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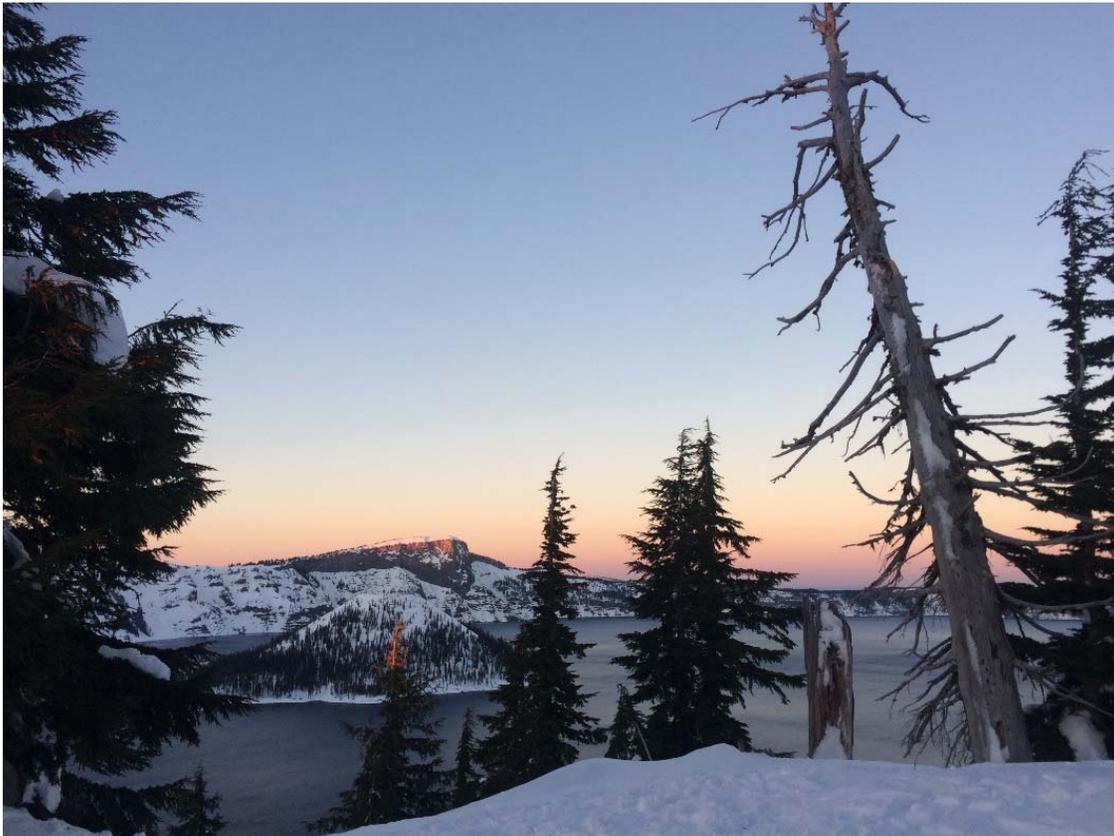


Natural Resources  
Conservation  
Service

# Oregon Basin Outlook Report

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January 1, 2017



**The final sunset of 2016 over Crater Lake**  
*Photo courtesy of Lauren Austin (Snow Surveyor, Oregon NRCS)*

**A healthy snowpack blankets the mountains as 2016's final rays of sunshine spread colors across the landscape of Crater Lake National Park. NRCS snow surveyors measured 8.5 feet of snow (138% of normal) on January 3<sup>rd</sup> at Park Headquarters snow course, which had the deepest snowpack measurement in the state. A rainy fall followed by a snowy December has left Oregon's mountains with above normal snowpacks for the start of the New Year.**

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# General Outlook

January 1<sup>st</sup>, 2017

## SUMMARY

Record breaking October precipitation provided a great start to the new water year, building hopes of a good snow year to come. The month of December fortified these hopes with sustenance, delivering cold snow storms that blanketed the entire state. Snow levels dropped all the way down to the valley floors in normally rainy locations as snow continued piling up in the mountains. As of New Year's Day, the snowpack is near normal to above normal throughout almost all of Oregon's higher elevations. Based on the current conditions, spring and summer streamflow forecasts are projecting near average to above average streamflows for the water supply season. However, there are several months left in the snow accumulation season, which means there is a lot of uncertainty in these first forecasts of the year. Currently, the long term weather outlook from NOAA's Climate Prediction Center is calling for the next three months to bring above normal precipitation across Oregon (<http://www.cpc.ncep.noaa.gov/>). If the rest of winter continues the wet, cold and snowy trend and spring snowmelt rate and timing are normal, then water supplies during the critical spring and summer months will likely be adequate.

## SNOWPACK

A snowy December helped ring in the New Year with near normal to above normal snowpack for almost the entire state. The series of cold wintery storms blanketed the state with snow, providing ample snow coverage throughout the mountains, closing interstates and schools around the state, while also bringing excellent powder for winter recreation opportunities.

As of January 1<sup>st</sup>, the statewide snowpack is 119% of normal. Overall, the Hood, Sandy and Lower Deschutes basins have the highest snowpack in the state at 136% of normal, while the Klamath basin has the lowest January 1<sup>st</sup> snowpack at 102% of normal. As always, there's quite a bit of spatial variability in mountain snowpack, which can be explained by the variability within storm patterns. A few locations, mostly in southern Oregon and in the Willowa Mountains, are currently storing below normal amounts of snow.

## PRECIPITATION

While most people celebrate the new calendar year on January 1<sup>st</sup>, the new water year began on October 1<sup>st</sup>. The mountains celebrated the new water year by experiencing the wettest October on record. Most long-term SNOTEL sites in Oregon received the highest October rainfall in over 30 years, which was two to four times more than the usual rainfall totals in many locations. North Fork SNOTEL in the Bull Run watershed near Portland collected 33.5 inches of rain in October, which was both a record for that site and the highest October precipitation total for a SNOTEL site in Oregon.

Most of the fall precipitation fell as rain, which is ideal for wetting up the soil profiles prior to snow accumulation. By December, precipitation transitioned to snow and quickly brought the snowpack up to near normal levels in the mountains. The water year-to-date precipitation totals range from 105% of average in the Harney basin to 136% of average in the Rogue and Umpqua basins.

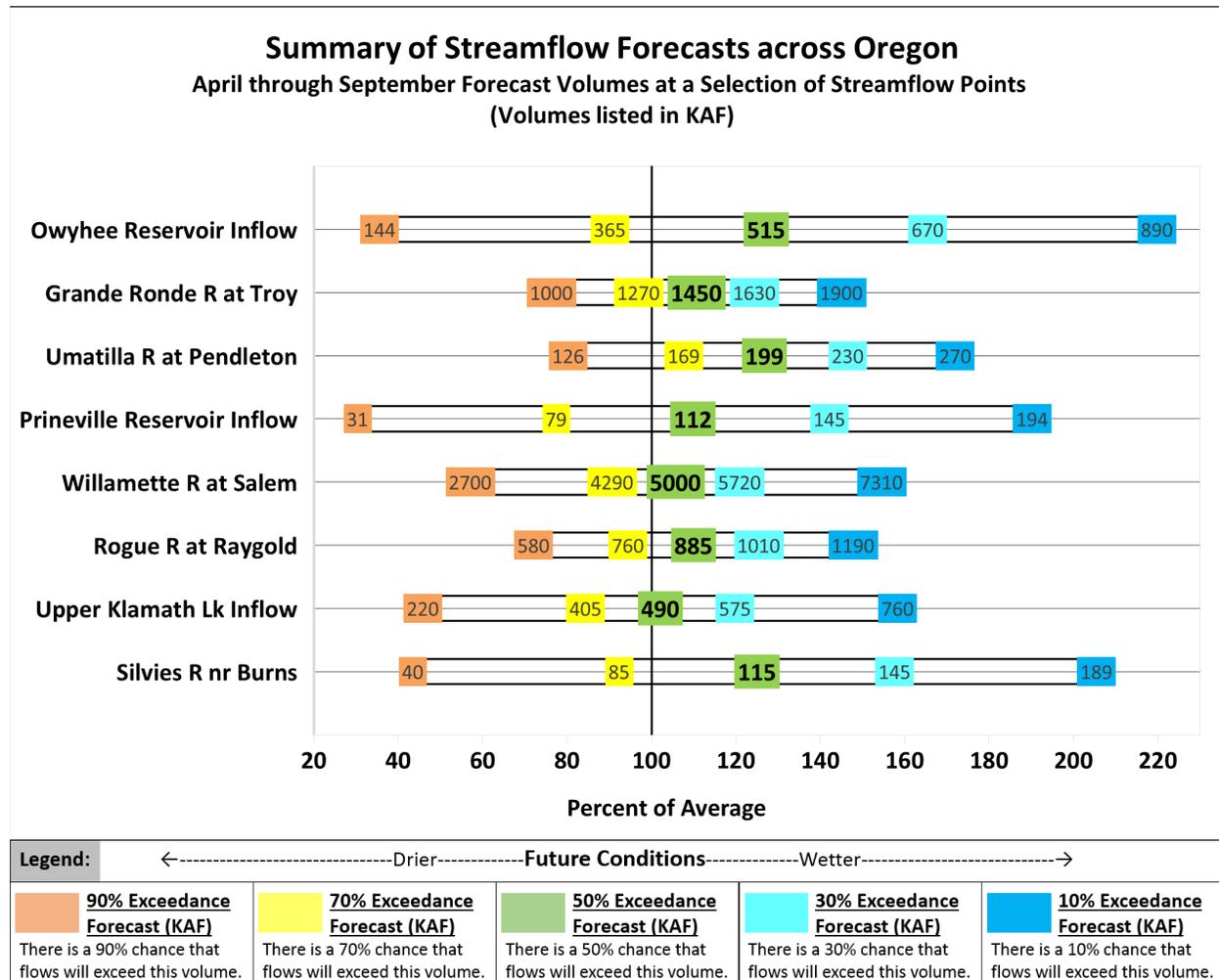
## RESERVOIRS

Most reservoirs in the state are currently storing below average amounts of water. Below normal streamflow this past summer and water usage led to below average volumes going into this new season. As of the end of December, the group of reservoirs that are storing the lowest amount in the state is in the Umatilla, Walla Walla and Willow basins at 56% of average and the highest is in the Deschutes and Crooked River basins at 90% of average.

## STREAMFLOW

As of January 1<sup>st</sup>, most of the spring and summer forecasts are projecting near average to above average streamflow volumes based on the wet fall and near normal to above normal snowpack in Oregon. Last year at this time, the state-wide snowpack was also above normal and continued to hover near normal through April 1<sup>st</sup>. Rapid and record breaking snowmelt occurred during April which led to below normal summer streamflow. This highlights the uncertainty of early season streamflow forecasts.

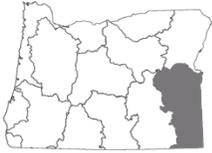
This year, we have upgraded the streamflow forecast summary table typically published in this section to a colorful graphical representation, shown below. Previously, the table only listed the 50% chance of exceedance (median) forecast because it is the forecast most commonly used by water users. The new graphic depicts the full range of 5 streamflow forecast volumes that are provided for each station, which illustrates the range of possible streamflow outcomes depending on the future weather. We hope to expand this way of graphically presenting streamflow forecasts in the future and welcome any feedback about this product.



To accompany the new forecast summary graphic, here are some helpful reminders about interpreting streamflow forecasts published in this document. For each forecast point, 5 possible streamflow volumes are predicted. Where the observed streamflow occurs within this spectrum depends on the range of future weather conditions. If water users wish to plan conservatively, they may lean toward using the 70% chance of exceedance forecast, or the drier forecast (which may be below average depending on the region). Conversely, if a water user believes future conditions will provide more water to the system, they could choose to use the 30% chance of exceedance forecast (the wetter forecast). These arrays of forecasts are shown in the chart on the previous page and explained in more detail on page 35.

Some of these forecasts assume that normal weather conditions will occur from now to the end of the forecast period. All forecasts are listed with units of 1000 acre-feet (KAF). This report contains data furnished by the Oregon Department of Water Resources, U.S. Geological Survey, NOAA National Weather Service and other cooperators. This report will be updated monthly, January through June.

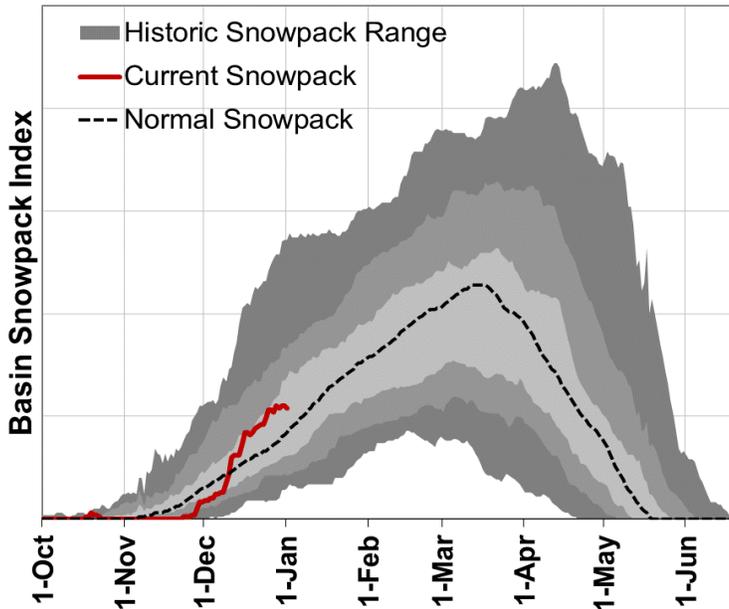
Note: A select set of streamflow forecasts have been discontinued in the Rogue, Grande Ronde and Willamette basins. Please see each basin section for more information.



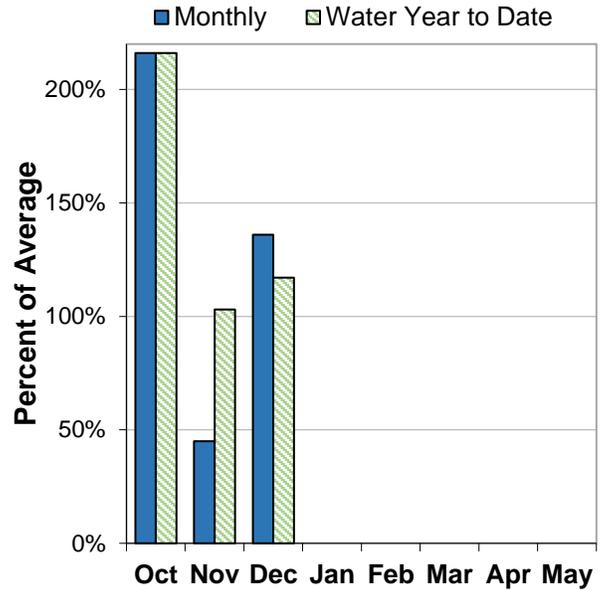
# Owyhee and Malheur Basins

January 1, 2017

### Mountain Snowpack



### Basin Precipitation



## Summary of Water Supply Conditions

### SNOWPACK

As of January 1, the basin snowpack was 130% of normal. This is lower than last year when the basin snowpack was 185% of normal on January 1, 2016.

### PRECIPITATION

October brought more than twice the normal amount of precipitation to the basin and record rainfall was measured at 5 out of 11 long-term SNOTEL sites in the basin. December precipitation was 136% of average. Precipitation since the beginning of the water year (October 1 - January 1) has been 117% of average.

### RESERVOIR

Reservoir storage across the basin is currently well below average. As of January 1, storage at major reservoirs in the basin ranges from 15% of average at Warm Springs Reservoir to 68% of average at Lake Owyhee.

### STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 121% to 130% of average. If conditions remain similar, water supplies in the basin are likely to be near normal to above normal this summer.

## Owyhee And Malheur Basins Summary for January 1, 2017

<b>Forecast Exceedance Probabilities for Risk Assessment *</b>								
<b>Streamflow Forecasts January 1, 2017</b>	<b>Forecast Period</b>	←-----Drier-----Future Conditions-----Wetter-----→						<b>Average (KAF)</b>
		<b>90% (KAF)</b>	<b>70% (KAF)</b>	<b>50% (KAF)</b>	<b>% Avg</b>	<b>30% (KAF)</b>	<b>10% (KAF)</b>	
Owyhee R nr Rome	FEB-JUL	295	550	725	125%	900	1160	580
	FEB-SEP	310	570	745	125%	925	1180	595
	APR-SEP	105	325	475	130%	620	840	365
Owyhee R bl Owyhee Dam <sup>2</sup>	FEB-JUL	335	605	785	124%	965	1230	635
	FEB-SEP	365	635	820	123%	1000	1270	665
	APR-SEP	144	365	515	127%	670	890	405
Malheur R nr Drewsey	FEB-JUL	59	105	135	116%	166	210	116
	APR-JUL	33	62	83	122%	103	132	68
	APR-SEP	34	64	85	121%	105	135	70
NF Malheur R at Beulah	FEB-JUL	50	78	97	114%	117	145	85

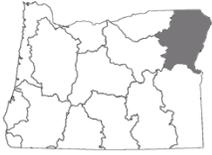
\* 90%, 70%, 50%, 30% & 10% exceedance probabilities are the chance that observed streamflow volume will exceed the forecasted volume  
 2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

<b>Reservoir Storage</b>	<b>Current (KAF)</b>	<b>Last Year (KAF)</b>	<b>Average (KAF)</b>	<b>% of Average</b>	<b>Useable Capacity (KAF)</b>
Beulah	12.1	9.9	21.0	58%	59.2
Bully Creek	5.0	4.5	10.8	46%	23.7
Lake Owyhee	212.9	69.5	312.7	68%	715.0
Warm Springs	9.1	9.5	60.4	15%	169.6

<b>Snowpack Summary by Basin</b>	<b>Basin Snowpack % of Median</b>		
	<b># of Sites</b>	<b>Current Yr</b>	<b>Last Yr</b>
East Little Owyhee Basin	2	124%	194%
South Fork Owyhee Basin	4	134%	191%
Upper Malheur Basin	3	124%	165%
Upper Owyhee Basin	5	132%	192%

## Owyhee And Malheur Basins Summary for January 1, 2017

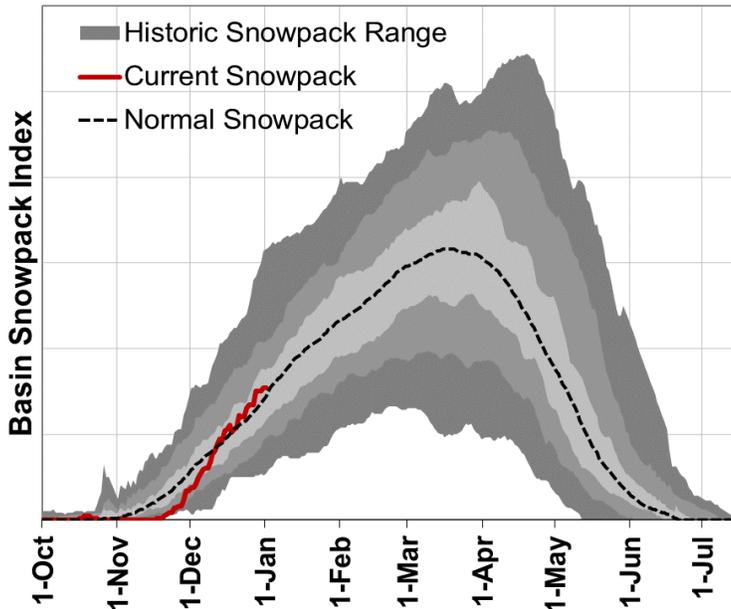
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Granite Peak SNOTEL	8543	1-Jan	31	7.7	12.3	7.0	110%
Trout Creek AM	7890	1-Jan	25	5.5	6.5		
Toe Jam SNOTEL	7700	1-Jan	36	9.8	10.8		
Govt Corrals AM	7400	1-Jan	21	4.6	8.3		
Jack Creek Upper SNOTEL	7250	1-Jan	32	7.7	11.0	5.4	143%
Dobson Creek Snow Course	7084	3-Jan	45	9.6	14.0	11.1	86%
Reynolds-Dobson Divide Snow Course	7064	3-Jan	50	10.8	15.0	9.8	110%
Fawn Creek SNOTEL	7000	1-Jan	30	6.9	11.0	5.9	117%
Buckskin Lower SNOTEL	6915	1-Jan	23	5.1	7.7	3.3	155%
Reynolds West Fork #2 Snow Course	6798	3-Jan	48	9.8	14.6	9.1	108%
Big Bend SNOTEL	6700	1-Jan	20	5.7	8.1	3.0	190%
Fry Canyon SNOTEL	6700	1-Jan	15	4.1	3.3		
Laurel Draw SNOTEL	6697	1-Jan	17	4.5	6.3	4.1	110%
South Mtn. SNOTEL	6500	1-Jan	24	6.6	9.1	6.2	106%
Taylor Canyon SNOTEL	6200	1-Jan	19	3.6	3.9	1.5	240%
Blue Mountain Spring SNOTEL	5870	1-Jan	33	7.0	10.5	6.9	101%
Mud Flat SNOTEL	5730	1-Jan	13	3.0	3.9	2.6	115%
Democrat Creek Snow Course	5686	3-Jan	27	4.5	2.0	4.1	110%
Reynolds Creek SNOTEL	5600	1-Jan	12	2.6	6.0	2.0	130%
Rock Springs SNOTEL	5290	1-Jan	16	3.4	4.5	1.9	179%
Lake Creek R.S. SNOTEL	5240	1-Jan	25	6.4	7.5	4.8	133%



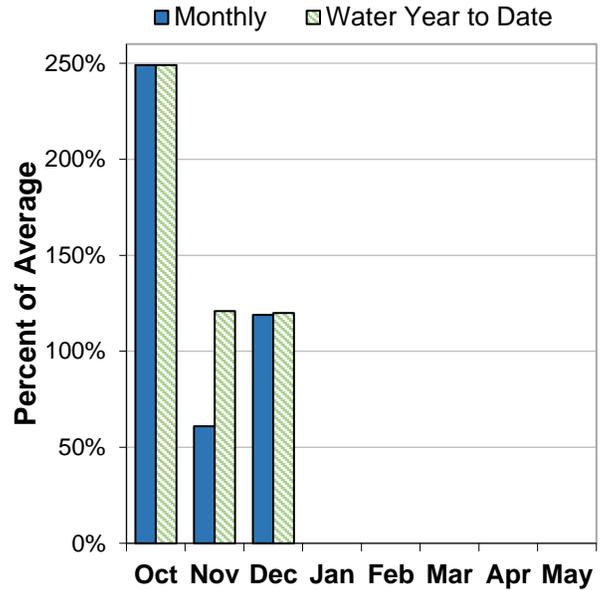
# Grande Ronde, Powder, Burnt and Imnaha Basins

January 1, 2017

**Mountain Snowpack**



**Basin Precipitation**



## Summary of Water Supply Conditions

### SNOWPACK

As of January 1, the basin snowpack was 108% of normal. This is lower than last year when the basin snowpack was 121% of normal on January 1, 2016.

### PRECIPITATION

October brought more than twice the normal amount of precipitation to the basin and record rainfall was measured at 10 out of 16 long-term SNOTEL sites in the basin. December precipitation was 119% of average. Precipitation since the beginning of the water year (October 1 - January 1) has been 120% of average.

### RESERVOIR

As of January 1, storage at major reservoirs in the basin ranges from 14% of average at Phillips Lake to 162% of average at Wallowa Lake.

### STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 101% to 117% of average. If conditions remain similar, water supplies in the basin are likely to be near normal to above normal this summer. Note: As of 2017, Deer Creek and Wolf Creek inflow forecasts have been discontinued due to discontinuation of associated stream gages.

## Grande Ronde, Powder, Burnt And Imnaha Basins Summary for January 1, 2017

<b>Forecast Exceedance Probabilities for Risk Assessment *</b>								
<b>Streamflow Forecasts January 1, 2017</b>	<b>Forecast Period</b>	←-----Drier-----Future Conditions-----Wetter-----→						<b>Average (KAF)</b>
		<b>90% (KAF)</b>	<b>70% (KAF)</b>	<b>50% (KAF)</b>	<b>% Avg</b>	<b>30% (KAF)</b>	<b>10% (KAF)</b>	
Burnt R nr Hereford	FEB-JUL	32	48	59	116%	70	86	51
	APR-SEP	17.4	31	41	117%	50	64	35
Powder R nr Sumpter	FEB-JUL	49	66	78	116%	90	107	67
	APR-JUL	36	51	62	117%	72	88	53
	APR-SEP	37	53	63	117%	74	90	54
Pine Ck nr Oxbow	FEB-JUL	138	190	225	102%	260	315	220
	APR-JUL	89	131	160	102%	189	230	157
	APR-SEP	94	136	165	101%	195	235	163
Imnaha R at Imnaha	APR-JUL	165	225	265	104%	310	370	255
	APR-SEP	181	245	290	104%	330	395	280
Catherine Ck nr Union	APR-JUL	44	57	66	110%	75	88	60
	APR-SEP	48	61	70	109%	79	93	64
Lostine R nr Lostine	APR-JUL	90	103	112	106%	121	134	106
	APR-SEP	96	111	121	105%	130	145	115
Bear Ck nr Wallowa	APR-SEP	50	61	68	105%	76	87	65
Grande Ronde R at Troy	MAR-JUL	1190	1480	1670	111%	1870	2160	1510
	APR-SEP	1000	1270	1450	111%	1630	1900	1310

\* 90%, 70%, 50%, 30% & 10% exceedance probabilities are the chance that observed streamflow volume will exceed the forecasted volume

<b>Reservoir Storage</b>	<b>Current (KAF)</b>	<b>Last Year (KAF)</b>	<b>Average (KAF)</b>	<b>% of Average</b>	<b>Useable Capacity (KAF)</b>
Phillips Lake	4.1	3.8	30.2	14%	73.5
Thief Valley	5.2	5.9	10.5	50%	13.3
Unity	6.0	6.5	9.5	63%	25.5
Wallowa Lake	23.8	15.6	14.7	162%	37.5

<b>Snowpack Summary by Basin</b>	<b>Basin Snowpack % of Median</b>		
	<b># of Sites</b>	<b>Current Yr</b>	<b>Last Yr</b>
Burnt Basin	2	126%	155%
Imnaha Basin	4	87%	129%
Lower Grande Ronde Basin	3	127%	105%
Powder Basin	8	108%	138%
Upper Grande Ronde Basin	7	121%	121%
Wallowa Basin	4	97%	118%

## Grande Ronde, Powder, Burnt And Imnaha Basins Summary for January 1, 2017

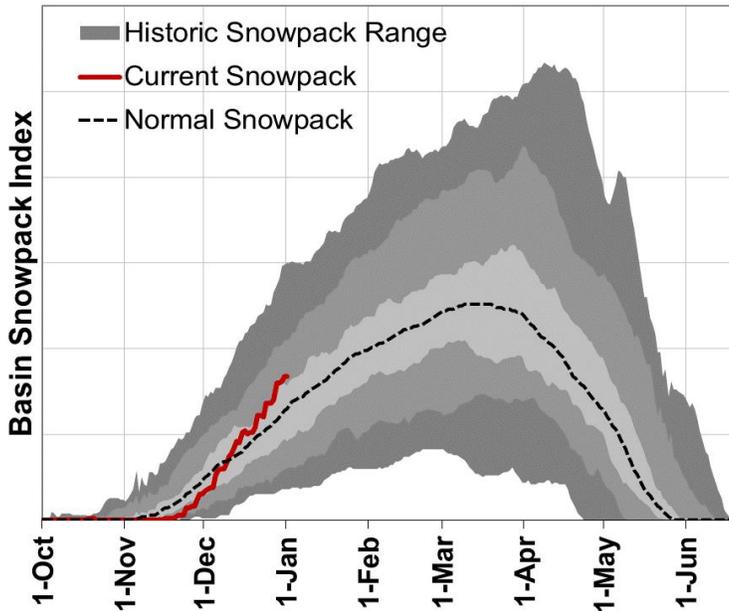
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Mt. Howard SNOTEL	7910	1-Jan	20	5.6	7.4	7.5	75%
Aneroid Lake #2 SNOTEL	7400	1-Jan	33	6.7	10.0	9.1	74%
Big Sheep AM	6230	1-Jan	30	6.0	12.0		
Bear Saddle SNOTEL	6180	1-Jan	33	6.9	16.2	9.4	73%
Bourne SNOTEL	5850	1-Jan	34	7.8	8.8	6.8	115%
Moss Springs SNOTEL	5760	1-Jan	47	12.0	12.3	10.2	118%
Taylor Green SNOTEL	5740	1-Jan		9.0	11.1	7.7	117%
Spruce Springs SNOTEL	5700	1-Jan	29	6.9	5.3	7.1	97%
Wolf Creek SNOTEL	5630	1-Jan	35	5.9	6.7	6.0	98%
Milk Shakes SNOTEL	5580	1-Jan	60	15.7	17.6		
West Branch SNOTEL	5560	1-Jan	28	5.3	11.5	9.2	58%
Touchet SNOTEL	5530	1-Jan	51	14.4	14.7	12.9	112%
Eilertson Meadows SNOTEL	5510	1-Jan		5.5	6.3	4.8	115%
Gold Center SNOTEL	5410	1-Jan	27	5.4	7.4	4.7	115%
Schneider Meadows SNOTEL	5400	1-Jan	48	10.3	18.0	12.3	84%
Beaver Reservoir SNOTEL	5150	1-Jan	25	5.7	4.7	4.2	136%
Tipton SNOTEL	5150	1-Jan	33	6.9	7.8	5.1	135%
High Ridge SNOTEL	4920	1-Jan	48	13.5	13.2	11.0	123%
County Line SNOTEL	4830	1-Jan	21	3.5	2.4	2.4	146%
Bowman Springs SNOTEL	4530	1-Jan	24	5.3	4.1	3.7	143%
East Eagle Snow Course	4400	31-Dec	44	10.0	13.2	8.7	115%
Sourdough Gulch SNOTEL	4000	1-Jan	20	4.9	1.6	0.6	817%



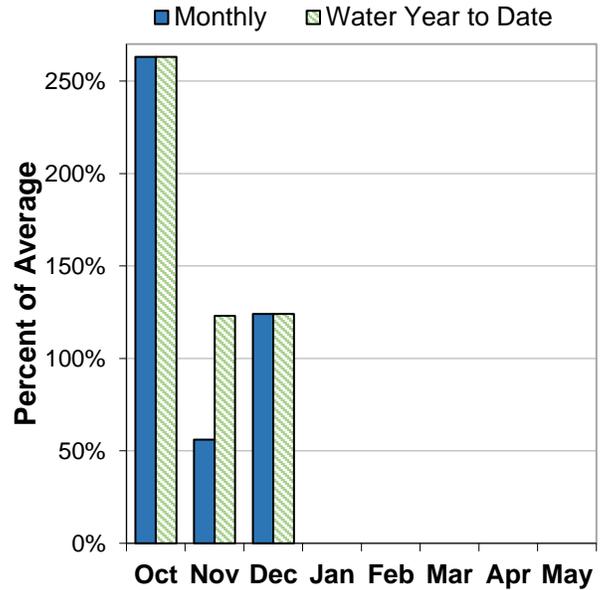
# Umatilla, Walla Walla and Willow Basins

January 1, 2017

### Mountain Snowpack



### Basin Precipitation



## Summary of Water Supply Conditions

### SNOWPACK

As of January 1, the basin snowpack was 129% of normal. This is higher than last year when the basin snowpack was 122% of normal on January 1, 2016.

### PRECIPITATION

October brought more than twice the normal amount of precipitation to the basin and record rainfall was measured at 4 out of 7 long-term SNOTEL sites in the basin. December precipitation was 124% of average. Precipitation since the beginning of the water year (October 1 - January 1) has been 124% of average.

### RESERVOIR

Reservoir storage across the basin is currently well below average. As of January 1, storage at major reservoirs in the basin ranges from 49% of average at Cold Springs Reservoir to 59% of average at McKay Reservoir.

### STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 112% to 131% of average. If conditions remain similar, water supplies in the basin are likely to be above normal to well above normal this summer.

## Umatilla, Walla Walla And Willow Basins Summary for January 1, 2017

### Forecast Exceedance Probabilities for Risk Assessment \*

Streamflow Forecasts January 1, 2017	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
SF Walla Walla R nr Milton-Freewater	MAR-SEP	71	81	89	111%	96	106	80
	APR-JUL	45	54	61	113%	67	76	54
	APR-SEP	58	67	74	112%	80	90	66
Umatilla R ab Meacham nr Gibbon	MAR-SEP	94	115	130	123%	144	166	106
	APR-JUL	62	81	94	127%	106	125	74
	APR-SEP	67	86	99	124%	112	131	80
Umatilla R at Pendleton	MAR-SEP	199	250	285	124%	320	370	230
	APR-JUL	122	165	194	128%	225	265	151
	APR-SEP	126	169	199	127%	230	270	157
McKay Ck nr Pilot Rock	APR-SEP	15.0	29	38	131%	48	62	29
Butter Ck nr Pine City	MAR-JUL	10.7	15.4	18.6	125%	22	27	14.9
	APR-SEP	6.2	9.7	12.1	123%	14.5	18.0	9.8
Willow Ck ab Willow Lk nr Heppner	FEB-JUL	7.7	12.0	14.9	126%	17.8	22	11.8
	APR-JUL	3.2	6.6	9.0	129%	11.3	14.7	7.0
Rhea Ck nr Heppner	FEB-JUL	9.5	14.0	17.0	125%	20	24	13.6

\* 90%, 70%, 50%, 30% & 10% exceedance probabilities are the chance that observed streamflow volume will exceed the forecasted volume

Reservoir Storage	Current (KAF)	Last Year (KAF)	Average (KAF)	% of Average	Useable Capacity (KAF)
Cold Springs	3.4	5.3	6.9	49%	38.6
Mckay	11.7	14.5	20.0	59%	71.5
Willow Creek	2.4	2.6	4.2	58%	9.8

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Umatilla Basin	5	136%	118%
Walla Walla Basin	7	129%	118%

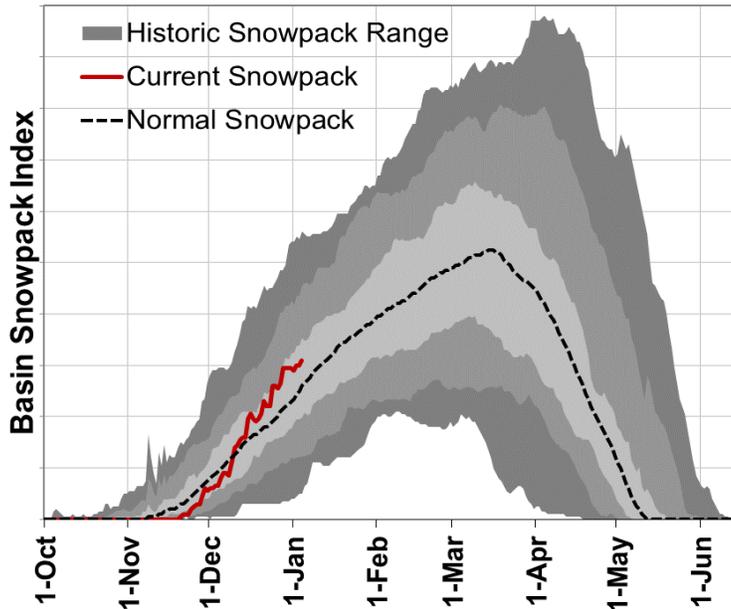
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Arbuckle Mtn SNOTEL	5770	1-Jan	34	8.4	9.4	8.1	104%
Spruce Springs SNOTEL	5700	1-Jan	29	6.9	5.3	7.1	97%
Milk Shakes SNOTEL	5580	1-Jan	60	15.7	17.6		
Touchet SNOTEL	5530	1-Jan	51	14.4	14.7	12.9	112%
Madison Butte SNOTEL	5150	1-Jan	17	3.6	3.9	2.7	133%
Lucky Strike SNOTEL	4970	1-Jan	24	5.3	4.9	3.9	136%
High Ridge SNOTEL	4920	1-Jan	48	13.5	13.2	11.0	123%
Bowman Springs SNOTEL	4530	1-Jan	24	5.3	4.1	3.7	143%
Emigrant Springs SNOTEL	3800	1-Jan	23	8.4	3.8	3.3	255%



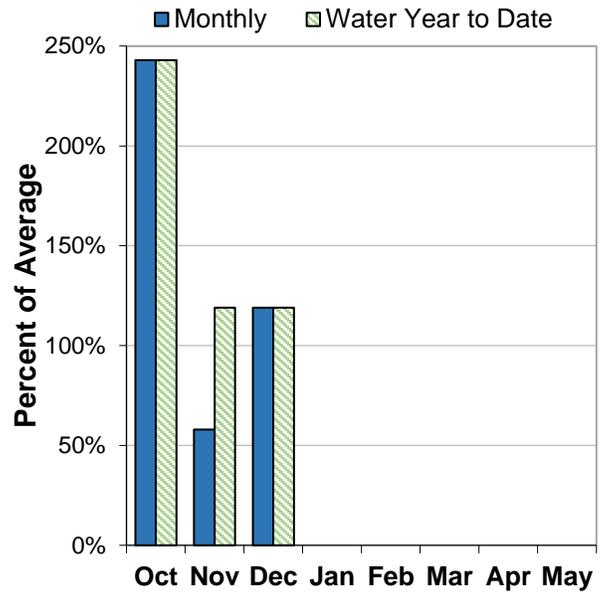
# John Day Basin

January 1, 2017

## Mountain Snowpack



## Basin Precipitation



## Summary of Water Supply Conditions

### SNOWPACK

As of January 1, the basin snowpack was 127% of normal. This is lower than last year when the basin snowpack was 159% of normal on January 1, 2016.

### PRECIPITATION

October brought more than twice the normal amount of precipitation to the basin and record rainfall was measured at 10 out of 13 long-term SNOTEL sites in the basin. December precipitation was 119% of average. Precipitation since the beginning of the water year (October 1 - January 1) has been 119% of average.

### STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 109% to 114% of average. If conditions remain similar, water supplies in the basin are likely to be near normal to above normal this summer.

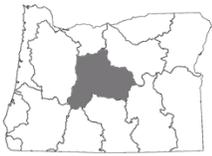
## John Day Basin Summary for January 1, 2017

<b>Forecast Exceedance Probabilities for Risk Assessment *</b>								
<b>Streamflow Forecasts January 1, 2017</b>	<b>Forecast Period</b>	←-----Drier-----Future Conditions-----Wetter-----→						<b>Average (KAF)</b>
		<b>90% (KAF)</b>	<b>70% (KAF)</b>	<b>50% (KAF)</b>	<b>% Avg</b>	<b>30% (KAF)</b>	<b>10% (KAF)</b>	
Strawberry Ck nr Prairie City	MAR-JUL	6.0	8.1	9.4	111%	10.8	12.8	8.5
	APR-SEP	6.4	8.4	9.8	111%	11.1	13.1	8.8
Mountain Ck nr Mitchell	FEB-JUL	3.9	6.2	7.8	111%	9.4	11.7	7.0
	APR-SEP	2.4	4.2	5.5	112%	6.7	8.5	4.9
Camas Ck nr Ukiah	MAR-JUL	36	47	55	115%	62	74	48
	APR-SEP	21	32	40	114%	47	58	35
MF John Day R at Ritter	MAR-JUL	100	141	169	108%	196	235	156
	APR-SEP	76	112	137	109%	161	197	126
NF John Day R at Monument	MAR-JUL	555	730	850	111%	965	1140	765
	APR-SEP	405	560	665	111%	770	925	600

\* 90%, 70%, 50%, 30% & 10% exceedance probabilities are the chance that observed streamflow volume will exceed the forecasted volume

<b>Snowpack Summary by Basin</b>	<b>Basin Snowpack % of Median</b>		
	<b># of Sites</b>	<b>Current Yr</b>	<b>Last Yr</b>
Lower John Day Basin	4	138%	185%
North Fork John Day Basin	7	121%	132%
Upper John Day Basin	5	126%	189%

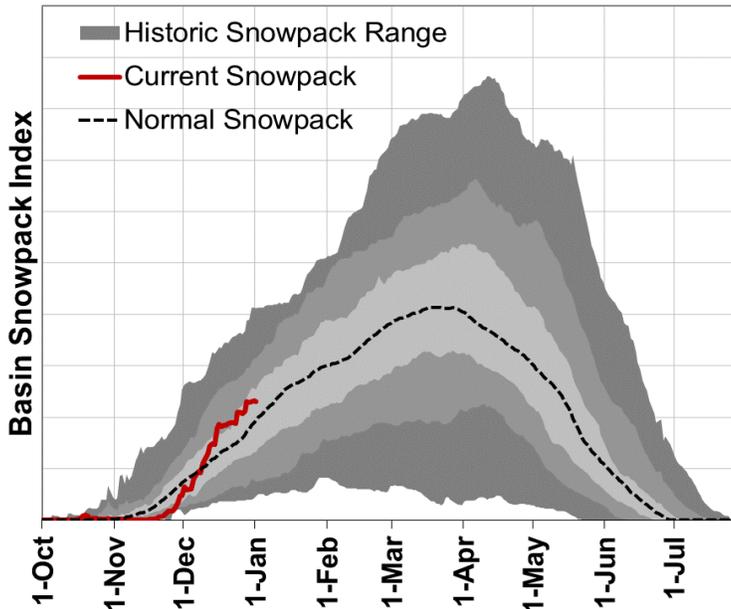
<b>Basin Snowpack Measurement Sites</b>	<b>Elevation (ft)</b>	<b>Date Measured</b>	<b>Depth (in)</b>	<b>Snow Water Equivalent (in)</b>			
				<b>Current SWE</b>	<b>Last Yr SWE</b>	<b>Median</b>	<b>% of Median</b>
Snow Mountain SNOTEL	6230	1-Jan	17	4.6	8.6	3.3	139%
Blue Mountain Spring SNOTEL	5870	1-Jan	33	7.0	10.5	6.9	101%
Bourne SNOTEL	5850	1-Jan	34	7.8	8.8	6.8	115%
Derr. SNOTEL	5850	1-Jan	27	6.9	11.1	5.7	121%
Arbuckle Mtn SNOTEL	5770	1-Jan	34	8.4	9.4	8.1	104%
Ochoco Meadows SNOTEL	5430	1-Jan	22	6.0	7.3	4.4	136%
Gold Center SNOTEL	5410	1-Jan	27	5.4	7.4	4.7	115%
Starr Ridge SNOTEL	5250	1-Jan	18	4.8	6.6	2.8	171%
Lake Creek R.S. SNOTEL	5240	1-Jan	25	6.4	7.5	4.8	133%
Madison Butte SNOTEL	5150	1-Jan	17	3.6	3.9	2.7	133%
Tipton SNOTEL	5150	1-Jan	33	6.9	7.8	5.1	135%
Lucky Strike SNOTEL	4970	1-Jan	24	5.3	4.9	3.9	136%
County Line SNOTEL	4830	1-Jan	21	3.5	2.4	2.4	146%
Marks Creek Snow Course	4580	30-Dec	19	4.4	5.8	2.4	183%



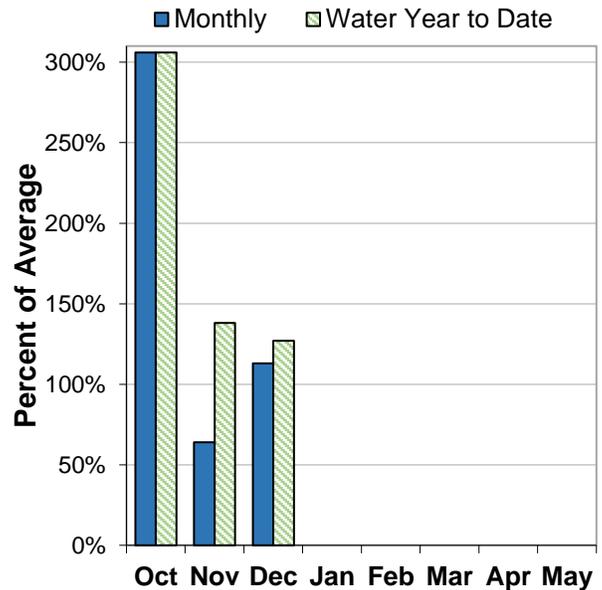
# Upper Deschutes and Crooked Basins

January 1, 2017

### Mountain Snowpack



### Basin Precipitation



## Summary of Water Supply Conditions

### SNOWPACK

As of January 1, the basin snowpack was 120% of normal. This is lower than last year when the basin snowpack was 134% of normal on January 1, 2016.

### PRECIPITATION

October brought more than three times the normal amount of precipitation to the basin and record rainfall was measured at 12 out of 13 long-term SNOTEL sites in the basin. December precipitation was 113% of average. Precipitation since the beginning of the water year (October 1 - January 1) has been 127% of average.

### RESERVOIR

As of January 1, storage at major reservoirs in the basin ranges from 77% of average at Prineville Reservoir to 119% of average at Crescent Lake.

### STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 102% to 117% of average. If conditions remain similar, water supplies in the basin are likely to be near normal to above normal this summer.

## Upper Deschutes And Crooked Basins Summary for January 1, 2017

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts January 1, 2017	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Deschutes R bl Snow Ck	FEB-JUL	31	38	43	105%	48	55	41
	FEB-SEP	48	60	69	110%	77	90	63
	APR-JUL	22	28	32	107%	36	42	30
	APR-SEP	38	50	58	112%	66	78	52
Crane Prairie Reservoir Inflow <sup>2</sup>	FEB-JUL	64	78	88	116%	99	113	76
	FEB-SEP	88	110	125	117%	140	162	107
	APR-JUL	46	58	66	118%	75	87	56
	APR-SEP	70	90	103	117%	117	136	88
Crescent Lake Inflow <sup>2</sup>	FEB-JUL	8.9	15.8	20	102%	25	32	19.6
	FEB-SEP	8.4	16.9	23	105%	28	37	22
	APR-JUL	7.4	12.6	16.2	108%	19.8	25	15.0
	APR-SEP	6.9	13.8	18.5	106%	23	30	17.4
Little Deschutes R nr La Pine	FEB-JUL	47	77	97	109%	117	147	89
	FEB-SEP	48	81	103	110%	125	158	94
	APR-JUL	35	58	73	116%	89	111	63
	APR-SEP	36	62	79	114%	97	123	69
Deschutes R at Benham Falls <sup>2</sup>	FEB-JUL	365	420	455	99%	490	545	460
	FEB-SEP	520	585	630	101%	675	740	625
	APR-JUL	265	300	325	102%	350	385	320
	APR-SEP	410	460	495	102%	530	580	485
Wychus Ck nr Sisters	FEB-JUL	36	43	48	112%	52	59	43
	FEB-SEP	46	55	61	111%	66	75	55
	APR-JUL	29	35	38	109%	42	47	35
	APR-SEP	39	46	51	109%	56	63	47
Prineville Reservoir Inflow <sup>2</sup>	FEB-JUL	87	164	215	105%	270	345	205
	FEB-SEP	86	164	215	105%	270	345	205
	APR-JUL	32	80	112	110%	145	193	102
	APR-SEP	31	79	112	110%	145	194	102
Ochoco Reservoir Inflow <sup>2</sup>	FEB-JUL	18.5	33	43	108%	53	68	40
	FEB-SEP	17.7	33	43	108%	53	68	40
	APR-JUL	7.4	16.7	23	110%	29	39	21
	APR-SEP	6.7	16.1	23	115%	29	38	20

\* 90%, 70%, 50%, 30% & 10% exceedance probabilities are the chance that observed streamflow volume will exceed the forecasted volume

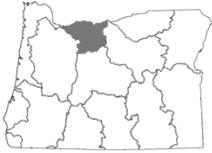
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

## Upper Deschutes And Crooked Basins Summary for January 1, 2017

Reservoir Storage	Current	Last Year	Average	% of	Useable
	(KAF)	(KAF)	(KAF)	Average	Capacity (KAF)
Crane Prairie	38.6	31.9	35.6	108%	55.3
Crescent Lake	52.1	52.4	44.0	119%	86.9
Ochoco	19.9	10.9	17.1	116%	44.2
Prineville	63.8	51.2	82.6	77%	148.6
Wickiup	112.2	109.5	140.8	80%	200.0

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Little Deschutes Basin	4	116%	143%
Upper Crooked Basin	3	138%	194%
Upper Deschutes Basin	9	117%	123%

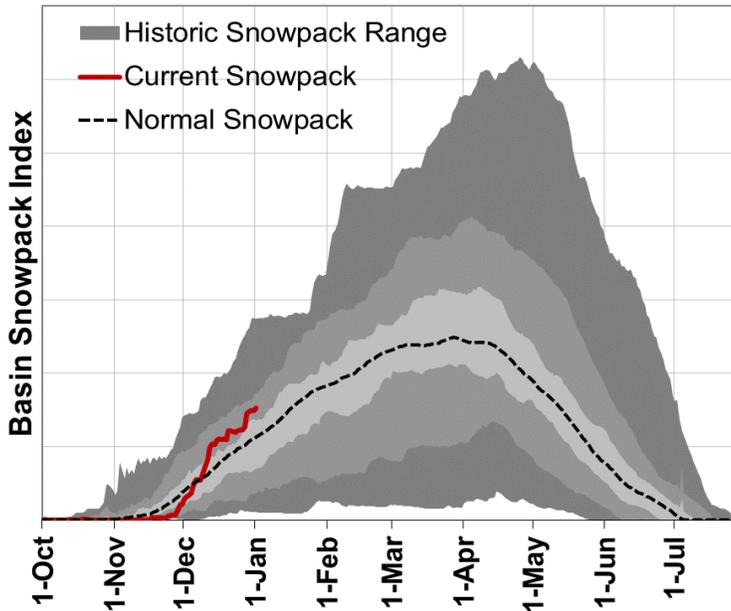
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Snow Mountain SNOTEL	6230	1-Jan	17	4.6	8.6	3.3	139%
Derr. SNOTEL	5850	1-Jan	27	6.9	11.1	5.7	121%
Three Creeks Meadow SNOTEL	5690	1-Jan	33	9.2	8.8	6.9	133%
Summit Lake SNOTEL	5610	1-Jan	60	18.6	23.0	16.3	114%
Irish Taylor SNOTEL	5540	1-Jan	58	16.4	16.2	14.6	112%
Ochoco Meadows SNOTEL	5430	1-Jan	22	6.0	7.3	4.4	136%
Cascade Summit SNOTEL	5100	1-Jan	54	14.9	16.2	14.1	106%
Roaring River SNOTEL	4950	1-Jan	51	15.5	13.8	12.6	123%
New Crescent Lake SNOTEL	4910	1-Jan	37	8.1	11.1	6.1	133%
Chemult Alternate SNOTEL	4850	1-Jan	23	4.6	8.6	4.6	100%
Hogg Pass SNOTEL	4790	1-Jan	50	14.4	11.1	11.6	124%
McKenzie SNOTEL	4770	1-Jan	69	19.3	18.6	18.5	104%
Marks Creek Snow Course	4580	30-Dec	19	4.4	5.8	2.4	183%
Salt Creek Falls SNOTEL	4220	1-Jan	40	11.9	13.4	8.6	138%
Santiam Jct. SNOTEL	3740	1-Jan	39	10.5	10.5	9.0	117%



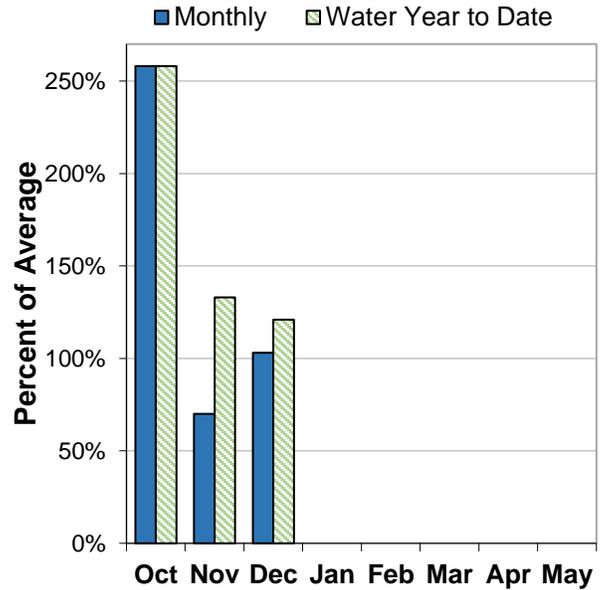
# Hood, Sandy and Lower Deschutes Basins

January 1, 2017

### Mountain Snowpack



### Basin Precipitation



## Summary of Water Supply Conditions

### SNOWPACK

As of January 1, the basin snowpack was 136% of normal. This is higher than last year when the basin snowpack was 117% of normal on January 1, 2016.

### PRECIPITATION

October brought more than twice the normal amount of precipitation to the basin and record rainfall was measured at 5 out of 9 long-term SNOTEL sites in the basin. December precipitation was 103% of average. Precipitation since the beginning of the water year (October 1 - January 1) has been 121% of average.

### STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 108% to 111% of average. If conditions remain similar, water supplies in the basin are likely to be near normal to above normal this summer.

## Hood, Sandy And Lower Deschutes Basins Summary for January 1, 2017

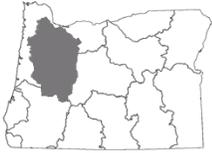
Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts January 1, 2017	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
WF Hood R nr Dee	APR-JUL	90	115	131	109%	148	172	120
	APR-SEP	107	133	151	109%	168	194	139
Hood R at Tucker Bridge	APR-JUL	169	215	245	109%	275	320	225
	APR-SEP	205	255	285	108%	320	370	265
Sandy R nr Marmot	APR-JUL	245	305	345	111%	390	450	310
	APR-SEP	290	355	400	111%	445	510	360

\* 90%, 70%, 50%, 30% & 10% exceedance probabilities are the chance that observed streamflow volume will exceed the forecasted volume

Reservoir Storage	Current (KAF)	Last Year (KAF)	Average (KAF)	% of Average	Useable Capacity (KAF)
Clear Lake	0.9	1.1	2.8	32%	13.1

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Lower Columbia - Sandy Basin	7	140%	114%
Lower Deschutes Basin	4	116%	103%
Middle Columbia - Hood Basin	6	124%	109%

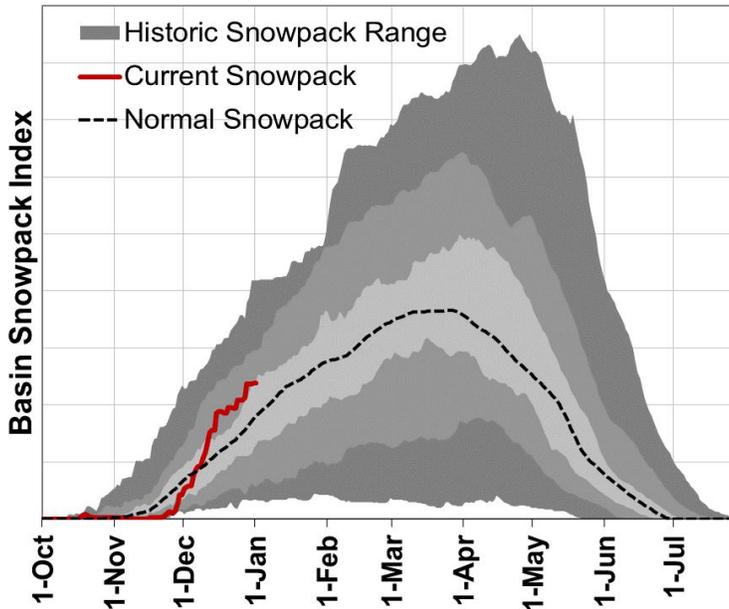
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Mt Hood Test Site SNOTEL	5370	1-Jan	81	25.0	21.7	25.3	99%
Red Hill SNOTEL	4410	1-Jan	72	25.8	17.1	18.7	138%
Surprise Lakes SNOTEL	4290	1-Jan	71	22.4	23.8	19.9	113%
Mud Ridge SNOTEL	4070	1-Jan	54	14.5	13.6	11.0	132%
Clear Lake SNOTEL	3810	1-Jan	34	8.1	7.5	6.3	129%
Blazed Alder SNOTEL	3650	1-Jan	64	20.8	14.5	12.3	169%
Clackamas Lake SNOTEL	3400	1-Jan	27	8.3	6.6	5.4	154%
Greenpoint SNOTEL	3310	1-Jan	28	7.8	11.0	9.2	85%
North Fork SNOTEL	3060	1-Jan	43	12.7	12.2	6.8	187%
South Fork Bull Run SNOTEL	2690	1-Jan	19	6.6	5.8	0.5	1320%



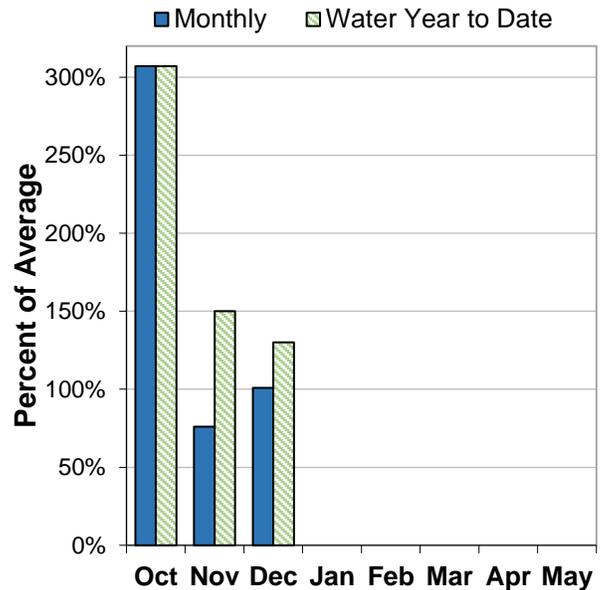
# Willamette Basin

January 1, 2017

## Mountain Snowpack



## Basin Precipitation



## Summary of Water Supply Conditions

### SNOWPACK

As of January 1, the basin snowpack was 132% of normal. This is higher than last year when the basin snowpack was 126% of normal on January 1, 2016.

### PRECIPITATION

October brought more than three times the normal amount of precipitation to the basin and record rainfall was measured at 16 out of 19 long-term SNOTEL sites in the basin. December precipitation was 101% of average. Precipitation since the beginning of the water year (October 1 - January 1) has been 130% of average.

### RESERVOIR

As of January 1, storage at major reservoirs in the basin ranges from 14% of average at Fall Creek Reservoir to 106% of average at Foster Reservoir.

### STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 104% to 108% of average. If conditions remain similar, water supplies in the basin are likely to be near normal to above normal this summer. Note: As of 2017, there are 17 forecasts in this basin have been discontinued due to low forecast verification. Provided instead are a range of historic streamflows that have occurred in the past - Link: <http://bit.ly/2iWsfkt>

## Willamette Basin Summary for January 1, 2017

<b>Forecast Exceedance Probabilities for Risk Assessment *</b>								
<b>Streamflow Forecasts January 1, 2017</b>	<b>Forecast Period</b>	←-----Drier-----Future Conditions-----Wetter-----→						<b>Average (KAF)</b>
		<b>90% (KAF)</b>	<b>70% (KAF)</b>	<b>50% (KAF)</b>	<b>% Avg</b>	<b>30% (KAF)</b>	<b>10% (KAF)</b>	
Hills Creek Reservoir Inflow <sup>1,2</sup>	APR-JUN	139	225	260	106%	300	385	245
	APR-SEP	195	295	335	106%	380	480	315
Lookout Point Reservoir Inflow <sup>1,2</sup>	APR-JUN	370	585	680	105%	780	995	650
	APR-SEP	510	755	865	105%	975	1220	825
McKenzie R bl Trail Bridge	APR-JUN	174	205	220	105%	240	270	210
	APR-SEP	290	335	360	104%	390	430	345
Cougar Lake Inflow <sup>1,2</sup>	APR-JUN	108	169	197	106%	225	285	185
	APR-SEP	149	220	250	106%	280	350	235
Blue Lake Inflow <sup>1,2</sup>	APR-JUN	34	69	84	105%	100	134	80
	APR-SEP	39	74	90	105%	106	141	86
McKenzie R nr Vida <sup>1</sup>	APR-JUN	550	770	870	105%	965	1190	830
	APR-SEP	855	1120	1240	104%	1360	1630	1190
Detroit Lake Inflow <sup>1,2</sup>	APR-JUN	275	430	495	105%	565	720	470
	APR-SEP	395	570	650	107%	730	905	610
North Santiam R at Mehama <sup>1</sup>	APR-JUN	375	605	710	107%	810	1040	665
	APR-SEP	520	780	895	107%	1010	1270	840
Green Peter Lake Inflow <sup>1,2</sup>	APR-JUN	120	225	275	104%	325	435	265
	APR-SEP	151	260	310	105%	360	470	295
Foster Lake Inflow <sup>1,2</sup>	APR-JUN	230	430	520	104%	610	810	500
	APR-SEP	290	495	590	104%	680	885	565
South Santiam R at Waterloo <sup>2</sup>	APR-JUN	310	450	550	105%	645	790	525
	APR-SEP	370	520	620	105%	720	865	590
Willamette R at Salem <sup>1,2</sup>	APR-JUN	2060	3500	4160	105%	4810	6260	3950
	APR-SEP	2700	4290	5000	106%	5720	7310	4730
Oak Grove Fk ab Powerplant	APR-JUL	91	112	126	110%	141	162	115
	APR-SEP	123	149	168	108%	186	210	155
Clackamas R ab Three Lynx	APR-JUL	345	430	490	109%	545	630	450
	APR-SEP	430	520	580	108%	640	730	535
Clackamas R at Estacada	APR-JUL	465	595	680	109%	770	895	625
	APR-SEP	565	700	790	108%	880	1020	730

\* 90%, 70%, 50%, 30% & 10% exceedance probabilities are the chance that observed streamflow volume will exceed the forecasted volume

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

## Willamette Basin Summary for January 1, 2017

Reservoir Storage	Current (KAF)	Last Year (KAF)	Average (KAF)	% of Average	Useable Capacity (KAF)
Blue River	3.9	4.1	9.6	41%	82.3
Cottage Grove	3.3	3.9	4.8	69%	31.8
Cougar	42.1	40.4	53.5	79%	174.9
Detroit	149.6	180.3	174.7	86%	426.8
Dorena	7.3	18.3	13.9	53%	72.1
Fall Creek	2.1	4.6	15.0	14%	116.0
Fern Ridge	3.5	38.3	14.4	25%	97.3
Foster	23.6	23.4	22.3	106%	46.2
Green Peter	155.3	185.5	182.3	85%	402.8
Hills Creek	87.8	89.5	104.8	84%	279.2
Lookout Point	113.7	146.4	144.2	79%	433.2
Henry Hagg Lake	33.2	41.2	31.9	104%	53.3

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Clackamas Basin	9	136%	115%
McKenzie Basin	14	120%	136%
Middle Fork Willamette Basin	7	118%	131%
North Santiam Basin	4	163%	132%
South Santiam Basin	4	180%	142%

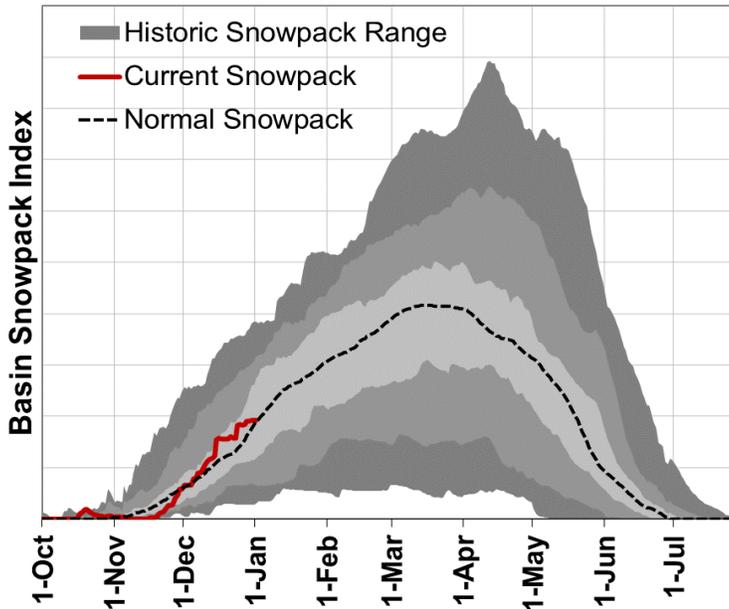
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Summit Lake SNOTEL	5610	1-Jan	60	18.6	23.0	16.3	114%
Irish Taylor SNOTEL	5540	1-Jan	58	16.4	16.2	14.6	112%
Cascade Summit SNOTEL	5100	1-Jan	54	14.9	16.2	14.1	106%
Roaring River SNOTEL	4950	1-Jan	51	15.5	13.8	12.6	123%
Holland Meadows SNOTEL	4930	1-Jan	39	12.4	14.8	10.8	115%
McKenzie SNOTEL	4770	1-Jan	69	19.3	18.6	18.5	104%
Bear Grass SNOTEL	4720	1-Jan	80	26.4	21.6		
Salt Creek Falls SNOTEL	4220	1-Jan	40	11.9	13.4	8.6	138%
Mud Ridge SNOTEL	4070	1-Jan	54	14.5	13.6	11.0	132%
Little Meadows SNOTEL	4020	1-Jan	57	19.4	14.4	10.8	180%
Clear Lake SNOTEL	3810	1-Jan	34	8.1	7.5	6.3	129%
Santiam Jct. SNOTEL	3740	1-Jan	39	10.5	10.5	9.0	117%
Daly Lake SNOTEL	3690	1-Jan	39	11.6	9.1	6.8	171%
Jump Off Joe SNOTEL	3520	1-Jan	32	8.7	8.1	5.2	167%
Peavine Ridge SNOTEL	3420	1-Jan	35	10.9	7.8	6.3	173%
Clackamas Lake SNOTEL	3400	1-Jan	27	8.3	6.6	5.4	154%
Smith Ridge SNOTEL	3270	1-Jan	31	9.1	7.5		
Saddle Mountain SNOTEL	3110	1-Jan	22	7.6	5.4		
Railroad Overpass SNOTEL	2680	1-Jan	3	1.0	3.1	0.0	
Marion Forks SNOTEL	2590	1-Jan	22	8.1	6.2	3.8	213%
Seine Creek SNOTEL	2060	1-Jan	5	1.7	1.5	0.0	
Miller Woods SNOTEL	420	1-Jan	0	0.0	0.0		



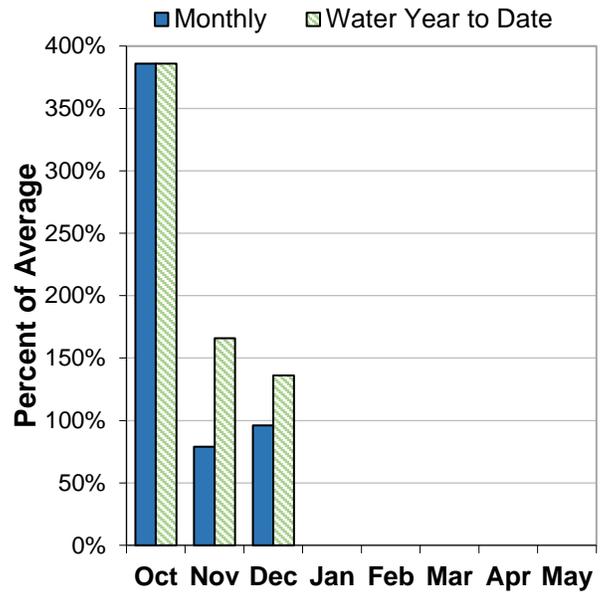
# Rogue and Umpqua Basins

January 1, 2017

### Mountain Snowpack



### Basin Precipitation



## Summary of Water Supply Conditions

### SNOWPACK

As of January 1, the basin snowpack was 110% of normal. This is lower than last year when the basin snowpack was 169% of normal on January 1, 2016.

### PRECIPITATION

October brought more than three times the normal amount of precipitation to the basin and record rainfall was measured at 8 out of 11 long-term SNOTEL sites in the basin. December precipitation was 96% of average. Precipitation since the beginning of the water year (October 1 - January 1) has been 136% of average.

### RESERVOIR

As of January 1, storage at major reservoirs in the basin ranges from 41% of average at Fourmile Lake to 94% of average at Emigrant Lake.

### STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 107% to 131% of average. If conditions remain similar, water supplies in the basin are likely to be near normal to above normal this summer. Note: As of 2017, the Hyatt Prairie inflow forecast has been discontinued due to streamflow data quality issues and associated low forecast skill.

## Rogue And Umpqua Basins Summary for January 1, 2017

<b>Forecast Exceedance Probabilities for Risk Assessment *</b>								
<b>Streamflow Forecasts January 1, 2017</b>	<b>Forecast Period</b>	←-----Drier-----Future Conditions-----Wetter-----→						<b>Average (KAF)</b>
		<b>90% (KAF)</b>	<b>70% (KAF)</b>	<b>50% (KAF)</b>	<b>% Avg</b>	<b>30% (KAF)</b>	<b>10% (KAF)</b>	
South Umpqua R at Tiller	APR-JUL	117	181	225	117%	270	335	193
	APR-SEP	126	191	235	118%	280	345	200
Cow Ck ab Galesville Reservoir <sup>2</sup>	FEB-JUL	22	35	43	130%	51	63	33
	APR-JUL	8.0	14.1	18.2	131%	22	28	13.9
	APR-SEP	9.2	15.4	19.6	131%	24	30	15.0
South Umpqua R nr Brockway	APR-JUL	215	370	470	121%	575	730	390
	APR-SEP	235	390	495	121%	600	760	410
North Umpqua R at Winchester	APR-JUL	545	730	855	110%	985	1170	775
	APR-SEP	660	855	985	111%	1120	1310	890
Lost Creek Lk Inflow <sup>2</sup>	FEB-JUL	610	750	845	106%	945	1080	795
	FEB-SEP	720	875	980	107%	1090	1240	920
	APR-JUL	395	490	560	108%	625	725	520
	APR-SEP	505	615	690	107%	770	880	645
Rogue R at Raygold <sup>2</sup>	APR-JUL	465	630	740	110%	855	1020	675
	APR-SEP	580	760	885	110%	1010	1190	805
Rogue R at Grants Pass <sup>2</sup>	APR-JUL	470	665	795	110%	930	1130	725
	APR-SEP	580	790	935	111%	1080	1290	845
Applegate Lake Inflow <sup>2</sup>	FEB-JUL	113	186	235	121%	285	355	195
	FEB-SEP	119	193	245	123%	295	370	200
	APR-JUL	65	107	135	124%	164	205	109
	APR-SEP	71	114	144	125%	173	215	115
Sucker Ck bl Ltl Grayback nr Holland	APR-JUL	29	51	66	120%	80	102	55
	APR-SEP	33	55	70	119%	85	107	59
Illinois R nr Kerby	APR-JUL	89	168	220	117%	275	355	188
	APR-SEP	95	175	230	119%	280	360	193

\* 90%, 70%, 50%, 30% & 10% exceedance probabilities are the chance that observed streamflow volume will exceed the forecasted volume

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

## Rogue And Umpqua Basins Summary for January 1, 2017

Reservoir Storage	Current (KAF)	Last Year (KAF)	Average (KAF)	% of Average	Useable Capacity (KAF)
Applegate	9.4	6.8	10.2	92%	75.2
Emigrant Lake	16.1	8.0	17.2	94%	39.0
Fish Lake	3.7	2.5	4.7	79%	7.9
Fourmile Lake	2.8	2.6	6.7	41%	15.6
Howard Prairie	30.0	10.3	35.5	85%	62.1
Hyatt Prairie	8.2	2.0	9.6	85%	16.2
Lost Creek	125.0	126.4	137.6	91%	315.0

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Applegate Basin	2	110%	183%
Middle Rogue Basin	5	285%	600%
North Umpqua Basin	3	124%	176%
South Umpqua Basin	6	212%	422%
Upper Rogue Basin	10	107%	157%

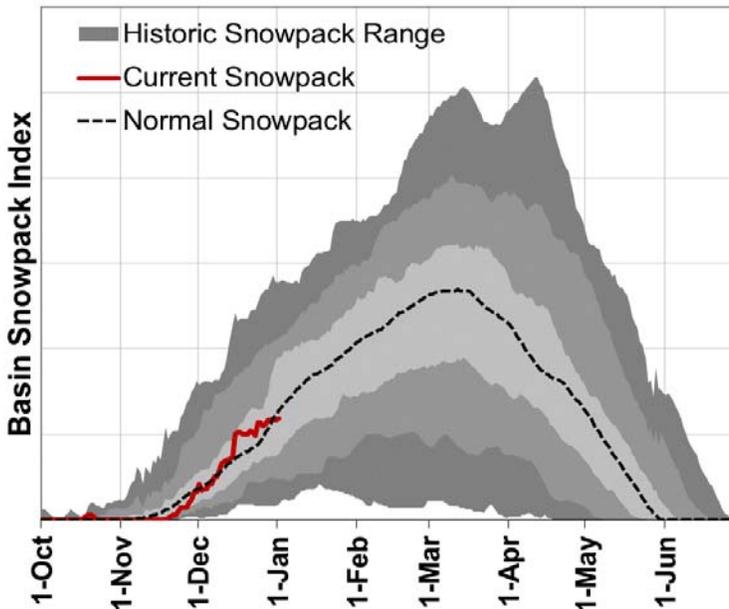
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Park H.Q. Rev Snow Course	6570	3-Jan	102	28.4	35.4	20.6	138%
Caliban (Alt.) Snow Course	6500	29-Dec	43	12.0	15.6		
Mt. Ashland Switchback Snow Course	6430	29-Dec	35	9.0			
Ski Bowl Road Snow Course	6070	29-Dec	27	7.2	13.3		
Big Red Mountain SNOTEL	6050	1-Jan	35	10.4	14.6	10.0	104%
Annie Springs SNOTEL	6010	1-Jan	57	16.0	21.0	17.3	92%
Fourmile Lake SNOTEL	5970	1-Jan	33	9.2	18.7	13.4	69%
Cold Springs Camp SNOTEL	5940	1-Jan	35	10.8	16.6	14.0	77%
Sevenmile Marsh SNOTEL	5700	1-Jan	43	12.6	15.7	12.5	101%
Summit Lake SNOTEL	5610	1-Jan	60	18.6	23.0	16.3	114%
Billie Creek Divide SNOTEL	5280	1-Jan	35	10.9	19.9	10.4	105%
Diamond Lake SNOTEL	5280	1-Jan	30	9.2	14.4	6.6	139%
Bigelow Camp SNOTEL	5130	1-Jan	20	6.2	13.1	5.1	122%
Beaver Dam Creek Snow Course	5120	3-Jan	28	8.9	9.4	6.3	141%
King Mountain 1 Snow Course	4760	3-Jan	30	6.8	11.0	2.2	309%
Deadwood Junction Snow Course	4660	3-Jan	22	8.0	11.1	4.2	190%
Fish Lk. SNOTEL	4660	1-Jan	20	5.0	11.8	5.1	98%
Howard Prairie SNOTEL	4580	1-Jan	8	2.3	6.6		
Siskiyou Summit Rev. 2 Snow Course	4560	29-Dec	15	3.8	9.2	2.2	173%
Red Butte 1 Snow Course	4460	30-Dec	30	9.3		4.6	202%
King Mountain SNOTEL	4340	1-Jan	11	3.7	9.2	1.5	247%
Red Butte 2 Snow Course	4050	30-Dec	7	1.5		1.1	136%
Silver Burn Snow Course	3680	3-Jan	33	6.5	12.2	5.3	123%
King Mountain 3 Snow Course	3680	3-Jan	14	1.8	5.2	0.0	
Red Butte 3 Snow Course	3500	30-Dec	4	0.6		0.4	150%
Toketee Airstrip SNOTEL	3240	1-Jan	6	2.3	5.1	1.3	177%
King Mountain 4 Snow Course	3050	3-Jan	5	0.7	0.8	0.0	
Red Butte 4 Snow Course	3000	30-Dec	0	0.0		0.0	



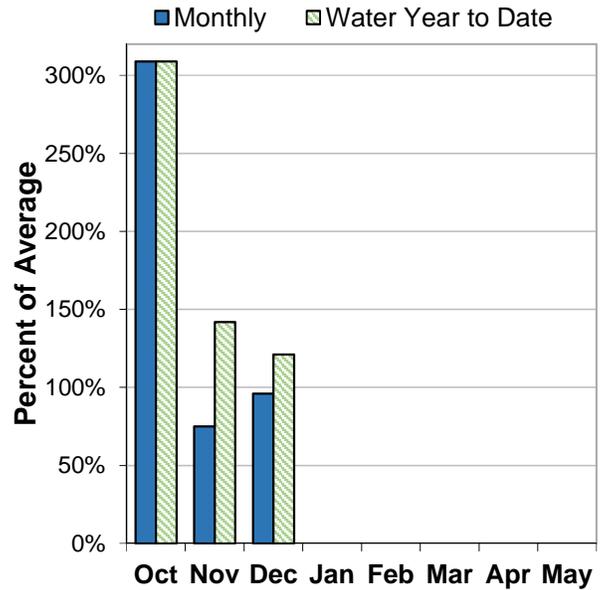
# Klamath Basin

January 1, 2017

## Mountain Snowpack



## Basin Precipitation



## Summary of Water Supply Conditions

### SNOWPACK

As of January 1, the basin snowpack was 102% of normal. This is lower than last year when the basin snowpack was 152% of normal on January 1, 2016.

### PRECIPITATION

October brought more than three times the normal amount of precipitation to the basin and record rainfall was measured at 10 out of 15 long-term SNOTEL sites in the basin. December precipitation was 96% of average. Precipitation since the beginning of the water year (October 1 - January 1) has been 121% of average.

### RESERVOIR

Reservoir storage across the basin is currently below average. As of January 1, storage at major reservoirs in the basin ranges from 35% of average at Clear Lake to 89% of average at Upper Klamath Lake.

### STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 102% to 116% of average. If conditions remain similar, water supplies in the basin are likely to be near normal to above normal this summer.

## Klamath Basin Summary for January 1, 2017

<b>Forecast Exceedance Probabilities for Risk Assessment *</b>								
<b>Streamflow Forecasts January 1, 2017</b>	<b>Forecast Period</b>	←-----Drier-----Future Conditions-----Wetter-----→						<b>Average (KAF)</b>
		<b>90% (KAF)</b>	<b>70% (KAF)</b>	<b>50% (KAF)</b>	<b>% Avg</b>	<b>30% (KAF)</b>	<b>10% (KAF)</b>	
Gerber Reservoir Inflow <sup>2</sup>	FEB-JUL	10.6	32	47	115%	62	84	41
	APR-SEP	0.10	9.3	16.7	116%	24	35	14.4
Sprague R nr Chiloquin	JAN-SEP	210	315	390	110%	460	565	355
	FEB-JUL	157	255	325	110%	390	490	295
	FEB-SEP	175	275	345	108%	415	520	320
	APR-JUL	100	164	210	112%	250	315	188
Williamson R bl Sprague nr Chiloquin	JAN-SEP	375	510	600	101%	690	825	595
	FEB-JUL	270	395	480	101%	560	685	475
	APR-SEP	220	305	365	103%	420	510	355
Upper Klamath Lake Inflow <sup>1,2</sup>	JAN-SEP	475	795	940	100%	1090	1400	940
	FEB-JUL	330	605	725	101%	850	1120	720
	MAR-SEP	300	545	660	101%	775	1020	655
	APR-SEP	220	405	490	102%	575	760	480

\* 90%, 70%, 50%, 30% & 10% exceedance probabilities are the chance that observed streamflow volume will exceed the forecasted volume

1) 90% and 10% exceedance probabilities are actually 95% and 5%

2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

<b>Reservoir Storage</b>	<b>Current (KAF)</b>	<b>Last Year (KAF)</b>	<b>Average (KAF)</b>	<b>% of Average</b>	<b>Useable Capacity (KAF)</b>
Clear Lake	65.1	23.2	187.7	35%	513.3
Gerber	18.8	2.2	39.6	47%	94.3
Upper Klamath Lake	245.7	232.8	275.4	89%	523.7

<b>Snowpack Summary by Basin</b>	<b>Basin Snowpack % of Median</b>		
	<b># of Sites</b>	<b>Current Yr</b>	<b>Last Yr</b>
Lost Basin	3	80%	184%
Sprague Basin	4	90%	128%
Upper Klamath Lake Basin	8	102%	149%
Williamson River Basin	5	119%	158%

## Klamath Basin Summary for January 1, 2017

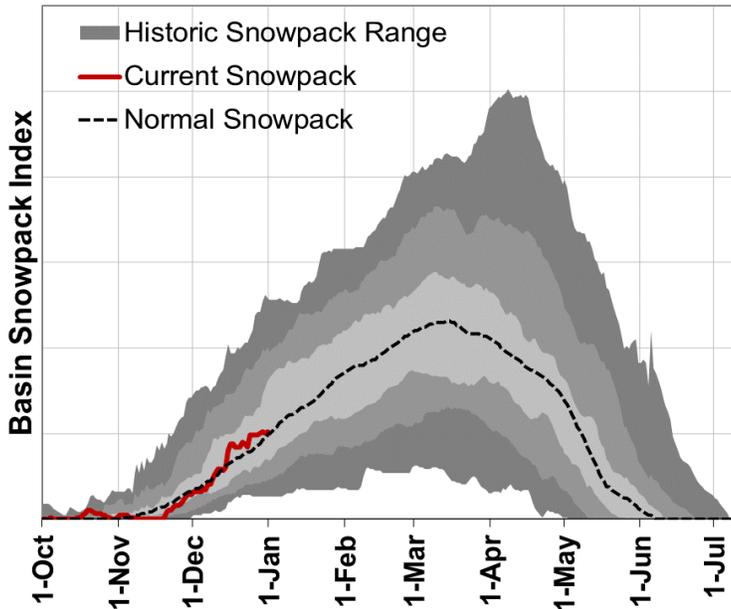
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Summer Rim SNOTEL	7080	1-Jan	26	6.4	8.2	7.2	89%
Swan Lake Mtn SNOTEL	6830	1-Jan	29	7.7	13.6		
Park H.Q. Rev Snow Course	6570	3-Jan	102	28.4	35.4	20.6	138%
Crazyman Flat SNOTEL	6180	1-Jan	27	6.4	9.6	8.4	76%
Ski Bowl Road Snow Course	6070	29-Dec	27	7.2	13.3		
Annie Springs SNOTEL	6010	1-Jan	57	16.0	21.0	17.3	92%
Finley Corrals AM	6000	1-Jan	29	7.0	8.3		
Fourmile Lake SNOTEL	5970	1-Jan	33	9.2	18.7	13.4	69%
Cold Springs Camp SNOTEL	5940	1-Jan	35	10.8	16.6	14.0	77%
Strawberry SNOTEL	5770	1-Jan	9	3.0	3.3	2.2	136%
Cox Flat AM	5750	1-Jan	9	3.0	5.5		
Silver Creek SNOTEL	5740	1-Jan	20	4.9	7.9	4.0	123%
Quartz Mountain SNOTEL	5720	1-Jan	4	1.0	2.8	0.9	111%
Sevenmile Marsh SNOTEL	5700	1-Jan	43	12.6	15.7	12.5	101%
Sun Pass SNOTEL	5400	1-Jan	31	7.8	14.0		
Billie Creek Divide SNOTEL	5280	1-Jan	35	10.9	19.9	10.4	105%
Diamond Lake SNOTEL	5280	1-Jan	30	9.2	14.4	6.6	139%
Beaver Dam Creek Snow Course	5120	3-Jan	28	8.9	9.4	6.3	141%
Taylor Butte SNOTEL	5030	1-Jan	13	3.2	4.1	3.6	89%
Gerber Reservoir SNOTEL	4890	1-Jan	1	0.2	2.4	1.2	17%
Chemult Alternate SNOTEL	4850	1-Jan	23	4.6	8.6	4.6	100%
Deadwood Junction Snow Course	4660	3-Jan	22	8.0	11.1	4.2	190%
Fish Lk. SNOTEL	4660	1-Jan	20	5.0	11.8	5.1	98%
Howard Prairie SNOTEL	4580	1-Jan	8	2.3	6.6		
Siskiyou Summit Rev. 2 Snow Course	4560	29-Dec	15	3.8	9.2	2.2	173%



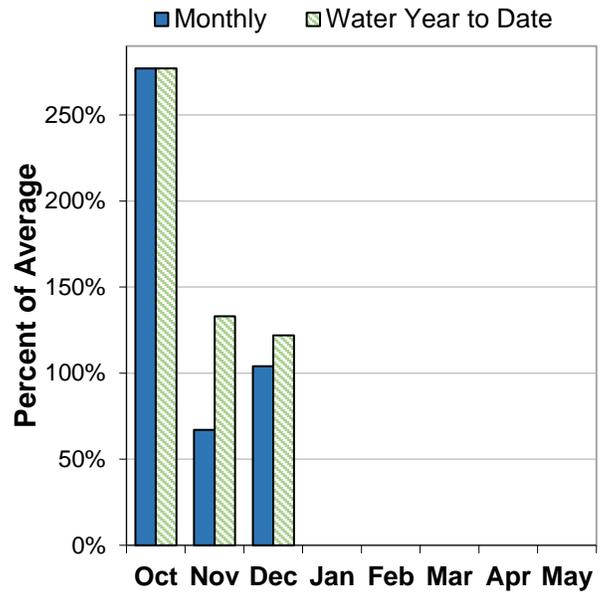
# Lake County and Goose Lake Basins

January 1, 2017

### Mountain Snowpack



### Basin Precipitation



## Summary of Water Supply Conditions

### SNOWPACK

As of January 1, the basin snowpack was 106% of normal. This is lower than last year when the basin snowpack was 168% of normal on January 1, 2016.

### PRECIPITATION

October brought more than twice the normal amount of precipitation to the basin and record rainfall was measured at 5 out of 7 long-term SNOTEL sites in the basin. December precipitation was 104% of average. Precipitation since the beginning of the water year (October 1 - January 1) has been 122% of average.

### RESERVOIR

As of January 1, storage at major reservoirs in the basin ranges from 76% of average at Drews Reservoir to 97% of average at Cottonwood Reservoir.

### STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 105% to 113% of average. If conditions remain similar, water supplies in the basin are likely to be near normal to above normal this summer.

## Lake County And Goose Lake Basins Summary for January 1, 2017

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts January 1, 2017	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Twentymile Ck nr Adel	MAR-JUL	3.0	18.2	29	107%	39	54	27
	APR-SEP	1.79	11.6	18.3	105%	25	35	17.4
Deep Ck ab Adel	MAR-JUL	39	66	85	108%	104	131	79
	APR-SEP	32	55	71	109%	87	110	65
Honey Ck nr Plush	MAR-JUL	4.9	13.1	18.7	109%	24	32	17.1
	APR-SEP	4.0	10.9	15.5	110%	20	27	14.1
Chewaucan R nr Paisley	MAR-JUL	48	76	95	113%	113	141	84
	APR-SEP	44	68	85	113%	101	126	75

\* 90%, 70%, 50%, 30% & 10% exceedance probabilities are the chance that observed streamflow volume will exceed the forecasted volume

Reservoir Storage	Current (KAF)	Last Year (KAF)	Average (KAF)	% of Average	Useable Capacity (KAF)
Cottonwood	3.2	1.5	3.3	97%	9.3
Drews	19.4	1.8	25.6	76%	63.5

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Goose Lake Basin	3	125%	184%
Lake Abert Basin	2	112%	154%
Summer Lake Basin	9	106%	168%
Upper Pit Basin	3	101%	223%

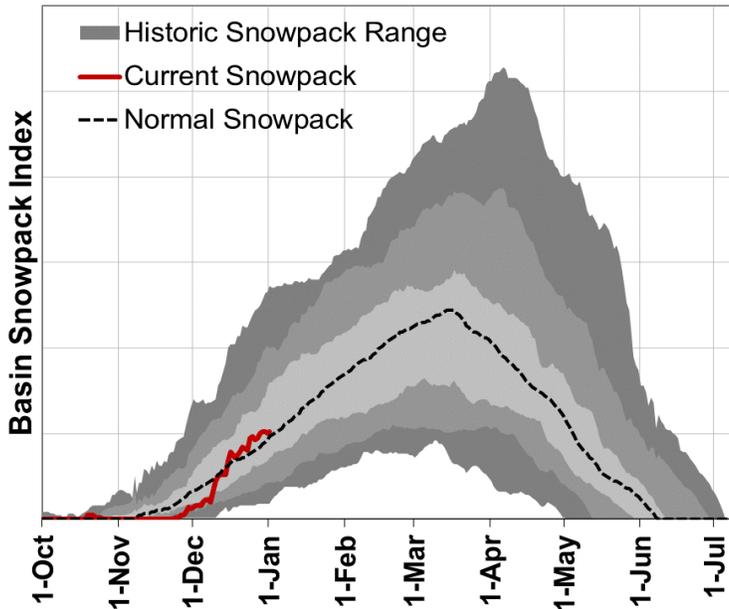
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Summer Rim SNOTEL	7080	1-Jan	26	6.4	8.2	7.2	89%
Patton Meadows AM	6800	1-Jan	23	5.5	6.7		
Sherman Valley AM	6640	1-Jan	26	6.2	4.1		
Hart Mountain AM	6430	1-Jan	4	1.3	0.8		
Crazyman Flat SNOTEL	6180	1-Jan	27	6.4	9.6	8.4	76%
Finley Corrals AM	6000	1-Jan	29	7.0	8.3		
Camas Creek #3 Snow Course	5860	29-Dec	26	6.0	8.9	3.9	154%
Sheldon SCAN	5860	1-Jan	1	0.2	1.0	0.0	
Strawberry SNOTEL	5770	1-Jan	9	3.0	3.3	2.2	136%
Cox Flat AM	5750	1-Jan	9	3.0	5.5		
Silver Creek SNOTEL	5740	1-Jan	20	4.9	7.9	4.0	123%



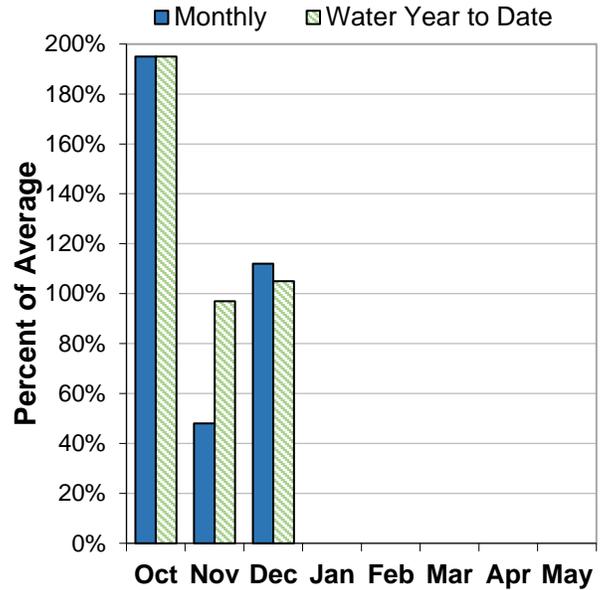
# Harney Basin

January 1, 2017

## Mountain Snowpack



## Basin Precipitation



## Summary of Water Supply Conditions

### SNOWPACK

As of January 1, the basin snowpack was 108% of normal. This is lower than last year when the basin snowpack was 186% of normal on January 1, 2016.

### PRECIPITATION

October brought nearly twice the normal amount of precipitation to the basin and record rainfall was measured at 4 out of 7 long-term SNOTEL sites in the basin. December precipitation was 112% of average. Precipitation since the beginning of the water year (October 1 - January 1) has been 105% of average.

### STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 65% to 125% of average.

## Harney Basin Summary for January 1, 2017

<b>Forecast Exceedance Probabilities for Risk Assessment *</b>								
<b>Streamflow Forecasts January 1, 2017</b>	<b>Forecast Period</b>	←-----Drier-----Future Conditions-----Wetter-----→						<b>Average (KAF)</b>
		<b>90% (KAF)</b>	<b>70% (KAF)</b>	<b>50% (KAF)</b>	<b>% Avg</b>	<b>30% (KAF)</b>	<b>10% (KAF)</b>	
Silvies R nr Burns	MAR-JUL	55	110	147	120%	184	240	123
	APR-SEP	40	85	115	125%	145	189	92
Donner Und Blitzen R nr Frenchglen	MAR-JUL	22	44	59	82%	74	96	72
	APR-SEP	21	42	56	82%	70	91	68
Trout Ck nr Denio	MAR-JUL	0.10	2.9	5.8	67%	8.6	12.8	8.7
	APR-SEP	0.10	2.5	5.2	65%	8.0	12.0	8.0

\* 90%, 70%, 50%, 30% & 10% exceedance probabilities are the chance that observed streamflow volume will exceed the forecasted volume

<b>Snowpack Summary by Basin</b>	<b>Basin Snowpack % of Median</b>		
	<b># of Sites</b>	<b>Current Yr</b>	<b>Last Yr</b>
Alvord Lake Basin	1	67%	184%
Donner und Blitzen River Basin	2	75%	174%
Silvies River Basin	4	150%	213%
Upper Quinn Basin	3	117%	187%

<b>Basin Snowpack Measurement Sites</b>	<b>Elevation (ft)</b>	<b>Date Measured</b>	<b>Depth (in)</b>	<b>Snow Water Equivalent (in)</b>			
				<b>Current SWE</b>	<b>Last Yr SWE</b>	<b>Median</b>	<b>% of Median</b>
Granite Peak SNOTEL	8543	1-Jan	31	7.7	12.3	7.0	110%
Trout Creek AM	7890	1-Jan	25	5.5	6.5		
Fish Creek SNOTEL	7660	1-Jan	30	7.0	19.3	10.5	67%
Govt Corrals AM	7400	1-Jan	21	4.6	8.3		
Silvies SNOTEL	6990	1-Jan	21	4.8	8.2	5.3	91%
Buckskin Lower SNOTEL	6915	1-Jan	23	5.1	7.7	3.3	155%
V Lake AM	6600	1-Jan	4	1.0	4.8		
Disaster Peak SNOTEL	6500	1-Jan	10	2.4	5.7	2.6	92%
Hart Mountain AM	6430	1-Jan	4	1.3	0.8		
Snow Mountain SNOTEL	6230	1-Jan	17	4.6	8.6	3.3	139%
Lamance Creek SNOTEL	6000	1-Jan	13	3.5	6.0	3.6	97%
Blue Mountain Spring SNOTEL	5870	1-Jan	33	7.0	10.5	6.9	101%
Sheldon SCAN	5860	1-Jan	1	0.2	1.0	0.0	
Rock Springs SNOTEL	5290	1-Jan	16	3.4	4.5	1.9	179%
Starr Ridge SNOTEL	5250	1-Jan	18	4.8	6.6	2.8	171%
Lake Creek R.S. SNOTEL	5240	1-Jan	25	6.4	7.5	4.8	133%

# Recession Forecasts for Oregon

Recession flow forecasts are presented below for key streamflow sites where reliable daily streamflow data are available. The recession flow forecasts use exceedance probabilities in a format similar to the standard water supply forecasts presented in this document. Each forecast provides a range of possible outcomes representing the uncertainty of forecasting models.

The types of forecasts in the table below are:

- 1) Threshold flow -- Date that the daily streamflow rate falls below the given threshold flow
- 2) Peak flow -- Maximum daily flow
- 3) Date of peak flow -- Date of occurrence of maximum daily flow
- 4) Average daily flow on a given date

OWYHEE AND MALHEUR BASINS					
FORECAST POINT	FORECAST THRESHOLD	FORECAST VALUE ----- CHANCE OF EXCEEDING ----- -----			LONG-TERM AVERAGE VALUE
		90%	50%	10%	
Owyhee R nr Rome	2000 cfs	Mar 21	May 2	Jun 13	<b>May 6</b>
Owyhee R nr Rome	1000 cfs	Mar 25	May 11	Jun 27	<b>May 18</b>
Owyhee R nr Rome	500 cfs	Apr 12	May 28	Jul 13	<b>Jun 2</b>

UPPER JOHN DAY BASIN					
FORECAST POINT	FORECAST THRESHOLD	FORECAST VALUE ----- CHANCE OF EXCEEDING ----- -----			LONG-TERM AVERAGE VALUE
		90%	50%	10%	
John Day R at Service Creek	Average Daily Flow on Aug. 1st	88	335	580	<b>271</b>

UPPER DESCHUTES AND CROOKED BASINS					
FORECAST POINT	FORECAST THRESHOLD	FORECAST VALUE ----- CHANCE OF EXCEEDING ----- -----			LONG-TERM AVERAGE VALUE
		90%	50%	10%	
Crane Prairie Inflow *	Date of Peak	May 9	May 25	Jun 10	<b>May 25</b>
Crane Prairie Inflow	Peak Flow	325	490	655	<b>403</b>
Crane Prairie Inflow	Average Daily Flow on Oct. 1st	205	285	365	<b>269</b>
Prineville Reservoir Inflow	150 cfs	May 12	Jun 3	Jun 25	<b>May 30</b>
Prineville Reservoir Inflow	80 cfs	May 16	Jun 10	Jul 5	<b>June 7</b>
Whychus Creek nr Sisters	100 cfs	Jul 23	Aug 27	Sep 26	<b>August 16</b>

\*No prediction possible until April 1. Historic values are shown for reference prior to the April 1 report.

<b>ROGUE AND UMPQUA BASINS</b>					
<i>FORECAST POINT</i>	<i>FORECAST THRESHOLD</i>	<i>FORECAST VALUE</i> ----- <i>CHANCE OF EXCEEDING</i> ----- -----			<i>LONG-TERM AVERAGE VALUE</i>
		90%	50%	10%	
South Umpqua R nr Brockway *	90 cfs	Jul 23	Aug 12	Sep 1	<b>August 8</b>
South Umpqua R at Tiller	140 cfs	Jun 24	Jul 17	Aug 7	<b>July 11</b>
South Umpqua R at Tiller	90 cfs	Jul 13	Aug 7	Sep 1	<b>August 1</b>
South Umpqua R at Tiller	60 cfs	Jul 28	Sep 1	Oct 1	<b>August 28</b>

\*Dates are based on streamflow data adjusted for releases from Galesville Reservoir to reflect natural flow conditions and do not match observed gage data. There is an approximately 20% chance in any given year that the flow will not recede below 90 cfs; the dates given here are for the event that the flow does recede below 90 cfs.

<b>LAKE COUNTY AND GOOSE LAKE BASINS</b>					
<i>FORECAST POINT</i>	<i>FORECAST THRESHOLD</i>	<i>FORECAST VALUE</i> ----- <i>CHANCE OF EXCEEDING</i> ----- -----			<i>LONG-TERM AVERAGE VALUE</i>
		90%	50%	10%	
Deep Ck ab Adel	100 cfs	May 22	Jun 14	Jul 7	<b>June 17</b>
Honey Ck nr Plush	100 cfs	Apr 6	May 12	Jun 17	<b>May 16</b>
Honey Ck nr Plush	50 cfs	Apr 25	May 27	Jun 28	<b>June 4</b>
Twentymile Ck nr Adel	50 cfs	Apr 26	May 30	Jul 3	<b>May 30</b>
Twentymile Ck nr Adel	10 cfs	Jun 11	Jul 9	Aug 7	<b>July 7</b>

<b>HARNEY BASIN</b>					
<i>FORECAST POINT</i>	<i>FORECAST THRESHOLD</i>	<i>FORECAST VALUE</i> ----- <i>CHANCE OF EXCEEDING</i> ----- -----			<i>LONG-TERM AVERAGE VALUE</i>
		90%	50%	10%	
Silvies R nr Burns	400 cfs	Apr 24	May 19	Jun 13	<b>May 21</b>
Silvies R nr Burns	200 cfs	May 8	Jun 4	Jul 1	<b>June 2</b>
Silvies R nr Burns	100 cfs	May 21	Jun 20	Jul 18	<b>June 13</b>
Silvies R nr Burns	50 cfs	Jun 5	Jul 13	Aug 22	<b>July 3</b>
Donner Und Blitzen R nr Frenchglen	200 cfs	May 19	Jun 10	Jul 2	<b>June 20</b>
Donner Und Blitzen R nr Frenchglen	100 cfs	Jun 9	Jun 30	Jul 23	<b>July 9</b>

# Basin Outlook Reports: How Forecasts Are Made

## Federal – State – Private Cooperative Snow Surveys

*For more water supply and resource management information, contact:*

**USDA, Natural Resources Conservation Service**  
**Snow Survey Office**  
**1201 NE Lloyd Suite 900**  
**Portland, OR 97232**  
**Phone: (503) 414-3271**  
**Web site <http://www.or.nrcs.usda.gov/snow>**

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. Unless otherwise specified, all forecasts are for flows that would occur naturally without any upstream influences

Forecasts of any kind, of course, are not perfect. Streamflow forecast uncertainty arises from three primary sources: (1) uncertain knowledge of future weather conditions, (2) uncertainty in the forecasting procedure, and (3) errors in the data. The forecast, therefore, must be interpreted not as a single value but rather as a range of values with specific probabilities of occurrence. The middle of the range is expressed by the 50% exceedance probability forecast, for which there is a 50% chance that the actual flow will be above, and a 50% chance that the actual flow will be below, this value. To describe the expected range around this 50% value, four other forecasts are provided, two smaller values (90% and 70% exceedance probability) and two larger values (30%, and 10% exceedance probability). For example, there is a 90% chance that the actual flow will be more than the 90% exceedance probability forecast. The others can be interpreted similarly.

The wider the spread among these values, the more uncertainty is in the forecast. As the season progresses, forecasts become more accurate, primarily because a greater portion of the future weather conditions become known; this is reflected by a narrowing of the range around the 50% exceedance probability forecast. Users should take this uncertainty into consideration when making operational decisions by selecting forecasts corresponding to the level of risk they are willing to assume about the amount of water to be expected. If users anticipate receiving a lesser supply of water, or if they wish to increase their chances of having an adequate supply of water for their operations, they may want to base their decisions on the 90% or 70% exceedance probability forecasts, or something in between. On the other hand, if users are concerned about receiving too much water (for example, threat of flooding), they may want to base their decisions on the 30% or 10% exceedance probability forecasts, or something in between. Regardless of the forecast value users choose for operations, they should be prepared to deal with either more or less water. Users should remember that even if the 90% exceedance probability forecast is used, there is still a 10% chance of receiving less than this amount. By using the exceedance probability information, users can easily determine the chances of receiving more or less water.

# Interpreting Water Supply Forecasts

Each month, five forecasts are issued for each forecast point and each forecast period. Unless otherwise specified, all streamflow forecasts are for streamflow volumes that would occur naturally without any upstream influences. Streamflow forecasts help users make risk-based decisions. Water users can select the forecast corresponding to the level of risk they are willing to accept in order to minimize the negative impacts of having more or less water than planned for. Users need to know what the different forecasts represent if they are to use the information correctly when making operational decisions. The following is an explanation of each of the forecasts.

**90 Percent Chance of Exceedance Forecast.** There is a 90 percent chance that the actual streamflow volume will exceed this forecast value, and there is a 10 percent chance that the actual streamflow volume will be less than this forecast value.

**70 Percent Chance of Exceedance Forecast.** There is a 70 percent chance that the actual streamflow volume will exceed this forecast value, and there is a 30 percent chance that the actual streamflow volume will be less than this forecast value.

**50 Percent Chance of Exceedance Forecast.** There is a 50 percent chance that the actual streamflow volume will exceed this forecast value, and there is a 50 percent chance that the actual streamflow volume will be less than this forecast value. Generally, this forecast is the middle of the range of possible streamflow volumes that can be produced given current conditions.

**30 Percent Chance of Exceedance Forecast.** There is a 30 percent chance that the actual streamflow volume will exceed this forecast value, and there is a 70 percent chance that the actual streamflow volume will be less than this forecast value.

**10 Percent Chance of Exceedance Forecast.** There is a 10 percent chance that the actual streamflow volume will exceed this forecast value, and there is a 90 percent chance that the actual streamflow volume will be less than this forecast value.

\*Note: There is still a 20 percent chance that actual streamflow volumes will fall either below the 90 percent exceedance forecast or above the 10 percent exceedance forecast.

These forecasts represent the uncertainty inherent in making streamflow predictions. This uncertainty may include sources such as: unknown future weather conditions, uncertainties associated with the various prediction methodologies, and the spatial coverage of the data network in a given basin. AF stands for acre-feet. Forecasted volumes of water are typically in thousands of acre-feet.

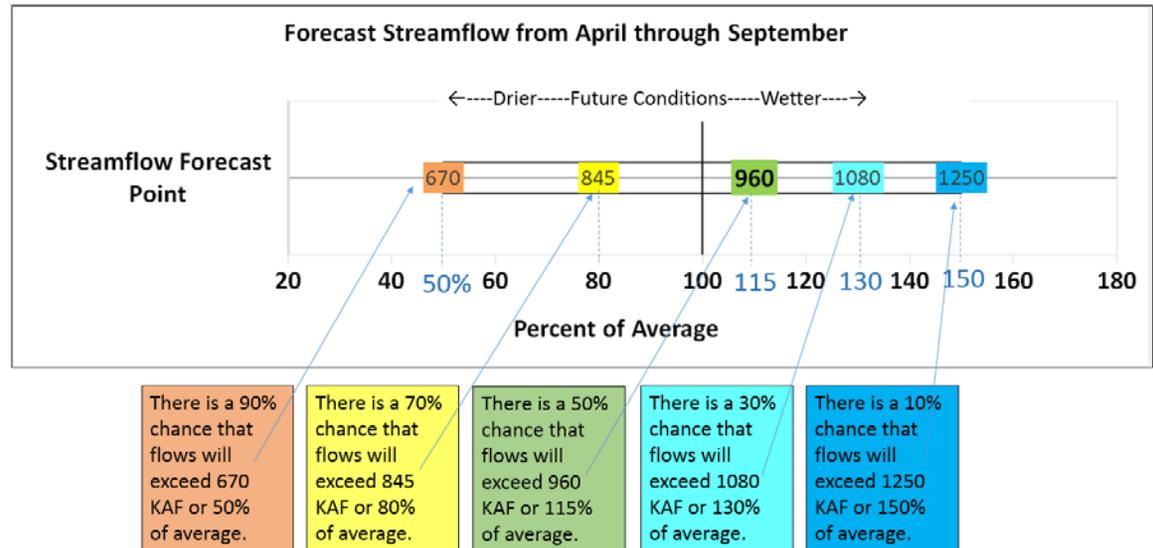
**30-Year Average.** The 30-year average streamflow for each forecast period is provided for comparison. The average is based on data from 1981-2010. The % AVG. column compares the 50% chance of exceedance forecast to the 30-year average streamflow; values above 100% denote when the 50% chance of exceedance forecast would be greater than the 30-year average streamflow.

**To Decrease the Chance of Having Less Water than Planned for:** A user might determine that making decisions based on a 50 percent chance of exceedance forecast is too much risk to take (there is still a 50% chance that the user will receive less than this amount). To reduce the risk of having less water than planned for, users can base their operational decisions on one of the forecasts with a greater chance of being exceeded such as the 90 or 70 percent exceedance forecasts.

**To Decrease the Chance of Having More Water than Planned for:** A user might determine that making decisions based on a 50 percent chance of exceedance forecast is too much risk to take (there is still a 50% chance that the user will receive more than this amount). To reduce the risk of having more water than planned for, users can base their operational decisions on one of the forecasts with a lesser chance of being exceeded such as the 30 or 10 percent exceedance forecasts.

## Graphical Representation of Streamflow Forecast Range:

*This type of graphic is used in the state-wide streamflow forecast summary*



## Using the Forecasts - an Example

### Using the 50 Percent Exceedance Forecast.

Using the example forecasts shown here, there is a 50% chance that actual streamflow volume at the Mountain Creek near Mitchell will be less than 4.4 KAF between April 1 and Sept 30. There is also a 50% chance that actual streamflow volume will be greater than 4.4 KAF.

**Using the 90 and 70 Percent Exceedance Forecasts.** If an unexpected shortage of water could cause problems (such as irrigated agriculture), users might want to plan on receiving 3.3 KAF (from the 70 percent exceedance forecast). There is a 30% chance of receiving less than 3.3 KAF.

Alternatively, if users determine the risk of using the 70 percent exceedance forecast is too great, then they might plan on receiving 1.7 KAF (from the 90 percent exceedance forecast). There is 10% chance of receiving less than 1.7 KAF.

JOHN DAY BASIN Streamflow Forecasts - February 1, 2013								
Forecast Point	Forecast Period	Drier Future Conditions			Wetter		30-Yr Avg. (1000AF)	
		90% (1000AF)	70% (1000AF)	50% (1000AF) (% AVG.)	30% (1000AF)	10% (1000AF)		
Strawberry Ck nr Prairie City	MAR-JUL	5.0	6.6	7.6	89	8.6	10.2	8.5
	APR-SEP	5.2	6.8	7.9	90	9.0	10.6	8.8
Mountain Ck nr Mitchell	FEB-JUL	3.2	5.4	6.9	99	8.4	10.6	7.0
	APR-SEP	1.7	3.3	4.4	90	5.5	7.1	4.9

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

**Using the 30 or 10 Percent Exceedance Forecasts.** If an unexpected excess of water could cause problems (such as operating a flood control reservoir), users might plan on receiving 5.5 KAF (from the 30 percent exceedance forecast). There is a 30% chance of receiving more than 5.5 KAF.

Alternatively, if users determine the risk of using the 30 percent exceedance forecast is too great, then they might plan on receiving 7.1 KAF (from the 10 percent exceedance forecast). There is a 10% chance of receiving more than 7.1 KAF.

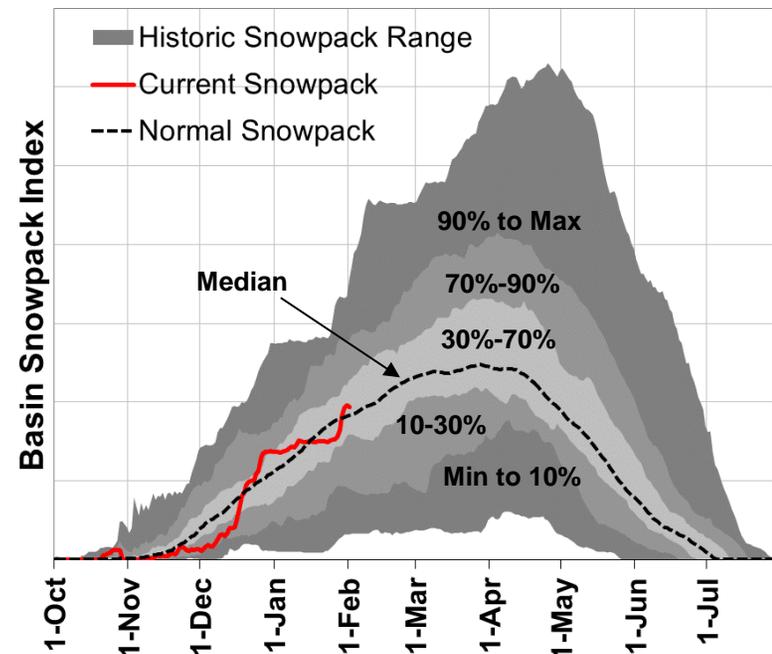
## Interpreting Snowpack Plots

The basin snowpack plots display an index calculated using daily SNOTEL data for many sites in each basin. They show how the current year's snowpack data compares to historical data in the basin. The "Current Snowpack" line can be compared with the "Normal Snowpack" (median) line, as well as the historic range of snowpack in the basin.

The grey shaded areas represent different percentiles of the historical range of the snowpack index for each day. The dark grey shading indicates the extreme lows and highs in the SNOTEL record (minimum to the 10<sup>th</sup> percentile and the 90<sup>th</sup> percentile to maximum). The medium grey shading indicates the range from the 10<sup>th</sup> to 30<sup>th</sup> percentiles and the 70<sup>th</sup> to 90<sup>th</sup> percentiles. The light grey shading indicates the range between the 30<sup>th</sup> to 70<sup>th</sup> percentiles, while the median is the 50<sup>th</sup> percentile. A percentile is the value of the snowpack index below which the given percent of historical years fall. For instance, the 90<sup>th</sup> percentile line indicates that the snowpack index has been below this line for 90 percent of the years of record.

\*\* Please note: These plots only use daily data from SNOTEL sites in the basin. Because snow course data is collected monthly, it cannot be included in these plots. The official snowpack percent of normal for the basin incorporates both SNOTEL and snow course data, so occasionally there might be slight discrepancies between the plot and official basin percent of normal (stated in basin summary below each plot).

## Mountain Snowpack



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Official Business



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

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