



United States
Department of
Agriculture



Natural Resources
Conservation
Service

Oregon Basin Outlook Report

June 1, 2021



Below-average reservoir storage, illustrated by exposed shorelines, at Phillips Lake near Sumpter, Oregon is indicative of the dry spring conditions across the state. (Photo: Matt Warbritton, Snow Survey Hydrologist)

Persistent dry conditions observed in April continued into May across much of Oregon with the whole state now in some category of drought. Several reservoirs, like Phillips Lake on the Powder River pictured above, are storing volumes below average across Oregon. This is due to continued precipitation deficits resulting in below to well-below-average water year precipitation and mostly well-below-normal snowpack conditions as of June 1st. Most basins now have little to no snowpack after experiencing rapid snowmelt from April into May. These conditions continue to adversely, and in some cases severely impact the water supply outlook for the summer.

Contents

General Outlook	1
Owyhee and Malheur Basins	4
Grande Ronde, Powder, Burnt and Imnaha Basins	7
Umatilla, Walla Walla, and Willow Basins	10
John Day Basin	13
Upper Deschutes and Crooked Basins	15
Hood, Sandy, and Lower Deschutes Basins	18
Willamette Basin	20
Rogue and Umpqua Basins	23
Klamath Basin	26
Lake County and Goose Lake	29
Harney Basin	32
Basin Outlook Reports: How Forecasts Are Made	34
Interpreting Water Supply Forecasts	35
Interpreting Snowpack Plots	36

In accordance with Federal civil rights law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, the USDA, its Agencies, offices, and employees, and institutions participating in or administering USDA programs are prohibited from discriminating based on race, color, national origin, religion, sex, gender identity (including gender expression), sexual orientation, disability, age, marital status, family/parental status, income derived from a public assistance program, political beliefs, or reprisal or retaliation for prior civil rights activity, in any program or activity conducted or funded by USDA (not all bases apply to all programs). Remedies and complaint filing deadlines vary by program or incident. Persons with disabilities who require alternative means of communication for program information (e.g., Braille, large print, audiotape, American Sign Language, etc.) should contact the responsible Agency or USDA's TARGET Center at (202) 720-2600 (voice and TTY) or contact USDA through the Federal Relay Service at (800) 877-8339. Additionally, program information may be made available in languages other than English. USDA is an equal opportunity provider and employer.

General Outlook

June 1st, 2021

SUMMARY

Despite modest precipitation in some regions at the end of May, incessant dry conditions due to well-below-average precipitation persist across the state for the third consecutive month. Reservoir storage and streamflow volumes are mostly below to well-below average across Oregon as of June 1st. This is caused by mostly below to well-below-average water year precipitation and well-below normal snowpack with most basins having little to no remaining snowpack. These conditions continue to result in an unfavorable water supply outlook for the summer, particularly for southern Oregon where conditions are severely impacting water supplies.

SNOWPACK

Snowpack across the state continued to rapidly decline from April into May. May had no significant snow accumulation due to warm temperatures and limited storm impacts in the region. Snowpack at SNOTEL sites in basins east of the Cascades has melted out as of June 1st. In western Oregon, most basins are melted out or well-below normal, except the Hood, Sandy and Lower Deschutes Basin which still has remaining snowpack from a series of late winter storm systems.

PRECIPITATION

Due to ongoing precipitation deficits and well-below-average May precipitation, water year precipitation as percent average slightly decreased across Oregon, with all basins at a lower percent average as of June 1st compared to May 1st. All basins in southern Oregon are well-below average (60%–76%). The Hood, Sandy and Lower Deschutes Basin is near average, in part due to wetter conditions earlier this year in this region.

The lowest water year precipitation observed on June 1st is in Lake County and Goose Lake Basin at 60% and the highest in Hood, Sandy, and Lower Deschutes Basin at 95%. Other precipitation totals for basins ranged from 62% in Klamath Basin to 88% in the Umatilla, Walla Walla, and Willow Basin.

As of June 1st, 100% of the state is in a drought category, according to the [National Drought Monitor](#), with several areas in central and southern Oregon in the Extreme to Exceptional Drought category or worse. The [three month outlook](#) from the NOAA Climate Prediction Center calls for a higher chance of below-average precipitation and above-average temperatures across Oregon.

RESERVOIRS

Reservoir conditions had little to no improvement as of June 1st compared to May 1st. Most reservoirs are storing volumes below to well-below average, markedly in southern Oregon where several are storing volumes between 8%–39%. In contrast, some reservoirs, particularly in the Willamette Basin and Umatilla, Walla Walla and Willow Basin, are storing volumes near to above

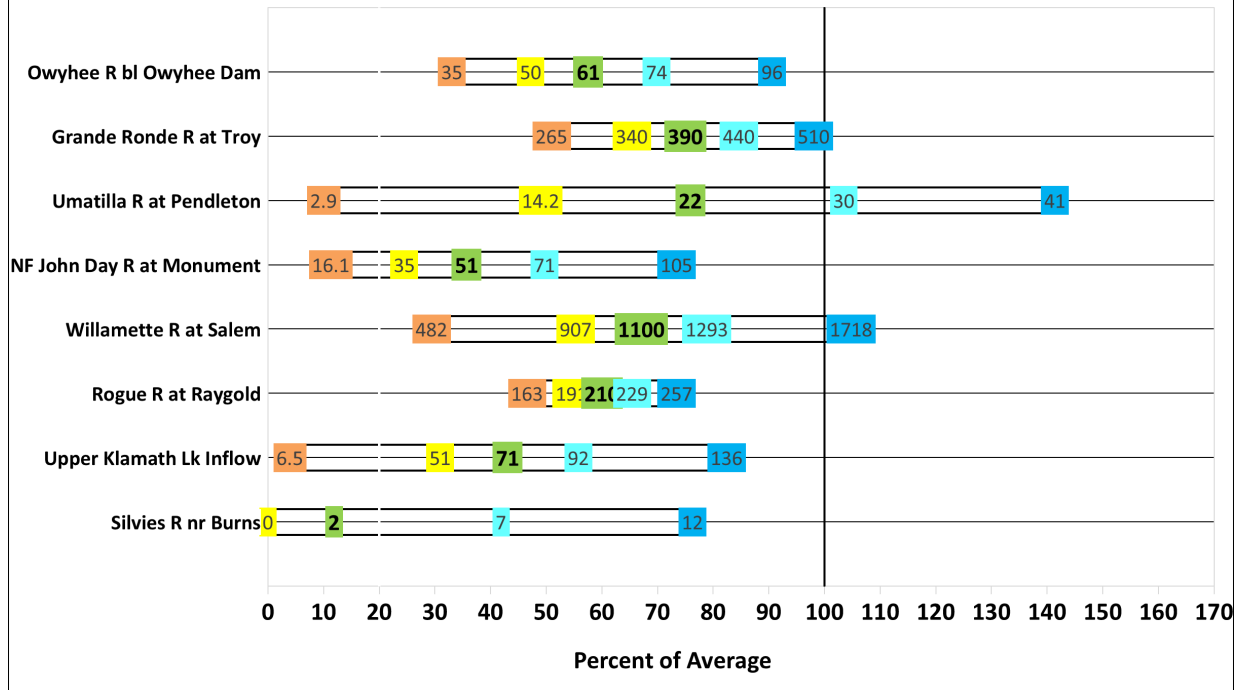
average. Reservoir operators control for a variety of factors when choosing to store or release water, including flooding, irrigation, fisheries and other water needs.

STREAMFLOW

Streamflow deficits continue to increase across much of the state as of June 1st, with conditions mostly below to well-below average. Several gage stations in western and southern Oregon are below 50% of average. However, very few streams in northeastern Oregon are near to above average.

The June 1st volumetric streamflow forecasts again call for mostly lower summer streamflow across the state compared to May 1st. The overall outlook is below to well-below average across Oregon. The forecasts for large parts western Oregon and eastern Oregon have dropped considerably, partly because the vast majority of snowmelt occurred rapidly at the end of April. The outlook for southern Oregon and parts of central Oregon is well-below average, where most forecasts are less than 50% (50% exceedance probability). Water supply conditions for much of Oregon during the summer will likely remain impaired, in some areas impaired severely.

Summary of Streamflow Forecasts across Oregon
 June through September Forecast Volumes at a Selection of Streamflow Points
 (Volumes listed in KAF)



Legend: ←-----Drier----- Future Conditions -----Wetter-----→				
90% Exceedance Forecast (KAF) There is a 90% chance that flows will exceed this volume.	70% Exceedance Forecast (KAF) There is a 70% chance that flows will exceed this volume.	50% Exceedance Forecast (KAF) There is a 50% chance that flows will exceed this volume.	30% Exceedance Forecast (KAF) There is a 30% chance that flows will exceed this volume.	10% Exceedance Forecast (KAF) There is a 10% chance that flows will exceed this volume.

To accompany the forecast summary graphic above, 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. 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 above and explained in more detail at the end of this document.

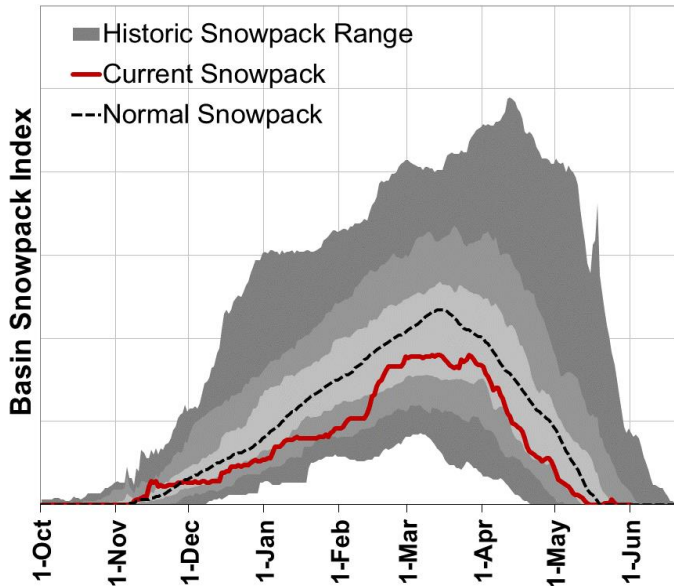
All forecasts are listed with units of 1000 acre-feet (KAF). This report contains data furnished by the Oregon Department of Water Resources, U.S. Geological Survey, NOAA National Weather Service, and other cooperators. This report will be updated monthly, January through June.



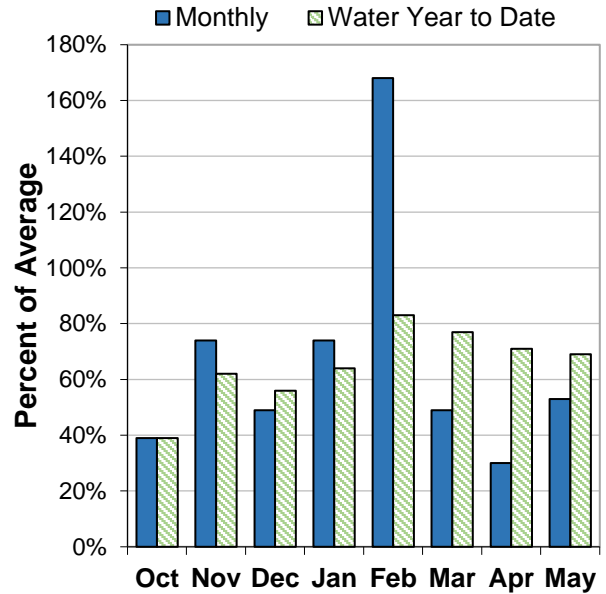
Owyhee and Malheur Basins

June 1, 2021

Owyhee



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of June 1, all snow measurement sites in the basin are snow-free, which is typical for this time of year. SNOTEL sites in the basin peaked around 90% to 110% of normal peak snowpack this winter.

PRECIPITATION

May precipitation was 53% of average. Precipitation since the beginning of the water year (October 1 - June 1) has been 69% of average.

RESERVOIR

Reservoir storage across the basin is currently well below average. As of June 1, storage at major reservoirs in the basin ranges from 73% of average at Warm Springs Reservoir to 106% of average at Bully Creek Reservoir.

STREAMFLOW FORECAST

The June through September streamflow forecasts in the basin range from 31% to 65% of average. Overall, forecasts increased significantly from last month's report. Water managers in the basin should prepare for significantly reduced water supplies in the coming summer.

Owyhee And Malheur Basins Summary for June 1, 2021

Forecast Exceedance Probabilities for Risk Assessment *

Streamflow Forecasts June 1, 2021	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						30-Year Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Owyhee R nr Rome	JUN-JUL	7.0	15.3	23	37%	32	48	63
	JUN-SEP	14.2	25	35	44%	45	64	80
Owyhee R bl Owyhee Dam ²	JUN-JUL	15.5	27	36	47%	46	64	76
	JUN-SEP	35	50	61	58%	74	96	106
Malheur R nr Drewsey	JUN-JUL	0.56	1.88	3.2	30%	4.9	8.1	10.8
	JUN-SEP	0.81	2.4	3.9	31%	5.8	9.3	12.5
NF Malheur R at Beulah ²	JUN-JUL	1.00	4.2	7.6	55%	11.0	16.0	13.7
	JUN-SEP	2.7	8.6	12.6	65%	16.6	22	19.5

* 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	33.1	47.2	46.7	71%	59.2
Bully Creek	17.3	20.8	23.2	75%	23.7
Lake Owyhee	352.7	576.5	536.2	66%	715.0
Warm Springs	68.0	128.8	122.4	56%	169.6

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
East Little Owyhee Basin	0		
South Fork Owyhee Basin	4		
Upper Malheur Basin	3		
Upper Owyhee Basin	5		
Middle Owyhee Basin	1		
Jordan Basin	2		

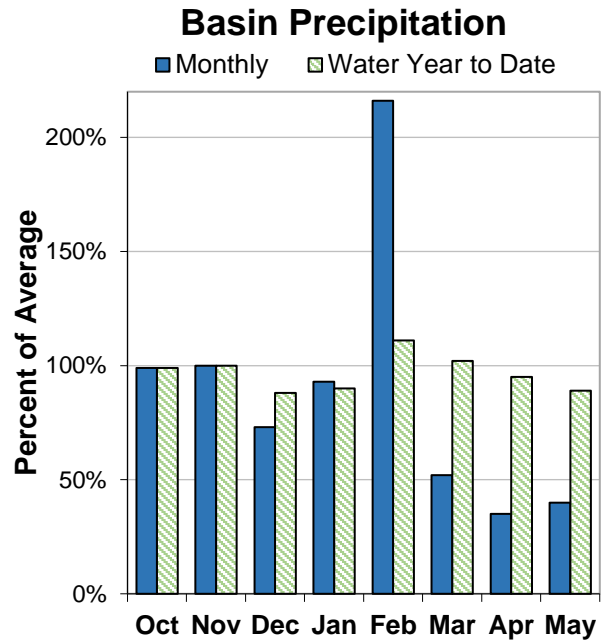
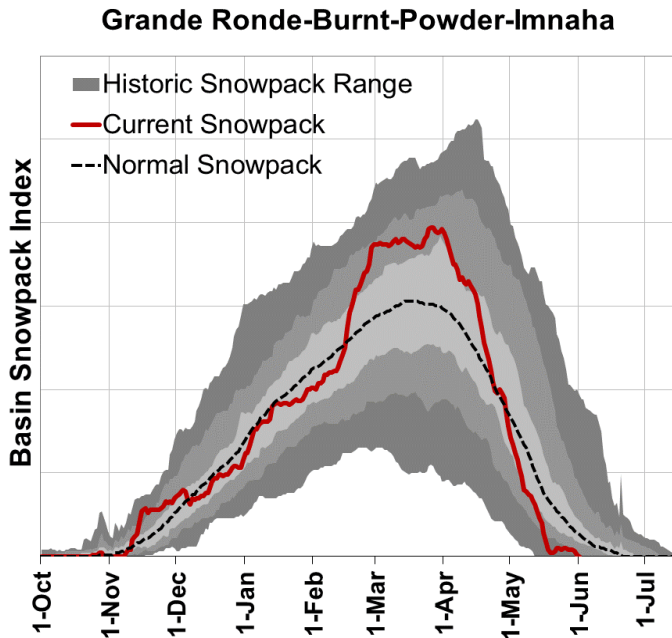
Owyhee And Malheur Basins Summary for June 1, 2021

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-Jun	0	0.0	0.0	1.5	0%
Trout Creek AM	7890	1-Jun	0	0.0	0.0		
Toe Jam SNOTEL	7700	1-Jun	0	0.0	0.0		
Govt Corrals AM	7400	1-Jun	0	0.0	0.0		
Jack Creek Upper SNOTEL	7250	1-Jun	0	0.0	0.0	0.0	
Fawn Creek SNOTEL	7000	1-Jun	0	0.0	0.0	0.0	
Buckskin Lower SNOTEL	6915	1-Jun	0	0.0	0.0	0.0	
Big Bend SNOTEL	6700	1-Jun	0	0.0	0.0	0.0	
Fry Canyon SNOTEL	6700	1-Jun	0	0.0	0.0		
Laurel Draw SNOTEL	6697	1-Jun	0	0.0	0.0	0.0	
South Mtn. SNOTEL	6500	1-Jun	0	0.0	0.0	0.0	
Taylor Canyon SNOTEL	6200	1-Jun	0	0.0	0.0	0.0	
Blue Mountain Spring SNOTEL	5870	1-Jun	0	0.0	0.0	0.0	
Barney Creek (New) Snow Course	5830	1-Jun	0	0.0	0.0		
Mud Flat SNOTEL	5730	1-Jun	0	0.0	0.0	0.0	
Reynolds Creek SNOTEL	5600	1-Jun	0	0.0	0.0	0.0	
Call Meadows AM	5380	1-Jun	0	0.0	0.0		
Rock Springs SNOTEL	5290	1-Jun	0	0.0	0.0	0.0	
Lake Creek R.S. SNOTEL	5240	1-Jun	0	0.0	0.0	0.0	



Grande Ronde, Powder, Burnt and Imnaha Basins

June 1, 2021



Summary of Water Supply Conditions

SNOWPACK

As of June 1, the basin snowpack was 0% of normal. This is significantly lower than last month when the basin snowpack was 84% of normal.

PRECIPITATION

May precipitation was 40% of average. Precipitation since the beginning of the water year (October 1 - June 1) has been 89% of average.

RESERVOIR

As of June 1, storage at major reservoirs in the basin ranges from 21% of average at Phillips Lake to 113% of average at Wallowa Lake.

STREAMFLOW FORECAST

The June through September streamflow forecasts in the basin range from 32% to 75% of average. Overall, forecasts decreased significantly from last month's report. Water managers in the basin should prepare for significantly reduced water supplies in the coming summer.

Grande Ronde, Powder, Burnt And Imnaha Basins Summary for June 1, 2021

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts June 1, 2021	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						30-Year Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Burnt R nr Hereford ²	JUN-JUL	0.24	0.95	1.70	40%	2.7	4.5	4.2
	JUN-SEP	0.78	1.83	2.8	47%	4.0	6.0	6.0
Powder R nr Sumpter ²	JUN-JUL	0.92	2.6	4.2	29%	6.3	10.0	14.5
	JUN-SEP	1.20	3.2	5.1	32%	7.4	11.5	15.8
Pine Ck nr Oxbow	JUN-JUL	4.2	13.1	19.2	37%	25	34	52
	JUN-SEP	6.9	16.2	23	40%	29	38	58
Imnaha R at Imnaha	JUN-JUL	48	62	72	66%	81	95	109
	JUN-SEP	62	77	87	67%	98	113	130
Catherine Ck nr Union	JUN-JUL	5.0	10.5	14.3	65%	18.0	24	22
	JUN-SEP	7.8	13.6	17.6	68%	21	27	26
Lostine R nr Lostine	JUN-JUL	38	45	50	74%	55	62	68
	JUN-SEP	42	50	55	72%	61	69	76
Bear Ck nr Wallowa	JUN-JUL	12.0	17.2	21	70%	24	29	30
	JUN-SEP	13.4	18.8	22	67%	26	31	33
Grande Ronde R at Troy	JUN-JUL	196	270	320	74%	365	440	430
	JUN-SEP	265	340	390	75%	440	510	520

* 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	12.5	38.6	58.7	21%	73.5
Thief Valley	11.7	14.1	13.6	86%	13.3
Unity	22.4	24.9	22.4	100%	25.5
Wallowa Lake	23.9	31.3	27.2	88%	37.5
Wolf Creek	7.1	11.1	9.7	73%	11.1

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Burnt Basin	2		
Imnaha Basin	3	0%	77%
Lower Grande Ronde Basin	3		
Powder Basin	7		
Upper Grande Ronde Basin	7	0%	2800%
Wallowa Basin	9	0%	101%

Grande Ronde, Powder, Burnt And Imnaha Basins Summary for June 1, 2021

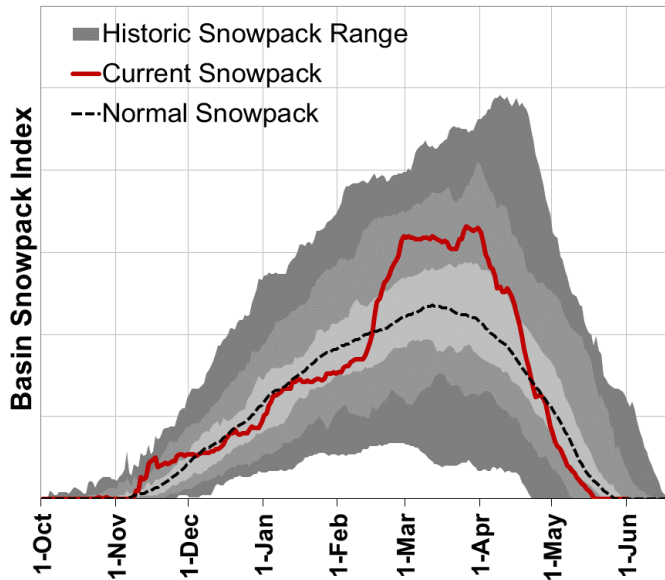
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Mt. Howard SNOTEL	7910	1-Jun	0	0.0	2.3	6.0	0%
Aneroid Lake #2 SNOTEL	7400	1-Jun		0.0	15.3	16.8	0%
TV Ridge AM	7050	1-Jun	0	0.0	0.0		
Bald Mtn AM	6600	1-Jun	0	0.0	2.9		
Big Sheep AM	6230	1-Jun	4	1.8	0.0		
Bear Saddle SNOTEL	6180	1-Jun	0	0.0	0.0	0.0	
Bourne SNOTEL	5850	1-Jun	0	0.0	0.0	0.0	
Barney Creek (New) Snow Course	5830	1-Jun	0	0.0	0.0		
Moss Springs SNOTEL	5760	1-Jun	0	0.0	5.6	0.2	0%
Taylor Green SNOTEL	5740	1-Jun	0	0.0	0.0	0.0	
Spruce Springs SNOTEL	5700	1-Jun	0	0.0	0.0	0.0	
Wolf Creek SNOTEL	5630	1-Jun	0	0.0	0.0	0.0	
Milk Shakes SNOTEL	5580	1-Jun	0	0.0	11.6		
West Branch SNOTEL	5560	1-Jun	0	0.0	0.0	0.0	
Touchet SNOTEL	5530	1-Jun	0	0.0	0.0	0.0	
Eilertson Meadows SNOTEL	5510	1-Jun	0	0.0	0.0	0.0	
West Eagle Meadows AM	5500	1-Jun	0	0.0	0.0		
Gold Center SNOTEL	5410	1-Jun	0	0.0	0.0	0.0	
Schneider Meadows SNOTEL	5400	1-Jun	0	0.0	0.0	0.0	
Beaver Reservoir SNOTEL	5150	1-Jun	0	0.0	0.0	0.0	
Tipton SNOTEL	5150	1-Jun	0	0.0	0.0	0.0	
High Ridge SNOTEL	4920	1-Jun	0	0.0	0.0	0.0	
County Line SNOTEL	4830	1-Jun	0	0.0	0.0	0.0	
Bowman Springs SNOTEL	4530	1-Jun	0	0.0	0.0	0.0	
Sourdough Gulch SNOTEL	4000	1-Jun	0	0.0	0.0	0.0	



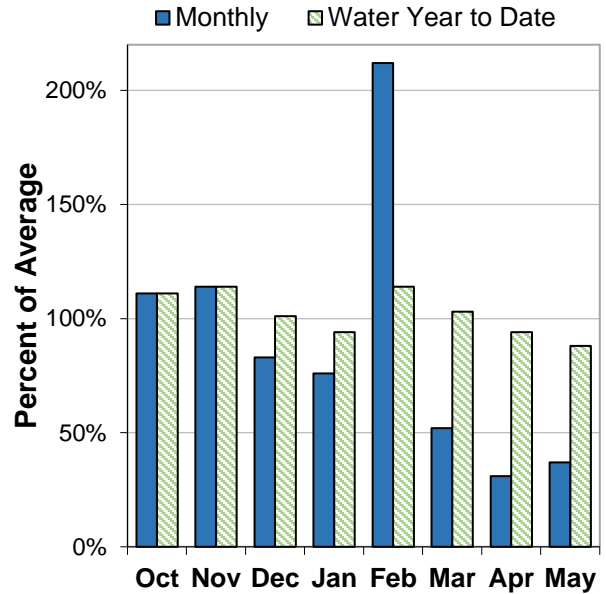
Umatilla, Walla Walla and Willow Basins

June 1, 2021

Umatilla-Walla Walla-Willow



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of June 1, all snow measurement sites in the basin are snow-free. This winter, SNOTEL sites peaked around 100% to 170% of normal peak snowpack.

PRECIPITATION

May precipitation was 37% of average. Precipitation since the beginning of the water year (October 1 - June 1) has been 88% of average.

RESERVOIR

As of June 1, storage at major reservoirs in the basin ranges from 80% of average at Cold Springs Reservoir to 95% of average at Willow Creek Reservoir.

STREAMFLOW FORECAST

The June through September streamflow forecasts in the basin range from 39% to 90% of average. Overall, forecasts decreased significantly from last month's report. Water managers in the basin should prepare for significantly reduced water supplies in the coming summer.

Umatilla, Walla Walla And Willow Basins Summary for June 1, 2021

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts June 1, 2021	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						30-Year Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
SF Walla Walla R nr Milton-Freewater	JUN-JUL	11.5	14.1	15.9	87%	17.7	20	18.2
	JUN-SEP	23	26	28	90%	30	33	31
Umatilla R ab Meacham Ck nr Gibbon	JUN-JUL	2.9	7.7	11.0	77%	14.3	19.1	14.2
	JUN-SEP	8.0	12.9	16.2	83%	19.5	24	19.6
Umatilla R at Pendleton	JUN-JUL	2.0	9.2	16.8	70%	24	36	24
	JUN-SEP	2.9	14.2	22	76%	30	41	29
McKay Ck nr Pilot Rock	JUN-JUL	0.04	0.79	1.87	49%	3.4	6.5	3.8
	JUN-SEP	0.07	0.91	2.0	50%	3.6	6.6	4.0
Butter Ck nr Pine City	JUN-JUL	0.14	0.49	0.85	45%	1.30	2.2	1.88
	JUN-SEP	0.26	0.68	1.09	47%	1.59	2.5	2.3
Willow Ck ab Willow Ck Lake nr Heppner	JUN-JUL	0.03	0.28	0.61	39%	1.07	1.96	1.57
	JUN-SEP	0.04	0.33	0.67	39%	1.13	2.0	1.72
Rhea Ck nr Heppner	JUN-JUL	0.10	0.38	0.67	40%	1.06	1.78	1.69
	JUN-SEP	0.21	0.56	0.89	42%	1.30	2.1	2.1

* 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	17.6	16.5	28.2	63%	38.6
Mckay	63.8	65.2	57.0	112%	71.5
Willow Creek	5.7	6.1	5.9	97%	9.8

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Umatilla Basin	5		
Walla Walla Basin	4		
Willow Basin	2		

Umatilla, Walla Walla And Willow Basins Summary for June 1, 2021

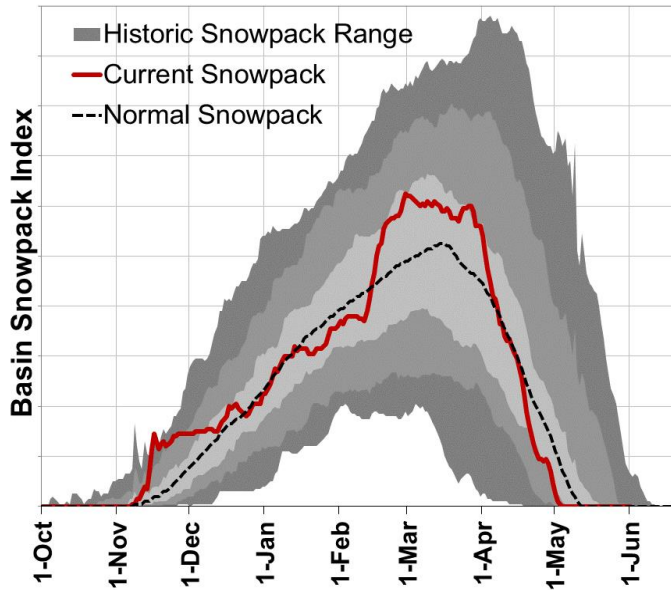
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Arbuckle Mtn SNOTEL	5770	1-Jun	0	0.0	0.0	0.0	
Spruce Springs SNOTEL	5700	1-Jun	0	0.0	0.0	0.0	
Milk Shakes SNOTEL	5580	1-Jun	0	0.0	11.6		
Touchet SNOTEL	5530	1-Jun	0	0.0	0.0	0.0	
Madison Butte SNOTEL	5150	1-Jun	0	0.0	0.0	0.0	
Lucky Strike SNOTEL	4970	1-Jun	0	0.0	0.0	0.0	
High Ridge SNOTEL	4920	1-Jun	0	0.0	0.0	0.0	
Bowman Springs SNOTEL	4530	1-Jun	0	0.0	0.0	0.0	
Emigrant Springs SNOTEL	3800	1-Jun	0	0.0	0.0	0.0	



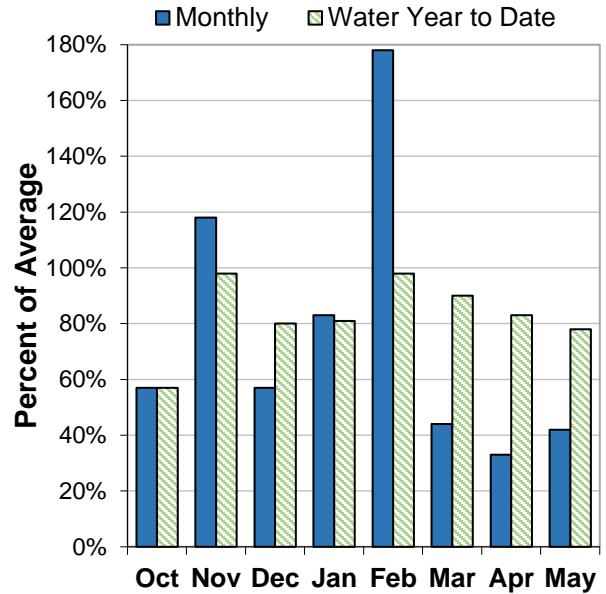
John Day Basin

June 1, 2021

John Day



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of June 1, all snow measurement sites in the basin are snow-free, which is typical for this time of year. SNOTEL sites in the basin peaked around 100% to 140% of normal peak snowpack this winter.

PRECIPITATION

May precipitation was 42% of average. Precipitation since the beginning of the water year

STREAMFLOW FORECAST

The June through September streamflow forecasts in the basin range from 25% to 72% of average. Overall, forecasts decreased significantly from last month's report. Water managers in the basin should prepare for significantly reduced water supplies in the coming summer.

John Day Basin Summary for June 1, 2021

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts June 1, 2021	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						30-Year Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Strawberry Ck nr Prairie City	JUN-JUL	0.57	1.66	2.4	52%	3.1	4.2	4.6
	JUN-SEP	0.70	1.87	2.7	52%	3.5	4.6	5.2
Mountain Ck nr Mitchell	JUN-JUL	0.02	0.11	0.21	23%	0.34	0.58	0.90
	JUN-SEP	0.04	0.14	0.25	25%	0.38	0.64	1.01
Camas Ck nr Ukiah	JUN-JUL	0.96	2.3	3.5	69%	5.0	7.6	5.1
	JUN-SEP	1.39	2.8	4.1	72%	5.6	8.2	5.7
MF John Day R at Ritter	JUN-JUL	1.67	4.8	7.8	28%	11.6	18.6	28
	JUN-SEP	3.0	6.8	10.2	32%	14.4	22	32
NF John Day R at Monument	JUN-JUL	11.4	28	43	34%	61	95	126
	JUN-SEP	16.1	35	51	36%	71	105	143

* 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	2	
North Fork John Day Basin	7	
Upper John Day Basin	5	

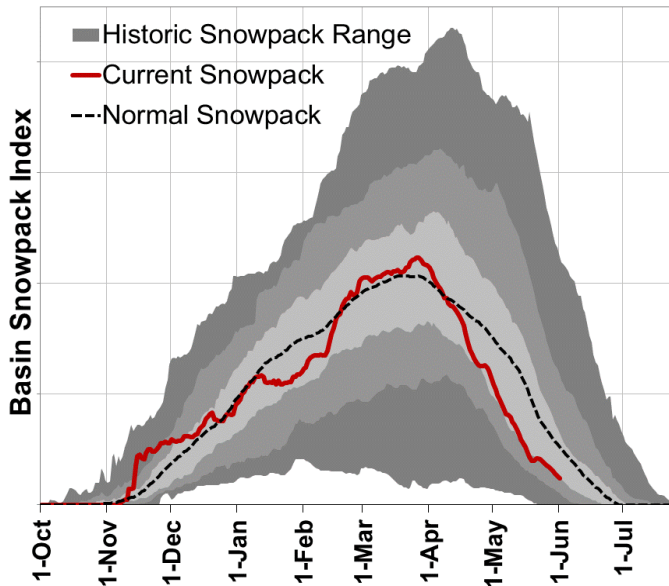
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Depth (in)	Snow Water Equivalent (in)		
				Current SWE	Last Yr SWE	% of Median
Snow Mountain SNOTEL	6230	1-Jun	0	0.0	0.0	0.0
Blue Mountain Spring SNOTEL	5870	1-Jun	0	0.0	0.0	0.0
Bourne SNOTEL	5850	1-Jun	0	0.0	0.0	0.0
Derr. SNOTEL	5850	1-Jun	0	0.0	0.0	0.0
Barney Creek (New) Snow Course	5830	1-Jun	0	0.0	0.0	
Arbuckle Mtn SNOTEL	5770	1-Jun	0	0.0	0.0	0.0
Ochoco Meadows SNOTEL	5430	1-Jun	0	0.0	0.0	0.0
Gold Center SNOTEL	5410	1-Jun	0	0.0	0.0	0.0
Starr Ridge SNOTEL	5250	1-Jun	0	0.0	0.0	0.0
Lake Creek R.S. SNOTEL	5240	1-Jun	0	0.0	0.0	0.0
Madison Butte SNOTEL	5150	1-Jun	0	0.0	0.0	0.0
Tipton SNOTEL	5150	1-Jun	0	0.0	0.0	0.0
Lucky Strike SNOTEL	4970	1-Jun	0	0.0	0.0	0.0
County Line SNOTEL	4830	1-Jun	0	0.0	0.0	0.0



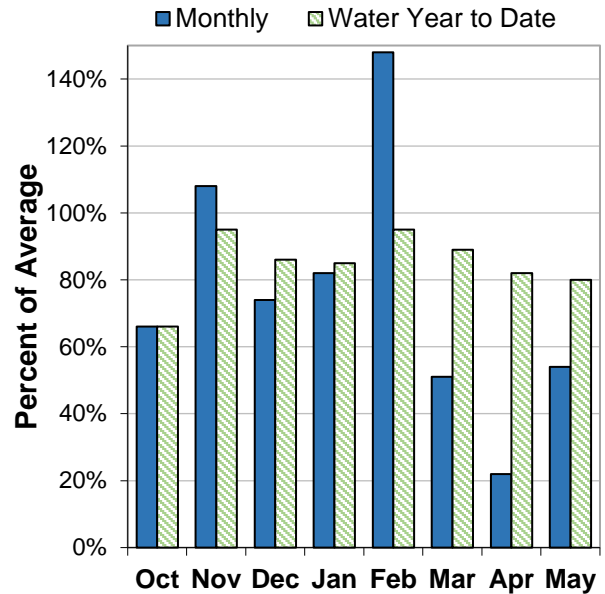
Upper Deschutes and Crooked Basins

June 1, 2021

Upper Deschutes-Crooked



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of June 1, the basin snowpack was 47% of normal. This is lower than last month when the snowpack was 63% of normal. As of June 1, all but one snow measurement site in the basin are snow-free, which is fairly typical for this time of year. Irish Taylor SNOTEL still has snowpack on June 1. This winter, SNOTEL sites peaked around 85% to 100% of normal peak snowpack.

PRECIPITATION

May precipitation was 54% of average. Precipitation since the beginning of the water year (October 1 - June 1) has been 80% of average.

RESERVOIR

As of June 1, storage at major reservoirs in the basin ranges from 32% of average at Ochoco Reservoir to 118% of average at Crane Prairie Reservoir.

STREAMFLOW FORECAST

The June through September streamflow forecasts in the basin range from 1% to 82% of average. Overall, forecasts decreased slightly from last month's report. Water managers in the basin should prepare for significantly reduced water supplies in the coming summer.

Upper Deschutes And Crooked Basins Summary for June 1, 2021

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts June 1, 2021	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						30-Year Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Deschutes R bl Snow Ck	JUN-JUL	6.5	9.0	10.7	62%	12.4	14.9	17.2
	JUN-SEP	15.9	21	24	60%	27	32	40
Crane Prairie Reservoir Inflow ²	JUN-JUL	12.9	16.8	19.5	65%	22	26	30
	JUN-SEP	27	35	40	65%	46	53	62
Crescent Lake Inflow ²	JUN-JUL	0.31	0.94	1.57	26%	2.4	3.8	6.1
	JUN-SEP	0.14	0.86	1.70	20%	2.8	5.0	8.4
Little Deschutes R nr La Pine ²	JUN-JUL	1.71	4.0	6.0	27%	8.5	12.9	22
	JUN-SEP	1.82	4.4	6.8	25%	9.8	15.0	27
Deschutes R at Benham Falls ²	JUN-JUL	106	119	127	78%	136	149	163
	JUN-SEP	230	255	265	80%	280	300	330
Whychus Ck nr Sisters	JUN-JUL	13.5	16.3	18.2	83%	20	23	22
	JUN-SEP	22	25	28	82%	30	34	34
Prineville Reservoir Inflow ²	JUN-JUL	0.00	0.00	0.23	3%	1.21	4.0	8.3
	JUN-SEP	0.00	0.00	0.10	1%	0.99	4.0	8.1
Ochoco Reservoir Inflow ²	JUN-JUL	0.00	0.00	0.21	8%	0.75	2.1	2.7
	JUN-SEP	0.00	0.00	0.05	2%	0.39	1.49	2.2

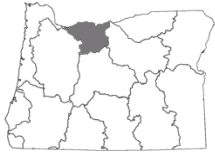
* 90%, 70%, 50%, 30% & 10% exceedance probabilities are the chance that observed streamflow volume will exceed the forecasted volume 2) Forecasts are for unimpaired flows. Actual flow will be dependent on management of upstream reservoirs and diversions

Reservoir Storage	Current (KAF)	Last Year (KAF)	Average (KAF)	% of Average	Useable Capacity (KAF)
Crane Prairie	47.9	47.0	42.8	112%	55.3
Crescent Lake	24.5	47.2	54.4	45%	86.9
Ochoco	9.7	21.9	34.6	28%	44.2
Prineville	80.4	101.4	140.5	57%	148.6
Wickiup	66.6	103.3	159.7	42%	200.0

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Little Deschutes Basin	4	60%	55%
Upper Crooked Basin	2		
Upper Deschutes Basin	10	47%	35%
Beaver - South Fork Basin	1		

Upper Deschutes And Crooked Basins Summary for June 1, 2021

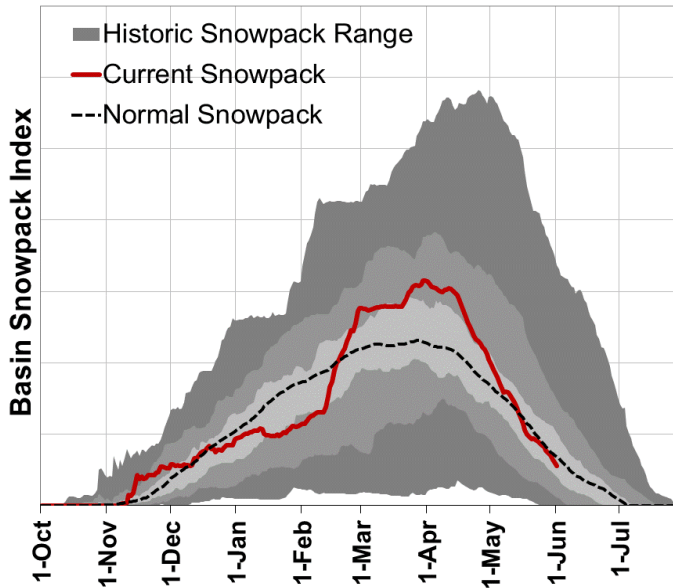
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Snow Mountain SNOTEL	6230	1-Jun	0	0.0	0.0	0.0	
Derr. SNOTEL	5850	1-Jun	0	0.0	0.0	0.0	
Three Creeks Meadow SNOTEL	5690	1-Jun	0	0.0	0.0	0.0	
Summit Lake SNOTEL	5610	1-Jun	33	18.5	16.9	30.5	61%
Irish Taylor SNOTEL	5540	1-Jun	37	15.4	8.6	26.7	58%
Ochoco Meadows SNOTEL	5430	1-Jun	0	0.0	0.0	0.0	
Cascade Summit SNOTEL	5100	1-Jun	0	0.0	0.0	0.2	0%
Roaring River SNOTEL	4950	1-Jun	0	0.0	0.0	0.0	
New Crescent Lake SNOTEL	4910	1-Jun	0	0.0	0.0	0.0	
Chemult Alternate SNOTEL	4850	1-Jun	0	0.0	0.0	0.0	
Hogg Pass SNOTEL	4790	1-Jun	0	0.0	0.0	0.0	
McKenzie SNOTEL	4770	1-Jun	0	0.0	0.0	15.2	0%
Salt Creek Falls SNOTEL	4220	1-Jun	0	0.0	0.0	0.0	
Santiam Jct. SNOTEL	3740	1-Jun	0	0.0	0.0	0.0	



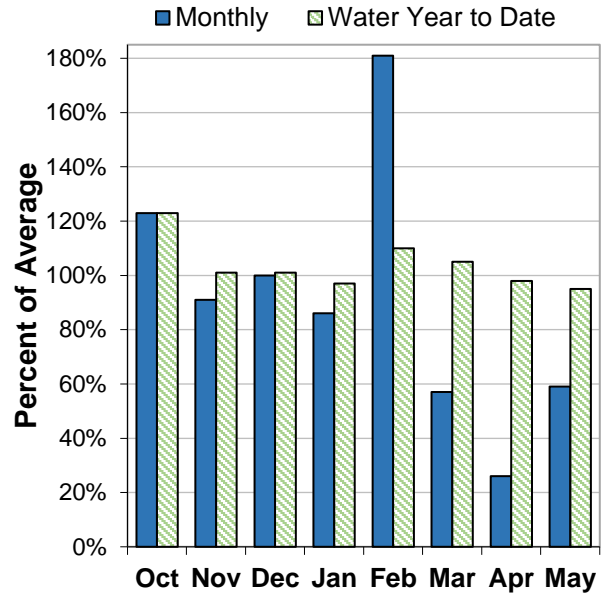
Hood, Sandy and Lower Deschutes Basins

June 1, 2021

Hood-Sandy-Lower Deschutes



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of June 1, the basin snowpack was 82% of normal. This is lower than last month when the snowpack was 97% of normal. As of June 1, all but two snow measurement sites in the basin are snow-free, which is fairly typical for this time of year. Mt Hood Test Site SNOTEL and Red Hill SNOTEL still have snowpack on June 1. This winter, SNOTEL sites peaked around 90% to 145% of normal peak snowpack.

PRECIPITATION

May precipitation was 59% of average. Precipitation since the beginning of the water year (October 1 - June 1) has been 95% of average.

STREAMFLOW FORECAST

The June through September streamflow forecasts in the basin range from 85% to 86% of average. Overall, forecasts decreased significantly from last month's report. Water managers in the basin should expect below normal streamflows this spring and summer.

Hood, Sandy And Lower Deschutes Basins Summary for June 1, 2021

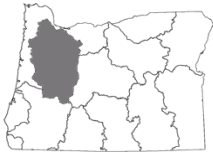
Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts June 1, 2021	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						30-Year Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
WF Hood R nr Dee	JUN-JUL	25	30	33	83%	36	41	40
	JUN-SEP	39	46	50	86%	54	60	58
Hood R at Tucker Bridge	JUN-JUL	53	61	66	83%	72	80	80
	JUN-SEP	83	94	102	85%	110	122	120
Sandy R nr Marmot	JUN-JUL	68	81	89	81%	98	110	110
	JUN-SEP	105	122	134	85%	146	163	157

* 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	3.5	2.4	6.5	54%	13.1

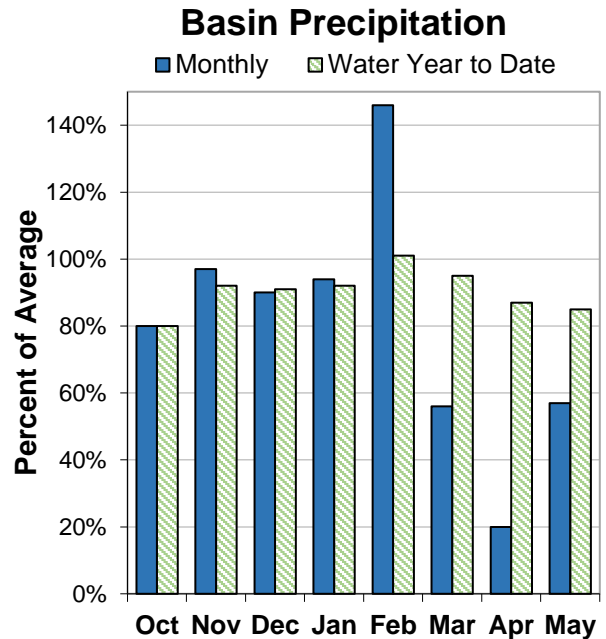
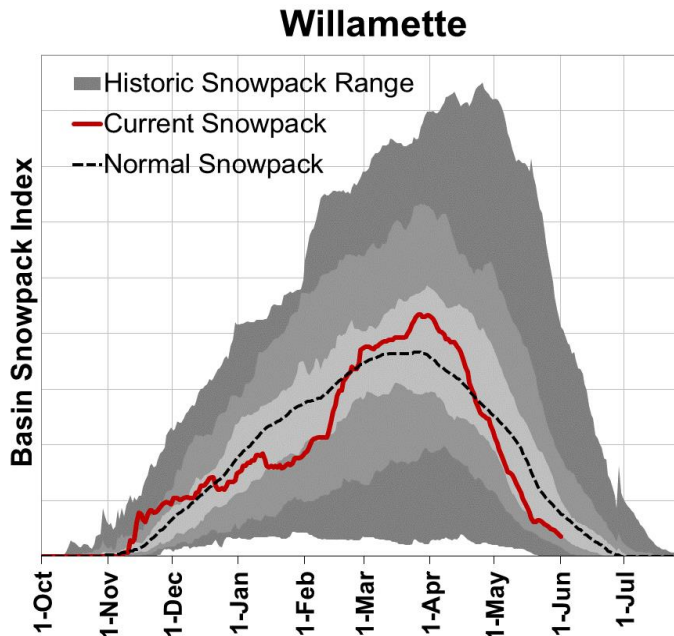
Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Lower Columbia - Sandy Basin	7	82%	49%
Lower Deschutes Basin	4	65%	39%
Middle Columbia - Hood Basin	5	82%	49%

Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Mt Hood Test Site SNOTEL	5370	1-Jun	66	31.2	18.7	48.1	65%
Red Hill SNOTEL	4410	1-Jun	34	19.3	11.2	13.5	143%
Surprise Lakes SNOTEL	4290	1-Jun	51	25.7	7.6	16.9	152%
Mud Ridge SNOTEL	4070	1-Jun	0	0.0	0.0	0.0	
Clear Lake SNOTEL	3810	1-Jun	0	0.0	0.0	0.0	
Blazed Alder SNOTEL	3650	1-Jun	0	0.0	0.0	0.0	
Clackamas Lake SNOTEL	3400	1-Jun	0	0.0	0.0	0.0	
Greenpoint SNOTEL	3310	1-Jun	0	0.0	0.0	0.0	
North Fork SNOTEL	3060	1-Jun	0	0.0	0.0	0.0	
South Fork Bull Run SNOTEL	2690	1-Jun	0	0.0	0.0	0.0	



Willamette Basin

June 1, 2021



Summary of Water Supply Conditions

SNOWPACK

As of June 1, the basin snowpack was 47% of normal. This is significantly lower than last month when the snowpack was 85% of normal. As of June 1, all but one snow measurement site in the basin are snow-free, which is fairly typical for this time of year. Summit Lake SNOTEL still has snowpack on June 1. This winter, SNOTEL sites peaked around 40% to 120% of normal peak snowpack.

PRECIPITATION

May precipitation was 57% of average. Precipitation since the beginning of the water year (October 1 - June 1) has been 85% of average.

RESERVOIR

As of June 1, storage at major reservoirs in the basin ranges from 87% of average at Fern Ridge Reservoir to 117% of average at Fall Creek Reservoir.

STREAMFLOW FORECAST

The June through September streamflow forecasts in the basin range from 51% to 86% of average. Overall, forecasts decreased significantly from last month's report. Water managers in the basin should expect well below normal to below normal streamflows this spring and summer.

Willamette Basin Summary for June 1, 2021

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts June 1, 2021	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→					30-Year Average (KAF)	
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)		10% (KAF)
Hills Creek Reservoir Inflow ^{1,2}	JUN-SEP	52	74	85	66%	95	117	129
Lookout Point Reservoir Inflow ^{1,2}	JUN-SEP	147	215	245	74%	275	345	330
McKenzie R bl Trail Bridge ¹	JUN-SEP	123	145	155	79%	165	187	195
Cougar Lake Inflow ^{1,2}	JUN-SEP	47	63	70	78%	77	93	90
Blue Lake Inflow ^{1,2}	JUN-SEP	0.59	10.5	15.0	76%	19.5	29	19.8
McKenzie R nr Vida ^{1,2}	JUN-SEP	330	410	445	78%	480	560	570
Detroit Lake Inflow ^{1,2}	JUN-SEP	113	173	200	77%	225	285	260
North Santiam R at Mehama ^{1,2}	JUN-SEP	130	225	260	78%	315	410	335
Green Peter Lake Inflow ^{1,2}	JUN-SEP	3.4	32	52	61%	72	116	85
Foster Lake Inflow ^{1,2}	JUN-SEP	42	72	85	52%	98	128	164
South Santiam R at Waterloo ^{1,2}	JUN-SEP	54	77	88	51%	99	122	171
Willamette R at Salem ^{1,2}	JUN-SEP	480	905	1100	67%	1290	1720	1640
Oak Grove Fk ab Powerplant	JUN-JUL	28	34	38	83%	42	48	46
	JUN-SEP	56	66	72	85%	78	88	85
Clackamas R ab Three Lynx	JUN-JUL	73	101	120	81%	139	167	148
	JUN-SEP	148	179	200	85%	220	250	235
Clackamas R at Estacada	JUN-JUL	88	137	170	83%	205	250	205
	JUN-SEP	179	235	270	86%	305	360	315

* 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 June 1, 2021

Reservoir Storage	Current (KAF)	Last Year (KAF)	Average (KAF)	% of Average	Useable Capacity (KAF)
Blue River	69.3	80.8	78.6	88%	82.3
Cottage Grove	18.0	27.8	30.3	59%	31.8
Cougar	125.0	167.3	165.0	76%	174.9
Detroit	375.3	402.9	423.4	89%	426.8
Dorena	44.6	70.5	70.4	63%	72.1
Fall Creek	76.2	108.8	115.5	66%	116.0
Fern Ridge	65.3	66.5	91.5	71%	97.3
Foster	45.4	45.4	46.3	98%	46.2
Green Peter	335.8	396.6	381.2	88%	402.8
Hills Creek	194.6	239.2	268.3	73%	279.2
Lookout Point	292.6	395.0	396.8	74%	433.2
Timothy Lake	63.3	61.9	62.3	102%	63.6
Henry Hagg Lake	50.1	51.6	52.5	95%	53.3

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Clackamas Basin	4		
McKenzie Basin	7	37%	21%
Middle Fork Willamette Basin	7	59%	44%
North Santiam Basin	4		
South Santiam Basin	3		

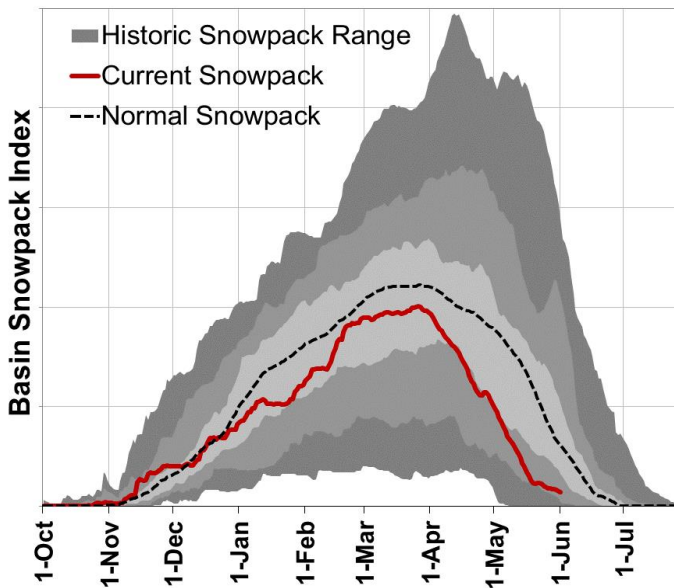
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Summit Lake SNOTEL	5610	1-Jun	33	18.5	16.9	30.5	61%
Irish Taylor SNOTEL	5540	1-Jun	37	15.4	8.6	26.7	58%
Cascade Summit SNOTEL	5100	1-Jun	0	0.0	0.0	0.2	0%
Roaring River SNOTEL	4950	1-Jun	0	0.0	0.0	0.0	
Holland Meadows SNOTEL	4930	1-Jun	0	0.0	0.0	0.0	
McKenzie SNOTEL	4770	1-Jun	0	0.0	0.0	15.2	0%
Bear Grass SNOTEL	4720	1-Jun	17	9.9	0.3		
Salt Creek Falls SNOTEL	4220	1-Jun	0	0.0	0.0	0.0	
Mud Ridge SNOTEL	4070	1-Jun	0	0.0	0.0	0.0	
Little Meadows SNOTEL	4020	1-Jun		0.0	0.0	0.0	
Clear Lake SNOTEL	3810	1-Jun	0	0.0	0.0	0.0	
Santiam Jct. SNOTEL	3740	1-Jun	0	0.0	0.0	0.0	
Daly Lake SNOTEL	3690	1-Jun	0	0.0	0.0	0.0	
Jump Off Joe SNOTEL	3520	1-Jun	0	0.0	0.0	0.0	
Peavine Ridge SNOTEL	3420	1-Jun	0	0.0	0.0	0.0	
Clackamas Lake SNOTEL	3400	1-Jun	0	0.0	0.0	0.0	
Smith Ridge SNOTEL	3270	1-Jun	0	0.0	0.0		
Saddle Mountain SNOTEL	3110	1-Jun	0	0.0	0.0		
Railroad Overpass SNOTEL	2680	1-Jun	0	0.0	0.0	0.0	
Marion Forks SNOTEL	2590	1-Jun	0	0.0	0.0	0.0	
Seine Creek SNOTEL	2060	1-Jun	0	0.0	0.0	0.0	
Miller Woods SNOTEL	420	1-Jun	0	0.0	0.0		



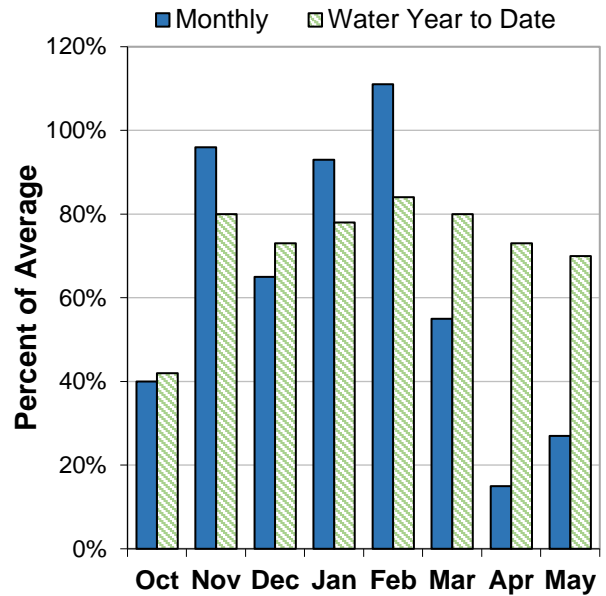
Rogue and Umpqua Basins

June 1, 2021

Rogue-Umpqua



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of June 1, the basin snowpack was 34% of normal. This is lower than last month when the snowpack was 57% of normal. As of June 1, most snow measurement sites in the basin are snow-free, which is typical for this time of year. This winter, SNOTEL sites peaked around 70% to 140% of normal peak snowpack.

PRECIPITATION

May precipitation was 27% of average. Precipitation since the beginning of the water year (October 1 - June 1) has been 70% of average.

RESERVOIR

Reservoir storage across the basin is currently below average. As of June 1, storage at major reservoirs in the basin ranges from 14% of average at Howard Prairie Reservoir to 85% of average at Applegate Reservoir.

STREAMFLOW FORECAST

The June through September streamflow forecasts in the basin range from 34% to 70% of average. Overall, forecasts decreased significantly from last month's report. Water managers in the basin should prepare for significantly reduced water supplies in the coming summer.

Rogue And Umpqua Basins Summary for June 1, 2021

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts June 1, 2021	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						30-Year Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
South Umpqua R at Tiller	JUN-JUL	1.20	2.2	11.0	28%	19.8	33	40
	JUN-SEP	1.47	8.1	17.0	35%	26	39	49
Cow Ck ab Galesville Reservoir	JUN-JUL	0.09	0.46	1.20	40%	1.76	2.7	3.0
	JUN-SEP	0.13	1.25	2.0	48%	2.8	3.9	4.2
South Umpqua R nr Brockway	JUN-JUL	0.72	8.1	21	29%	34	53	72
	JUN-SEP	2.7	16.2	31	34%	46	68	90
North Umpqua R at Winchester	JUN-JUL	63	98	122	52%	146	181	235
	JUN-SEP	153	193	220	63%	245	285	350
Lost Creek Lk Inflow ²	JUN-JUL	103	122	134	65%	147	166	205
	JUN-SEP	189	215	230	70%	245	270	330
Rogue R at Raygold ²	JUN-JUL	84	106	120	55%	134	156	220
	JUN-SEP	164	192	210	60%	230	255	350
Rogue R at Grants Pass ²	JUN-JUL	70	94	110	50%	127	151	220
	JUN-SEP	139	169	190	56%	210	240	340
Applegate Lake Inflow ²	JUN-JUL	1.40	7.0	11.0	39%	14.8	21	28
	JUN-SEP	3.4	10.2	15.0	44%	19.7	27	34
Sucker Ck bl LtI Grayback Ck nr Holland	JUN-JUL	3.3	6.0	7.9	58%	9.8	12.6	13.6
	JUN-SEP	5.6	8.8	10.9	62%	13.0	16.0	17.6
Illinois R nr Kerby	JUN-JUL	0.96	7.4	13.2	41%	19.2	28	32
	JUN-SEP	7.3	13.0	16.9	44%	21	27	38

* 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	46.3	36.7	64.9	71%	75.2
Emigrant Lake	13.4	25.6	35.5	38%	39.0
Fish Lake	3.8	4.9	6.2	61%	7.9
Fourmile Lake	4.1	5.9	10.7	39%	15.6
Howard Prairie	5.1	15.5	48.3	11%	62.1
Hyatt Prairie	3.5	6.7	13.2	26%	16.2
Lost Creek	224.5	283.1	302.6	74%	315.0

Rogue And Umpqua Basins Summary for June 1, 2021

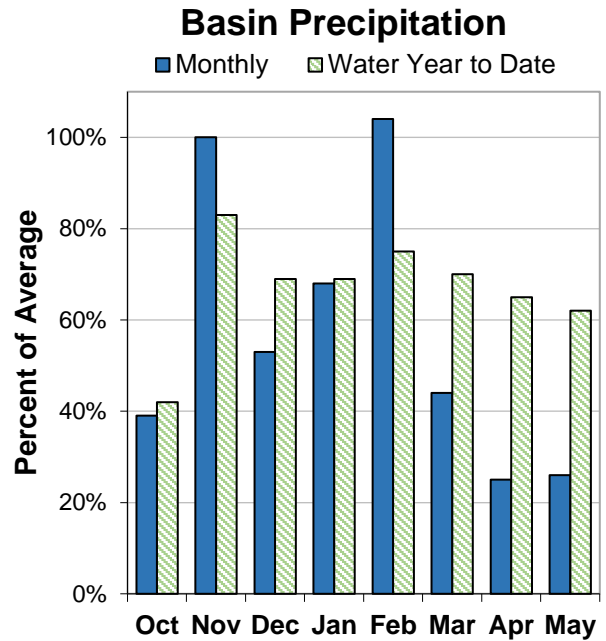
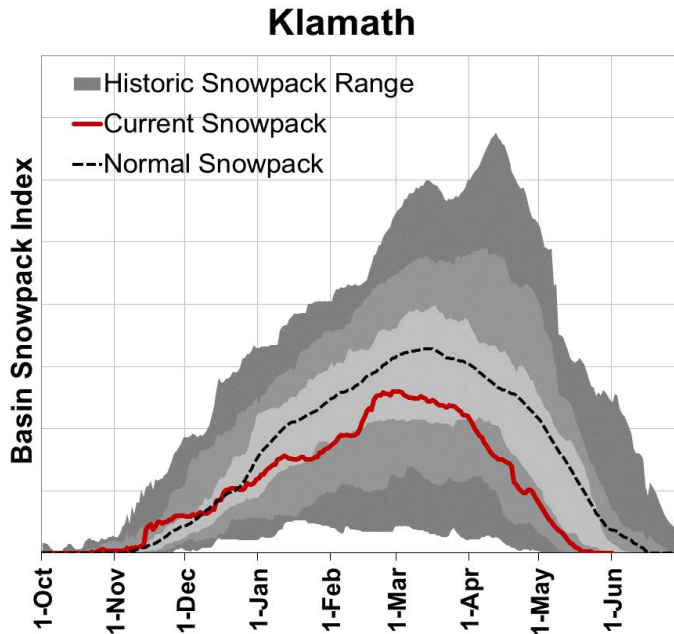
Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Applegate Basin	2	0%	0%
Middle Rogue Basin	1		
North Umpqua Basin	3	61%	55%
South Umpqua Basin	2		
Upper Rogue Basin	6	0%	0%

Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Big Red Mountain SNOTEL	6050	1-Jun	0	0.0	0.0	0.2	0%
Annie Springs SNOTEL	6010	1-Jun	0	0.0	0.0	24.0	0%
Fourmile Lake SNOTEL	5970	1-Jun	0	0.0	0.0	0.0	
Cold Springs Camp SNOTEL	5940	1-Jun	0	0.0	0.0	0.0	
Sevenmile Marsh SNOTEL	5700	1-Jun	0	0.0	0.0	0.0	
Summit Lake SNOTEL	5610	1-Jun	33	18.5	16.9	30.5	61%
Billie Creek Divide SNOTEL	5280	1-Jun	0	0.0	0.0	0.0	
Diamond Lake SNOTEL	5280	1-Jun	0	0.0	0.0	0.0	
Bigelow Camp SNOTEL	5130	1-Jun	0	0.0	0.0	0.0	
Fish Lk. SNOTEL	4660	1-Jun	0	0.0	0.0	0.0	
Howard Prairie SNOTEL	4580	1-Jun	0	0.0	0.0		
King Mountain SNOTEL	4340	1-Jun	0	0.0	0.0	0.0	
Tokenetee Airstrip SNOTEL	3240	1-Jun	0	0.0	0.0	0.0	



Klamath Basin

June 1, 2021



Summary of Water Supply Conditions

SNOWPACK

As of June 1, the basin snowpack was 0% of normal. This is significantly lower than last month when the basin snowpack was 45% of normal. This winter, SNOTEL sites peaked around 30% to 115% of normal peak snowpack.

PRECIPITATION

May precipitation was 26% of average. Precipitation since the beginning of the water year (October 1 - June 1) has been 62% of average.

RESERVOIR

Reservoir storage across the basin is currently well below average. As of June 1, storage at major reservoirs in the basin ranges from 53% of average at Gerber Reservoir to 85% of average at Upper Klamath Lake.

STREAMFLOW FORECAST

The June through September streamflow forecasts in the basin range from 1% to 64% of average. Overall, forecasts increased slightly from last month's report. Water managers in the basin should prepare for significantly reduced water supplies in the coming summer.

Klamath Basin Summary for June 1, 2021

Forecast Exceedance Probabilities for Risk Assessment *

Streamflow Forecasts June 1, 2021	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						30-Year Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Gerber Reservoir Inflow ²	JUN-JUL	0.00	0.00	0.00	0%	0.13	0.76	1.43
	JUN-SEP	0.00	0.00	0.01	1%	0.25	1.17	1.78
Sprague R nr Chiloquin	JUN-JUL	-6.70	3.8	10.9	22%	18.0	28	50
	JUN-SEP	1.48	15.4	25	34%	34	48	73
Williamson R bl Sprague R nr Chiloquin	JUN-JUL	25	37	45	50%	53	65	90
	JUN-SEP	68	84	95	64%	106	122	149
Upper Klamath Lake Inflow ^{1,2}	JUN-SEP	6.5	51	71	43%	92	136	165

* 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	97.3	199.2	247.4	39%	513.3
Gerber	20.6	62.4	65.0	32%	94.3
Upper Klamath Lake	298.0	396.7	445.2	67%	523.7

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Lost Basin	3		
Sprague Basin	5		
Upper Klamath Lake Basin	6	0%	0%
Williamson River Basin	4	0%	0%

Klamath Basin Summary for June 1, 2021

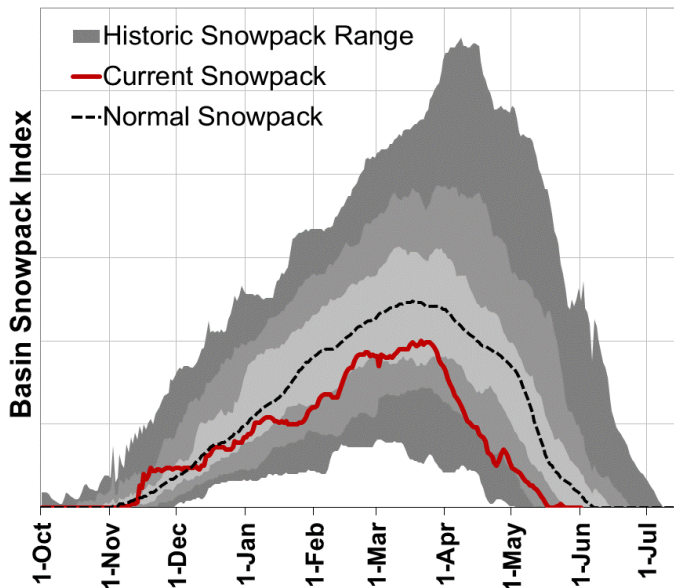
Basin Snowpack Measurement Sites	Elevation (ft)	Date Measured	Depth (in)	Snow Water Equivalent (in)			
				Current SWE	Last Yr SWE	Median	% of Median
Summer Rim SNOTEL	7080	1-Jun	0	0.0	0.0	0.0	
Swan Lake Mtn SNOTEL	6830	1-Jun	0	0.0	0.0		
Crazyman Flat SNOTEL	6180	1-Jun	0	0.1	0.0	0.0	
Annie Springs SNOTEL	6010	1-Jun	0	0.0	0.0	24.0	0%
Finley Corrals AM	6000	1-Jun	0	0.0	0.0		
Fourmile Lake SNOTEL	5970	1-Jun	0	0.0	0.0	0.0	
Cold Springs Camp SNOTEL	5940	1-Jun	0	0.0	0.0	0.0	
Strawberry SNOTEL	5770	1-Jun	0	0.0	0.0	0.0	
Cox Flat AM	5750	1-Jun	0	0.0	0.0		
Silver Creek SNOTEL	5740	1-Jun	0	0.0	0.0	0.0	
Quartz Mountain SNOTEL	5720	1-Jun	0	0.0	0.0	0.0	
Sevenmile Marsh SNOTEL	5700	1-Jun	0	0.0	0.0	0.0	
State Line SNOTEL	5680	1-Jun	0	0.0	0.0		
Sun Pass SNOTEL	5400	1-Jun	0	0.0	0.0		
Billie Creek Divide SNOTEL	5280	1-Jun	0	0.0	0.0	0.0	
Diamond Lake SNOTEL	5280	1-Jun	0	0.0	0.0	0.0	
Crowder Flat SNOTEL	5170	1-Jun	0	0.0	0.0	0.0	
Taylor Butte SNOTEL	5030	1-Jun	0	0.0	0.0	0.0	
Gerber Reservoir SNOTEL	4890	1-Jun	0	0.0	0.0	0.0	
Chemult Alternate SNOTEL	4850	1-Jun	0	0.0	0.0	0.0	
Fish Lk. SNOTEL	4660	1-Jun	0	0.0	0.0	0.0	
Howard Prairie SNOTEL	4580	1-Jun	0	0.0	0.0		



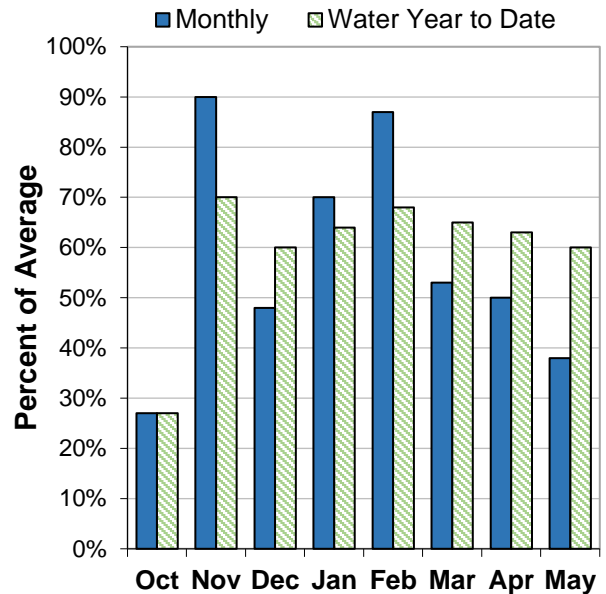
Lake County and Goose Lake Basins

June 1, 2021

Lake County-Goose Lake



Basin Precipitation



Summary of Water Supply Conditions

SNOWPACK

As of June 1, the basin snowpack was 0% of normal. This is lower than last month when the snowpack was 31% of normal. As of June 1, all snow measurement sites in the basin are snow-free, which is fairly typical for this time of year. SNOTEL sites peaked around 30% to 80% of normal peak snowpack this winter.

PRECIPITATION

May precipitation was 38% of average. Precipitation since the beginning of the water year (October 1 - June 1) has been 60% of average.

RESERVOIR

Reservoir storage across the basin is currently well below average. As of March 1, storage at Cottonwood Reservoir is at 15% of average.

STREAMFLOW FORECAST

The June through September streamflow forecasts in the basin range from 6% to 21% of average. Overall, forecasts decreased significantly from last month's report. Water managers in the basin should prepare for significantly reduced water supplies in the coming summer.

Lake County And Goose Lake Basins Summary for June 1, 2021

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts June 1, 2021	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						30-Year Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Twentymile Ck nr Adel	JUN-JUL	0.00	0.00	0.40	11%	1.18	2.1	3.8
	JUN-SEP	0.00	0.00	0.70	16%	1.73	3.2	4.3
Deep Ck ab Adel	JUN-JUL	0.00	0.00	1.10	8%	3.5	7.0	13.9
	JUN-SEP	0.00	0.16	2.0	13%	4.5	8.2	15.8
Honey Ck nr Plush	JUN-JUL	0.00	0.00	0.10	4%	0.47	1.12	2.6
	JUN-SEP	0.00	0.00	0.15	6%	0.54	1.22	2.7
Chewaucan R nr Paisley	JUN-JUL	0.00	0.00	2.2	12%	5.6	10.6	19.0
	JUN-SEP	0.00	1.21	4.8	21%	8.4	13.6	23

* 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	4.7	7.0	21%	9.3
Drews	3.8	41.0	45.5	8%	63.5

Snowpack Summary by Basin	Basin Snowpack % of Median		
	# of Sites	Current Yr	Last Yr
Goose Lake Basin	4	0%	5%
Lake Abert Basin	1		
Summer Lake Basin	2		
Warner Lakes Basin	1	0%	5%

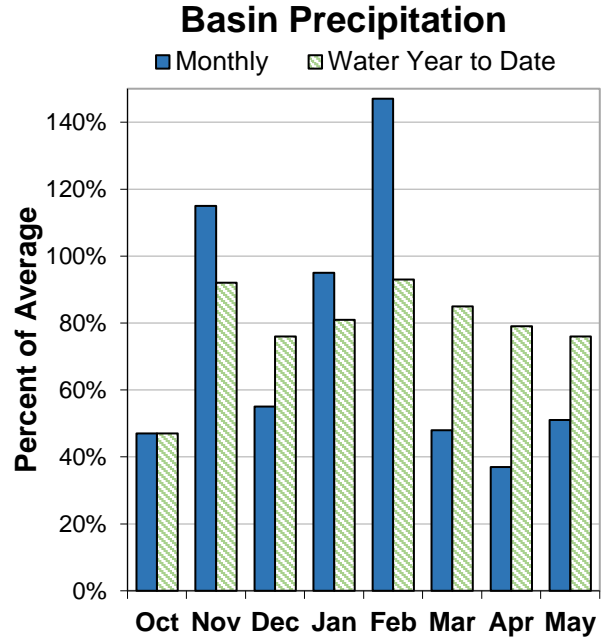
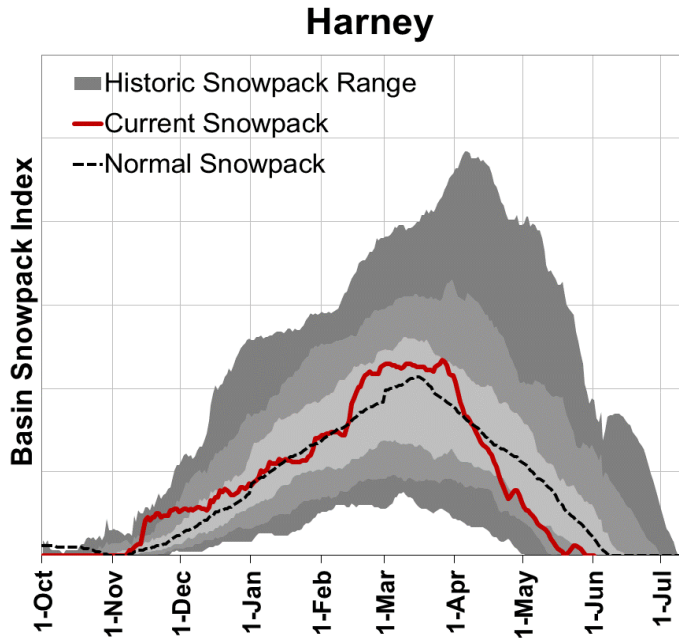
Lake County And Goose Lake Basins Summary for June 1, 2021

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-Jun	0	0.0	0.2	4.2	0%
Summer Rim SNOTEL	7080	1-Jun	0	0.0	0.0	0.0	
Cedar Pass SNOTEL	7030	1-Jun	0	0.0	0.0	0.0	
Patton Meadows AM	6800	1-Jun	0	0.0	0.0		
Sherman Valley AM	6640	1-Jun	0	0.0	0.0		
Bear Flat Meadow AM	6580	1-Jun	0	0.0	0.0		
Hart Mountain AM	6430	1-Jun	0	0.0	0.0		
Rogger Meadow AM	6360	1-Jun	0	0.0	0.0		
Adin Mtn SNOTEL	6190	1-Jun	0	0.0	0.0	0.0	
Crazyman Flat SNOTEL	6180	1-Jun	0	0.1	0.0	0.0	
Finley Corrals AM	6000	1-Jun	0	0.0	0.0		
Strawberry SNOTEL	5770	1-Jun	0	0.0	0.0	0.0	
Cox Flat AM	5750	1-Jun	0	0.0	0.0		
Silver Creek SNOTEL	5740	1-Jun	0	0.0	0.0	0.0	
State Line SNOTEL	5680	1-Jun	0	0.0	0.0		
Crowder Flat SNOTEL	5170	1-Jun	0	0.0	0.0	0.0	



Harney Basin

June 1, 2021



Summary of Water Supply Conditions

SNOWPACK

As of June 1, the basin snowpack was 0% of normal. This is significantly lower than last month when the snowpack was 52% of normal. As of June 1, all snow measurement site in the basin are snow-free. This winter, SNOTEL sites peaked around 55% to 105% of normal peak snowpack.

PRECIPITATION

May precipitation was 51% of average. Precipitation since the beginning of the water year (October 1 - June 1) has been 76% of average.

STREAMFLOW FORECAST

The June through September streamflow forecasts in the basin range from 12% to 45% of average. Overall, forecasts decreased significantly from last month's report. Water managers in the basin should prepare for significantly reduced water supplies in the coming summer.

Harney Basin Summary for June 1, 2021

Forecast Exceedance Probabilities for Risk Assessment *								
Streamflow Forecasts June 1, 2021	Forecast Period	←-----Drier-----Future Conditions-----Wetter-----→						30-Year Average (KAF)
		90% (KAF)	70% (KAF)	50% (KAF)	% Avg	30% (KAF)	10% (KAF)	
Silvies R nr Burns	JUN-JUL	0.00	0.00	1.30	10%	4.7	10.3	13.5
	JUN-SEP	0.00	0.00	1.90	12%	6.7	12.2	16.0
Donner Und Blitzen R nr Frenchglen	JUN-JUL	2.5	6.9	9.8	41%	12.8	17.1	24
	JUN-SEP	5.2	10.2	13.6	45%	17.0	22	30
Trout Ck nr Denio	JUN-JUL	0.00	0.00	0.30	14%	0.83	1.62	2.2
	JUN-SEP	0.00	0.00	0.50	19%	1.10	1.98	2.7

* 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	2	0%	37%
Donner und Blitzen River Basin	2	0%	37%
Silvies River Basin	4		
Upper Quinn Basin	4	0%	0%

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-Jun	0	0.0	0.0	1.5	0%
Trout Creek AM	7890	1-Jun	0	0.0	0.0		
Fish Creek SNOTEL	7660	1-Jun	0	0.0	3.4	9.1	0%
Govt Corrals AM	7400	1-Jun	0	0.0	0.0		
Silvies SNOTEL	6990	1-Jun	0	0.0	0.0	0.0	
Buckskin Lower SNOTEL	6915	1-Jun	0	0.0	0.0	0.0	
V Lake AM	6600	1-Jun	0	0.0	0.0		
Disaster Peak SNOTEL	6500	1-Jun	0	0.0	0.0	0.0	
Hart Mountain AM	6430	1-Jun	0	0.0	0.0		
Snow Mountain SNOTEL	6230	1-Jun	0	0.0	0.0	0.0	
Lamance Creek SNOTEL	6000	1-Jun	0	0.0	0.0	0.0	
Blue Mountain Spring SNOTEL	5870	1-Jun	0	0.0	0.0	0.0	
Call Meadows AM	5380	1-Jun	0	0.0	0.0		
Rock Springs SNOTEL	5290	1-Jun	0	0.0	0.0	0.0	
Starr Ridge SNOTEL	5250	1-Jun	0	0.0	0.0	0.0	
Lake Creek R.S. SNOTEL	5240	1-Jun	0	0.0	0.0	0.0	
Buckskin Lake AM	5190	1-Jun	0	0.0	0.0		

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 <https://www.nrcs.usda.gov/wps/portal/nrcs/main/or/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.

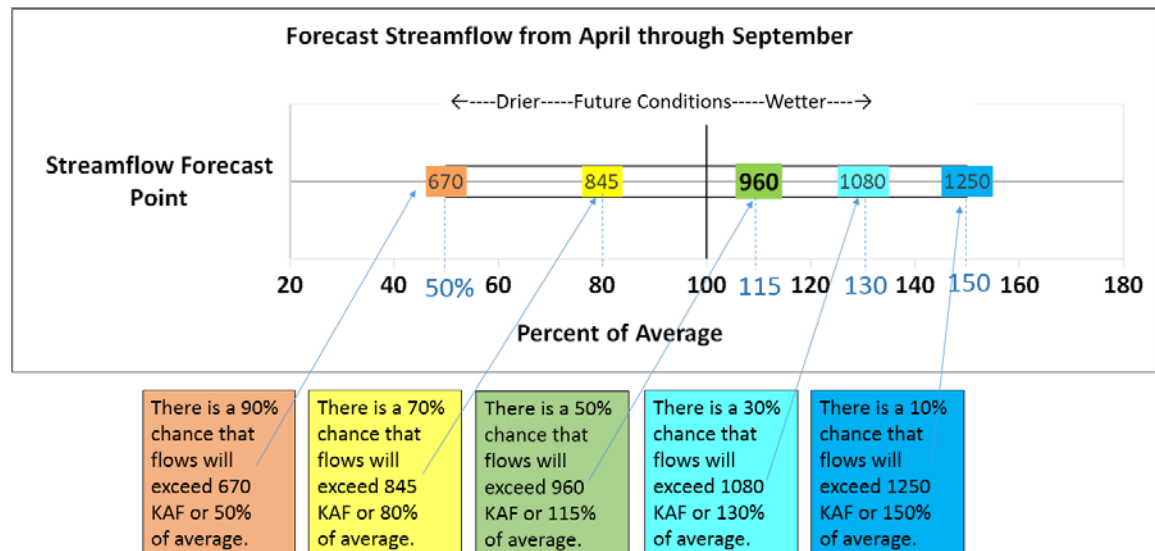
30-Year Average. The 30-year average streamflow for each forecast period is provided for comparison. The average is based on data from 1981-2010. The % AVG. column compares the 50% chance of exceedance forecast to the 30-year average streamflow; values above 100% denote when the 50% chance of exceedance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

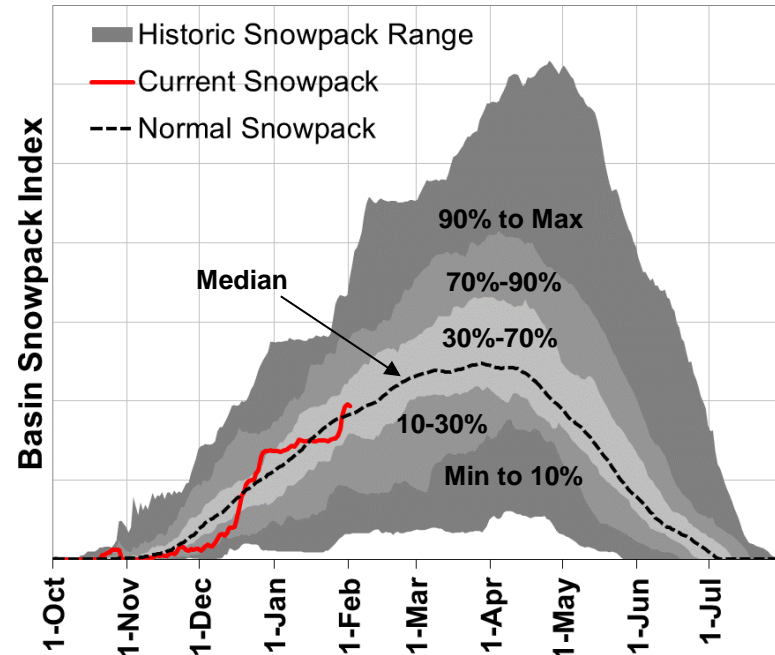
Interpreting Snowpack Plots

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



USDA Natural Resources Conservation Service
1201 NE Lloyd Suite 900
Portland, OR 97232-1274

Official Business



This publication may be found online at:
<https://www.nrcs.usda.gov/wps/portal/nrcs/main/or/snow/>

Issued by
Terry Cosby, Chief
Natural Resources Conservation
Service U.S. Department of Agriculture

Released by
Ron Alvarado, State Conservationist
Natural Resources Conservation Service
Portland, Oregon

IMPORTANT NOTICE

WE ARE NOW OFFERING AN EMAIL SUBSCRIPTION FOR THE OREGON BASIN OUTLOOK REPORT

If you would like to receive this document in PDF format via an email announcement, please sign up on our website to update your subscription preference.

You will receive an email each month as soon as the report is published with a link to the PDF document on our website. By choosing this paperless option, you will receive your water supply information much faster and also help us save natural resources by reducing our hardcopy printing.

If you would like to update your subscription, please sign up on our website by clicking the subscribe link on the left hand side of the webpage:

Snow Survey Homepage:

<https://www.nrcs.usda.gov/wps/portal/nrcs/main/or/snow/>