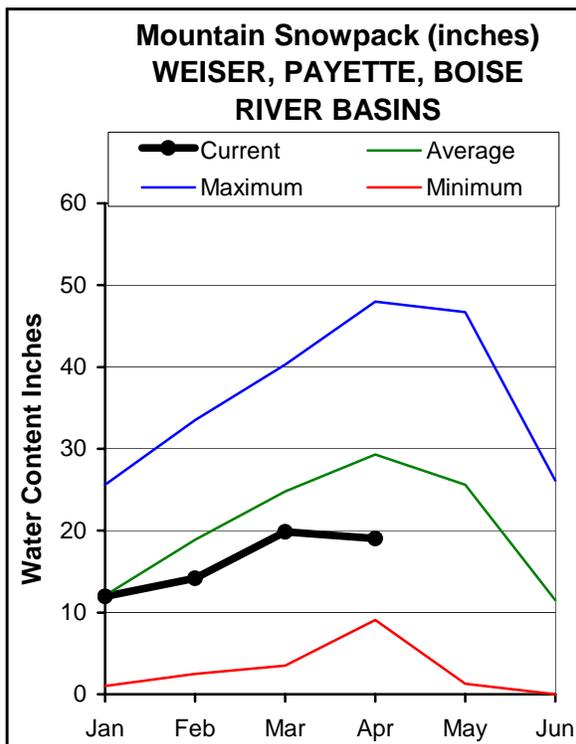
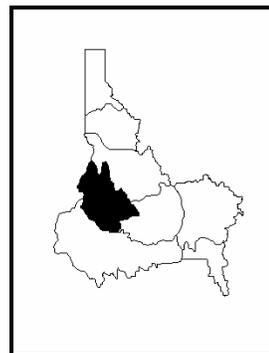
SALMON RIVER BASIN Reservoir Storage (1000 AF) - End of March				SALMON RIVER BASIN Watershed Snowpack Analysis - April 1, 2007				
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
					Salmon River ab Salmon	11	58	72
					Lemhi River	10	64	69
					Middle Fork Salmon River	3	57	67
					South Fork Salmon River	3	58	70
					Little Salmon River	4	53	66
					Salmon Basin Total	31	60	70

\* 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 1971-2000 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 APRIL 1, 2007



## WATER SUPPLY OUTLOOK

March precipitation was less than 40% of average in the west-central mountains. Water year to date precipitation is also lagging at 82% of average for the Weiser, Payette and Boise basins. Combine the lack of moisture with record temperatures and it's easy to understand why snowpacks are lower than a month ago. All three basins saw snowpacks peak and begin to melt about two weeks ahead of schedule. The lowest snowpacks are in the Weiser and Boise basins, both currently about 60% of average decreasing from March 1 values of 84% and 76% respectively. The Payette basin has a better snowpack at 68% of average, down from 83% at the beginning of March. A decrease in snowpack water content between March 1 and April 1 is very unusual, in fact since 1961 it only happened once before in the Boise basin (1969), twice in the Payette (2004 and 1992) and six times in the Weiser. Reservoir storage in these basins is still above average due to good carry over storage from last winter. In the Boise system Anderson Ranch storage is 131% of average, 77% of capacity; filling depends on demand and timing of runoff. Arrowrock Reservoir is 94% full, while Lucky Peak Reservoir is 88% full. Cascade and Deadwood reservoirs are at 130% and 122% of average respectively. Streamflow forecasts continued to dwindle this month and are now lower than in any previous month this water year. The Boise River near Boise is forecast at 60% of average, the Payette near Horseshoe Bend at 68% and the Weiser River at 64%. Surface water irrigation supplies should be adequate but good spring precipitation will help ensure it.

WEISER, PAYETTE, BOISE RIVER BASINS  
Streamflow Forecasts - April 1, 2007

Forecast Point	Forecast Period	<<==== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)				
		90% (1000AF)		70% (1000AF)		Chance Of Exceeding * 50% (1000AF) (% AVG.)			30% (1000AF)		10% (1000AF)	
WEISER near Weiser (1)	APR-JUL	154	210	250	64	295	370	390				
	APR-SEP	169	225	270	64	320	395	420				
SF PAYETTE at Lowman	APR-JUL	240	280	310	71	340	390	440				
	APR-SEP	275	320	355	72	390	445	495				
DEADWOOD RESERVOIR Inflow (1,2)	APR-JUL	71	83	91	68	100	113	134				
	APR-SEP	75	88	97	68	107	122	142				
LAKE FORK PAYETTE near McCall	APR-JUL	52	60	65	77	70	79	85				
	APR-SEP	55	63	68	76	74	82	89				
NF PAYETTE at Cascade (1,2)	APR-JUL	265	315	355	68	395	455	520				
	APR-SEP	270	325	365	68	405	470	540				
NF PAYETTE nr Banks (2)	APR-JUL	325	400	450	67	500	575	675				
	APR-SEP	320	405	460	66	515	600	700				
PAYETTE nr Horseshoe Bend (1,2)	APR-JUL	805	1020	1110	68	1200	1410	1640				
	APR-SEP	820	1070	1190	68	1310	1560	1760				
BOISE near Twin Springs (1)	APR-JUL	345	390	425	67	460	515	635				
	APR-SEP	380	430	465	67	505	560	690				
SF BOISE at Anderson Ranch Dam (1,2)	APR-JUL	220	260	285	53	315	360	540				
	APR-SEP	240	280	310	53	340	390	580				
MORES CREEK near Arrowrock Dam	APR-JUL	49	65	77	59	90	111	131				
	APR-SEP	51	68	80	58	94	115	137				
BOISE near Boise (1,2)	APR-JUN	585	700	750	60	800	915	1260				
	APR-JUL	540	745	835	59	925	1130	1410				
	APR-SEP	620	825	915	60	1010	1210	1530				

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

WEISER, PAYETTE, BOISE RIVER BASINS  
Watershed Snowpack Analysis - April 1, 2007

Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
MANN CREEK	11.1	8.1	10.2	8.8	Mann Creek	1	43	64
CASCADE	693.2	555.6	409.3	428.8	Weiser River	3	45	60
DEADWOOD	161.9	111.3	78.1	91.6	North Fork Payette	8	54	69
ANDERSON RANCH	450.2	344.8	228.7	262.8	South Fork Payette	5	55	67
ARROWROCK	272.2	257.1	70.5	204.5	Payette Basin Total	14	56	68
LUCKY PEAK	293.2	258.0	113.6	162.6	Middle & North Fork Boise	5	51	62
LAKE LOWELL (DEER FLAT)	165.2	93.7	87.2	126.9	South Fork Boise River	8	42	56
					Mores Creek	5	51	64
					Boise Basin Total	15	45	58
					Canyon Creek	1	33	49

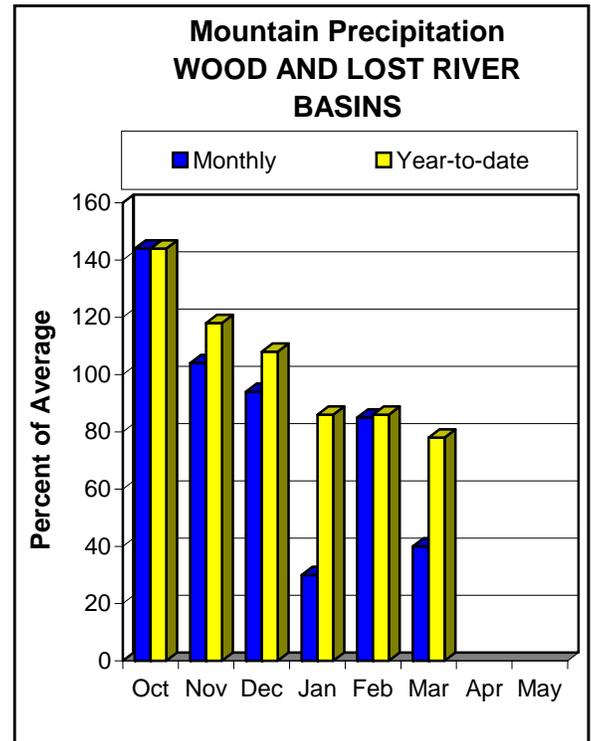
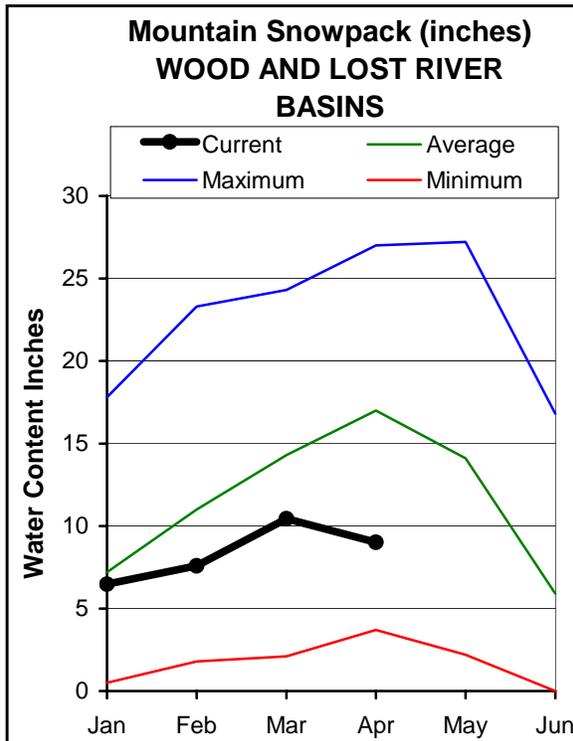
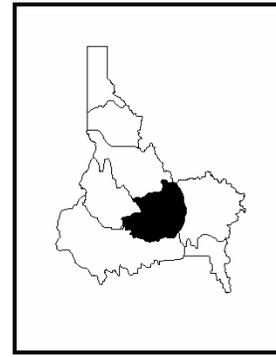
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# WOOD and LOST RIVER BASINS

## APRIL 1, 2007



## WATER SUPPLY OUTLOOK

Monthly precipitation was meager in Idaho's central mountains ranging from one third of normal in the Camas, Medicine Lodge and Beaver basins to barely over half of normal in the Little Lost and Birch basins. Overall water year to date precipitation since October 1 is 78% of average for the region. Comparing March 1 and April 1 shows that all basins lost snow water content; this is an uncommon occurrence especially in the Camas-Beaver drainage where since 1961 it's only happened once before in 1978. March is typically a month for additional accumulation but instead snow at all but the highest elevations started to melt. Snowpacks average about 50% of normal across these central mountains, ranging from over 60% in the eastern basins to less than a 30% in Camas Creek. Melting snow produced an early streamflow peak for Camas Creek near Blaine on March 20th, this came about two weeks earlier than normal. Expect earlier than normal peaks on the other streams as record breaking temperatures in March seasoned the snowpack, making it ready to produce runoff on days when the temperature rise above freezing. Streamflow forecasts decreased from last month and range from 22-59% of average. The Surface Water Supply Index (SWSI), which combines reservoir storage and streamflow projections, indicates shortages are likely in the Little Lost and Big Lost basins and may be marginally adequate for the Magic and Little Wood reservoir users. Spring precipitation is needed to delay irrigation demand until later in the season. Conditions would be much more severe if reservoirs were not storing water from last year. Magic and Mackay reservoirs are 143% and 108% of average, while Little Wood reservoir is nearly full.

WOOD AND LOST RIVER BASINS  
Streamflow Forecasts - April 1, 2007

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)
		90%		50%		10%		
		(1000AF)	(1000AF)	(1000AF)	(% AVG.)	(1000AF)	(1000AF)	
BIG WOOD at Hailey (1)	APR-JUL	95	118	135	53	153	182	255
	APR-SEP	110	136	155	53	176	210	290
BIG WOOD ab Magic Reservoir	APR-JUL	26	45	61	32	80	112	190
	APR-SEP	30	51	68	33	88	122	204
CAMAS CREEK near Blaine	APR-JUL	8.0	16.0	22	22	30	43	100
	APR-SEP	8.0	16.0	22	22	30	43	101
BIG WOOD below Magic Dam (2)	APR-JUL	49	70	83	29	118	169	290
	APR-SEP	55	76	90	30	126	180	305
LITTLE WOOD R ab High Five Ck	APR-JUL	15.2	22	28	36	34	45	78
	APR-SEP	17.7	26	32	38	39	50	85
LITTLE WOOD near Carey (2)	APR-JUL	17.0	25	31	36	38	49	87
	APR-SEP	18.7	27	34	36	42	54	94
BIG LOST at Howell Ranch	APR-JUL	69	88	102	59	117	142	173
	APR-SEP	79	101	117	59	135	162	197
BIG LOST bl Mackay Reservoir	APR-JUL	37	56	69	49	82	101	141
	APR-SEP	51	74	90	52	106	129	172
LITTLE LOST bl Wet Creek	APR-JUL	13.6	16.7	19.0	61	21	25	31
	APR-SEP	15.9	20	23	59	26	31	39

WOOD AND LOST RIVER BASINS Reservoir Storage (1000 AF) - End of March					WOOD AND LOST RIVER BASINS Watershed Snowpack Analysis - April 1, 2007			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
MAGIC	191.5	153.3	77.4	107.1	Big Wood ab Hailey	8	45	60
LITTLE WOOD	30.0	29.4	5.3	19.4	Camas Creek	4	18	27
MACKAY	44.4	35.2	33.7	32.7	Big Wood Basin Total	12	38	52
					Fish Creek	3	17	25
					Little Wood River	9	25	35
					Big Lost River	7	33	45
					Little Lost River	4	53	62
					Birch-Medicine Lodge Cree	4	60	65
Camas-Beaver Creeks	4	39	48					

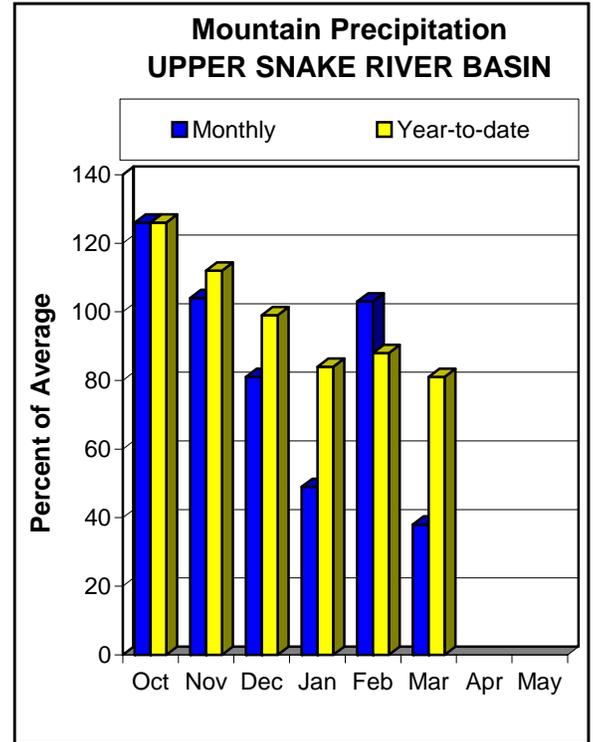
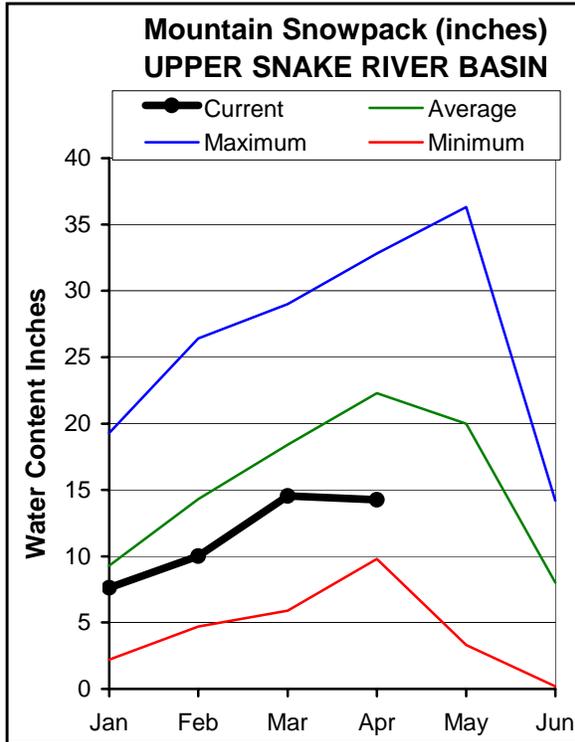
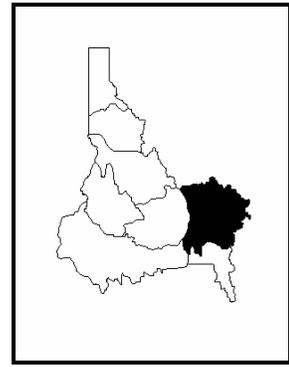
\* 90%, 70%, 50%, 30%, and 10% chances of exceeding are the probabilities that the actual volume will exceed the volumes in the table.

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# UPPER SNAKE BASINS

## APRIL 1, 2007



## WATER SUPPLY OUTLOOK

Warm temperatures and lack of moisture really hurt this basin. On March 1, the snowpack was 77% of normal and dropped to 63% by April 1. Based on 42 years of snow records for the 17 SNOTEL sites in the Snake River basin above Heise drainage, this year's April 1 snowpack is the 6th lowest. Last year, on April 1, some SNOTEL sites in the Upper Snake basin had twice the water content as this year. Luckily, carryover storage in Palisades Reservoir and Jackson Lake are above average as a result of last year's runoff. This storage will help water users meet their needs this spring and summer, but next year's storage will depend deeply on winter snow storms. There is still time for spring precipitation as the average mountain SNOTEL precipitation is 3.1 inches for April. We'll need a lot more than 3.1 inches of rain for water year to date precipitation to increase from it current value of 81% to normal. Most streams are forecast to flow at 60-70% of average. Streamflow peaks will mostly likely be short-lived and will occur early. Good spring precipitation will make a difference, let's hope Mother Nature gets a second wind and blows moisture towards the Upper Snake.

UPPER SNAKE RIVER BASIN  
Streamflow Forecasts - April 1, 2007

Forecast Point	Forecast Period	<<----- Drier ----- Future Conditions ----- Wetter ----->>						30-Yr Avg. (1000AF)				
		90%		70%		50%			30%		10%	
		(1000AF)	(1000AF)	(1000AF)	(1000AF)	(% AVG.)	(1000AF)		(1000AF)	(1000AF)	(1000AF)	
HENRYS FORK near Ashton (2)	APR-JUL	300	350	390	68	430	495	570				
	APR-SEP	435	505	550	72	600	675	765				
HENRYS FORK near Rexburg (2)	APR-JUL	910	1050	1140	73	1230	1370	1560				
	APR-SEP	1250	1400	1510	75	1620	1770	2010				
FALLS RIVER nr Ashton (2)	APR-JUL	235	275	300	79	325	365	380				
	APR-SEP	275	325	355	79	385	435	450				
TETON RIVER NEAR DRIGGS	APR-JUL	80	99	112	68	126	149	165				
	APR-SEP	106	129	145	69	162	190	210				
TETON near St. Anthony	APR-JUL	198	240	270	67	300	355	405				
	APR-SEP	250	295	330	69	365	425	480				
SNAKE at Flagg Ranch	APR-JUL	320	355	380	77	405	440	495				
	APR-SEP	355	395	420	77	445	485	545				
SNAKE nr Moran (1,2)	APR-JUL	485	555	600	74	645	715	815				
	APR-SEP	530	610	665	74	720	800	905				
PACIFIC CREEK at Moran	APR-JUL	80	100	114	67	128	148	171				
	APR-SEP	87	108	122	69	136	157	178				
SNAKE ab resv nr Alpine (1,2)	APR-JUL	1420	1620	1710	72	1800	2000	2370				
	APR-SEP	1630	1870	1980	73	2090	2330	2730				
GREYS above Palisades	APR-JUL	151	186	210	62	235	270	340				
	APR-SEP	178	220	245	62	270	310	395				
SALT near Etna	APR-JUL	100	154	190	56	225	280	340				
	APR-SEP	137	198	240	57	280	345	420				
SNAKE nr Irwin (1,2)	APR-JUL	1730	2050	2200	66	2350	2670	3330				
	APR-SEP	2030	2400	2570	66	2740	3110	3870				
SNAKE near Heise (2)	APR-JUL	1850	2210	2360	66	2490	2850	3560				
	APR-SEP	2160	2570	2760	66	2950	3330	4160				
WILLOW CREEK nr Ririe (2)	APR-JUL	8.4	16.7	24	30	33	48	81				
BLACKFOOT RESV INFLOW	APR-JUN	23	30	36	30	42	52	120				
SNAKE nr Blackfoot (1,2)	APR-JUL	2080	2600	2840	62	3080	3600	4600				
	APR-SEP	2750	3270	3510	63	3750	4270	5620				
PORTNEUF at Topaz	APR-JUL	28	36	42	52	49	59	81				
	APR-SEP	37	47	55	55	63	76	100				
AMERICAN FALLS RESV INFLOW (1,2)	APR-JUL	575	1310	1640	51	1970	2700	3240				
	APR-SEP	725	1460	1790	51	2120	2860	3510				

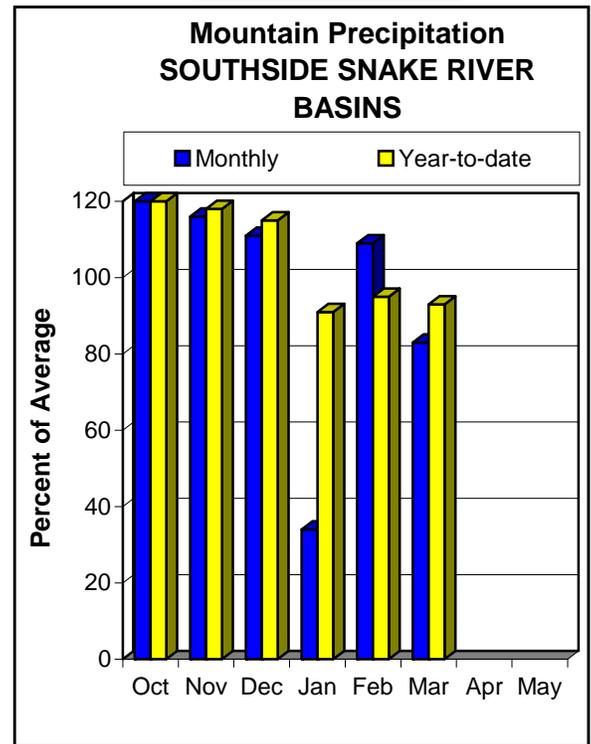
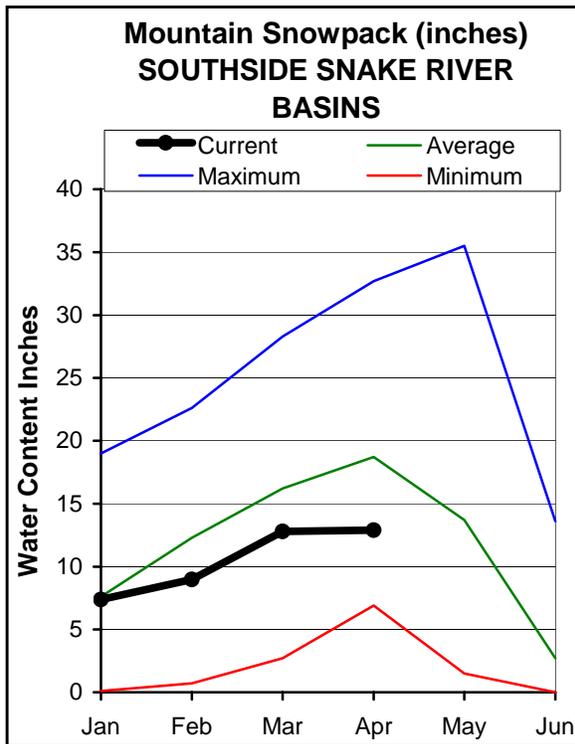
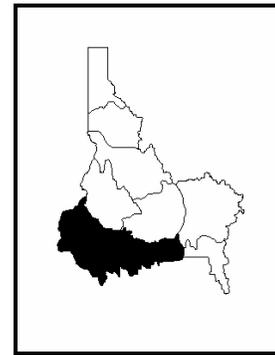
UPPER SNAKE RIVER BASIN Reservoir Storage (1000 AF) - End of March					UPPER SNAKE RIVER BASIN Watershed Snowpack Analysis - April 1, 2007			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
HENRYS LAKE	90.4	83.7	85.6	85.5	Henry Fork-Falls River	11	56	63
ISLAND PARK	135.2	119.0	103.1	114.6	Teton River	4	52	61
GRASSY LAKE	15.2	12.7	8.6	12.3	Henry Fork above Rexburg	15	55	62
JACKSON LAKE	847.0	636.4	419.8	486.6	Snake above Jackson Lake	5	60	68
PALISADES	1400.0	1178.6	845.4	941.5	Gros Ventre River	3	67	65
RIRIE	80.5	53.5	47.8	41.6	Hoback River	5	59	59
BLACKFOOT	348.7	182.9	101.0	229.8	Greys River	5	59	68
AMERICAN FALLS	1672.6	1643.0	1508.5	1443.2	Salt River	5	56	65
					Snake above Palisades	22	57	64
					Willow Creek	2	38	46
					Blackfoot River	4	47	54
					Portneuf River	7	37	46
Snake abv American Falls	38	54	61					

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

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# SOUTHSIDE SNAKE RIVER BASINS APRIL 1, 2007



## WATER SUPPLY OUTLOOK

Yo-yo like temperatures and precipitation that was like a water spigot, either on or off, created a different water supply outlook each month. On March 1, the snowpack was 80% of normal in these Southside Snake River basins. Now on April 1, we teetered the other way and the snowpack dropped to 69% of average for these basins as whole. The snowpack ranges from 33% in the Owyhee Basin to 70% in the Raft River Basin. Unfortunately, most of the lower elevation snow melted out a few weeks too early in mid-March and brought an increase in streams. Timing and magnitude of the streamflow peaks on the Bruneau River will depend on the rate of snowmelt; so have your river-running gear ready as the peak won't last long without rain. Carryover storage is the good news and will provide adequate irrigation supplies for the Owyhee, Salmon Falls and Oakley water users. Spring is just beginning, so let's hope for more rain to sustain the natural flow in the summer months. The Owyhee River is projected at recession levels for the rest of the season near 30% of normal; the Bruneau River is forecasted at only 53% of normal, Salmon Falls Creek at 60% and Oakley Reservoir inflow at 69%.

SOUTHSIDE SNAKE RIVER BASINS  
Streamflow Forecasts - April 1, 2007

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)
		90%		50%		10%		
		(1000AF)	(1000AF)	(1000AF)	(% AVG.)	(1000AF)	(1000AF)	
OAKLEY RESERVOIR INFLOW	APR-JUL	11.6	16.3	19.9	69	24	30	29
	APR-SEP	13.1	18.1	22	69	26	33	32
OAKLEY RESV STORAGE	APR-30	48	50	51	124	52	54	41
	MAY-31	44	47	50	111	53	56	45
	JUN-30	33	38	42	105	46	51	40
SALMON FALLS CREEK nr San Jacinto	APR-JUN	26	37	45	60	54	70	75
	APR-JUL	27	39	48	60	58	75	80
	APR-SEP	30	42	52	62	63	80	84
SALMON FALLS RESV STORAGE	APR-30	91	95	98	112	101	105	88
	MAY-31	84	92	98	97	104	112	101
	JUN-30	64	77	86	91	95	108	95
BRUNEAU near Hot Spring	APR-JUL	56	84	106	52	131	172	205
	APR-SEP	60	90	113	53	139	182	215
OWYHEE near Gold Creek (2)	APR-JUL	1.9	4.5	6.8	27	9.6	14.7	25
	APR-SEP	1.8	4.2	6.5	27	9.2	14.1	24
OWYHEE nr Owyhee (2)	APR-JUL	10.5	21	31	38	42	62	82
OWYHEE near Rome	APR-JUL	44	90	130	34	178	260	380
OWYHEE RESV INFLOW (2)	APR-JUL	67	103	133	33	166	222	400
	APR-SEP	78	117	148	34	183	241	430
SUCCOR CK nr Jordan Valley	APR-JUL	1.4	2.8	4.0	33	5.4	7.9	12.1
Reynolds Creek nr Tollgate	APR-JUL	2.1	3.0	3.6	44	4.3	5.4	8.2

SOUTHSIDE SNAKE RIVER BASINS Reservoir Storage (1000 AF) - End of March					SOUTHSIDE SNAKE RIVER BASINS Watershed Snowpack Analysis - April 1, 2007			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
OAKLEY	75.6	47.8	41.0	36.0	Raft River	6	51	70
SALMON FALLS	182.6	84.9	57.4	70.2	Goose-Trapper Creeks	7	45	62
WILDHORSE RESERVOIR	71.5	55.0	47.3	46.2	Salmon Falls Creek	8	41	59
OWYHEE	715.0	577.4	579.8	593.0	Bruneau River	8	33	52
BROWNLEE	1420.0	1175.8	949.9	1029.5	Reynolds Creek	5	58	67
					Owyhee Basin Total	20	21	33

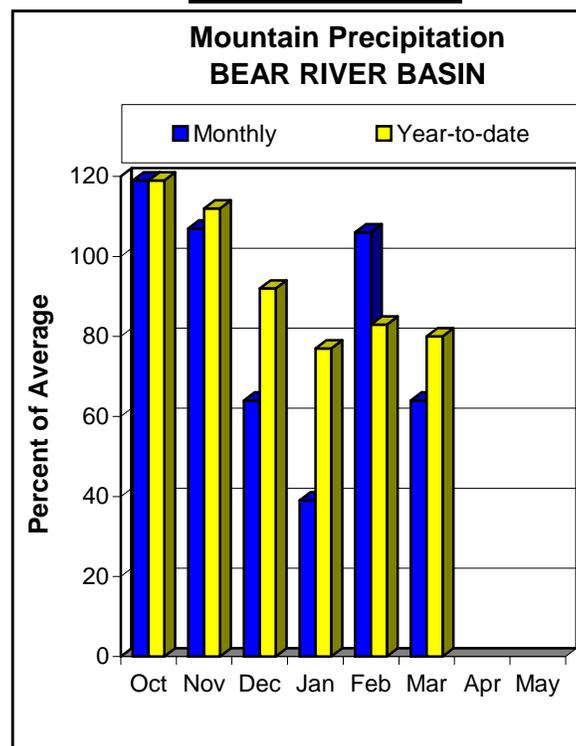
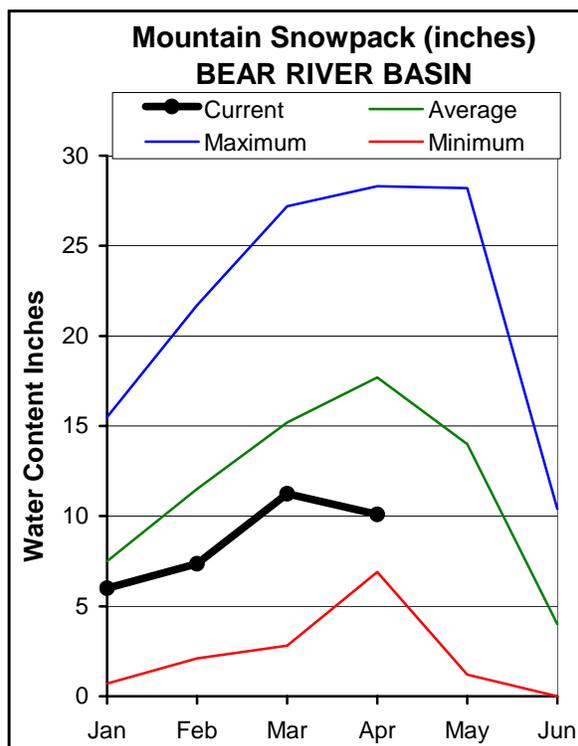
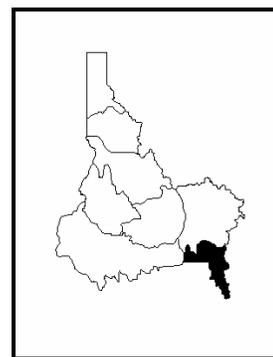
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# BEAR RIVER BASIN

## APRIL 1, 2007



## WATER SUPPLY OUTLOOK

The fifteen stations measuring mountain precipitation in the Bear River Basin showed 64% of average precipitation for March and 80% of average precipitation for the water year which began October first. The snowpack is fairing worse at less than 60% of average for April 1. Measurements from two snow courses reveal how little snow there is from a historical perspective; Emigration Canyon snow course, in the Bear Basin, has its second lowest April 1 snow water content since 1953 and Strawberry Creek snow course, in the Mink drainage, has the sixth lowest snowpack since 1955. As would be expected, summer streamflow forecasts for the Bear River decreased from last month and now range from 67% of average for the headwaters in Wyoming and Utah to 32% of average at Stewart Dam. Fortunately the recovery in storage that Bear Lake experienced over the past couple of winters will meet irrigation demands even with the low runoff. Bear Lake is storing 43% of capacity which is 165,000 acre-feet more than a year ago. Let's hope for a wet spring similar to 2005 when rainfall helped make up for a poor winter.

BEAR RIVER BASIN  
Streamflow Forecasts - April 1, 2007

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)
		90%		50%		10%		
		(1000AF)	(1000AF)	(1000AF)	(% AVG.)	(1000AF)	(1000AF)	
Bear River nr UT-WY State Line	APR-JUL	56	68	77	68	86	101	113
	APR-SEP	60	74	84	67	95	112	125
Bear River ab Reservoir nr Woodruff	APR-JUL	28	48	64	47	82	114	136
	APR-SEP	27	48	65	46	85	120	142
Big Creek nr Randolph	APR-JUL	0.3	1.1	1.8	37	2.7	4.3	4.9
Smiths Fork nr Border	APR-JUL	44	55	64	62	73	88	103
	APR-SEP	53	66	76	63	86	103	121
Bear River at Stewart Dam	APR-JUL	42	60	75	32	91	118	234
	APR-SEP	46	67	83	32	101	130	262
Little Bear River at Paradise	APR-JUL	5.2	9.9	14.0	30	18.8	27	46
Logan R Abv State Dam Nr Logan	APR-JUL	28	42	53	42	65	86	126
Blacksmith Fk Abv Up&L Dam Nr Hyrum	APR-JUL	12.2	18.2	23	48	28	37	48

BEAR RIVER BASIN Reservoir Storage (1000 AF) - End of March					BEAR RIVER BASIN Watershed Snowpack Analysis - April 1, 2007			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
BEAR LAKE	1421.0	609.4	444.3	923.8	Smiths & Thomas Forks	4	63	73
MONTPELIER CREEK	4.0	2.6	2.8	1.7	Bear River ab WY-ID line	14	51	60
					Montpelier Creek	2	53	60
					Mink Creek	4	41	56
					Cub River	3	36	51
					Bear River ab ID-UT line	25	46	57
					Malad River	3	12	15

\* 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 1971-2000 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. 2005).**

#### **Panhandle River Basins**

Kootenai R at Leonia, ID  
+ Lake Koocanusa (Storage Change)  
Boundary Ck nr Porthill, ID – No Corrections  
Moyie R at Eastport, ID – No Corrections  
Smith Creek nr Porthill, ID – No Corrections  
Clark Fork R at Whitehorse Rapids, ID  
+ Hungry Horse (Storage Change)  
+ Flathead Lake (Storage Change)  
+ Noxon Rapids Resv (Storage Change)  
Pend Oreille Lake Inflow, ID  
+ 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, ID  
+ Priest Lake (Storage Change)  
NF Coeur d'Alene R at Enaville, ID - No Corrections  
St. Joe R at Calder, ID - No Corrections  
Spokane R nr Post Falls, ID  
+ 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 Resv Inflow, ID  
+ Clearwater R nr Peck, ID  
- Clearwater R at Orofino, ID  
+ Dworshak Resv (Storage Change)  
Clearwater R at Orofino, ID - No Corrections  
Clearwater R at Spalding, ID  
+ Dworshak Resv (Storage Change)

#### **Salmon River Basin**

Salmon R at Salmon, ID - No Corrections  
Lemhi R nr Lemhi, ID – No Corrections  
MF Salmon R at MF Lodge, ID – No Corrections  
Salmon R at White Bird, ID - No Corrections

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

Weiser R nr Weiser, ID - No Corrections  
SF Payette R at Lowman, ID - No Corrections  
Deadwood Resv Inflow, ID  
+ Deadwood R blw Deadwood Resv nr Lowman  
+ Deadwood Resv (Storage Change)  
Lake Fork Payette R nr Mccall, ID – No Corrections  
NF Payette R at Cascade, ID  
+ Cascade Resv (Storage Change)  
+ Payette Lake (Storage Change)

NF Payette R nr Banks, ID  
+ Cascade Resv (Storage Change)  
+ Payette Lake (Storage Change)  
Payette R nr Horseshoe Bend, ID  
+ Cascade Resv (Storage Change)  
+ Deadwood Resv (Storage Change)  
+ Payette Lake (Storage Change)  
Boise R nr Twin Springs, ID - No Corrections  
SF Boise R at Anderson Ranch Dam, ID  
+ Anderson Ranch Resv (Storage Change)  
Boise R nr Boise, ID  
+ Anderson Ranch Resv (Storage Change)  
+ Arrowrock Resv (Storage Change)  
+ Lucky Peak Resv (Storage Change)

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

Big Wood R at Hailey, ID - No Corrections  
Big Wood R abv Magic Resv, ID  
+ Big Wood R nr Bellevue, ID  
+ Willow Ck  
Camas Ck nr Blaine – No Corrections  
Big Wood R blw Magic Dam nr Richfield, ID  
+ Magic Resv (Storage Change)  
Little Wood R abv High Five Ck, ID – No Corrections  
Little Wood R nr Carey, ID  
+ Little Wood Resv (Storage Change)  
Big Lost R at Howell Ranch, ID - No Corrections  
Big Lost R blw Mackay Resv nr Mackay, ID  
+ Mackay Resv (Storage Change)  
Little Lost R blw Wet Ck nr Howe, ID - No Corrections

#### **Upper Snake River Basin**

Henrys Fork nr Ashton, ID  
+ Henrys Lake (Storage Change)  
+ Island Park Resv (Storage Change)  
Henrys Fork nr Rexburg, ID  
+ Henrys Lake (Storage Change)  
+ Island Park Resv (Storage Change)  
+ Grassy Lake (Storage Change)  
+ Diversions from Henrys Fk btw Ashton to St. Anthony, ID  
+ Diversions from Henrys Fk btw St. Anthony to Rexburg, ID  
+ Diversions from Falls R abv nr Ashton, ID  
+ Diversions from Falls R nr Ashton to Chester, ID  
Falls R nr Ashton, ID  
+ Grassy Lake (Storage Change)  
+ Diversions from Falls R abv nr Ashton, ID  
Teton R nr Driggs, ID - No Corrections  
Teton R nr St. Anthony, ID  
- Cross Cut Canal into Teton R  
+ Sum of Diversions for Teton R abv St. Anthony, ID  
Snake R nr Moran, WY  
+ Jackson Lake (Storage Change)  
Pacific Ck at Moran, WY – No Corrections  
Snake R abv Palisades, WY  
+ Jackson Lake (Storage Change)

Greys R abv Palisades, WY – No Corrections  
 Salt R abv Palisades, WY – No Corrections  
 Snake R nr Irwin, ID  
   + Jackson Lake (Storage Change)  
   + Palisades Resv (Storage Change)  
 Snake R nr Heise, ID  
   + Jackson Lake (Storage Change)  
   + Palisades Resv (Storage Change)  
 Willow Ck nr Ririe, ID  
   + Ririe Resv (Storage Change)  
 Blackfoot Reservoir Inflow, ID  
   + Blackfoot Reservoir releases  
   + Blackfoot Resv (Storage Change)  
 Snake R nr Blackfoot, ID  
   + Palisades Resv (Storage Change)  
   + Jackson Lake (Storage Change)  
   + Diversions from Snake R btw Heise and Shelly  
   + Diversions from Snake R btw Shelly and Blackfoot  
 Portneuf R at Topaz, ID - No Corrections  
 American Falls Resv Inflow, ID  
   + Snake River at Neeley  
   + All Corrections made for Henrys Fk nr Rexburg, ID  
   + Jackson Lake (Storage Change)  
   + Palisades Resv (Storage Change)  
   + Diversions from Snake R btw Heise and Shelly  
   + Diversions from Snake R btw Shelly and Blackfoot  
**Southside Snake River Basins**  
 Oakley Resv Inflow, ID  
   + Goose Ck abv Trapper Ck  
   + Trapper Ck nr Oakley  
 Salmon Falls Ck nr San Jacinto, NV - No Corrections  
 Bruneau R nr Hot Springs, ID - No Corrections  
 Owyhee R nr Gold Ck, NV  
   + Wildhorse Resv (Storage Change)  
 Owyhee R nr Owyhee, NV  
   + Wildhorse Resv (Storage Change)  
 Owyhee R nr Rome, OR – No Corrections  
 Owyhee Resv Inflow, OR  
   + Owyhee R blw Owyhee Dam, OR  
   + Owyhee Resv (Storage Change)  
   + Diversions to North and South Canals  
 Succor Ck nr Jordan Valley, OR - No Corrections  
 Snake R at King Hill, ID - No Corrections  
 Snake R nr Murphy, ID - No Corrections  
 Snake R at Weiser, ID - No Corrections  
 Snake R at Hells Canyon Dam, ID  
   + Brownlee Resv (Storage Change)  
**Bear River Basin**  
 Bear R nr UT-WY Stateline, UT – No Corrections  
 Bear R abv Resv nr Woodruff, UT – No Corrections  
 Smiths Fork nr Border, WY - No Corrections  
 Bear R blw Stewart Dam nr Montpelier, ID  
   + Bear R blw Stewart Dam  
   + Rainbow Inlet Canal

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. 2005)**

<u><b>Basin/ Reservoir</b></u>	<u><b>Dead Storage</b></u>	<u><b>Inactive Storage</b></u>	<u><b>Active Storage</b></u>	<u><b>Surcharge Storage</b></u>	<u><b>NRCS Capacity</b></u>	<u><b>NRCS Capacity Includes</b></u>
<u><b>Panhandle Region</b></u>						
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	---	13.50	225.00	---	238.5	Inactive+Active
Priest Lake	20.00	28.00	71.30	---	119.3	Dead+Inactive+Active
<u><b>Clearwater Basin</b></u>						
Dworshak	---	1452.00	2016.00	---	3468.0	Inactive+Active
<u><b>Weiser/Boise/Pavette Basins</b></u>						
Mann Creek	1.61	0.24	11.10	---	11.1	Active
Cascade	---	46.70	646.50	---	693.2	Inactive+Active
Deadwood	---	---	161.90	---	161.9	Active
Anderson Ranch	24.90	37.00	413.10	---	450.1	Inactive+Active
Arrowrock	---	---	272.20	---	272.2	Active
Lucky Peak	---	28.80	264.40	13.80	293.2	Inactive+Active
Lake Lowell	7.90	5.80	159.40	---	165.2	Inactive+Active
<u><b>Wood/Lost Basins</b></u>						
Magic	Unknown	---	191.50	---	191.5	Active
Little Wood	---	---	30.00	---	30.0	Active
Mackay	0.13	---	44.37	---	44.4	Active
<u><b>Upper Snake Basin</b></u>						
Henrys Lake	---	---	90.40	---	90.4	Active
Island Park	0.40	---	127.30	7.90	135.2	Active+Surcharge
Grassy Lake	---	---	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	---	---	348.73	---	348.7	Active
American Falls	---	---	1672.60	---	1672.6	Active
<u><b>Southside Snake Basins</b></u>						
Oakley	---	---	75.60	---	75.6	Active
Salmon Falls	48.00	5.00	182.65	---	182.6	Active+Inactive
Wildhorse	---	---	71.50	---	71.5	Active
Owyhee	406.83	---	715.00	---	715.0	Active
Brownlee	0.45	444.70	975.30	---	1420.0	Inactive+Active
<u><b>Bear River Basin</b></u>						
Bear Lake	5.0 MAF	119.00	1302.00	---	1421.0	Active+Inactive: includes 119 that can be released
Montpelier Creek	0.21	---	3.84	---	4.0	Dead+Active

**Reservoir Capacity Definitions** (Units in 1,000 Acre-Feet, KAF)

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

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

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