



United States
Department of
Agriculture



Natural Resources
Conservation
Service

Oregon Basin Outlook Report

March 1, 2018



Surveyor Kurt Moffitt measures new fallen snow near Mt. Bachelor

Photo courtesy of Gabriella Coughlin (NRCS Redmond)

Late February snow storms dumped lots of fluffy snow, but could not overcome the large snowpack deficit after two dry months. As of March 1st, snowpack conditions throughout Oregon remain well below normal. Without abundant snow and spring rainfall, water supply shortages will be likely this summer, especially in southern Oregon where the snowpack is less than 50% of normal. Most of the major irrigation reservoirs are storing near average amounts of water, which will provide a much needed buffer to water users who have access to it.

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General Outlook

March 1st, 2018

SUMMARY

February seemed to have two seasons - the first half of the month resembled springtime weather and the latter half brought a long awaited return of winter. Late February storm systems brought new mountain snow measured in feet, but this new snow was not enough to overcome the impacts of a dry December and January. As of March 1st, all basins in Oregon have well below normal snowpack conditions and most basins are recording 40-60% of typical snowpack levels.

If mountain snowpacks do not reach typical peak levels this spring, many of Oregon's streams and rivers may have below normal flows this summer. As of March 1st, most of the state is expected to experience below average streamflow during the summer water supply season. Water users that have access to stored reservoir water may have a buffer as most of Oregon's major reservoirs are storing above average amounts of water as of the end of February. Water managers are advised to carefully plan, especially in the southern part of the state where snowpacks remain below 50% of normal. Additionally, the drought monitor has listed much of central and southern Oregon in a moderate drought category: <http://droughtmonitor.unl.edu/>. Unless the state receives ample rainfall and snow during the spring months, there will likely be water shortages this summer in some locations, especially across southern and southeastern Oregon.

SNOWPACK

The first half of February continued a spring-like trend of warm and dry weather that began in December. Snowpacks were nearing record low territory and were in great need of a boost. Significant mid-February storms signaled a change in the weather, bringing a 20% boost to the state-wide snowpack. Snowpack levels doubled at many snow monitoring sites in Oregon – some receiving as much snow in two weeks as they had accumulated all winter. Temperatures were much colder in late February and the snow line dropped down to the valley floors, causing numerous school and business closures in western Oregon.

Even with the return of winter, all basins have a below normal snowpack as of March 1st. Of the 159 snowpack monitoring sites measured for this report, almost half are recording snowpack below 50% of normal. Only eleven sites have above normal snowpack levels as of March 1st. The best snow in the state is found in the northernmost parts of Oregon, with basins around Mt. Hood recording 79% of normal snowpack. The lowest levels in the state are found in the southern and southeastern regions of the state, which are currently recording less than 50% of normal snowpack.

PRECIPITATION

February precipitation ended with mixed results across the state. Parts of northern and central Oregon received the normal to well above normal monthly allotment, while western & southern Oregon received below normal amounts. Most of February's precipitation fell during the last two weeks of the month. The lowest amounts fell in Lake County and Goose Lake basins at 48% of average and the highest amounts fell in the Umatilla, Walla Walla and Willow basins at 131% of average.

Since October 1st, precipitation across the state has followed a similar trend - northern Oregon basins have received near average to slightly above average amounts of precipitation and southern Oregon has been drier than normal for the entire water year so far.

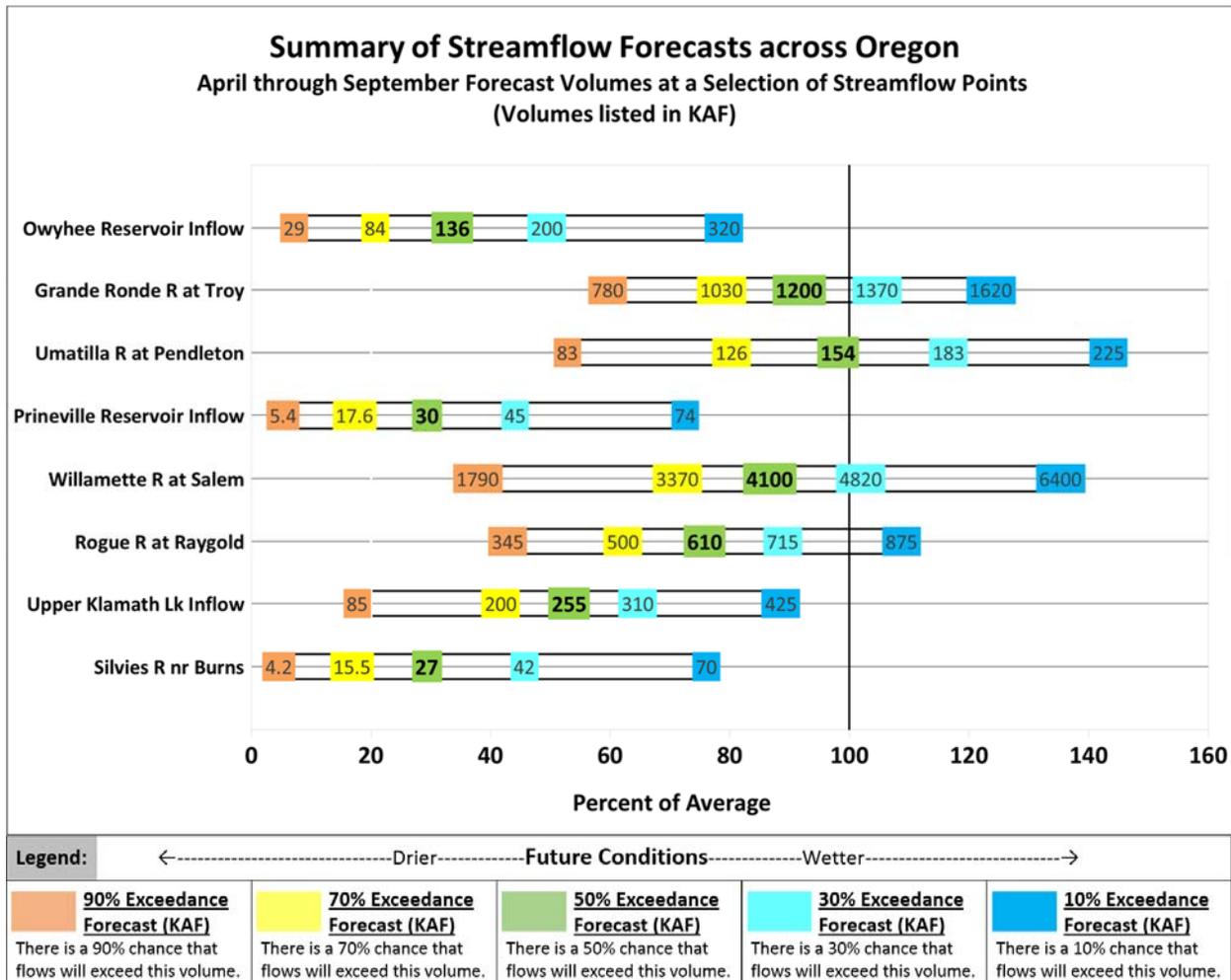
RESERVOIRS

Reservoir storage remains one of the brighter spots in the state where most of the major irrigation reservoirs are storing average to above average amounts of water. The Owyhee and Malheur basins have the highest reservoir storage collectively at 127% of average. Interestingly, this is the region with the lowest snowpack in the state at 40% of normal. Overall, the group of reservoirs with the lowest storage can be found in the Willamette basin, at 81% of average and the Rogue and Umpqua basins are not too far behind at 87%.

STREAMFLOW

Most of the state experienced below average streamflow during February. The exceptions were a few select rivers in central Oregon with above average streamflow, as well as northeastern Oregon where most rivers had well above average February streamflow. This is also the same area of the state that had above average February precipitation.

Based on below normal March 1st snowpack conditions, most of the state is forecast to have below average summer streamflows, especially in southern Oregon where precipitation has been lagging behind all season. Some of the best forecasts reflect where the snowpack is best, in the Hood, Sandy and Lower Deschutes basins (90-95% of average). The lowest streamflow forecasts in the state are in the Owyhee, Malheur, and Harney basins (25-40% of average).



To accompany the above forecast summary graphic, 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 this forecast graphic and explained in more detail in the “Interpreting Water Supply Forecasts” section at the end of this report.

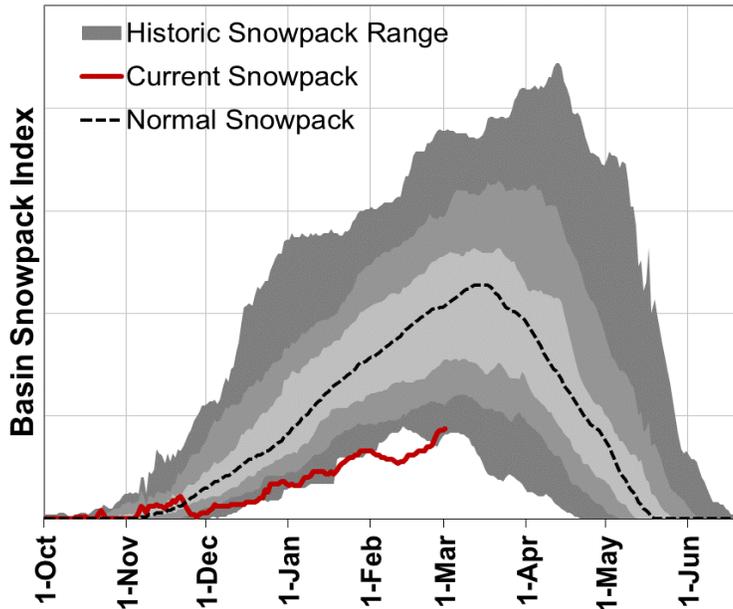
All forecasts are listed with units of 1000 acre-feet (KAF). This report contains data furnished by the Oregon Department of Water Resources, U.S. Geological Survey, NOAA National Weather Service and other cooperators. This report will be updated monthly, January through June.



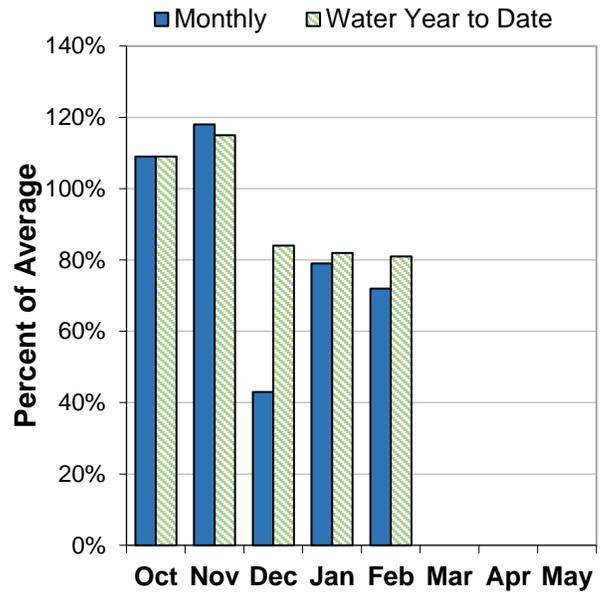
Owyhee and Malheur Basins

March 1, 2018

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of March 1, the basin snowpack was 40% of normal. This is similar to last month when the snowpack was 42% of normal. Fawn Creek (NV) SNOTEL (7030 ft elev) set a new record low for March 1 snowpack since measurements began 38 years ago. The site recorded 6.5" of SWE (49% of normal).

PRECIPITATION

February precipitation was 72% of average. Precipitation since the beginning of the water year (October 1 - March 1) has been 81% of average.

RESERVOIR

As of March 1, storage at major reservoirs in the basin ranges from 79% of average at Bully Creek Reservoir to 132% of average at Warm Springs Reservoir.

STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 26% to 48% of average. Overall, forecasts remain similar to last month's report. Water users in the basin without access to reservoir water should anticipate water shortages this coming summer and begin to prepare accordingly.

Owyhee And Malheur Basins Summary for March 1, 2018

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts March 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	MAR-JUL	29	78	125	24%	183	290	515
	MAR-SEP	35	87	136	26%	195	305	530
	APR-JUL	6.6	43	85	25%	141	250	345
	APR-SEP	10.4	51	96	26%	154	265	365
Owyhee R bl Owyhee Dam ²	MAR-JUL	39	100	157	28%	225	355	555
	MAR-SEP	56	122	182	31%	255	380	585
	APR-JUL	16.5	63	112	30%	174	290	375
	APR-SEP	29	84	136	34%	200	320	405
Malheur R nr Drewsey	MAR-JUL	10.2	23	34	33%	48	73	102
	APR-SEP	7.0	17.5	27	39%	39	61	70
NF Malheur R at Beulah ²	MAR-JUL	16.4	26	33	43%	42	57	76
	APR-SEP	14.8	23	30	48%	38	52	62

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

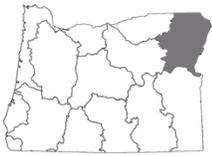
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

Reservoir Storage	Current (KAF)	Last Year (KAF)	Average (KAF)	% of Average	Useable Capacity (KAF)
Beulah	28.5	25.6	32.1	89%	59.2
Bully Creek	13.0	14.9	16.4	79%	23.7
Lake Owyhee	513.8	504.4	392.6	131%	715.0
Warm Springs	108.5	40.6	82.2	132%	169.6

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
East Little Owyhee Basin	7	41%	160%
South Fork Owyhee Basin	6	40%	136%
Upper Malheur Basin	8	35%	168%
Upper Owyhee Basin	5	45%	128%

Owyhee And Malheur Basins Summary for March 1, 2018

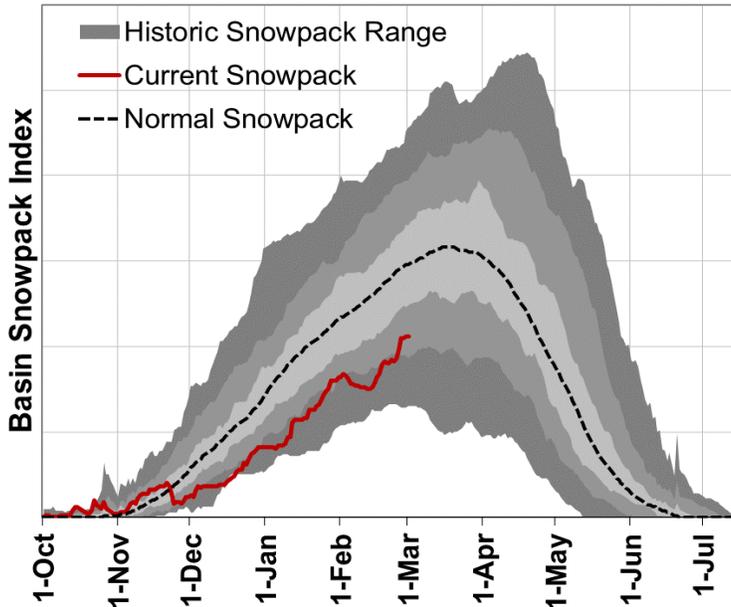
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Granite Peak SNOTEL	8543	1-Mar	39	9.0	30.6	18.3	49%
Trout Creek AM	7890	1-Mar	20	4.0	15.0	11.5	35%
Toe Jam SNOTEL	7700	1-Mar	34	8.6	28.8		
Govt Corrals AM	7400	1-Mar	24	4.8	21.1		
Jack Creek Upper SNOTEL	7250	1-Mar	33	7.4	16.9	14.4	51%
Fawn Creek SNOTEL	7000	1-Mar	33	6.5	17.6	13.4	49%
Merritt Mountain AM	7000	27-Feb	12	1.3	9.2	6.2	21%
Buckskin Lower SNOTEL	6915	1-Mar	22	4.8	13.0	8.1	59%
Gold Creek Snow Course	6707	27-Feb	6	0.7	8.4	5.8	12%
Big Bend SNOTEL	6700	1-Mar	12	3.9	13.7	8.4	46%
Fry Canyon SNOTEL	6700	1-Mar	9	1.6	9.2		
Fry Canyon Snow Course	6700	27-Feb	12	2.0	9.1	7.9	25%
Laurel Draw SNOTEL	6697	1-Mar	16	4.9	12.6	10.0	49%
Columbia Basin AM	6650	27-Feb	9	1.0	9.2	8.6	12%
Red Canyon AM	6600	28-Feb	7	1.8	9.9	7.7	23%
Louse Canyon AM	6530	28-Feb	3	0.7	6.7	4.2	17%
South Mtn. SNOTEL	6500	1-Mar	22	5.5	17.6	15.0	37%
Succor Creek AM	6310	28-Feb	6	1.4	9.9	8.4	17%
Quinn Ridge AM	6270	28-Feb	2	0.4	3.0	2.0	20%
Taylor Canyon SNOTEL	6200	1-Mar	2	0.4	11.7	5.2	8%
Blue Mountain Spring SNOTEL	5870	1-Mar	39	8.4	15.8	14.4	58%
Vaught Ranch AM	5850	28-Feb	3	0.7	4.9	4.8	15%
Barney Creek (New) Snow Course	5830	28-Feb	16	3.3	13.0		
Buck Pasture AM	5740	28-Feb	2	0.5	3.5	1.6	31%
Lookout Butte AM	5740	28-Feb	2	0.4	2.4	0.0	
Mud Flat SNOTEL	5730	1-Mar	6	1.3	7.2	7.1	18%
Battle Creek AM	5710	28-Feb	1	0.2	5.7	3.6	6%
Reynolds Creek SNOTEL	5600	1-Mar	8	1.5	6.2	2.1	71%
Bull Basin AM	5460	28-Feb	1	0.2	1.9	1.9	11%
Dooley Mountain Snow Course	5440	28-Feb	8	1.6	12.0	8.2	20%
Call Meadows AM	5380	27-Feb	2	0.4	10.2	4.4	9%
Bully Creek AM	5300	27-Feb	1	0.2	9.2	1.8	11%
Rock Springs SNOTEL	5290	1-Mar	6	0.6	9.3	6.2	10%
Lake Creek R.S. SNOTEL	5240	1-Mar	22	5.5	14.0	10.3	53%
Flag Prairie AM	4720	27-Feb	1	0.2	8.2	4.0	5%
Eldorado Pass Snow Course	4630	28-Feb	0	0.0	6.8	3.0	0%



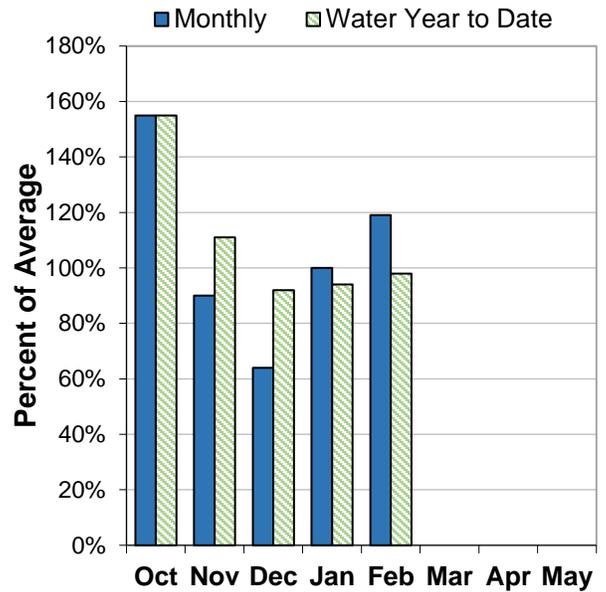
Grande Ronde, Powder, Burnt and Imnaha Basins

March 1, 2018

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of March 1, the basin snowpack was 69% of normal. This is similar to last month when the snowpack was 68% of normal. This month's snowpack measurement at Dooley Mountain snow course (5440 ft elev) was in the bottom three years out of 75 years of surveys. Surveyors measured 1.6" of SWE (20% of normal), which is the lowest March 1 measurement since 1977.

PRECIPITATION

February precipitation was 119% of average. Precipitation since the beginning of the water year (October 1 - March 1) has been 98% of average. High Ridge SNOTEL set a new record high for February precipitation (9.9", 189% of average) since measurements begun 40 years ago.

RESERVOIR

As of March 1, storage at major reservoirs in the basin ranges from 82% of average at Wolf Creek Reservoir to 159% of average at Wallowa Lake.

STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 42% to 95% of average. Overall, forecasts remain similar to last month's report. Water supplies in the basin are likely to be well below normal in the Burnt, Powder, Pine and Imnaha drainages, and below normal to near normal in the Grande Ronde basin this summer.

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

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts March 1, 2018	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Burnt R nr Hereford ²	MAR-JUL	9.6	16.2	22	48%	28	39	46
	APR-SEP	4.3	9.8	14.8	42%	21	32	35
Powder R nr Sumpter ²	MAR-JUL	22	31	37	59%	44	55	63
	APR-SEP	17.0	25	31	57%	38	50	54
Pine Ck nr Oxbow	MAR-JUL	74	114	142	71%	170	210	200
	APR-SEP	49	87	113	69%	138	177	163
Imnaha R at Imnaha	APR-JUL	122	172	205	80%	240	290	255
	APR-SEP	134	187	220	79%	260	310	280
Catherine Ck nr Union	APR-JUL	30	42	50	83%	58	70	60
	APR-SEP	33	45	53	83%	62	74	64
Lostine R nr Lostine	APR-JUL	81	92	98	92%	105	115	106
	APR-SEP	87	98	105	91%	113	124	115
Bear Ck nr Wallowa	APR-JUL	44	53	60	95%	66	76	63
	APR-SEP	45	55	62	95%	68	78	65
Grande Ronde R at Troy	MAR-JUL	970	1220	1390	92%	1550	1800	1510
	APR-SEP	780	1030	1200	92%	1370	1620	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

Reservoir Storage	Current (KAF)	Last Year (KAF)	Average (KAF)	% of Average	Useable Capacity (KAF)
Phillips Lake	37.1	7.7	34.8	107%	73.5
Thief Valley	14.1	14.1	13.7	103%	13.3
Unity	15.0	10.6	14.5	104%	25.5
Wallowa Lake	26.0	26.5	16.4	159%	37.5
Wolf Creek	2.8	3.6	3.4	82%	11.1

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Burnt Basin	4	50%	156%
Imnaha Basin	5	67%	114%
Lower Grande Ronde Basin	4	72%	109%
Powder Basin	12	64%	123%
Upper Grande Ronde Basin	9	76%	113%
Wallowa Basin	6	72%	100%

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

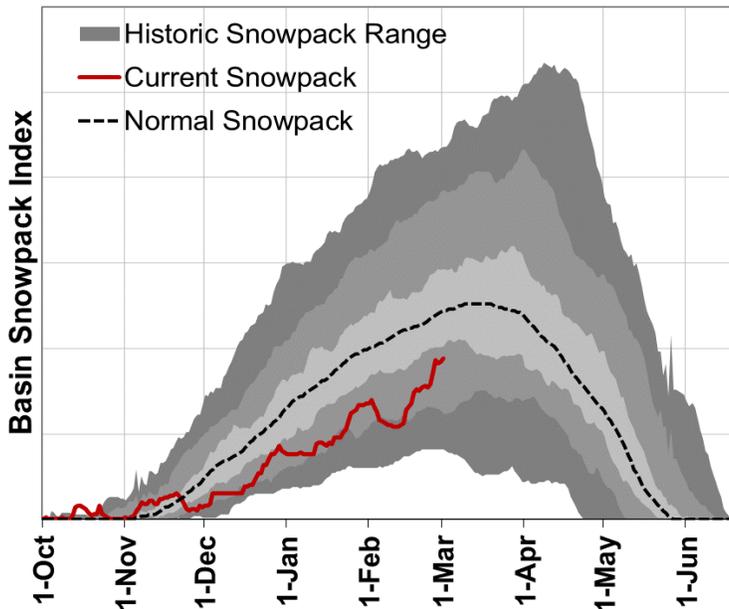
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Mt. Howard SNOTEL	7910	1-Mar	30	9.3	14.9	11.8	79%
Aneroid Lake #2 SNOTEL	7400	1-Mar	42	11.7	21.8	20.2	58%
Anthony Lake (Rev) Snow Course	7160	1-Mar	57	15.7	32.1	19.8	79%
TV Ridge AM	7050	1-Mar	31	9.3	13.5	14.2	65%
Little Alps Snow Course	6360	1-Mar	32	6.4	15.6	10.4	62%
Big Sheep AM	6230	1-Mar	48	14.4	24.6	21.4	67%
Bear Saddle SNOTEL	6180	1-Mar	43	11.4	21.6	21.0	54%
Placer Creek Snow Course	5860	26-Feb	51	9.2	18.2	15.4	60%
Bourne SNOTEL	5850	1-Mar	30	7.5	18.6	14.0	54%
Barney Creek (New) Snow Course	5830	28-Feb	16	3.3	13.0		
Moss Springs SNOTEL	5760	1-Mar	67	20.1	21.5	20.9	96%
Taylor Green SNOTEL	5740	1-Mar	46	13.8	17.3	18.1	76%
Spruce Springs SNOTEL	5700	1-Mar	38	10.0	13.8	14.7	68%
Wolf Creek SNOTEL	5630	1-Mar	34	8.1	15.0	14.6	55%
Milk Shakes SNOTEL	5580	1-Mar	98	29.0	35.0		
West Branch SNOTEL	5560	1-Mar	55	12.8	19.6	19.0	67%
Touchet SNOTEL	5530	1-Mar	66	19.9	30.5	26.5	75%
Eilertson Meadows SNOTEL	5510	1-Mar	16	4.2	15.7	9.2	46%
West Eagle Meadows AM	5500	1-Mar	58	17.4	23.8	27.4	64%
Dooley Mountain Snow Course	5440	28-Feb	8	1.6	12.0	8.2	20%
Gold Center SNOTEL	5410	1-Mar	26	6.3	15.1	9.0	70%
Schneider Meadows SNOTEL	5400	1-Mar	68	18.8	29.4	25.3	74%
Beaver Reservoir SNOTEL	5150	1-Mar	28	6.4	11.5	8.9	72%
Tipton SNOTEL	5150	1-Mar	29	7.6	14.9	11.1	68%
Thorson Cabin #2 Snow Course	5100	26-Feb	23	5.8	12.4		
High Ridge SNOTEL	4920	1-Mar	64	19.5	27.8	21.4	91%
County Line SNOTEL	4830	1-Mar	10	1.9	3.2	4.3	44%
Eldorado Pass Snow Course	4630	28-Feb	0	0.0	6.8	3.0	0%
Little Antone (Alt.) Snow Course	4560	1-Mar	31	5.0	11.0	8.8	57%
Bowman Springs SNOTEL	4530	1-Mar	18	5.3	9.1	7.5	71%
East Eagle Snow Course	4400	1-Mar	48	13.0	23.4	21.1	62%
Sourdough Gulch SNOTEL	4000	1-Mar	4	0.8	3.0	0.2	400%



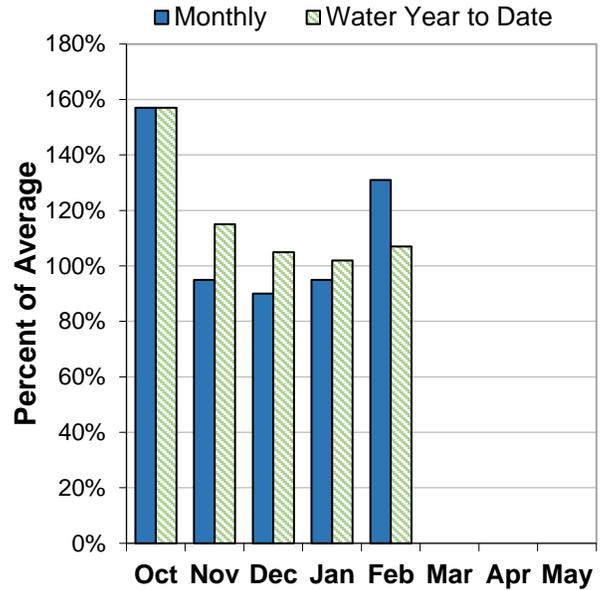
Umatilla, Walla Walla and Willow Basins

March 1, 2018

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of March 1, the basin snowpack was 77% of normal. This is slightly higher than last month when the snowpack was 68% of normal.

PRECIPITATION

February precipitation was 131% of average. Precipitation since the beginning of the water year (October 1 - March 1) has been 107% of average.

RESERVOIR

As of March 1, storage at major reservoirs in the basin ranges from 90% of average at Willow Creek Reservoir to 131% of average at Cold Springs Reservoir.

STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 69% to 105% of average. Overall, forecasts increased slightly from last month's report. Water supplies in the basin are likely to be well below normal in the Willow and Butter Creek drainages, and between slightly below to near normal in the Umatilla and Walla Walla basins this summer.

Umatilla, Walla Walla And Willow Basins Summary for March 1, 2018

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts March 1, 2018	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-JUL	57	65	71	104%	77	86	68
	APR-SEP	54	63	69	105%	75	84	66
Umatilla R ab Meacham nr Gibbon	MAR-JUL	69	88	101	100%	114	134	101
	APR-SEP	49	67	79	99%	92	110	80
Umatilla R at Pendleton	MAR-JUL	148	192	220	98%	250	295	225
	APR-SEP	83	126	154	98%	183	225	157
McKay Ck nr Pilot Rock	MAR-JUL	22	34	43	88%	54	73	49
	APR-SEP	8.8	17.8	26	90%	35	52	29
Butter Ck nr Pine City	MAR-JUL	5.5	8.4	10.6	71%	13.2	17.4	14.9
	APR-SEP	3.3	5.5	7.3	74%	9.4	12.9	9.8
Willow Ck ab Willow Lk nr Heppner	MAR-JUL	3.1	5.3	7.1	70%	9.1	12.6	10.1
	APR-SEP	1.63	3.4	5.0	70%	7.0	10.3	7.1
Rhea Ck nr Heppner	MAR-JUL	3.3	5.6	7.4	67%	9.4	12.9	11.1
	APR-SEP	1.76	3.6	5.2	69%	7.0	10.3	7.5

* 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	25.7	11.1	19.6	131%	38.6
Mckay	49.7	34.8	39.2	127%	71.5
Willow Creek	4.1	4.8	4.6	90%	9.8

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Umatilla Basin	5	79%	134%
Walla Walla Basin	7	77%	130%

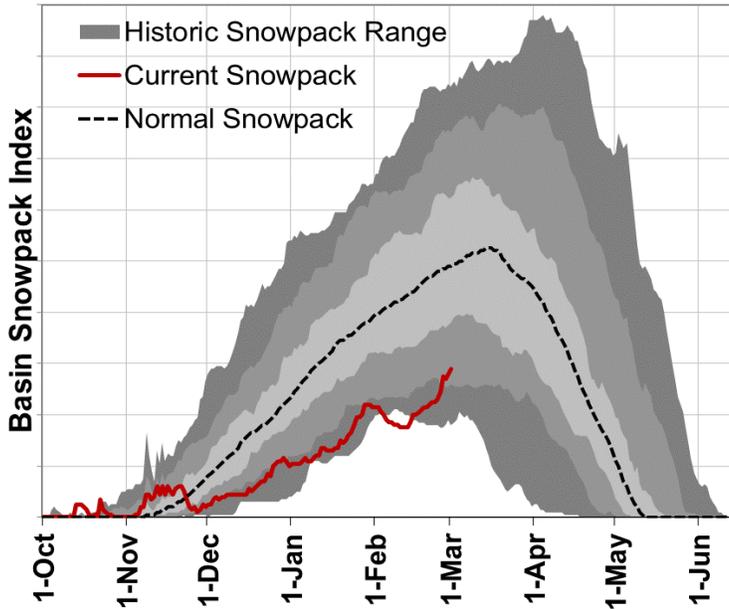
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Arbuckle Mtn SNOTEL	5770	1-Mar	37	10.5	17.6	15.2	69%
Spruce Springs SNOTEL	5700	1-Mar	38	10.0	13.8	14.7	68%
Milk Shakes SNOTEL	5580	1-Mar	98	29.0	35.0		
Touchet SNOTEL	5530	1-Mar	66	19.9	30.5	26.5	75%
Madison Butte SNOTEL	5150	1-Mar	12	2.4	7.0	3.9	62%
Lucky Strike SNOTEL	4970	1-Mar	15	4.5	10.2	6.8	66%
High Ridge SNOTEL	4920	1-Mar	64	19.5	27.8	21.4	91%
Indian Ridge Snow Course	4908	28-Feb	58	13.8	20.0		
Bowman Springs SNOTEL	4530	1-Mar	18	5.3	9.1	7.5	71%
Emigrant Springs SNOTEL	3800	1-Mar	17	3.6	8.9	4.1	88%



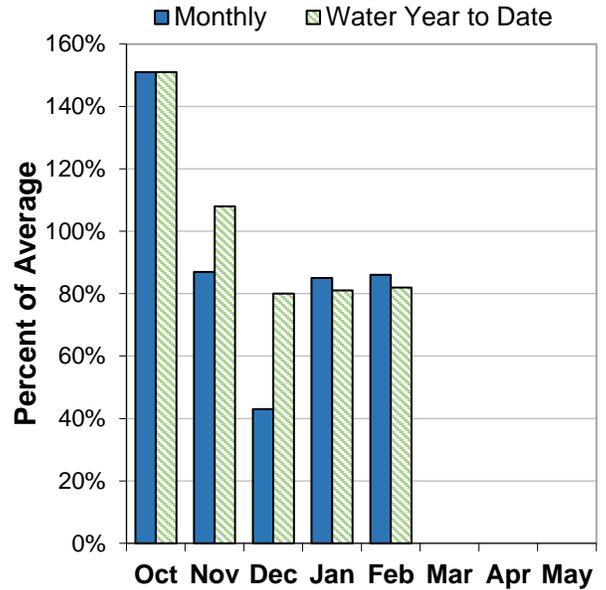
John Day Basin

March 1, 2018

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of March 1, the basin snowpack was 59% of normal. This is slightly higher than last month when the snowpack was 54% of normal.

PRECIPITATION

February precipitation was 86% of average. Precipitation since the beginning of the water year (October 1 - March 1) has been 82% of average.

STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 43% to 94% of average. Overall, forecasts remain similar to last month's report.

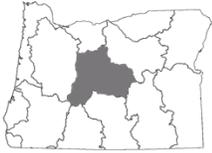
John Day Basin Summary for March 1, 2018

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts March 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	4.1	5.9	7.1	84%	8.4	10.2	8.5
	APR-SEP	4.2	6.0	7.2	82%	8.5	10.3	8.8
Mountain Ck nr Mitchell	MAR-JUL	1.42	2.2	2.9	46%	3.7	5.0	6.3
	APR-SEP	0.75	1.47	2.1	43%	2.8	4.1	4.9
Camas Ck nr Ukiah	MAR-JUL	29	39	45	94%	52	62	48
	APR-SEP	14.6	25	33	94%	40	51	35
MF John Day R at Ritter	MAR-JUL	39	75	100	64%	125	162	156
	APR-SEP	24	59	83	66%	106	141	126
NF John Day R at Monument	MAR-JUL	255	405	510	67%	610	765	765
	APR-SEP	159	305	410	68%	510	655	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	6	64%	148%
North Fork John Day Basin	8	67%	141%
Upper John Day Basin	6	59%	138%

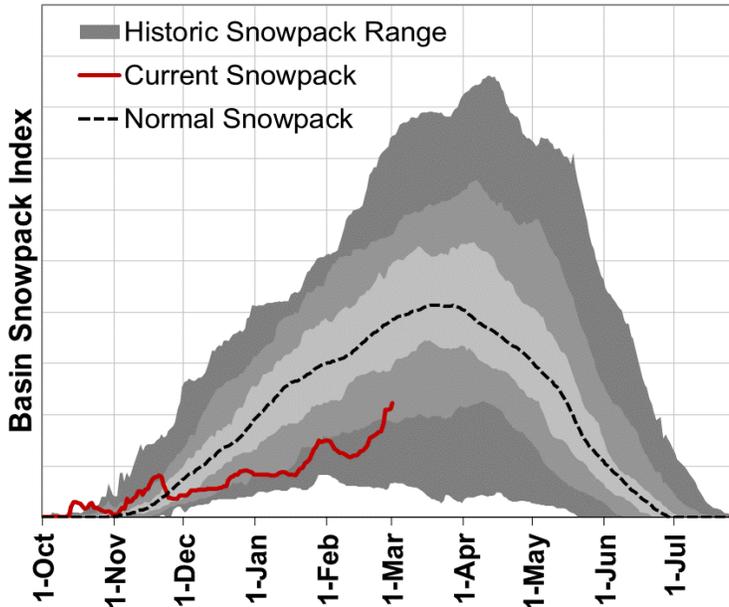
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Anthony Lake (Rev) Snow Course	7160	1-Mar	57	15.7	32.1	19.8	79%
Little Alps Snow Course	6360	1-Mar	32	6.4	15.6	10.4	62%
Snow Mountain SNOTEL	6230	1-Mar	20	5.0	13.5	9.8	51%
Blue Mountain Spring SNOTEL	5870	1-Mar	39	8.4	15.8	14.4	58%
Derr Snow Course	5860	1-Mar	22	7.4	13.6	9.2	80%
Bourne SNOTEL	5850	1-Mar	30	7.5	18.6	14.0	54%
Derr. SNOTEL	5850	1-Mar	31	7.4	19.2	12.8	58%
Barney Creek (New) Snow Course	5830	28-Feb	16	3.3	13.0		
Arbuckle Mtn SNOTEL	5770	1-Mar	37	10.5	17.6	15.2	69%
Ochoco Meadows SNOTEL	5430	1-Mar	21	5.0	13.9	10.0	50%
Gold Center SNOTEL	5410	1-Mar	26	6.3	15.1	9.0	70%
Starr Ridge SNOTEL	5250	1-Mar	15	3.5	10.3	6.2	56%
Lake Creek R.S. SNOTEL	5240	1-Mar	22	5.5	14.0	10.3	53%
Ochoco Meadows Snow Course	5190	27-Feb	21	7.0	13.1	10.0	70%
Madison Butte SNOTEL	5150	1-Mar	12	2.4	7.0	3.9	62%
Tipton SNOTEL	5150	1-Mar	29	7.6	14.9	11.1	68%
Lucky Strike SNOTEL	4970	1-Mar	15	4.5	10.2	6.8	66%
County Line SNOTEL	4830	1-Mar	10	1.9	3.2	4.3	44%
Marks Creek Snow Course	4580	27-Feb	10	2.0	5.6	3.1	65%
Little Antone (Alt.) Snow Course	4560	1-Mar	31	5.0	11.0	8.8	57%



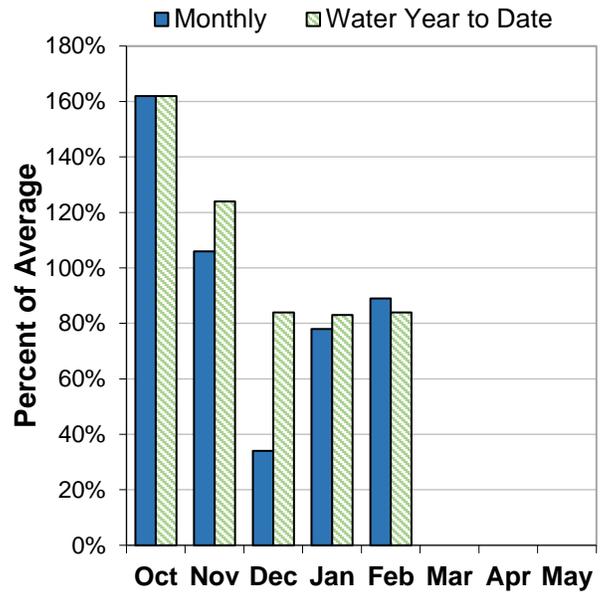
Upper Deschutes and Crooked Basins

March 1, 2018

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of March 1, the basin snowpack was 58% of normal. This is slightly higher than last month when the snowpack was 48% of normal.

PRECIPITATION

February precipitation was 89% of average. Precipitation since the beginning of the water year (October 1 - March 1) has been 84% of average.

RESERVOIR

As of March 1, storage at major reservoirs in the basin ranges from 90% of average at Prineville Reservoir to 164% of average at Crescent Lake.

STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 29% to 87% of average. Overall, forecasts remain similar to last month's report. Water managers in the Crooked and Little Deschutes basins without access to reservoir water should prepare for significantly reduced water supplies in the coming summer. Streamflow forecasts in the Upper Deschutes basin are slightly higher, but still well below normal.

Upper Deschutes And Crooked Basins Summary for March 1, 2018

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts March 1, 2018	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Deschutes R bl Snow Ck	MAR-JUL	22	27	30	83%	34	39	36
	MAR-SEP	34	42	48	83%	54	62	58
	APR-JUL	17.6	22	25	83%	28	33	30
	APR-SEP	29	37	43	83%	49	57	52
Crane Prairie Reservoir Inflow ²	MAR-JUL	41	50	57	86%	64	74	66
	MAR-SEP	58	73	83	86%	93	108	97
	APR-JUL	32	42	48	86%	54	63	56
	APR-SEP	50	64	74	84%	84	98	88
Crescent Lake Inflow ²	MAR-JUL	5.5	9.4	12.1	70%	14.7	18.6	17.2
	MAR-SEP	5.1	9.9	13.1	67%	16.3	21	19.5
	APR-JUL	4.3	7.6	9.8	65%	12.0	15.3	15.0
	APR-SEP	3.9	8.0	10.8	62%	13.6	17.7	17.4
Little Deschutes R nr La Pine ²	MAR-JUL	23	39	49	64%	60	76	77
	MAR-SEP	22	39	51	61%	63	81	83
	APR-JUL	14.0	28	37	59%	46	60	63
	APR-SEP	12.9	28	39	57%	50	65	69
Deschutes R at Benham Falls ²	MAR-JUL	300	320	335	85%	350	370	395
	MAR-SEP	440	465	485	87%	500	530	560
	APR-JUL	245	260	270	84%	285	300	320
	APR-SEP	380	405	420	87%	435	460	485
Wychus Ck nr Sisters	MAR-JUL	26	30	33	85%	35	39	39
	MAR-SEP	34	39	42	82%	45	50	51
	APR-JUL	23	27	29	83%	31	34	35
	APR-SEP	31	35	38	81%	41	45	47
Prineville Reservoir Inflow ²	MAR-JUL	25	44	60	35%	78	110	171
	MAR-SEP	24	43	59	35%	77	109	171
	APR-JUL	6.3	18.7	31	30%	46	74	102
	APR-SEP	5.4	17.6	30	29%	45	74	102
Ochoco Reservoir Inflow ²	MAR-JUL	5.8	10.1	13.7	42%	17.9	25	33
	MAR-SEP	5.1	9.2	12.7	40%	16.8	24	32
	APR-JUL	2.4	5.7	8.8	42%	12.5	19.2	21
	APR-SEP	1.85	4.9	7.8	39%	11.5	18.0	20

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

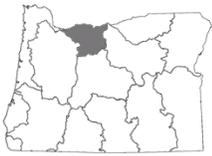
2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

Upper Deschutes And Crooked Basins Summary for March 1, 2018

Reservoir Storage	Current (KAF)	Last Year (KAF)	Average (KAF)	% of Average	Useable Capacity (KAF)
Crane Prairie	45.3	41.2	39.8	114%	55.3
Crescent Lake	78.1	57.0	47.5	164%	86.9
Ochoco	21.8	29.2	23.4	93%	44.2
Prineville	89.2	95.5	98.9	90%	148.6
Wickiup	190.1	157.1	176.1	108%	200.0

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Little Deschutes Basin	4	63%	140%
Upper Crooked Basin	5	64%	145%
Upper Deschutes Basin	13	58%	126%

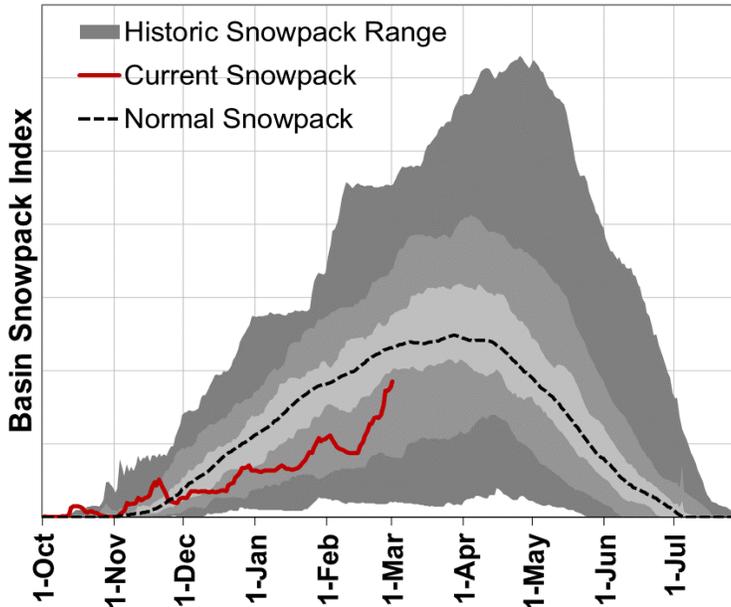
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
New Dutchman #3 Snow Course	6320	1-Mar	95	27.1	42.7	39.6	68%
Snow Mountain SNOTEL	6230	1-Mar	20	5.0	13.5	9.8	51%
Derr Snow Course	5860	1-Mar	22	7.4	13.6	9.2	80%
Derr. SNOTEL	5850	1-Mar	31	7.4	19.2	12.8	58%
Three Creeks Meadow SNOTEL	5690	1-Mar	27	6.6	20.3	16.1	41%
Summit Lake SNOTEL	5610	1-Mar	78	23.5	41.3	31.2	75%
Irish Taylor SNOTEL	5540	1-Mar	69	18.2	33.4	30.8	59%
Tangent Snow Course	5470	1-Mar	25	5.4	22.4	18.1	30%
Ochoco Meadows SNOTEL	5430	1-Mar	21	5.0	13.9	10.0	50%
Ochoco Meadows Snow Course	5190	27-Feb	21	7.0	13.1	10.0	70%
Racing Creek Snow Course	5160	2-Mar	21	5.0	21.6	12.3	41%
Cascade Summit SNOTEL	5100	1-Mar	77	18.9	33.0	26.2	72%
Roaring River SNOTEL	4950	1-Mar	56	13.4	30.9	25.0	54%
New Crescent Lake SNOTEL	4910	1-Mar	18	4.6	20.3	12.0	38%
Chemult Alternate SNOTEL	4850	1-Mar	12	1.8	14.2	8.1	22%
Hogg Pass SNOTEL	4790	1-Mar	42	10.9	29.6	20.1	54%
McKenzie SNOTEL	4770	1-Mar	81	23.8	38.2	36.4	65%
Marks Creek Snow Course	4580	27-Feb	10	2.0	5.6	3.1	65%
Hungry Flat Snow Course	4400	1-Mar	10	1.5	5.9	2.1	71%
Salt Creek Falls SNOTEL	4220	1-Mar	35	8.1	24.6	16.3	50%
Santiam Jct. SNOTEL	3740	1-Mar	36	8.4	19.5	15.5	54%



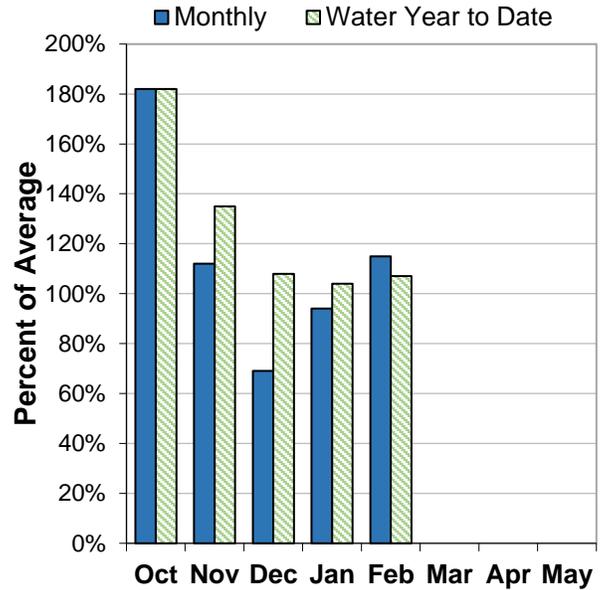
Hood, Sandy and Lower Deschutes Basins

March 1, 2018

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of March 1, the basin snowpack was 79% of normal. This is higher than last month when the snowpack was 59% of normal.

PRECIPITATION

February precipitation was 115% of average. Precipitation since the beginning of the water year (October 1 - March 1) has been 107% of average.

STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 91% to 96% of average. Overall, forecasts increased slightly from last month's report. Water supplies in the basin are likely to be below normal to near normal this summer.

Hood, Sandy And Lower Deschutes Basins Summary for March 1, 2018

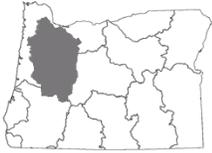
Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts March 1, 2018	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
WF Hood R nr Dee	APR-JUL	74	98	114	95%	130	153	120
	APR-SEP	89	114	131	94%	148	173	139
Hood R at Tucker Bridge	APR-JUL	135	177	205	91%	235	275	225
	APR-SEP	165	210	240	91%	270	315	265
Sandy R nr Marmot	APR-JUL	200	260	300	97%	340	395	310
	APR-SEP	240	305	345	96%	390	450	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	3.8	1.7	3.8	99%	13.1

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Lower Columbia - Sandy Basin	7	85%	122%
Lower Deschutes Basin	7	64%	114%
Middle Columbia - Hood Basin	6	84%	118%

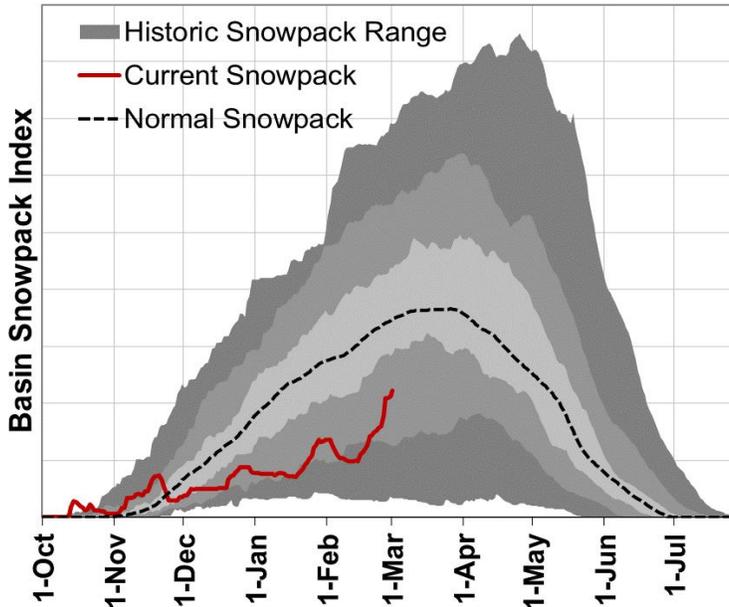
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
High Prairie Snow Course	6080	28-Feb	79	22.1		36.6	60%
Mt Hood Test Site SNOTEL	5370	1-Mar	117	36.1	41.4	48.0	75%
Racing Creek Snow Course	5160	2-Mar	21	5.0	21.6	12.3	41%
Red Hill SNOTEL	4410	1-Mar	87	32.2	47.1	41.7	77%
Mill Creek Meadow Snow Course	4400	4-Mar	30	6.7		11.7	57%
Surprise Lakes SNOTEL	4290	1-Mar	111	40.3	47.6	39.7	102%
Beaver Creek #2 Snow Course	4220	2-Mar	27	5.2	12.2	9.0	58%
Beaver Creek #1 Snow Course	4210	2-Mar	33	6.6	16.4	14.0	47%
Mud Ridge SNOTEL	4070	1-Mar	67	19.2	27.2	24.1	80%
Clear Lake SNOTEL	3810	1-Mar	22	4.2	15.3	12.4	34%
Blazed Alder SNOTEL	3650	1-Mar	89	26.3	35.1	25.0	105%
Clackamas Lake SNOTEL	3400	1-Mar	35	7.9	16.8	12.4	64%
Greenpoint SNOTEL	3310	1-Mar	32	6.3	22.8	18.0	35%
North Fork SNOTEL	3060	1-Mar	52	16.3	26.5	14.8	110%
South Fork Bull Run SNOTEL	2690	1-Mar	26	8.0	11.4	1.7	471%



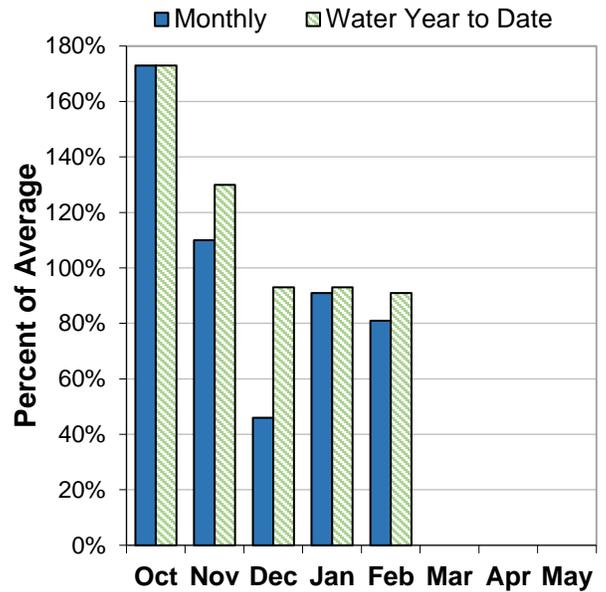
Willamette Basin

March 1, 2018

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of March 1, the basin snowpack was 65% of normal. This is higher than last month when the snowpack was 48% of normal.

PRECIPITATION

February precipitation was 81% of average. Precipitation since the beginning of the water year (October 1 - March 1) has been 91% of average.

RESERVOIR

As of March 1, storage at major reservoirs in the basin ranges from 68% of average at Lookout Point Reservoir to 123% of average at Timothy Lake.

STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 82% to 91% of average. Overall, forecasts remain similar to last month's report. Water supplies in the basin are likely to be below normal this summer.

Willamette Basin Summary for March 1, 2018

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts March 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 ^{1,2}	APR-JUN	90	167	200	82%	235	315	245
	APR-SEP	134	220	260	83%	300	390	315
Lookout Point Reservoir Inflow ^{1,2}	APR-JUN	240	440	530	82%	625	825	650
	APR-SEP	360	580	680	82%	780	1000	825
McKenzie R bl Trail Bridge	APR-JUN	135	170	186	89%	200	240	210
	APR-SEP	235	285	305	88%	330	380	345
Cougar Lake Inflow ^{1,2}	APR-JUN	73	131	157	85%	183	240	185
	APR-SEP	106	171	200	85%	230	295	235
Blue Lake Inflow ^{1,2}	APR-JUN	21	54	69	86%	84	117	80
	APR-SEP	25	59	74	86%	89	123	86
McKenzie R nr Vida ^{1,2}	APR-JUN	435	635	730	88%	820	1030	830
	APR-SEP	705	950	1060	89%	1170	1410	1190
Detroit Lake Inflow ^{1,2}	APR-JUN	200	340	400	85%	465	600	470
	APR-SEP	305	460	530	87%	600	755	610
North Santiam R at Mehama ^{1,2}	APR-JUN	260	475	570	86%	670	885	665
	APR-SEP	375	615	725	86%	835	1080	840
Green Peter Lake Inflow ^{1,2}	APR-JUN	85	190	240	91%	285	390	265
	APR-SEP	109	215	265	90%	315	425	295
Foster Lake Inflow ^{1,2}	APR-JUN	169	365	455	91%	545	740	500
	APR-SEP	210	410	505	89%	600	800	565
South Santiam R at Waterloo ²	APR-JUN	179	385	480	91%	575	785	525
	APR-SEP	220	435	535	91%	630	845	590
Willamette R at Salem ^{1,2}	APR-JUN	1300	2750	3410	86%	4070	5520	3950
	APR-SEP	1790	3370	4100	87%	4820	6400	4730
Oak Grove Fk ab Powerplant	APR-JUL	71	88	101	88%	113	131	115
	APR-SEP	99	122	137	88%	152	174	155
Clackamas R ab Three Lynx	APR-JUL	260	335	385	86%	440	510	450
	APR-SEP	335	415	465	87%	520	600	535
Clackamas R at Estacada	APR-JUL	335	455	535	86%	615	735	625
	APR-SEP	425	550	635	87%	720	845	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 March 1, 2018

Reservoir Storage	Current (KAF)	Last Year (KAF)	Average (KAF)	% of Average	Useable Capacity (KAF)
Blue River	24.8	35.9	34.6	72%	82.3
Cottage Grove	10.0	10.9	11.0	91%	31.8
Cougar	61.2	88.0	85.4	72%	174.9
Detroit	220.2	279.5	252.3	87%	426.8
Dorena	18.2	23.5	26.5	69%	72.1
Fall Creek	14.7	5.8	50.3	29%	116.0
Fern Ridge	30.6	38.1	42.5	72%	97.3
Foster	24.0	25.2	27.7	87%	46.2
Green Peter	255.0	263.6	264.2	97%	402.8
Hills Creek	112.6	183.2	154.3	73%	279.2
Lookout Point	147.3	260.7	216.2	68%	433.2
Timothy Lake	63.0	54.0	51.2	123%	63.6
Henry Hagg Lake	44.4	46.9	45.2	98%	53.3

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Clackamas Basin	9	79%	123%
McKenzie Basin	17	58%	127%
Middle Fork Willamette Basin	7	62%	129%
North Santiam Basin	4	72%	169%
South Santiam Basin	4	75%	175%

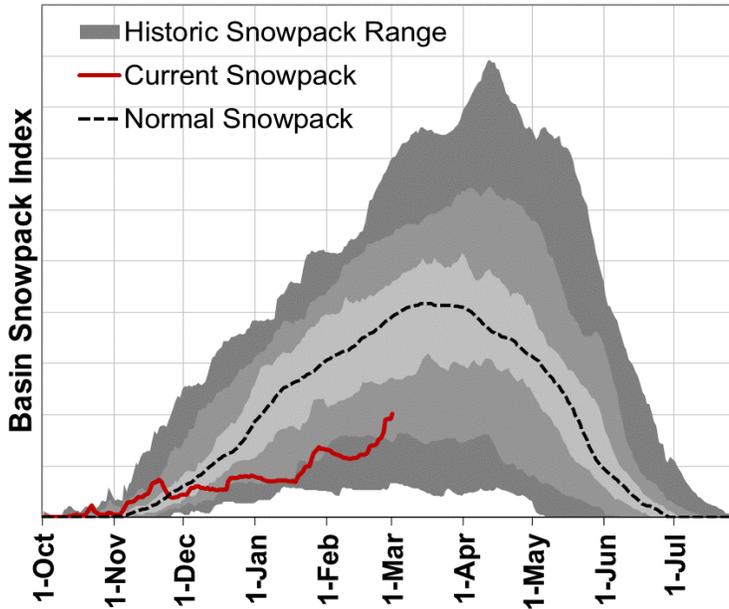
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Snow Depth	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Summit Lake SNOTEL	5610	1-Mar	78	23.5	41.3	31.2	75%
Irish Taylor SNOTEL	5540	1-Mar	69	18.2	33.4	30.8	59%
Cascade Summit SNOTEL	5100	1-Mar	77	18.9	33.0	26.2	72%
Roaring River SNOTEL	4950	1-Mar	56	13.4	30.9	25.0	54%
Holland Meadows SNOTEL	4930	1-Mar	38	7.9	27.0	18.0	44%
McKenzie SNOTEL	4770	1-Mar	81	23.8	38.2	36.4	65%
Bear Grass SNOTEL	4720	1-Mar	106	33.7	54.5		
Beaver Creek #2 Snow Course	4220	2-Mar	27	5.2	12.2	9.0	58%
Salt Creek Falls SNOTEL	4220	1-Mar	35	8.1	24.6	16.3	50%
Beaver Creek #1 Snow Course	4210	2-Mar	33	6.6	16.4	14.0	47%
Mud Ridge SNOTEL	4070	1-Mar	67	19.2	27.2	24.1	80%
Little Meadows SNOTEL	4020	1-Mar	67	19.1	38.9	21.2	90%
Clear Lake SNOTEL	3810	1-Mar	22	4.2	15.3	12.4	34%
Santiam Jct. SNOTEL	3740	1-Mar	36	8.4	19.5	15.5	54%
Daly Lake SNOTEL	3690	1-Mar	31	6.8	19.3	11.3	60%
Marys Peak (Rev.) Snow Course	3580	27-Feb	27	6.8	6.8		
Jump Off Joe SNOTEL	3520	1-Mar	30	6.5	14.9	11.2	58%
Peavine Ridge SNOTEL	3420	1-Mar	27	6.0	19.7	11.2	54%
Clackamas Lake SNOTEL	3400	1-Mar	35	7.9	16.8	12.4	64%
Smith Ridge SNOTEL	3270	1-Mar	31	6.0	12.4		
Saddle Mountain SNOTEL	3110	1-Mar	22	6.2	12.5		
Railroad Overpass SNOTEL	2680	1-Mar	5	1.6	0.6	0.0	
Marion Forks SNOTEL	2590	1-Mar	20	5.9	16.3	7.5	79%
Seine Creek SNOTEL	2060	1-Mar	4	1.5	1.0	0.0	
Miller Woods SNOTEL	420	1-Mar	0	0.0	0.0		



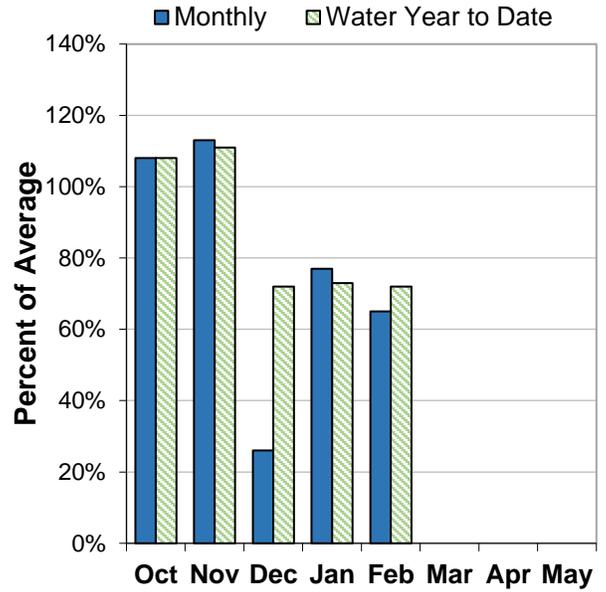
Rogue and Umpqua Basins

March 1, 2018

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of March 1, the basin snowpack was 52% of normal. This is higher than last month when the snowpack was 41% of normal.

PRECIPITATION

February precipitation was 65% of average. Precipitation since the beginning of the water year (October 1 - March 1) has been 72% of average.

RESERVOIR

As of March 1, storage at major reservoirs in the basin ranges from 63% of average at Hyatt Prairie Reservoir to 116% of average at Fish Lake.

STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 47% to 91% of average. Overall, forecasts remain similar to last month's report. Water managers in the Applegate River basin should prepare for significantly reduced water supplies in the coming summer. Streamflow forecasts in the rest of the Rogue and Umpqua basins are slightly higher, but still well below normal to below normal.

Rogue And Umpqua Basins Summary for March 1, 2018

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts March 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	65	126	168	87%	210	270	193
	APR-SEP	72	134	176	88%	215	280	200
Cow Ck ab Galesville Reservoir	APR-JUL	1.55	7.1	10.9	78%	14.7	20	13.9
	APR-SEP	2.3	8.0	11.8	79%	15.7	21	15.0
South Umpqua R nr Brockway	APR-JUL	68	215	315	81%	415	560	390
	APR-SEP	78	230	330	80%	430	580	410
North Umpqua R at Winchester	APR-JUL	410	585	705	91%	825	1000	775
	APR-SEP	505	690	810	91%	935	1120	890
Lost Creek Lk Inflow ²	MAR-JUL	380	480	545	82%	610	710	665
	MAR-SEP	475	580	655	83%	725	835	790
	APR-JUL	285	365	420	81%	475	555	520
	APR-SEP	380	470	530	82%	590	680	645
Rogue R at Raygold ²	APR-JUL	260	405	505	75%	605	750	675
	APR-SEP	345	500	610	76%	715	875	805
Rogue R at Grants Pass ²	APR-JUL	230	410	525	72%	645	820	725
	APR-SEP	305	495	620	73%	750	940	845
Applegate Lake Inflow ²	MAR-JUL	1.39	44	73	47%	101	144	155
	MAR-SEP	3.9	47	76	47%	106	149	161
	APR-JUL	1.09	29	50	46%	71	102	109
	APR-SEP	1.15	32	54	47%	76	108	115
Sucker Ck bl Ltl Grayback nr Holland	APR-JUL	4.8	24	37	67%	50	69	55
	APR-SEP	7.0	27	40	68%	53	73	59
Illinois R nr Kerby	APR-JUL	13.7	87	136	72%	186	260	188
	APR-SEP	16.8	90	140	73%	190	265	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	17.4	22.8	25.0	70%	75.2
Emigrant Lake	20.0	30.1	27.2	74%	39.0
Fish Lake	5.8	4.1	5.0	116%	7.9
Fourmile Lake	6.9	4.2	7.5	91%	15.6
Howard Prairie	37.9	40.4	37.9	100%	62.1
Hyatt Prairie	6.9	10.0	10.9	63%	16.2
Lost Creek	194.6	231.0	219.0	89%	315.0

Rogue And Umpqua Basins Summary for March 1, 2018

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Applegate Basin	5	30%	153%
Middle Rogue Basin	8	41%	180%
North Umpqua Basin	9	66%	160%
South Umpqua Basin	10	106%	263%
Upper Rogue Basin	11	51%	113%

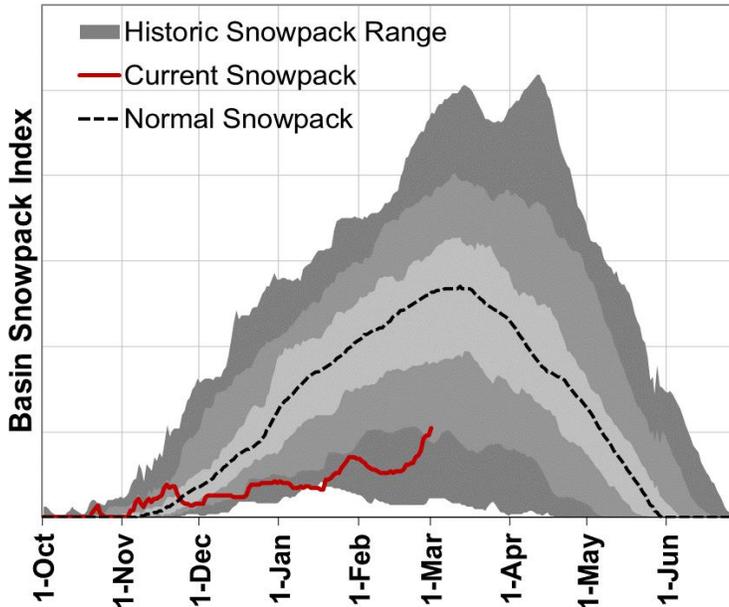
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Park H.Q. Rev Snow Course	6570	28-Feb	101	32.8	55.6	53.2	62%
Caliban (Alt.) Snow Course	6500	1-Mar	35	7.4	38.6	25.2	29%
Mt. Ashland Switchback Snow Course	6430	1-Mar	30	6.7	40.4	27.6	24%
Ski Bowl Road Snow Course	6070	1-Mar	23	4.2	27.4	21.0	20%
Big Red Mountain SNOTEL	6050	1-Mar	31	7.8	34.8	22.6	35%
Annie Springs SNOTEL	6010	1-Mar	72	21.5	48.1	35.1	61%
Fourmile Lake SNOTEL	5970	1-Mar	47	10.7	24.8	27.2	39%
Cold Springs Camp SNOTEL	5940	1-Mar	41	10.7	28.9	29.9	36%
Sevenmile Marsh SNOTEL	5700	1-Mar	55	12.9	35.6	28.7	45%
Summit Lake SNOTEL	5610	1-Mar	78	23.5	41.3	31.2	75%
Billie Creek Divide SNOTEL	5280	1-Mar	40	10.9	24.1	20.6	53%
Diamond Lake SNOTEL	5280	1-Mar	21	5.4	22.7	15.6	35%
Bigelow Camp SNOTEL	5130	1-Mar	26	6.5	22.9	10.6	61%
Beaver Dam Creek Snow Course	5120	1-Mar	26	5.0	13.4	10.9	46%
King Mountain 1 Snow Course	4760	1-Mar	31	6.0	20.8	5.0	120%
Deadwood Junction Snow Course	4660	1-Mar	24	5.4	9.6	6.8	79%
Fish Lk. SNOTEL	4660	1-Mar	25	5.4	10.1	10.7	50%
Howard Prairie SNOTEL	4580	1-Mar	13	2.3	8.3		
Howard Prairie Snow Course	4580	1-Mar	14	2.0	7.3	6.6	30%
Siskiyou Summit Rev. 2 Snow Course	4560	1-Mar	19	3.4	14.0	6.1	56%
Red Butte 1 Snow Course	4460	28-Feb	31	6.0	22.5	9.8	61%
King Mountain SNOTEL	4340	1-Mar	18	3.8	14.5	2.4	158%
North Umpqua Snow Course	4200	1-Mar	24	3.9	14.9	10.4	38%
Red Butte 2 Snow Course	4050	28-Feb	17	3.3	3.2	2.9	114%
Trap Creek Snow Course	3830	28-Feb	18	4.2	14.7	8.8	48%
Silver Burn Snow Course	3680	28-Feb	27	4.6	15.5	11.5	40%
King Mountain 3 Snow Course	3680	1-Mar	17	3.0	1.2	0.0	
Red Butte 3 Snow Course	3500	28-Feb	14	2.0	1.7	0.1	2000%
Toketee Airstrip SNOTEL	3240	1-Mar	13	2.7	5.0	0.8	338%
King Mountain 4 Snow Course	3050	1-Mar	8	1.7	0.0	0.0	
Red Butte 4 Snow Course	3000	28-Feb	6	1.3	1.2	0.0	



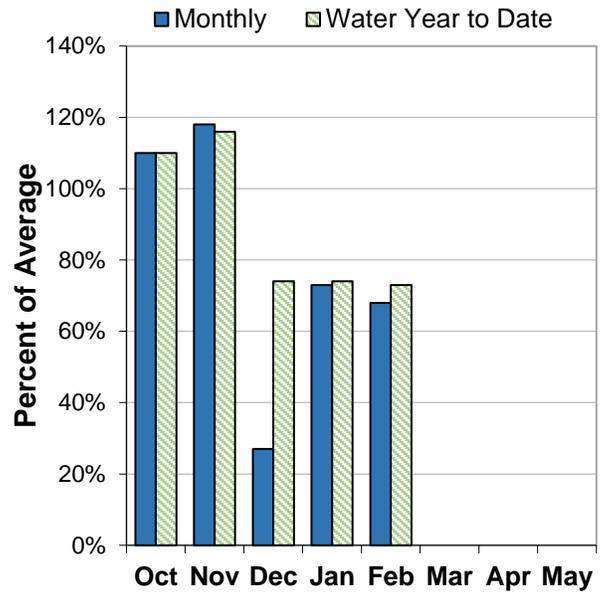
Klamath Basin

March 1, 2018

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of March 1, the basin snowpack was 46% of normal. This is slightly higher than last month when the snowpack was 42% of normal.

PRECIPITATION

February precipitation was 68% of average. Precipitation since the beginning of the water year (October 1 - March 1) has been 73% of average.

RESERVOIR

As of March 1, storage at major reservoirs in the basin ranges from 93% of average at Clear Lake to 125% of average at Gerber Reservoir.

STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 24% to 58% of average. Overall, forecasts remain similar to last month's report. Water users in the basin without access to reservoir water should anticipate water shortages this coming summer and begin to prepare accordingly.

Klamath Basin Summary for March 1, 2018

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts March 1, 2018	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Gerber Reservoir Inflow ²	MAR-JUL	1.20	5.4	9.9	31%	15.9	27	32
	APR-SEP	0.00	1.01	3.4	24%	7.3	15.6	14.4
Sprague R nr Chiloquin	MAR-JUL	59	88	111	44%	136	178	255
	MAR-SEP	71	102	127	46%	154	198	275
	APR-JUL	40	62	81	43%	101	136	188
	APR-SEP	52	77	97	46%	119	155	210
Williamson R bl Sprague nr Chiloquin	MAR-JUL	97	165	210	53%	255	325	400
	MAR-SEP	142	215	260	57%	310	380	460
	APR-JUL	62	117	155	53%	193	250	295
	APR-SEP	107	166	205	58%	245	305	355
Upper Klamath Lake Inflow ^{1,2}	MAR-JUL	95	235	300	52%	365	505	580
	MAR-SEP	132	285	355	54%	425	575	655
	APR-JUL	44	152	200	50%	250	360	400
	APR-SEP	85	200	255	53%	310	425	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

Reservoir Storage	Current (KAF)	Last Year (KAF)	Average (KAF)	% of Average	Useable Capacity (KAF)
Clear Lake	202.0	186.7	217.4	93%	513.3
Gerber	62.9	56.2	50.3	125%	94.3
Upper Klamath Lake	375.3	439.0	370.9	101%	523.7

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Lost Basin	4	34%	151%
Sprague Basin	7	35%	146%
Upper Klamath Lake Basin	8	51%	111%
Williamson River Basin	5	53%	126%

Klamath Basin Summary for March 1, 2018

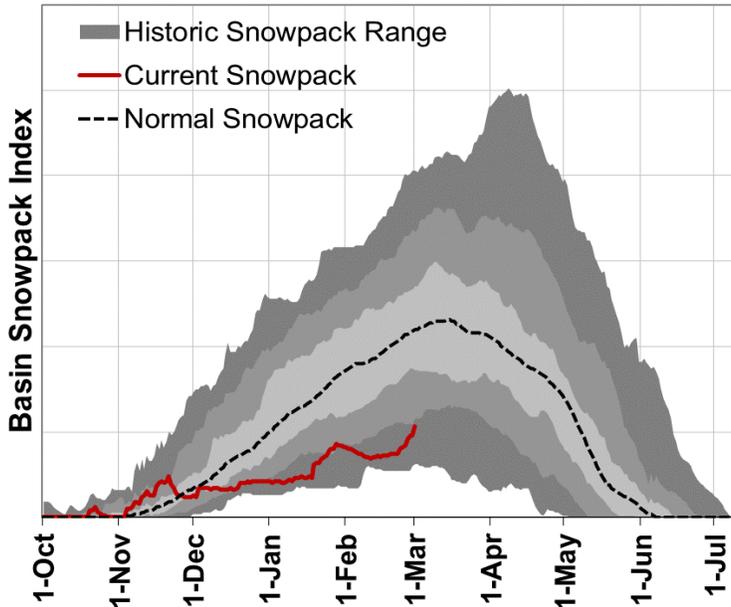
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Summer Rim SNOTEL	7080	1-Mar	28	7.5	18.4	14.1	53%
Swan Lake Mtn SNOTEL	6830	1-Mar	25	7.7	29.4		
Park H.Q. Rev Snow Course	6570	28-Feb	101	32.8	55.6	53.2	62%
Crazyman Flat SNOTEL	6180	1-Mar	18	6.2	18.5	14.8	42%
Ski Bowl Road Snow Course	6070	1-Mar	23	4.2	27.4	21.0	20%
Annie Springs SNOTEL	6010	1-Mar	72	21.5	48.1	35.1	61%
Finley Corrals AM	6000	1-Mar	21	5.2	21.6	13.2	39%
Fourmile Lake SNOTEL	5970	1-Mar	47	10.7	24.8	27.2	39%
Cold Springs Camp SNOTEL	5940	1-Mar	41	10.7	28.9	29.9	36%
Strawberry SNOTEL	5770	1-Mar	8	1.2	8.3	4.3	28%
Cox Flat AM	5750	1-Mar	8	2.0	10.8	5.8	34%
Silver Creek SNOTEL	5740	1-Mar	12	2.1	15.3	10.3	20%
Quartz Mountain SNOTEL	5720	1-Mar	6	1.2	2.9	1.5	80%
Sevenmile Marsh SNOTEL	5700	1-Mar	55	12.9	35.6	28.7	45%
State Line SNOTEL	5680	1-Mar	8	1.4	8.8		
Sycan Flat AM	5580	27-Feb	3	0.8	9.5	6.2	13%
Sun Pass SNOTEL	5400	1-Mar	20	4.3	25.1		
Billie Creek Divide SNOTEL	5280	1-Mar	40	10.9	24.1	20.6	53%
Diamond Lake SNOTEL	5280	1-Mar	21	5.4	22.7	15.6	35%
Crowder Flat SNOTEL	5170	1-Mar	4	0.7	3.8	4.0	18%
Beaver Dam Creek Snow Course	5120	1-Mar	26	5.0	13.4	10.9	46%
Taylor Butte SNOTEL	5030	1-Mar	3	1.0	9.9	7.0	14%
Dog Hollow AM	4920	27-Feb	2	0.4	0.8	0.0	
Gerber Reservoir SNOTEL	4890	1-Mar	4	0.7	0.4	0.5	140%
Chemult Alternate SNOTEL	4850	1-Mar	12	1.8	14.2	8.1	22%
Deadwood Junction Snow Course	4660	1-Mar	24	5.4	9.6	6.8	79%
Fish Lk. SNOTEL	4660	1-Mar	25	5.4	10.1	10.7	50%
Howard Prairie SNOTEL	4580	1-Mar	13	2.3	8.3		
Howard Prairie Snow Course	4580	1-Mar	14	2.0	7.3	6.6	30%
Siskiyou Summit Rev. 2 Snow Course	4560	1-Mar	19	3.4	14.0	6.1	56%



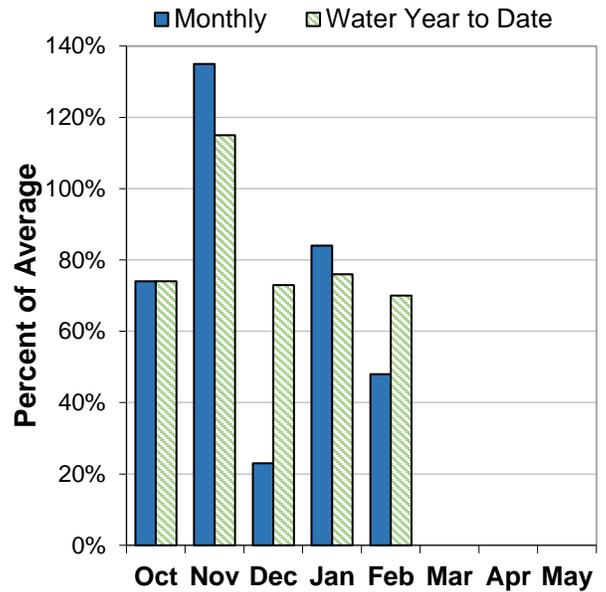
Lake County and Goose Lake Basins

March 1, 2018

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of March 1, the basin snowpack was 44% of normal. This is similar to last month when the snowpack was 42% of normal.

PRECIPITATION

February precipitation was 48% of average. Precipitation since the beginning of the water year (October 1 - March 1) has been 70% of average.

RESERVOIR

As of March 1, storage at major reservoirs in the basin ranges from 51% of average at Cottonwood Reservoir to 114% of average at Drews Reservoir.

STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 35% to 49% of average. Overall, forecasts decreased slightly from last month's report. Water users in the basin without access to reservoir water should anticipate water shortages this coming summer and begin to prepare accordingly.

Lake County And Goose Lake Basins Summary for March 1, 2018

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts March 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	1.63	4.7	7.7	29%	11.4	18.3	27
	APR-SEP	1.13	3.6	6.1	35%	9.1	14.9	17.4
Deep Ck ab Adel	MAR-JUL	17.0	27	35	44%	45	60	79
	APR-SEP	12.0	21	29	45%	38	54	65
Honey Ck nr Plush	MAR-JUL	1.65	3.8	5.7	33%	8.0	12.2	17.1
	APR-SEP	1.20	3.1	4.9	35%	7.1	11.1	14.1
Chewaucan R nr Paisley	MAR-JUL	21	32	41	49%	52	69	84
	APR-SEP	17.8	28	37	49%	46	62	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	2.3	7.0	4.4	51%	9.3
Drews	37.0	57.4	32.4	114%	63.5

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Goose Lake Basin	7	42%	152%
Lake Abert Basin	6	36%	145%
Summer Lake Basin	13	44%	144%
Upper Pit Basin	3	46%	155%

Lake County And Goose Lake Basins Summary for March 1, 2018

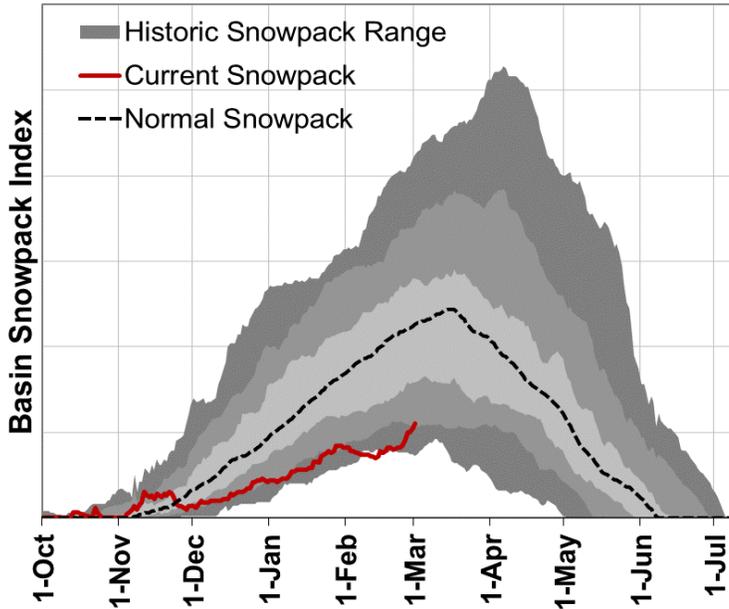
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Dismal Swamp SNOTEL	7360	1-Mar	47	14.5	37.5	24.5	59%
Summer Rim SNOTEL	7080	1-Mar	28	7.5	18.4	14.1	53%
Cedar Pass SNOTEL	7030	1-Mar	29	8.5	20.8	14.2	60%
Barley Camp AM	6890	27-Feb	33	9.9	27.0	14.4	69%
Patton Meadows AM	6800	1-Mar	23	6.9	18.5	14.4	48%
Sherman Valley AM	6640	1-Mar	11	2.8	15.2	11.3	25%
Bear Flat Meadow AM	6580	27-Feb	12	2.4	15.3	11.2	21%
Hart Mountain AM	6430	1-Mar	2	0.6	2.9	1.0	60%
Rogger Meadow AM	6360	1-Mar	13	3.2	17.8	10.1	32%
Adin Mtn Snow Course	6190	28-Feb	17	4.3	19.0	10.6	41%
Adin Mtn SNOTEL	6190	1-Mar	16	4.1	20.5	10.9	38%
Crazyman Flat SNOTEL	6180	1-Mar	18	6.2	18.5	14.8	42%
Finley Corrals AM	6000	1-Mar	21	5.2	21.6	13.2	39%
Camas Creek #3 Snow Course	5860	28-Feb	21	4.5	16.0	11.4	39%
Sheldon SCAN	5860	1-Mar	1	0.3	0.0	0.0	
Strawberry SNOTEL	5770	1-Mar	8	1.2	8.3	4.3	28%
Cox Flat AM	5750	1-Mar	8	2.0	10.8	5.8	34%
Silver Creek SNOTEL	5740	1-Mar	12	2.1	15.3	10.3	20%
State Line SNOTEL	5680	1-Mar	8	1.4	8.8		
Sycan Flat AM	5580	27-Feb	3	0.8	9.5	6.2	13%
Crowder Flat SNOTEL	5170	1-Mar	4	0.7	3.8	4.0	18%



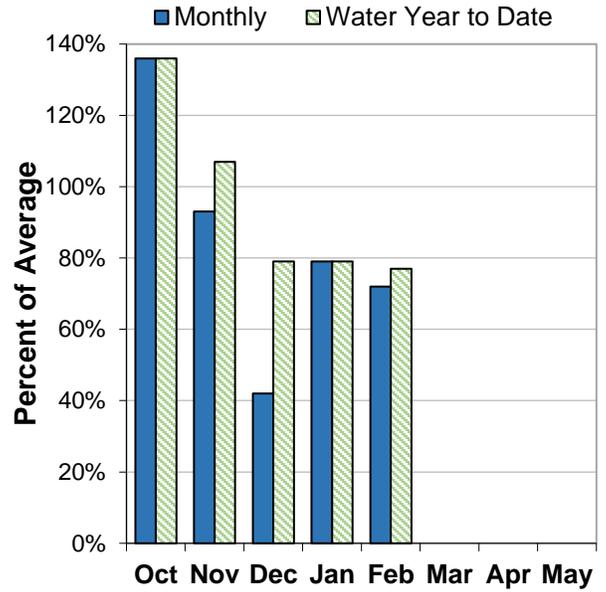
Harney Basin

March 1, 2018

Mountain Snowpack



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of March 1, the basin snowpack was 47% of normal. This is similar to last month when the snowpack was 48% of normal.

PRECIPITATION

February precipitation was 72% of average. Precipitation since the beginning of the water year (October 1 - March 1) has been 77% of average.

STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 23% to 63% of average. Overall, forecasts remain similar to last month's report. Water users in the basin should anticipate water shortages this coming summer and begin to prepare accordingly.

Harney Basin Summary for March 1, 2018

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts March 1, 2018	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Silvies R nr Burns	MAR-JUL	10.5	25	38	31%	55	84	123
	APR-SEP	4.2	15.5	27	29%	42	70	92
Donner Und Blitzen R nr Frenchglen	MAR-JUL	24	35	44	61%	54	71	72
	APR-SEP	23	34	43	63%	53	70	68
Trout Ck nr Denio	MAR-JUL	0.09	0.98	2.1	24%	3.7	6.9	8.7
	APR-SEP	0.03	0.79	1.87	23%	3.4	6.5	8.0

* 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
Alvord Lake Basin	6	43%	130%
Donner und Blitzen River Basin	5	48%	116%
Silvies River Basin	4	45%	145%
Upper Quinn Basin	5	37%	150%

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-Mar	39	9.0	30.6	18.3	49%
Trout Creek AM	7890	1-Mar	20	4.0	15.0	11.5	35%
Fish Creek SNOTEL	7660	1-Mar	56	14.0	26.6	21.3	66%
Govt Corrals AM	7400	1-Mar	24	4.8	21.1		
Oregon Canyon AM	7050	28-Feb	6	1.1	8.6	5.8	19%
Silvies SNOTEL	6990	1-Mar	25	5.9	12.9	14.6	40%
Pueblo Summit AM	6970	28-Feb	6	1.2	3.2	2.4	50%
Buckskin Lower SNOTEL	6915	1-Mar	22	4.8	13.0	8.1	59%
V Lake AM	6600	1-Mar	0	0.0	6.0	5.6	0%
Louse Canyon AM	6530	28-Feb	3	0.7	6.7	4.2	17%
Disaster Peak SNOTEL	6500	1-Mar	7	1.1	9.3	7.6	14%
Hart Mountain AM	6430	1-Mar	2	0.6	2.9	1.0	60%
Quinn Ridge AM	6270	28-Feb	2	0.4	3.0	2.0	20%
Snow Mountain SNOTEL	6230	1-Mar	20	5.0	13.5	9.8	51%
Lamance Creek SNOTEL	6000	1-Mar	7	1.4	14.9	11.0	13%
Blue Mountain Spring SNOTEL	5870	1-Mar	39	8.4	15.8	14.4	58%
Sheldon SCAN	5860	1-Mar	1	0.3	0.0	0.0	
Buck Pasture AM	5740	28-Feb	2	0.5	3.5	1.6	31%
Call Meadows AM	5380	27-Feb	2	0.4	10.2	4.4	9%
Rock Springs SNOTEL	5290	1-Mar	6	0.6	9.3	6.2	10%
Starr Ridge SNOTEL	5250	1-Mar	15	3.5	10.3	6.2	56%
Lake Creek R.S. SNOTEL	5240	1-Mar	22	5.5	14.0	10.3	53%
Buckskin Lake AM	5190	27-Feb	1	0.2	0.8	0.0	

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 8	Apr 8	May 20	May 6
Owyhee R nr Rome	1000 cfs	Mar 10	Apr 14	May 25	May 18
Owyhee R nr Rome	500 cfs	Mar 16	Apr 23	Jun 4	Jun 2

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	20	125	350	271

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 25		May 25
Crane Prairie Inflow	Peak Flow	200	335	475	403
Crane Prairie Inflow	Average Daily Flow on Oct. 1st	135	185	235	269
Prineville Reservoir Inflow	150 cfs	Apr 21	May 14	Jun 6	May 30
Prineville Reservoir Inflow	80 cfs	Apr 27	May 21	Jun 14	June 7
Whychus Creek nr Sisters	100 cfs	Jul 7	Aug 2	Aug 27	August 16

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

ROGUE AND UMPQUA BASINS					
<i>FORECAST POINT</i>	<i>FORECAST THRESHOLD</i>	<i>FORECAST VALUE ----- CHANCE OF EXCEEDING ----- -----</i>			<i>LONG-TERM AVERAGE VALUE</i>
		90%	50%	10%	
South Umpqua R nr Brockway *	90 cfs	Jul 10	Jul 28	Aug 17	August 8
South Umpqua R at Tiller	140 cfs	Jun 12	Jul 3	Jul 23	July 11
South Umpqua R at Tiller	90 cfs	Jun 30	Jul 23	Aug 12	August 1
South Umpqua R at Tiller	60 cfs	Jul 23	Aug 17	Sep 16	August 28

*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.

LAKE COUNTY AND GOOSE LAKE BASINS					
<i>FORECAST POINT</i>	<i>FORECAST THRESHOLD</i>	<i>FORECAST VALUE ----- CHANCE OF EXCEEDING ----- -----</i>			<i>LONG-TERM AVERAGE VALUE</i>
		90%	50%	10%	
Deep Ck ab Adel	100 cfs	May 10	Jun 1	Jun 23	June 17
Honey Ck nr Plush	100 cfs	Mar 20	Apr 22	May 25	May 16
Honey Ck nr Plush	50 cfs	Apr 4	May 5	Jun 3	June 4
Twentymile Ck nr Adel	50 cfs	Apr 3	Apr 29	May 25	May 30
Twentymile Ck nr Adel	10 cfs	May 29	Jun 21	Jul 14	July 7

HARNEY BASIN					
<i>FORECAST POINT</i>	<i>FORECAST THRESHOLD</i>	<i>FORECAST VALUE ----- CHANCE OF EXCEEDING ----- -----</i>			<i>LONG-TERM AVERAGE VALUE</i>
		90%	50%	10%	
Silvies R nr Burns	400 cfs	Apr 5	May 4	Jun 2	May 21
Silvies R nr Burns	200 cfs	Apr 11	May 10	Jun 8	June 2
Silvies R nr Burns	100 cfs	Apr 19	May 21	Jun 22	June 13
Silvies R nr Burns	50 cfs	May 8	Jun 12	Jul 17	July 3
Donner Und Blitzen R nr Frenchglen	200 cfs	May 9	May 31	Jun 22	June 20
Donner Und Blitzen R nr Frenchglen	100 cfs	May 31	Jun 20	Jul 10	July 9

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.

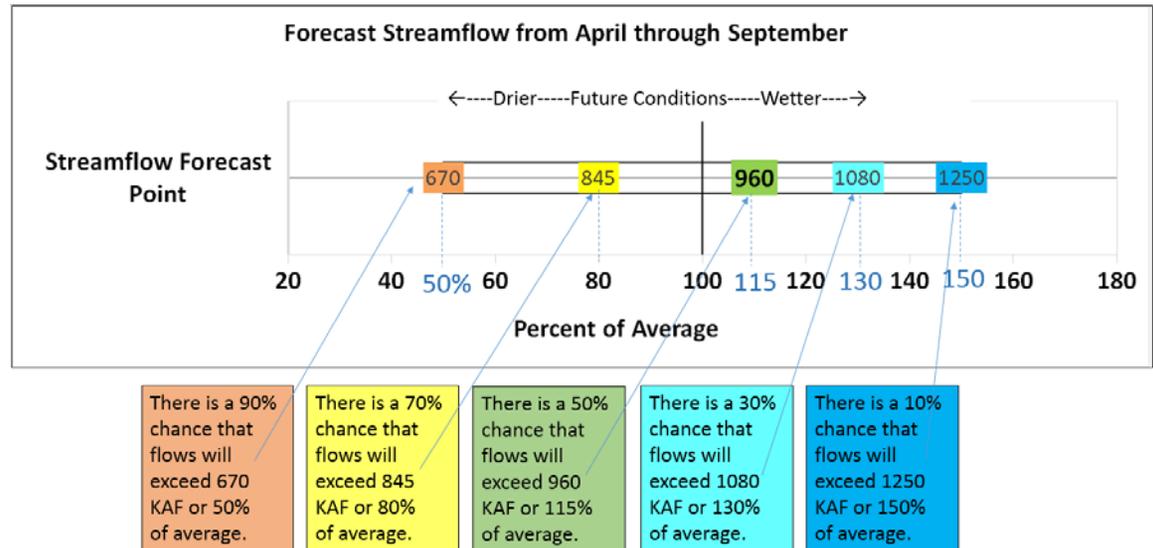
30-Year Average. The 30-year average streamflow for each forecast period is provided for comparison. The average is based on data from 1981-2010. The % AVG. column compares the 50% chance of exceedance forecast to the 30-year average streamflow; values above 100% denote when the 50% chance of exceedance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

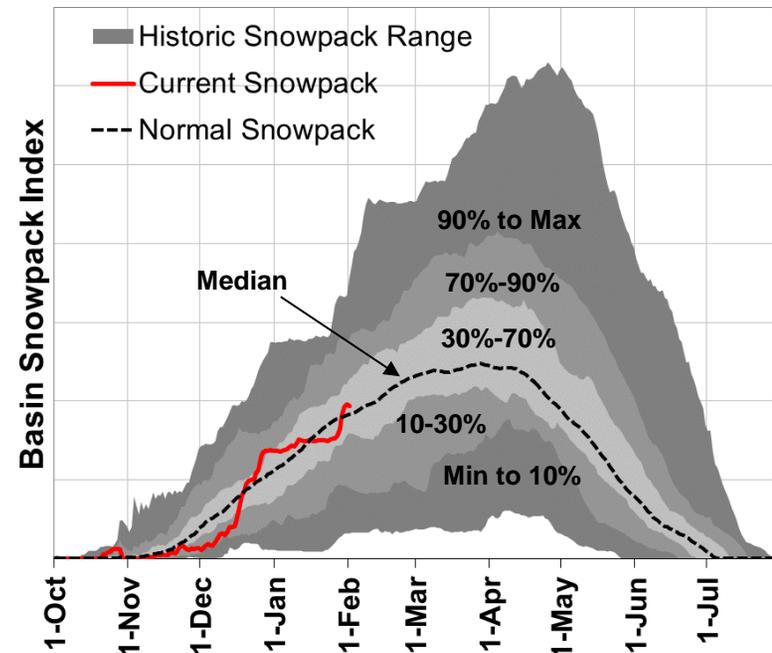
Interpreting Snowpack Plots

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 10th percentile and the 90th percentile to maximum). The medium grey shading indicates the range from the 10th to 30th percentiles and the 70th to 90th percentiles. The light grey shading indicates the range between the 30th to 70th percentiles, while the median is the 50th percentile. A percentile is the value of the snowpack index below which the given percent of historical years fall. For instance, the 90th 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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