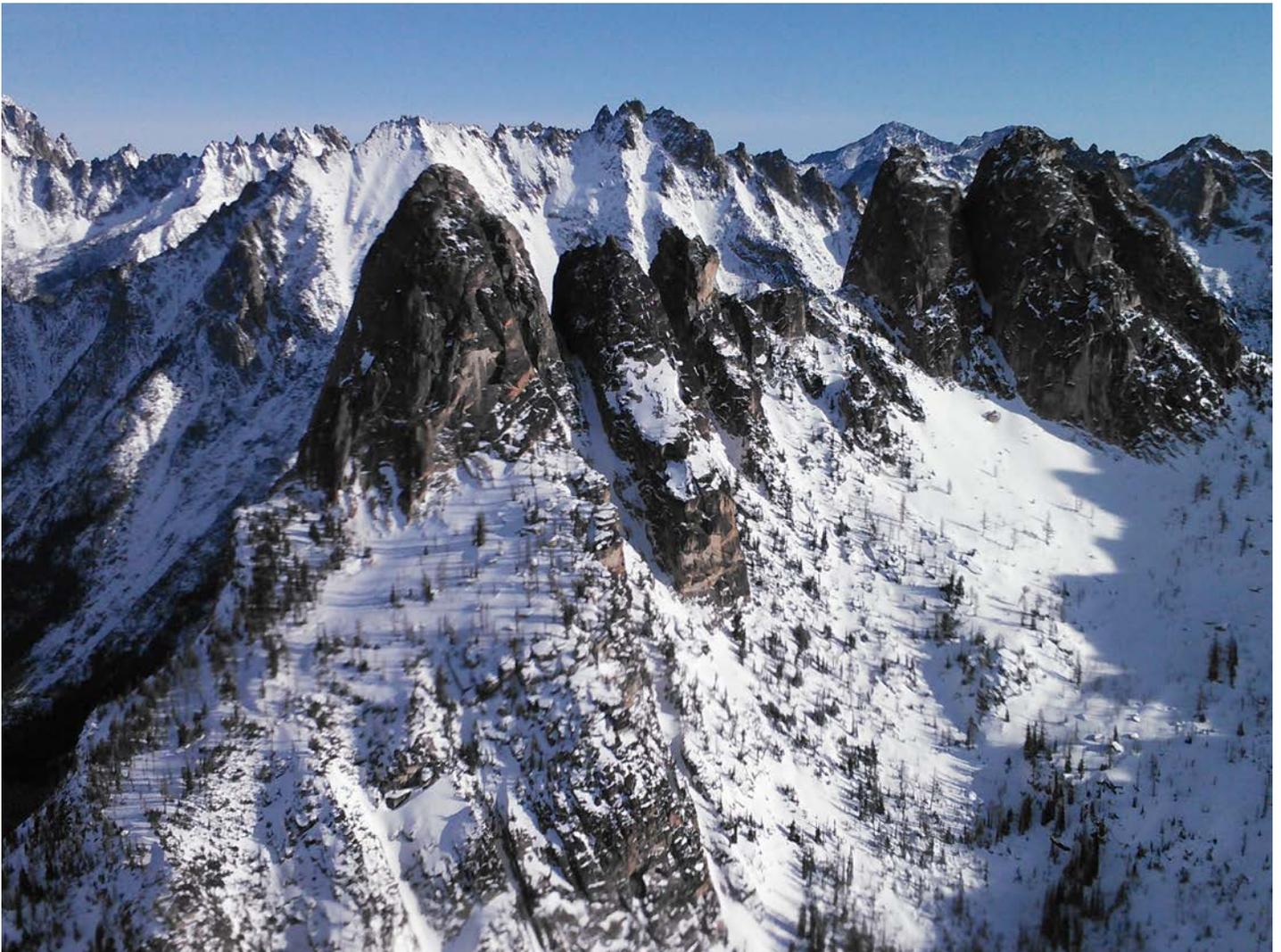


Washington Water Supply Outlook Report January 1, 2014



December 28, 2013, Liberty Bell Peaks at Washington Pass, North Cascade Range, Washington. One of the most avalanche prone areas along highway 20 and one of the main reasons this highway permanently closes in winter shows its bones due to a serious lack of snow. Photo by Keith Kingslien, Elite Productions, Helicopter pilot Doug Uttecht, Northwest Helicopters.

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

January 2014

General Outlook

What a difference a year makes. At this time last year we were swimming in snow and now we are high and dry like a beached whale. As of January 1 over 20% of our long term (more than 10 years) SNOTEL network set new record low snow water content levels and with every passing day without significant snowfall that trend continues. So far 2014 is tracking very close to recent low water supply years of 1990, 2001 and 2005. Mountain recreationists should be joyous for the short term weather forecasts calling for a significant disturbance which should bring good mountain snow, if only for a short time. A return to high pressure and dry weather for the rest of the month is the current call. Long term forecasts seem to be changing weekly as the indicators continue to dance the dance but currently Climate Prediction Center is forecasting for below normal temperatures and an equal chance for above, below or normal precipitation.

Snowpack

The January 1 statewide SNOTEL readings were 45% but vary across the state. So far we have should have received about 50% of our annual total snowfall however we fall well short of that at only about 18%. The Green River data reported the lowest readings at 16% of average followed closely by the Lewis River with 19%. Readings from the Pend Orielle, including Idaho and Montana data, reported the highest at 102% of normal. Westside medians from SNOTEL, and January 1 snow surveys, included the North Puget Sound river basins with 56% of normal, the Central and South Puget river basins with 46%, and the Lewis-Cowlitz basins with 34% of normal. Snowpack along the east slopes of the Cascade Mountains included the Yakima area with 42% and the Wenatchee area with 55%. Snowpack in the Spokane River Basin was at 74% and the Walla Walla River Basin had 59% of the long term median.

BASIN	PERCENT OF LAST YEAR	PERCENT OF AVERAGE
Spokane	80	74
Newman Lake	73	72
Pend Oreille	105	102
Okanogan	50	75
Methow	44	59
Conconully Lake	20	38
Central Columbia	53	55
Upper Yakima	30	40
Lower Yakima	30	45
Ahtanum Creek	30	55
Walla Walla	66	59
Lower Snake	97	78
Cowlitz	10	19
Lewis	31	50
White	31	64
Green	22	16
Puyallup	32	59
Cedar	21	29
Snoqualmie	32	44
Skykomish	44	58
Skagit	37	44
Nooksack	42	69
Olympic Peninsula	11	24

Precipitation

The first three months of the water-year 2014 delivered dryer than normal conditions throughout Washington river basins. The highest percent of average was reported in the Walla Walla Basin with a December total of 115% however water-year average remained below normal at 84%. The Olympic Peninsula suffered the worst with only 31% for the water-year. The wettest spot in the state was reported at Alpine Meadows SNOTEL in the Tolt River Basin with a water-year accumulation of 45.6 inches, almost 15 inches below normal or 76% of average. Wenatchee reported only 0.19 inches of rain for December and 0.80 inches for the water-year.

RIVER BASIN	DECEMBER PERCENT OF AVERAGE	WATER YEAR PERCENT OF AVERAGE
Spokane	61	65
Pend Oreille	50	63
Upper Columbia	31	48
Central Columbia	46	51
Upper Yakima	73	66
Lower Yakima	56	53
Walla Walla	115	84
Lower Snake	86	74
Lower Columbia	54	55
South Puget Sound	92	72
Central Puget Sound	86	73
North Puget Sound	52	53
Olympic Peninsula	25	31

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 2014 ended decent reservoir surplus. In fact several had to be drawn down in anticipation for winter runoff and flood control storage. Reservoir storage in the Yakima Basin was 411,000-acre feet, 119% of average for the Upper Reaches and 145,000-acre feet or 140% of average for Rimrock and Bumping Lakes. The power generation reservoirs included the following: Coeur d'Alene Lake, 50,000 acre feet, 54% of average and 21% of capacity; and the Skagit River reservoirs at 96% of average and 66% 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	21	54
Pend Oreille	34	76
Upper Columbia		
Central Columbia		
Upper Yakima	49	119
Lower Yakima	63	140
Lower Snake	66	96
North Puget Sound	48	59

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

Streamflow

Forecasts vary from 51% of average for the Methow near Pateros to 101% of average for the Pend Oreille. April-September forecasts for some Western Washington streams include the Cedar River near Cedar Falls, 86%; White River, 91%; and Skagit River, 76%. Some Eastern Washington streams include the Yakima River near Parker, 65%; Wenatchee River at Plain, 70%; and Spokane River near Post Falls, 81%. 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.

BASIN	PERCENT OF AVERAGE (50 PERCENT CHANCE OF EXCEEDENCE)
Spokane	57-84
Pend Oreille	73-101
Upper Columbia	51-109
Central Columbia	52-92
Upper Yakima	59-72
Lower Yakima	62-78
Walla Walla	85-91
Lower Snake	77-91
Lower Columbia	66-93
South Puget Sound	79-91
Central Puget Sound	81-87
North Puget Sound	74-88
Olympic Peninsula	70-73

STREAM	PERCENT OF AVERAGE DECEMBER STREAMFLOWS
Pend Oreille at Albeni Fall Dam	69
Kettle at Laurier	102
Columbia at Birchbank	79
Spokane at Spokane	70
Similkameen at Nighthawk	117
Okanogan at Tonasket	110
Methow at Pateros	120
Chelan at Chelan	49
Wenatchee at Pashastin	82
Cle Elum near Roslyn	102
Yakima at Parker	113
Naches at Naches	116
Grande Ronde at Troy	109
Snake below Lower Granite Dam	77
Columbia River at The Dalles	80
Cowlitz below Mayfield Dam	91
Skagit at Concrete	61
Dungeness near Sequim	34

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. Light fall precipitation created drier than optimal soils moisture conditions coming into winter. No good news with the current state of mountain snowpack. Much more snow will be needed to make up for any soil moisture deficits.

BASIN	ESTIMATED PERCENT SATURATION
Spokane	52
Pend Oreille	65
Upper Columbia	25
Central Columbia	64
Upper Yakima	62
Lower Yakima	68
Walla Walla	68
Lower Snake	68
Lower Columbia	71
South Puget Sound	75
Central Puget Sound	N/A
North Puget Sound	68
Olympic Peninsula	34

BASIN SUMMARY OF
SNOW COURSE DATA

JANUARY 2014

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	1/01/14	22	12.2	29.3	19.8	MISSION CREEK CAN.	5840	1/01/14	37	11.2	9.4	9.3
ASHLEY DIVIDE	4820	12/30/13	14	3.4	--	2.6	MONASHEE PASS CAN.	4500	1/04/14	33	9.0	4.1	6.6
BADGER PASS SNOTEL	6900	1/01/14	49	13.9	13.0	12.5	MORSE LAKE SNOTEL	5410	1/01/14	25	9.5	33.8	22.0
BARKER LAKES SNOTEL	8250	1/01/14	32	7.9	6.8	5.9	MOSES MTN SNOTEL	5010	1/01/14	10	2.6	14.4	6.3
BASIN CREEK SNOTEL	7180	1/01/14	24	6.0	2.7	3.6	MOSQUITO RDG SNOTEL	5200	1/01/14	43	13.0	16.4	13.0
BEAVER CREEK TRAIL	2200	12/29/13	2	.3	9.1	4.2	MOULTON RESERVOIR	6850	1/02/14	14	2.7	2.4	2.8
BEAVER PASS	3680	12/29/13	11	1.7	17.4	10.5	MOUNT CRAG SNOTEL	3960	1/01/14	3	1.8	26.8	11.3
BEAVER PASS SNOTEL	3630	1/01/14	22	5.9	27.5	15.5	MT. KOBAN CAN.	5500	12/28/13	14	2.6	--	5.4
BLACK PINE SNOTEL	7100	1/01/14	19	4.2	4.1	4.2	MOWICH SNOTEL	3160	1/01/14	0	.0	4.8	.0
BLACKWALL PILL CAN.	6370	1/01/14	42	12.0	19.4	15.4	MOUNT GARDNER SNOTEL	2920	1/01/14	0	.0	8.6	6.3
BLEWETT PASS#2SNOTEL	4240	1/01/14	6	2.4	8.5	6.6	N.F. ELK CR SNOTEL	6250	1/01/14	22	5.1	4.1	4.5
BROWN TOP AM	6000	12/29/13	49	7.7	31.0	26.2	NEVADA RIDGE SNOTEL	7020	1/01/14	25	5.7	5.9	5.6
BUCKINGHORSE SNOTEL	4870	1/01/14	8	4.2	43.5	--	NEW HOZOMEEN LAKE	2800	12/30/13	4	.6	5.4	--
BUMPING LAKE (NEW)	3400	1/02/14	0	.0	10.6	6.6	NEZ PERCE CMP SNOTEL	5650	1/01/14	23	5.8	5.0	5.8
BUMPING RIDGE SNOTEL	4610	1/01/14	12	4.0	13.7	10.4	NOISY BASIN SNOTEL	6040	1/01/14	74	21.2	18.0	16.1
BUNCHGRASS MDWSNOTEL	5000	1/01/14	40	9.3	13.2	11.6	OLALLIE MDWS SNOTEL	4030	1/01/14	32	9.8	26.7	19.5
BURNT MOUNTAIN PIL	4170	1/01/14	4	1.9	11.1	4.5	OPHIR PARK	7150	1/01/14	21	5.0	5.3	5.7
CALAMITY SNOTEL	2500	1/01/14	0	.0	5.1	--	PARADISE SNOTEL	5130	1/01/14	42	15.7	34.9	29.0
CAYUSE PASS SNOTEL	5240	1/01/14	24	7.5	35.2	--	PARK CK RIDGE SNOTEL	4600	1/01/14	20	7.8	25.8	19.2
CHESSMAN RESERVOIR	6200	12/29/13	7	1.2	--	1.4	PEPPER CREEK SNOTEL	2140	1/01/14	0	.0	6.3	--
COMBINATION SNOTEL	5600	1/01/14	6	1.3	1.9	2.0	PETERSON MDW SNOTEL	7200	1/01/14	20	4.8	4.1	4.0
COPPER BOTTOM SNOTEL	5200	1/01/14	9	2.8	2.4	--	PIGTAIL PEAK SNOTEL	5800	1/01/14	47	15.9	24.4	21.0
CORRAL PASS SNOTEL	5800	1/01/14	28	10.1	18.4	14.8	PIKE CREEK SNOTEL	5930	1/01/14	17	3.7	4.6	9.7
COUGAR MTN. SNOTEL	3200	1/01/14	0	.0	10.3	6.6	POPE RIDGE SNOTEL	3590	1/01/14	5	2.2	10.6	8.8
COYOTE HILL	4200	12/27/13	17	4.1	2.3	3.2	POTATO HILL SNOTEL	4510	1/01/14	17	6.7	16.6	11.5
DALY CREEK SNOTEL	5780	1/01/14	18	4.2	4.6	4.5	QUARTZ PEAK SNOTEL	4700	1/01/14	25	7.0	9.6	9.7
DEVILS PARK	5900	12/30/13	45	13.9	19.6	--	RAGGED MOUNTAIN	4200	1/01/14	23	6.6	13.8	9.8
DISCOVERY BASIN	7050	12/31/13	15	3.2	3.9	3.8	RAGGED MTN SNOTEL	4210	1/01/14	23	6.9	10.3	12.5
DIX HILL	6400	1/01/14	13	2.4	3.4	3.9	RAINY PASS SNOTEL	4890	1/01/14	27	8.0	17.8	15.7
DOMMERIE FLATS	2200	12/31/13	0	.0	3.9	4.1	RAINY PASS	4780	12/28/13	34	8.6	20.0	--
DUNGENESS SNOTEL	4010	1/01/14	1	.4	9.3	3.2	REX RIVER SNOTEL	3810	1/01/14	10	4.6	17.7	12.9
ELBOW LAKE SNOTEL	3200	1/01/14	13	4.9	21.4	13.9	ROCKER PEAK SNOTEL	8000	1/01/14	31	7.3	4.7	6.0
EMERY CREEK SNOTEL	4350	1/01/14	33	8.7	6.3	5.9	SADDLE MTN SNOTEL	7900	1/01/14	50	13.0	10.7	10.5
FARRON CAN.	4000	12/31/13	20	4.6	5.6	6.1	SALMON MDWS SNOTEL	4460	1/01/14	6	1.8	9.1	4.7
FISH CREEK	8000	1/02/14	31	8.2	4.0	3.6	SASSE RIDGE SNOTEL	4340	1/01/14	21	5.5	16.3	11.7
FISH LAKE	3370	12/30/13	21	7.8	16.8	12.0	SATUS PASS	3960	1/01/14	3	1.8	6.6	--
FISH LAKE SNOTEL	3430	1/01/14	17	5.3	13.9	13.0	SAVAGE PASS SNOTEL	6170	1/01/14	39	8.9	10.8	10.3
FLATTOP MTN SNOTEL	6300	1/01/14	74	19.4	22.6	18.5	SAWMILL RIDGE SNOTEL	4640	1/01/14	14	5.8	19.7	--
FOURTH OF JULY SUM	3200	12/31/13	8	1.9	4.7	3.0	SENTINEL BT SNOTEL	4680	1/01/14	15	3.7	6.0	3.7
FROHNER MDWS SNOTEL	6480	1/01/14	16	3.3	3.5	3.1	SHEEP CANYON SNOTEL	3990	1/01/14	8	3.4	26.4	15.1
GRAVE CRK SNOTEL	4300	1/01/14	35	8.9	5.2	6.6	SHERWIN SNOTEL	3200	1/01/14	---	2.8	3.2	4.5
GREEN LAKE SNOTEL	5920	1/01/14	20	6.7	16.4	9.4	SKALKAHO SNOTEL	7260	1/01/14	35	7.9	9.3	8.7
GREYBACK RES CAN.	4700	12/29/13	25	6.5	--	4.3	SKOOKUM CREEK SNOTEL	3310	1/01/14	12	3.4	20.6	9.6
GROUSE CAMP SNOTEL	5390	1/01/14	13	5.0	13.5	8.6	SOURDOUGH GUL SNOTEL	4000	1/01/14	1	.5	1.1	.6
HAND CREEK SNOTEL	5030	1/01/14	26	5.5	4.1	4.2	SPENCER MDW SNOTEL	3400	1/01/14	4	2.0	18.8	12.4
HARTS PASS SNOTEL	6490	1/01/14	38	12.6	25.2	17.7	SPIRIT LAKE SNOTEL	3520	1/01/14	0	.0	15.7	3.1
HARTS PASS	6500	12/28/13	39	11.5	24.4	--	SPOTTED BEAR MTN.	7000	12/29/13	22	5.3	5.1	5.3
HELL ROARING DIVIDE	5770	12/31/13	52	14.7	16.0	11.0	SPRUCE SPGS SNOTEL	5700	1/01/14	17	3.6	3.9	7.1
HIGH RIDGE SNOTEL	4920	1/01/14	19	6.0	8.4	11.0	STAHL PEAK SNOTEL	6030	1/01/14	55	15.4	13.6	15.1
HOLBROOK	4530	1/01/14	12	2.8	2.1	3.2	STAMPEDE PASS SNOTEL	3850	1/01/14	10	3.9	14.6	17.4
HOODOO BASIN SNOTEL	6050	1/01/14	50	13.3	17.2	16.6	STEVENS PASS SNOTEL	3950	1/01/14	32	9.3	20.0	17.0
HUCKLEBERRY SNOTEL	2250	1/01/14	0	.0	3.0	.9	STORM LAKE	7780	12/31/13	23	5.6	5.4	5.1
HUMBOLDT GLCH SNOTEL	4250	1/01/14	22	5.1	4.4	5.7	SUMMERLAND RES CAN.	4200	1/02/14	22	4.8	3.8	4.5
INDIAN ROCK SNOTEL	5360	1/01/14	4	2.5	21.0	--	SUNSET SNOTEL	5540	1/01/14	27	6.9	7.0	7.5
ISINTOK LAKE CAN.	5100	1/02/14	16	2.3	3.3	3.4	SURPRISE LKS SNOTEL	4290	1/01/14	14	5.2	28.0	19.9
JUNE LAKE SNOTEL	3440	1/01/14	6	2.4	29.8	16.6	SWAMP CREEK SNOTEL	3930	1/01/14	21	6.6	8.9	5.8
KELLOGG PEAK	5560	12/31/13	20	4.7	8.1	11.8	SWIFT CREEK SNOTEL	4440	1/01/14	11	5.2	39.6	23.4
KLESILKWA CAN.	3450	1/04/14	4	.9	7.2	4.6	TEN MILE LOWER	6600	12/26/13	16	4.2	--	2.7
KRAFT CREEK SNOTEL	4750	1/01/14	36	7.8	3.3	--	TEN MILE MIDDLE	6800	12/26/13	23	5.8	--	4.3
LOLO PASS SNOTEL	5240	1/01/14	41	9.9	8.6	11.0	THUNDER BASIN SNOTEL	4320	1/01/14	17	5.8	17.9	14.2
LONE PINE SNOTEL	3930	1/01/14	5	1.8	31.5	15.3	TINKHAM CREEK SNOTEL	2990	1/01/14	8	3.2	12.5	9.8
LOOKOUT SNOTEL	5140	1/01/14	32	7.7	9.7	11.9	TOUCHET SNOTEL	5530	1/01/14	22	8.2	13.2	12.9
LOST HORSE SNOTEL	5120	1/01/14	8	2.2	13.4	6.8	TRINKUS LAKE	6100	1/02/14	68	19.7	19.1	16.9
LOST LAKE SNOTEL	6110	1/01/14	62	19.8	17.7	22.5	TROUGH #2 SNOTEL	5480	1/01/14	12	4.6	7.6	5.2
LUBRECHT FOREST NO 3	5450	12/31/13	11	1.9	1.3	2.2	TRUMAN CREEK	4060	12/30/13	7	1.0	--	1.9
LUBRECHT FOREST NO 4	4650	12/31/13	3	.6	.8	1.2	TUNNEL AVENUE	2450	12/31/13	0	.0	6.1	6.3
LUBRECHT FOREST NO 6	4040	12/31/13	4	1.0	1.2	1.3	TWELVEMILE SNOTEL	5600	1/01/14	22	4.8	5.8	6.6
LUBRECHT HYDROPLOT	4200	12/31/13	7	1.5	1.2	2.0	TWIN LAKES SNOTEL	6400	1/01/14	51	11.9	13.0	16.1
LUBRECHT SNOTEL	4680	1/01/14	6	1.6	1.6	2.4	TWIN SPIRIT DIVIDE	3480	1/01/14	5	1.8	3.6	6.2
LYMAN LAKE SNOTEL	5980	1/01/14	51	12.7	32.2	26.4	UPPER HOLLAND LAKE	6200	1/02/14	56	14.8	11.2	13.0
LYNN LAKE SNOTEL	3900	1/01/14	7	3.1	13.5	--	UPPER WHEELER SNOTEL	4330	1/01/14	4	2.3	6.3	5.0
MARIAS PASS	5250	12/30/13	28	6.9	--	5.8	WARM SPRINGS SNOTEL	7800	1/01/14	40	9.2	7.9	8.6
MARTEN RIDGE SNOTEL	3520	1/01/14	28	8.3	33.1	--	WATERHOLE SNOTEL	5010	1/01/14	13	5.5	30.5	17.0
MEADOWS CABIN	1900	12/28/13	2	.4	3.1	--	WEASEL DIVIDE	5450	12/30/13	47	13.6	14.2	12.6
MEADOWS PASS SNOTEL	3230	1/01/14	8	3.3	13.6	9.3	WELLS CREEK SNOTEL	4030	1/01/14	20	7.1	21.2	12.5
M F NOOKSACK SNOTEL	4970	1/01/14	43	17.5	26.9	16.6	WHITE PASS ES SNOTEL	4440	1/01/14	8	2.9	12.2	9.0
MICA CREEK SNOTEL	4510	1/01/14	29	8.9	8.7	11.0							



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>

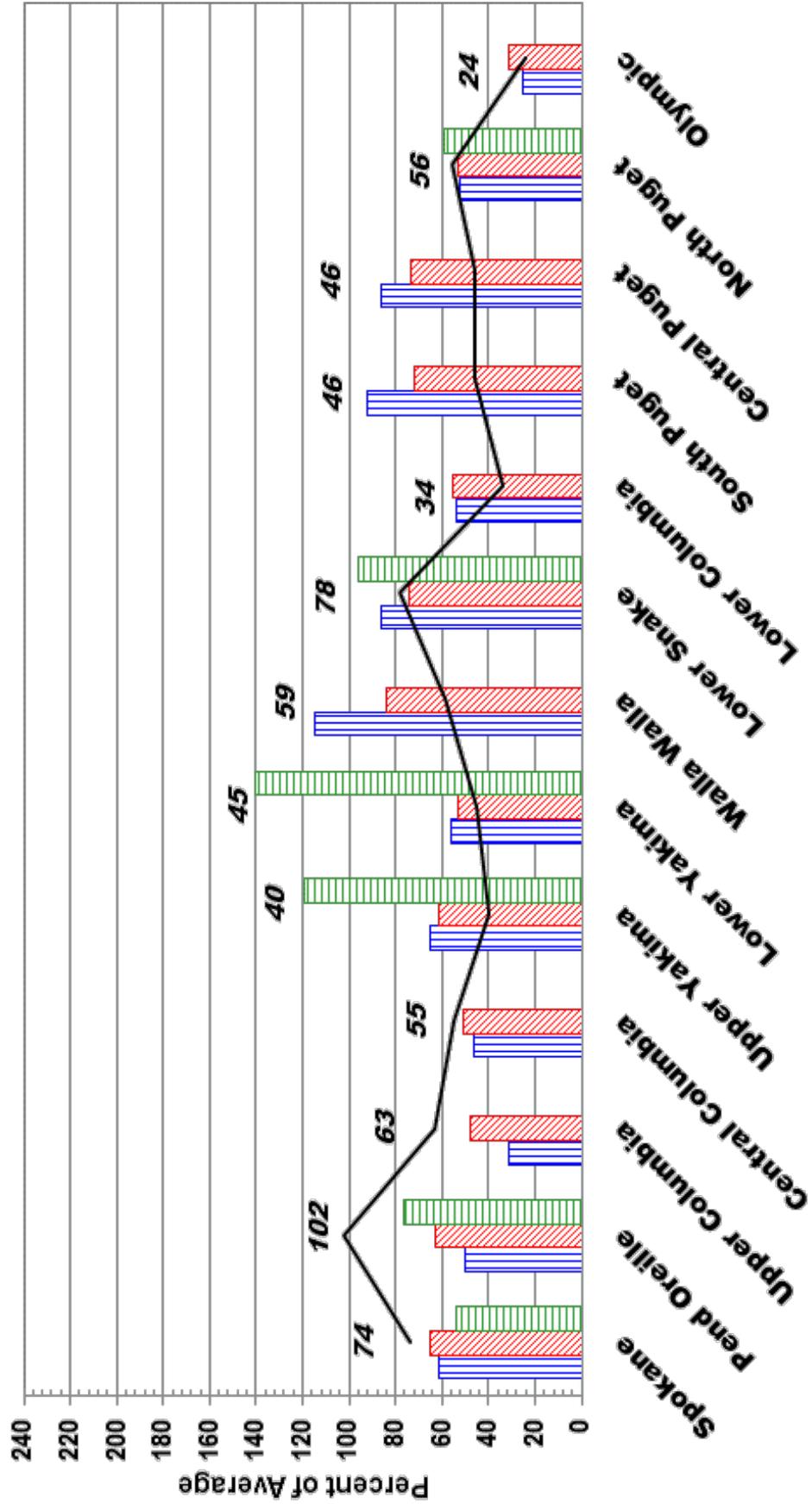
USDA-NRCS Agency Homepages

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

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

January 1, 2014 - Snowpack, Precipitation and Reservoir Conditions at a Glance

(Water Year = October 1, 2013 - 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 South Continental Area Committee is making plans for the 82nd Annual Western Snow Conference in 2014.

Mark your calendar and start thinking about submitting a paper to attend the 2014 Western Snow Conference:

Dates: April 14-17, 2014

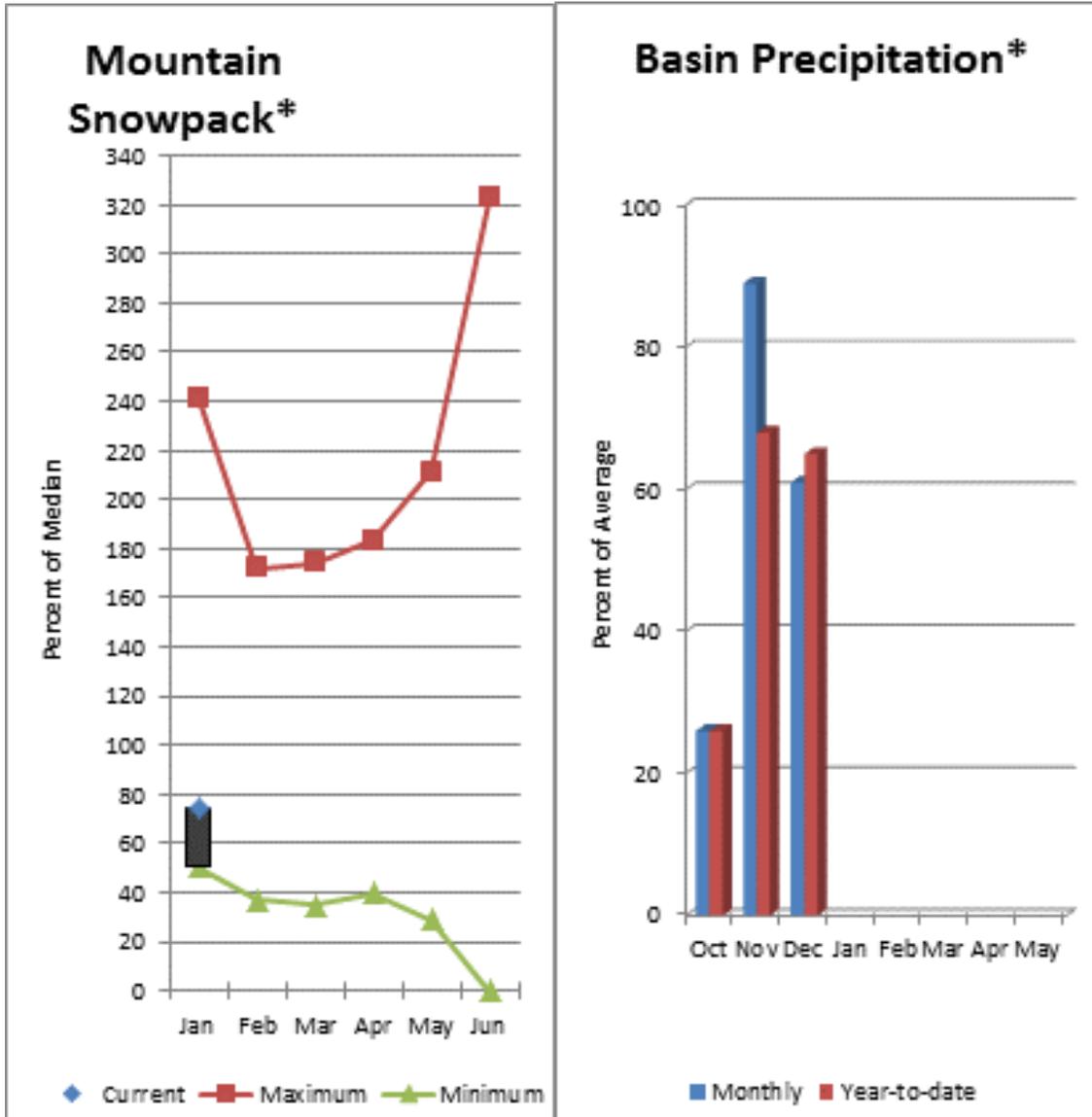
Location: Durango, Colorado

The Technical Tour is scheduled for Thursday, April 17th, to explore current research activities in the Durango/Silverton area led by personnel of the Center for Snow and Avalanche Studies in Silverton. One of their projects is the issue of dust on snow, changes in albedo, accelerated melt, and the subsequent impact on stream flow.

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 81% of average near Post Falls and 84% at Long Lake. The Chamokane River near Long Lake forecasted to have 57% of average flows for the May-August period. The forecast is based on a basin snowpack that is 74% of normal and precipitation that is 65% of average for the water year. Precipitation for December was above normal at 61% of average. Streamflow on the Spokane River at Spokane was 71% of average for December. January 1 storage in Coeur d'Alene Lake was 50,000 acre feet, 54% of average and 21% of capacity. Snowpack at Quartz Peak SNOTEL site was 72% of average with 7 inches of water content. Average temperatures in the Spokane basin were 1-2 degrees above normal for December and 1-2 degrees below normal for the water year.

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

Spokane River Basin

Streamflow Forecasts - January 1, 2014

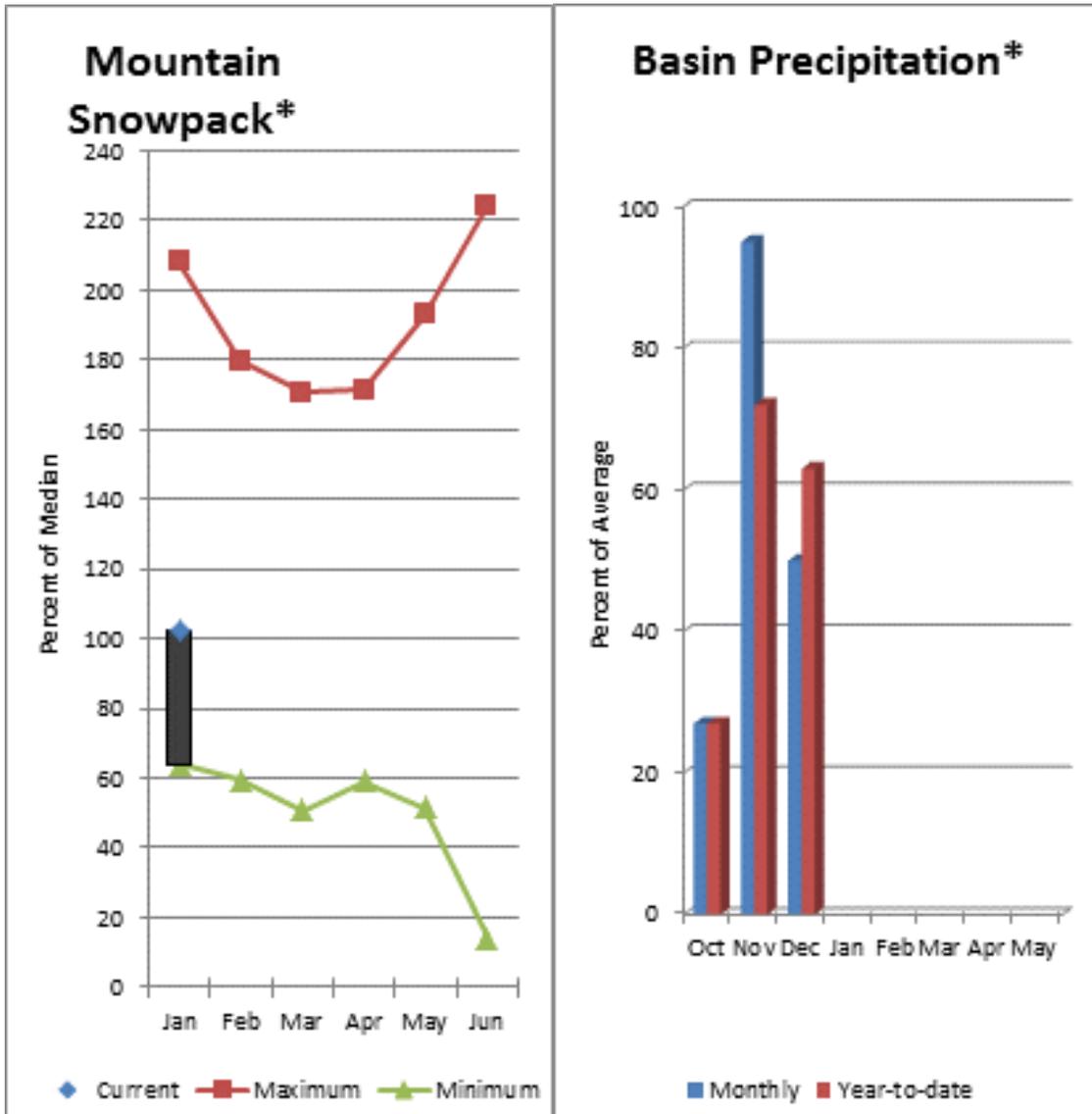
Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>				30-Yr Avg. (1000AF)				
		90% (1000AF)		70% (1000AF)			Chance Of Exceeding * 50% (1000AF) (% AVG.)		30% (1000AF) 10% (1000AF)	
Spokane R nr Post Falls (2)	APR-JUL	1050	1580	1950	82	2320	2850	2390		
	APR-SEP	1100	1650	2020	81	2390	2940	2480		
Spokane R at Long Lake (2)	APR-JUL	1190	1800	2210	84	2620	3230	2620		
	APR-SEP	1340	1970	2400	84	2830	3460	2850		
Chamokane Ck nr Long Lake	MAY-AUG	1.93	3.9	5.3	57	6.7	8.7	9.3		

SPOKANE RIVER BASIN Reservoir Storage (1000 AF) - End of December					SPOKANE RIVER BASIN Watershed Snowpack Analysis - January 1, 2014			
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	50.4	72.9	93.7	SPOKANE RIVER	13	79	72
					NEWMAN LAKE	1	73	72

* 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.



*Based on selected stations

The April – September average forecast for the Priest River near the town of Priest River is 73% and the Pend Orielle below Box Canyon is 101%. December streamflow was 69% of average on the Pend Oreille River and 79% on the Columbia Birchbank. January 1 snow cover was 102% of normal in the Pend Oreille Basin River Basin. Bunchgrass Meadows SNOTEL site had 9.3 inches of snow water on the snow pillow. Normally Bunchgrass would have 11.6 inches on January 1. Precipitation during December was 50% of average, keeping the year-to-date precipitation at 63% of average. Reservoir storage in the basin, including Lake Pend Oreille and Priest Lake was 76% of normal. Average temperatures were 1-2 degrees above normal for December and 1-2 degrees below normal for the water year.

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

Pend Oreille River Basins

Streamflow Forecasts - January 1, 2014

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)	
Pend Oreille Lake Inflow (2)	APR-JUL APR-SEP	8960 9950	1070 1170	11800 12900	100 101	12900 14100	14600 15900	11800 12800
Priest R nr Priest River (1,2)	APR-JUL APR-SEP	215 230	425 455	570 605	73 73	615 655	825 880	780 830
Pend Oreille R bl Box Canyon (2)	APR-JUL APR-SEP	9110 10100	1080 1190	12000 13100	101 101	13200 14300	14900 16100	11900 13000

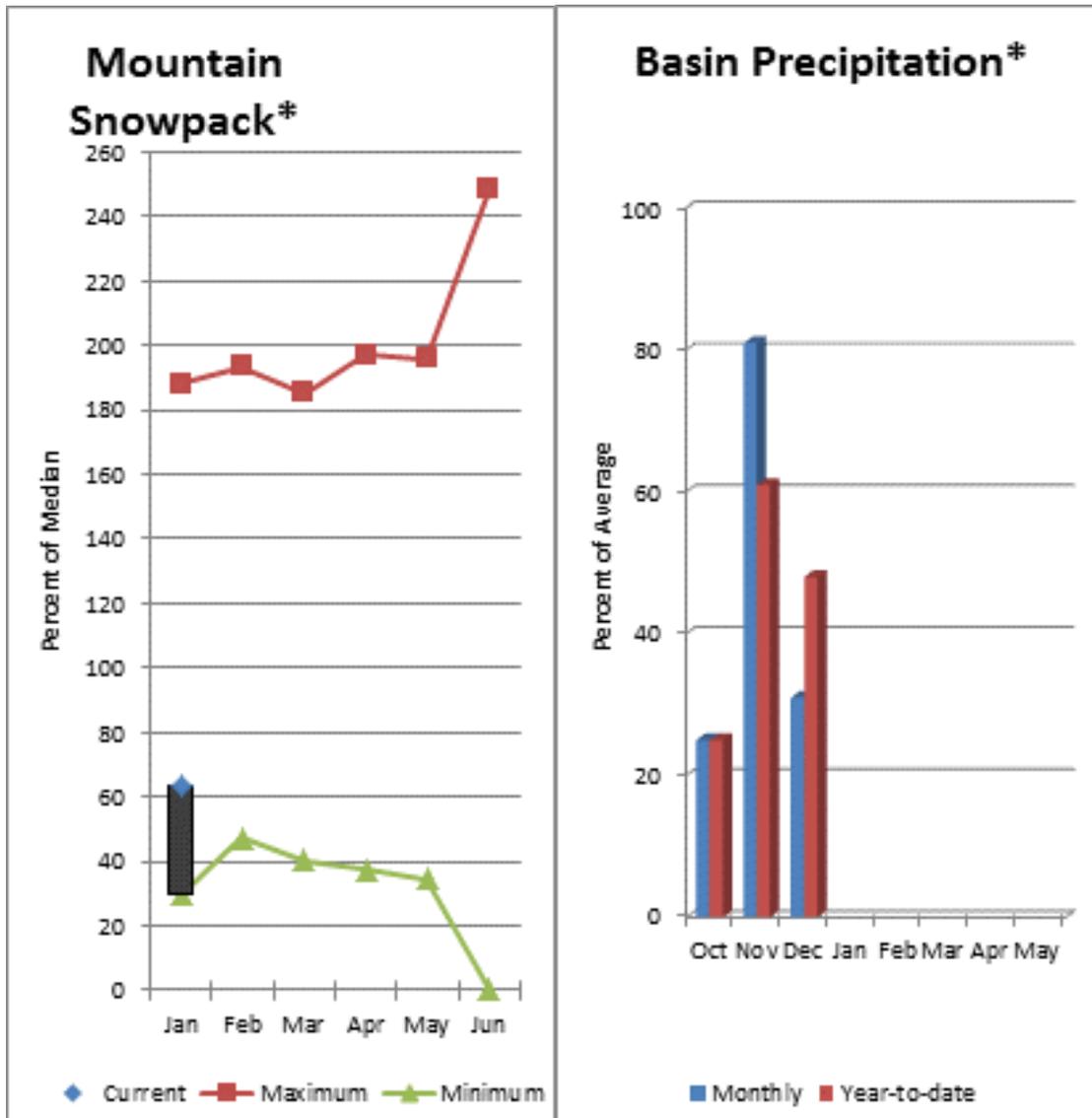
PEND OREILLE RIVER BASINS Reservoir Storage (1000 AF) - End of December					PEND OREILLE RIVER BASINS Watershed Snowpack Analysis - January 1, 2014			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
Pend Oreille	1561.	522.6	900.3	708.2	COLVILLE RIVER	0		
Priest Lake	119.3	54.9	64.1	56.5	PEND OREILLE RIVER	49	104	103
					KETTLE RIVER	1	62	100

* 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 109%, Similkameen River is 80%, Kettle River 91% and Methow River is 51%. January 1 snow cover on the Okanogan was 77% of normal, Omak Creek was 41% and the Methow was 59%. December precipitation in the Upper Columbia was 31% of average, with precipitation for the water year at 48% of average. December streamflow for the Methow River was 120% of average, 110% for the Okanogan River and 117% for the Similkameen. Snow-water content at Salmon Meadows SNOTEL was 1.8 inches. Average for this site is 4.7 inches on January 1. Combined storage in the Conconully Reservoirs was not available at this time. Temperatures were 1-2 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, 2014

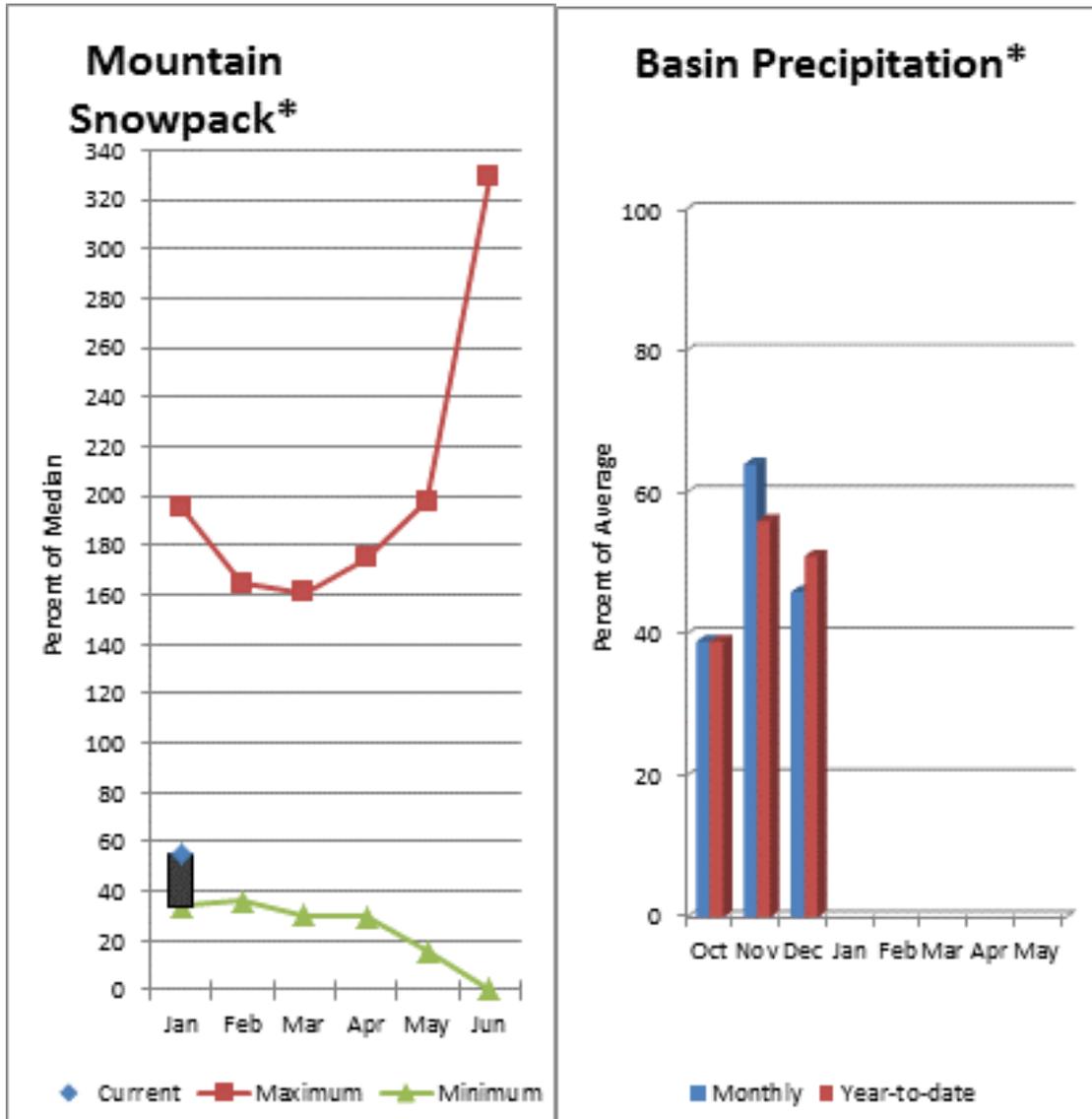
Forecast Point	Forecast Period	Future Conditions						30-Yr Avg. (1000AF)
		Drier		Wetter		Chance Of Exceeding *		
		90% (1000AF)	70% (1000AF)	30% (1000AF)	10% (1000AF)	50% (% AVG.)	50% (% AVG.)	
Colville R at Kettle Falls	APR-JUL	9.5	42	72	61	102	146	119
	APR-SEP	13.1	47	80	61	113	161	131
Kettle R nr Laurier	APR-JUL	1110	1430	1640	91	1850	2170	1800
	APR-SEP	1150	1480	1710	91	1940	2270	1880
Columbia R at Birchbank (1,2)	APR-JUL	22200	27900	30500	90	33100	38800	33840
	APR-SEP	27600	34800	38000	91	41200	48400	41750
Columbia R at Grand Coulee (2)	APR-JUL	30700	41100	45900	90	50700	61100	51015
	APR-SEP	37100	49600	55300	92	61000	73500	60110
Similkameen R nr Nighthawk (1)	APR-JUL	510	820	960	80	1100	1410	1200
	APR-SEP	535	870	1020	80	1170	1500	1280
Okanogan R nr Tonasket (1)	APR-JUL	805	1320	1550	105	1780	2300	1480
	APR-SEP	870	1450	1720	104	1990	2570	1650
Okanogan R at Malott (1)	APR-JUL	820	1360	1600	110	1840	2380	1450
	APR-SEP	885	1490	1770	109	2050	2660	1620
Methow R nr Pateros	APR-JUL	155	320	435	52	550	715	835
	APR-SEP	165	340	460	51	580	755	895

UPPER COLUMBIA RIVER BASINS Reservoir Storage (1000 AF) - End of December					UPPER COLUMBIA RIVER BASINS Watershed Snowpack Analysis - January 1, 2014			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
SALMON LAKE	10.5	9.3	8.5	---	OKANOGAN RIVER	2	42	64
					OMAK CREEK	1	18	41
CONCONULLY RESERVOIR	13.0	11.3	9.1	---	SANPOIL RIVER	0		
					SIMILKAMEEN RIVER	0		
					TOATS COULEE CREEK	0		
					CONCONULLY LAKE	1	20	38
					METHOW RIVER	3	43	59

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

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



*Based on selected stations

Precipitation during December was 46% of average in the basin and 51% for the year-to-date. Runoff for Entiat River is forecast to be 52% of average for the summer. The April-September average forecast for Chelan River is 66%, Wenatchee River at Plain is 70%, Stehekin River is 74% and Icicle Creek is 73%. December average streamflows on the Chelan River were 48% and on the Wenatchee River 82%. January 1 snowpack in the Wenatchee River Basin was 50% of normal; the Chelan, 46%; the Entiat, 25%; Stemilt Creek, 68% and Colockum Creek, 88%. Reservoir storage in Lake Chelan was not available. Lyman Lake SNOTEL had the most snow water with 12.7 inches of water. This site would normally have 26.4 inches on January 1. Temperatures were 3-5 degrees above normal for December and near normal for the water year.

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

Central Columbia River Basins

Streamflow Forecasts - January 1, 2014

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)
Stehekin R at Stehekin	APR-JUL	365	455	520	76	585	675	680				
	APR-SEP	415	515	585	74	655	755	790				
Chelan R at Chelan (2)	APR-JUL	480	600	680	68	760	880	1000				
	APR-SEP	495	640	735	66	830	975	1120				
Entiat R nr Ardenvoir	APR-JUL	52	86	109	55	132	166	200				
	APR-SEP	54	90	115	52	140	176	220				
Wenatchee R at Plain	APR-JUL	465	615	715	72	815	965	990				
	APR-SEP	480	645	755	70	865	1030	1080				
Icicle Ck nr Leavenworth	APR-JUL	138	178	205	75	230	270	275				
	APR-SEP	150	192	220	73	250	290	300				
Wenatchee R at Peshastin	APR-JUL	660	860	995	73	1130	1330	1370				
	APR-SEP	675	900	1050	70	1200	1420	1490				
Columbia R bl Rock Island Dam (2)	APR-JUL	37500	45400	50800	91	56200	64100	55770				
	APR-SEP	44300	53600	60000	92	66400	75700	65200				

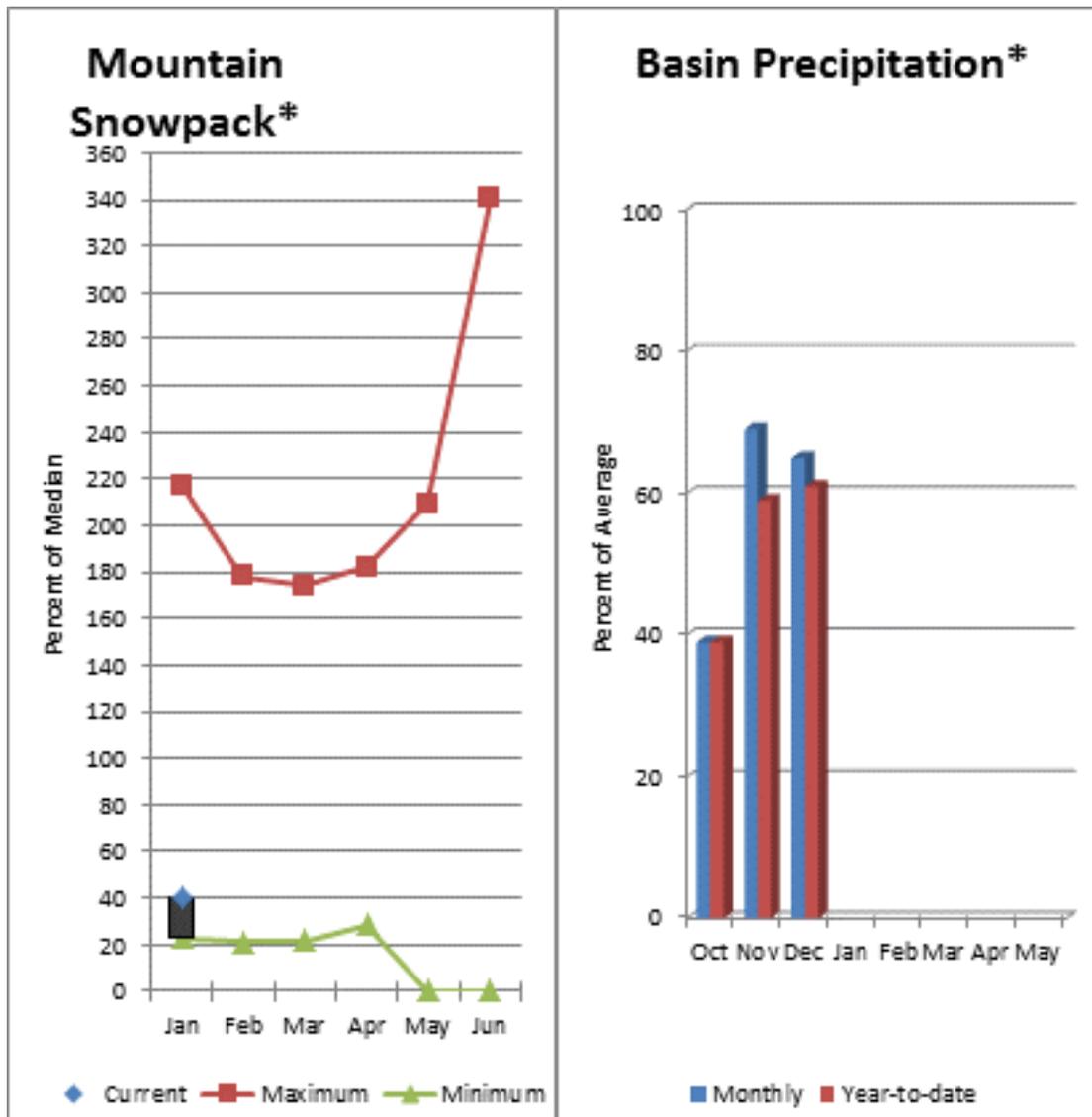
CENTRAL COLUMBIA RIVER BASINS Reservoir Storage (1000 AF) - End of December					CENTRAL COLUMBIA RIVER BASINS Watershed Snowpack Analysis - January 1, 2014			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
Lake Chelan	676.1	---	387.4	411.3	CHELAN LAKE BASIN	3	38	46
					ENTIAT RIVER	1	21	25
					WENATCHEE RIVER	7	42	52
					STEMILT CREEK	1	37	46
					COLOCKUM CREEK	1	61	88

* 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 411,000-acre feet, 119% of average. Forecasts for the Yakima River at Cle Elum are 68% of average and the Teanaway River near Cle Elum is at 59%. Lake inflows are all forecasted to be below average this summer as well. December streamflows within the basin were Cle Elum River near Roslyn at 110%. January 1 snowpack was 40% based upon 9 snow course and SNOTEL readings within the Upper Yakima Basin. Precipitation was 65% of average for December and 61% 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 - January 1, 2014

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)
Keechelus Reservoir Inflow (2)	APR-JUL	43	66	81	70	96	119	116				
	APR-SEP	49	72	88	70	104	127	126				
Kachess Reservoir Inflow (2)	APR-JUL	37	58	73	70	88	109	104				
	APR-SEP	42	63	77	68	91	112	113				
Cle Elum Lake Inflow (2)	APR-JUL	175	240	285	74	330	395	385				
	APR-SEP	183	255	300	72	345	415	415				
Yakima R at Cle Elum (2)	APR-JUL	285	425	520	69	615	755	755				
	APR-SEP	315	465	565	68	665	815	830				
Teanaway R bl Forks nr Cle Elum	APR-JUL	20	54	77	59	100	134	130				
	APR-SEP	22	56	79	59	102	136	133				

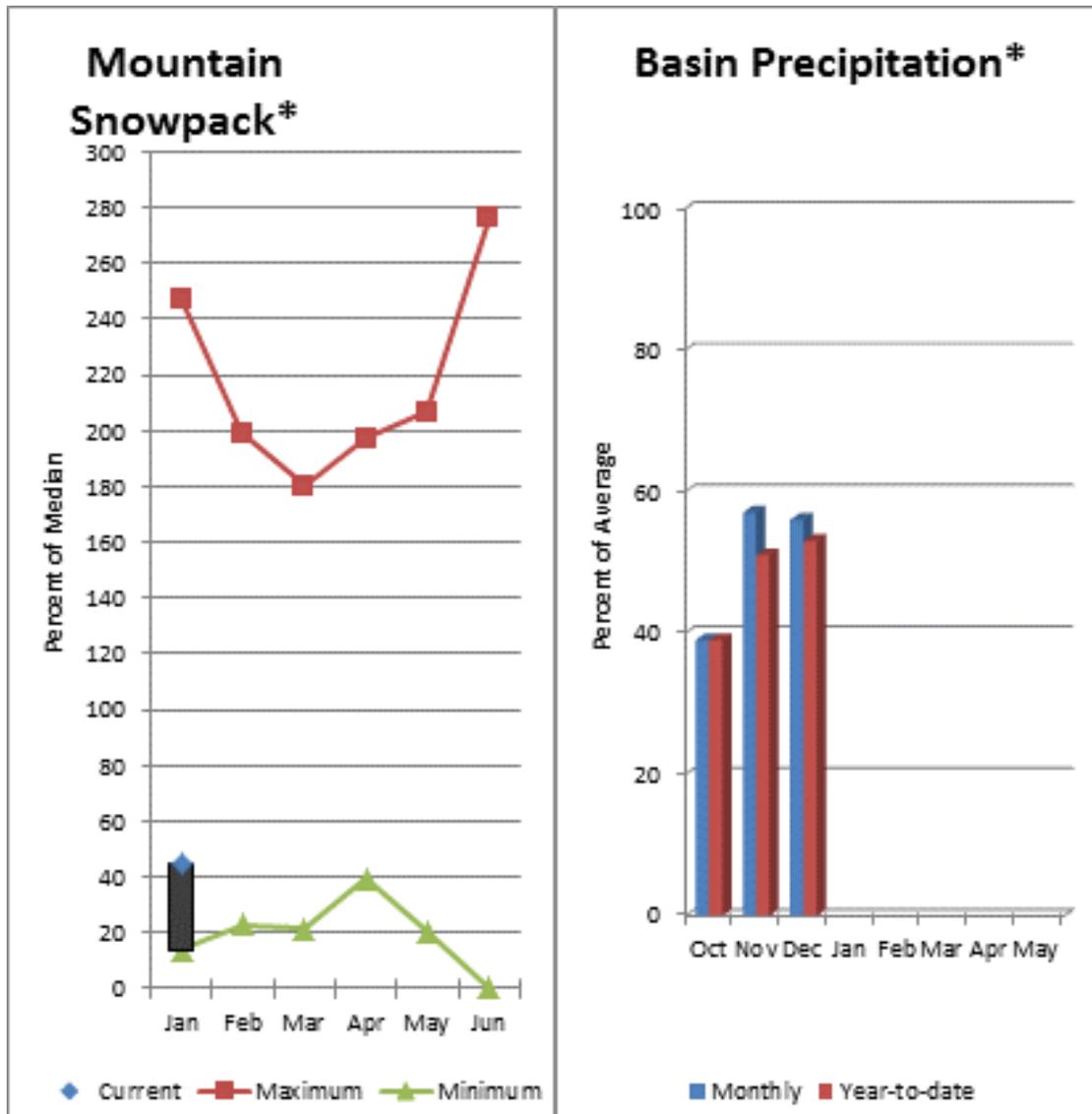
UPPER YAKIMA RIVER BASIN Reservoir Storage (1000 AF) - End of December					UPPER YAKIMA RIVER BASIN Watershed Snowpack Analysis - January 1, 2014			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
Keechelus	157.8	85.9	93.7	68.5	UPPER YAKIMA RIVER	8	32	38
Kachess	239.0	162.3	172.7	113.4				
Cle Elum	436.9	163.0	272.6	164.0				

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

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

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

Lower Yakima River Basin



*Based on selected stations

December average streamflows within the basin were: Yakima River near Parker, 108%; Naches River near Naches, 101%; and Yakima River at Kiona, 103%. January 1 reservoir storage for Bumping and Rimrock reservoirs was 145,000-acre feet, 140% of average. Forecast averages for Yakima River near Parker are 65%; American River near Nile, 62%; Ahtanum Creek, 62%; and Klickitat River near Glenwood, 66%. January 1 snowpack was 45% based upon 7 snow course and SNOTEL readings within the Lower Yakima Basin and Ahtanum Creek reported in at 55% of normal. Precipitation was 56% of average for December and 53% year-to-date for water. Temperatures were 2-5 degrees above normal for December and for 1-2 degrees below normal 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.

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

Lower Yakima River Basin

Streamflow Forecasts - January 1, 2014

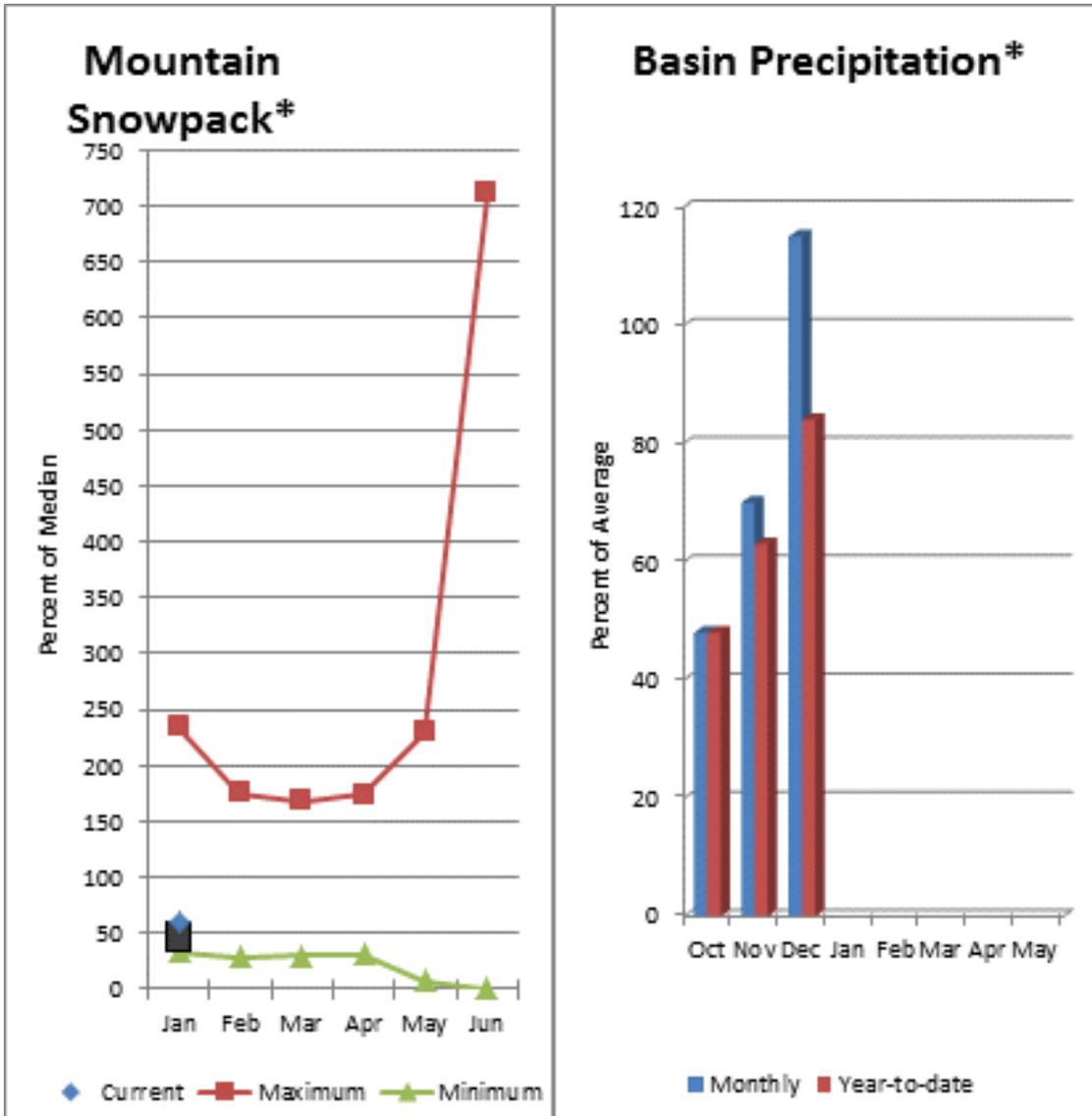
Forecast Point	Forecast Period	<<==== Drier ===== Future Conditions ===== Wetter =====>>					30-Yr Avg. (1000AF)	
		==== Chance Of Exceeding * =====						
		90% (1000AF)	70% (1000AF)	50% (1000AF) (% AVG.)		30% (1000AF)		10% (1000AF)
Bumping Lake Inflow (2)	APR-JUL	54	73	85	75	97	116	114
	APR-SEP	58	78	91	74	104	124	123
American R nr Nile	APR-JUL	38	54	65	64	76	92	102
	APR-SEP	38	56	68	62	80	98	110
Rimrock Lake Inflow (2)	APR-JUL	101	127	145	78	163	189	187
	APR-SEP	120	150	170	77	190	220	220
Naches R nr Naches (2)	APR-JUL	275	390	470	67	550	665	700
	APR-SEP	285	415	500	66	585	715	760
Ahtanum Ck at Union Gap	APR-JUL	0.85	9.9	16.1	60	22	31	27
	APR-SEP	2.4	11.7	18.0	62	24	34	29
Yakima R nr Parker (2)	APR-JUL	580	885	1090	66	1300	1600	1660
	APR-SEP	640	965	1190	65	1410	1740	1820
Klickitat R nr Glenwood	APR-JUL	47	68	83	66	98	119	126
	APR-SEP	53	76	92	66	108	131	139
Klickitat R nr Pitt	APR-JUL	215	280	325	75	370	435	435
	APR-SEP	275	355	405	78	455	535	520

LOWER YAKIMA RIVER BASIN					LOWER YAKIMA RIVER BASIN			
Reservoir Storage (1000 AF) - End of December					Watershed Snowpack Analysis - January 1, 2014			
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	21.3	14.4	11.5	LOWER YAKIMA RIVER	7	30	45
Rimrock	198.0	123.9	121.9	92.4	AHTANUM CREEK	2	30	55

* 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.



*Based on selected stations

December precipitation was 115% of average, maintaining the year-to-date precipitation at 84% of average. Snowpack in the basin was 59% of normal. Streamflow forecasts are 85% of average for Mill Creek and 91% for the SF Walla Walla near Milton-Freewater. Average temperatures were 2-4 degrees above normal for December and 2-3 degrees below normal for the water year.

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

Walla Walla River Basin

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Streamflow Forecasts - January 1, 2014

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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)
SF Walla Walla R nr Milton-Freewater	MAR-SEP	61	69	74	93	79	87	80				
	APR-JUL	38	44	48	89	52	58	54				
	APR-SEP	49	55	60	91	65	71	66				
Mill Ck nr Walla Walla	APR-JUL	13.0	17.0	19.8	83	23	27	24				
	APR-SEP	15.8	20	23	85	26	30	27				

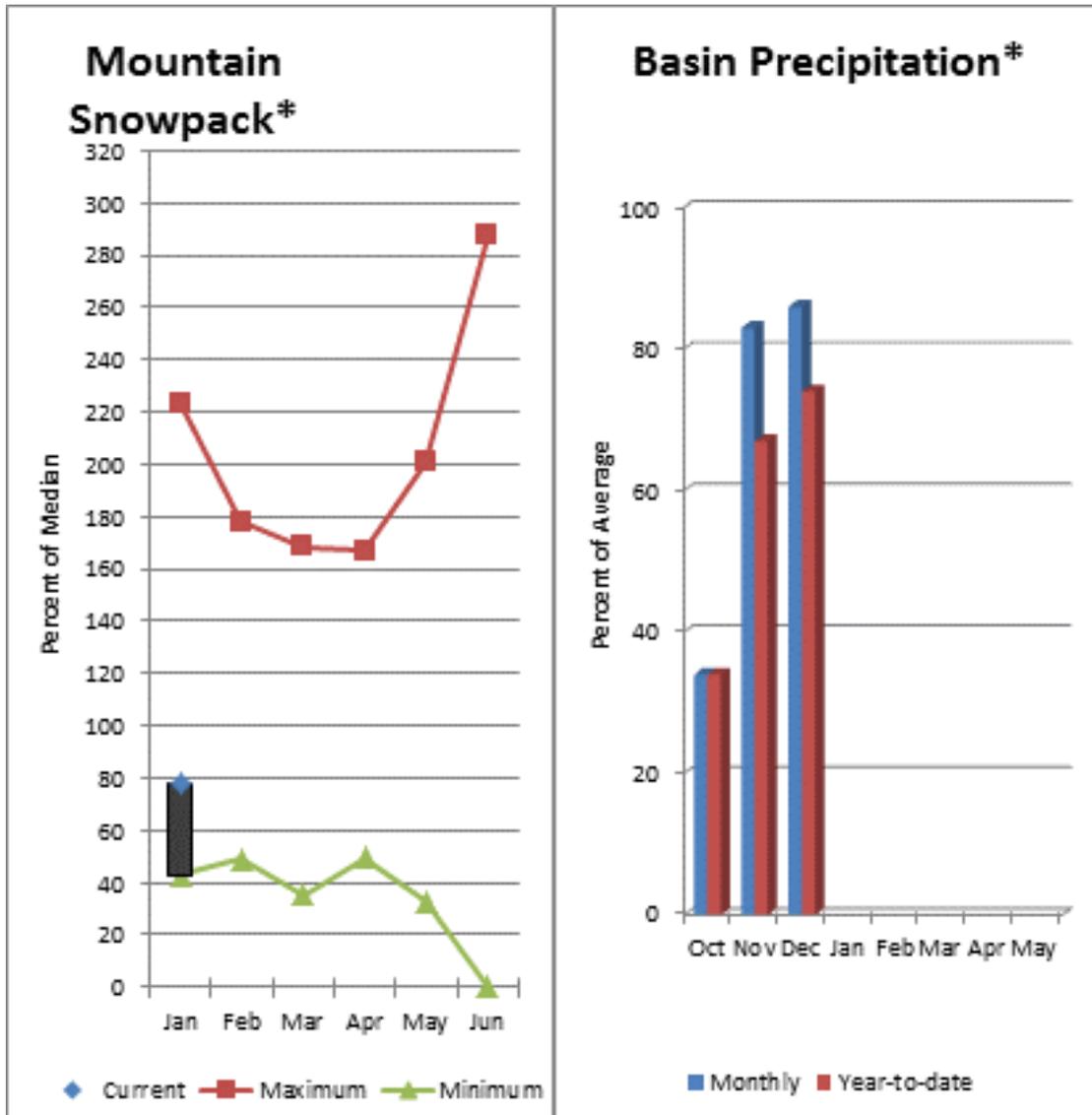
WALLA WALLA RIVER BASIN					WALLA WALLA RIVER BASIN			
Reservoir Storage (1000 AF) - End of December					Watershed Snowpack Analysis - January 1, 2014			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
					WALLA WALLA RIVER	2	66	59

* 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 Grande Ronde River can expect summer flows to be about 83% of normal. The forecast for Asotin Creek at Asotin predicts 77% of average flows for the April – July runoff period. December precipitation was 86% of average, bringing the year-to-date precipitation to 74% of average. January 1 snowpack readings averaged 78% of normal. December streamflow was 77% of average for Snake River below Lower Granite Dam and 130% for Grande Ronde River near Troy. Dworshak Reservoir storage was 96% of average. Average temperatures were 2-3 degrees above normal for December and 2-3 degrees below for the water year.

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

Lower Snake River Basin

Streamflow Forecasts - January 1, 2014

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.)										
Grande Ronde R at Troy (1)	MAR-JUL	730	1100	1270	84	1440	1810	1510				
	APR-SEP	575	930	1090	83	1250	1600	1310				
Asotin Ck at Asotin	APR-JUL	8.7	19.6	27	77	34	45	35				
Clearwater River At Spalding, Id	APR-JUL	3450	5370	6240	91	7110	9030	6890				
	APR-SEP	3740	5700	6590	91	7480	9440	7270				
Snake R bl Lower Granite Dam	APR-JUL	7730	15200	18600	94	22000	29500	19848				
	APR-SEP	9080	17500	21300	96	25100	33500	22280				

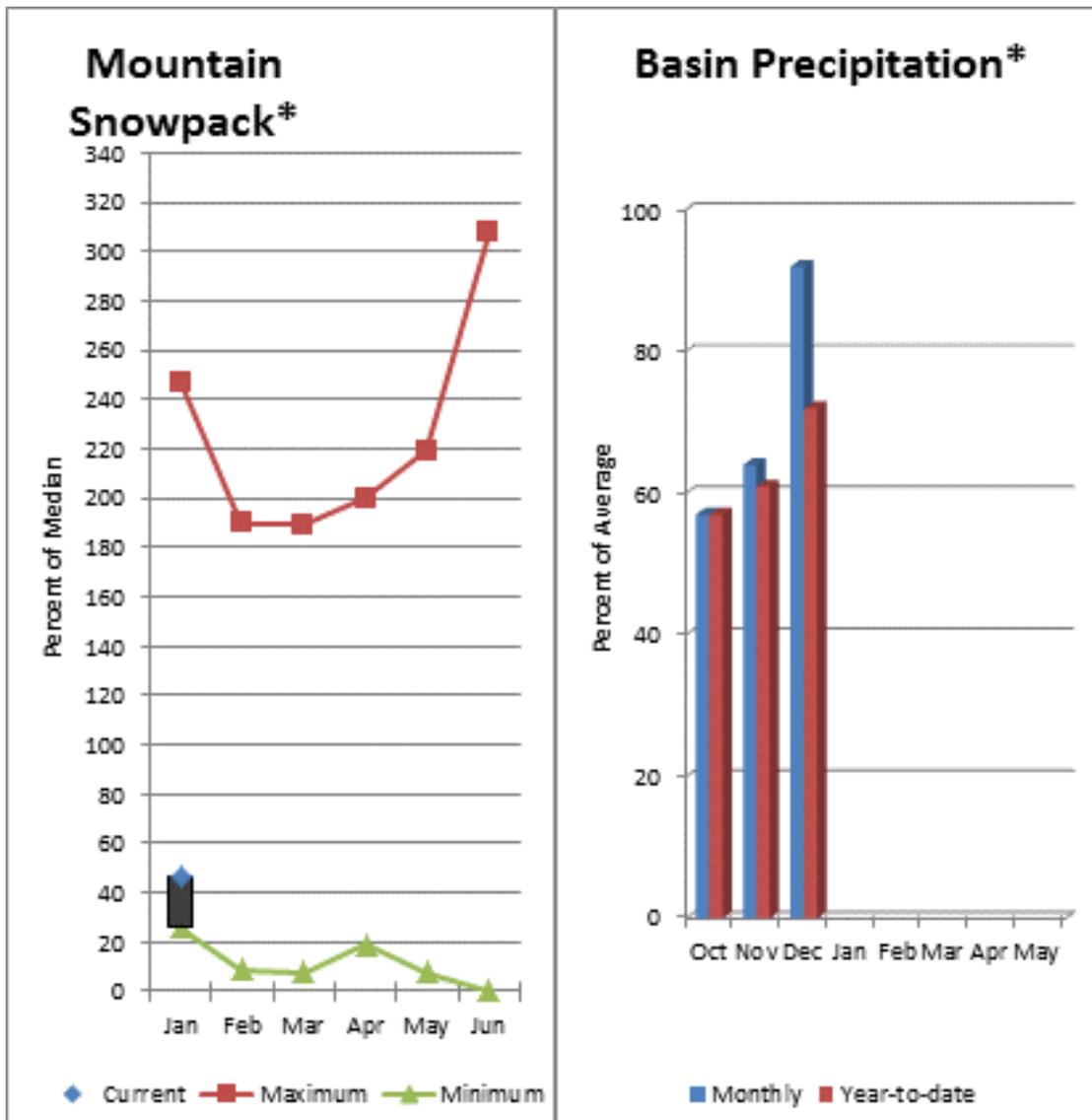
LOWER SNAKE RIVER BASIN Reservoir Storage (1000 AF) - End of December					LOWER SNAKE RIVER BASIN Watershed Snowpack Analysis - January 1, 2014			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
Dworshak	3468.0	2298.8	1565.4	2403.0	LOWER SNAKE, GRANDE RON	12	104	83

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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.

Lower Columbia River Basins



*Based on selected stations

Forecasts for April – September streamflows within the basin are Lewis River at Ariel, 80% and Cowlitz River at Castle Rock, 85% of average. The Columbia at The Dalles is forecasted to have 93% of average flows this summer according to the River Forecast Center. December average streamflow for Cowlitz River was 91%. The Columbia River at The Dalles was 79% of average. December precipitation was 54% of average and the water-year average was 55%. January 1 snow cover for Cowlitz River was 50%, and Lewis River was 19% of normal. Cayuse Pass Temperatures were 1-3 degrees below 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, 2014

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)
Columbia R at The Dalles (2)	APR-JUL	53100	64800	72700	91	80600	92300	79855				
	APR-SEP	63300	76900	86200	93	95500	10900		92704			
Klickitat R nr Glenwood	APR-JUL	47	68	83	66	98	119	126				
	APR-SEP	53	76	92	66	108	131	139				
Klickitat R nr Pitt	APR-JUL	215	280	325	75	370	435	435				
	APR-SEP	275	355	405	78	455	535	520				
Lewis R at Ariel (2)	APR-JUL	495	670	790	81	910	1080	970				
	APR-SEP	585	770	895	80	1020	1200	1120				
Cowlitz R bl Mayfield Dam (2)	APR-JUL	830	1130	1340	83	1550	1850	1620				
	APR-SEP	890	1270	1530	83	1790	2170	1840				
Cowlitz R at Castle Rock (2)	APR-JUL	1340	1640	1850	83	2060	2360	2230				
	APR-SEP	1560	1900	2140	85	2380	2720	2520				

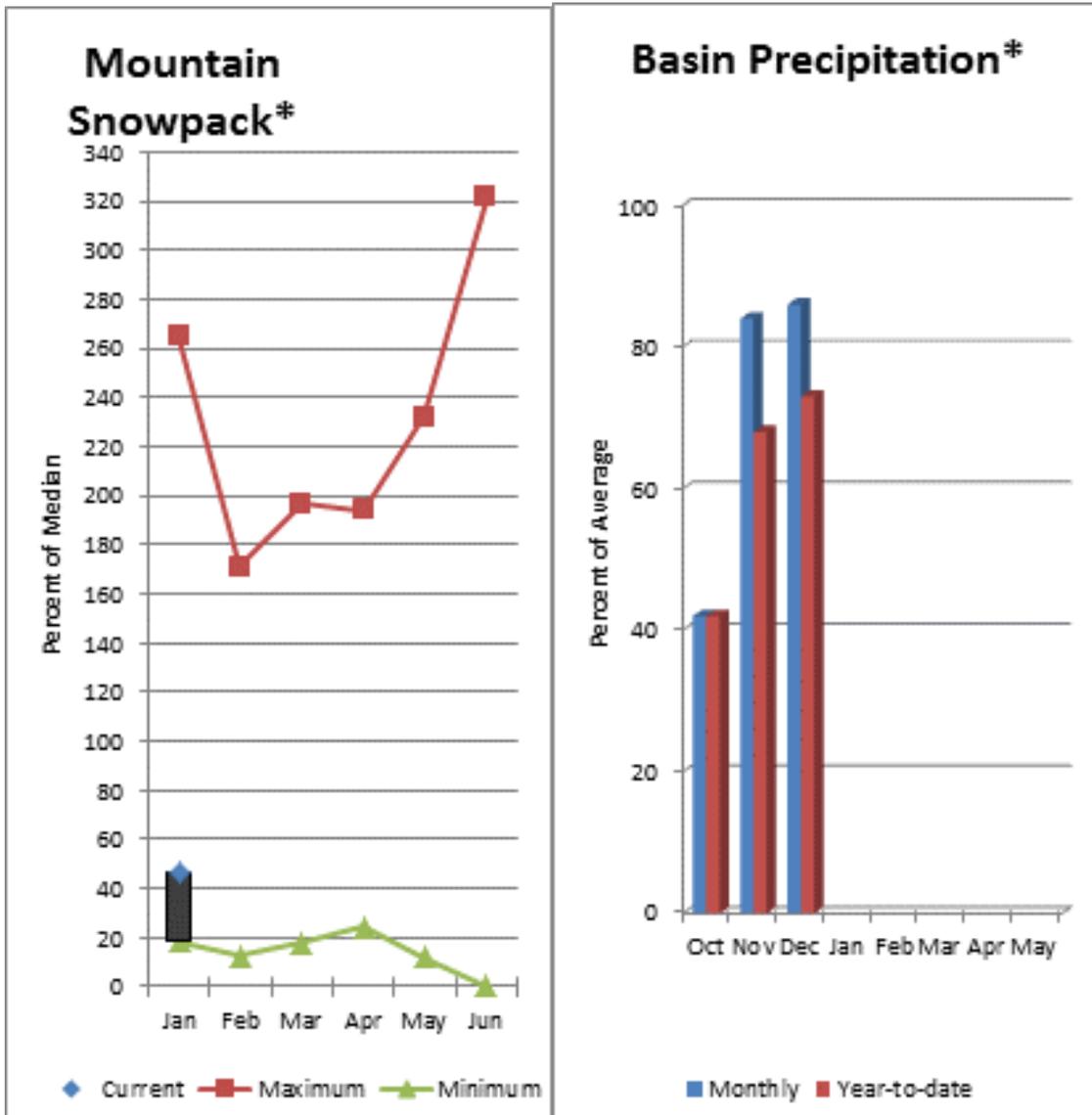
LOWER COLUMBIA RIVER BASINS					LOWER COLUMBIA RIVER BASINS			
Reservoir Storage (1000 AF) - End of December					Watershed Snowpack Analysis - January 1, 2014			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
Swift	---	---	689.0	634.1	LEWIS RIVER	4	11	18
Yale	---	---	383.1		COWLITZ RIVER	6	34	50
Merwin	---	---	404.4	400.1				
Mossyrook Dam (riffe Lk)	---	---	1212.0	1203.				

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

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South Puget Sound River Basins



*Based on selected stations

Summer runoff is forecast to be 79% of normal for the Green River below Howard Hanson Dam and 91% for the White River near Buckley. January 1 snowpack was 64% of average for the White River, 59% for Puyallup River and 16% in the Green River Basin. December precipitation was 92% of average, bringing the water year-to-date to 72% 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, 2014

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.)	
White R nr Buckley (1)	APR-JUL	275	355	390	91	425	505	430
	APR-SEP	340	430	470	91	510	600	515
Green R bl Howard Hanson Dam (1,2)	APR-JUL	99	159	186	79	215	275	235
	APR-SEP	118	178	205	79	230	290	260

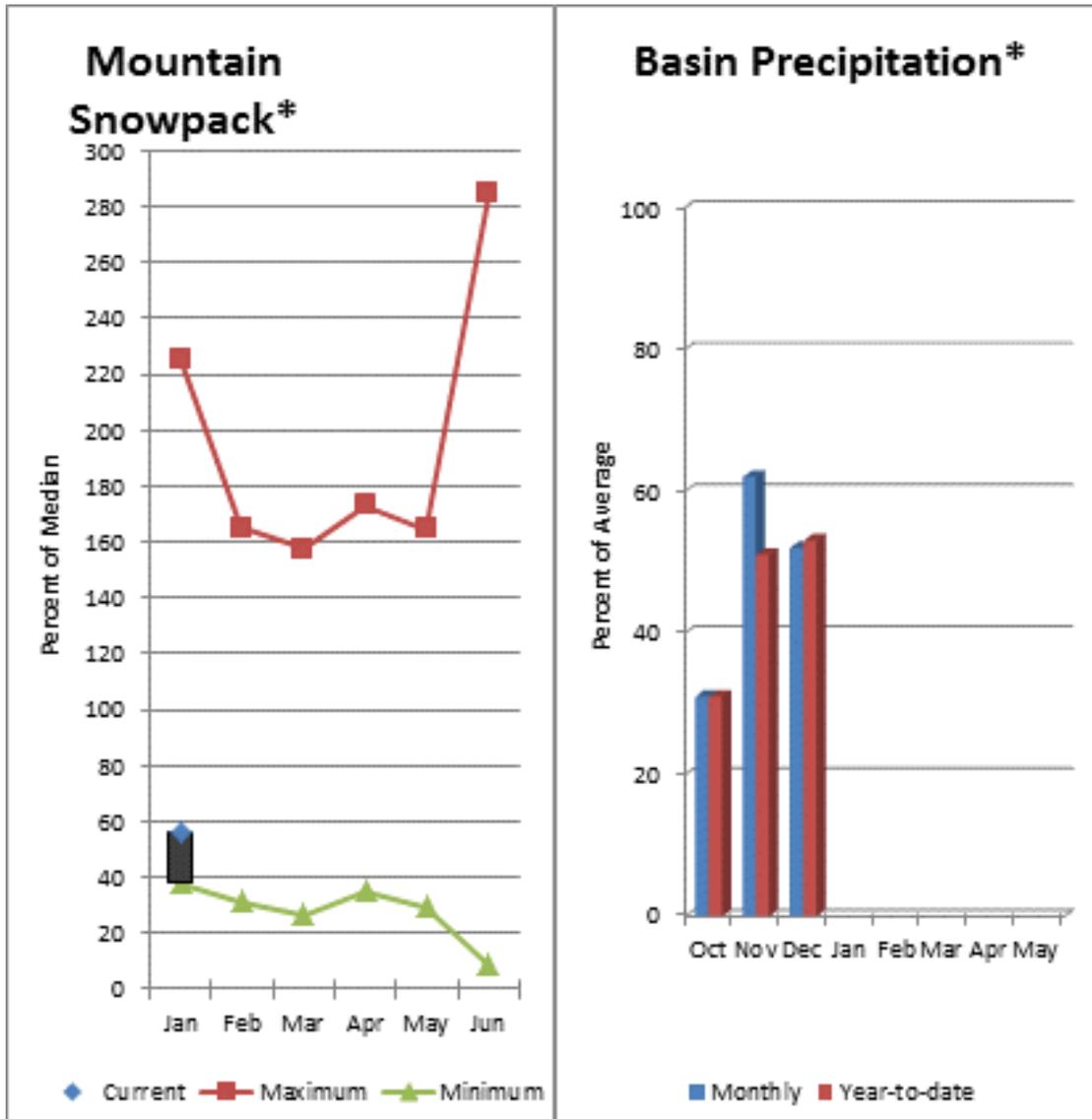
SOUTH PUGET SOUND RIVER BASINS Reservoir Storage (1000 AF) - End of December					SOUTH PUGET SOUND RIVER BASINS Watershed Snowpack Analysis - January 1, 2014			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
					WHITE RIVER	3	36	52
					GREEN RIVER	2	16	16
					PUYALLUP RIVER	4	32	51

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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: 86% for Cedar River near Cedar Falls; 81% for Rex River; 83% for South Fork of the Tolt River; and 88% for Taylor Creek near Selleck. Basin-wide precipitation for December was 86% of average, bringing water-year-to-date to 73% of average. January 1 median snow cover in Cedar River Basin was 29%, Tolt River Basin was 53%, Snoqualmie River Basin was 44%, and Skykomish River Basin was 58%. 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, 2014

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)
Cedar R nr Cedar Falls	APR-JUL	33	48	58	83	68	83	70				
	APR-SEP	40	55	65	86	75	90	76				
Rex R nr Cedar Falls	APR-JUL	9.2	15.4	19.6	82	24	30	24				
	APR-SEP	11.5	17.8	22	81	26	32	27				
Cedar R At Cedar Falls	APR-JUL	8.8	32	48		64	87					
	APR-SEP	11.9	35	50		65	88					
Taylor Creek nr Selleck	APR-JUL	11.6	15.1	17.4	87	19.7	23	20				
	APR-SEP	14.9	18.5	21	88	23	27	24				
SF Tolt R nr Index	APR-JUL	7.1	9.8	11.7	82	13.6	16.3	14.2				
	APR-SEP	8.5	11.4	13.3	83	15.2	18.1	16.1				

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

CENTRAL PUGET SOUND RIVER BASINS Watershed Snowpack Analysis - January 1, 2014

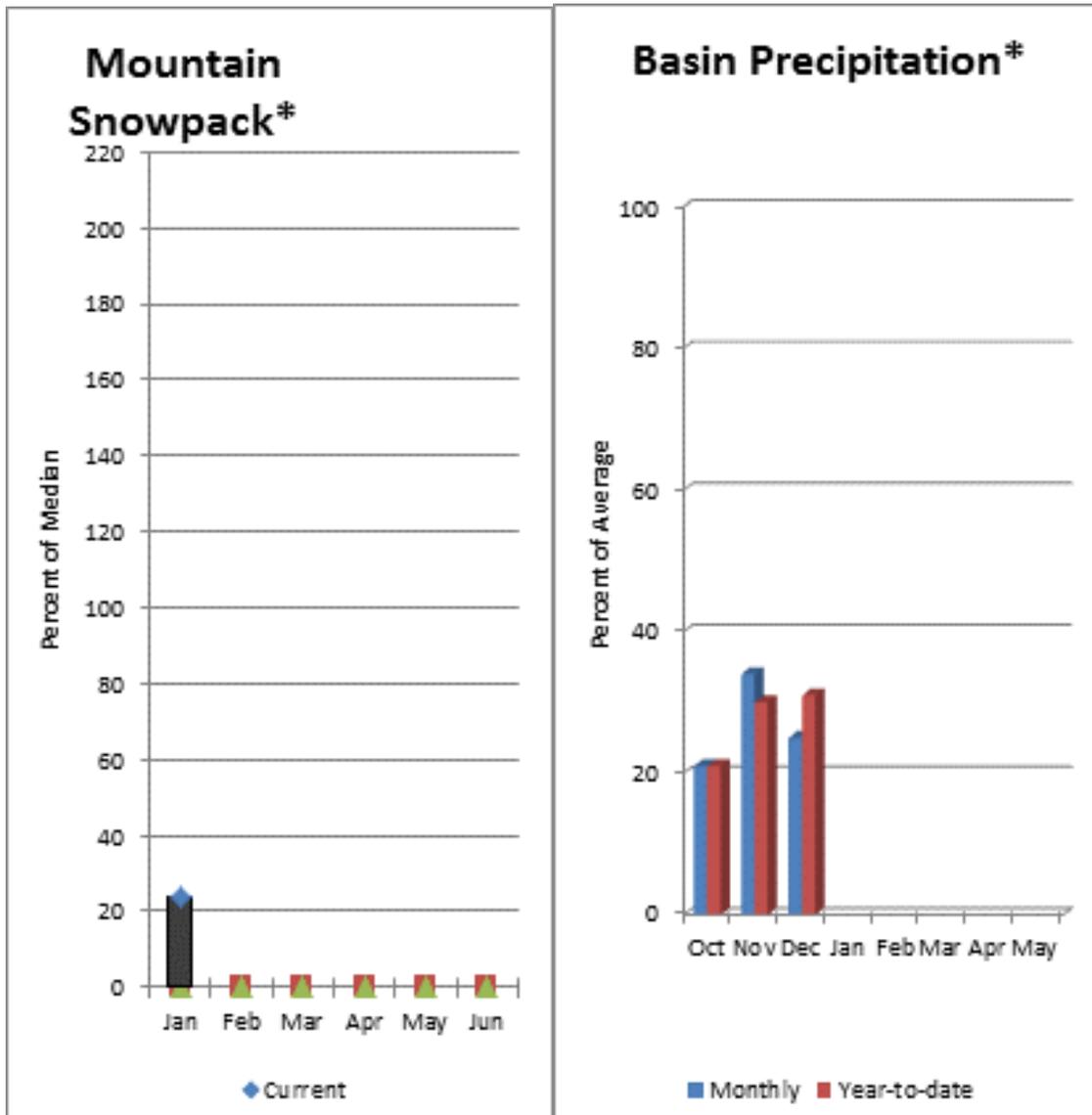
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
					CEDAR RIVER	4	21	29
					TOLT RIVER	2	31	53
					SNOQUALMIE RIVER	4	32	44
					SKYKOMISH RIVER	2	44	58

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North Puget Sound River Basins



*Based on selected stations

Forecast for Skagit River streamflow at Newhalem is 76% of average for the spring and summer period. December streamflow in Skagit River was 61% of average. Other forecast points included Baker River at 74% and Thunder Creek at 88% of average. Basin-wide precipitation for December was 52% of average, bringing water-year-to-date to 53% of average. January 1 average snow cover in Skagit River Basin was 44% and Nooksack River Basin was 69% of normal. Baker River Basin data was not available at this time. January 1 Skagit River reservoir storage was 59% of average and 44% of capacity. Average temperatures were slightly above normal for December and slightly below for the water year.

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

North Puget Sound River Basins

Streamflow Forecasts - January 1, 2014

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)
		Chance Of Exceeding *						
		90% (1000AF)	70% (1000AF)	50% (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
Thunder Ck nr Newhalem	APR-JUL	171	191	205	87	220	240	235
	APR-SEP	250	275	290	88	305	330	330
Skagit R at Newhalem	APR-JUL	980	1170	1300	77	1430	1620	1680
	APR-SEP	1180	1400	1550	76	1700	1920	2030
Baker R nr Concrete (2)	APR-JUL	395	500	570	73	640	745	780
	APR-SEP	495	635	730	74	825	965	980

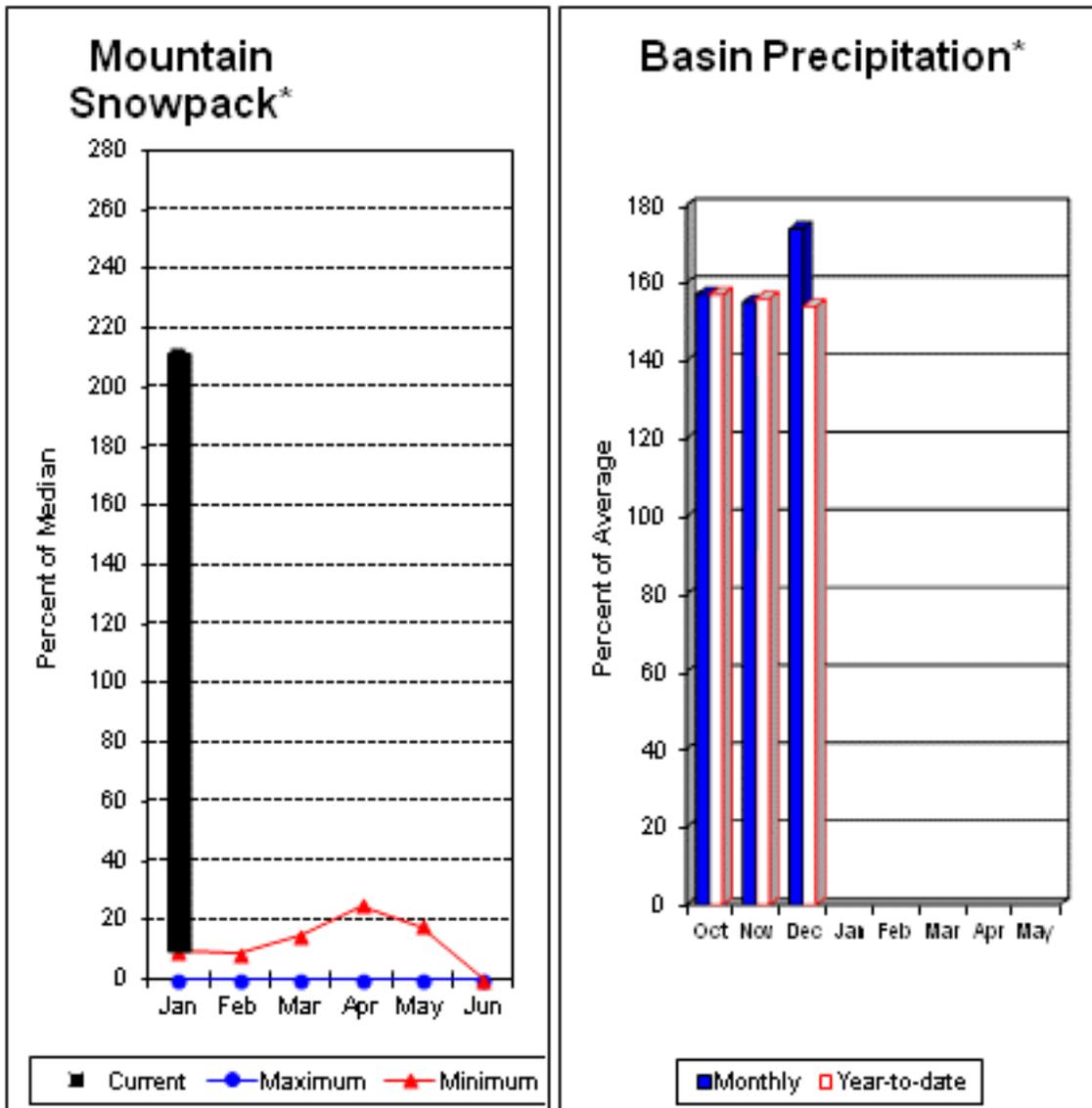
NORTH PUGET SOUND RIVER BASINS Reservoir Storage (1000 AF) - End of December					NORTH PUGET SOUND RIVER BASINS Watershed Snowpack Analysis - January 1, 2014			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
Ross	1404.	672.4	1123.	1135.	SKAGIT RIVER	8	31	44
Diablo Reservoir	90.6	---	85.6	85.8	BAKER RIVER	0		
					NOOKSACK RIVER	3	42	69

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Olympic Peninsula River Basins



*Based on selected stations

Forecasted average runoff for streamflow for the Dungeness River is 73% and Elwha River is 70%. December runoff in the Dungeness River was 34% of normal. Big Quilcene and Wynoochee rivers may expect below average runoff this summer as well. December precipitation was 25% of average. Precipitation has accumulated at 31% of average for the water year. December precipitation at Quillayute was 6.16 inches. The 1981-2010 average for December is 12.99 inches. Olympic Peninsula snowpack averaged a whopping 24% of normal on January 1, the lowest region in the state. Temperatures were near average for December and close 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, 2014

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)
Dungeness R nr Sequim	APR-JUL	64	80	91	76	102	118	120				
	APR-SEP	73	93	106	73	119	139	145				
Elwha R at McDonald Bridge	APR-JUL	195	250	285	71	320	375	400				
	APR-SEP	225	290	330	70	370	435	470				

OLYMPIC PENINSULA RIVER BASINS Reservoir Storage (1000 AF) - End of December				OLYMPIC PENINSULA RIVER BASINS Watershed Snowpack Analysis - January 1, 2014				
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Median
					OLYMPIC PENINSULA	3	12	24

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Issued by

Jason Weller
Chief
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Released by

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

Canada	Snow Survey Network Program – British Columbia Ministry of Environment River Forecast Center – British Columbia Ministry of Forests, Lands and Natural Resource Operations
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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Mount Vernon, WA 98273-2873



Washington Water Supply Outlook Report

Natural Resources Conservation Service
Spokane, WA

