



United States  
Department of  
Agriculture



Natural Resources  
Conservation  
Service

# Oregon Basin Outlook Report

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January 1, 2018



**Not much snow to measure on January 1**

*Photo courtesy of Bill Goodman (Snow Surveyor, USFS Lakeview)*

**Surveyor Alan Grubb stands near the Camas Creek #3 snow course in southern Oregon, which had just 46% of normal snowpack on January 1. Snowpacks across the state are well below average after several warm, wet storms and a dry December, but with much of the winter still ahead, a wide range of outcomes for the water year are still possible.**

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# General Outlook

January 1<sup>st</sup>, 2018

## SUMMARY

While the eastern US has been in the grips of a deep freeze, the Pacific Northwest has experienced more than its fair share of sunshine and dry weather during the month of December. Oregon's winter began with cold snowy weather in November that had many people hopeful for the winter ahead. However, December's lack of storm systems has left the snowpack well below normal throughout the state and the lowest for this time of year since 2015.

Based on the current low snowpack and overall dry December, the summer streamflow forecasts are calling for below average streamflows throughout the state. The long range weather forecast from NOAA's Climate Prediction Center is calling for cooler and wetter than normal conditions in northern Oregon over the next three months, typical of the La Nina conditions that are currently in place: <http://www.cpc.ncep.noaa.gov/>. Just as the snowpack season has several months ahead to potentially rebound to more normal levels, the streamflow forecasts and summer water supply outlook will also continue to come into focus as the winter progresses.

## SNOWPACK

Winter started off looking very promising. October and November storms brought unusual amounts of early season snow to the mountains, allowing winter recreation to begin well ahead of schedule. Unfortunately, the mountains experienced a warming trend with significant rainfall during late November and again in late December, causing snowmelt instead of accumulation. As of January 1<sup>st</sup>, snowpack conditions range from 42% in the Owyhee, Malheur and John Day basins up to 59% of normal in the Umatilla, Walla Walla and Willow Basins.

January 1<sup>st</sup> is still considered early in the snowpack accumulation season and there are several months left for conditions to sway in a more positive direction. In other similar years where the snowpack got off to a slow start in December, the state achieved a near normal amount of snow by the first of April around 40% of the time. January and February are key months for snowpack accumulation, so stay tuned to see how the winter of 2018 will unfold.

## PRECIPITATION

The water year started out with plenty of storms to boost early season precipitation across the state. By December 1<sup>st</sup>, all basins in Oregon had above normal precipitation for the water year (Oct 1<sup>st</sup> – Dec 1<sup>st</sup>), ranging from 107% of average in the Harney basin to 135% in the basins around Mt. Hood. However, December brought a noticeable change in storm patterns.

As December began, weather patterns shifted to prolonged stretches of high pressure and dry weather across the state. In late December, a potent warm and moist storm brought the majority of the month's total precipitation. Basins in northern Oregon received more precipitation relative to average than those in the southern half of the state. The highest December precipitation (90% of average) fell in the Umatilla, Walla Walla, and Willow basins in northern Oregon, and the lowest (23% of average) fell in Lake County and Goose Lake basins in southern Oregon. Because of the dry December, water year to date (Oct 1<sup>st</sup> – Jan 1<sup>st</sup>) precipitation ranges from 70-85% of average in the southern and central Oregon basins up to 90-110% of average in the northern and northwestern basins of the state.

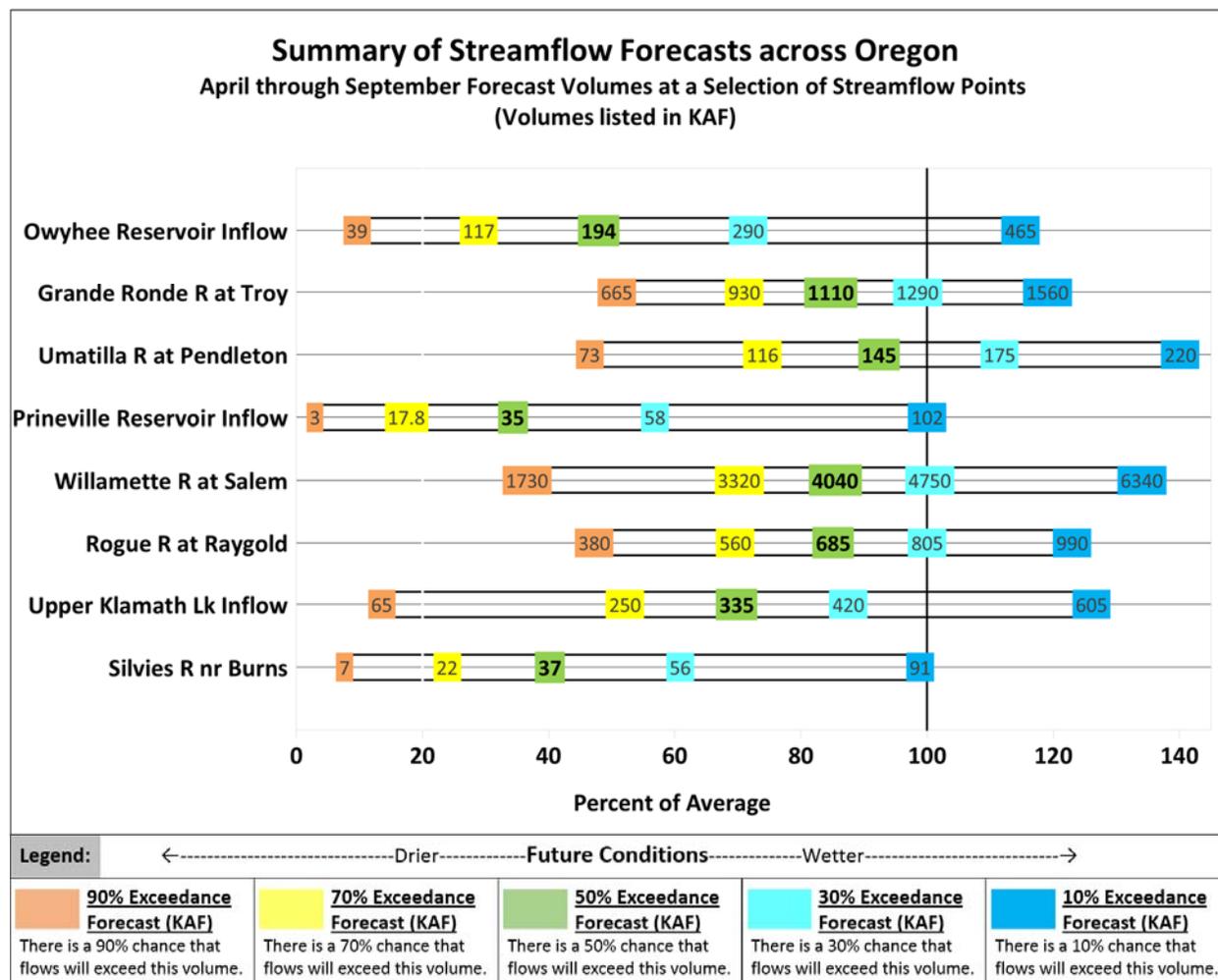
## RESERVOIRS

At the end of December, Oregon’s reservoir storage varied significantly across the state. As of January 1<sup>st</sup>, basin reservoir storage ranged from 85-100% of average in the western and northern regions of the state to 100-145% of average in the eastern and southern basins of Oregon. Within each basin, there is a wide range of variability in reservoir storage volumes.

## STREAMFLOW

Two potent storms bookended the month of December, causing flashy, rapidly rising rivers. However, the month was dry overall, which led to below average December streamflow volumes for most of the state. The exception was northeastern Oregon, where streamflow remained above average for the month.

Based on the current below normal snowpack conditions and a drier than average December, the forecasts for summer streamflow are leaning towards below average streamflows. Some of the lowest forecasts in the state are found in the Owyhee, Malheur, Lake County and Goose Lake basins, which range from about 40% to 60% of average. Meanwhile, the best forecasts can be found where the snowpack levels are currently highest, in the Umatilla and Walla Walla drainages, where streamflow forecasts range from 90% to 100% of average for the spring and summer water supply season.



These first set of streamflow forecasts in this January report are inherently the most uncertain, as there are several months left of winter to shape the snowpack, which drives the spring and summer flows. All eyes will be focused on the next several weeks as the winter weather story unfolds, giving a more certain look into the summer water supply picture.

To accompany the forecast summary graphic on the previous page, here are some helpful reminders about interpreting streamflow forecasts published in this document. For each forecast point, five 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.

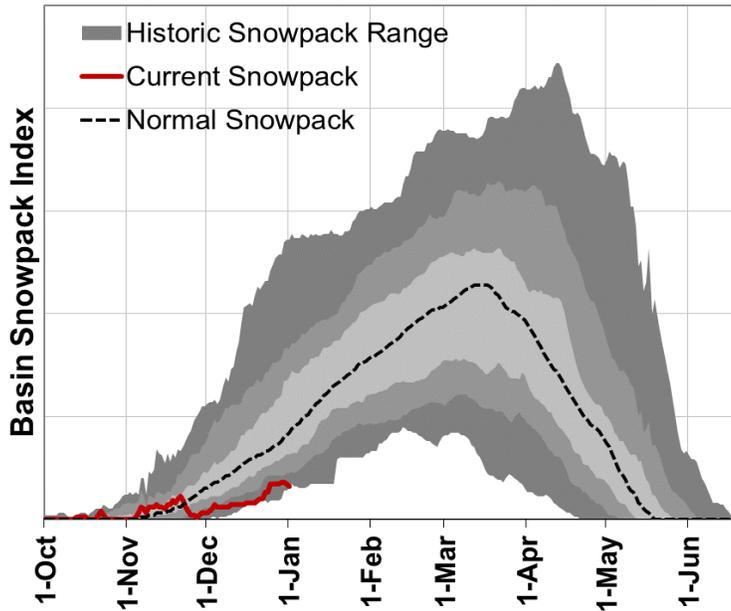
All forecasts are listed with units of 1000 acre-feet (KAF). This report contains data furnished by the Oregon Department of Water Resources, U.S. Geological Survey, NOAA National Weather Service and other cooperators. This report will be updated monthly, January through June.



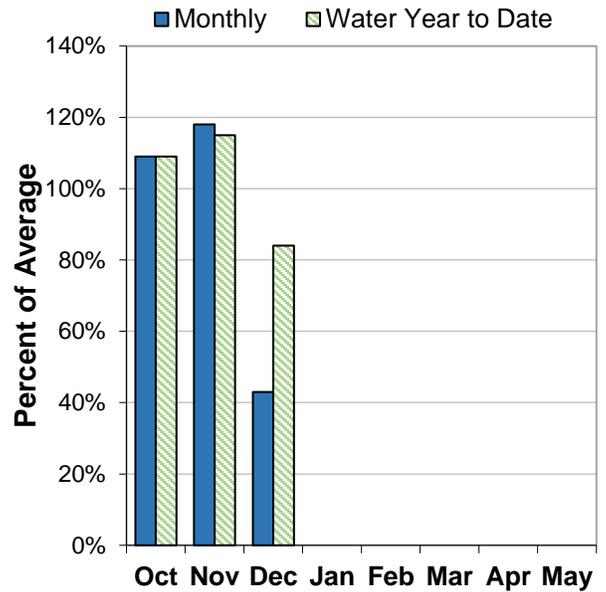
# Owyhee and Malheur Basins

January 1, 2018

### Mountain Snowpack



### Basin Precipitation



## Summary of Water Supply Conditions

### SNOWPACK

As of January 1, the basin snowpack was 42% of normal. This is significantly lower than last year when the basin snowpack was 130% of normal on January 1, 2017.

### PRECIPITATION

December precipitation was 43% of average. Precipitation since the beginning of the water year (October 1 - January 1) has been 84% of average.

### RESERVOIR

As of January 1, storage at major reservoirs in the basin ranges from 78% of average at Bully Creek Reservoir to 160% of average at Warm Springs Reservoir.

### STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 42% to 60% of average.

## Owyhee And Malheur Basins Summary for January 1, 2018

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts January 1, 2018	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Owyhee R nr Rome	FEB-JUL	50	151	250	43%	375	605	580
	FEB-SEP	56	161	265	45%	390	625	595
	APR-JUL	13.8	73	140	41%	230	395	345
	APR-SEP	18.9	83	153	42%	245	415	365
Owyhee R bl Owyhee Dam <sup>2</sup>	FEB-JUL	70	185	295	46%	425	670	635
	FEB-SEP	87	210	320	48%	460	705	665
	APR-JUL	25	95	167	45%	260	435	375
	APR-SEP	39	117	194	48%	290	465	405
Malheur R nr Drewsey	FEB-JUL	15.1	36	56	48%	79	122	116
	APR-SEP	5.7	17.7	30	43%	45	72	70
NF Malheur R at Beulah <sup>2</sup>	FEB-JUL	20	36	49	58%	64	90	85
	APR-SEP	15.7	27	37	60%	49	68	62

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

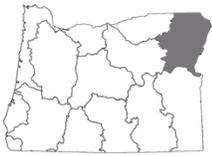
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

Reservoir Storage	Current (KAF)	Last Year (KAF)	Average (KAF)	% of Average	Useable Capacity (KAF)
Beulah	20.6	12.1	21.0	98%	59.2
Bully Creek	8.4	5.0	10.8	78%	23.7
Lake Owyhee	461.4	212.9	312.7	148%	715.0
Warm Springs	96.4	9.1	60.4	160%	169.6

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
East Little Owyhee Basin	2	45%	124%
South Fork Owyhee Basin	4	38%	134%
Upper Malheur Basin	3	44%	124%
Upper Owyhee Basin	5	40%	132%

## Owyhee And Malheur Basins Summary for January 1, 2018

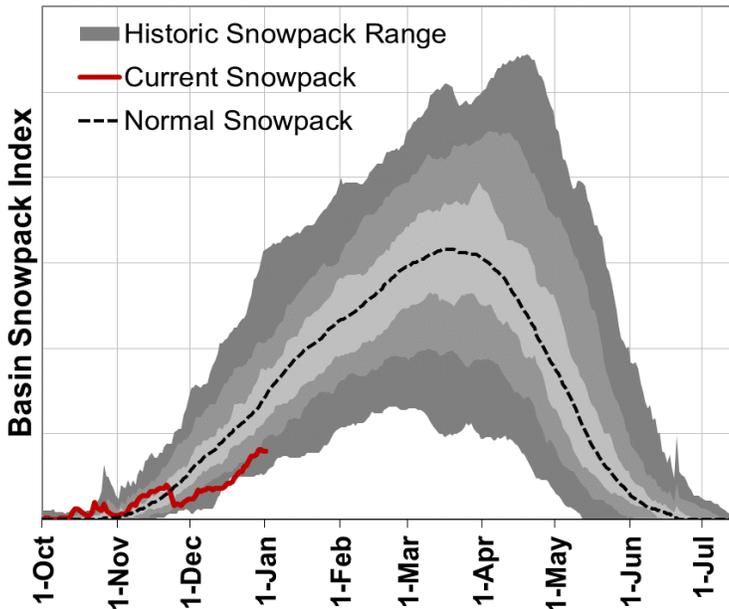
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Granite Peak SNOTEL	8543	1-Jan	15	3.5	7.7	7.0	50%
Trout Creek AM	7890	1-Jan	3	0.6	5.5		
Toe Jam SNOTEL	7700	1-Jan	15	3.9	9.8		
Govt Corrals AM	7400	1-Jan	6	1.2	4.6		
Jack Creek Upper SNOTEL	7250	1-Jan	13	2.2	7.7	5.4	41%
Fawn Creek SNOTEL	7000	1-Jan	13	2.0	6.9	5.9	34%
Buckskin Lower SNOTEL	6915	1-Jan	7	1.1	5.1	3.3	33%
Big Bend SNOTEL	6700	1-Jan	3	1.5	5.7	3.0	50%
Fry Canyon SNOTEL	6700	1-Jan	5	1.1	4.1		
Laurel Draw SNOTEL	6697	1-Jan	9	1.9	4.5	4.1	46%
South Mtn. SNOTEL	6500	1-Jan	9	2.0	6.6	6.2	32%
Taylor Canyon SNOTEL	6200	1-Jan	3	0.3	3.6	1.5	20%
Blue Mountain Spring SNOTEL	5870	1-Jan	11	3.1	7.0	6.9	45%
Mud Flat SNOTEL	5730	1-Jan	4	0.7	3.0	2.6	27%
Reynolds Creek SNOTEL	5600	1-Jan	9	1.8	2.6	2.0	90%
Rock Springs SNOTEL	5290	1-Jan	3	1.0	3.4	1.9	53%
Lake Creek R.S. SNOTEL	5240	1-Jan	8	1.9	6.4	4.8	40%



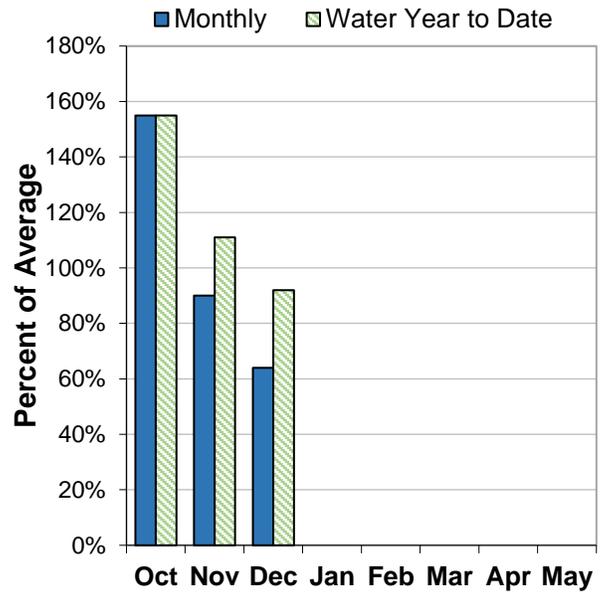
# Grande Ronde, Powder, Burnt and Imnaha Basins

January 1, 2018

**Mountain Snowpack**



**Basin Precipitation**



## Summary of Water Supply Conditions

### SNOWPACK

As of January 1, the basin snowpack was 55% of normal. This is significantly lower than last year when the basin snowpack was 108% of normal on January 1, 2017. Two SNOTEL sites in the basin, each with over 35 years of measurements, set new record lows for January 1 snowpack levels. Aneroid Lake SNOTEL (7400 ft elev) recorded 2.7" of SWE (30% of normal) and Bourne SNOTEL (5850 ft elev) recorded 2.5" of SWE (37% of normal).

### PRECIPITATION

December precipitation was 64% of average. Precipitation since the beginning of the water year (October 1 - January 1) has been 92% of average.

### RESERVOIR

As of January 1, storage at major reservoirs in the basin ranges from 79% of average at Thief Valley Reservoir to 111% of average at Phillips Lake.

### STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 43% to 91% of average.

## Grande Ronde, Powder, Burnt And Imnaha Basins Summary for January 1, 2018

<b>Forecast Exceedance Probabilities for Risk Assessment *</b>								
<b>Streamflow Forecasts January 1, 2018</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 <sup>2</sup>	FEB-JUL	9.9	18.7	26	51%	35	51	51
	APR-SEP	3.1	9.0	14.9	43%	22	35	35
Powder R nr Sumpter <sup>2</sup>	FEB-JUL	20	32	41	61%	51	68	67
	APR-SEP	14.2	24	32	59%	41	56	54
Pine Ck nr Oxbow	FEB-JUL	62	115	151	69%	187	240	220
	APR-SEP	28	71	100	61%	129	172	163
Imnaha R at Imnaha	APR-JUL	100	160	200	78%	245	305	255
	APR-SEP	110	174	215	77%	260	325	280
Catherine Ck nr Union	APR-JUL	26	39	47	78%	56	69	60
	APR-SEP	28	42	51	80%	60	73	64
Lostine R nr Lostine	APR-JUL	74	87	96	91%	105	118	106
	APR-SEP	78	93	103	90%	113	127	115
Bear Ck nr Wallowa	APR-JUL	40	50	58	92%	65	75	63
	APR-SEP	41	52	59	91%	67	78	65
Grande Ronde R at Troy	MAR-JUL	810	1100	1300	86%	1490	1780	1510
	APR-SEP	665	930	1110	85%	1290	1560	1310

\* 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>
Phillips Lake	33.6	4.1	30.2	111%	73.5
Thief Valley	8.3	5.2	10.5	79%	13.3
Unity	9.0	6.0	9.5	95%	25.5
Wallowa Lake		23.8	14.7		37.5
Wolf Creek	2.4		2.6	92%	11.1

<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	51%	126%
Imnaha Basin	4	40%	87%
Lower Grande Ronde Basin	3	67%	127%
Powder Basin	8	42%	106%
Upper Grande Ronde Basin	7	64%	119%
Wallowa Basin	4	55%	94%

## Grande Ronde, Powder, Burnt And Imnaha Basins Summary for January 1, 2018

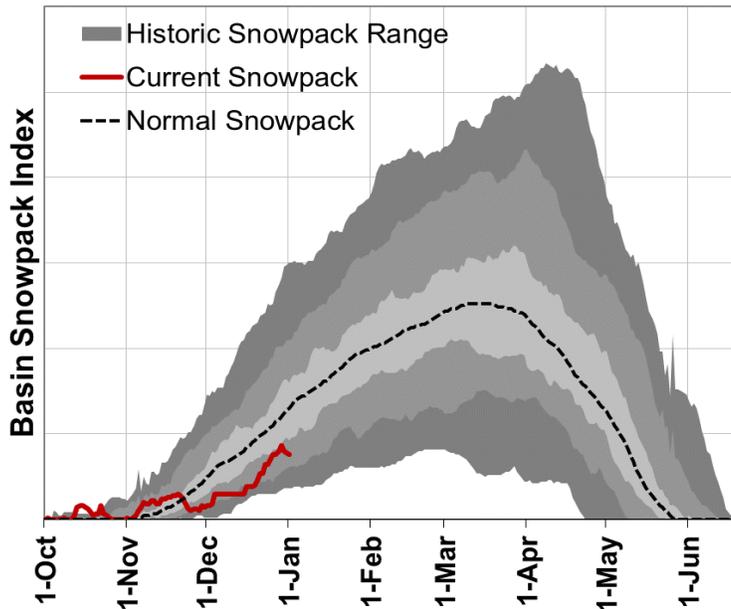
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Mt. Howard SNOTEL	7910	1-Jan	12	4.3	5.6	7.5	57%
Aneroid Lake #2 SNOTEL	7400	1-Jan	15	2.7	6.7	9.1	30%
Big Sheep AM	6230	1-Jan	13	3.4	6.0		
Bear Saddle SNOTEL	6180	1-Jan	12	3.0	6.9	9.4	32%
Bourne SNOTEL	5850	1-Jan	8	2.5	7.8	6.8	37%
Moss Springs SNOTEL	5760	1-Jan	30	8.4	12.0	10.2	82%
Taylor Green SNOTEL	5740	1-Jan	14	3.7	8.0	7.7	48%
Spruce Springs SNOTEL	5700	1-Jan	17	4.9	6.9	7.1	69%
Wolf Creek SNOTEL	5630	1-Jan	11	3.1	5.9	6.0	52%
Milk Shakes SNOTEL	5580	1-Jan	46	14.1	15.7		
West Branch SNOTEL	5560	1-Jan	20	3.7	5.3	9.2	40%
Touchet SNOTEL	5530	1-Jan	28	8.8	14.4	12.9	68%
Eilertson Meadows SNOTEL	5510	1-Jan	3	1.4	5.4	4.8	29%
West Eagle Meadows AM	5500	1-Jan	17	4.4			
Gold Center SNOTEL	5410	1-Jan	8	1.9	5.4	4.7	40%
Schneider Meadows SNOTEL	5400	1-Jan	20	5.3	10.3	12.3	43%
Beaver Reservoir SNOTEL	5150	1-Jan	12	2.5	5.7	4.2	60%
Tipton SNOTEL	5150	1-Jan	10	3.1	6.9	5.1	61%
High Ridge SNOTEL	4920	1-Jan	24	6.4	13.5	11.0	58%
County Line SNOTEL	4830	1-Jan	7	1.9	3.5	2.4	79%
Bowman Springs SNOTEL	4530	1-Jan	9	2.9	5.3	3.7	78%
East Eagle Snow Course	4400	31-Dec	11	2.9	10.0	8.7	33%
Sourdough Gulch SNOTEL	4000	1-Jan	0	0.0	4.8	0.6	0%



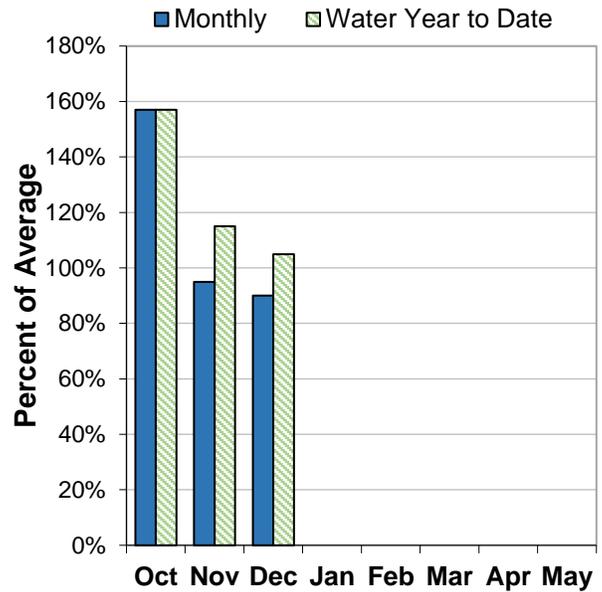
# Umatilla, Walla Walla and Willow Basins

January 1, 2018

**Mountain Snowpack**



**Basin Precipitation**



## Summary of Water Supply Conditions

### SNOWPACK

As of January 1, the basin snowpack was 59% of normal. This is significantly lower than last year when the basin snowpack was 129% of normal on January 1, 2017.

### PRECIPITATION

December precipitation was 90% of average. Precipitation since the beginning of the water year (October 1 - January 1) has been 105% 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 63% of average at Willow Creek Reservoir to 93% of average at Cold Springs Reservoir.

### STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 73% to 100% of average.

## Umatilla, Walla Walla And Willow Basins Summary for January 1, 2018

<b>Forecast Exceedance Probabilities for Risk Assessment *</b>								
<b>Streamflow Forecasts January 1, 2018</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>	
SF Walla Walla R nr Milton-Freewater	MAR-JUL	51	61	68	100%	74	84	68
	APR-SEP	50	59	66	100%	72	82	66
Umatilla R ab Meacham nr Gibbon	MAR-JUL	60	81	96	95%	110	132	101
	APR-SEP	43	62	75	94%	88	107	80
Umatilla R at Pendleton	MAR-JUL	126	176	210	93%	245	295	225
	APR-SEP	73	116	145	92%	175	220	157
McKay Ck nr Pilot Rock	MAR-JUL	16.0	33	44	90%	55	72	49
	APR-SEP	3.1	17.0	26	90%	36	50	29
Butter Ck nr Pine City	MAR-JUL	3.8	8.5	11.7	79%	15.0	19.7	14.9
	APR-SEP	2.0	5.5	7.9	81%	10.3	13.8	9.8
Willow Ck ab Willow Lk nr Heppner	MAR-JUL	0.88	4.8	7.5	74%	10.2	14.1	10.1
	APR-SEP	0.00	2.9	5.3	75%	7.7	11.2	7.1
Rhea Ck nr Heppner	MAR-JUL	1.01	5.1	7.9	71%	10.7	14.8	11.1
	APR-SEP	0.00	3.2	5.5	73%	7.9	11.3	7.5

\* 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>
Cold Springs	6.4	3.4	6.9	93%	38.6
Mckay	17.6	11.7	20.0	88%	71.5
Willow Creek	2.7	2.4	4.2	63%	9.8

<b>Snowpack Summary by Basin</b>	<b>Basin Snowpack % of Median</b>		
	<b># of Sites</b>	<b>Current Yr</b>	<b>Last Yr</b>
Umatilla Basin	5	57%	136%
Walla Walla Basin	7	59%	129%

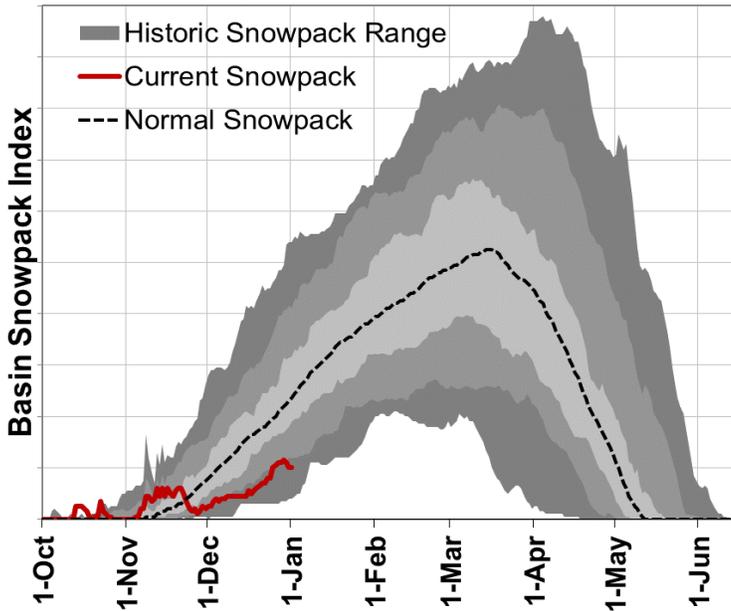
<b>Basin Snowpack Measurement Sites</b>	<b>Elevation (ft)</b>	<b>Date Measured</b>	<b>Depth (in)</b>	<b>Snow Water Equivalent (in)</b>			
				<b>Current SWE</b>	<b>Last Yr SWE</b>	<b>Median</b>	<b>% of Median</b>
Arbuckle Mtn SNOTEL	5770	1-Jan	14	3.8	8.4	8.1	47%
Spruce Springs SNOTEL	5700	1-Jan	17	4.9	6.9	7.1	69%
Milk Shakes SNOTEL	5580	1-Jan	46	14.1	15.7		
Touchet SNOTEL	5530	1-Jan	28	8.8	14.4	12.9	68%
Madison Butte SNOTEL	5150	1-Jan	2	0.7	3.6	2.7	26%
Lucky Strike SNOTEL	4970	1-Jan	7	1.8	5.3	3.9	46%
High Ridge SNOTEL	4920	1-Jan	24	6.4	13.5	11.0	58%
Bowman Springs SNOTEL	4530	1-Jan	9	2.9	5.3	3.7	78%
Emigrant Springs SNOTEL	3800	1-Jan	9	2.3	8.4	3.3	70%



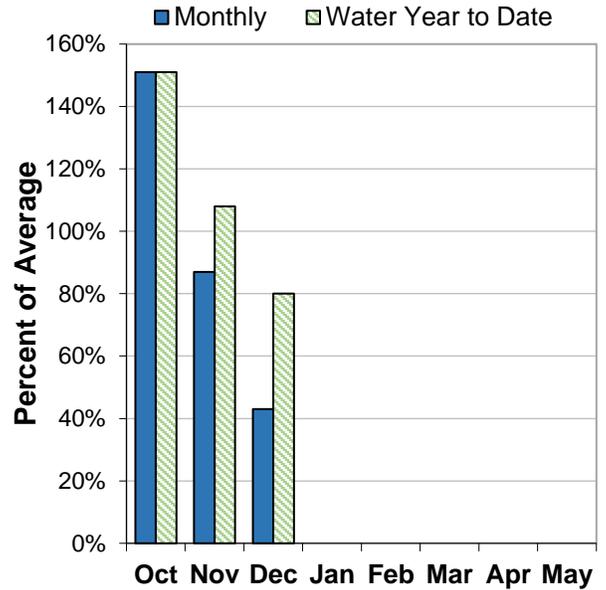
# John Day Basin

January 1, 2018

## Mountain Snowpack



## Basin Precipitation



## Summary of Water Supply Conditions

### SNOWPACK

As of January 1, the basin snowpack was 42% of normal. This is significantly lower than last year when the basin snowpack was 127% of normal on January 1, 2017.

### PRECIPITATION

December precipitation was 43% of average. Precipitation since the beginning of the water year (October 1 - January 1) has been 80% of average.

### STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 45% to 89% of average.

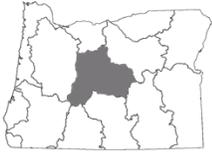
## John Day Basin Summary for January 1, 2018

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts January 1, 2018	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Strawberry Ck nr Prairie City	MAR-JUL	4.2	6.2	7.6	89%	9.0	11.0	8.5
	APR-SEP	4.3	6.3	7.7	88%	9.1	11.1	8.8
Mountain Ck nr Mitchell	MAR-JUL	1.09	2.2	3.2	51%	4.3	6.3	6.3
	APR-SEP	0.57	1.43	2.2	45%	3.2	5.0	4.9
Camas Ck nr Ukiah	MAR-JUL	24	35	43	90%	51	62	48
	APR-SEP	12.1	23	31	89%	38	49	35
MF John Day R at Ritter	MAR-JUL	33	73	101	65%	129	170	156
	APR-SEP	19.9	56	80	63%	105	141	126
NF John Day R at Monument	MAR-JUL	210	385	505	66%	625	800	765
	APR-SEP	131	285	390	65%	495	650	600

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

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Lower John Day Basin	4	24%	138%
North Fork John Day Basin	7	47%	121%
Upper John Day Basin	5	40%	126%

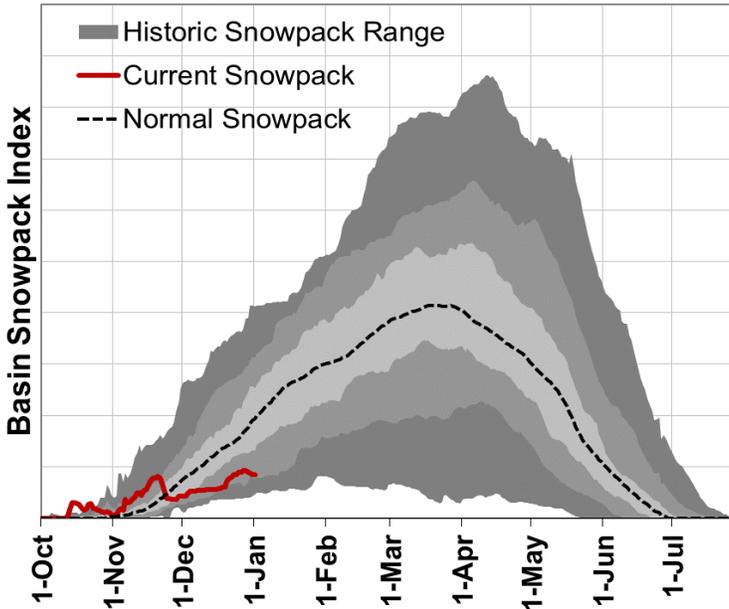
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Snow Mountain SNOTEL	6230	1-Jan	8	2.0	4.6	3.3	61%
Blue Mountain Spring SNOTEL	5870	1-Jan	11	3.1	7.0	6.9	45%
Bourne SNOTEL	5850	1-Jan	8	2.5	7.8	6.8	37%
Derr. SNOTEL	5850	1-Jan	6	1.2	6.9	5.7	21%
Arbuckle Mtn SNOTEL	5770	1-Jan	14	3.8	8.4	8.1	47%
Ochoco Meadows SNOTEL	5430	1-Jan	5	1.6	6.0	4.4	36%
Gold Center SNOTEL	5410	1-Jan	8	1.9	5.4	4.7	40%
Starr Ridge SNOTEL	5250	1-Jan	6	1.3	4.8	2.8	46%
Lake Creek R.S. SNOTEL	5240	1-Jan	8	1.9	6.4	4.8	40%
Madison Butte SNOTEL	5150	1-Jan	2	0.7	3.6	2.7	26%
Tipton SNOTEL	5150	1-Jan	10	3.1	6.9	5.1	61%
Lucky Strike SNOTEL	4970	1-Jan	7	1.8	5.3	3.9	46%
County Line SNOTEL	4830	1-Jan	7	1.9	3.5	2.4	79%
Marks Creek Snow Course	4580	2-Jan	1	0.2	4.4	2.4	8%



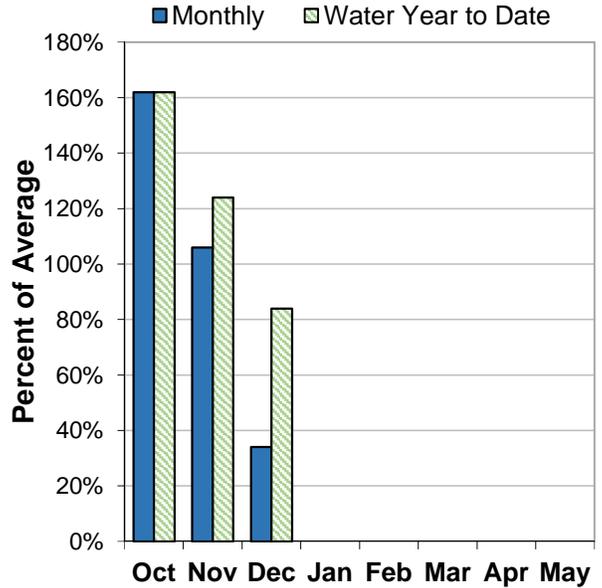
# Upper Deschutes and Crooked Basins

January 1, 2018

**Mountain Snowpack**



**Basin Precipitation**



## Summary of Water Supply Conditions

### SNOWPACK

As of January 1, the basin snowpack was 43% of normal. This is significantly lower than last year when the basin snowpack was 120% of normal on January 1, 2017.

### PRECIPITATION

December precipitation was 34% of average. Precipitation since the beginning of the water year (October 1 - January 1) has been 84% of average. Two long-term SNOTEL sites set new records for the lowest December precipitation - New Crescent (1.7", 22% of average) and Chemult Alternate (0.7", 13% of average).

### RESERVOIR

As of January 1, storage at major reservoirs in the basin ranges from 99% of average at Prineville Reservoir to 175% of average at Crescent Lake.

### STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 34% to 90% of average.

## Upper Deschutes And Crooked Basins Summary for January 1, 2018

<b>Forecast Exceedance Probabilities for Risk Assessment *</b>								
<b>Streamflow Forecasts January 1, 2018</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>	
Deschutes R bl Snow Ck	FEB-JUL	23	31	36	88%	41	48	41
	FEB-SEP	34	46	55	87%	64	76	63
	APR-JUL	15.5	22	26	87%	30	37	30
	APR-SEP	25	37	45	87%	53	65	52
Crane Prairie Reservoir Inflow <sup>2</sup>	FEB-JUL	44	59	69	91%	79	94	76
	FEB-SEP	60	82	97	91%	112	135	107
	APR-JUL	30	42	51	91%	60	72	56
	APR-SEP	45	65	79	90%	93	113	88
Crescent Lake Inflow <sup>2</sup>	FEB-JUL	4.0	10.9	15.5	79%	20	27	19.6
	FEB-SEP	2.6	11.2	17.0	77%	23	31	22
	APR-JUL	1.69	7.0	10.6	71%	14.2	19.4	15.0
	APR-SEP	0.46	7.3	12.0	69%	16.7	24	17.4
Little Deschutes R nr La Pine <sup>2</sup>	FEB-JUL	15.7	45	65	73%	85	115	89
	FEB-SEP	12.7	45	68	72%	90	122	94
	APR-JUL	1.99	25	40	63%	56	79	63
	APR-SEP	0.00	25	42	61%	60	86	69
Deschutes R at Benham Falls <sup>2</sup>	FEB-JUL	320	370	410	89%	445	495	460
	FEB-SEP	445	510	555	89%	600	670	625
	APR-JUL	215	255	280	88%	305	340	320
	APR-SEP	345	395	430	89%	460	510	485
Wychus Ck nr Sisters	FEB-JUL	28	35	40	93%	45	52	43
	FEB-SEP	36	44	50	91%	56	65	55
	APR-JUL	23	28	32	91%	36	41	35
	APR-SEP	31	38	42	89%	47	54	47
Prineville Reservoir Inflow <sup>2</sup>	FEB-JUL	24	59	91	44%	130	200	205
	FEB-SEP	23	58	90	44%	129	200	205
	APR-JUL	3.7	18.9	36	35%	59	102	102
	APR-SEP	3.0	17.8	35	34%	58	102	102
Ochoco Reservoir Inflow <sup>2</sup>	FEB-JUL	5.6	13.0	19.9	50%	28	43	40
	FEB-SEP	4.9	12.2	19.0	48%	27	42	40
	APR-JUL	1.92	5.9	9.8	47%	14.8	24	21
	APR-SEP	1.40	5.1	9.0	45%	13.9	23	20

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

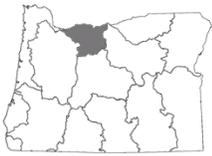
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

## Upper Deschutes And Crooked Basins Summary for January 1, 2018

Reservoir Storage	Current (KAF)	Last Year (KAF)	Average (KAF)	% of Average	Useable Capacity (KAF)
Crane Prairie	40.7	38.6	35.6	114%	55.3
Crescent Lake	76.9	52.1	44.0	175%	86.9
Ochoco	19.3	19.9	17.1	113%	44.2
Prineville	81.5	63.8	82.6	99%	148.6
Wickiup	154.9	112.2	140.8	110%	200.0

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Little Deschutes Basin	4	50%	113%
Upper Crooked Basin	3	24%	138%
Upper Deschutes Basin	9	47%	118%

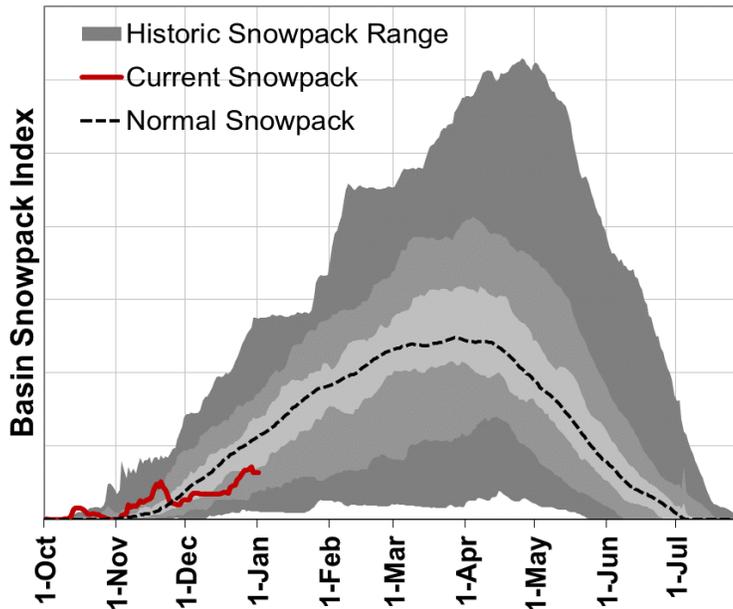
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Snow Mountain SNOTEL	6230	1-Jan	8	2.0	4.6	3.3	61%
Derr. SNOTEL	5850	1-Jan	6	1.2	6.9	5.7	21%
Three Creeks Meadow SNOTEL	5690	1-Jan	4	1.5	9.2	6.9	22%
Summit Lake SNOTEL	5610	1-Jan	23	11.2	18.6	16.3	69%
Bald Peter Snow Course	5600	3-Jan	4	1.0		10.8	9%
Irish Taylor SNOTEL	5540	1-Jan	28	8.3	16.4	14.6	57%
Ochoco Meadows SNOTEL	5430	1-Jan	5	1.6	6.0	4.4	36%
Racing Creek Snow Course	5160	3-Jan	0	0.0		6.0	0%
Cascade Summit SNOTEL	5100	1-Jan	29	7.9	14.9	14.1	56%
Roaring River SNOTEL	4950	1-Jan	15	4.9	15.5	12.6	39%
New Crescent Lake SNOTEL	4910	1-Jan	2	1.1	8.1	6.1	18%
Chemult Alternate SNOTEL	4850	1-Jan	1	0.4	4.7	4.6	9%
Hogg Pass SNOTEL	4790	1-Jan	9	3.4	14.4	11.6	29%
McKenzie SNOTEL	4770	1-Jan	27	8.9	20.4	18.5	48%
Marks Creek Snow Course	4580	2-Jan	1	0.2	4.4	2.4	8%
Salt Creek Falls SNOTEL	4220	1-Jan	9	3.2	11.9	8.6	37%
Santiam Jct. SNOTEL	3740	1-Jan	7	2.8	10.5	9.0	31%



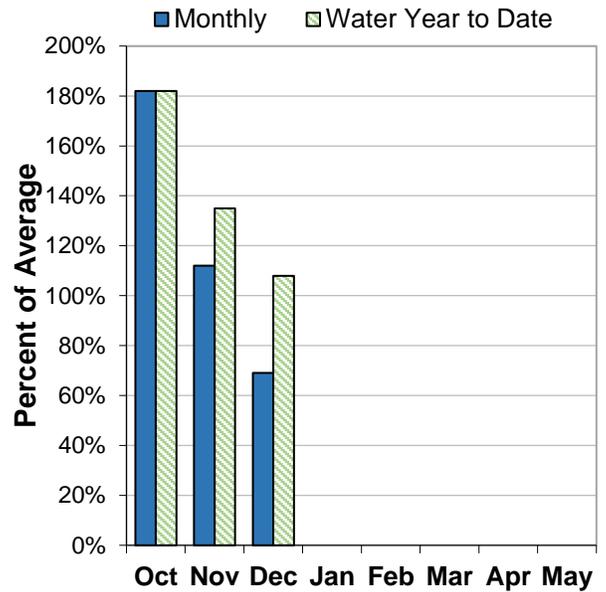
# Hood, Sandy and Lower Deschutes Basins

January 1, 2018

**Mountain Snowpack**



**Basin Precipitation**



## Summary of Water Supply Conditions

### SNOWPACK

As of January 1, the basin snowpack was 56% of normal. This is significantly lower than last year when the basin snowpack was 136% of normal on January 1, 2017.

### PRECIPITATION

December precipitation was 69% of average. Precipitation since the beginning of the water year (October 1 - January 1) has been 108% of average.

### STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 87% to 92% of average.

## Hood, Sandy And Lower Deschutes Basins Summary for January 1, 2018

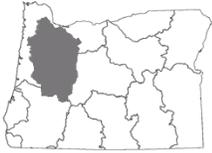
<b>Forecast Exceedance Probabilities for Risk Assessment *</b>								
<b>Streamflow Forecasts January 1, 2018</b>	<b>Forecast Period</b>	←-----Drier-----Future Conditions-----Wetter-----→						<b>Average (KAF)</b>
		<b>90% (KAF)</b>	<b>70% (KAF)</b>	<b>50% (KAF)</b>	<b>% Avg</b>	<b>30% (KAF)</b>	<b>10% (KAF)</b>	
WF Hood R nr Dee	APR-JUL	65	89	106	88%	122	147	120
	APR-SEP	78	104	122	88%	139	165	139
Hood R at Tucker Bridge	APR-JUL	120	166	197	88%	230	275	225
	APR-SEP	148	198	230	87%	265	315	265
Sandy R nr Marmot	APR-JUL	181	240	285	92%	325	390	310
	APR-SEP	220	285	330	92%	375	440	360

\* 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>
Clear Lake	2.4	0.9	2.8	86%	13.1

<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 Columbia - Sandy Basin	7	61%	140%
Lower Deschutes Basin	4	50%	116%
Middle Columbia - Hood Basin	6	65%	124%

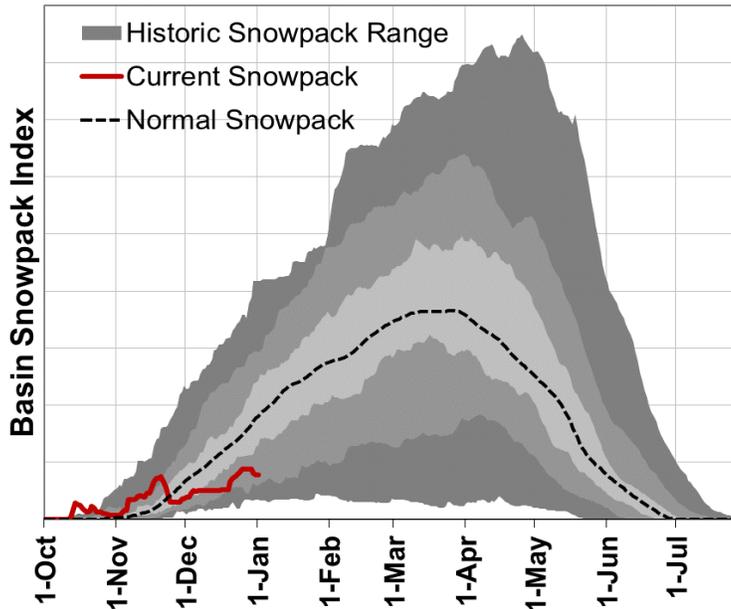
<b>Basin Snowpack Measurement Sites</b>	<b>Elevation (ft)</b>	<b>Date Measured</b>	<b>Depth (in)</b>	<b>Snow Water Equivalent (in)</b>			
				<b>Current SWE</b>	<b>Last Yr SWE</b>	<b>Median</b>	<b>% of Median</b>
High Prairie Snow Course	6080	2-Jan	19	5.9		16.4	36%
Bald Peter Snow Course	5600	3-Jan	4	1.0		10.8	9%
Mt Hood Test Site SNOTEL	5370	1-Jan	44	13.4	25.0	25.3	53%
Racing Creek Snow Course	5160	3-Jan	0	0.0		6.0	0%
Red Hill SNOTEL	4410	1-Jan	29	12.3	25.8	18.7	66%
Mill Creek Meadow Snow Course	4400	2-Jan	6	1.8		6.4	28%
Surprise Lakes SNOTEL	4290	1-Jan	51	18.5	22.4	19.9	93%
Beaver Creek #2 Snow Course	4220	2-Jan	5	1.2		4.6	26%
Beaver Creek #1 Snow Course	4210	2-Jan	8	2.0		5.9	34%
Mud Ridge SNOTEL	4070	1-Jan	20	6.3	14.5	11.0	57%
Clear Lake SNOTEL	3810	1-Jan	5	1.3	8.1	6.3	21%
Blazed Alder SNOTEL	3650	1-Jan	27	9.9	20.8	12.3	80%
Clackamas Lake SNOTEL	3400	1-Jan	10	3.2	8.3	5.4	59%
Greenpoint SNOTEL	3310	1-Jan	3	1.4	7.8	9.2	15%
North Fork SNOTEL	3060	1-Jan	15	4.8	12.7	6.8	71%
South Fork Bull Run SNOTEL	2690	1-Jan	3	1.3	6.6	0.5	260%



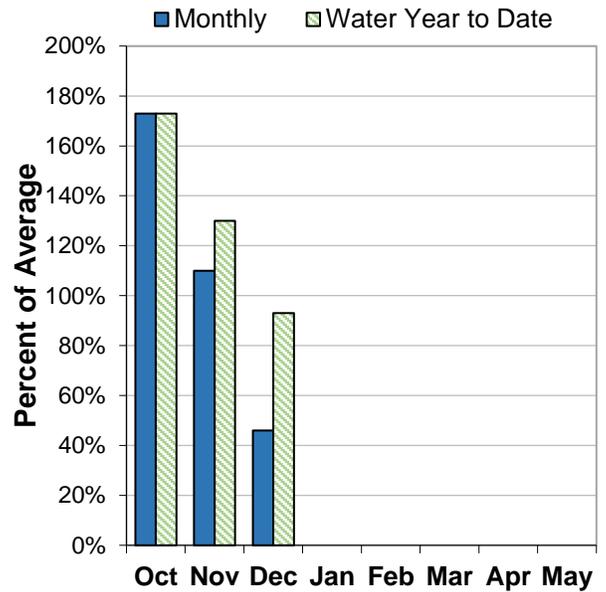
# Willamette Basin

January 1, 2018

## Mountain Snowpack



## Basin Precipitation



## Summary of Water Supply Conditions

### SNOWPACK

As of January 1, the basin snowpack was 44% of normal. This is significantly lower than last year when the basin snowpack was 132% of normal on January 1, 2017.

### PRECIPITATION

December precipitation was 46% of average. Precipitation since the beginning of the water year (October 1 - January 1) has been 93% of average.

### RESERVOIR

As of January 1, storage at major reservoirs in the basin ranges from 32% of average at Fern Ridge Reservoir to 114% of average at Timothy Lake.

### STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 83% to 90% of average.

## Willamette Basin Summary for January 1, 2018

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts January 1, 2018	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Hills Creek Reservoir Inflow <sup>1,2</sup>	APR-JUN	83	167	205	84%	245	330	245
	APR-SEP	124	220	265	84%	310	410	315
Lookout Point Reservoir Inflow <sup>1,2</sup>	APR-JUN	230	445	545	84%	640	860	650
	APR-SEP	335	580	695	84%	805	1050	825
McKenzie R bl Trail Bridge	APR-JUN	122	166	185	88%	205	250	210
	APR-SEP	215	280	305	88%	335	400	345
Cougar Lake Inflow <sup>1,2</sup>	APR-JUN	68	130	158	85%	186	245	185
	APR-SEP	99	168	199	85%	230	300	235
Blue Lake Inflow <sup>1,2</sup>	APR-JUN	17.0	51	67	84%	83	117	80
	APR-SEP	19.5	55	71	83%	87	122	86
McKenzie R nr Vida <sup>1,2</sup>	APR-JUN	405	625	725	87%	825	1040	830
	APR-SEP	660	930	1050	88%	1170	1440	1190
Detroit Lake Inflow <sup>1,2</sup>	APR-JUN	165	320	385	82%	455	610	470
	APR-SEP	255	430	510	84%	590	765	610
North Santiam R at Mehama <sup>1,2</sup>	APR-JUN	220	445	550	83%	655	885	665
	APR-SEP	325	580	700	83%	815	1070	840
Green Peter Lake Inflow <sup>1,2</sup>	APR-JUN	74	181	230	87%	280	385	265
	APR-SEP	95	205	255	86%	305	415	295
Foster Lake Inflow <sup>1,2</sup>	APR-JUN	146	345	435	87%	525	725	500
	APR-SEP	187	395	485	86%	580	785	565
South Santiam R at Waterloo <sup>2</sup>	APR-JUN	152	365	465	89%	560	775	525
	APR-SEP	193	415	515	87%	615	835	590
Willamette R at Salem <sup>1,2</sup>	APR-JUN	1260	2710	3360	85%	4020	5460	3950
	APR-SEP	1730	3320	4040	85%	4750	6340	4730
Oak Grove Fk ab Powerplant	APR-JUL	66	87	102	89%	116	137	115
	APR-SEP	95	121	139	90%	157	184	155
Clackamas R ab Three Lynx	APR-JUL	245	330	390	87%	445	530	450
	APR-SEP	315	405	470	88%	530	620	535
Clackamas R at Estacada	APR-JUL	330	455	545	87%	630	760	625
	APR-SEP	415	550	640	88%	730	865	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, 2018

Reservoir Storage	Current (KAF)	Last Year (KAF)	Average (KAF)	% of Average	Useable Capacity (KAF)
Blue River	8.5	3.9	9.6	89%	82.3
Cottage Grove	3.8	3.3	4.8	78%	31.8
Cougar	41.2	42.1	53.5	77%	174.9
Detroit	154.9	149.6	174.7	89%	426.8
Dorena	9.5	7.3	13.9	68%	72.1
Fall Creek	6.8	2.1	15.0	45%	116.0
Fern Ridge	4.6	3.5	14.4	32%	97.3
Foster	23.6	23.6	22.3	106%	46.2
Green Peter	179.5	155.3	182.3	98%	402.8
Hills Creek	83.0	87.8	104.8	79%	279.2
Lookout Point	110.0	113.7	144.2	76%	433.2
Timothy Lake	57.5	53.4	50.3	114%	63.6
Henry Hagg Lake	35.8	33.2	31.9	112%	53.3

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Clackamas Basin	9	56%	136%
McKenzie Basin	14	43%	120%
Middle Fork Willamette Basin	7	47%	118%
North Santiam Basin	4	36%	163%
South Santiam Basin	4	34%	180%

## Willamette Basin Summary for January 1, 2018

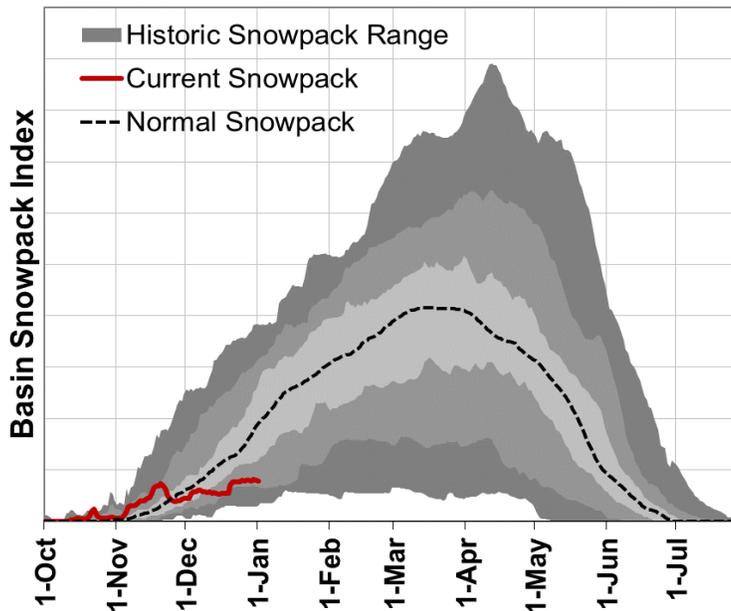
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Summit Lake SNOTEL	5610	1-Jan	23	11.2	18.6	16.3	69%
Irish Taylor SNOTEL	5540	1-Jan	28	8.3	16.4	14.6	57%
Cascade Summit SNOTEL	5100	1-Jan	29	7.9	14.9	14.1	56%
Roaring River SNOTEL	4950	1-Jan	15	4.9	15.5	12.6	39%
Holland Meadows SNOTEL	4930	1-Jan	1	0.7	12.4	10.8	6%
McKenzie SNOTEL	4770	1-Jan	27	8.9	20.4	18.5	48%
Bear Grass SNOTEL	4720	1-Jan	34	11.7	26.4		
Beaver Creek #2 Snow Course	4220	2-Jan	5	1.2		4.6	26%
Salt Creek Falls SNOTEL	4220	1-Jan	9	3.2	11.9	8.6	37%
Beaver Creek #1 Snow Course	4210	2-Jan	8	2.0		5.9	34%
Mud Ridge SNOTEL	4070	1-Jan	20	6.3	14.5	11.0	57%
Little Meadows SNOTEL	4020	1-Jan	13	5.7	19.4	10.8	53%
Clear Lake SNOTEL	3810	1-Jan	5	1.3	8.1	6.3	21%
Santiam Jct. SNOTEL	3740	1-Jan	7	2.8	10.5	9.0	31%
Daly Lake SNOTEL	3690	1-Jan	2	0.9	11.6	6.8	13%
Jump Off Joe SNOTEL	3520	1-Jan	2	0.9	8.7	5.2	17%
Peavine Ridge SNOTEL	3420	1-Jan	8	2.9	10.9	6.3	46%
Clackamas Lake SNOTEL	3400	1-Jan	10	3.2	8.3	5.4	59%
Smith Ridge SNOTEL	3270	1-Jan	1	0.4	9.1		
Saddle Mountain SNOTEL	3110	1-Jan	0	0.0	7.6		
Railroad Overpass SNOTEL	2680	1-Jan	0	0.0	1.0	0.0	
Marion Forks SNOTEL	2590	1-Jan	3	1.5	8.1	3.8	39%
Seine Creek SNOTEL	2060	1-Jan	0	0.0	1.7	0.0	
Miller Woods SNOTEL	420	1-Jan	0	0.0	0.0		



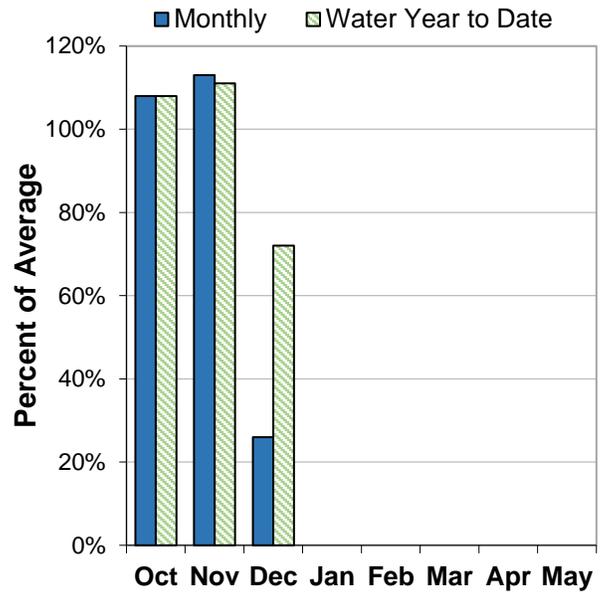
# Rogue and Umpqua Basins

January 1, 2018

### Mountain Snowpack



### Basin Precipitation



## Summary of Water Supply Conditions

### SNOWPACK

As of January 1, the basin snowpack was 44% of normal. This is significantly lower than last year when the basin snowpack was 110% of normal on January 1, 2017.

### PRECIPITATION

December precipitation was 26% of average. Precipitation since the beginning of the water year (October 1 - January 1) has been 72% of average. Diamond Lake SNOTEL recorded the lowest December precipitation since records began in 1980 (2.1", 24% of average).

### RESERVOIR

As of January 1, storage at major reservoirs in the basin ranges from 37% of average at Applegate Reservoir to 119% of average at Howard Prairie Reservoir.

### STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 75% to 93% of average.

## Rogue And Umpqua Basins Summary for January 1, 2018

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts January 1, 2018	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
South Umpqua R at Tiller	APR-JUL	63	127	170	88%	215	275	193
	APR-SEP	70	134	178	89%	220	285	200
Cow Ck ab Galesville Reservoir	APR-JUL	2.1	8.2	12.3	88%	16.4	22	13.9
	APR-SEP	2.9	9.1	13.3	89%	17.6	24	15.0
South Umpqua R nr Brockway	APR-JUL	79	230	335	86%	440	590	390
	APR-SEP	89	245	350	85%	455	610	410
North Umpqua R at Winchester	APR-JUL	410	595	720	93%	845	1030	775
	APR-SEP	505	695	830	93%	960	1150	890
Lost Creek Lk Inflow <sup>2</sup>	FEB-JUL	465	605	705	89%	800	940	795
	FEB-SEP	555	715	820	89%	925	1080	920
	APR-JUL	285	385	450	87%	515	615	520
	APR-SEP	380	490	565	88%	640	755	645
Rogue R at Raygold <sup>2</sup>	APR-JUL	295	460	570	84%	685	850	675
	APR-SEP	380	560	685	85%	805	990	805
Rogue R at Grants Pass <sup>2</sup>	APR-JUL	270	470	600	83%	735	930	725
	APR-SEP	350	565	705	83%	850	1060	845
Applegate Lake Inflow <sup>2</sup>	FEB-JUL	29	101	151	77%	200	275	195
	FEB-SEP	31	105	156	78%	205	280	200
	APR-JUL	10.9	53	81	74%	109	151	109
	APR-SEP	13.6	57	86	75%	115	158	115
Sucker Ck bl Ltl Grayback nr Holland	APR-JUL	6.7	28	43	78%	58	79	55
	APR-SEP	8.9	31	46	78%	61	84	59
Illinois R nr Kerby	APR-JUL	20	99	152	81%	205	285	188
	APR-SEP	24	103	157	81%	210	290	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

Reservoir Storage	Current (KAF)	Last Year (KAF)	Average (KAF)	% of Average	Useable Capacity (KAF)
Applegate	3.8	9.4	10.2	37%	75.2
Emigrant Lake	13.8	16.1	17.2	80%	39.0
Fish Lake	5.4	3.7	4.7	115%	7.9
Fourmile Lake	5.7	2.8	6.7	84%	15.6
Howard Prairie	42.1	30.0	35.5	119%	62.1
Hyatt Prairie	7.0	8.2	9.6	73%	16.2
Lost Creek	128.7	125.0	137.6	94%	315.0

## Rogue And Umpqua Basins Summary for January 1, 2018

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Applegate Basin	2	17%	110%
Middle Rogue Basin	5	10%	285%
North Umpqua Basin	7	47%	137%
South Umpqua Basin	10	20%	202%
Upper Rogue Basin	10	49%	107%

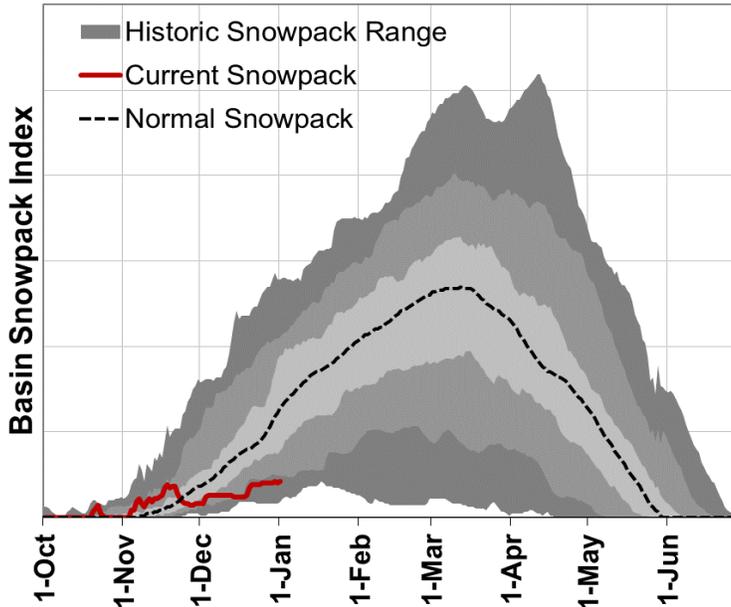
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Park H.Q. Rev Snow Course	6570	2-Jan	46	16.1	28.4	20.6	78%
Mt. Ashland Switchback Snow Course	6430	29-Dec	4	1.0	9.0		
Ski Bowl Road Snow Course	6070	29-Dec	2	0.8	7.2		
Big Red Mountain SNOTEL	6050	1-Jan	5	2.2	10.4	10.0	22%
Annie Springs SNOTEL	6010	1-Jan	30	9.9	16.0	17.3	57%
Fourmile Lake SNOTEL	5970	1-Jan	12	3.6	9.2	13.4	27%
Cold Springs Camp SNOTEL	5940	1-Jan	10	4.4	10.8	14.0	31%
Sevenmile Marsh SNOTEL	5700	1-Jan	20	6.9	12.6	12.5	55%
Summit Lake SNOTEL	5610	1-Jan	23	11.2	18.6	16.3	69%
Billie Creek Divide SNOTEL	5280	1-Jan	10	4.1	10.9	10.4	39%
Diamond Lake SNOTEL	5280	1-Jan	3	1.3	9.2	6.6	20%
Bigelow Camp SNOTEL	5130	1-Jan	1	0.3	6.2	5.1	6%
Beaver Dam Creek Snow Course	5120	2-Jan	6	2.2	9.1	6.3	35%
King Mountain 1 Snow Course	4760	29-Dec	0	0.0	6.8	2.2	0%
Deadwood Junction Snow Course	4660	2-Jan	5	2.3	8.0	4.2	55%
Fish Lk. SNOTEL	4660	1-Jan	7	2.3	5.0	5.1	45%
Howard Prairie SNOTEL	4580	1-Jan	2	0.7	2.3		
Howard Prairie Snow Course	4580	2-Jan	1	0.2		3.1	6%
Siskiyou Summit Rev. 2 Snow Course	4560	29-Dec	2	0.6	3.8	2.2	27%
Red Butte 1 Snow Course	4460	28-Dec	6	1.2	9.3	4.6	26%
King Mountain SNOTEL	4340	1-Jan	0	0.0	3.7	1.5	0%
Red Butte 2 Snow Course	4050	28-Dec	0	0.0	1.5	1.1	0%
Silver Burn Snow Course	3680	2-Jan	5	1.5	6.5	5.3	28%
King Mountain 3 Snow Course	3680	29-Dec	0	0.0	1.8	0.0	
Red Butte 3 Snow Course	3500	28-Dec	0	0.0	0.6	0.4	0%
Toketee Airstrip SNOTEL	3240	1-Jan	1	0.5	2.3	1.3	38%
King Mountain 4 Snow Course	3050	29-Dec	0	0.0	0.7	0.0	
Red Butte 4 Snow Course	3000	28-Dec	0	0.0	0.0	0.0	



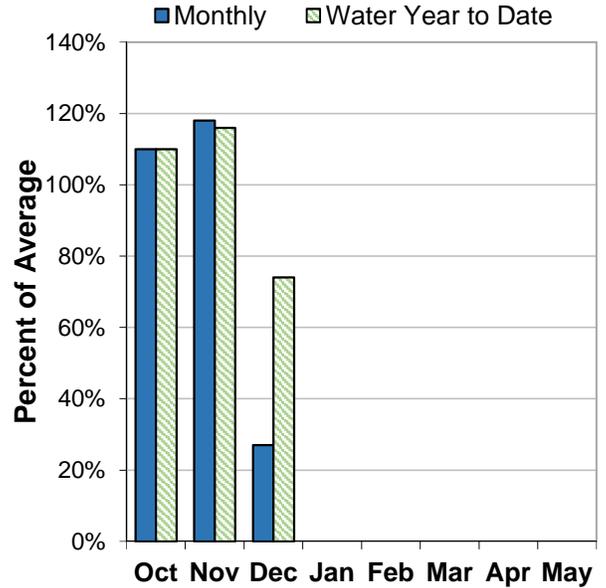
# Klamath Basin

January 1, 2018

## Mountain Snowpack



## Basin Precipitation



## Summary of Water Supply Conditions

### SNOWPACK

As of January 1, the basin snowpack was 43% of normal. This is significantly lower than last year when the basin snowpack was 102% of normal on January 1, 2017.

### PRECIPITATION

December precipitation was 27% of average. Precipitation since the beginning of the water year (October 1 - January 1) has been 74% of average. Three long-term SNOTEL sites set new records for the lowest December precipitation - Taylor Butte (0.5", 13% of average), Diamond Lake (2.1", 24% of average), and Chemult Alternate (0.7", 13% of average).

### RESERVOIR

As of January 1, storage at major reservoirs in the basin ranges from 97% of average at Upper Klamath Lake to 147% of average at Gerber Reservoir.

### STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 37% to 73% of average.

## Klamath Basin Summary for January 1, 2018

<b>Forecast Exceedance Probabilities for Risk Assessment *</b>								
<b>Streamflow Forecasts January 1, 2018</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>	JAN-JUL	3.6	13.4	24	51%	37	62	47
	APR-SEP	0.00	1.75	5.3	37%	10.8	22	14.4
Sprague R nr Chiloquin	JAN-JUL	41	144	215	65%	285	390	330
	JAN-SEP	54	160	235	66%	305	410	355
	APR-JUL	11.0	75	118	63%	162	225	188
	APR-SEP	24	91	137	65%	182	250	210
Williamson R bl Sprague nr Chiloquin	JAN-JUL	167	295	385	72%	475	605	535
	JAN-SEP	215	350	440	74%	530	665	595
	APR-JUL	69	150	205	69%	260	340	295
	APR-SEP	115	200	260	73%	315	405	355
Upper Klamath Lake Inflow <sup>1,2</sup>	JAN-JUL	188	490	625	73%	765	1070	860
	JAN-SEP	225	545	690	73%	835	1160	940
	APR-JUL	24	194	270	68%	350	520	400
	APR-SEP	65	250	335	70%	420	605	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	200.5	65.1	187.7	107%	513.3
Gerber	58.4	18.8	39.6	147%	94.3
Upper Klamath Lake	266.9	245.7	275.4	97%	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	4%	80%
Sprague Basin	4	33%	90%
Upper Klamath Lake Basin	8	50%	102%
Williamson River Basin	5	54%	117%

## Klamath Basin Summary for January 1, 2018

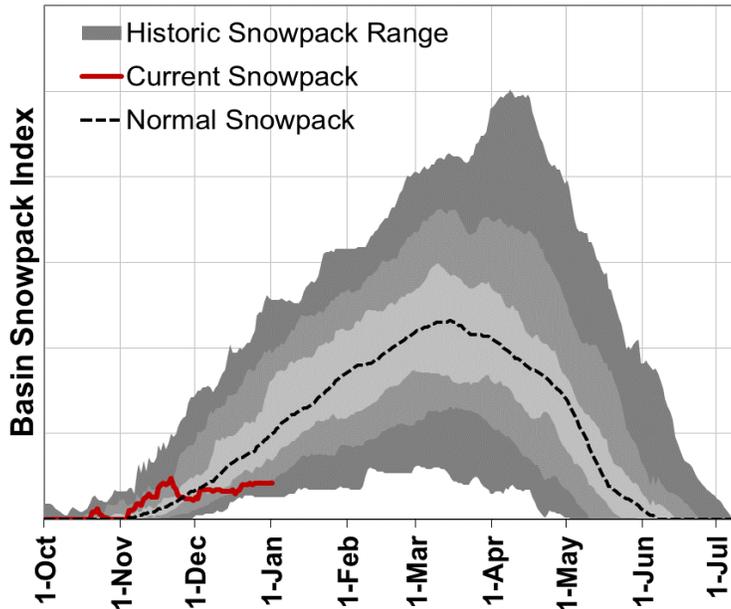
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Summer Rim SNOTEL	7080	1-Jan	9	2.6	6.4	7.2	36%
Swan Lake Mtn SNOTEL	6830	1-Jan	6	2.7	7.7		
Park H.Q. Rev Snow Course	6570	2-Jan	46	16.1	28.4	20.6	78%
Crazyman Flat SNOTEL	6180	1-Jan	8	3.1	6.4	8.4	37%
Ski Bowl Road Snow Course	6070	29-Dec	2	0.8	7.2		
Annie Springs SNOTEL	6010	1-Jan	30	9.9	16.0	17.3	57%
Finley Corrals AM	6000	1-Jan	10	3.0	7.0		
Fourmile Lake SNOTEL	5970	1-Jan	12	3.6	9.2	13.4	27%
Cold Springs Camp SNOTEL	5940	1-Jan	10	4.4	10.8	14.0	31%
Strawberry SNOTEL	5770	1-Jan	1	0.2	3.0	2.2	9%
Cox Flat AM	5750	1-Jan	2	0.6	3.0		
Silver Creek SNOTEL	5740	1-Jan	4	1.3	4.9	4.0	33%
Quartz Mountain SNOTEL	5720	1-Jan	0	0.0	1.0	0.9	0%
Sevenmile Marsh SNOTEL	5700	1-Jan	20	6.9	12.6	12.5	55%
State Line SNOTEL	5680	1-Jan	0	0.0	2.0		
Sun Pass SNOTEL	5400	1-Jan	4	1.2	7.8		
Billie Creek Divide SNOTEL	5280	1-Jan	10	4.1	10.9	10.4	39%
Diamond Lake SNOTEL	5280	1-Jan	3	1.3	9.2	6.6	20%
Crowder Flat SNOTEL	5170	1-Jan	0	0.0	0.8	1.6	0%
Beaver Dam Creek Snow Course	5120	2-Jan	6	2.2	9.1	6.3	35%
Taylor Butte SNOTEL	5030	1-Jan	1	0.7	3.2	3.6	19%
Gerber Reservoir SNOTEL	4890	1-Jan	0	0.0	0.2	1.2	0%
Chemult Alternate SNOTEL	4850	1-Jan	1	0.4	4.7	4.6	9%
Deadwood Junction Snow Course	4660	2-Jan	5	2.3	8.0	4.2	55%
Fish Lk. SNOTEL	4660	1-Jan	7	2.3	5.0	5.1	45%
Howard Prairie SNOTEL	4580	1-Jan	2	0.7	2.3		
Howard Prairie Snow Course	4580	2-Jan	1	0.2		3.1	6%
Siskiyou Summit Rev. 2 Snow Course	4560	29-Dec	2	0.6	3.8	2.2	27%



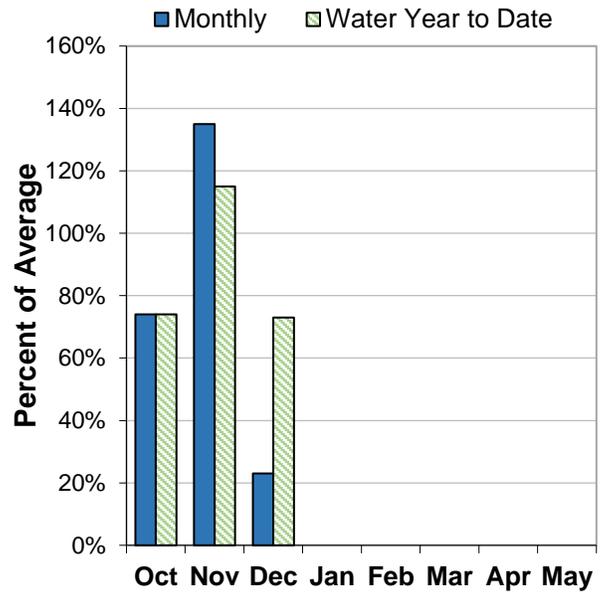
# Lake County and Goose Lake Basins

January 1, 2018

### Mountain Snowpack



### Basin Precipitation



## Summary of Water Supply Conditions

### SNOWPACK

As of January 1, the basin snowpack was 43% of normal. This is significantly lower than last year when the basin snowpack was 106% of normal on January 1, 2017.

### PRECIPITATION

December precipitation was 23% of average. Precipitation since the beginning of the water year (October 1 - January 1) has been 73% of average.

### RESERVOIR

As of January 1, storage at major reservoirs in the basin ranges from 43% of average at Cottonwood Reservoir to 127% of average at Drews Reservoir.

### STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 53% to 63% of average.

## Lake County And Goose Lake Basins Summary for January 1, 2018

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts January 1, 2018	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	1.92	7.7	13.9	51%	22	37	27
	APR-SEP	1.61	5.5	9.5	55%	14.5	24	17.4
Deep Ck ab Adel	MAR-JUL	18.4	35	49	62%	66	95	79
	APR-SEP	14.1	28	40	62%	54	78	65
Honey Ck nr Plush	MAR-JUL	1.96	5.6	9.1	53%	13.4	21	17.1
	APR-SEP	1.57	4.6	7.5	53%	11.1	17.8	14.1
Chewaucan R nr Paisley	MAR-JUL	22	39	54	64%	70	98	84
	APR-SEP	19.3	34	47	63%	61	86	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	1.4	3.2	3.3	43%	9.3
Drews	32.4	19.4	25.6	127%	63.5

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Goose Lake Basin	3	58%	125%
Lake Abert Basin	2	40%	112%
Summer Lake Basin	9	43%	106%
Upper Pit Basin	3	30%	101%

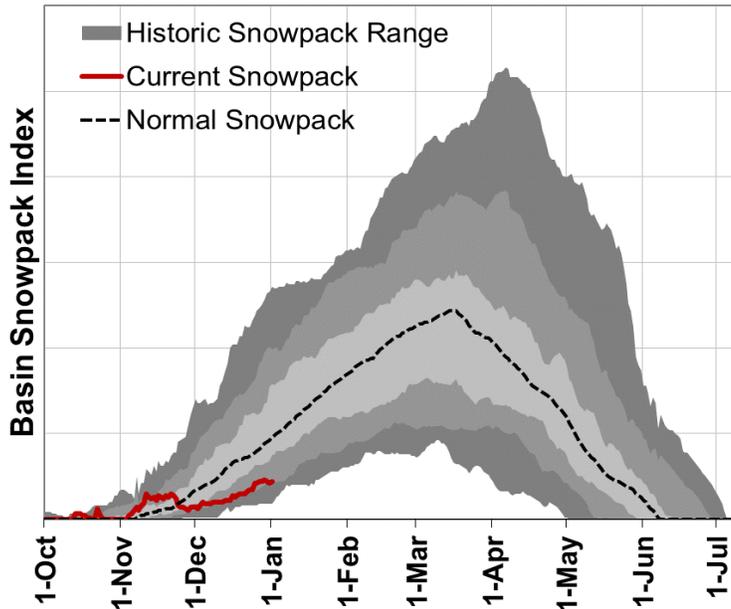
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Dismal Swamp SNOTEL	7360	1-Jan	19	7.0	10.3	9.3	75%
Summer Rim SNOTEL	7080	1-Jan	9	2.6	6.4	7.2	36%
Cedar Pass SNOTEL	7030	1-Jan	9	2.7	7.7	6.5	42%
Patton Meadows AM	6800	1-Jan	2	0.6	5.5		
Sherman Valley AM	6640	1-Jan	5	1.5	5.5		
Hart Mountain AM	6430	1-Jan	3	0.9	1.3		
Roger Meadow AM	6360	1-Jan	6	1.8	6.2		
Adin Mtn SNOTEL	6190	1-Jan	3	1.2	4.4	4.7	26%
Crazyman Flat SNOTEL	6180	1-Jan	8	3.1	6.4	8.4	37%
Finley Corrals AM	6000	1-Jan	10	3.0	7.0		
Camas Creek #3 Snow Course	5860	2-Jan	7	1.8	6.0	3.9	46%
Sheldon SCAN	5860	1-Jan	0	0.0	0.2	0.0	
Strawberry SNOTEL	5770	1-Jan	1	0.2	3.0	2.2	9%
Cox Flat AM	5750	1-Jan	2	0.6	3.0		
Silver Creek SNOTEL	5740	1-Jan	4	1.3	4.9	4.0	33%
State Line SNOTEL	5680	1-Jan	0	0.0	2.0		
Crowder Flat SNOTEL	5170	1-Jan	0	0.0	0.8	1.6	0%



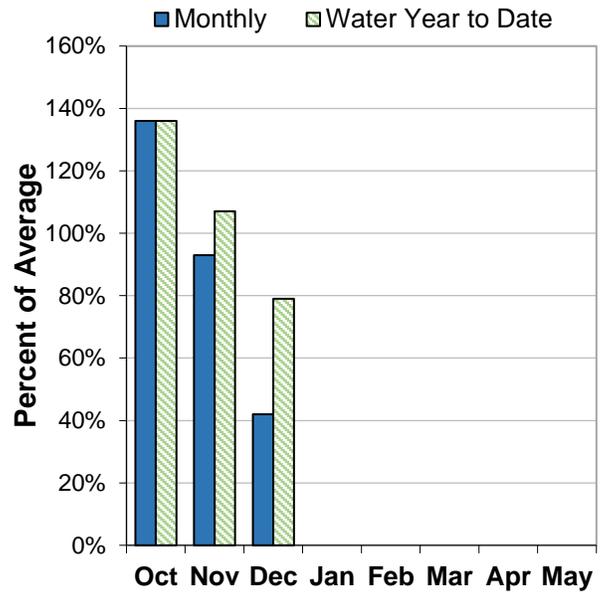
# Harney Basin

January 1, 2018

## Mountain Snowpack



## Basin Precipitation



## Summary of Water Supply Conditions

### SNOWPACK

As of January 1, the basin snowpack was 47% of normal. This is significantly lower than last year when the basin snowpack was 108% of normal on January 1, 2017.

### PRECIPITATION

December precipitation was 42% of average. Precipitation since the beginning of the water year (October 1 - January 1) has been 79% of average.

### STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 31% to 72% of average.

## Harney Basin Summary for January 1, 2018

<b>Forecast Exceedance Probabilities for Risk Assessment *</b>								
<b>Streamflow Forecasts January 1, 2018</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	11.8	33	53	43%	78	124	123
	APR-SEP	7.0	22	37	40%	56	91	92
Donner Und Blitzen R nr Frenchglen	MAR-JUL	25	39	51	71%	64	86	72
	APR-SEP	24	38	49	72%	61	82	68
Trout Ck nr Denio	MAR-JUL	0.28	1.48	2.8	32%	4.6	8.1	8.7
	APR-SEP	0.17	1.22	2.5	31%	4.2	7.4	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	51%	67%
Donner und Blitzen River Basin	2	47%	75%
Silvies River Basin	4	48%	150%
Upper Quinn Basin	3	37%	117%

<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	15	3.5	7.7	7.0	50%
Trout Creek AM	7890	1-Jan	3	0.6	5.5		
Fish Creek SNOTEL	7660	1-Jan	23	5.4	7.0	10.5	51%
Govt Corrals AM	7400	1-Jan	6	1.2	4.6		
Silvies SNOTEL	6990	1-Jan	10	2.0	4.8	5.3	38%
Buckskin Lower SNOTEL	6915	1-Jan	7	1.1	5.1	3.3	33%
V Lake AM	6600	1-Jan	0	0.0	1.0		
Disaster Peak SNOTEL	6500	1-Jan	2	0.4	2.4	2.6	15%
Hart Mountain AM	6430	1-Jan	3	0.9	1.3		
Snow Mountain SNOTEL	6230	1-Jan	8	2.0	4.6	3.3	61%
Lamance Creek SNOTEL	6000	1-Jan	1	0.5	3.5	3.6	14%
Blue Mountain Spring SNOTEL	5870	1-Jan	11	3.1	7.0	6.9	45%
Sheldon SCAN	5860	1-Jan	0	0.0	0.2	0.0	
Rock Springs SNOTEL	5290	1-Jan	3	1.0	3.4	1.9	53%
Starr Ridge SNOTEL	5250	1-Jan	6	1.3	4.8	2.8	46%
Lake Creek R.S. SNOTEL	5240	1-Jan	8	1.9	6.4	4.8	40%

# 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 4	Apr 15	May 25	<b>May 6</b>
Owyhee R nr Rome	1000 cfs	Mar 6	Apr 20	Jun 6	<b>May 18</b>
Owyhee R nr Rome	500 cfs	Mar 19	May 4	Jun 19	<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	40	210	455	<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	225	390	550	<b>403</b>
Crane Prairie Inflow	Average Daily Flow on Oct. 1st	140	220	300	<b>269</b>
Prineville Reservoir Inflow	150 cfs	Apr 21	May 13	Jun 4	<b>May 30</b>
Prineville Reservoir Inflow	80 cfs	Apr 27	May 22	Jun 16	<b>June 7</b>
Whychus Creek nr Sisters	100 cfs	Jul 3	Aug 7	Sep 6	<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 11	Aug 2	Aug 22	<b>August 8</b>
South Umpqua R at Tiller	140 cfs	Jun 11	Jul 4	Jul 28	<b>July 11</b>
South Umpqua R at Tiller	90 cfs	Jun 30	Jul 23	Aug 17	<b>August 1</b>
South Umpqua R at Tiller	60 cfs	Jul 23	Aug 22	Sep 26	<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 15	Jun 7	Jun 30	<b>June 17</b>
Honey Ck nr Plush	100 cfs	Mar 28	May 3	Jun 8	<b>May 16</b>
Honey Ck nr Plush	50 cfs	Apr 12	May 14	Jun 15	<b>June 4</b>
Twentymile Ck nr Adel	50 cfs	Apr 5	May 9	Jun 12	<b>May 30</b>
Twentymile Ck nr Adel	10 cfs	May 30	Jun 27	Jul 23	<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 10	May 5	May 30	<b>May 21</b>
Silvies R nr Burns	200 cfs	Apr 18	May 15	Jun 11	<b>June 2</b>
Silvies R nr Burns	100 cfs	Apr 25	May 25	Jun 24	<b>June 13</b>
Silvies R nr Burns	50 cfs	May 12	Jun 19	Jul 28	<b>July 3</b>
Donner Und Blitzen R nr Frenchglen	200 cfs	May 13	Jun 4	Jun 26	<b>June 20</b>
Donner Und Blitzen R nr Frenchglen	100 cfs	Jun 3	Jun 24	Jul 15	<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.

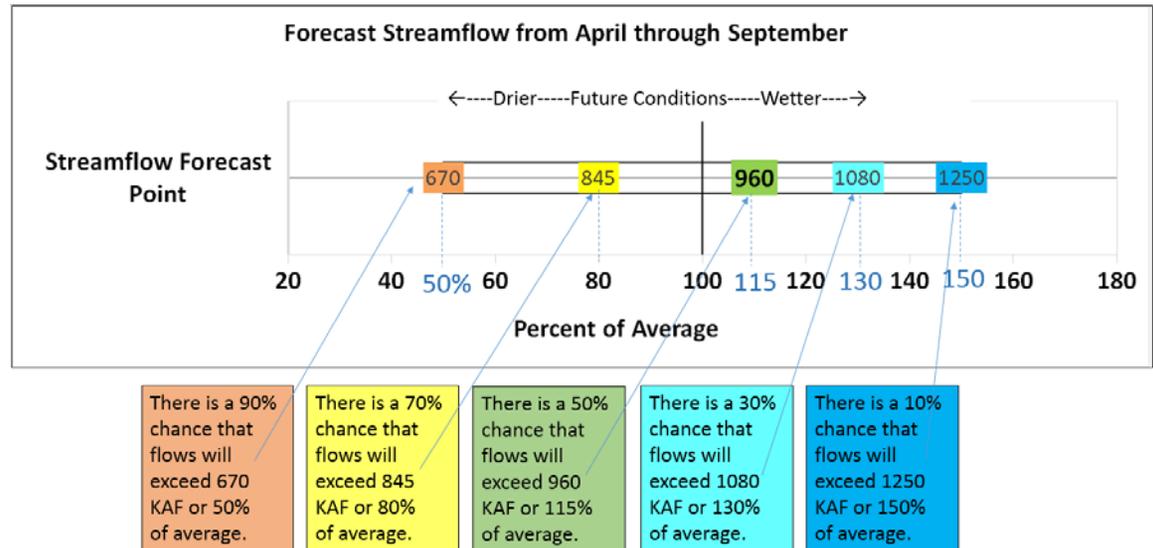
**30-Year Average.** The 30-year average streamflow for each forecast period is provided for comparison. The average is based on data from 1981-2010. The % AVG. column compares the 50% chance of exceedance forecast to the 30-year average streamflow; values above 100% denote when the 50% chance of exceedance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

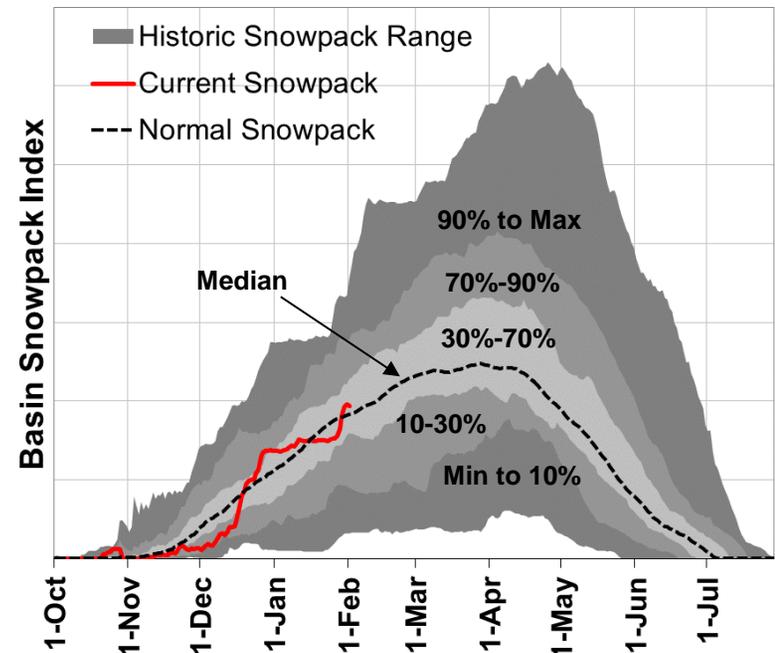
**Interpreting Snowpack Plots**

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



This publication may be found online at:  
<http://www.or.nrcs.usda.gov/snow>

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