

Washington Water Supply Outlook Report January 1, 2013



Grouse Camp SNOTEL
July 2012



Grouse Camp SNOTEL
September 2012

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

For more water supply and resource management information, contact:

Local Natural Resources Conservation Service Field Office

or

**Scott Pattee
Water Supply Specialist
Natural Resources Conservation Service
2021 E. College Way, Suite 214
Mt. Vernon, WA 98273-2873
(360) 428-7684**

or

**Larry Johnson
State Conservation Engineer
Natural Resources Conservation Service
W 316 Boone Ave., Suite 450
Spokane, WA 99201
(509) 323-2955**

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

January 2013

General Outlook

Record breaking fall precipitation helped take the sting out of a record warm summer and horrendous fire season in Washington State. Warmer than average temperatures delayed the start of this season's snowpack accumulation but when it did start snowing record amounts piled up in the mountains on a daily basis. New 30-year normals for precipitation, snow water, snow depth, reservoir storage and streamflow have been calculated for the 1981-2010 period which has replaced the 1971-2000 averages. There are some major changes in both increases and decreases so be sure to watch the data closely. More information can be found on page 4 of this report. Climate forecasters are predicting a cool dry pattern for the short term but long term forecasts have much uncertainty this season due to unstable tendencies with climate indices.

Snowpack

The January 1 statewide SNOTEL readings were 148% but remain near too much above normal across the state. So far we have received about 60% of our annual total snowfall. Normally we would have received 40-42% by this time of year. The Lower Snake River data in SE Washington reported the lowest readings at 82% of average. Readings from the Olympic Peninsula reported the highest at 211% of normal. Westside medians from SNOTEL, and January 1 snow surveys, included the North Puget Sound river basins with 152% of normal, the Central and South Puget river basins with 145%, and the Lewis-Cowlitz basins with 154% of normal. Snowpack along the east slopes of the Cascade Mountains included the Yakima area with 132% and the Wenatchee area with 128%. Snowpack in the Spokane River Basin was at 91% and the Walla Walla River Basin had 90% of the long term median. Maximum snow cover in Washington was at Easy Pass SNOTEL, with water content of 48.4 inches. Easy Pass is only a few years old so a normal has yet to be established. However neighboring sites are running 150 – 170% of normal.

BASIN	PERCENT OF LAST YEAR	PERCENT OF AVERAGE
Spokane	118	91
Newman Lake	117	98
Pend Oreille	102	96
Okanogan	129	153
Methow	127	137
Conconully Lake	276	194
Central Columbia	128	124
Upper Yakima	118	121
Lower Yakima	155	150
Ahtanum Creek	184	184
Walla Walla	138	90
Lower Snake	120	82
Cowlitz	172	147
Lewis	246	162
White	161	146
Green	137	120
Puyallup	158	168
Cedar	104	137
Snoqualmie	137	138
Skykomish	165	134
Skagit	122	141
Nooksack	135	162
Olympic Peninsula	232	211

Precipitation

During the month of December, the National Weather Service and Natural Resources Conservation Service climate stations reported average too much above average precipitation totals throughout Washington river basins. The highest percent of average in the state was at Waterhole SNOTEL in the Olympics which reported 258% of average for a total of 20.1 inches. The average for Waterhole is 4.9 inches for December. The wettest spot in the state was reported at Swift Creek SNOTEL near Mt. St. Helens with a December accumulation of 35.9 inches or 140% of normal.

RIVER BASIN	DECEMBER PERCENT OF AVERAGE	WATER YEAR PERCENT OF AVERAGE
Spokane	107.....	118
Pend Oreille	138.....	139
Upper Columbia	152.....	144
Central Columbia	124.....	129
Upper Yakima	99.....	109
Lower Yakima	121.....	131
Walla Walla	117.....	125
Lower Snake	103.....	113
Lower Columbia	132.....	140
South Puget Sound	118.....	119
Central Puget Sound	106.....	111
North Puget Sound	110.....	124
Olympic Peninsula	174.....	154

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. For the most part water year 2012 ended with very good reservoir surplus and with above normal fall precipitation many reservoirs are still at above normal levels. In fact several had to be drawn down in anticipation for winter runoff and flood control storage. Reservoir storage in the Yakima Basin was 539,000-acre feet, 135% of average for the Upper Reaches and 136,000-acre feet or 122% of average for Rimrock and Bumping Lakes. Storage at the Okanogan reservoirs was 109% of average for January 1. The power generation reservoirs included the following: Coeur d'Alene Lake, 73,000 acre feet, 66% of average and 31% of capacity; Chelan Lake, 387,000-acre feet, 98% of average and 57 of capacity; and the Skagit River reservoirs at 99% of average and 81% 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	31	78
Pend Oreille	57	126
Upper Columbia	75	109
Central Columbia	57	94
Upper Yakima	65	156
Lower Yakima	59	131
Lower Snake	45	65
North Puget Sound	81	99

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

Streamflow

Forecasts vary from 96% of average for the S.F. Walla Walla near Milton-Freewater to 137% of average for S.F. Tolt River near Index. April-September forecasts for some Western Washington streams include the Cedar River near Cedar Falls, 113%; White River, 121%; and Skagit River, 114%. Some Eastern Washington streams include the Yakima River near Parker, 112%; Wenatchee River at Plain, 111%; and Spokane River near Post Falls, 102%. Volumetric forecasts are developed using current, historic and average snowpack, precipitation and streamflow data collected and coordinated by organizations cooperating with NRCS. Caution should be used when using early season forecasts for critical water resource management decisions.

After a very wet fall temperatures dropped in December thus bringing runoff to near normal conditions in all but a few basins. The Kettle River had the highest reported flows with 223% of average. The Similkameen with 85% of average was the lowest in the state. Other streamflows were the following percentage of average as reported by the River Forecast Center: the Cowlitz at Castle Rock, 137%; the Stehekin at Stehekin, 84%; the Columbia below Rock Island Dam, 150%; and the Priest River, 161%.

BASIN	PERCENT OF AVERAGE (50 PERCENT CHANCE OF EXCEEDENCE)
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Spokane	102-122
Pend Oreille	110-121
Upper Columbia	101-132
Central Columbia	102-111
Upper Yakima	99-107
Lower Yakima	107-131
Walla Walla	96-100
Lower Snake	99-117
Lower Columbia	101-120
South Puget Sound	112-121
Central Puget Sound	104-137
North Puget Sound	103-114
Olympic Peninsula	111-119

STREAM	PERCENT OF AVERAGE DECEMBER STREAMFLOWS
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Pend Oreille Below Box Canyon	159
Kettle at Laurier	223
Columbia at Birchbank	138
Spokane at Long Lake	150
Similkameen at Nighthawk	85
Okanogan at Tonasket	90
Methow at Pateros	124
Chelan at Chelan	110
Wenatchee at Pashastin	91
Cle Elum near Roslyn	95
Yakima at Parker	105
Naches at Naches	110
Grande Ronde at Troy	124
Snake below Lower Granite Dam	122
SF Walla Walla near Milton-Freewater, OR	112
Columbia River at The Dalles	134
Cowlitz below Mayfield Dam	120
Skagit at Concrete	87
Dungeness near Sequim	94

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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. Heavy fall precipitation helped bolster soil moisture profiles in most locations of the state after a record dry August and September. With a solid snowpack over most of the mountainous regions of the state these number should hold and will help provide maximum runoff come spring.

BASIN	ESTIMATED PERCENT SATURATION
Spokane	58
Pend Oreille	66
Upper Columbia	56
Central Columbia	59
Upper Yakima	63
Lower Yakima	69
Walla Walla	71
Lower Snake	71
Lower Columbia	72
South Puget Sound	74
Central Puget Sound	N/A
North Puget Sound	82
Olympic Peninsula	44

What is the upshot of changing 30-year normal periods?

The Snow Survey and Water Supply Forecasting (SSWSF) normal is a measure of central tendency for a data type (such as snow-water equivalent) at a site location, over a 30-year period. The 30-year interval was chosen in agreement with World Meteorological Organization (WMO) standards.

Depending on the data type, the central tendency measure available may be the median, the average or both. The SSWSF Program has chosen a default normal with the best representation of central tendency for a particular data type. The default normal appears in pre-determined reports.

A complete listing of all new normals and an explanation of how they were computed can be found at:

http://www.wcc.nrcs.usda.gov/normals/30year_normals_landing.htm

BASIN SUMMARY OF
SNOW COURSE DATA

JANUARY 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
ALPINE MEADOWS SNTL	3500	1/01/13	83	29.3	14.7	19.8	MICA CREEK SNOTEL	4510	1/01/13	39	8.7	6.8	11.0
BADGER PASS SNOTEL	6900	1/01/13	52	13.0	15.4	12.5	MORSE LAKE SNOTEL	5410	1/01/13	106	33.8	22.4	22.0
BARKER LAKES SNOTEL	8250	1/01/13	27	6.8	5.3	5.9	MOSES MTN SNOTEL	5010	1/01/13	48	14.4	4.6	6.3
BASIN CREEK SNOTEL	7180	1/01/13	14	2.7	2.6	3.6	MOSQUITO RDG SNOTEL	5200	1/01/13	59	16.4	13.5	13.0
BEAVER CREEK TRAIL	2200	12/30/12	46	9.1	5.8	4.2	MOULTON RESERVOIR	6850	12/27/12	12	2.4	--	2.8
BEAVER PASS	3680	12/28/12	84	17.4	11.8	10.5	MOUNT CRAG SNOTEL	3960	1/01/13	95	26.8	11.5	11.3
BEAVER PASS SNOTEL	3630	1/01/13	88	27.5	20.5	15.5	MOWICH SNOTEL	3160	1/01/13	22	4.8	.3	.0
BLACK PINE SNOTEL	7100	1/01/13	19	4.1	4.7	4.2	MOUNT GARDNER SNOTEL	2920	1/01/13	37	8.6	5.9	6.3
BLEWETT PASS#2SNOTEL	4240	1/01/13	27	8.5	6.3	6.6	N.F. ELK CR SNOTEL	6250	1/01/13	17	4.0	4.7	4.5
BROWN TOP AM	6000	12/28/12	111	31.0	19.0	26.2	NEVADA RIDGE SNOTEL	7020	1/01/13	24	5.9	6.7	5.6
BUCKINGHORSE SNOTEL	4870	1/01/13	119	43.5	19.7	--	NEW HOZOMEEN LAKE	2800	12/28/12	22	5.4	5.0	--
BUMPING LAKE (NEW)	3400	1/03/13	42	10.6	6.8	6.6	NEZ PERCE CMP SNOTEL	5650	1/01/13	21	5.0	5.5	5.8
BUMPING RIDGE SNOTEL	4610	1/01/13	55	13.7	11.4	10.4	NOISY BASIN SNOTEL	6040	1/01/13	64	18.0	9.0	16.1
BUNCHGRASS MDWSNOTEL	5000	1/01/13	49	13.0	10.0	11.6	OLALLIE MDWS SNOTEL	4030	1/01/13	80	26.7	24.5	19.5
BURNT MOUNTAIN PIL	4170	1/01/13	44	11.1	7.1	4.5	OPHIR PARK	7150	1/01/13	23	5.3	5.1	5.7
CALAMITY SNOTEL	2500	1/01/13	17	5.1	.0	--	PARADISE SNOTEL	5130	1/01/13	105	34.9	24.4	29.0
CAYUSE PASS SNOTEL	5240	1/01/13	116	35.2	18.6	--	PARK CK RIDGE SNOTEL	4600	1/01/13	86	25.8	19.9	19.2
COMBINATION SNOTEL	5600	1/01/13	9	1.9	2.1	2.0	PEPPER CREEK SNOTEL	2140	1/01/13	25	6.3	1.7	--
COPPER BOTTOM SNOTEL	5200	1/01/13	11	2.4	3.3	--	PETERSON MDW SNOTEL	7200	1/01/13	19	4.1	4.2	4.0
CORRAL PASS SNOTEL	5800	1/01/13	63	18.4	14.3	14.8	PIGTAIL PEAK SNOTEL	5800	1/01/13	83	24.4	20.9	21.0
COUGAR MTN. SNOTEL	3200	1/01/13	42	10.3	5.1	6.6	PIKE CREEK SNOTEL	5930	1/01/13	23	4.6	5.3	9.7
COYOTE HILL	4200	12/31/12	12	2.3	2.4	3.2	POPE RIDGE SNOTEL	3590	1/01/13	41	10.6	8.7	8.8
DALY CREEK SNOTEL	5780	1/01/13	19	4.6	5.0	4.5	POTATO HILL SNOTEL	4510	1/01/13	65	16.6	10.4	11.5
DEVILS PARK	5900	12/28/12	65	19.6	23.6	--	QUARTZ PEAK SNOTEL	4700	1/01/13	39	9.5	8.1	9.7
DISCOVERY BASIN	7050	12/26/12	20	3.9	3.3	3.8	RAGGED MOUNTAIN	4200	12/30/12	45	13.8	8.1	9.8
DIX HILL	6400	1/01/13	15	3.4	4.6	3.9	RAGGED MTN SNOTEL	4210	1/01/13	39	10.3	7.5	12.5
DOMMERIE FLATS	2200	12/28/12	22	3.9	2.5	4.1	RAINY PASS SNOTEL	4890	1/01/13	59	17.8	19.1	15.7
DUNGENESS SNOTEL	4010	1/01/13	39	9.3	2.6	3.2	RAINY PASS	4780	12/30/12	69	20.0	14.4	--
ELBOW LAKE SNOTEL	3200	1/01/13	74	21.4	12.6	13.9	REX RIVER SNOTEL	3810	1/01/13	59	17.7	16.6	12.9
EMERY CREEK SNOTEL	4350	1/01/13	---	6.3	4.3	5.9	ROCKER PEAK SNOTEL	8000	1/01/13	23	4.7	6.5	6.0
FISH CREEK	8000	12/27/12	20	4.0	--	3.6	SADDLE MTN SNOTEL	7900	1/01/13	38	10.6	9.3	10.5
FISH LAKE	3370	12/27/12	57	16.8	--	12.0	SALMON MDWS SNOTEL	4460	1/01/13	30	9.1	3.3	4.7
FISH LAKE SNOTEL	3430	1/01/13	48	13.9	12.9	13.0	SASSE RIDGE SNOTEL	4340	1/01/13	58	16.3	14.1	11.7
FLATTOP MTN SNOTEL	6300	1/01/13	85	22.6	16.8	18.5	SAVAGE PASS SNOTEL	6170	1/01/13	---	10.8	11.1	10.3
FOURTH OF JULY SUM	3200	12/28/12	23	4.7	2.2	3.0	SAMMILL RIDGE SNOTEL	4640	1/01/13	61	19.7	12.9	--
FREEZEOUT CK. TRAIL	3500	12/29/12	23	5.4	7.6	--	SENTINEL BT SNOTEL	4680	1/01/13	26	6.0	2.4	3.7
FROHNER MDWS SNOTEL	6480	1/01/13	14	3.5	4.5	3.1	SHEEP CANYON SNOTEL	3990	1/01/13	94	26.4	11.0	15.1
GRAVE CRK SNOTEL	4300	1/01/13	21	5.2	4.9	6.6	SHERWIN SNOTEL	3200	1/01/13	---	3.2	2.7	4.5
GREEN LAKE SNOTEL	5920	1/01/13	63	16.4	9.6	9.4	SKALKAHO SNOTEL	7260	1/01/13	35	9.3	9.3	8.7
GROUSE CAMP SNOTEL	5390	1/01/13	43	13.5	6.9	8.6	SKOOKUM CREEK SNOTEL	3310	1/01/13	63	20.6	12.8	9.6
HAND CREEK SNOTEL	5030	1/01/13	17	4.1	3.9	4.2	SOURDOUGH GUL SNOTEL	4000	1/01/13	6	1.1	.5	.6
HARTS PASS SNOTEL	6490	1/01/13	71	25.2	19.8	17.7	SPENCER MDW SNOTEL	3400	1/01/13	67	18.8	7.6	12.4
HARTS PASS	6500	12/28/12	84	24.4	19.4	--	SPIRIT LAKE SNOTEL	3520	1/01/13	29	15.7	1.9	3.1
HIGH RIDGE SNOTEL	4920	1/01/13	33	8.4	6.9	11.0	SPOTTED BEAR MTN.	7000	1/01/13	---	5.1	--	5.3
HOLBROOK	4530	1/01/13	12	2.1	1.9	3.2	SPRUCE SPGS SNOTEL	5700	1/01/13	19	3.9	4.2	7.1
HOODOO BASIN SNOTEL	6050	1/01/13	61	17.2	16.4	16.6	STAHL PEAK SNOTEL	6030	1/01/13	51	13.6	11.1	15.1
HUCKLEBERRY SNOTEL	2250	1/01/13	13	3.0	.8	.9	STAMPEDE PASS SNOTEL	3850	1/01/13	54	14.6	14.5	17.4
HUMBOLDT GLCH SNOTEL	4250	1/01/13	20	4.4	6.4	5.7	STEVENS PASS SNOTEL	3950	1/01/13	73	20.0	15.1	17.0
INDIAN ROCK SNOTEL	5360	1/01/13	67	21.0	10.0	--	STORM LAKE	7780	12/26/12	25	5.4	5.7	5.1
JUNE LAKE SNOTEL	3440	1/01/13	102	29.8	10.1	16.6	SUNSET SNOTEL	5540	1/01/13	26	7.0	7.6	7.5
KELLOGG PEAK	5560	12/28/12	30	8.1	6.2	11.8	SURPRISE LKS SNOTEL	4290	1/01/13	92	28.0	13.4	19.9
KRAFT CREEK SNOTEL	4750	1/01/13	16	3.3	4.9	--	SWAMP CREEK SNOTEL	3930	1/01/13	32	8.9	10.5	5.8
LOLO PASS SNOTEL	5240	1/01/13	35	8.6	11.2	11.0	SWIFT CREEK SNOTEL	4440	1/01/13	130	39.6	17.9	23.4
LONE PINE SNOTEL	3930	1/01/13	96	31.5	10.8	15.3	THUNDER BASIN SNOTEL	4320	1/01/13	58	17.9	14.4	14.2
LOOKOUT SNOTEL	5140	1/01/13	38	9.7	10.2	11.9	TINKHAM CREEK SNOTEL	2990	1/01/13	48	12.5	13.4	9.8
LOST HORSE SNOTEL	5120	1/01/13	48	13.4	6.6	6.8	TOUCHET SNOTEL	5530	1/01/13	44	13.2	8.8	12.9
LOST LAKE SNOTEL	6110	1/01/13	62	17.7	16.9	22.5	TRINKUS LAKE	6100	1/01/13	---	19.1	--	16.9
LUBRECHT FOREST NO 3	5450	12/27/12	8	1.3	1.3	2.2	TROUGH #2 SNOTEL	5480	1/01/13	31	7.6	3.9	5.2
LUBRECHT FOREST NO 4	4650	12/27/12	6	.8	.8	1.2	TUNNEL AVENUE	2450	12/28/12	30	6.1	6.0	6.3
LUBRECHT FOREST NO 6	4040	12/27/12	8	1.2	1.7	1.3	TWELVEMILE SNOTEL	5600	1/01/13	24	5.8	7.9	6.6
LUBRECHT HYDROPLOT	4200	12/27/12	9	1.2	1.9	2.0	TWIN LAKES SNOTEL	6400	1/01/13	47	13.0	15.6	16.1
LUBRECHT SNOTEL	4680	1/01/13	7	1.6	2.9	2.4	TWIN SPIRIT DIVIDE	3480	12/30/12	23	3.6	3.2	6.2
LYMAN LAKE SNOTEL	5980	1/01/13	108	32.2	25.2	26.4	UPPER HOLLAND LAKE	6200	1/01/13	---	11.2	--	13.0
LYNN LAKE	4000	1/01/13	49	13.5	10.0	7.9	UPPER WHEELER SNOTEL	4330	1/01/13	26	6.3	3.0	5.0
LYNN LAKE SNOTEL	3900	1/01/13	49	13.5	10.0	--	WARM SPRINGS SNOTEL	7800	1/01/13	32	7.9	8.5	8.6
MARTEN RIDGE SNOTEL	3520	1/01/13	96	33.1	23.6	--	WATERHOLE SNOTEL	5010	1/01/13	92	30.5	14.6	17.0
MEADOWS CABIN	1900	12/29/12	16	3.1	.0	--	WEASEL DIVIDE	5450	12/27/12	52	14.2	11.7	12.6
MEADOWS PASS SNOTEL	3230	1/01/13	52	13.6	14.5	9.3	WELLS CREEK SNOTEL	4030	1/01/13	72	21.2	13.4	12.5
M F NOOKSACK SNOTEL	4970	1/01/13	82	26.9	25.5	16.6	WHITE PASS ES SNOTEL	4440	1/01/13	47	12.2	9.2	9.0



Natural Resources Conservation Service

Washington State
Snow, Water and Climate Services

Program Contacts

Roylene Rides At The Door
State Conservationist
Spokane State Office
W. 316 Boone Ave., Suite 450
Spokane, WA 99201-2348
phone: 509-323-2961
fax: 509-323-2979
roylene.rides-at-the-door@wa.usda.gov

Melissa Webb
Hydrologist
Oregon Data Collection Office
101 SW Main St, Suite 1300
Portland, OR 97204
Phone: 503-414-3267
Fax: 503-414-3277
melissa.webb@or.usda.gov

Scott Pattee
Water Supply Specialist
Washington Snow Survey Office
2021 E. College Way, Suite 214
Mount Vernon, WA 98273-2873
phone: 360-428-7684
fax: 360-424-6172
scott.pattee@wa.usda.gov

Rashawn Tama
Forecast Hydrologist
National Water and Climate Center
101 SW Main St., Suite 1600
Portland, OR 97204-3224
phone: 503-414-3010
fax: 503-414-3101
rashawn.tama@por.usda.gov

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

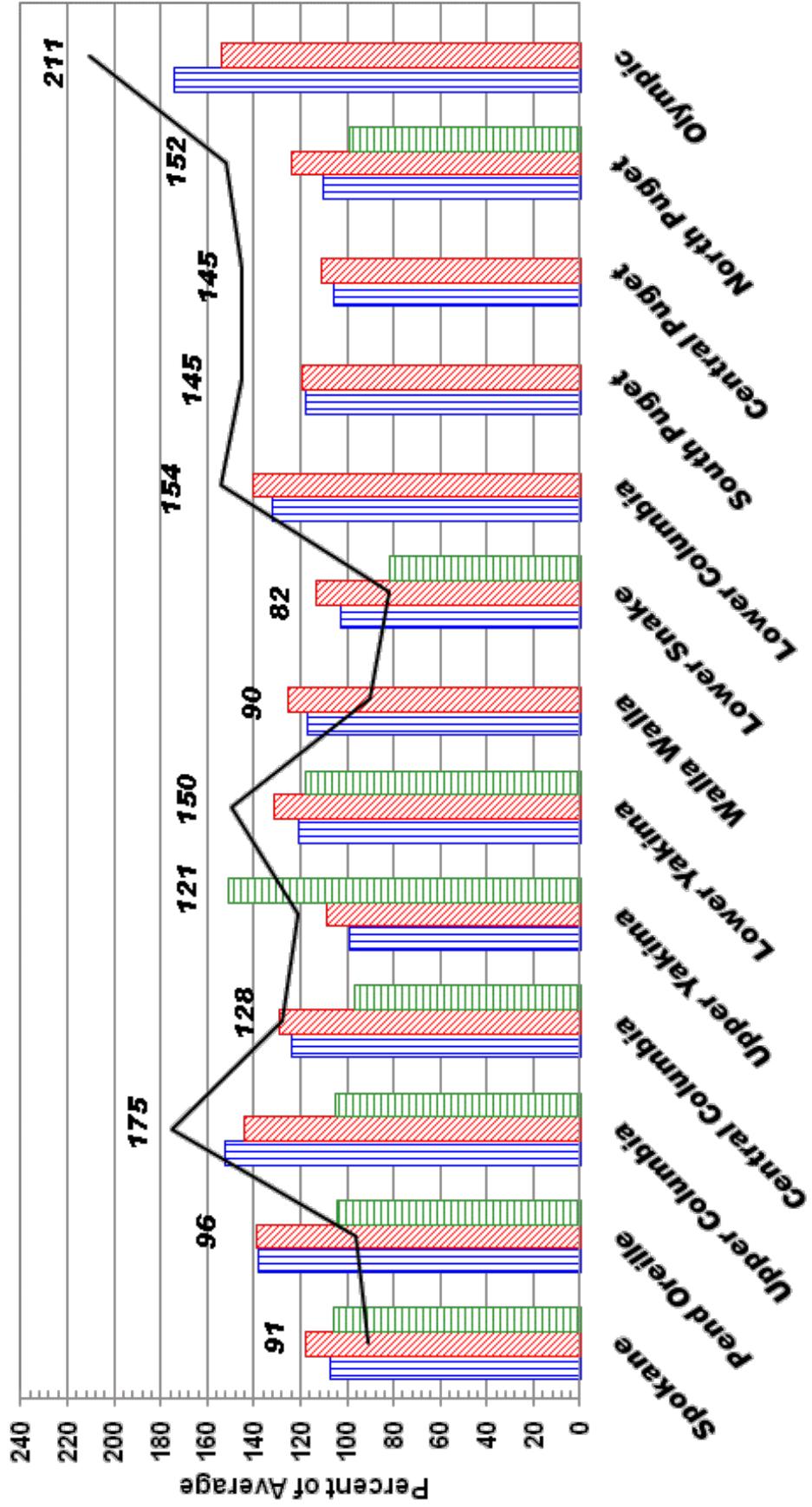
Washington:
<http://www.wa.nrcs.usda.gov>

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



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

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



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"

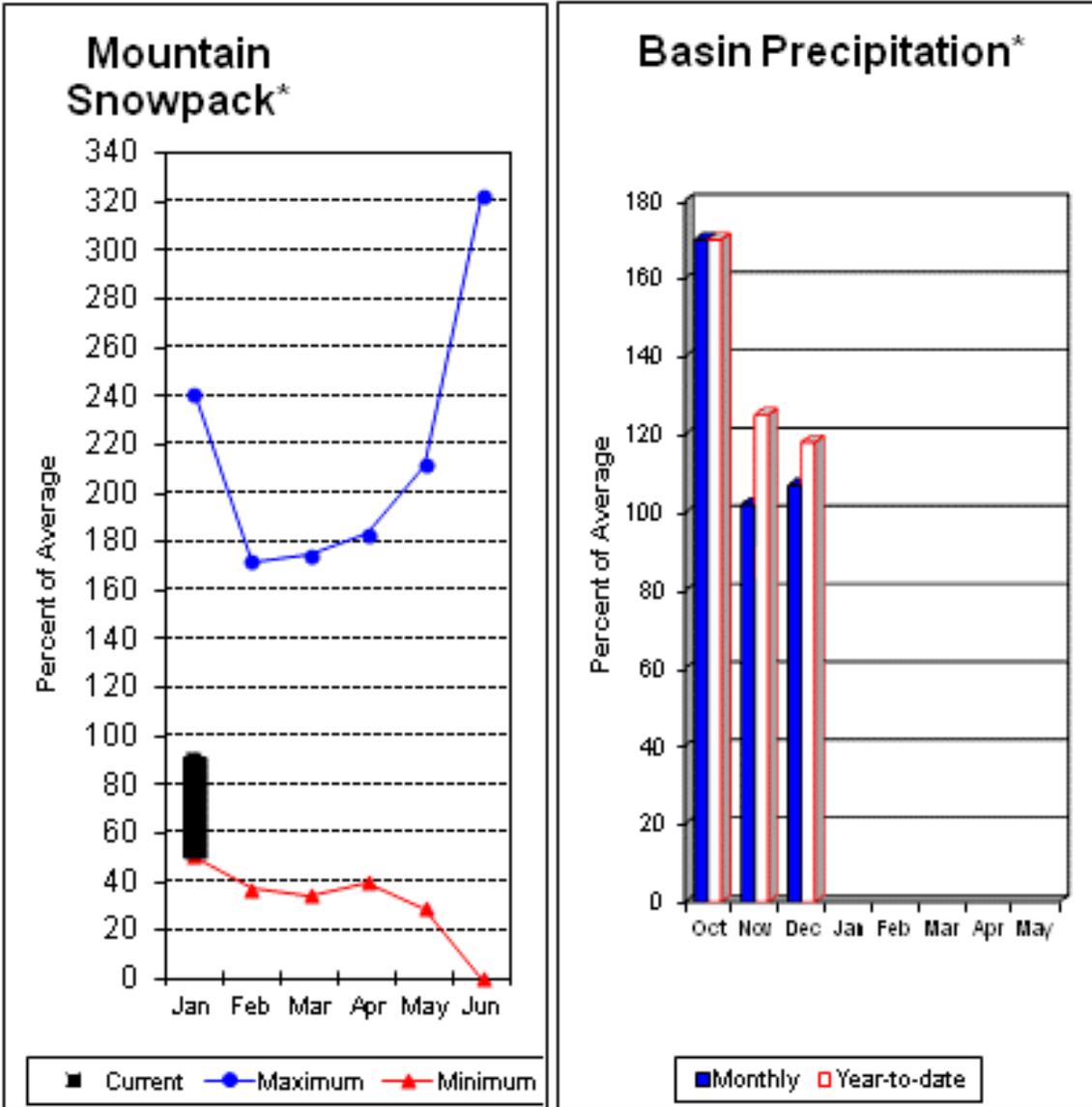
A short course and panel discussion is being planned for Monday April 15th titled "**New Strategies and Techniques in Long Range Streamflow Forecasting**". Many agencies use long range streamflow forecasts for hydropower planning, reservoir operation and marketing. This will provide a forum to discuss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

Spokane River Basin



*Based on selected stations

The January 1 forecasts for summer runoff within the Spokane River Basin are 102% of average near Post Falls and 104% at Long Lake. The Chamokane River near Long Lake forecasted to have 122% of average flows for the May-August period. The forecast is based on a basin snowpack that is 91% of normal and precipitation that is 118% of average for the water year. Precipitation for December was above normal at 107% of average. Streamflow on the Spokane River at Long Lake was 150% of average for December. January 1 storage in Coeur d'Alene Lake was 73,000 acre feet, 78% of average and 31% of capacity. Snowpack at Quartz Peak SNOTEL site was 98% of average with 9.5 inches of water content. Average temperatures in the Spokane basin were 2-4 degrees above normal for December and slightly above normal for the water year.

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

Spokane River Basin

Streamflow Forecasts - January 1, 2012

Forecast Point	Forecast Period	Future Conditions				30-Yr Avg. (1000AF)
		Drier		Wetter		
		90% (1000AF)	70% (1000AF)	50% (1000AF)	10% (1000AF)	
		Chance Of Exceeding * (% AVG.)				
Spokane R nr Post Falls (2)	APR-JUL	1526	2064	2430	102	2390
	APR-SEP	1611	2158	2530	102	2480
Spokane R at Long Lake (2)	APR-JUL	1697	2306	2720	104	2620
	APR-SEP	1893	2522	2950	104	2850
Chamokane Ck nr Long Lake	MAY-AUG	7.9	9.9	11.3	122	9.3

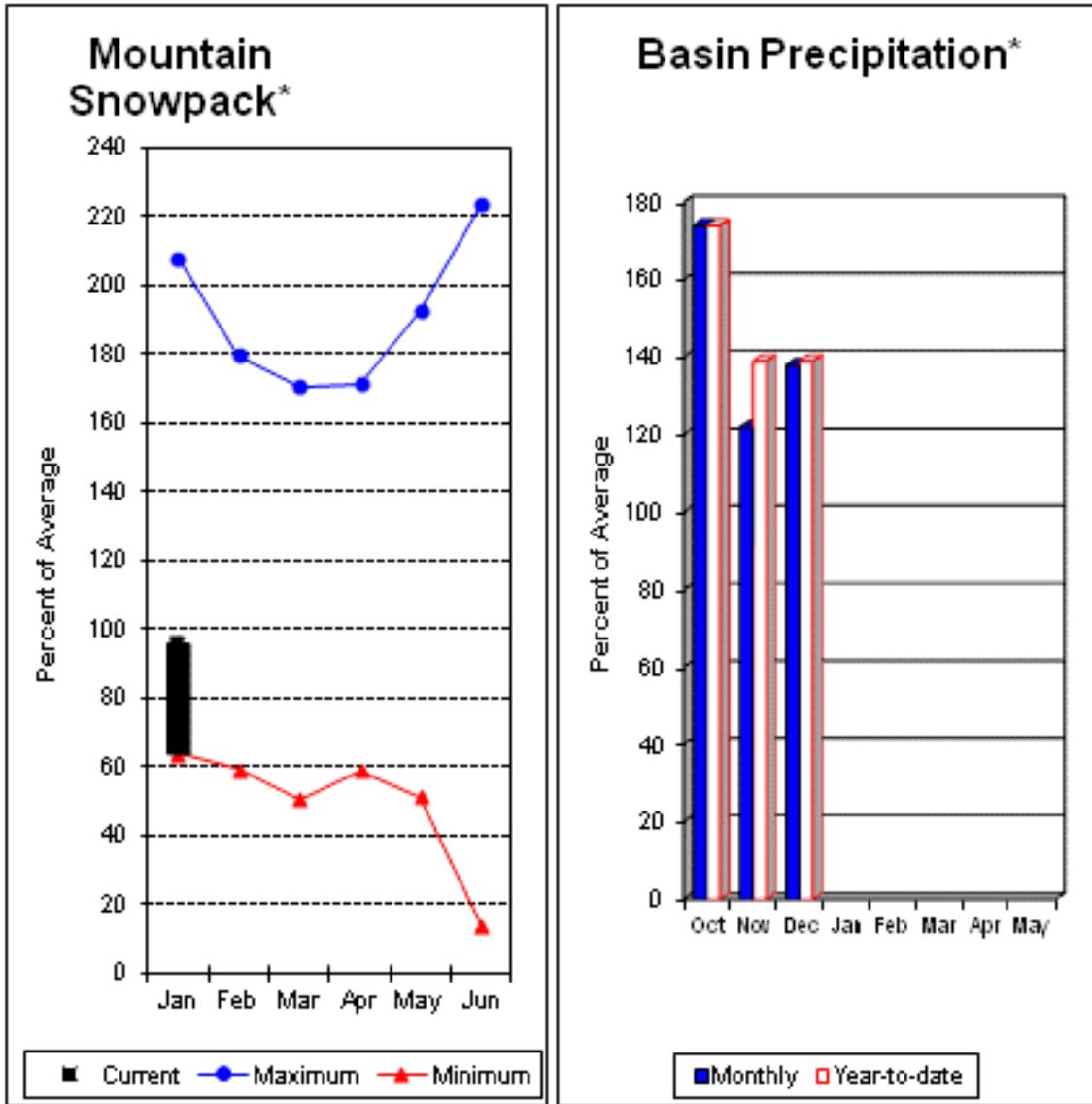
SPOKANE RIVER BASIN Reservoir Storage (1000 AF) - End of December					SPOKANE RIVER BASIN Watershed Snowpack Analysis - January 1, 2013			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
Coeur d'Alene	238.5	72.9	50.9	93.7	SPOKANE RIVER	13	118	91
					NEWMAN LAKE	1	117	98

* 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.

Pend Oreille River Basins



*Based on selected stations

The April – September average forecast for the Priest River near the town of Priest River is 121% and the Pend Oreille below Box Canyon is 110%. December streamflow was 159% of average on the Pend Oreille River and 138% on the Columbia Birchbank. January 1 snow cover was 96% of normal in the Pend Oreille Basin River Basin. Bunchgrass Meadows SNOTEL site had 13 inches of snow water on the snow pillow. Normally Bunchgrass would have 11.6 inches on January 1. Precipitation during December was 138% of average, keeping the year-to-date precipitation at 139% of average. Reservoir storage in the basin, including Lake Pend Oreille and Priest Lake was 126% of normal. Average temperatures were 4-6 degrees above normal for December and 3-4 degrees above normal for the water year.

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

Pend Oreille River Basins

Streamflow Forecasts - January 1, 2012

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)	
Pend Oreille Lake Inflow (2)	APR-JUL	9963	11652	12800	109	13948	15637	11800				
	APR-SEP	11146	12905	14100	110	15295	17054	12800				
Priest R nr Priest River (1,2)	APR-JUL	710	850	945	121	1040	1180	780				
	APR-SEP	750	900	1000	121	1100	1250	830				
Pend Oreille R bl Box Canyon (2)	APR-JUL	10108	11830	13000	109	14170	15892	11900				
	APR-SEP	11269	13074	14300	110	15526	17331	13000				

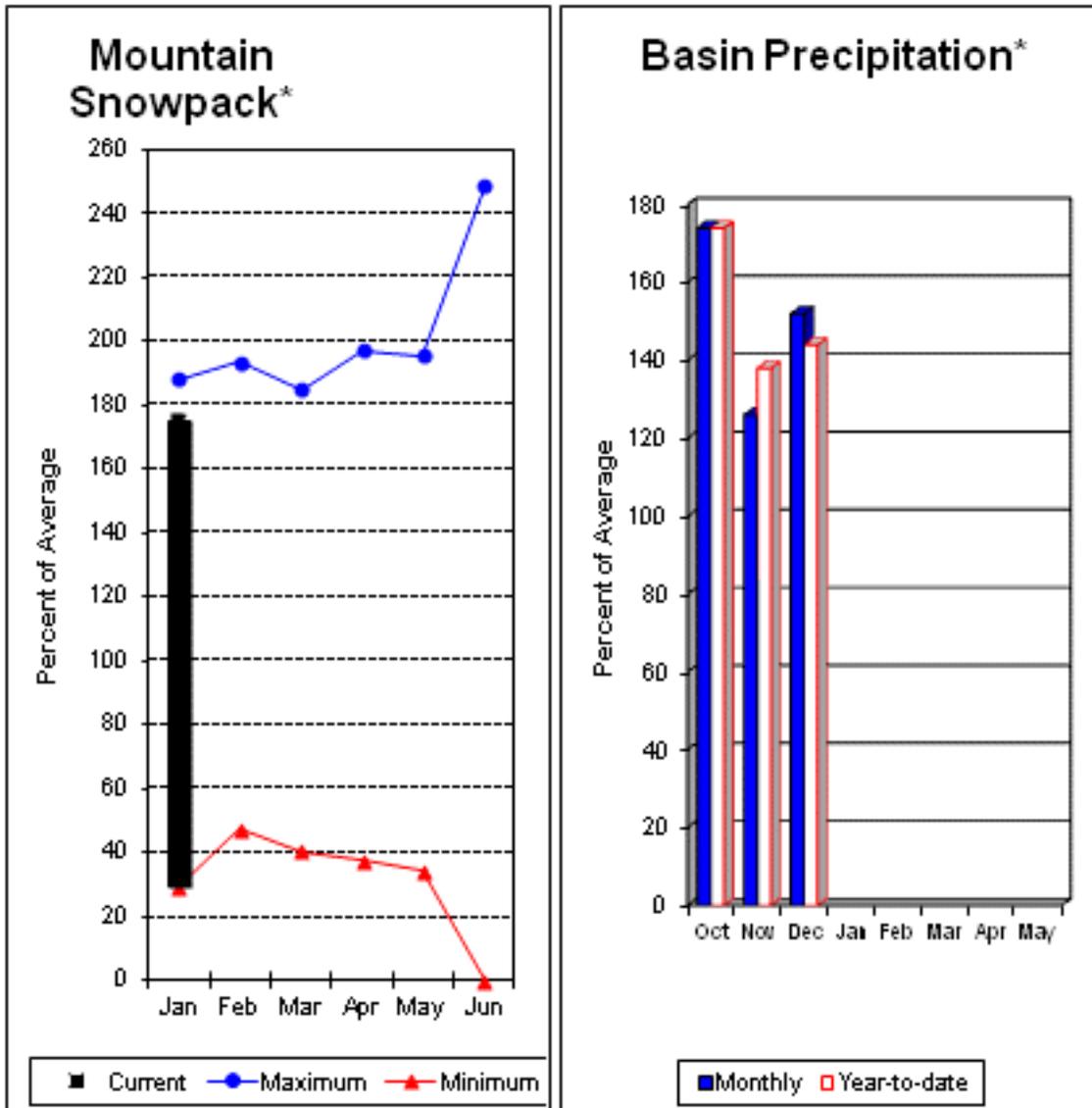
PEND OREILLE RIVER BASINS Reservoir Storage (1000 AF) - End of December					PEND OREILLE RIVER BASINS Watershed Snowpack Analysis - January 1, 2013			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
Pend Oreille	1561.3	900.3	641.0	708.2	COLVILLE RIVER	0	0	0
Priest Lake	119.3	64.1	53.2	56.5	PEND OREILLE RIVER	8	99	96
					KETTLE RIVER	1	250	162

* 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 Columbia River Basins



*Based on selected stations

Summer runoff average forecast for the Okanogan River is 106%, Similkameen River is 114%, Kettle River 108% and Methow River is 129%. January 1 snow cover on the Okanogan was 153% of normal, Omak Creek was 229% and the Methow was 137%. December precipitation in the Upper Columbia was 152% of average, with precipitation for the water year at 144% of average. December streamflow for the Methow River was 124% of average, 90% for the Okanogan River and 85% for the Similkameen. Snow-water content at Salmon Meadows SNOTEL was 9.1 inches. Average for this site is 4.7 inches on January 1. Combined storage in the Conconully Reservoirs was 18,000-acre feet, which is 75% of capacity and 109% of the January 1 average. Temperatures were 2 degrees above normal for December and for the water year.

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

Upper Columbia River Basins

Streamflow Forecasts - January 1, 2012

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)
		Chance Of Exceeding *						
		90% (1000AF)	70% (1000AF)	50% (1000AF) (% AVG.)		30% (1000AF)	10% (1000AF)	
Colville R at Kettle Falls	APR-JUL	60	104	134	113	164	208	119
	APR-SEP	67	115	148	113	181	229	131
Kettle R nr Laurier	APR-JUL	1850	2170	2380	132	2590	2910	1800
	APR-SEP	1930	2260	2490	132	2720	3050	1880
Similkameen R nr Nighthawk (1)	APR-JUL	920	1230	1370	114	1510	1820	1200
	APR-SEP	975	1310	1460	114	1610	1940	1280
Okanogan R nr Tonasket (1)	APR-JUL	755	1270	1500	101	1730	2250	1480
	APR-SEP	820	1400	1670	101	1940	2520	1650
Okanogan R at Malott (1)	APR-JUL	770	1310	1550	107	1790	2330	1450
	APR-SEP	835	1440	1720	106	2000	2610	1620
Methow R nr Pateros	APR-SEP	875	1050	1170	131	1290	1470	895
	APR-JUL	800	965	1080	129	1190	1360	835
Kettle R at Laurier (3)	APR-SEP	1520		2027	108		2734	1875

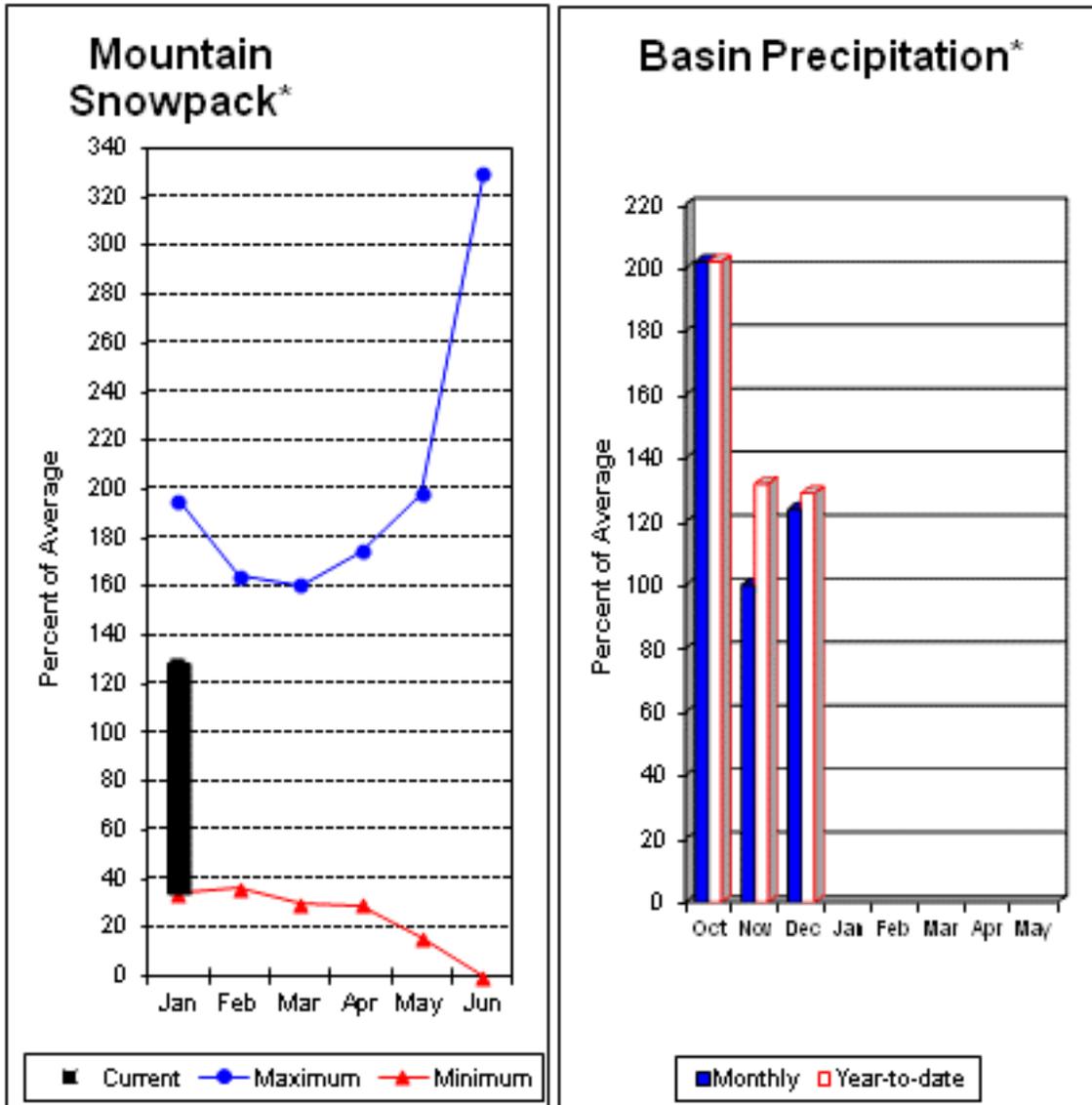
UPPER COLUMBIA RIVER BASINS Reservoir Storage (1000 AF) - End of December					UPPER COLUMBIA RIVER BASINS Watershed Snowpack Analysis - January 1, 2013			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
SALMON LAKE	10.5	8.5	8.4	---	OKANOGAN RIVER	2	129	153
CONCONULLY RESERVOIR	13.0	9.1	10.4	---	OMAK CREEK	1	313	229
					SANPOIL RIVER	0	0	0
					SIMILKAMEEN RIVER	0	0	0
					TOATS COULEE CREEK	0	0	0
					CONCONULLY LAKE	1	276	194
					METHOW RIVER	3	127	137

* 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.

Central Columbia River Basins



*Based on selected stations

Precipitation during December was 124% of average in the basin and 129% for the year-to-date. Runoff for Entiat River is forecast to be 109% of average for the summer. The April-September average forecast for Chelan River is 107%, Wenatchee River at Plain is 111%, Stehekin River is 108% and Icicle Creek is 102%. December average streamflows on the Chelan River were 110% and on the Wenatchee River 91%. January 1 snowpack in the Wenatchee River Basin was 124% of normal; the Chelan, 124%; the Entiat, 120%; Stemilt Creek, 126% and Colockum Creek, 146%. Reservoir storage in Lake Chelan was 387,000-acre feet, 94% of January 1 average and 57% of capacity. Lyman Lake SNOTEL had the most snow water with 32.2 inches of water. This site would normally have 26.4 inches on January 1. Temperatures were 2-4 degrees above normal for December and 2-3 degrees above normal for the water year.

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

Central Columbia River Basins

Streamflow Forecasts - January 1, 2012

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)				
Stehekin R at Stehekin	APR-JUL	570	660	725	107	790	880	680
	APR-SEP	680	780	850	108	920	1020	790
Chelan R at Chelan (2)	APR-JUL	860	980	1060	106	1140	1260	1000
	APR-SEP	960	1100	1200	107	1300	1440	1120
Entiat R nr Ardenvoir	APR-JUL	163	197	220	110	245	275	200
	APR-SEP	179	215	240	109	265	300	220
Wenatchee R at Plain	APR-JUL	850	1000	1100	111	1200	1350	990
	APR-SEP	925	1090	1200	111	1310	1470	1080
Icicle Ck nr Leavenworth	APR-JUL	215	255	280	102	305	345	275
	APR-SEP	235	275	305	102	335	375	300
Wenatchee R at Peshastin	APR-JUL	1160	1360	1500	110	1640	1840	1370
	APR-SEP	1260	1480	1630	109	1780	2000	1490

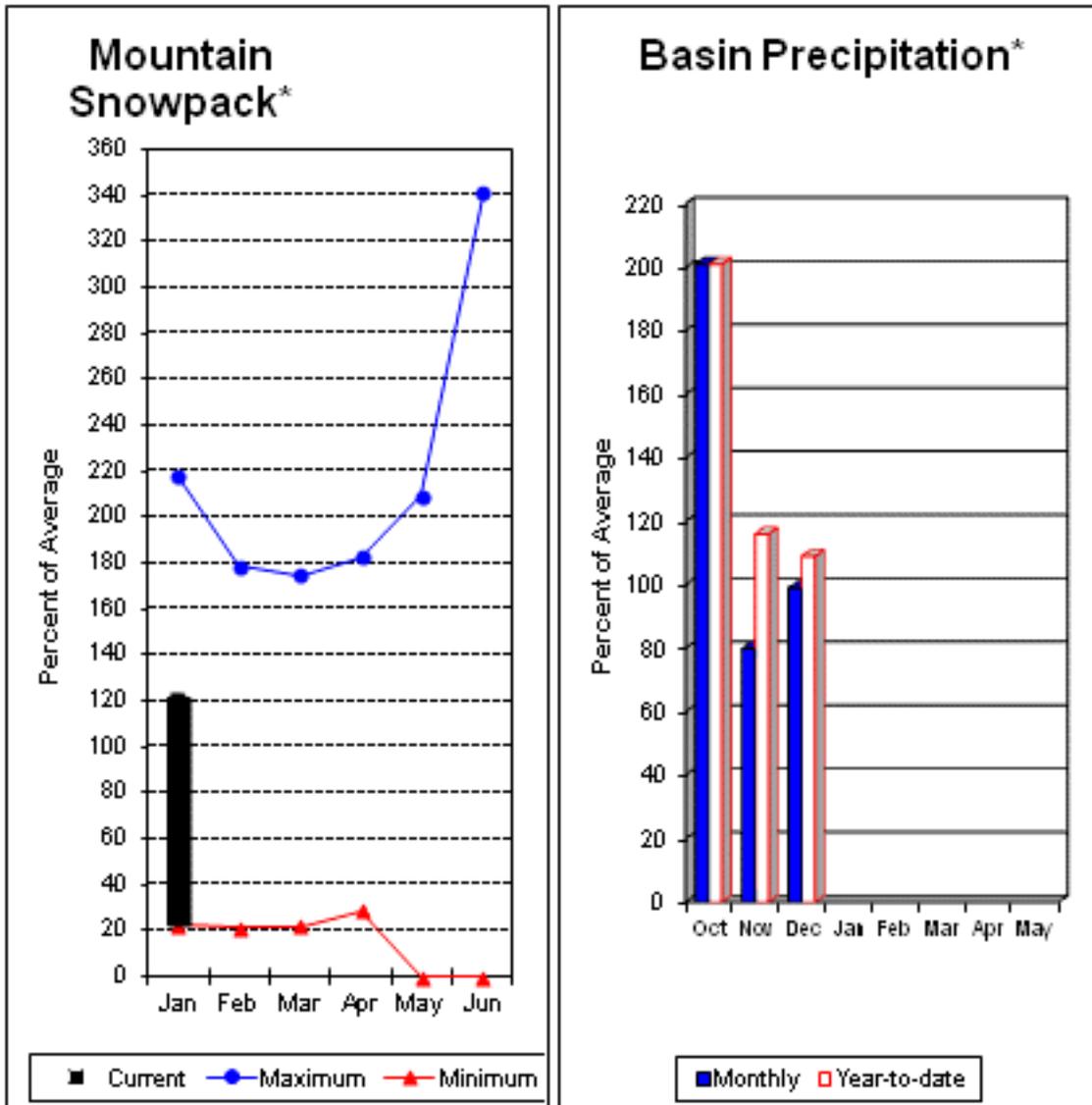
CENTRAL COLUMBIA RIVER BASINS Reservoir Storage (1000 AF) - End of December					CENTRAL COLUMBIA RIVER BASINS Watershed Snowpack Analysis - January 1, 2013			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
CHELAN LAKE	676.1	387.4	309.9	411.3	CHELAN LAKE BASIN	3	122	124
					ENTIAT RIVER	1	122	120
					WENATCHEE RIVER	7	133	124
					STEMILT CREEK	1	210	126
					COLOCKUM CREEK	1	195	146

* 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

January 1 reservoir storage for the Upper Yakima reservoirs was 539,000-acre feet, 156% of average. Forecasts for the Yakima River at Cle Elum are 101% of average and the Teanaway River near Cle Elum is at 107%. Lake inflows are all forecasted to be near average this summer. December streamflows within the basin were Cle Elum River near Roslyn at 95%. January 1 snowpack was 121% based upon 9 snow course and SNOTEL readings within the Upper Yakima Basin. Precipitation was 99% of average for December and 109% 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. A note worthy event was the loss of the Grouse Camp SNOTEL to the Table Mountain fire. The site was completely destroyed on September 19th. Snow Survey crews reinstalled the site as soon as fire officials would let us in, which wasn't until Late October.

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

Upper Yakima River Basin

Streamflow Forecasts - January 1, 2012

Forecast Point	Forecast Period	Future Conditions <<==== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)
		90% (1000AF)		70% (1000AF)		Chance Of Exceeding * 50% (1000AF) (% AVG.)		
		30% (1000AF)		10% (1000AF)				
Keechelus Reservoir Inflow (2)	APR-JUL	79	102	117	101	132	155	116
	APR-SEP	88	111	127	101	143	166	126
Kachess Reservoir Inflow (2)	APR-JUL	69	90	105	101	120	141	104
	APR-SEP	78	99	113	100	127	148	113
Cle Elum Lake Inflow (2)	APR-JUL	275	340	385	100	430	495	385
	APR-SEP	305	375	420	101	465	535	415
Yakima R at Cle Elum (2)	APR-JUL	515	655	750	99	845	985	755
	APR-SEP	570	720	820	99	920	1070	830
Teanaway R bl Forks nr Cle Elum	APR-JUL	83	117	140	108	163	197	130
	APR-SEP	85	119	142	107	165	199	133

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

Reservoir	Usable Capacity	*** Usable Storage ***		
		This Year	Last Year	Avg
KEECHELUS	157.8	93.7	91.3	68.5
KACHESS	239.0	172.7	146.8	113.4
CLE ELUM	436.9	272.6	288.5	164.0

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

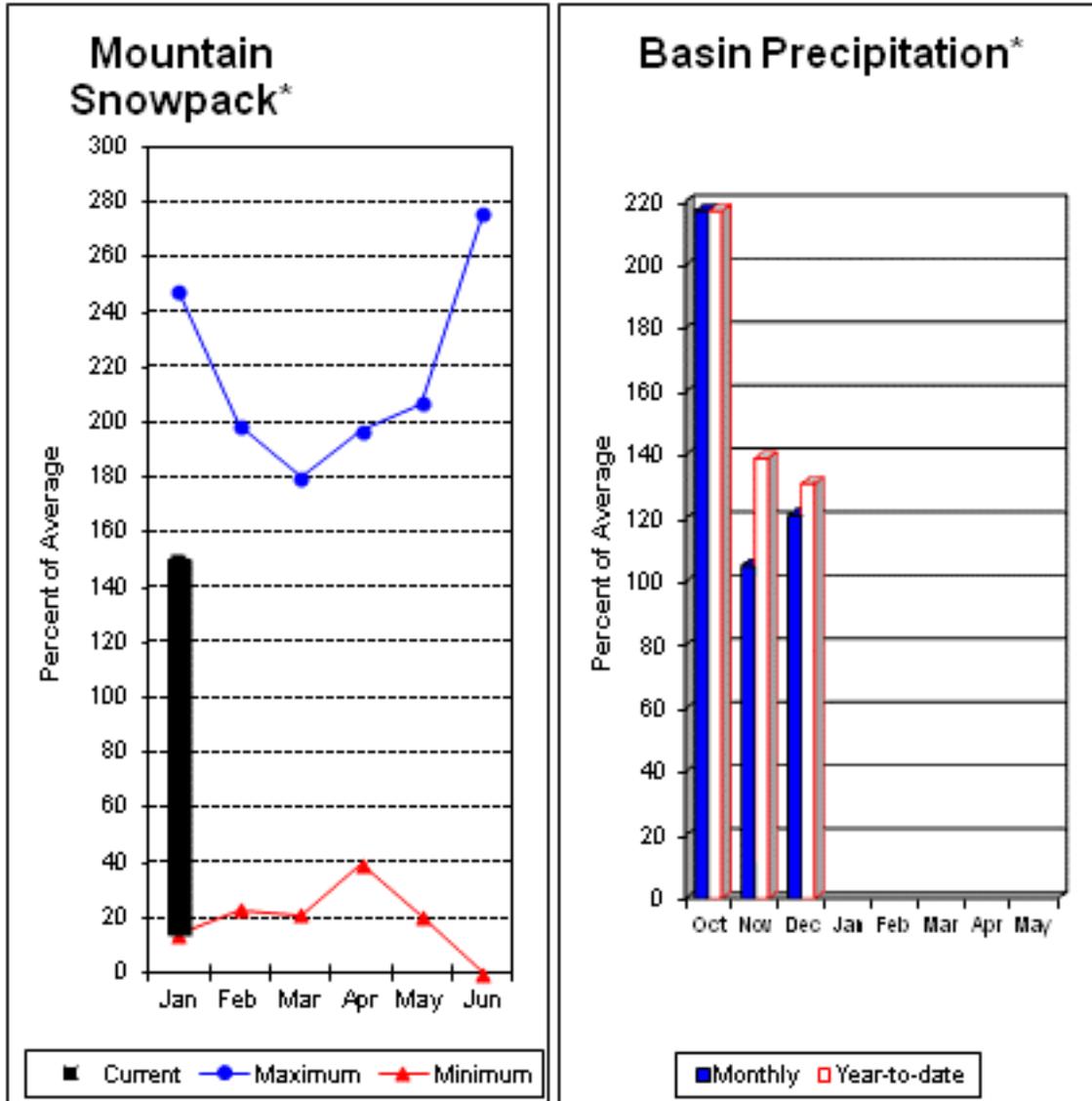
Reservoir	Watershed	Number of Data Sites	This Year as % of	
			Last Yr	Average
KEECHELUS	UPPER YAKIMA RIVER	9	118	121

* 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 Yakima River Basin



*Based on selected stations

December average streamflows within the basin were: Yakima River near Parker, 105%; Naches River near Naches, 110%; and Yakima River at Kiona, 105%. January 1 reservoir storage for Bumping and Rimrock reservoirs was 136,000-acre feet, 131% of average. Forecast averages for Yakima River near Parker are 112%; American River near Nile, 121%; Ahtanum Creek, 131%; and Klickitat River near Glenwood, 114%. January 1 snowpack was 150% based upon 7 snow course and SNOTEL readings within the Lower Yakima Basin and Ahtanum Creek reported in at 184% of normal. Precipitation was 121% of average for December and 131% year-to-date for water. Temperatures were 2-4 degrees above normal for December and for the water year. Volume forecasts for Yakima Basin are for natural flow. As such, they January differ from the U.S. Bureau of Reclamation's forecast for the total water supply available, which includes irrigation return flow. In cooperation with the Yakima Indian Nation Snow

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

Survey crews installed a new SNOTEL site near the historic Satus Pass snow course. Satus Pass SNOTEL will serve well in forecasting efforts for both Satus Creek and the Klickitat River.

Lower Yakima River Basin

Streamflow Forecasts - January 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.)	
Bumping Lake Inflow (2)	APR-JUL	89	108	120	105	132	151	114
	APR-SEP	98	118	131	107	144	164	123
American R nr Nile	APR-JUL	95	111	122	120	133	149	102
	APR-SEP	103	121	133	121	145	163	110
Rimrock Lake Inflow (2)	APR-JUL	156	182	200	107	220	245	187
	APR-SEP	185	215	235	107	255	285	220
Naches R nr Naches (2)	APR-JUL	570	685	765	109	845	960	700
	APR-SEP	615	745	830	109	915	1040	760
Ahtanum Ck at Union Gap	APR-JUL	19.8	29	35	130	41	50	27
	APR-SEP	22	32	38	131	44	54	29
Yakima R nr Parker (2)	APR-JUL	1340	1640	1850	111	2060	2360	1660
	APR-SEP	1480	1810	2030	112	2250	2580	1820
Klickitat R nr Glenwood	APR-JUL	108	129	144	114	159	180	126
	APR-SEP	119	142	158	114	174	197	139
Klickitat R nr Pitt	APR-JUL	400	465	510	117	555	620	435
	APR-SEP	480	560	610	117	660	740	520

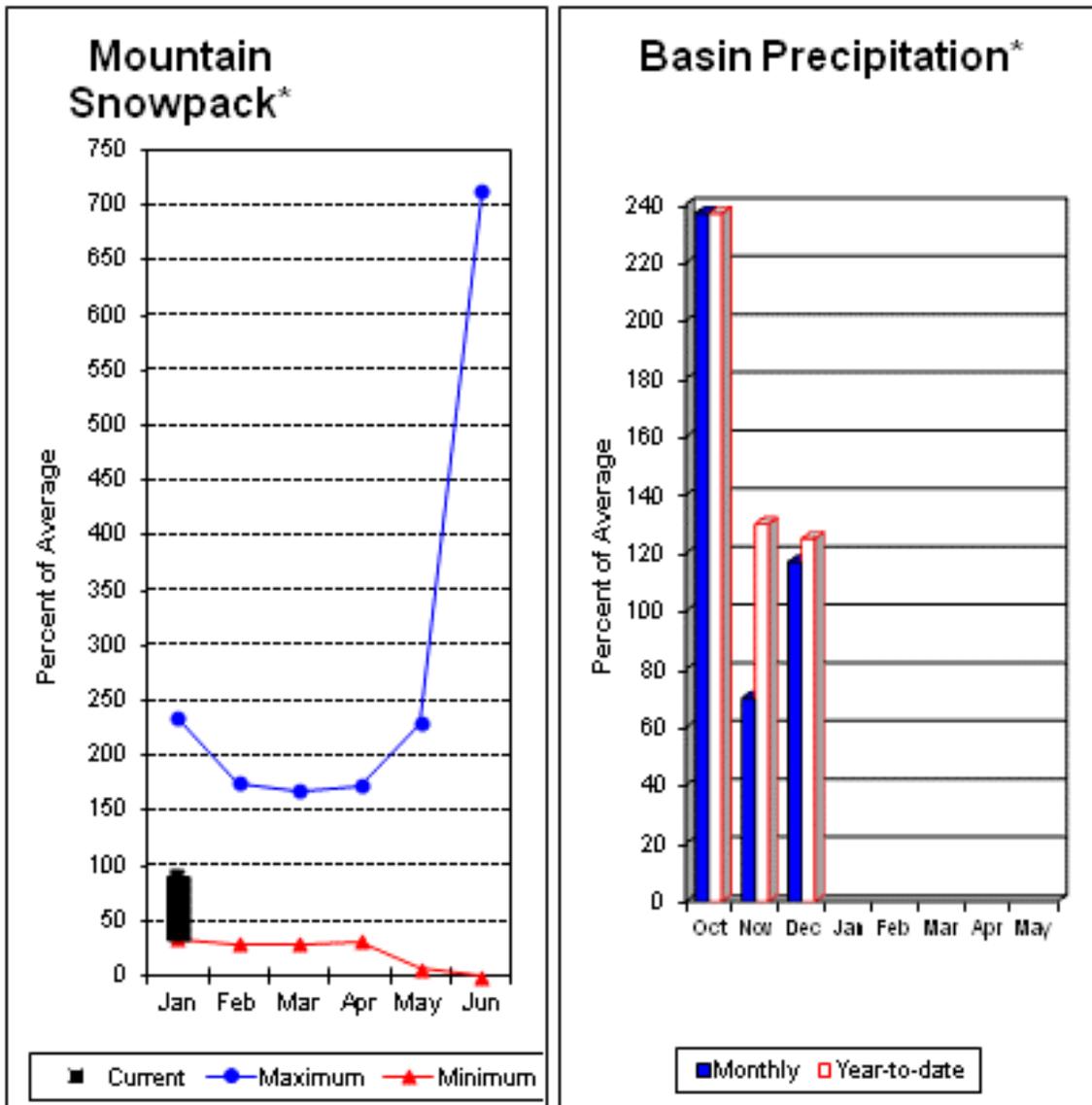
LOWER YAKIMA RIVER BASIN Reservoir Storage (1000 AF) - End of December					LOWER YAKIMA RIVER BASIN Watershed Snowpack Analysis - January 1, 2013			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
BUMPING LAKE	33.7	14.4	18.6	11.5	LOWER YAKIMA RIVER	7	155	150
RIMROCK	198.0	121.9	125.8	92.4	AHTANUM CREEK	2	184	184

* 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

December precipitation was 117% of average, maintaining the year-to-date precipitation at 125% of average. Snowpack in the basin was 90% of normal. Streamflow forecasts are 100% of average for Mill Creek and 96% for the SF Walla Walla near Milton-Freewater. December streamflow was 112% of average for the SF Walla Walla River. Average temperatures were 2-4 degrees above normal for December and for the water year.

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

Walla Walla River Basin

Streamflow Forecasts - January 1, 2012

Forecast Point	Forecast Period	Future Conditions <<==== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)				
		90% (1000AF)		70% (1000AF)		50% (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	17.2	21	24	100	27	31	24				
	APR-SEP	19.8	24	27	100	30	34	27				

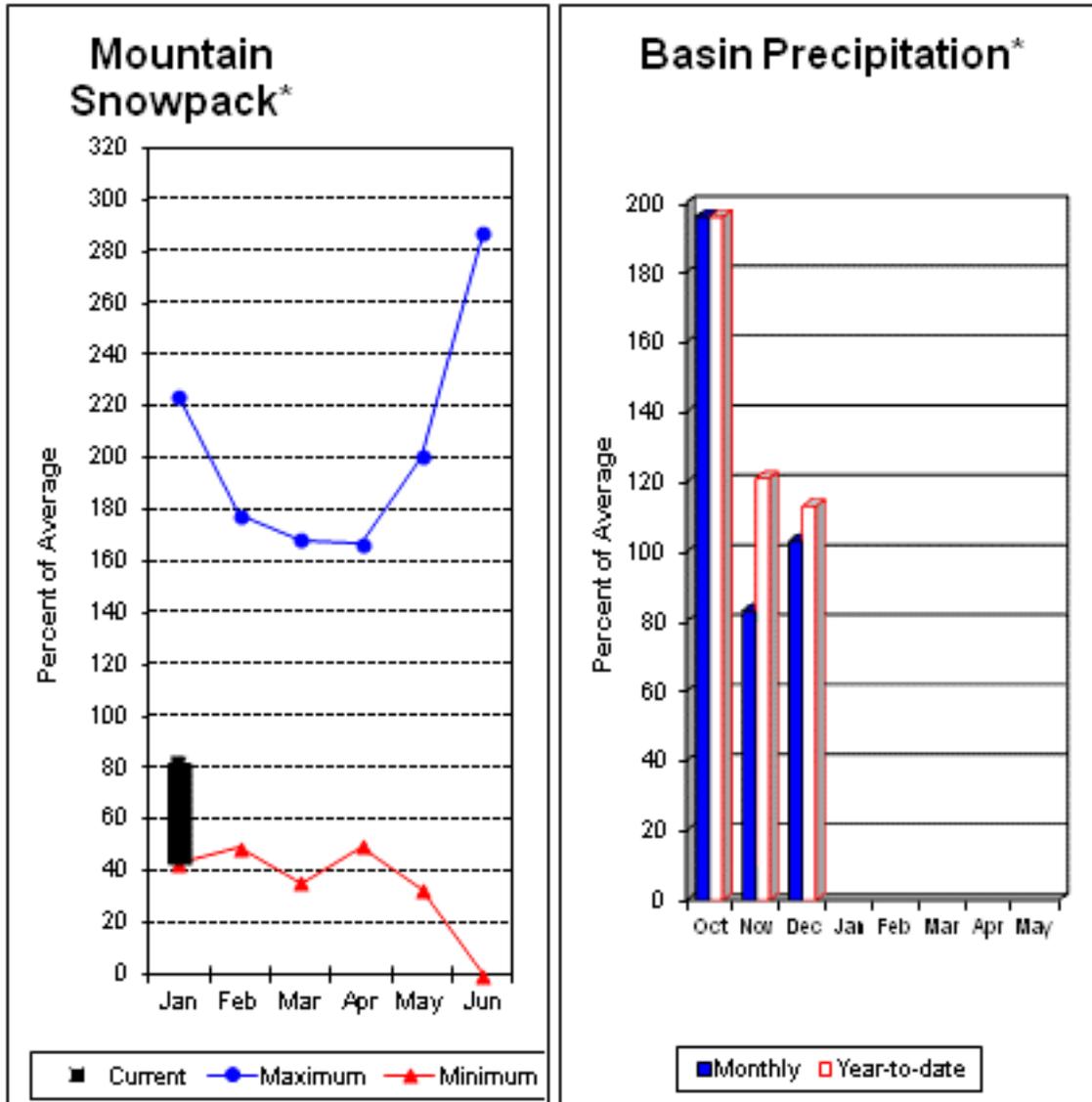
WALLA WALLA RIVER BASIN Reservoir Storage (1000 AF) - End of December					WALLA WALLA RIVER BASIN Watershed Snowpack Analysis - January 1, 2013			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
					WALLA WALLA RIVER	2	138	90

* 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 Snake River Basin



*Based on selected stations

The Snake and Grande Ronde rivers can expect summer flows to be about 101% and 99% of normal respectively. The forecast for Asotin Creek at Asotin predicts 117% of average flows for the April – July runoff period. December precipitation was 103% of average, bringing the year-to-date precipitation to 113% of average. January 1 snowpack readings averaged 82% of normal. December streamflow was 122% of average for Snake River below Lower Granite Dam and 124% for Grande Ronde River near Troy. Dworshak Reservoir storage was 65% of average. Average temperatures were 3-4 degrees above normal for December and for the water year.

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

Lower Snake River Basin

Streamflow Forecasts - January 1, 2012

Forecast Point	Forecast Period	<<===== Drier =====>>		Future Conditions		===== Wetter =====>>		30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (1000AF)	Chance Of Exceeding * (% AVG.)	30% (1000AF)	10% (1000AF)	
Grande Ronde R at Troy (1)	MAR-JUL	970	1340	1510	100	1680	2050	1510
	APR-SEP	785	1140	1300	99	1460	1810	1310
Asotin Ck at Asotin	APR-JUL	23	34	41	117	48	59	35
Snake R bl Lower Granite Dam (3)	APR-SEP	17279		22411	101		26953	22279

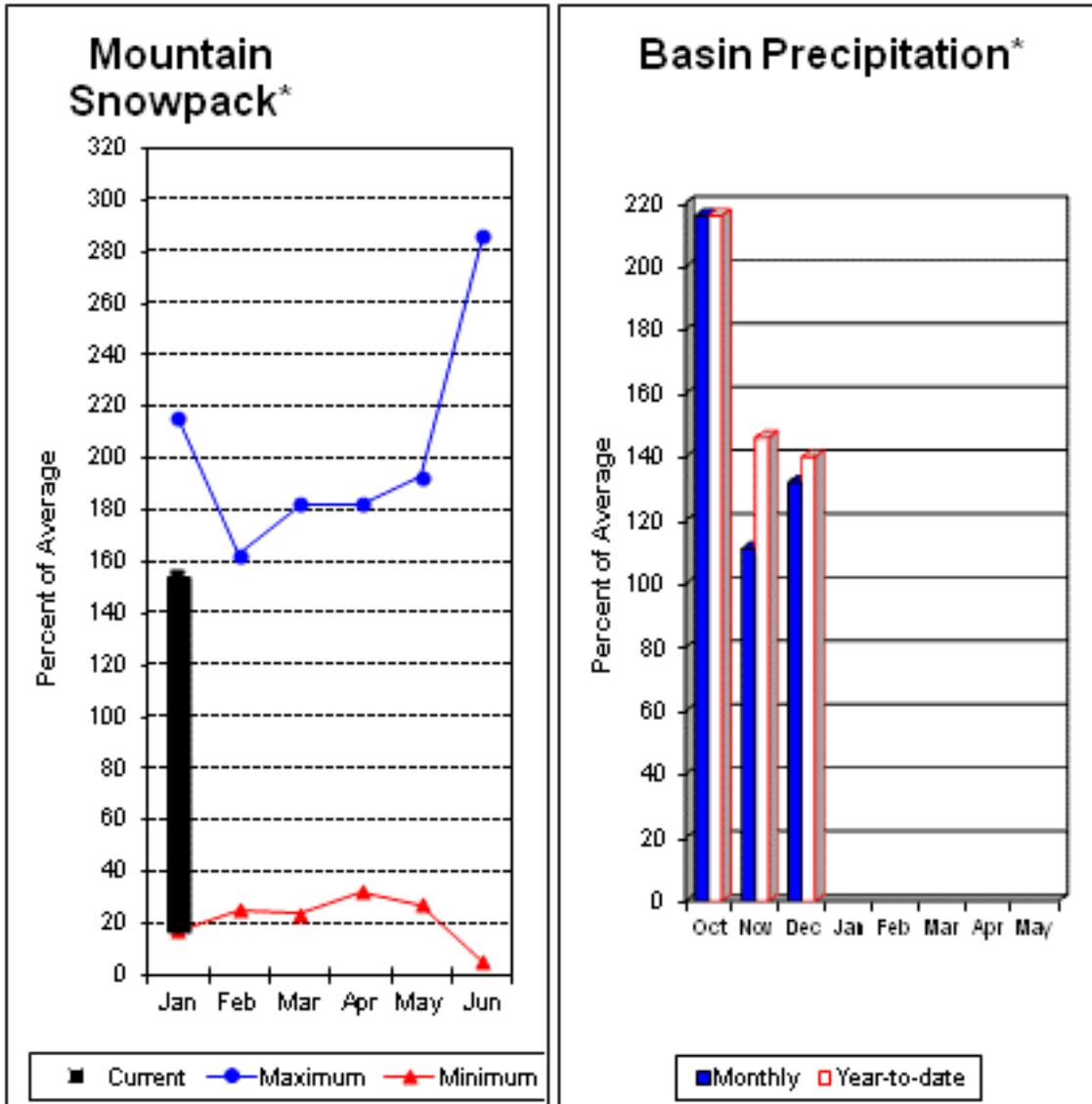
LOWER SNAKE RIVER BASIN Reservoir Storage (1000 AF) - End of December				LOWER SNAKE RIVER BASIN Watershed Snowpack Analysis - January 1, 2013				
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
Dworshak	3468.0	1565.4	2256.3	2403.0	LOWER SNAKE, GRANDE RONDE	12	115	80

* 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.
- (3) - As provided by Northwest River Forecast Center.

Lower Columbia River Basins



*Based on selected stations

Forecasts for April – September streamflows within the basin are Lewis River at Ariel, 117% and Cowlitz River at Castle Rock, 117% of average. The Columbia at The Dalles is forecasted to have 101% of average flows this summer according to the River Forecast Center. December average streamflow for Cowlitz River was 120%. The Columbia River at The Dalles was 134% of average. December precipitation was 132% of average and the water-year average was 140%. January 1 snow cover for Cowlitz River was 147%, and Lewis River was 162% of normal. Cayuse Pass SNOTEL reported the most snow in the basin with 35.2 inches of water and 116 inches of depth. Temperatures were near normal during December and for the water year.

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

Lower Columbia River Basins

Streamflow Forecasts - January 1, 2012

Forecast Point	Forecast Period	Future Conditions						30-Yr Avg. (1000AF)
		<<===== Drier =====>>		=====		>>===== Wetter =====>>		
		90% (1000AF)	70% (1000AF)	Chance Of Exceeding * 50% (1000AF) (% AVG.)		30% (1000AF)	10% (1000AF)	
Klickitat R nr Glenwood	APR-JUL	108	129	144	114	159	180	126
	APR-SEP	119	142	158	114	174	197	139
Klickitat R nr Pitt	APR-JUL	400	465	510	117	555	620	435
	APR-SEP	480	560	610	117	660	740	520
Lewis R at Ariel (2)	APR-JUL	785	960	1080	111	1200	1370	970
	APR-SEP	930	1120	1240	111	1360	1550	1120
Cowlitz R bl Mayfield Dam (2)	APR-JUL	1440	1740	1950	120	2160	2460	1620
	APR-SEP	1560	1940	2200	120	2460	2840	1840
Cowlitz R at Castle Rock (2)	APR-JUL	2060	2360	2570	115	2780	3080	2230
	APR-SEP	2360	2700	2940	117	3180	3520	2520
Columbia R at The Dalles (3)	APR-SEP	80810		93514	101		102558	92704

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

Reservoir	Usable Capacity	*** Usable Storage ***		
		This Year	Last Year	Avg
MOSSYROCK	---	1212.0	1253.7	1203.0
SWIFT	---	689.0	728.6	634.1
YALE	0.0	383.1	388.1	---
MERWIN	---	404.4	390.4	400.1

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

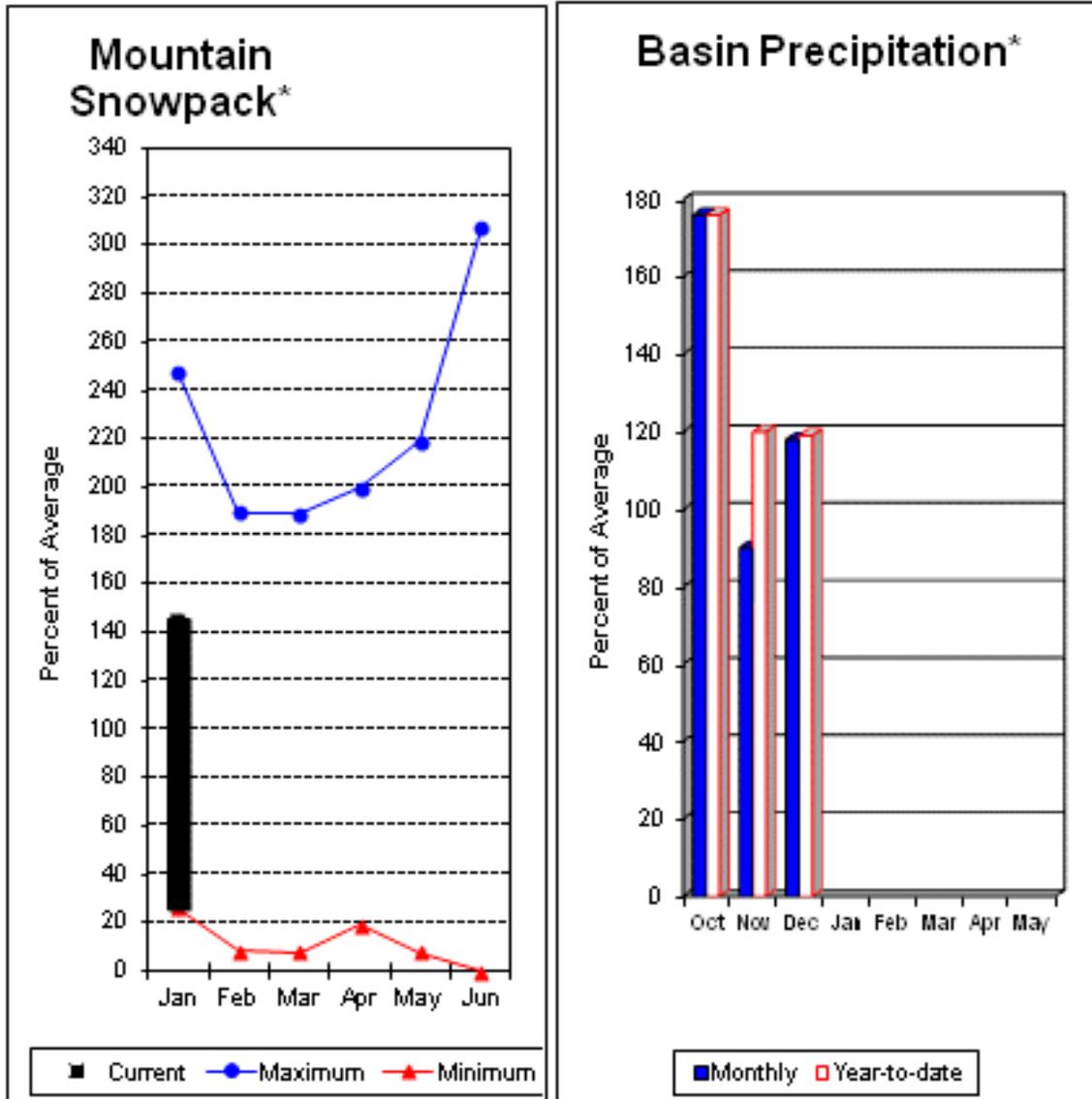
Watershed	Number of Data Sites	This Year as % of	
		Last Yr	Average
LEWIS RIVER	5	246	162
COWLITZ RIVER	6	172	147

* 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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- (3) - As provided by Northwest River Forecast Center.

South Puget Sound River Basins



*Based on selected stations

Summer runoff is forecast to be 112% of normal for the Green River below Howard Hanson Dam and 121% for the White River near Buckley. January 1 snowpack was 146% of average for the White River, 168% for Puyallup River and 120% in the Green River Basin. Water content on January 1 at Corral Pass SNOTEL, at an elevation of 6,000 feet, was 18.4 inches. This site has a January 1 average of 14.8 inches. December precipitation was 118% of average, bringing the water year-to-date to 119% of average for the basins. Average temperatures in the area were near normal for December and for the water-year.

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

South Puget Sound River Basins

Streamflow Forecasts - January 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)			
White R nr Buckley (1)	APR-JUL APR-SEP	410 495	490 585	525 625	122 121	560 665	640 755	430 515
Green R bl Howard Hanson Dam (1,2)	APR-JUL APR-SEP	178 205	240 265	265 290	113 112	290 315	350 375	235 260

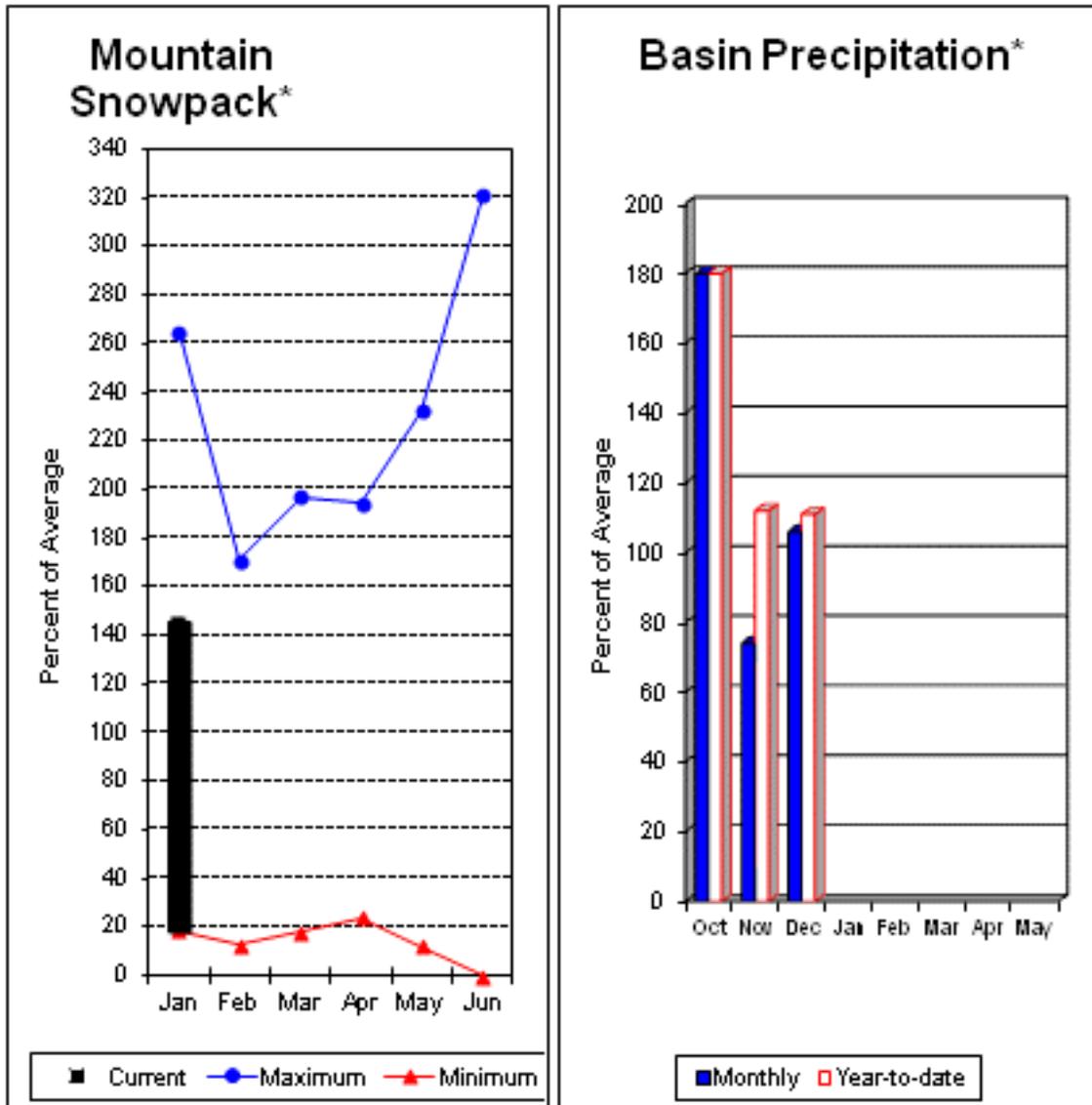
SOUTH PUGET SOUND RIVER BASINS Reservoir Storage (1000 AF) - End of December					SOUTH PUGET SOUND RIVER BASINS Watershed Snowpack Analysis - January 1, 2013			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
					WHITE RIVER	3	161	146
					GREEN RIVER	3	137	120
					PUYALLUP RIVER	5	158	168

* 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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Central Puget Sound River Basins



*Based on selected stations

Forecast for spring and summer flows are: 113% for Cedar River near Cedar Falls; 115% for Rex River; 137% for South Fork of the Tolt River; and 104% for Taylor Creek near Selleck. Basin-wide precipitation for December was 106% of average, bringing water-year-to-date to 111% of average. January 1 median snow cover in Cedar River Basin was 137%, Tolt River Basin was 170%, Snoqualmie River Basin was 138%, and Skykomish River Basin was 134%. Olallie Meadows SNOTEL site, at 3960 feet, had 26.75 inches of water content. Average January 1 water content is 19.5 inches at Olallie Meadows. Temperatures were near normal for December and for the water-year.

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

Central Puget Sound River Basins

Streamflow Forecasts - January 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)
		Chance Of Exceeding *										
		(1000AF) (% AVG.)										
Cedar R nr Cedar Falls	APR-JUL	54	69	79	113	89	104	70				
	APR-SEP	61	76	86	113	96	111	76				
Rex R nr Cedar Falls	APR-JUL	17.6	24	28	117	32	38	24				
	APR-SEP	21	27	31	115	35	41	27				
Taylor Creek Near Selleck	APR-JUL	15.2	18.7	21	105	23	27	20				
	APR-SEP	18.9	23	25	104	27	31	24				
SF Tolt R nr Index	APR-JUL	14.7	17.4	19.3	136	21	24	14.2				
	APR-SEP	17.2	20	22	137	24	27	16.1				

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

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

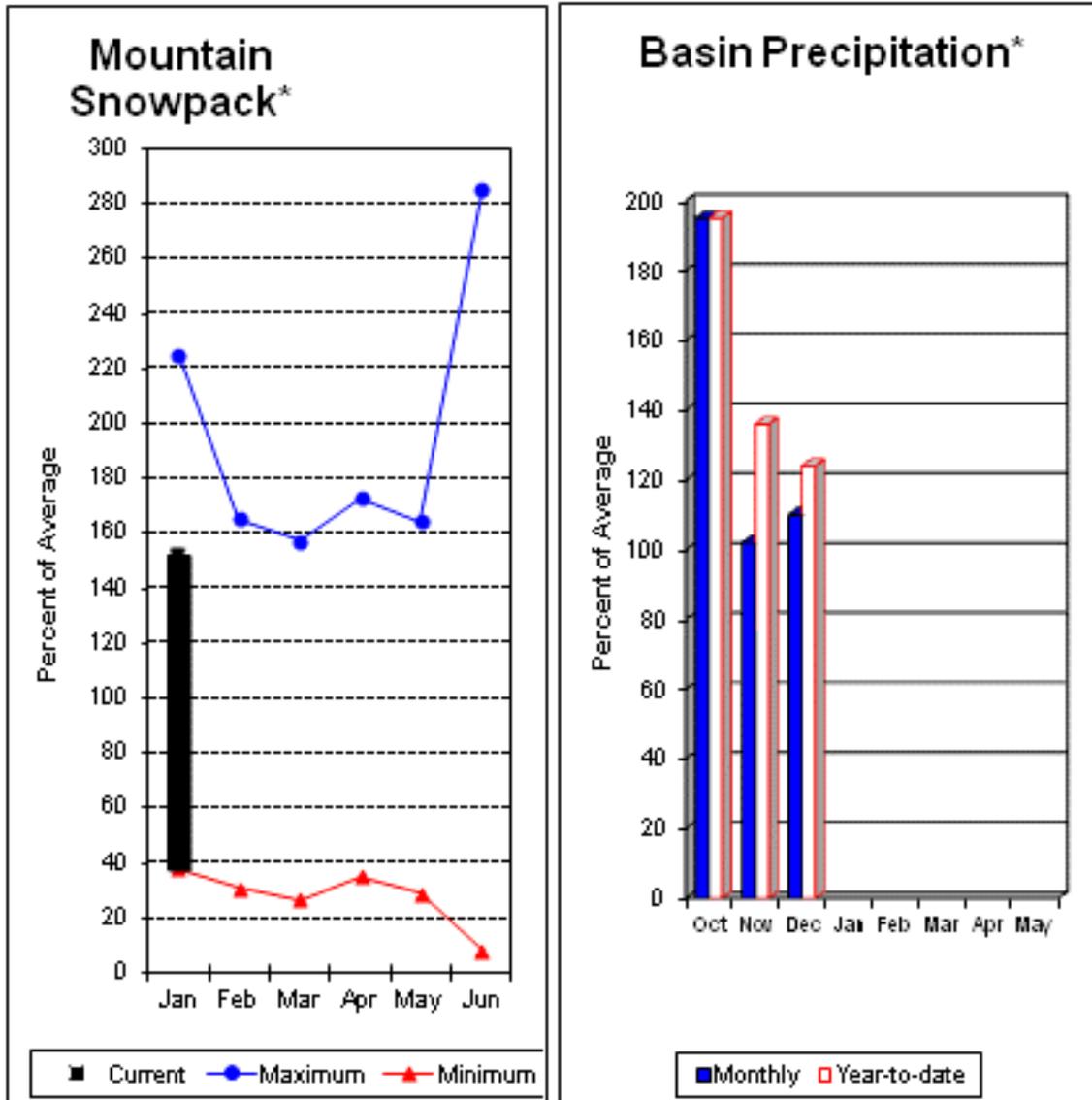
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
					CEDAR RIVER	4	104	137
					TOLT RIVER	2	181	170
					SNOQUALMIE RIVER	4	137	138
					SKYKOMISH RIVER	2	165	134

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North Puget Sound River Basins



*Based on selected stations

Forecast for Skagit River streamflow at Newhalem is 114% of average for the spring and summer period. December streamflow in Skagit River was 87% of average. Other forecast points included Baker River at 105% and Thunder Creek at 103% of average. Basin-wide precipitation for December was 110% of average, bringing water-year-to-date to 124% of average. January 1 average snow cover in Skagit River Basin was 140% and Nooksack River Basin was 162% 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 48.4 inches of water content, almost 30% more than any other site in the basin. January 1 Skagit River reservoir storage was 99% of average and 80% of capacity. Average temperatures for were near normal for December and for the water year.

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

North Puget Sound River Basins

Streamflow Forecasts - January 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.)	
Thunder Ck Nr Newhalem	APR-JUL	210	230	245	104	260	280	235
	APR-SEP	300	325	340	103	355	380	330
Skagit R At Newhalem	APR-JUL	1650	1840	1970	117	2100	2290	1680
	APR-SEP	1950	2170	2320	114	2470	2690	2030
Baker R nr Concrete (2)	APR-JUL	635	740	810	104	880	985	780
	APR-SEP	795	935	1030	105	1120	1260	980

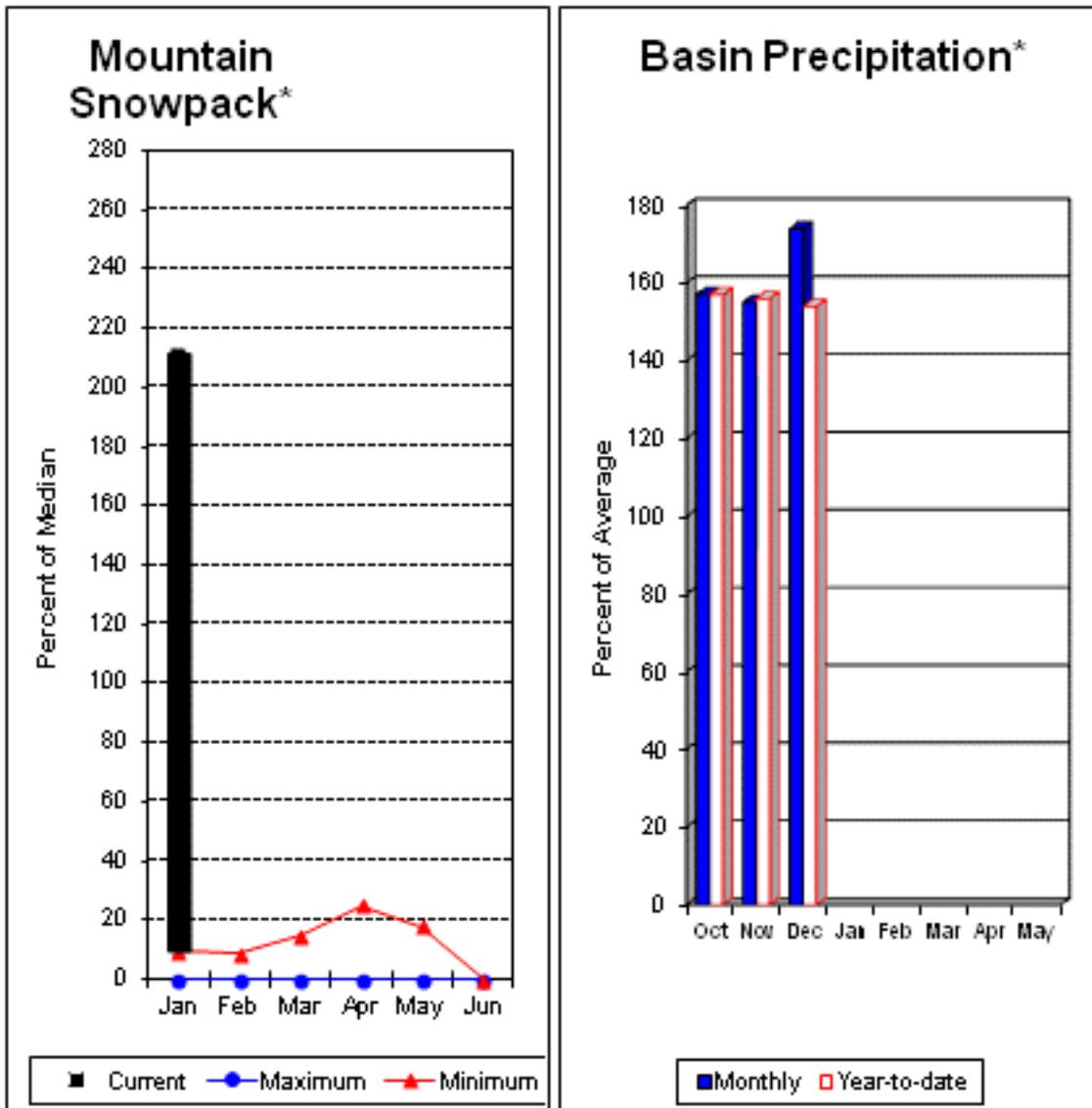
NORTH PUGET SOUND RIVER BASINS Reservoir Storage (1000 AF) - End of December					NORTH PUGET SOUND RIVER BASINS Watershed Snowpack Analysis - January 1, 2013			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
ROSS	1404.1	1123.8	1118.5	1135.0	SKAGIT RIVER	8	122	141
DIABLO RESERVOIR	90.6	85.6	85.7	---	BAKER RIVER	0	140	0
					NOOKSACK RIVER	3	135	162

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Olympic Peninsula River Basins



*Based on selected stations

Forecasted average runoff for streamflow for the Dungeness River is 111% and Elwha River is 119%. December runoff in the Dungeness River was 94% of normal. Big Quilcene and Wynoochee rivers should expect above average runoff this summer as well. December precipitation was 175% of average. Precipitation has accumulated at 154% of average for the water year. December precipitation at Quillayute was 17.53 inches. The 1981-2010 average for December is 14.5 inches. Olympic Peninsula snowpack averaged a whopping 211% of normal on January 1, the highest in the state. Temperatures were slightly below average for December and closer to normal for the water year.

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

Olympic Peninsula River Basins

Streamflow Forecasts - January 1, 2012

Forecast Point	Forecast Period	Future Conditions						30-Yr Avg. (1000AF)
		Drier		50%		Wetter		
		90% (1000AF)	70% (1000AF)	134 (1000AF)	112 (% AVG.)	30% (1000AF)	10% (1000AF)	
Dungeness R Nnr Sequim	APR-JUL	107	123	134	112	145	161	120
	APR-SEP	128	148	161	111	174	194	145
Elwha R At McDonald Bridge	APR-JUL	385	440	475	119	510	565	400
	APR-SEP	455	520	560	119	600	665	470

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

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

Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
					OLYMPIC PENINSULA	3	232	211

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Issued by

Jason Weller
Acting Chief
Natural Resources Conservation Service
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.



Washington Snow Survey Office
2021 E. College Way, Suite 214
Mount Vernon, WA 98273-2873



Washington Water Supply Outlook Report

Natural Resources Conservation Service
Spokane, WA

