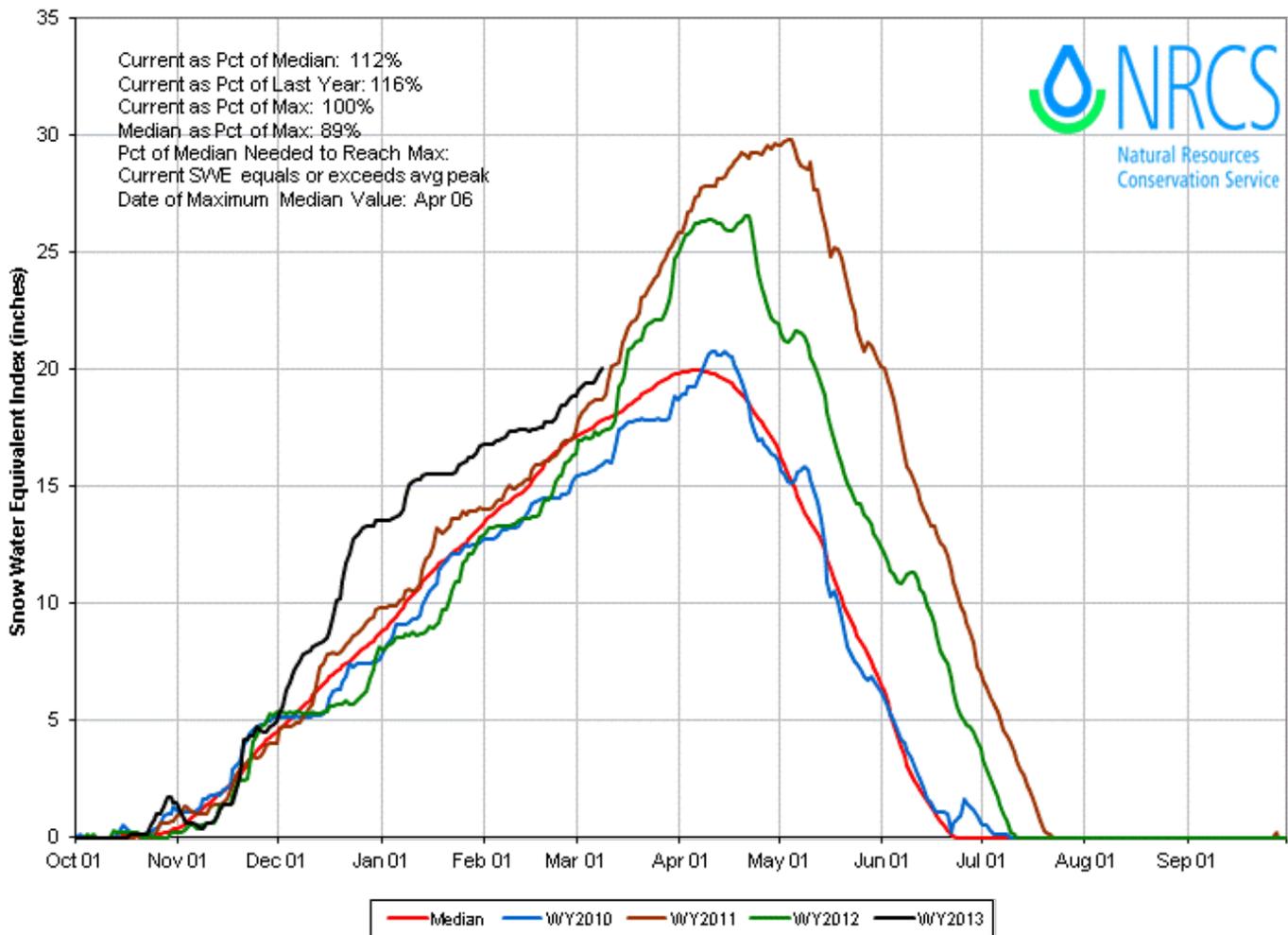


Washington Water Supply Outlook Report March 1, 2013

*COLUMBIA ABOVE METHOW Time Series Snowpack Summary
 Based on Provisional SNOTEL data as of Mar 08, 2013*



Water Supply Outlook Reports and Federal - State – Private Cooperative Snow Surveys

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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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Washington Water Supply Outlook

March 2013

General Outlook

For the most part February proved to be a very dry month in Washington. Only a few stations received near or above average rainfall, mostly in the north and central Cascade Mountains and not until the very last days of the month. Last minute snow accumulation also helped rebound declining percentages however what snow did fall was not nearly what we normally receive in February. Average temperatures for the month varied from slightly below average on the west side to much above average on the east side. For the most part mountain temperatures remained near normal where the valleys were unseasonably warm. Weather forecasting continues to be a fickle matter this year with much uncertainty in long range predictions. However the Climate Prediction Center is suggesting that we will remain cooler than normal through the rapidly approaching spring with equal chances of above, below or near normal precipitation.

Snowpack

The March 1 statewide SNOTEL readings were 119%, basically the same as last month. Though we received more than a foot of snow in some locations during the last week of the month it only served to maintain the levels we started the month with. So far we have received about 85-90% of our annual total snowfall. The Lower Snake and Walla Walla basins reported the lowest readings at 86% of normal. Readings from the Central Puget Sound reported the highest at 144% of normal. Westside medians from SNOTEL, and March 1 snow surveys, included the North Puget Sound river basins with 116% of normal, the Olympics 143%, South Puget river basins with 124%, and the Lewis-Cowlitz basins with 128% of normal. Snowpack along the east slopes of the Cascade Mountains included the Yakima area with 94% and the Wenatchee area with 91%. Snowpack in the Spokane and Pend Oreille basin reported 87% and 91% of the long term median respectfully. Maximum snow cover in Washington was at Easy Pass SNOTEL, with water content of 85.6 inches or approximately 19 feet deep. Easy Pass is only a few years old so a normal has yet to be established.

BASIN	PERCENT OF LAST YEAR	PERCENT OF MEDIAN
Spokane	86	87
Newman Lake	113	97
Pend Oreille	84	91
Okanogan	115	112
Methow	99	112
Conconully Lake	190	123
Central Columbia	91	91
Upper Yakima	81	93
Lower Yakima	86	95
Ahtanum Creek	79	89
Walla Walla	91	86
Lower Snake	87	86
Cowlitz	102	129
Lewis	126	127
White	98	112
Green	96	123
Puyallup	109	136
Cedar	89	130
Snoqualmie	121	138
Skykomish	132	142
Skagit	83	105
Nooksack	104	128
Olympic Peninsula	126	143

Precipitation

During the month of February, the National Weather Service and Natural Resources Conservation Service climate stations reported below normal precipitation totals throughout Washington river basins with the exception of the northwest corner and the western Olympics. Though better than January water year averages continue to shrink. The highest percent of average in the state was at M.F. Nooksack SNOTEL which reported 151% of average for a total of 12.4 inches. The average for this site is 8.2 inches for February. The driest location was at Moxee, WA near Yakima which received no measurable precipitation for the month. The wettest spot in the state was reported at Alpine Meadows SNOTEL in the Tolt River Basin with a February accumulation of 16.4 inches or 122% of normal. So far March is starting out on better footing with near to above average precipitation most everywhere. The Yakima Valley, which was the driest area last month, earns high marks this month at over 200% of normal so far.

RIVER BASIN	FEBRUARY PERCENT OF AVERAGE	WATER YEAR PERCENT OF AVERAGE
Spokane	70.....	101
Pend Oreille	72.....	114
Upper Columbia	47.....	115
Central Columbia	60.....	99
Upper Yakima	89.....	95
Lower Yakima	65.....	100
Walla Walla	82.....	106
Lower Snake	72.....	101
Lower Columbia	74.....	112
South Puget Sound	86.....	106
Central Puget Sound	104.....	103
North Puget Sound	92.....	105
Olympic Peninsula	100.....	106

Reservoir

Seasonal reservoir levels in Washington can vary greatly due to specific watershed management practices required in preparation for irrigation season, fisheries management, power generation, municipal demands and flood control. Reservoir storage in the Yakima Basin was 564,000-acre feet, 125% of average for the Upper Reaches and 151,000-acre feet or 110% of average for Rimrock and Bumping Lakes. Storage at the Okanogan reservoirs was 96% of average for March 1. The power generation reservoirs included the following: Coeur d'Alene Lake, 67,000 acre feet, 51% of average and 28% of capacity; Chelan Lake, 226,000-acre feet, 81% of average and 33% of capacity; and the Skagit River reservoirs at 78% of average and 46% of capacity. Recent climate impacts and management procedures may affect these numbers on a daily or weekly basis.

BASIN	PERCENT OF CAPACITY	CURRENT STORAGE AS PERCENT OF AVERAGE
Spokane	28	51
Pend Oreille	58	115
Upper Columbia	81	96
Central Columbia	33	81
Upper Yakima	68	125
Lower Yakima	65	110
Lower Snake	74	109
North Puget Sound	46	78

For more information contact your local Natural Resources Conservation Service office.

Streamflow

Forecasts vary from 81% of average for the Spokane near Post Falls to 130% of average for S.F. Tolt River near Index. April-September forecasts for some Western Washington streams include the Cedar River near Cedar Falls, 109%; White River, 109%; and Skagit River, 98%. Some Eastern Washington streams include the Yakima River near Parker, 90%; Wenatchee River at Plain, 89%; and Kettle near Laurier, 123%. Volumetric forecasts are developed using current, historic and average snowpack, precipitation and streamflow data collected and coordinated by organizations cooperating with NRCS.

With another dry month runoff was for the most part much below average. The Okanogan River had the highest reported flows with 110% of average. The Wenatchee at Peshastin with 59% of average had the least non-regulated runoff. Other streamflows were the following percentage of average as reported by the River Forecast Center: the Cowlitz at Castle Rock, 73%; the Columbia below Rock Island Dam, 94%; and the Priest River, 79%.

BASIN	PERCENT OF AVERAGE (50 PERCENT CHANCE OF EXCEEDENCE)
Spokane	81-100
Pend Oreille	98-100
Upper Columbia	84-123
Central Columbia	80-96
Upper Yakima	86-93
Lower Yakima	88-110
Walla Walla	96
Lower Snake	74-103
Lower Columbia	91-113
South Puget Sound	106-109
Central Puget Sound	104-130
North Puget Sound	98-104
Olympic Peninsula	108-112

STREAM	PERCENT OF AVERAGE FEBRUARY STREAMFLOWS
Pend Oreille Below Box Canyon	77
Kettle at Laurier	65
Columbia at Birchbank	95
Spokane at Long Lake	65
Similkameen at Nighthawk	74
Okanogan at Tonasket	110
Methow at Pateros	105
Chelan at Chelan	66
Wenatchee at Pashastin	59
Cle Elum near Roslyn	49
Yakima at Parker	54
Naches at Naches	46
Grande Ronde at Troy	61
Snake below Lower Granite Dam	68
SF Walla Walla near Milton-Freewater, OR	82
Columbia River at The Dalles	78
Cowlitz below Mayfield Dam	71
Skagit at Concrete	64
Dungeness near Sequim	83

For more information contact your local Natural Resources Conservation Service office.

Soil Moisture

Current soil moisture data is available from a limited number of SNOTEL sites scattered throughout each basin. As the effort continues to install additional sensors and more years of data are acquired this information will become invaluable to the streamflow forecasting community. Warm temperatures and rain-on-snow events of February pushed most soils moisture levels up a few percentage points. With a solid snowpack over most of the mountainous regions of the state these numbers should hold and will help provide maximum runoff come spring.

BASIN	ESTIMATED PERCENT SATURATION
Spokane	70
Pend Oreille	59
Upper Columbia	56
Central Columbia	56
Upper Yakima	66
Lower Yakima	76
Walla Walla	73
Lower Snake	73
Lower Columbia	77
South Puget Sound	77
Central Puget Sound	N/A
North Puget Sound	76
Olympic Peninsula	45

Western Snow Conference

The Western Snow Conference is an annual tradition which started in 1932 as an international forum for individuals and organizations to share scientific, management and socio-political information on snow and runoff. The principal aim of the Western Snow Conference is to advance snow and hydrological sciences. The North Continental Area Committee is making plans for the 81st Annual Western Snow Conference in 2013.

Mark your calendar and start thinking about submitting a paper to attend the 2013 Western Snow Conference:

Dates: April 15-18, 2013

Location: Snow King Resort Jackson Hole, Wyoming <http://www.snowking.com>

Theme: "Wild Weather in the Wild West"

A short course and panel discussion is being planned for Monday April 15th titled "**New Strategies and Techniques in Long Range Streamflow Forecasting**". Many agencies use long range streamflow forecasts for hydropower planning, reservoir operation and marketing. This will provide a forum to discuss the current state of forecasting, the advancement of long range forecasting, additional needs of agencies, and more.

A Technical Tour is scheduled for Thursday, April 18th to discover how the local environment plays a critical role in the snowpack of the area. This will be an all day bus trip and a great opportunity to view the majestic landscape that so many have been studying and talking about.

Additional information about the conference and the Call for Papers will be posted on the WSC web page at <http://www.westernsnowconference.org/>

Also find Western Snow Conference on Facebook and Twitter.

BASIN SUMMARY OF
SNOW COURSE DATA

MARCH 2012

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1971-00	SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1971-00
ABERDEEN LAKE CAN.	4000	2/25/13	30	9.4	5.7	5.7	HIGH RIDGE SNOTEL	4920	3/01/13	64	18.0	20.5	21.4
AHTANUM R.S.	3100	2/26/13	8	3.2	3.8	6.5	HOLBROOK	4530	3/01/13	21	5.2	--	7.6
ALPINE MEADOWS	3500	2/26/13	138	51.0	32.9	31.5	HOODOO BASIN SNOTEL	6050	3/01/13	104	29.9	36.2	32.3
ALPINE MEADOWS SNTL	3500	3/01/13	139	67.1	42.9	40.3	HUCKLEBERRY SNOTEL	2250	3/01/13	12	5.3	4.0	1.5
AMBROSE	6480	2/26/13	37	9.6	10.6	9.2	HUMBOLDT GLCH SNOTEL	4250	3/01/13	38	9.1	14.5	9.8
ASHLEY DIVIDE	4820	2/26/13	15	2.4	5.0	5.3	HURRICANE	4500	2/28/13	65	22.6	13.6	12.0
BADGER PASS SNOTEL	6900	3/01/13	84	26.3	29.9	23.7	INDIAN ROCK SNOTEL	5360	3/01/13	63	26.1	26.8	--
BAIRD #2	3220	2/25/13	25	5.2	6.4	7.9	IRENE'S CAMP	5530	2/27/13	34	8.4	7.8	7.9
BAREE MIDWAY	4600	2/25/13	66	20.7	21.2	23.6	JUNE LAKE SNOTEL	3440	3/01/13	118	50.9	35.5	36.3
BAREE TRAIL	3800	2/25/13	25	6.8	9.9	7.8	KELLER RIDGE	3700	2/27/13	21	4.7	3.3	--
BARKER LAKES SNOTEL	8250	3/01/13	38	10.3	9.2	10.3	KELLOGG PEAK	5560	2/28/13	53	17.6	17.2	23.2
BASIN CREEK SNOTEL	7180	3/01/13	24	5.0	4.4	5.5	KISHENEHIN	3890	2/27/13	26	6.5	6.7	7.2
BEAVER CREEK TRAIL	2200	3/03/13	37	12.9	17.0	11.2	KRAFT CREEK SNOTEL	4750	3/01/13	35	9.3	14.4	--
BEAVER PASS	3680	3/03/13	85	32.0	28.6	22.6	LAMB BUTTE	3700	3/01/13	43	14.8	15.0	--
BEAVER PASS SNOTEL	3630	3/01/13	108	39.6	41.6	27.8	LIGHTNING LAKE CAN.	3700	2/26/13	38	9.7	14.0	10.3
BIG WHITE MTN CAN.	5510	3/01/13	58	17.0	--	16.8	LOGAN CREEK	4300	2/27/13	19	4.4	5.0	5.5
BLACK MOUNTAIN	7750	2/28/13	39	9.1	10.7	11.0	LOLO PASS SNOTEL	5240	3/01/13	66	18.5	26.1	22.9
BLACK PINE SNOTEL	7100	3/01/13	30	7.2	10.6	8.2	LONE PINE SNOTEL	3930	3/01/13	114	47.9	30.9	28.1
BLEWETT PASS#2SNOTEL	4240	3/01/13	35	12.2	16.3	14.7	LOOKOUT SNOTEL	5140	3/01/13	67	19.1	24.0	24.5
BONAUPART SOUTH	4660	3/01/13	24	5.7	4.6	--	LOST HORSE MTN CAN.	6300	2/27/13	32	8.7	7.4	8.0
BRENDA MINE CAN.	4450	2/25/13	32	7.9	8.9	11.3	LOST HORSE SNOTEL	5120	3/01/13	45	13.3	18.3	17.5
BROCKMERE CAN.	3000	2/28/13	22	6.8	7.5	7.6	LOST LAKE SNOTEL	6110	3/01/13	99	32.6	42.2	43.7
BROWN TOP AM	6000	3/04/13	133	42.1	55.6	48.8	LOST LAKE	4070	3/01/13	26	6.7	5.4	--
BROWNS PASS	2270	2/27/13	19	4.9	2.4	--	LOUP LOUP CAMPGROUND	2266	2/26/13	33	9.7	5.2	--
BRUSH CREEK TIMBER	5000	2/27/13	32	10.0	13.3	6.3	LUBRECHT FOREST NO 3	5450	2/27/13	14	2.9	5.4	4.4
BUCKINGHORSE SNOTEL	4870	3/01/13	146	59.4	55.1	--	LUBRECHT FOREST NO 4	4650	2/27/13	7	1.5	3.4	2.1
BULL MOUNTAIN	6600	2/25/13	22	5.4	5.0	4.8	LUBRECHT FOREST NO 6	4040	2/28/13	13	2.8	5.8	2.7
BUMPING LAKE (NEW)	3400	2/28/13	52	14.1	16.2	14.9	LUBRECHT HYDROPLOT	4200	2/27/13	12	2.5	6.2	4.1
BUMPING RIDGE SNOTEL	4610	3/01/13	74	21.6	28.0	22.7	LUBRECHT SNOTEL	4680	3/01/13	12	3.3	7.7	4.7
BUNCHGRASS MDWSNOTEL	5000	3/01/13	68	20.1	21.8	22.5	LYMAN LAKE SNOTEL	5980	3/01/13	136	47.5	50.6	48.6
BURNT MOUNTAIN PIL	4170	3/01/13	60	21.6	19.6	15.1	LYNN LAKE	4000	3/01/13	81	31.9	25.2	17.0
BUTTERMILK BUTTE	5250	2/25/13	39	12.6	11.7	--	LYNN LAKE SNOTEL	3900	3/01/13	81	31.9	25.2	--
CALAMITY SNOTEL	2500	3/01/13	14	4.5	3.3	--	MARIAS PASS	5250	2/27/13	44	12.7	15.0	13.1
CARMI CAN.	4100	3/03/13	19	5.2	--	5.8	MARTEN RIDGE SNOTEL	3520	3/01/13	153	66.9	59.7	--
CAYUSE PASS SNOTEL	5240	3/01/13	153	53.6	52.8	--	MAZAMA	2266	2/26/13	22	6.1	9.6	--
CHAMOKANE 2	3520	2/28/13	25	7.8	8.0	--	MCCULLOCH CAN.	4200	2/28/13	29	7.1	--	6.2
CHESSMAN RESERVOIR	6200	2/28/13	19	4.9	4.4	2.8	MEADOWS CABIN	1900	3/03/13	18	5.9	5.7	3.4
CHEWALAH #2	4930	2/26/13	50	15.5	15.8	15.3	MEADOWS PASS SNOTEL	3230	3/01/13	79	30.0	36.0	21.6
CHICKEN CREEK	4060	2/27/13	46	11.8	15.4	12.8	METEOR	2266	2/25/13	20	4.9	3.5	--
CHIWAUKUM G.S.	2500	2/27/13	19	5.0	10.0	9.0	M F NOOKSACK SNOTEL	4970	3/01/13	140	56.4	61.2	45.3
CITY CABIN	2390	2/26/13	42	13.4	13.7	8.8	MICA CREEK SNOTEL	4510	3/01/13	58	17.4	20.4	19.8
CLOUDY PASS AM	6500	3/04/13	92	34.0	36.7	33.5	MINERAL CREEK	4000	2/26/13	43	13.2	14.6	13.9
COLD CREEK STRIP	6020	2/27/13	36	10.5	6.7	7.5	MISSEZULA MTN CAN.	5080	2/27/13	24	5.6	8.3	8.4
COLOCKUM PASS	5370	3/01/13	37	12.6	11.4	13.6	MISSION RIDGE	5000	2/27/13	40	14.4	12.0	14.7
COMBINATION SNOTEL	5600	3/01/13	15	3.7	5.0	4.1	MOSES MOUNTAIN (2)	4800	2/28/13	51	18.3	9.1	11.6
COPPER BOTTOM SNOTEL	5200	3/01/13	14	3.4	7.7	--	MOSES MTN SNOTEL	5010	3/01/13	50	18.2	9.4	13.0
COPPER MOUNTAIN	7700	2/23/13	32	7.8	7.0	8.0	MOSES PEAK	6650	2/28/13	70	27.3	14.8	17.6
CORRAL PASS SNOTEL	5800	3/01/13	81	28.4	32.0	28.7	MOSQUITO RDG SNOTEL	5200	3/01/13	80	26.3	32.3	29.8
COTTONWOOD CREEK	6400	2/28/13	23	5.7	5.5	5.2	MOULTON RESERVOIR	6850	2/28/13	25	6.6	5.9	6.0
COUGAR MTN. SNOTEL	3200	3/01/13	56	23.0	17.3	15.2	MOUNT CRAG SNOTEL	3960	3/01/13	98	33.5	28.2	26.1
COX VALLEY	4500	2/27/13	104	33.0	29.1	30.7	MT. KOBAU CAN.	5500	2/25/13	48	17.7	6.5	10.2
DALY CREEK SNOTEL	5780	3/01/13	32	8.2	9.9	8.4	MOUNT TOLMAN	2000	2/26/13	9	2.0	1.9	2.4
DEER PARK	5200	2/26/13	59	22.7	18.7	11.7	MOWICH SNOTEL	3160	3/01/13	19	7.4	2.0	.7
DESERT MOUNTAIN	5600	3/05/13	41	12.0	12.2	10.8	MOUNT GARDNER	3300	2/26/13	52	16.8	--	12.9
DEVILS PARK	5900	2/28/13	91	31.1	43.9	35.2	MOUNT GARDNER SNOTEL	2920	3/01/13	51	18.2	17.6	14.5
DISAUTEL PASS	2270	2/27/13	24	6.8	3.1	--	MUTTON CREEK #1	5700	2/25/13	48	16.3	6.4	12.0
DISCOVERY BASIN	7050	3/01/13	26	6.8	8.3	7.4	N.F. ELK CR SNOTEL	6250	3/01/13	28	7.0	11.1	8.9
DIX HILL	6400	2/24/13	25	6.6	11.6	8.2	NEVADA RIDGE SNOTEL	7020	3/01/13	38	9.7	16.0	10.9
DOMMERIE FLATS	2200	2/28/13	10	2.9	8.4	6.8	NEW HOZOMEEN LAKE	2800	3/04/13	14	4.5	7.2	8.0
DUNCAN RIDGE	5370	2/27/13	27	7.0	4.3	5.4	NEZ PERCE CMP SNOTEL	5650	3/01/13	40	10.0	12.1	10.8
DUNGENESS SNOTEL	4010	3/01/13	35	12.6	7.6	5.9	NOISY BASIN SNOTEL	6040	3/01/13	103	34.0	30.2	31.5
EL DORADO MINE	7800	2/23/13	28	7.2	10.2	12.9	OLALLIE MDWS SNOTEL	4030	3/01/13	126	51.1	55.2	42.4
ELBOW LAKE SNOTEL	3200	3/01/13	123	44.5	38.7	32.4	OPHIR PARK	7150	2/24/13	32	8.4	13.7	11.2
EMERY CREEK SNOTEL	4350	3/01/13	---	12.1	10.9	12.5	OYAMA LAKE CAN.	4100	3/01/13	22	4.4	4.6	6.2
ENDERBY CAN.	5800	2/28/13	112	40.9	--	33.8	PARADISE SNOTEL	5130	3/01/13	156	70.6	64.5	55.5
ESPERON CK. UP CAN.	5050	2/25/13	44	14.0	11.2	14.6	PARK CK RIDGE SNOTEL	4600	3/01/13	110	41.1	45.5	38.7
FATTY CREEK	5500	3/02/13	55	16.3	19.0	17.4	PEPPER CREEK SNOTEL	2140	3/01/13	29	11.4	7.5	--
FISH CREEK	8000	2/28/13	31	10.6	7.0	7.0	PETERSON MDW SNOTEL	7200	3/01/13	30	7.1	7.2	7.1
FISH LAKE	3370	2/27/13	73	24.2	33.0	27.6	PETTITJOHN CREEK	4300	3/01/13	23	6.0	5.3	--
FISH LAKE SNOTEL	3430	3/01/13	75	24.3	31.4	26.7	PITTAIL PEAK SNOTEL	5800	3/01/13	114	40.9	58.6	41.9
FLATTOP MTN SNOTEL	6300	3/01/13	125	39.1	37.0	33.8	PIKE CREEK SNOTEL	5930	3/01/13	31	7.5	11.3	19.6
FLEECER RIDGE	7500	2/25/13	31	7.7	8.0	7.7	PIPESTONE PASS	7200	2/23/13	20	3.6	2.9	3.2
FOURTH OF JULY SUM	3200	2/28/13	32	9.0	10.8	8.5	POPE RIDGE SNOTEL	3590	3/01/13	50	14.3	18.5	16.2
FREEZEOUT CK. TRAIL	3500	3/04/13	31	9.7	16.1	10.4	POSTILL LAKE CAN.	4200	2/28/13	27	6.7	7.3	7.3
FROHNER MDWS SNOTEL	6480	3/01/13	23	5.8	8.6	5.9	POTATO HILL SNOTEL	4510	3/01/13	87	27.3	28.1	20.8
FROST MEADOWS	4630	3/01/13	47	15.8	--	15.6	QUARTZ PEAK SNOTEL	4700	3/01/13	58	17.6	21.0	19.5
GOAT CREEK	3600	2/25/13	24	5.5	5.3	5.9	RAGGED MTN SNOTEL	4210	3/01/13	57	19.1	22.4	21.4
GOLD MTN LOOKOUT	2266	2/26/13	42	14.7	9.5	--	RAGGED RIDGE	3330	2/27/13	29	7.8	4.2	7.9
GRAVE CRK SNOTEL	4300	3/01/13	44	12.0	15.0	13.5	RAINY PASS SNOTEL	4890	3/01/13	84	30.1	38.7	31.7
GREEN LAKE SNOTEL	5920	3/01/13	63	21.2	25.7	18.2	RAINY PASS	4780	3/02/13	81	28.5	38.2	--
GROUSE CAMP SNOTEL	5390	3/01/13	43	16.1	18.4	17.4	REX RIVER SNOTEL	3810	3/01/13	91	38.6	42.1	28.3
HAMILTON HILL CAN.	4550	2/26/13	29	8.4	12.8	12.7	ROCKER PEAK SNOTEL	8000	3/01/13	37	8.8	11.8	10.1
HAND CREEK SNOTEL	5030	3/01/13	29	7.0	9.2	9.5	ROLAND SUMMIT	5120	3/01/13	82	26.7	31.4	27.0
HARTS PASS SNOTEL	6490	3/01/13	---	38.1	39.4	33.7	ROUND TOP MTN	4020	2/27/13	44	12.3	10.2	--
HARTS PASS	6500	3/02/13	92	36.2	39.0	32.6	RUSTY CREEK	4000	2/25/13	23	6.3	3.7	6.0
HELL ROARING DIVIDE	5770	2/26/13	75	20.6	21.8	23.9	SADDLE MTN SNOTEL	7900	3/01/13	56	16.7	21.0	19.0
HERRIG JUNCTION	4850	2/27/13	60	15.7	21.2	21.2	SALMON MDWS SNOTEL	4460	3/01/13	34	10.2	7.2	8.7

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1971-00
SASSE RIDGE SNOTEL	4340	3/01/13	82	26.1	33.5	27.3
SATUS PASS	4030	2/25/13	29	8.6	8.0	8.9
SAVAGE PASS SNOTEL	6170	3/01/13	---	18.6	23.9	20.5
SAWMILL RIDGE SNOTEL	4640	3/01/13	87	33.0	44.1	--
SENTINEL BT SNOTEL	4680	3/01/13	35	8.7	6.5	8.1
SHEEP CANYON SNOTEL	3990	3/01/13	119	45.1	32.3	29.4
SHERWIN SNOTEL	3200	3/01/13	---	7.9	11.3	9.1
SILVER STAR MTN CAN.	5600	3/01/13	79	29.7	23.2	25.0
SKALKAHO SNOTEL	7260	3/01/13	52	15.1	20.0	17.5
SKITWISH RIDGE	5110	3/01/13	76	25.8	27.8	25.0
SKOOKUM CREEK SNOTEL	3310	3/01/13	107	49.7	38.1	29.4
SKOOKUM LAKES	4230	2/28/13	38	11.5	12.8	--
SLIDE ROCK MOUNTAIN	7100	2/24/13	36	11.2	14.2	10.1
SOURDOUGH GUL SNOTEL	4000	3/01/13	5	2.5	.8	.2
SOUTH BALDY	4920	2/28/13	56	17.3	16.6	--
SPENCER MDW SNOTEL	3400	3/01/13	80	30.7	24.4	28.4
SPIRIT LAKE SNOTEL	3520	3/01/13	28	19.3	7.6	5.2
SPOTTED BEAR MTN.	7000	2/28/13	30	7.8	12.2	10.7
SPRUCE SPGS SNOTEL	5700	3/01/13	35	8.7	13.4	14.7
STARVATION MOUNTAIN	6750	2/28/13	53	18.0	15.5	14.3
STAHL PEAK SNOTEL	6030	3/01/13	86	25.2	27.6	27.5
STAMPEDE PASS SNOTEL	3850	3/01/13	91	28.5	34.8	35.4
STEMPLE PASS	6600	2/27/13	28	6.4	10.3	7.0
STEVENS PASS SNOTEL	3950	3/01/13	112	32.5	38.1	34.1
STORM LAKE	7780	3/01/13	35	9.4	10.3	9.5
STRYKER BASIN	6180	2/27/13	79	24.6	25.4	25.0
SUMMIT G.S. #2	4600	2/25/13	36	8.9	6.7	8.1
SUNSET SNOTEL	5540	3/01/13	54	15.0	19.5	19.1

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1971-00
SURPRISE LAKS SNOTEL	4290	3/01/13	112	44.4	41.4	39.7
SWAMP CREEK SNOTEL	3930	3/01/13	51	16.0	23.8	15.6
SWIFT CREEK SNOTEL	4440	3/01/13	158	66.2	47.9	48.0
TEN MILE LOWER	6600	2/25/13	28	6.8	7.8	5.4
TEN MILE MIDDLE	6800	2/25/13	31	7.2	9.1	7.5
THUNDER BASIN SNOTEL	4320	3/01/13	80	27.1	29.2	26.7
THOMPSON CREEK	2500	2/27/13	23	5.2	2.6	4.2
THOMPSON RIDGE	4650	2/25/13	35	10.9	11.2	--
TINKHAM CREEK SNOTEL	2990	3/01/13	74	25.9	32.4	23.8
TOATS COULEE	2850	2/27/13	17	4.0	2.0	3.1
TOGO	3370	2/27/13	27	7.6	7.8	7.8
TOUCHET SNOTEL	5530	3/01/13	65	23.4	25.0	26.5
TRINKUS LAKE	6100	3/02/13	97	33.6	34.0	32.4
TROUGH #2 SNOTEL	5480	3/01/13	28	7.9	9.1	8.6
TROUT CREEK CAN.	5650	2/25/13	27	7.8	9.0	6.7
TRUMAN CREEK	4060	2/27/13	13	2.9	5.2	4.0
TUNNEL AVENUE	2450	2/28/13	---	12.5	18.1	15.8
TWELVEMILE SNOTEL	5600	3/01/13	43	8.7	18.9	13.8
TWIN LAKES SNOTEL	6400	3/01/13	84	25.7	36.5	30.2
TWIN SPIRIT DIVIDE	3480	2/27/13	32	9.6	7.8	11.9
UPPER HOLLAND LAKE	6200	3/02/13	71	24.1	22.6	26.0
UPPER WHEELER SNOTEL	4330	3/01/13	25	7.3	8.2	11.1
VULCAN MTN	4660	2/25/13	40	10.9	8.1	--
VULCAN ROAD	3840	2/25/13	29	7.1	6.4	--
WARM SPRINGS SNOTEL	7800	3/01/13	46	13.0	17.7	14.8
WATERHOLE SNOTEL	5010	3/01/13	103	43.2	35.3	30.8
WEASEL DIVIDE	5450	2/28/13	78	21.7	27.9	26.2
WELLS CREEK SNOTEL	4030	3/01/13	103	33.6	29.2	27.1
WHITE PASS ES SNOTEL	4440	3/01/13	64	19.3	26.0	19.5
WHITE ROCKS MTN CAN.	7200	2/25/13	58	19.3	16.8	19.6



Natural Resources Conservation Service

Washington State
Snow, Water and Climate Services

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Helpful Internet Addresses

NRCS Snow Survey and Climate Services Homepages

Washington:
<http://www.wa.nrcs.usda.gov/snow>

Oregon:
<http://www.or.nrcs.usda.gov/snow>

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

National Water and Climate Center (NWCC):
<http://www.wcc.nrcs.usda.gov>

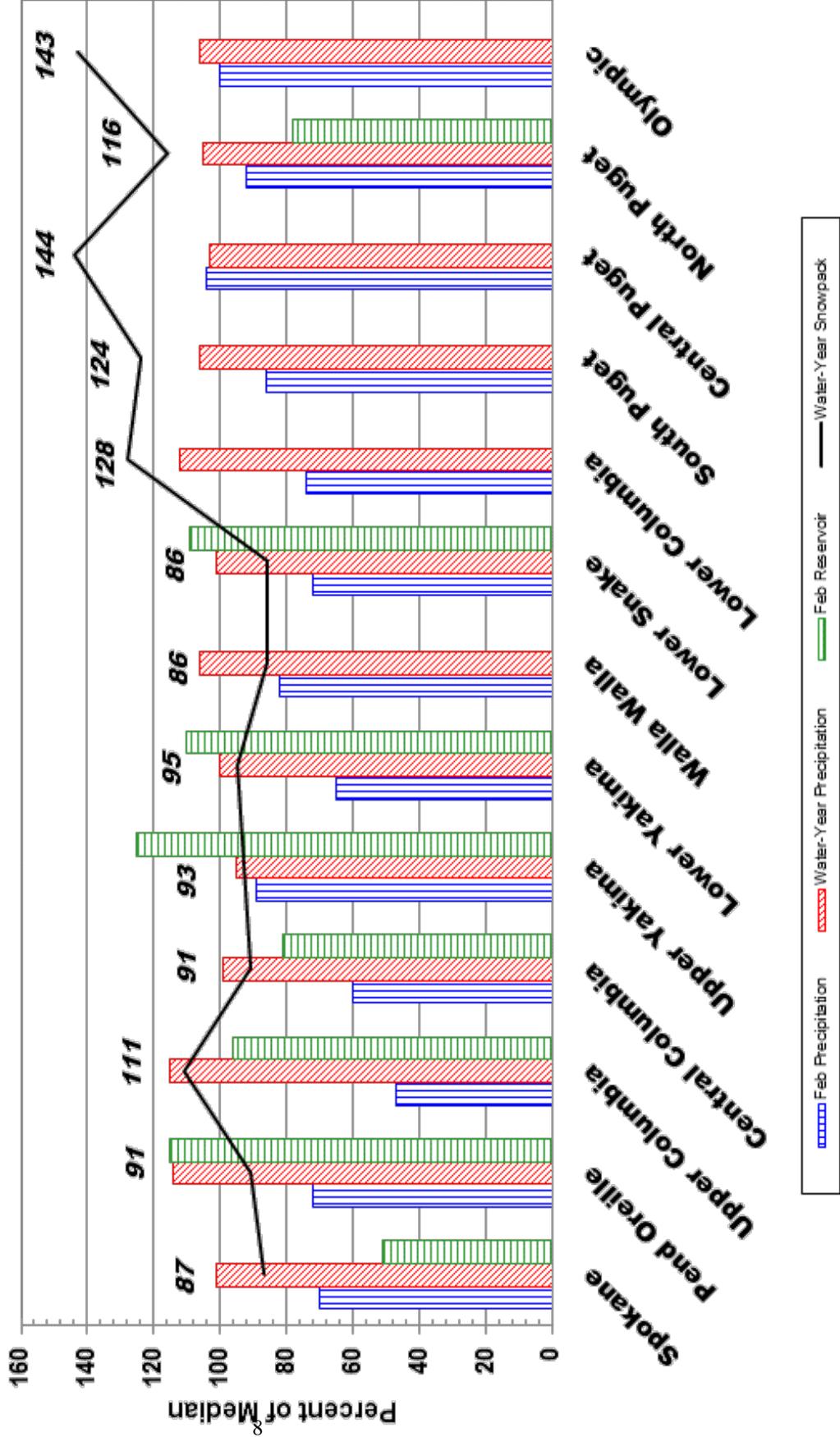
USDA-NRCS Agency Homepages

Washington:
<http://www.wa.nrcs.usda.gov>

NRCS National:
<http://www.nrcs.usda.gov>

March 1, 2013 - Snowpack, Precipitation and Reservoir Conditions at a Glance

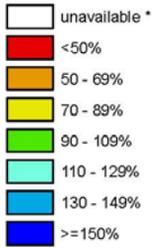
(Water Year = October 1, 2012 - Current Date)



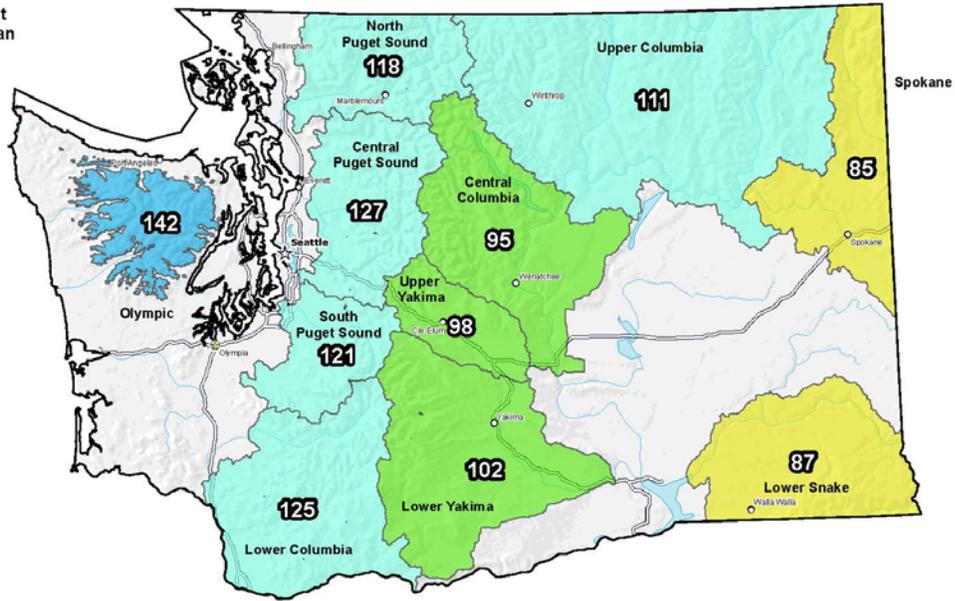
Washington SNOTEL Current Snow Water Equivalent (SWE) % of Normal

Mar 01, 2013

Current Snow Water Equivalent (SWE) Basin-wide Percent of 1981-2010 Median



* Data unavailable at time of posting or measurement is not representative at this time of year



Provisional Data
Subject to Revision



The snow water equivalent percent of normal represents the current snow water equivalent found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).

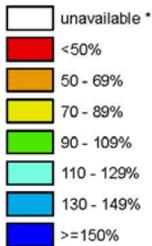


Prepared by the USDA/NRCS National Water and Climate Center
Portland, Oregon <http://www.wcc.nrcs.usda.gov/gis/>
Based on data from <http://www.wcc.nrcs.usda.gov/reports/>
Science contact: Jim.Marron@por.usda.gov 503 414 3047

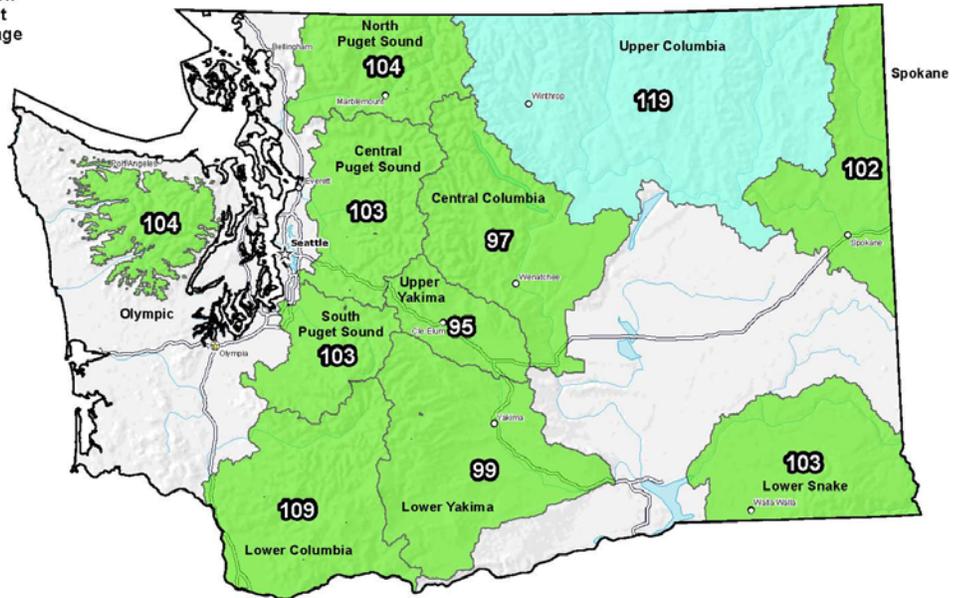
Washington SNOTEL Water Year (Oct 1) to Date Precipitation % of Normal

Mar 01, 2013

Water Year (Oct 1) to Date Precipitation Basin-wide Percent of 1981-2010 Average



* Data unavailable at time of posting or measurement is not representative at this time of year



Provisional Data
Subject to Revision

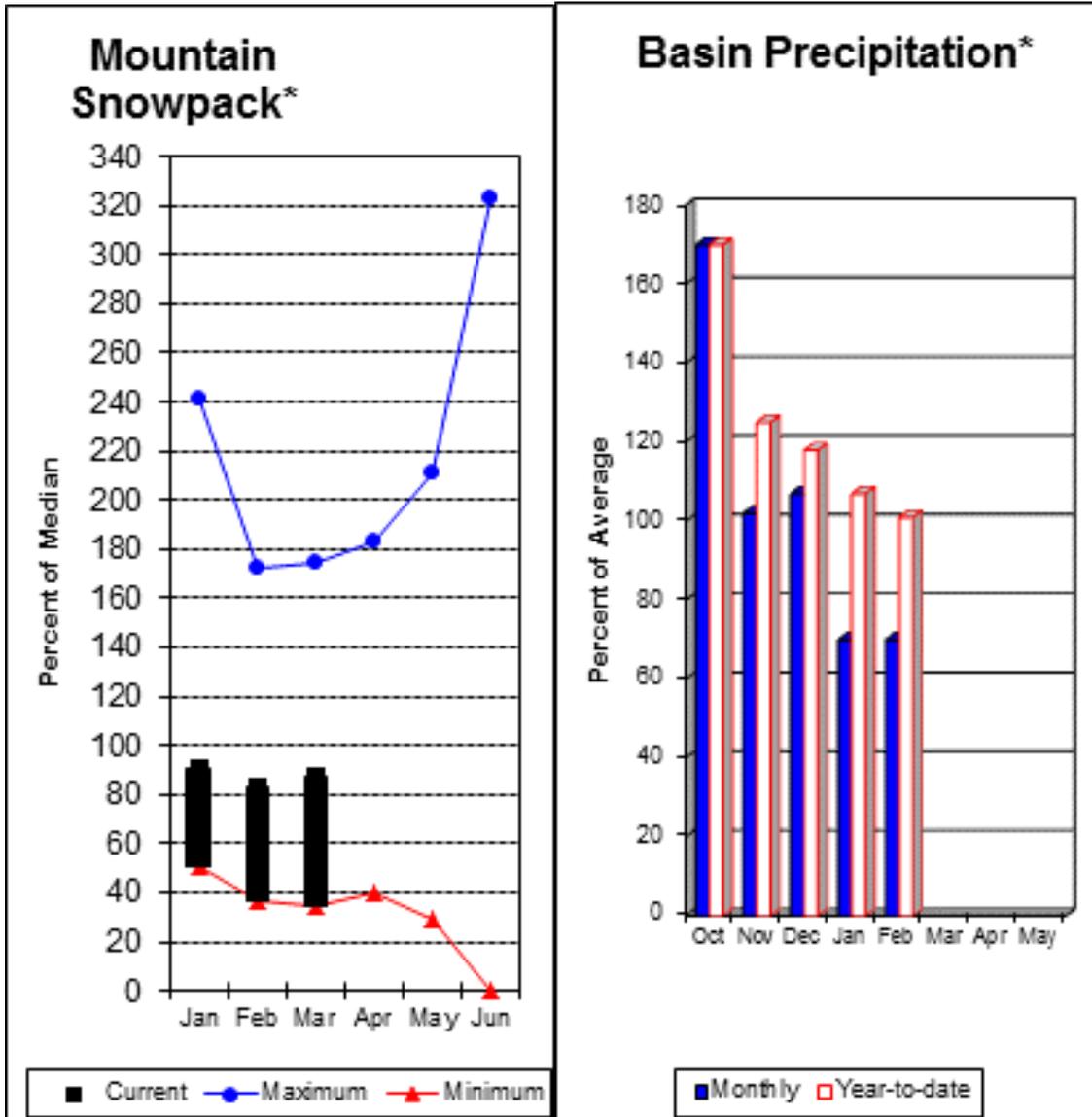


The water year to date precipitation percent of normal represents the accumulated precipitation found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).



Prepared by the USDA/NRCS National Water and Climate Center
Portland, Oregon <http://www.wcc.nrcs.usda.gov/gis/>
Based on data from <http://www.wcc.nrcs.usda.gov/reports/>
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Spokane River Basin



*Based on selected stations

The March 1 forecasts for summer runoff within the Spokane River Basin are 81% of average near Post Falls and 84% at Long Lake. The Chamokane River near Long Lake is forecasted to have normal flows for the May-August period. The forecast is based on a basin snowpack that is 87% of normal and precipitation that is 101% of average for the water year. Precipitation for February was below normal at 70% of average. Streamflow on the Spokane River at Long Lake was 65% of average for February. March 1 storage in Coeur d'Alene Lake was 67,000 acre feet, 51% of average and 28% of capacity. Snowpack at Quartz Peak SNOTEL site was 90% of normal with 17.6 inches of water content. Average temperatures in the Spokane basin were 2-4 degrees below normal for February and slightly above normal for the water year.

For more information contact your local Natural Resources Conservation Service office.

Spokane River Basin

Streamflow Forecasts - March 1, 2012

Forecast Point	Forecast Period	Future Conditions				30-Yr Avg. (1000AF)		
		Drier		Wetter				
		Chance Of Exceeding *						
		90% (1000AF)	70% (1000AF)	50% (1000AF)	50% (% AVG.)	30% (1000AF)	10% (1000AF)	
Spokane R nr Post Falls (2)	APR-JUL	1240	1660	1940	81	2220	2640	2390
	APR-SEP	1300	1720	2010	81	2300	2720	2480
Spokane R at Long Lake (2)	APR-JUL	1440	1890	2200	84	2510	2960	2620
	APR-SEP	1610	2080	2390	84	2700	3170	2850
Chamokane Ck nr Long Lake	MAY-AUG	4.1	7.2	9.3	100	11.4	14.5	9.3

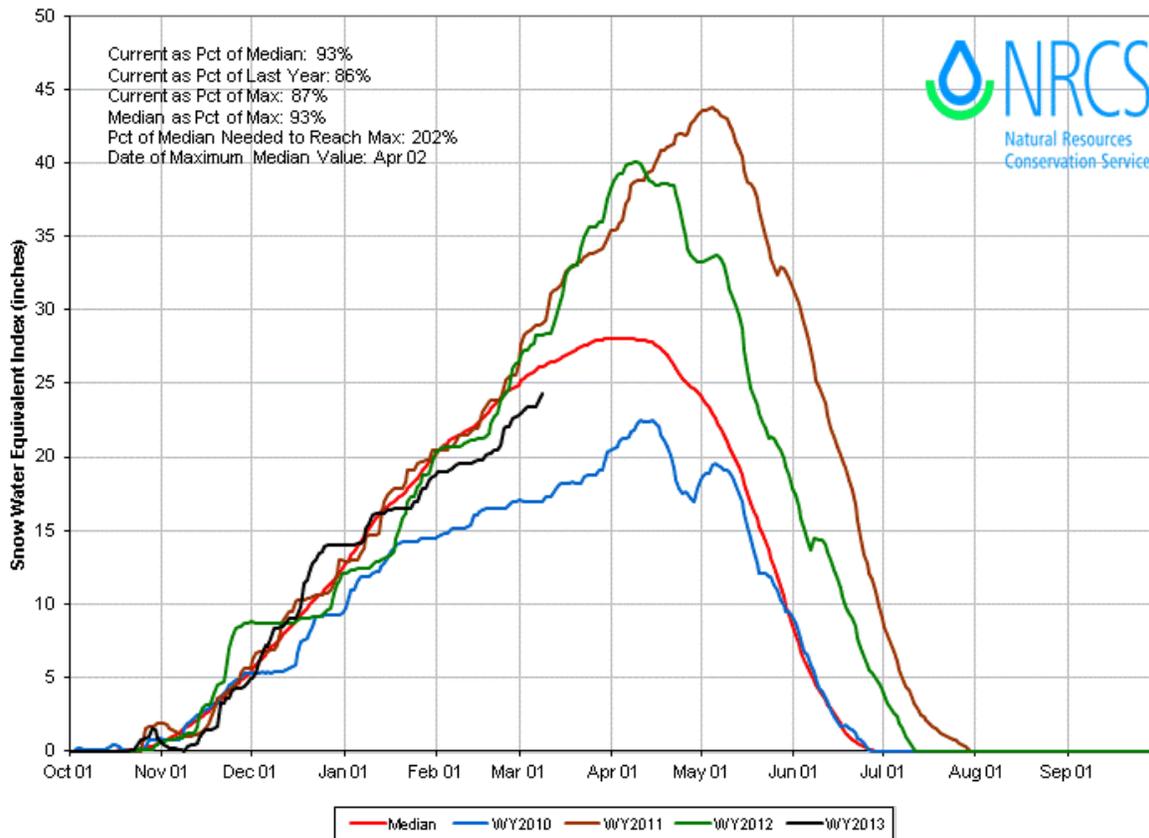
SPOKANE RIVER BASIN Reservoir Storage (1000 AF) - End of February					SPOKANE RIVER BASIN Watershed Snowpack Analysis - March 1, 2013			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
Coeur d'Alene	238.5	67.2	82.5	132.8	SPOKANE RIVER	16	86	87
					NEWMAN LAKE	3	113	97

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

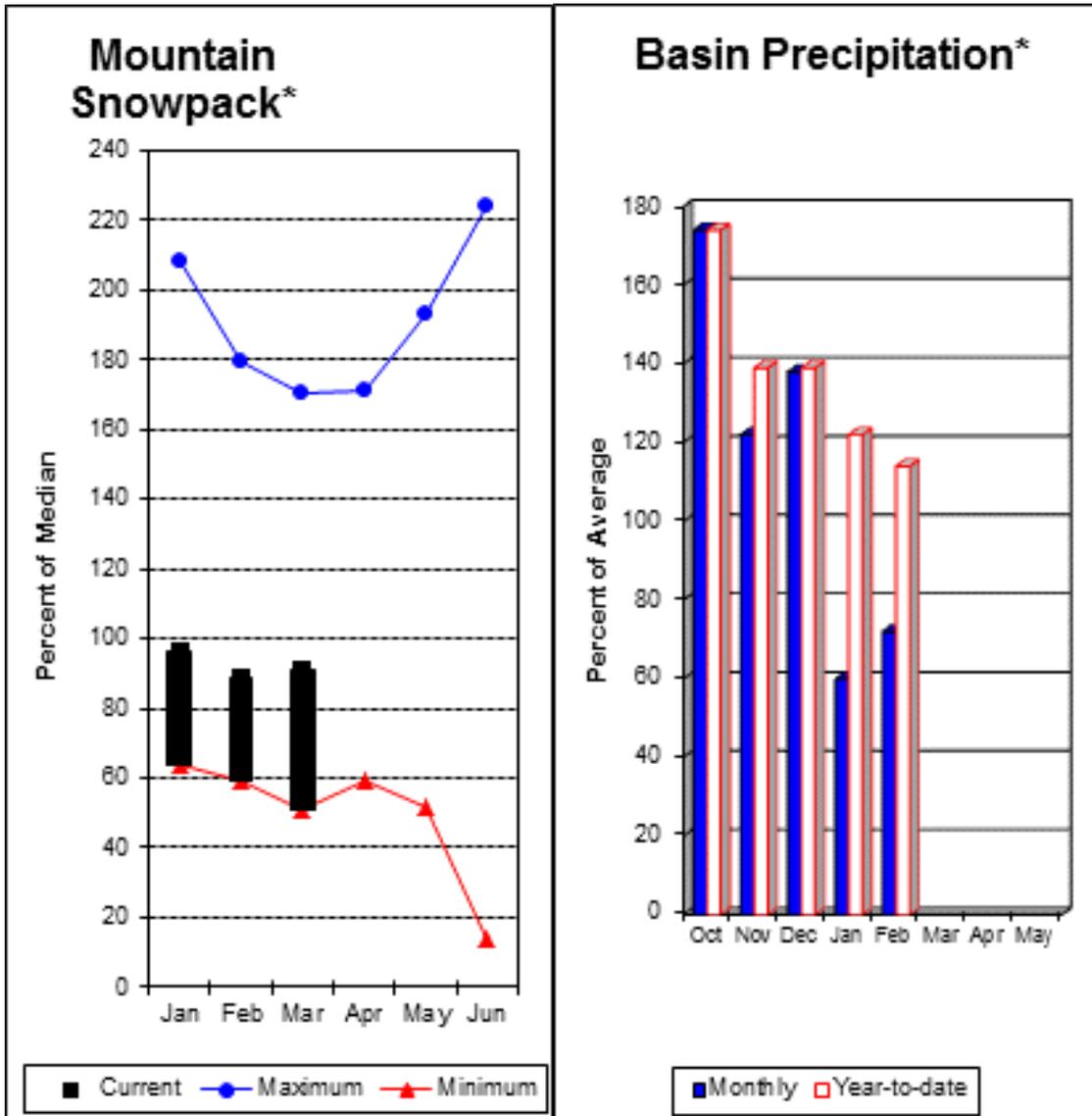
The average is computed for the 1981-2010 base period.

- (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.

PREIST, COEUR D'ALENE, ST. JOE, SPOKANE, PALOUSE Time Series Snowpack Summary
Based on Provisional SNOTEL data as of Mar 08, 2013



Pend Oreille River Basins



*Based on selected stations

The April – September average forecast for the Priest River near the town of Priest River is 100% and the Pend Orielle below Box Canyon is 99%. February streamflow was 77% of average on the Pend Oreille River and 95% on the Columbia Birchbank. March 1 snow cover was 91% of normal in the Pend Oreille Basin River Basin. Bunchgrass Meadows SNOTEL site had 20.1 inches of snow water on the snow pillow. Normally Bunchgrass would have 22.5 inches on March 1. Precipitation during February was 72% of average, keeping the year-to-date precipitation at 114% of average. Reservoir storage in the basin, including Lake Pend Oreille and Priest Lake was 115% of normal. Average temperatures were 2-3 degrees above normal for February and 1-2 degrees above normal for the water year.

For more information contact your local Natural Resources Conservation Service office.

Pend Oreille River Basins

Streamflow Forecasts - March 1, 2012

Forecast Point	Forecast Period	Future Conditions					30-Yr Avg. (1000AF)	
		Drier		Wetter		Chance Of Exceeding * 50% (% AVG.)		
		90% (1000AF)	70% (1000AF)	30% (1000AF)	10% (1000AF)			
Pend Oreille Lake Inflow (2)	APR-JUL APR-SEP	9550 10400	10800 11700	11600 12600	98 98	12400 13500	13700 14800	11800 12800
Priest R nr Priest River (1,2)	APR-JUL APR-SEP	640 675	725 765	785 830	101 100	845 895	930 985	780 830
Pend Oreille R bl Box Canyon (2)	APR-JUL APR-SEP	9720 10500	11000 11900	11800 12800	99 99	12600 13700	13900 15100	11900 13000

PEND OREILLE RIVER BASINS Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage ***		
		This Year	Last Year	Avg
Pend Oreille	1561.3	930.0	562.1	792.6
Priest Lake	119.3	50.2	56.0	57.1

PEND OREILLE RIVER BASINS Watershed Snowpack Analysis - March 1, 2013

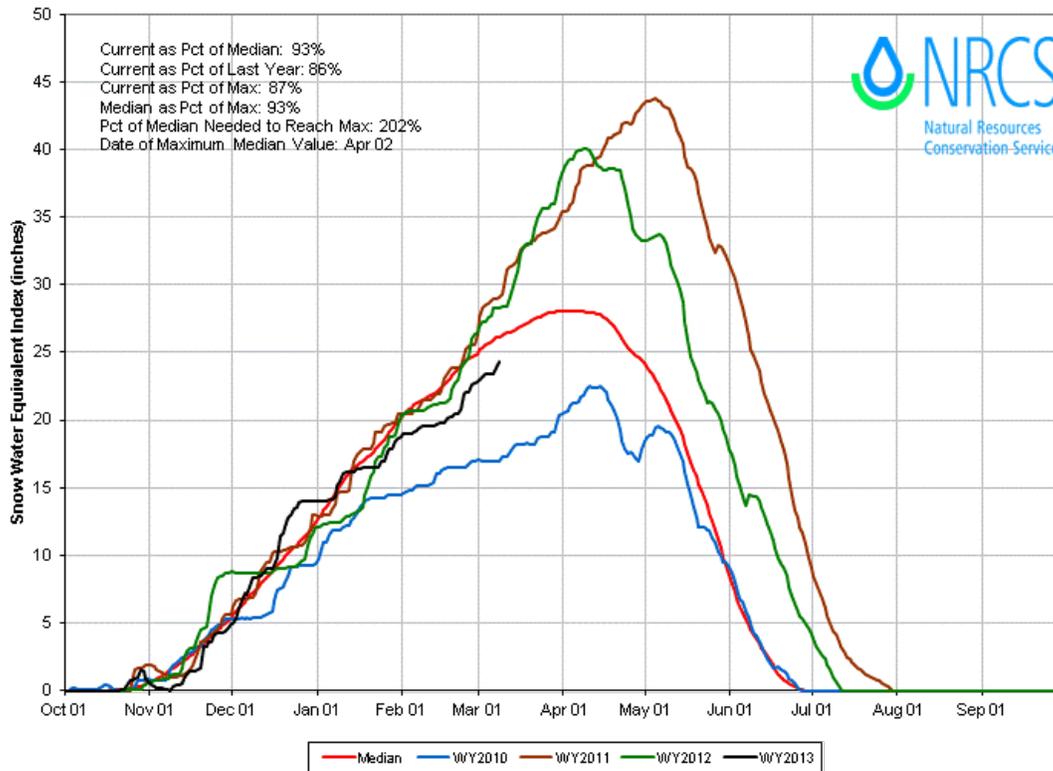
Watershed	Number of Data Sites	This Year as % of	
		Last Yr	Median
COLVILLE RIVER	2	93	89
PEND OREILLE RIVER	11	83	86
KETTLE RIVER	5	125	101

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

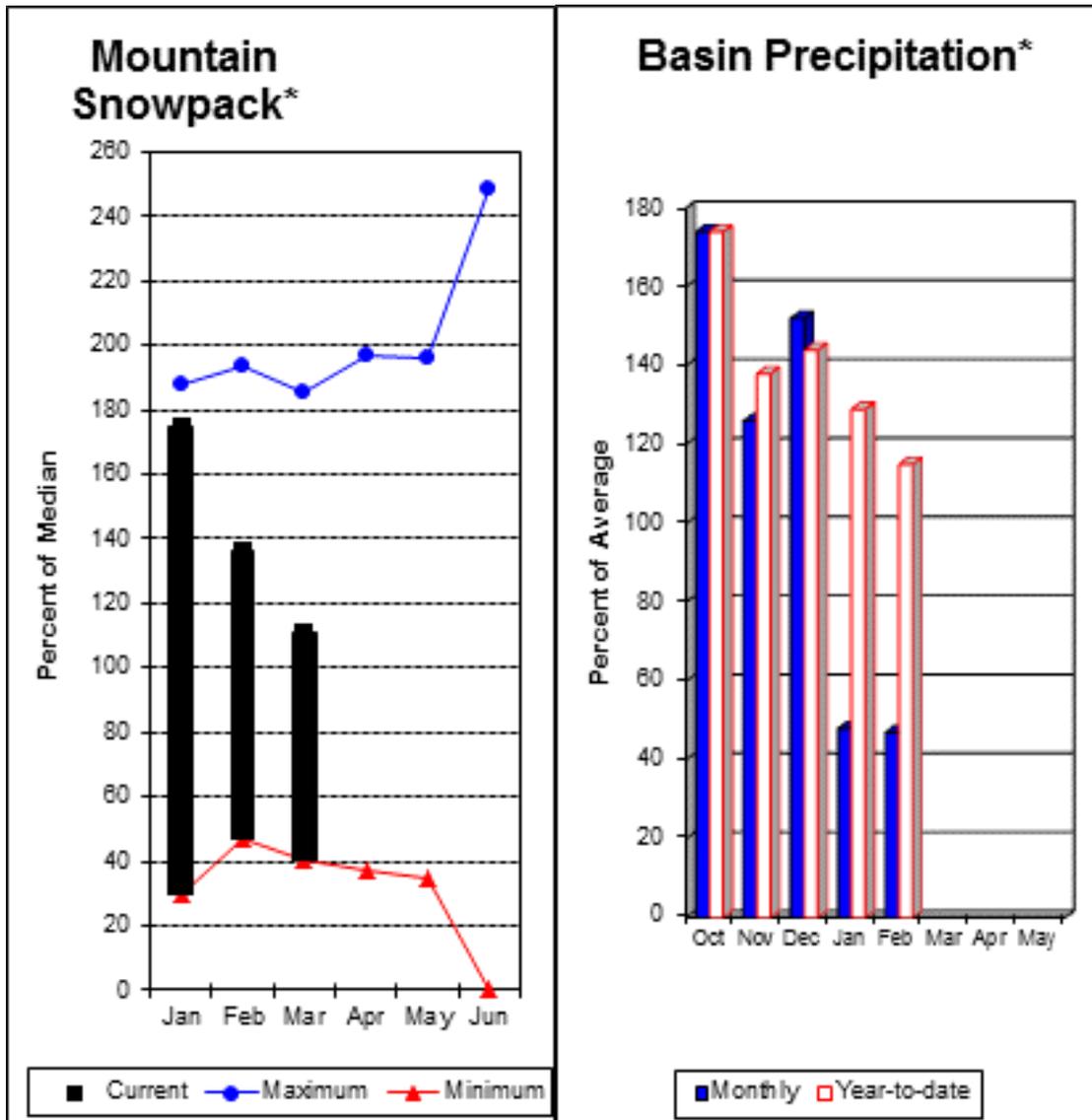
The average is computed for the 1981-2010 base period.

- (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.

*PREIST, COEUR D'ALENE, ST. JOE, SPOKANE, PALOUSE Time Series Snowpack Summary
Based on Provisional SNOTEL data as of Mar 08, 2013*



Upper Columbia River Basins



*Based on selected stations

Summer runoff average forecast for the Okanogan River is 97-100%, Similkameen River is 95%, Kettle River 123% and Methow River is 105%. March 1 snow cover on the Okanogan was 112% of normal, Omak Creek was 151% and the Methow was 112%. February precipitation in the Upper Columbia was 47% of average, with precipitation for the water year at 115% of average. February streamflow for the Methow River was 105% of average, 110% for the Okanogan River and 74% for the Similkameen. Snow-water content at Salmon Meadows SNOTEL was 10.2 inches. Median for this site is 8.7 inches on March 1. Combined storage in the Conconully Reservoirs was 19,000-acre feet, which is 81% of capacity and 96% of the March 1 average. Temperatures were near normal for February and for the water year.

For more information contact your local Natural Resources Conservation Service office.

Upper Columbia River Basins

Streamflow Forecasts - March 1, 2012

Forecast Point	Forecast Period	Future Conditions						30-Yr Avg. (1000AF)
		Drier		Wetter		Chance Of Exceeding *		
		90% (1000AF)	70% (1000AF)	30% (1000AF)	10% (1000AF)	50% (% AVG.)	50% (% AVG.)	
Colville R at Kettle Falls	APR-JUL	45	82	107	90	132	169	119
	APR-SEP	50	90	118	90	146	186	131
Kettle R nr Laurier	APR-JUL	1840	2050	2200	122	2350	2560	1800
	APR-SEP	1910	2150	2310	123	2470	2710	1880
Columbia R at Birchbank (1,2)	APR-JUL	22500	26000	27600	82	29100	32600	33840
	APR-SEP	29200	33600	35500	85	37500	41800	41750
Columbia R at Grand Coulee (2)	APR-JUL	32900	38800	41500	81	44200	50100	51015
	APR-SEP	40200	47300	50500	84	53700	60800	60110
Similkameen R nr Nighthawk (1)	APR-JUL	785	1020	1130	94	1240	1470	1200
	APR-SEP	860	1100	1210	95	1320	1560	1280
Okanogan R nr Tonasket (1)	APR-JUL	965	1290	1440	97	1590	1920	1480
	APR-SEP	1070	1440	1600	97	1760	2130	1650
Okanogan R at Malott (1)	APR-JUL	955	1300	1450	100	1600	1940	1450
	APR-SEP	1070	1450	1620	100	1790	2170	1620
Methow R nr Pateros	APR-SEP	775	870	935	105	1000	1100	895
	APR-JUL	720	815	875	105	935	1030	835

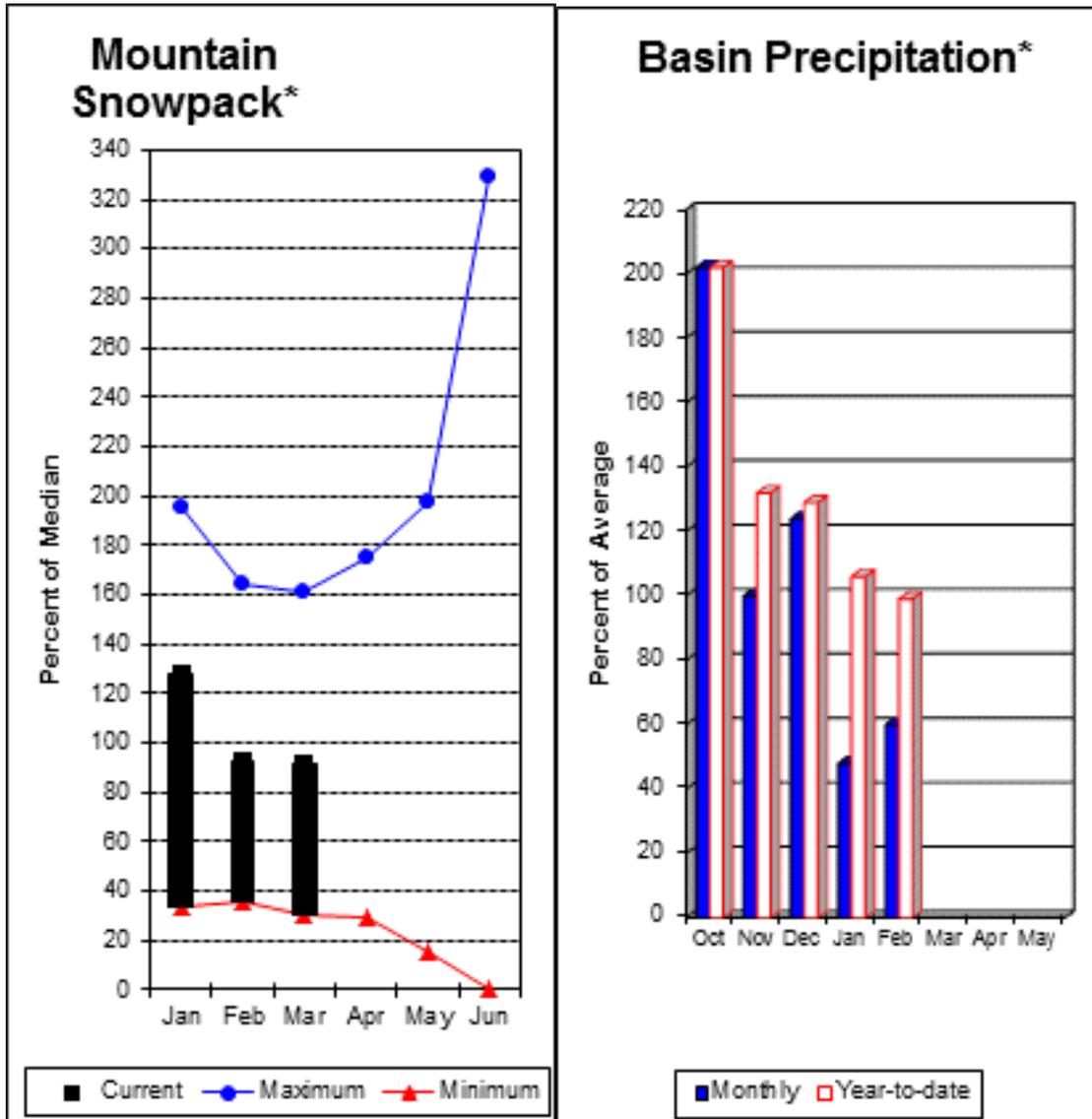
UPPER COLUMBIA RIVER BASINS Reservoir Storage (1000 AF) - End of February					UPPER COLUMBIA RIVER BASINS Watershed Snowpack Analysis - March 1, 2013			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
SALMON LAKE	10.5	8.7	8.3	8.3	OKANOGAN RIVER	17	115	112
CONCONULLY RESERVOIR	13.0	10.4	11.5	11.5	OMAK CREEK	3	195	151
					SANPOIL RIVER	1	145	83
					SIMILKAMEEN RIVER	4	82	80
					TOATS COULEE CREEK	4	144	125
					CONCONULLY LAKE	3	190	123
					METHOW RIVER	6	97	110

* 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.

Central Columbia River Basins



*Based on selected stations

Precipitation during February was 60% of average in the basin and 99% for the year-to-date. Runoff for Entiat River is forecast to be 84% of average for the summer. The April-September average forecast for Chelan River is 90%, Wenatchee River at Plain is 89%, Stehekin River is 96% and Icicle Creek is 80%. February average streamflows on the Chelan River were 66% and on the Wenatchee River 59%. March 1 snowpack in the Wenatchee River Basin was 90% of normal; the Chelan, 100%; the Entiat, 88%; Stemilt Creek, 84% and Colockum Creek, 92%. Reservoir storage in Lake Chelan was 226,000-acre feet, 81% of March 1 average and 33% of capacity. Lyman Lake SNOTEL had the most snow water with 47.5 inches of water. This site would normally have 48.6 inches on March 1. Temperatures were 2-4 degrees above normal for February and near normal for the water year.

For more information contact your local Natural Resources Conservation Service office.

Central Columbia River Basins

Streamflow Forecasts - March 1, 2012

Forecast Point	Forecast Period	Future Conditions					30-Yr Avg. (1000AF)	
		Drier		Wetter		Chance Of Exceeding * 50% (1000AF) (% AVG.)		
		90% (1000AF)	70% (1000AF)	30% (1000AF)	10% (1000AF)			
Stehekin R at Stehekin	APR-JUL APR-SEP	530 630	600 705	650 755	96 96	700 805	770 880	680 790
Chelan R at Chelan (2)	APR-JUL APR-SEP	770 855	855 945	910 1010	91 90	965 1070	1050 1170	1000 1120
Entiat R nr Ardenvoir	APR-JUL APR-SEP	134 152	154 171	167 185	84 84	180 199	200 220	200 220
Wenatchee R at Plain	APR-JUL APR-SEP	725 805	820 900	880 965	89 89	940 1030	1030 1130	990 1080
Icicle Ck nr Leavenworth	APR-JUL APR-SEP	178 194	205 220	220 240	80 80	235 260	260 285	275 300
Wenatchee R at Peshastin	APR-JUL APR-SEP	1010 1100	1140 1230	1220 1320	89 89	1300 1410	1430 1540	1370 1490
Columbia R bl Rock Island Dam (2)	APR-JUL APR-SEP	38100 45800	42800 51300	45900 55000	82 84	49000 58700	53700 64100	55770 65200

CENTRAL COLUMBIA RIVER BASINS Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage ***		
		This Year	Last Year	Avg
CHELAN LAKE	676.1	225.6	185.0	279.8

CENTRAL COLUMBIA RIVER BASINS Watershed Snowpack Analysis - March 1, 2013

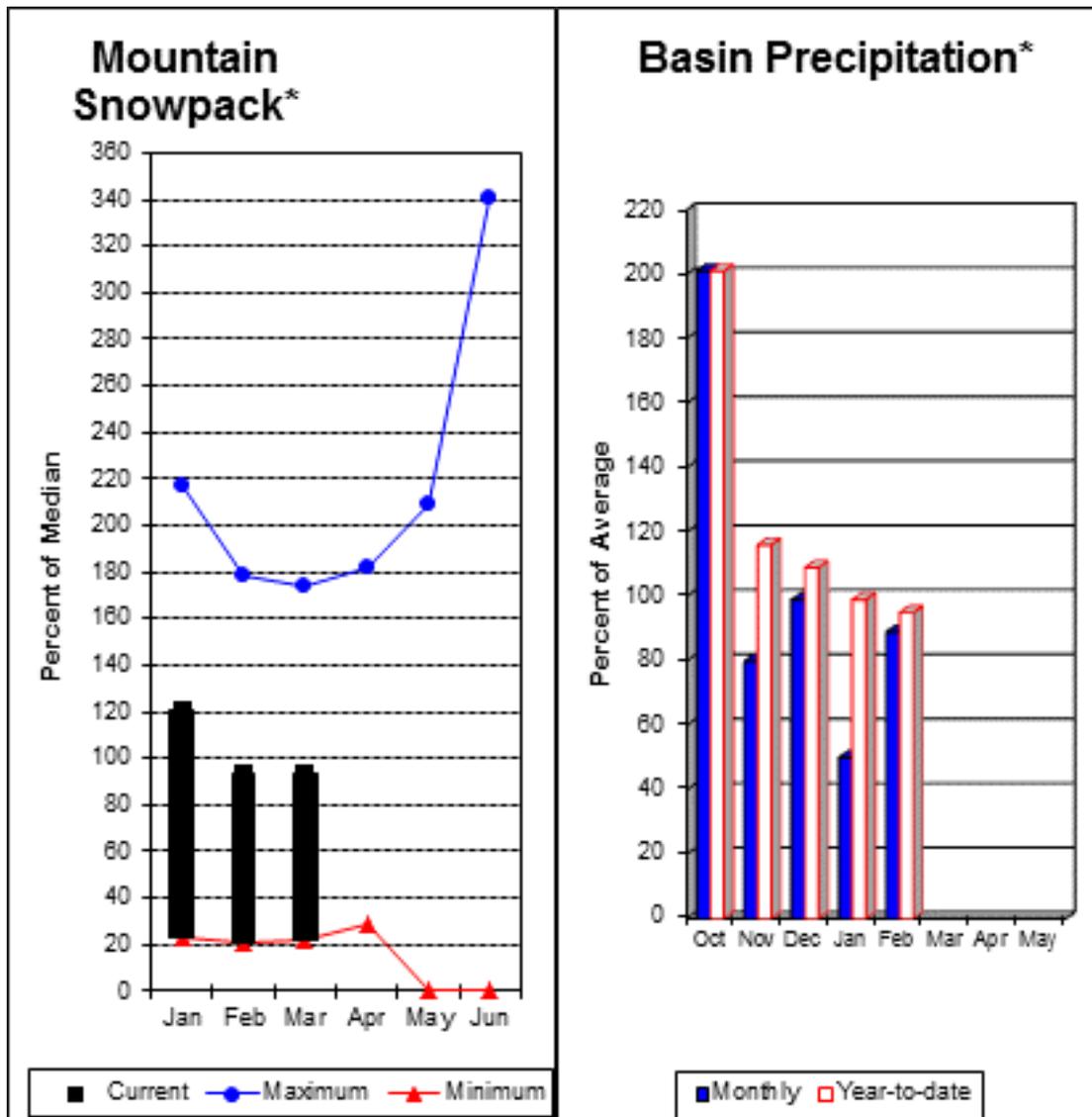
Watershed	Number of Data Sites	This Year as % of	
		Last Yr	Median
CHELAN LAKE BASIN	3	85	100
ENTIAT RIVER	1	77	88
WENATCHEE RIVER	9	84	90
STEMILT CREEK	2	107	84
COLOCKUM CREEK	2	100	92

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

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

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

Upper Yakima River Basin



*Based on selected stations

March 1 reservoir storage for the Upper Yakima reservoirs was 564,000-acre feet, 125% of average. Forecasts for the Yakima River at Cle Elum are 90% of average and the Teanaway River near Cle Elum is at 86%. Lake inflows are all forecasted to be slightly below average this summer. February streamflows within the basin were Cle Elum River near Roslyn at 49%. March 1 snowpack was 93% based upon 11 snow course and SNOTEL readings within the Upper Yakima Basin. Precipitation was 89% of average for February and 95% year-to-date for water. Volume forecasts for the Yakima Basin are for natural flow. As such, they may differ from the U.S. Bureau of Reclamation's forecast for the total water supply available, which includes irrigation return flow.

For more information contact your local Natural Resources Conservation Service office.

Upper Yakima River Basin

Streamflow Forecasts - March 1, 2012

Forecast Point	Forecast Period	Future Conditions						30-Yr Avg. (1000AF)
		Drier		Wetter		Chance Of Exceeding *		
		90% (1000AF)	70% (1000AF)	30% (1000AF)	10% (1000AF)	50% (1000AF)	(% AVG.)	
Keechelus Reservoir Inflow (2)	APR-JUL	78	95	107	92	119	136	116
	APR-SEP	86	104	116	92	128	146	126
Kachess Reservoir Inflow (2)	APR-JUL	72	86	96	92	106	120	104
	APR-SEP	79	93	103	91	113	127	113
Cle Elum Lake Inflow (2)	APR-JUL	295	330	355	92	380	415	385
	APR-SEP	320	360	385	93	410	450	415
Yakima R at Cle Elum (2)	APR-JUL	500	610	685	91	760	870	755
	APR-SEP	545	665	750	90	835	955	830
Teaway R bl Forks nr Cle Elum	APR-JUL	79	97	110	85	123	141	130
	APR-SEP	83	101	114	86	127	145	133

UPPER YAKIMA RIVER BASIN Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage ***		
		This Year	Last Year	Avg
KEECHELUS	157.8	101.6	115.2	92.3
KACHESS	239.0	182.6	172.7	143.6
CLE ELUM	436.9	279.8	326.1	214.4

UPPER YAKIMA RIVER BASIN Watershed Snowpack Analysis - March 1, 2013

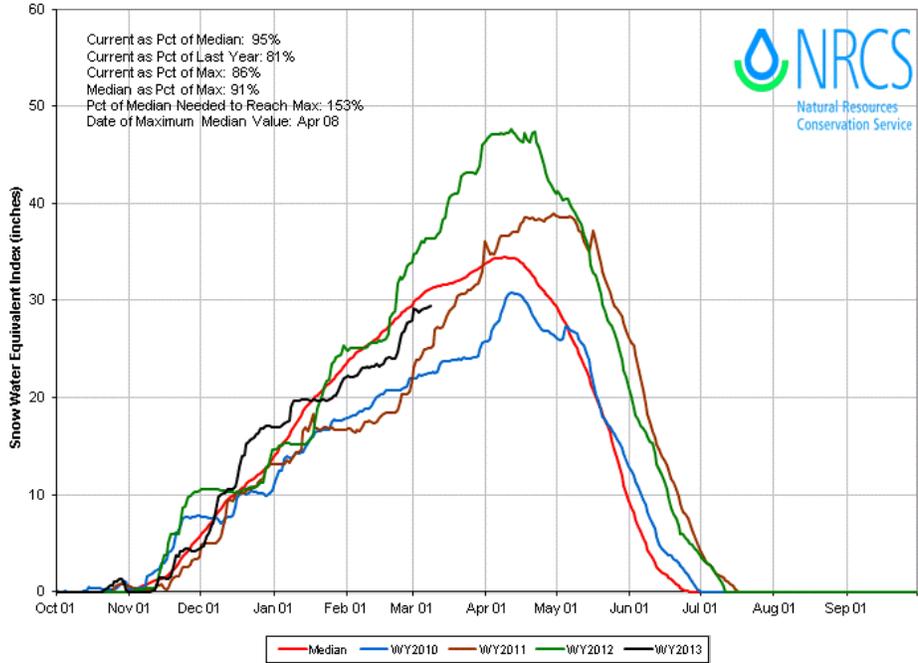
Watershed	Number of Data Sites	This Year as % of	
		Last Yr	Median
UPPER YAKIMA RIVER	11	81	93

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

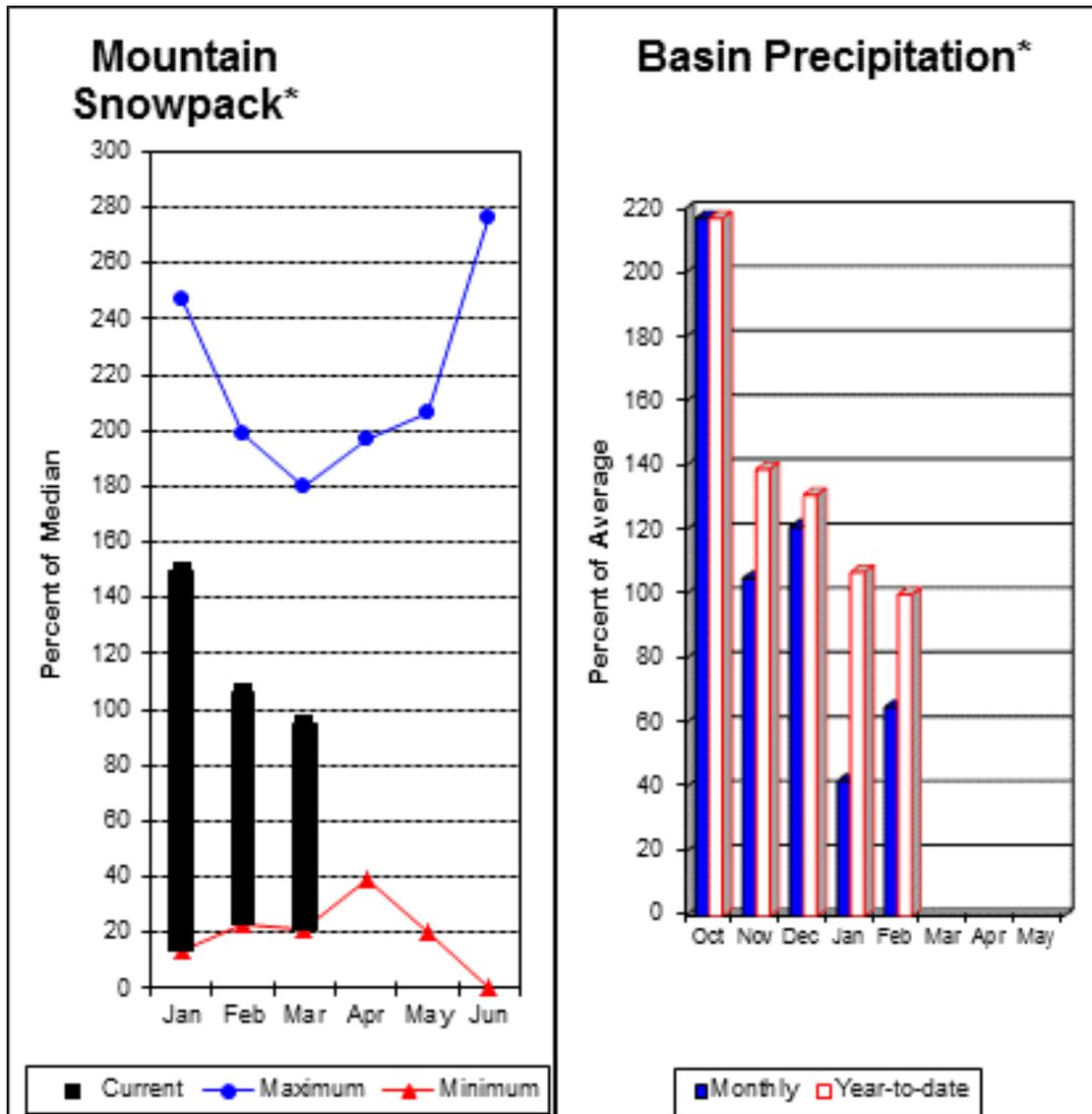
The average is computed for the 1981-2010 base period.

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

UPPER YAKIMA Time Series Snowpack Summary
Based on Provisional SNOTEL data as of Mar 08, 2013



Lower Yakima River Basin



*Based on selected stations

February average streamflows within the basin were: Yakima River near Parker, 54%; Naches River near Naches, 46%; and Yakima River at Kiona, 61%. March 1 reservoir storage for Bumping and Rimrock reservoirs was 151,000-acre feet, 110% of average. Forecast averages for Yakima River near Parker are 90%; American River near Nile, 94%; Ahtanum Creek, 110%; and Klickitat River near Glenwood, 91%. March 1 snowpack was 95% based upon 7 snow course and SNOTEL readings within the Lower Yakima Basin and Ahtanum Creek reported in at 89% of normal. Precipitation was 65% of average for February and 100% year-to-date for water. Temperatures were 2-4 degrees above normal for February and near normal for the water year. Volume forecasts for Yakima Basin are for natural flow. As such, they March differ from the U.S. Bureau of Reclamation's forecast for the total water supply available, which includes irrigation return flow.

For more information contact your local Natural Resources Conservation Service office.

Lower Yakima River Basin

Streamflow Forecasts - March 1, 2012

Forecast Point	Forecast Period	<<==== Drier ===== Future Conditions ===== Wetter =====>>					30-Yr Avg. (1000AF)	
		90%		70%		50%		
		(1000AF)	(1000AF)	(1000AF)	(1000AF)	(1000AF)		(1000AF)
		Chance Of Exceeding *						
					(% AVG.)			
						30%	10%	
						(1000AF)	(1000AF)	
Bumping Lake Inflow (2)	APR-JUL	81	95	105	92	113	127	
	APR-SEP	89	103	113	92	123	137	
American R nr Nile	APR-JUL	76	88	96	94	104	116	
	APR-SEP	82	94	103	94	112	124	
Rimrock Lake Inflow (2)	APR-JUL	147	164	175	94	186	205	
	APR-SEP	173	192	205	93	220	235	
Naches R nr Naches (2)	APR-JUL	485	565	620	89	675	755	
	APR-SEP	525	610	670	88	730	815	
Ahtanum Ck at Union Gap	APR-JUL	20	26	30	111	34	40	
	APR-SEP	22	28	32	110	36	42	
Yakima R nr Parker (2)	APR-JUL	1140	1350	1490	90	1630	1840	
	APR-SEP	1270	1480	1630	90	1780	1990	
Klickitat R nr Glenwood	APR-JUL	91	105	115	91	125	139	
	APR-SEP	101	116	127	91	138	153	
Klickitat R nr Pitt	APR-JUL	345	390	425	98	460	505	
	APR-SEP	420	475	515	99	555	610	

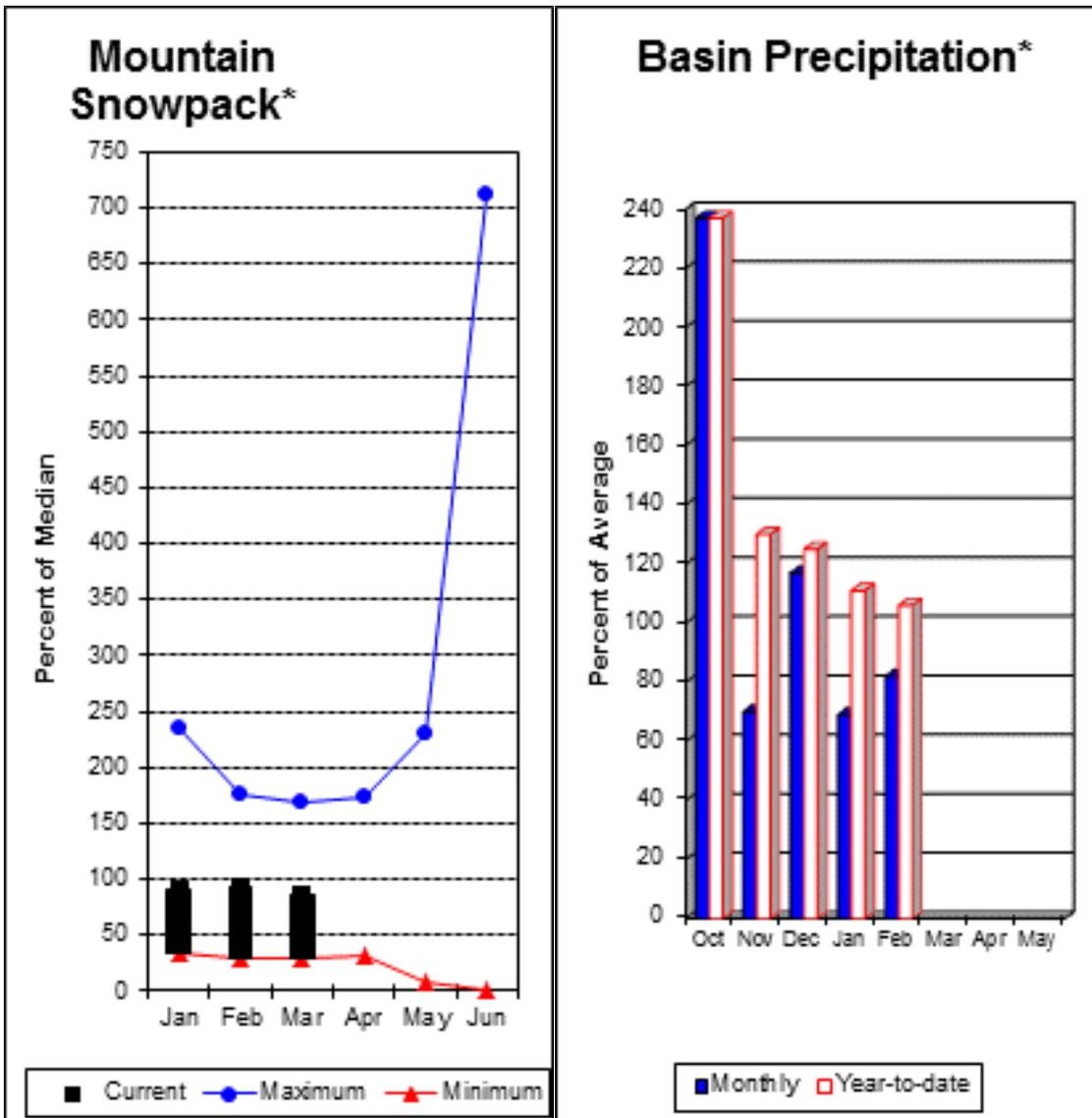
LOWER YAKIMA RIVER BASIN Reservoir Storage (1000 AF) - End of February					LOWER YAKIMA RIVER BASIN Watershed Snowpack Analysis - March 1, 2013			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
BUMPING LAKE	33.7	10.2	18.0	13.3	LOWER YAKIMA RIVER	7	86	95
RIMROCK	198.0	140.3	156.5	123.3	AHTANUM CREEK	3	79	89

* 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.

Walla Walla River Basin



*Based on selected stations

February precipitation was 82% of average, maintaining the year-to-date precipitation at 106% of average. Snowpack in the basin was 86% of normal. Streamflow forecasts are 96% of average for both Mill Creek and for the SF Walla Walla near Milton-Freewater. February streamflow was 82% of average for the SF Walla Walla River. Average temperatures were 1-3 degrees above normal for February and for the water year.

For more information contact your local Natural Resources Conservation Service office.

Walla Walla River Basin

Streamflow Forecasts - March 1, 2012

Forecast Point	Forecast Period	Future Conditions						30-Yr Avg. (1000AF)
		Drier		50%		Wetter		
		90% (1000AF)	70% (1000AF)	Chance Of Exceeding * (1000AF) (% AVG.)		30% (1000AF)	10% (1000AF)	
SF Walla Walla R nr Milton-Freewater	MAR-SEP	63	71	76	95	81	89	80
	APR-JUL	40	46	50	93	54	60	54
	APR-SEP	52	58	63	96	68	74	66
Mill Ck nr Walla Walla	APR-JUL	16.1	20	23	96	26	30	24
	APR-SEP	18.7	23	26	96	29	33	27

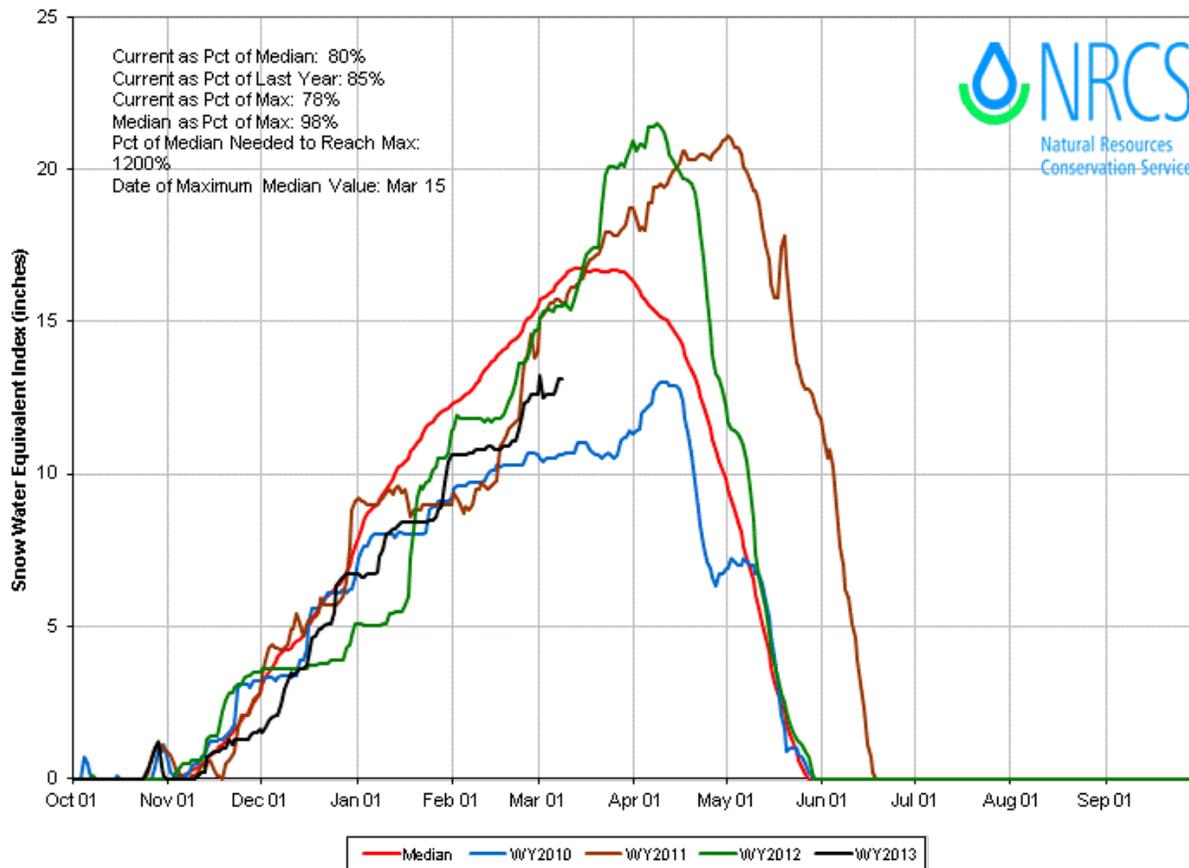
WALLA WALLA RIVER BASIN Reservoir Storage (1000 AF) - End of February					WALLA WALLA RIVER BASIN Watershed Snowpack Analysis - March 1, 2013			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
					WALLA WALLA RIVER	2	91	86

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

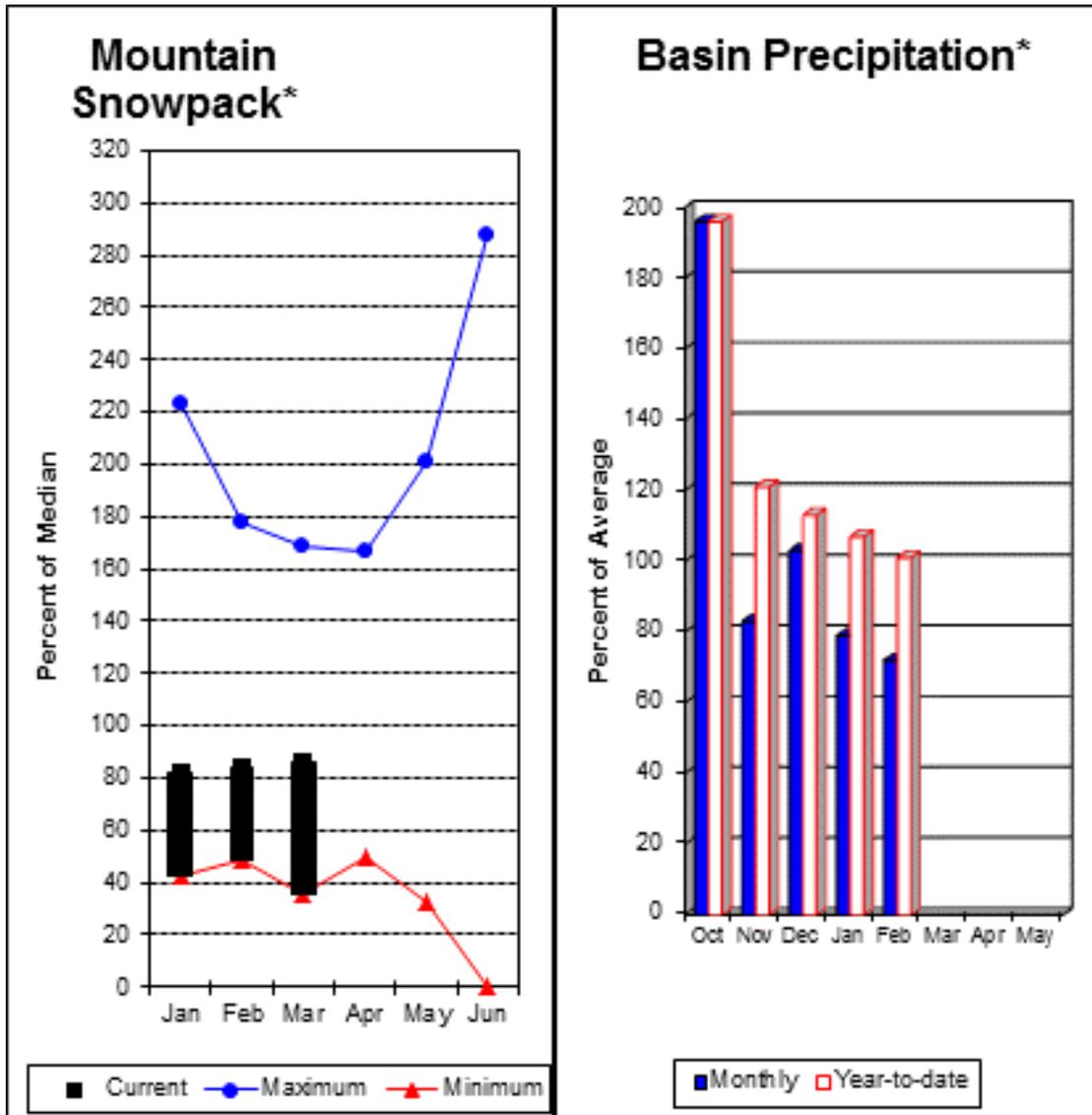
The average is computed for the 1981-2010 base period.

- (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.

*WALLA WALLA, TOUCHET Time Series Snowpack Summary
Based on Provisional SNOTEL data as of Mar 08, 2013*



Lower Snake River Basin



*Based on selected stations

The Snake and Grande Ronde rivers can expect summer flows to be about 90% and 100% of normal respectively. The forecast for Asotin Creek at Asotin predicts 103% of average flows for the April – July runoff period. February precipitation was 72% of average, bringing the year-to-date precipitation to 101% of average. March 1 snowpack readings averaged 86% of normal. February streamflow was 68% of average for Snake River below Lower Granite Dam and 61% for Grande Ronde River near Troy. Dworshak Reservoir storage was 109% of average. Average temperatures were 1-3 degrees above normal for February and for the water year.

For more information contact your local Natural Resources Conservation Service office.

Lower Snake River Basin

Streamflow Forecasts - March 1, 2012

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)				
		90%		70%		50%			30%		10%	
		(1000AF)	(1000AF)	(1000AF)	(1000AF)	(1000AF)	(1000AF)		(1000AF)	(1000AF)	(1000AF)	(1000AF)
Grande Ronde R at Troy (1)	MAR-JUL	1090	1390	1520	101	1650	1950	1510				
	APR-SEP	875	1170	1310	100	1450	1740	1310				
Asotin Ck at Asotin	APR-JUL	21	30	36	103	42	51	35				
Clearwater R at Spalding (1,2)	APR-JUL	4180	5570	6200	90	6830	8220	6890				
	APR-SEP	4450	5890	6540	90	7190	8630	7270				
Snake R bl Lower Granite Dam (1,2)	APR-JUL	6900	11900	14200	72	16400	21400	19850				
	APR-SEP	8330	13900	16500	74	19100	24700	22280				

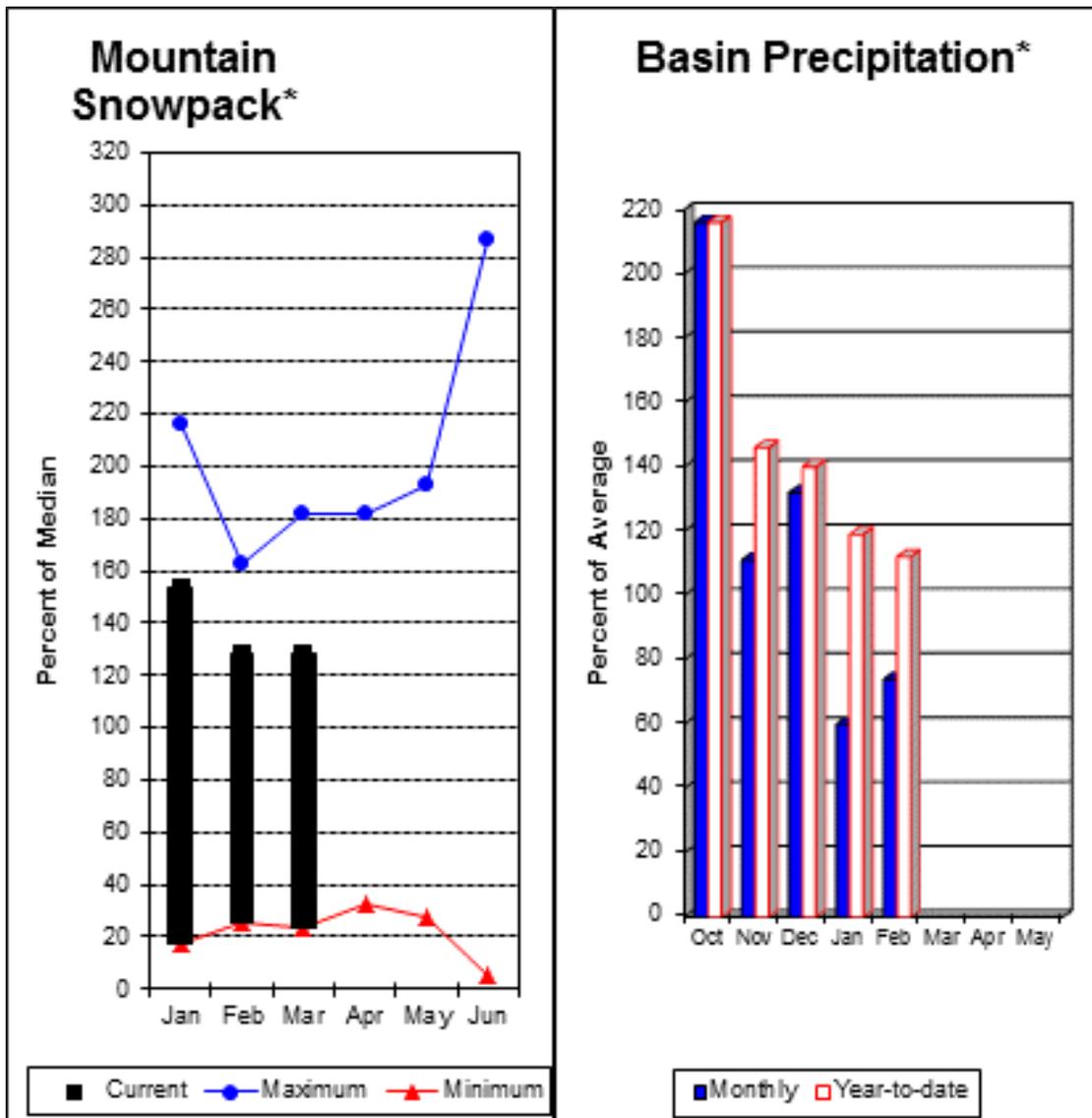
LOWER SNAKE RIVER BASIN Reservoir Storage (1000 AF) - End of February					LOWER SNAKE RIVER BASIN Watershed Snowpack Analysis - March 1, 2013			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
Dworshak	3468.0	2581.6	2362.2	2358.0	LOWER SNAKE, GRANDE RONDE	12	86	85

* 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.

Lower Columbia River Basins



*Based on selected stations

Forecasts for April – September streamflows within the basin are Lewis River at Ariel, 105% and Cowlitz River at Castle Rock, 110% of average. The Columbia at The Dalles is forecasted to have 82% of average flows this summer according to the River Forecast Center. February average streamflow for Cowlitz River was 71%. The Columbia River at The Dalles was 78% of average. February precipitation was 74% of average and the water-year average was 112%. March 1 snow cover for Cowlitz River was 129%, and Lewis River was 127% of normal. Paradise SNOTEL reported the most snow in the basin with 70.6 inches of water and 156 inches of depth. Temperatures were 1-3 degrees above normal during February and near normal for the water year.

For more information contact your local Natural Resources Conservation Service office.

Lower Columbia River Basins

Streamflow Forecasts - March 1, 2012

Forecast Point	Forecast Period	Future Conditions						30-Yr Avg. (1000AF)
		Drier		Wetter		Chance Of Exceeding *		
		90% (1000AF)	70% (1000AF)	30% (1000AF)	10% (1000AF)	50% (% AVG.)	50% (% AVG.)	
Columbia R at The Dalles (2)	APR-JUL	51700	58700	63500	80	68300	75300	79855
	APR-SEP	62900	71100	76700	83	82300	90500	92704
Klickitat R nr Glenwood	APR-JUL	91	105	115	91	125	139	126
	APR-SEP	101	116	127	91	138	153	139
Klickitat R nr Pitt	APR-JUL	345	390	425	98	460	505	435
	APR-SEP	420	475	515	99	555	610	520
Lewis R at Ariel (2)	APR-JUL	730	895	1010	104	1120	1290	970
	APR-SEP	875	1050	1170	105	1290	1460	1120
Cowlitz R bl Mayfield Dam (2)	APR-JUL	1410	1660	1830	113	2000	2250	1620
	APR-SEP	1580	1880	2080	113	2280	2580	1840
Cowlitz R at Castle Rock (2)	APR-JUL	1990	2270	2460	110	2650	2930	2230
	APR-SEP	2260	2560	2770	110	2980	3280	2520

LOWER COLUMBIA RIVER BASINS Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage ***		
		This Year	Last Year	Avg
MOSSYROCK		NO REPORT		
SWIFT		NO REPORT		
YALE		NO REPORT		
MERWIN		NO REPORT		

LOWER COLUMBIA RIVER BASINS Watershed Snowpack Analysis - March 1, 2013

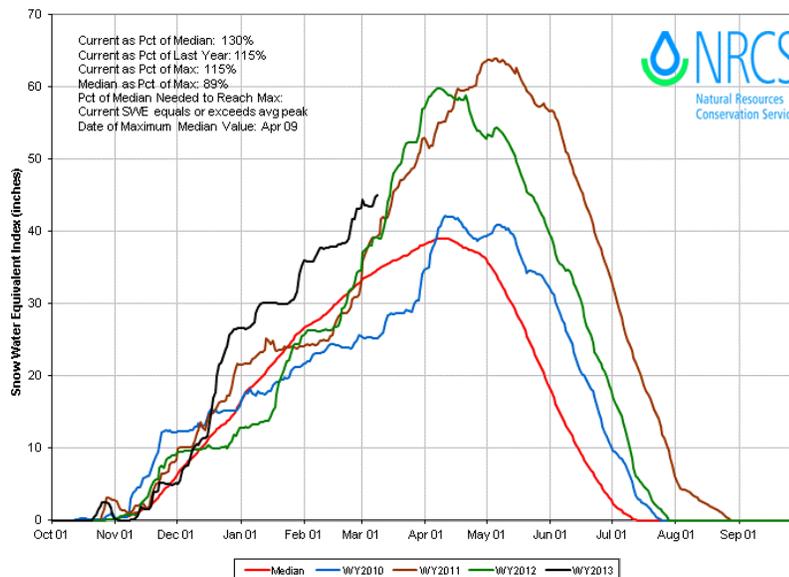
Watershed	Number of Data Sites	This Year as % of	
		Last Yr	Median
LEWIS RIVER	5	126	127
COWLITZ RIVER	6	102	129

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

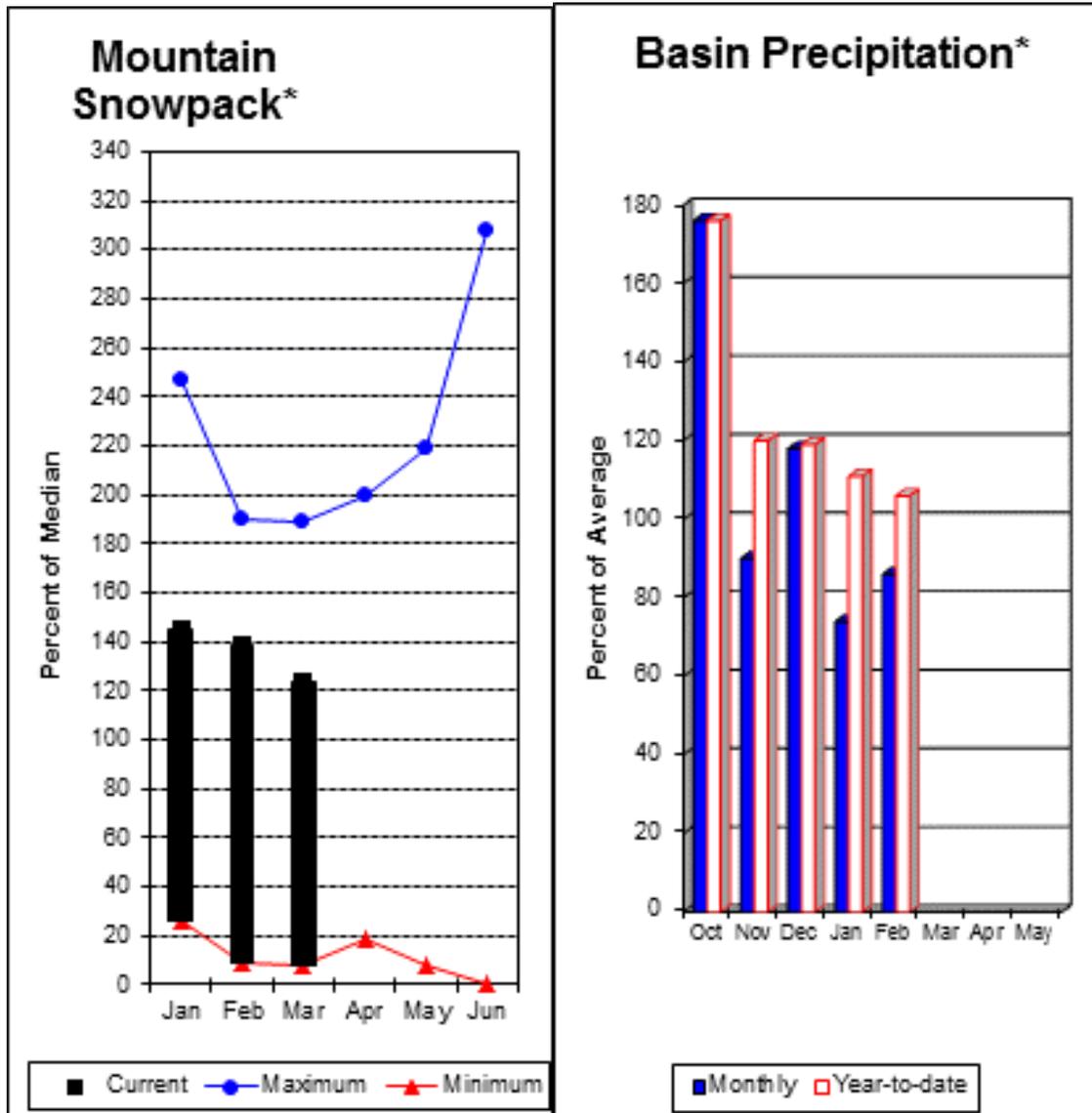
The average is computed for the 1981-2010 base period.

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- (2) - The value is natural volume - actual volume may be affected by upstream water management.

LEWIS, COWLITZ Time Series Snowpack Summary
Based on Provisional SNOTEL data as of Mar 08, 2013



South Puget Sound River Basins



*Based on selected stations

Summer runoff is forecast to be 106% of normal for the Green River below Howard Hanson Dam and 109% for the White River near Buckley. March 1 snowpack was 112% of normal for the White River, 136% for Puyallup River and 123% in the Green River Basin. Water content on March 1 at Corral Pass SNOTEL, at an elevation of 6,000 feet, was 28.4 inches. This site has a March 1 median of 28.7 inches. February precipitation was 86% of average, bringing the water year-to-date to 106% of average for the basins. Average temperatures in the area were 1-3 above below for February and slightly below normal for the water-year.

For more information contact your local Natural Resources Conservation Service office.

South Puget Sound River Basins

Streamflow Forecasts - March 1, 2012

Forecast Point	Forecast Period	Future Conditions						30-Yr Avg. (1000AF)
		Drier		50%		Wetter		
		90% (1000AF)	70% (1000AF)	(1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
White R nr Buckley (1)	APR-JUL	355	435	470	109	505	585	430
	APR-SEP	430	520	560	109	600	690	515
Green R bl Howard Hanson Dam (1,2)	APR-JUL	152	220	250	106	280	350	235
	APR-SEP	175	245	275	106	305	375	260

SOUTH PUGET SOUND RIVER BASINS Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage ***		
		This Year	Last Year	Avg

SOUTH PUGET SOUND RIVER BASINS Watershed Snowpack Analysis - March 1, 2013

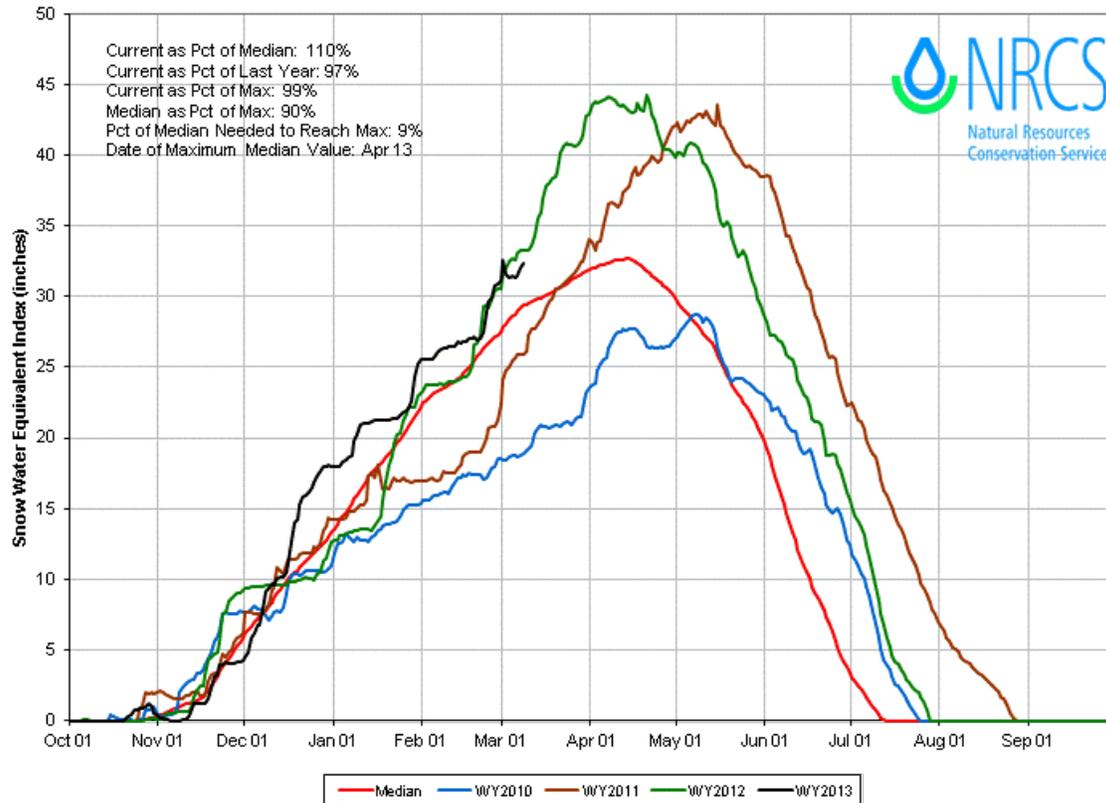
Watershed	Number of Data Sites	This Year as % of	
		Last Yr	Median
WHITE RIVER	2	98	112
GREEN RIVER	3	96	123
PUYALLUP RIVER	4	109	136

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

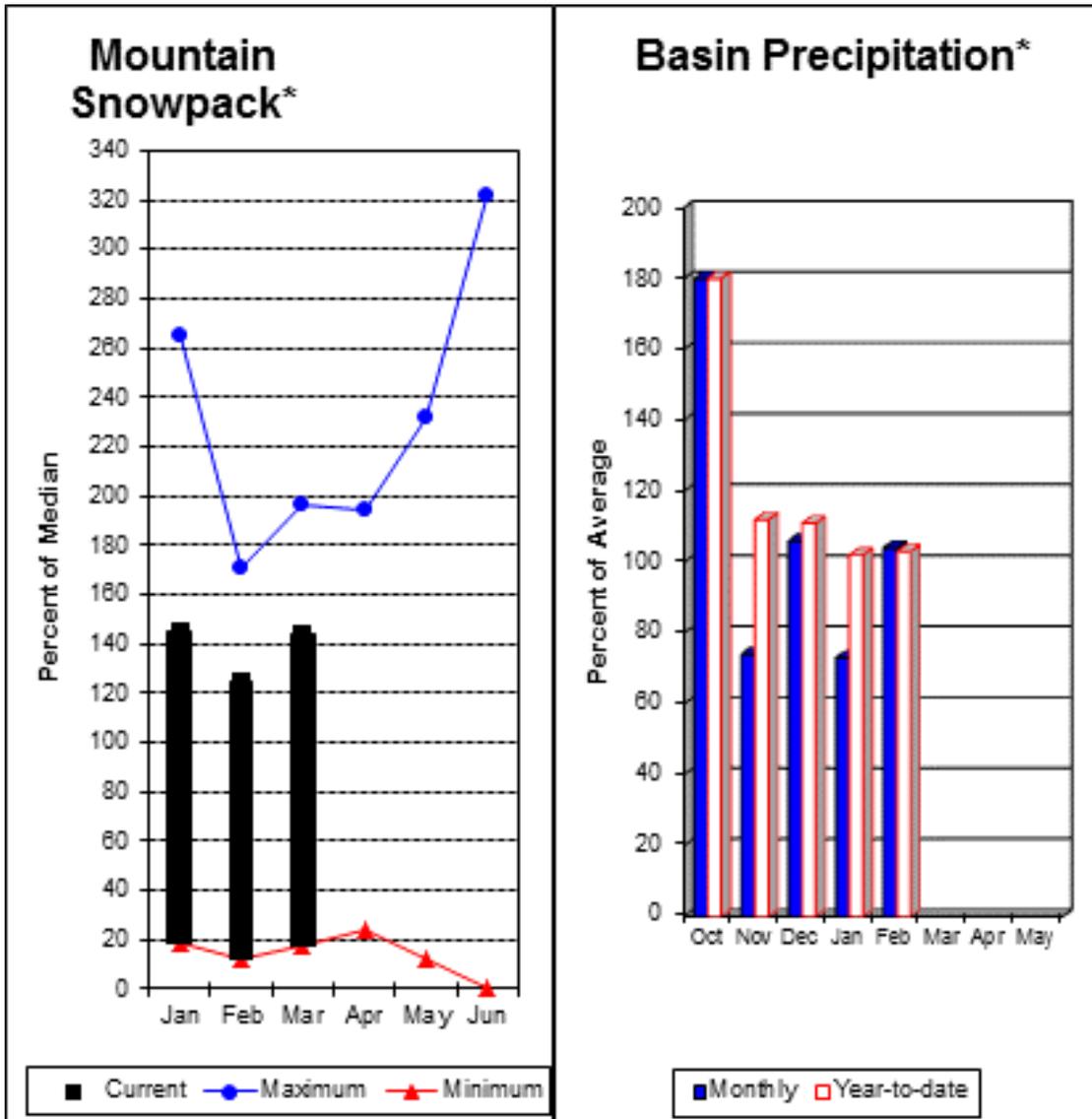
The average is computed for the 1981-2010 base period.

- (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.

*WHITE, GREEN, PUYALLUP Time Series Snowpack Summary
Based on Provisional SNOTEL data as of Mar 08, 2013*



Central Puget Sound River Basins



*Based on selected stations

Forecast for spring and summer flows are: 109% for Cedar River near Cedar Falls; 115% for Rex River; 130% for South Fork of the Tolt River; and 104% for Taylor Creek near Selleck. Basin-wide precipitation for February was 104% of average, bringing water-year-to-date to 103% of average. March 1 median snow cover in Cedar River Basin was 130%, Tolt River Basin was 166%, Snoqualmie River Basin was 138%, and Skykomish River Basin was 142%. Alpine Meadows SNOTEL site in the Tolt Basin, at 3500 feet, had 67.1 inches of water content. March 1 median water content is 40.3 inches at Alpine Meadows. Temperatures were 1-2 degrees below normal for February and for the water-year.

For more information contact your local Natural Resources Conservation Service office.

Central Puget Sound River Basins

Streamflow Forecasts - March 1, 2012

Forecast Point	Forecast Period	Future Conditions						30-Yr Avg. (1000AF)
		Drier		50%		Wetter		
		90% (1000AF)	70% (1000AF)	(1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
Cedar R nr Cedar Falls	APR-JUL	60	70	77	110	84	94	70
	APR-SEP	65	76	83	109	90	101	76
Rex R nr Cedar Falls	APR-JUL	19.9	25	28	117	31	36	24
	APR-SEP	23	28	31	115	34	39	27
Taylor Creek Near Selleck	APR-JUL	16.0	19.0	21	105	23	26	20
	APR-SEP	19.5	23	25	104	27	30	24
SF Tolt R nr Index	APR-JUL	15.2	17.6	19.2	135	21	23	14.2
	APR-SEP	16.5	19.2	21	130	23	25	16.1

CENTRAL PUGET SOUND RIVER BASINS Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage ***		
		This Year	Last Year	Avg
		60	70	77

CENTRAL PUGET SOUND RIVER BASINS Watershed Snowpack Analysis - March 1, 2013

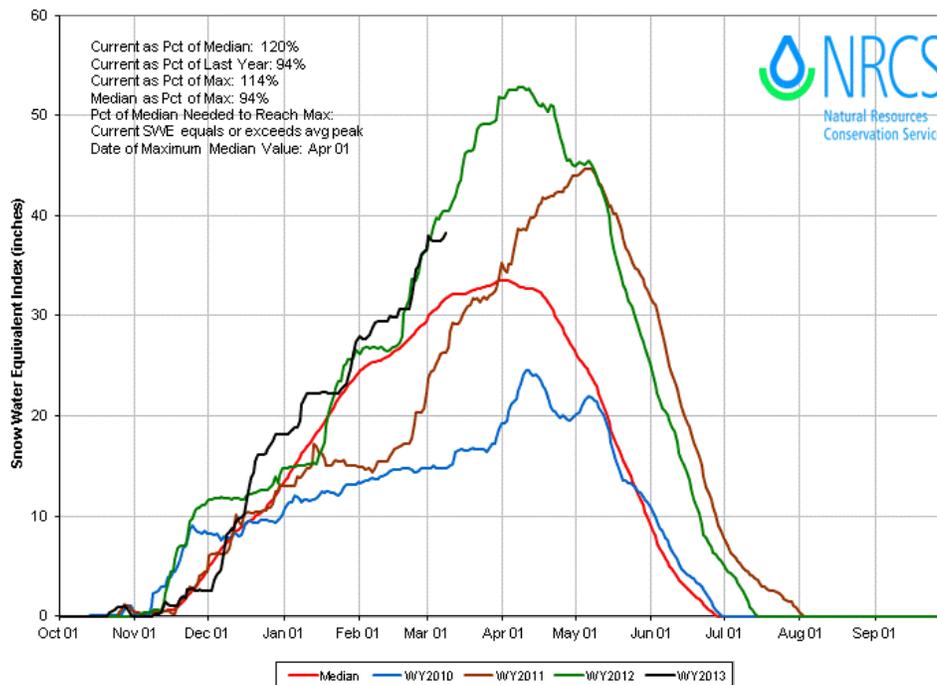
Watershed	Number of Data Sites	This Year as % of	
		Last Yr	Median
CEDAR RIVER	6	89	130
TOLT RIVER	3	147	166
SNOQUALMIE RIVER	5	121	138
SKYKOMISH RIVER	3	132	142

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

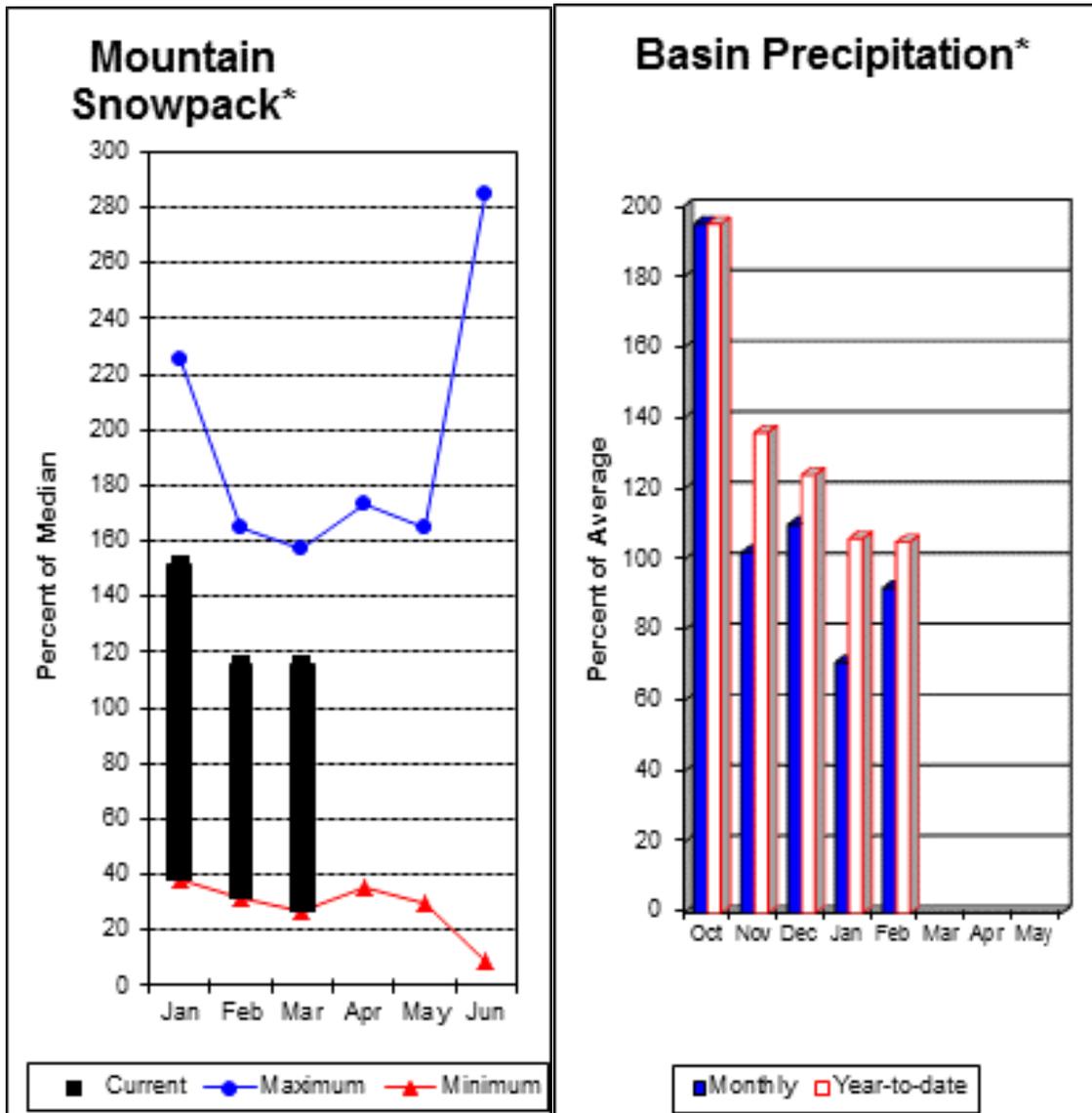
The average is computed for the 1981-2010 base period.

- (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.

*CEDAR, SNOQUALMIE, SKYKOMISH Time Series Snowpack Summary
Based on Provisional SNOTEL data as of Mar 08, 2013*



North Puget Sound River Basins



*Based on selected stations

Forecast for Skagit River streamflow at Newhalem is 98% of average for the spring and summer period. February streamflow in Skagit River was 64% of average. Other forecast points included Baker River at 104% and Thunder Creek at 99% of average. Basin-wide precipitation for February was 92% of average, bringing water-year-to-date to 105% of average. March 1 median snow cover in Skagit River Basin was 105% and Nooksack River Basin was 128% of normal. Baker River Basin data was not available at this time. The most snow measured in the basins and in the state was at Easy Pass SNOTEL with 85.6 inches of water content, almost 20% more than any other site in the area. March 1 Skagit River reservoir storage was 78% of average and 46% of capacity. Average temperatures for were 1-2 degrees below normal for February and for the water year.

For more information contact your local Natural Resources Conservation Service office.

North Puget Sound River Basins

Streamflow Forecasts - March 1, 2012

Forecast Point	Forecast Period	<<==== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)		
		90%		70%		50%			30%	
		(1000AF)	(1000AF)	(1000AF)	(1000AF)	(1000AF)	(1000AF)		(1000AF)	(1000AF)
Thunder Ck Nr Newhalem	APR-JUL	197	215	230	98	245	265	235		
	APR-SEP	285	310	325	99	340	365	330		
Skagit R At Newhalem	APR-JUL	1430	1580	1680	100	1780	1930	1680		
	APR-SEP	1710	1880	1990	98	2100	2270	2030		
Baker R nr Concrete (2)	APR-JUL	640	735	800	103	865	960	780		
	APR-SEP	805	935	1020	104	1110	1240	980		

NORTH PUGET SOUND RIVER BASINS Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage ***		
		This Year	Last Year	Avg
ROSS	1404.1	646.5	766.6	832.4
DIABLO RESERVOIR	90.6	86.0	85.7	---

NORTH PUGET SOUND RIVER BASINS Watershed Snowpack Analysis - March 1, 2013

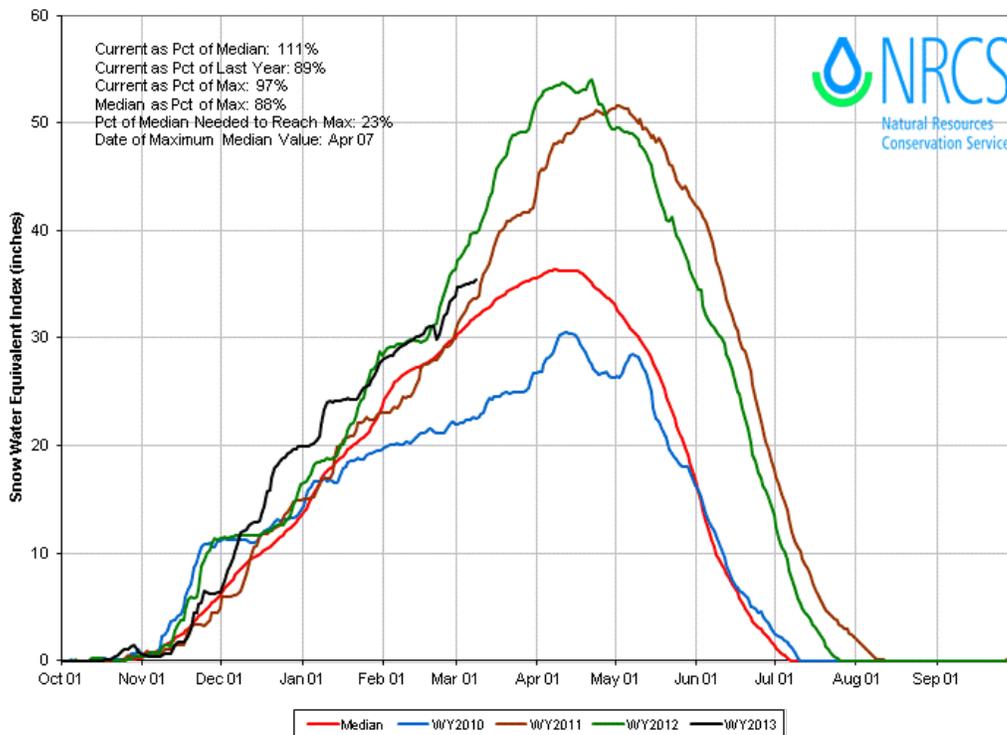
Watershed	Number of Data Sites	This Year as % of	
		Last Yr	Median
SKAGIT RIVER	14	83	105
BAKER RIVER	0	112	0
NOOKSACK RIVER	2	101	130

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

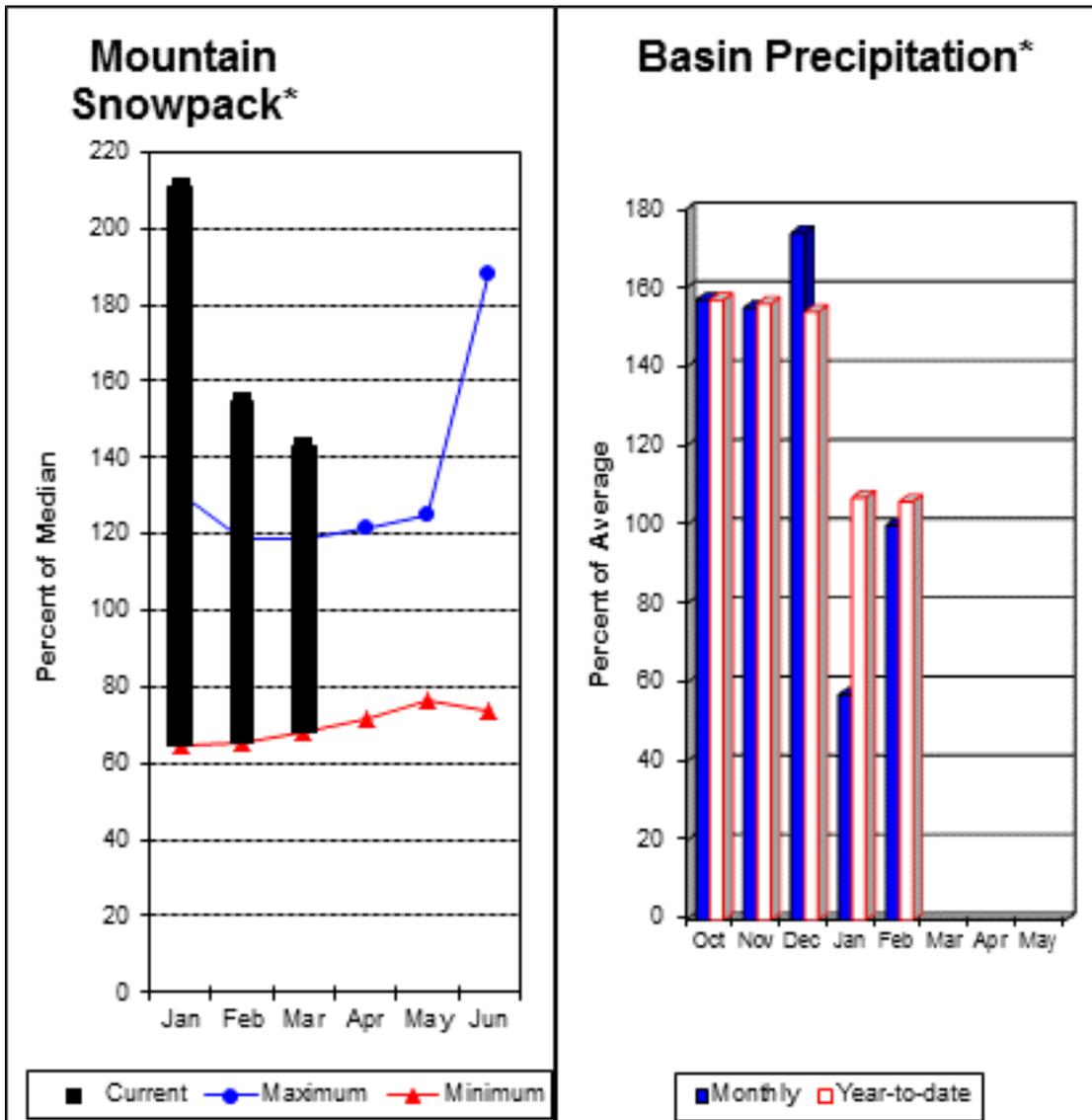
The average is computed for the 1981-2010 base period.

- (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.

BAKER, SKAGIT, NOOKSACK Time Series Snowpack Summary
Based on Provisional SNOTEL data as of Mar 08, 2013



Olympic Peninsula River Basins



*Based on selected stations

Forecasted average runoff for streamflow for the Dungeness River is 108% and Elwha River is 112%. February runoff in the Dungeness River was 83% of normal. Big Quilcene and Wynoochee rivers should expect above average runoff this summer as well. February precipitation was 100% of average. Precipitation has accumulated at 106% of average for the water year. February precipitation at Quillayute was 11.77 inches. The 1981-2010 average for February is 10.35 inches. Olympic Peninsula snowpack averaged 143% of normal on March 1. Temperatures were near average for February and slightly below normal for the water year.

For more information contact your local Natural Resources Conservation Service office.

Olympic Peninsula River Basins

Streamflow Forecasts - March 1, 2012

Forecast Point	Forecast Period	Future Conditions					30-Yr Avg. (1000AF)	
		<<===== Drier =====>>		===== Wetter =====>>				
		90% (1000AF)	70% (1000AF)	Chance Of Exceeding * 50% (% AVG.)		30% (1000AF)	10% (1000AF)	
Dungeness R Nr Sequim	APR-JUL	107	120	129	108	138	151	120
	APR-SEP	128	145	156	108	167	184	145
Elwha R At McDonald Bridge	APR-JUL	380	420	450	113	480	520	400
	APR-SEP	435	490	525	112	560	615	470

OLYMPIC PENINSULA RIVER BASINS Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage ***		
		This Year	Last Year	Avg

OLYMPIC PENINSULA RIVER BASINS Watershed Snowpack Analysis - March 1, 2013

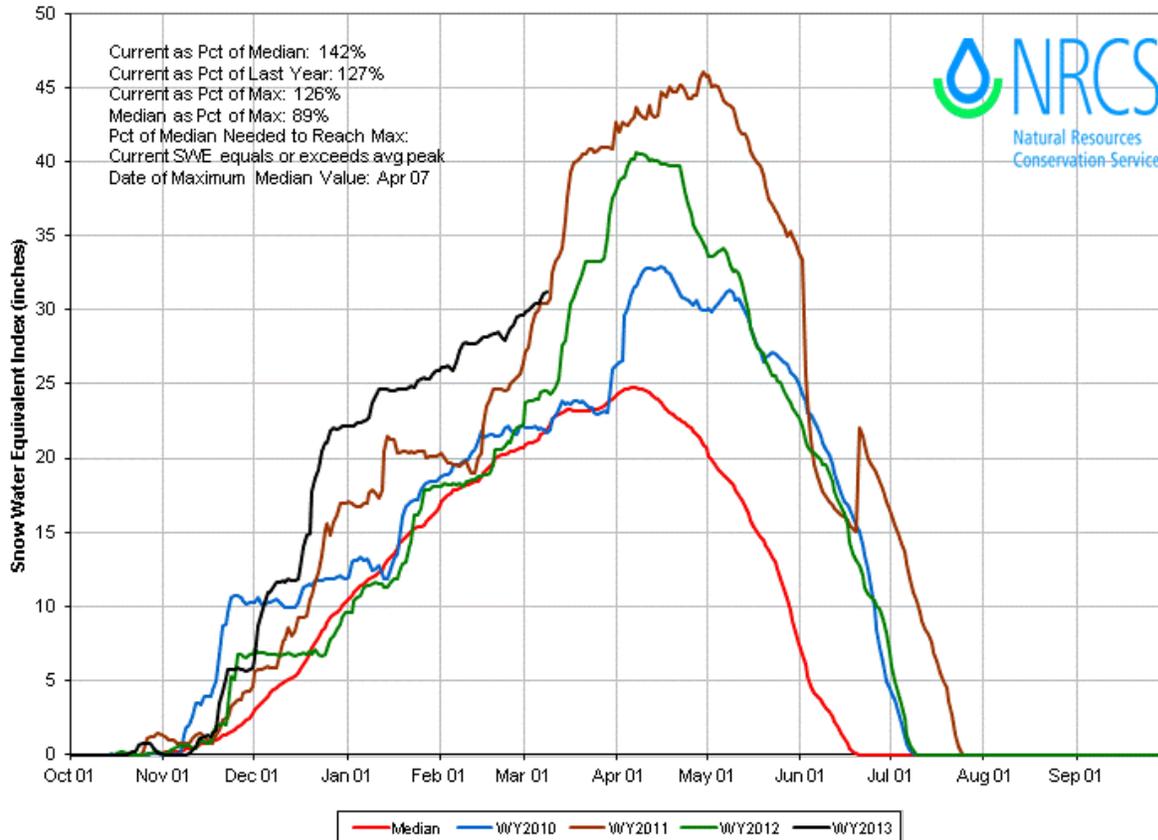
Watershed	Number of Data Sites	This Year as % of	
		Last Yr	Median
OLYMPIC PENINSULA	6	126	143

* 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.

*OLYMPIC Time Series Snowpack Summary
Based on Provisional SNOTEL data as of Mar 08, 2013*



Issued by

Jason Weller
Acting Chief
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U.S. Department of Agriculture

Released by

Roylene Rides At The Door
State Conservationist
Natural Resources Conservation Service
Spokane, Washington

The Following Organizations Cooperate with the Natural Resources Conservation Service in Snow Survey Work*:

Canada	Ministry of Sustainable Resources Snow Survey, River Forecast Centre, Victoria, British Columbia
State	Washington State Department of Ecology Washington State Department of Natural Resources
Federal	Department of the Army Corps of Engineers U.S. Department of Agriculture Forest Service U.S. Department of Commerce NOAA, National Weather Service U.S. Department of Interior Bonneville Power Administration Bureau of Reclamation Geological Survey National Park Service Bureau of Indian Affairs Recourse Conservation & Development Councils
Local	City of Tacoma City of Seattle Chelan County P.U.D. Pacific Power and Light Company Puget Sound Energy Washington Water Power Company Snohomish County P.U.D. Colville Confederated Tribes Spokane County Yakama Indian Nation Whatcom County Pierce County Kalispel Tribe of Indians Spokane Indian Tribe Jamestown S'klallum Tribe
Private	Okanogan Irrigation District Wenatchee Heights Irrigation District Newman Lake Homeowners Association Whitestone Reclamation District

*Other organizations and individuals furnish valuable information for the snow survey reports. Their cooperation is gratefully acknowledged.



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Washington Water Supply Outlook Report

Natural Resources Conservation Service
Spokane, WA

