

Natural Resources Conservation Service



Oregon Water Supply Outlook Report

March 1, 2024



Meghan Ciupak, NRCS Hydrologist, takes a core sample at the Mary's Peak snow course located 15 miles west of Corvallis. Mary's Peak, measured since 1938, is the only active snow course in the Oregon Coastal Range. Snowpack at the site is 76% of median as of March 1st. Photo taken by Wesley Engel, NRCS Hydrologist (February 29, 2024)

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Conditions Overview

Summary

February, very much like January, was a month of climatic whiplash. Anomalously warm temperatures, in line with historical tendencies for a strong El Nino winter, spanned late January into early February and resulted in melting of snowpack at several SNOTEL stations in parts of the state. Towards the end of February, similar to the first half of January, a major storm event brought significant snow accumulation to much of the Northwest. This boosted snowpack levels across the state. However, some regions are still experiencing a snowpack deficit, in part resulting from a slow start to the snow accumulation season and a mid-winter heat wave that caused melting of snow at several SNOTEL stations. This diminished the capacity at some stations for more robust snowpack recovery with the recent storm.

Large storm events, like the ones toward the end of February and in the first half of January, have been essential to snowpack accumulation across the state in a winter that has otherwise trended fairly warm across much of the state so far. As we approach the historical timing for peak snow accumulation (end of March to early April), additional snow accumulation and freezing temperatures in the mountains to sustain snowpack will be essential to ensure adequate water supplies into summer.



*Note that basin conditions outlined in this report include data from stations within the SNOTEL and SNOLITE network, and/or cooperator weather stations.

Matthew Kritzer, Bureau of Reclamation, prepares a snow sample at Park H.Q. Snow Course in Crater Lake National Park. Snowpack at the site is 98% of median as of February 28. Photo taken by Chris Gebauer, NRCS Soil Scientist (February 28, 2024)

Snowpack

While statewide snowpack is 101% of normal, portions of the state are still experiencing a snowpack deficit. Notable deficits persist in portions of the Rogue and Klamath basins, the Umpqua and Santiam basins, and much of the northern Blue Mountains. The mid-winter melt event during the second-half of January and into February has hampered the ability for these regions to more robustly recover from snowpack deficits with the most recent storm and has contributed to snowpack variability across the state. However, in the central Blue Mountains spanning from the Ochoco to the Elkhorn Mountains and the Steens Mountain, snowpack has been fairly close or exceeding normal for much of the winter so far, which bodes well for summer water supply outlook there.



Basin snowpack (% of median) as of March 1. Points with no values either represents sites with no data available or no median (normal) established.

Precipitation

Precipitation during February was above to well-above normal across the state, with the greatest positive departures from the normal median period (1991-2020) in northwest Oregon, Wallowa Mountains, and southwestern Oregon. This has helped boost WYTD precipitation statewide, which as of March 1st is 106% of normal. Few regions are still experiencing slight deficits in WYTD precipitation, including the northern-most portions of the Blue Mountains, parts of the Klamath and Rogue Basins, in addition to Silver Creek and Lake Abert watersheds in southern Oregon.



Basin monthly precipitation (% of median) as of March 1



Basin water-year precipitation (% of median) as of March 1. Points with no values either represents sites with no data available or no median (normal) established.

Reservoirs

Volumetric storage for reservoirs across the state trends above normal in central and eastern Oregon and more variable in western and southern Oregon. Few reservoirs in the central Cascades are storing volumes well-below normal.

Reservoir storage values aren't necessarily reflective of water supply conditions. Reservoir operators control for a variety of factors when choosing to store or release water, including flooding, irrigation, fisheries, and other water needs. These management needs may impact storage values for a reservoir.



Reservoir storage (% of normal storage capacity) as of March 1

Streamflow

Volumetric streamflow across Oregon is generally near to above normal. Across much of southern, central and eastern Oregon, streamflow is mostly above normal with notable exceptions at Rhea Creek near Heppner and Crescent Lake Inflow where streamflow is moderate to well-below normal. In western Oregon, streamflow is generally near normal, with some slightly below normal flows in the northern Coastal Range.

Water supply forecasts (WSF) for March 1st have generally improved across the state since February 1st due to improved snowpack and precipitation conditions in most regions. WSFs in western Oregon are generally near normal and in central and eastern Oregon near to well-above normal. The summer outlook for stream-flow at Upper Klamath Lake and for the Chewaucan River near Paisly continues to be below normal.

Predictive skill for WSFs continues to improve for most points compared to February 1 as the normal timing for peak snow accumulation approaches. However, in basins that are rain-dominated (ex., much of the lower Rogue and Umpqua basins), skill may still be sufficiently low, meaning current conditions are a poor predictor of summer water supply. In this case, the 50%-exceedance value typically has a greater tendency toward the climatological normal, which may or may not be more reflective of March-1 conditions. Forecast product-users should bear this and any model uncertainty (quantitatively captured by exceedance intervals) in mind when interpreting WSFs for decision making.



View the map for February observed streamflow here.

Streamflow forecasts (% of normal) for the primary period as of March 1

Drought

As of March 5, nearly 10% of Oregon is in moderate drought (D1). Drought is primarily distributed from Wasco County down to Klamath and Lake counties, with additional D1-drought designation in Wallowa County.

At the beginning of the water year, 54% of the state was in some drought category (D1-D3), and 27% of the state in severe to extreme drought.



Soils

The NASA SPORT-LiS product for soil moisture (0-100 cm depth) indicates drier soil moisture profiles notably in parts of the Umatilla Basin and in parts of Klamath and Deschutes counties.

Soil moisture conditions are useful in assessing current drought and future drought potential. In addition, soil moisture is generally a good indicator in some regions of the potential efficiency of snowmelt runoff into streamflow in the spring. Drier soils tend to absorb more water from snowmelt than wetter soils, thus less melt is translated into streamflow (i.e. low efficiency).



1-Month Outlook

The Climate Prediction Center 1-month climatic outlook calls for most equal chances of above and below normal temperatures across Oregon. There are equal chances of below and above normal precipitation spanning from the northern Coastal Range to the northeastern corner of the state, and higher chances of above normal precipitation for the rest of the state.



https://www.cpc.ncep.noaa.gov/

Owyhee Basin Summary

SNOWPACK



View snowpack for individual sites by accessing the basin data report <u>here</u>.

As of March 1, the basin snowpack is 147% of median. This is an increase from February 1st, when the basin snowpack was 132% of median.

PRECIPITATION



► View precipitation for individual sites by accessing the basin data report <u>here</u>.

FoM = First of Month

February precipitation is above normal at 204% of median. Precipitation since the beginning of the water year (October 1 - March 1) is 130% of median.

Reservoir storage across the basin is above normal. As of March 1, storage at Lake Owyhee Reservoir is 171% of median and Wild Horse Reservoir is 186% of median.

Ownethers	Current	Last Year	Median	Capacity	Current %	Last Year %	Median %	Current %	Last Year %
Owynee	(KAF)	(KAF)	(KAF)	(KAF)	Capacity	Capacity	Capacity	Median	Median
Wild Horse Reservoir	58.7	29.3	31.6	71.5	82%	41%	44%	186%	93%
Lake Owyhee	519.7	137.2	304.5	715.0	73%	19%	43%	171%	45%
Basin Inde	x				74%	21%	43%	172%	50%
# of reservoir	S				2	2	2	2	2

STREAMFLOW FORECAST

The streamflow forecasts for the primary period in the basin are above normal and range from 196% to 221% of median.



Malheur Basin Summary

SNOWPACK



► View snowpack for individual sites by accessing the basin data report <u>here</u>.

As of March 1, the basin snowpack is 117% of median. On February 1 the basin snowpack was 107% of median.



FoM = First of Month

February precipitation is above normal at 125% of median. Precipitation since the beginning of the water year (October 1 - March 1) is 115% of median.

As of March 1, storage ranges from 104% at Bully Creek Reservoir to 247% of median at Warm Springs Reservoir.

Malheur		nt Last Year	Median	Capacity	Current %	Last Year %	Median %	Current %	Last Year %
) (KAF)	(KAF)	(KAF)	Capacity	Capacity	Capacity	Median	Median
Bully Creek	15	.6 6.4	14.9	23.7	66%	27%	63%	104%	43%
Beulah	38	.4 15.8	26.2	59.2	65%	27%	44%	146%	60%
Warm Springs	125	.4 14.0	50.8	169.6	74%	8%	30%	247%	28%
	Basin Index				71%	14%	36%	195%	39%
	# of reservoirs				3	3	3	3	3

STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin are above normal, with forecast ranging from 145% to 169% of median.



Grande Ronde, Burnt, Powder, Imnaha Basin Summary

SNOWPACK



View snowpack for individual sites by accessing the basin data report <u>here</u>.

As of March 1, the basin snowpack is 88% of median. Last month on February 1 the basin snowpack was 81% of median.

PRECIPITATION

Grande Ronde-Burnt-Powder-Imnaha Basin Precipitation



 View precipitation for individual sites by accessing the basin data report <u>here</u>.

FoM = First of Month

February precipitation is above normal at 127% of median. Precipitation since the beginning of the water year (October 1 - March 1) is 97% of median.

As of March 1, storage at major reservoirs in the basin ranges from 97% of median at Brownlee Reservoir to 153% of median at Wallowa Lake.

Grande Ronde-Burnt-Powder-Imnaha	Current (KAF)	Last Year (KAF)	Median (KAF)	Capacity (KAF)	Current % Capacity	Last Year % Capacity	Median % Capacity	Current % Median	Last Year % Median
Thief Valley	13.5	11.7	13.7	13.3	101%	88%	103%	98%	86%
Wallowa Lake	26.9	21.4	17.6	37.5	72%	57%	47%	153%	121%
Unity	18.6	13.0	12.6	25.5	73%	51%	49%	147%	103%
Phillips Lake	30.4	3.4	26.7	73.5	41%	5%	36%	114%	13%
Brownlee Reservoir	1078.2	899.5	1109.0	1420.0	76%	63%	78%	97%	81%
Wolf Creek	3.7	2.7	3.1	11.1	33%	24%	28%	118%	86%
Basin Inde	x				74%	60%	75%	99%	80%
# of reservoir	S				6	6	6	6	6

STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 81% to 122% of median.



Umatilla, Walla Walla, Willow Basin Summary

SNOWPACK



View snowpack for individual sites by accessing the basin data report <u>here</u>.

As of March 1, the basin snowpack is 86% of median. Last month on February 1 the basin snowpack was 73% of median.



PRECIPITATION

► View precipitation for individual sites by accessing the basin data report <u>here</u>.

FoM = First of Month

February precipitation is above normal at 110% of median. Precipitation since the beginning of the water year (October 1 - March 1) is 100% of median.

As of March 1, storage at major reservoirs in the basin ranges from 94% of median at Cold Springs Reservoir to 120% at McKay Reservoir.

Umatilla-Walla Walla-Willow		Last Year	Median	Capacity	Current %	Last Year %	Median %	Current %	Last Year %
	(KAF)	(KAF)	(KAF)	(KAF)	Capacity	Capacity	Capacity	Median	Median
Willow Creek	5.2	4.4	4.7	9.8	53%	45%	48%	111%	94%
Mckay	44.1	33.2	36.9	71.5	62%	46%	52%	120%	90%
Cold Springs	16.7	10.6	17.7	38.6	43%	27%	46%	94%	60%
Basin Index	C				55%	40%	49%	111%	81%
# of reservoirs	5				3	3	3	3	3

STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 90% to 138% of median.



John Day Basin Summary



View snowpack for individual sites by accessing the basin data report <u>here</u>.

As of March 1, the basin snowpack is 104% of median. Last month on February 1 the basin snowpack was 96% of median.





View precipitation for individual sites by accessing the basin data report <u>here</u>.

February precipitation is above normal at 143% of median. Precipitation since the beginning of the water year (October 1 - March 1) is 119% of median.

FoM = First of Month

STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin are above normal, with forecast points ranging from 108% to 119% of median.



Upper Deschutes, Crooked Basin Summary

SNOWPACK



► View snowpack for individual sites by accessing the basin data report here.

As of March 1, the basin snowpack is 103% of median. Last month on February 1 the basin snowpack was 84% of median.



PRECIPITATION

February precipitation is above normal at 140% of median. Precipitation since the beginning of the water year (October 1 - March 1) is 111% of median.

FoM = First of Month

As of March 1, storage at major reservoirs in the basin ranges from 24% of median at Crescent Lake to 147% of median at Ochoco.

Upper Deschutes-Crooked	Current	Last Year	Median	Capacity	Current %	Last Year %	Median %	Current %	Last Year %
opper Deschutes-crooked	(KAF)	(KAF)	(KAF)	(KAF)	Capacity	Capacity	Capacity	Median	Median
Crescent Lake	13.0	7.8	54.8	86.9	15%	9%	63%	24%	14%
Ochoco	34.0	5.4	23.1	44.2	77%	12%	52%	147%	24%
Prineville	110.9	19.5	96.2	148.6	75%	13%	65%	115%	20%
Crane Prairie	48.7	46.1	43.2	55.3	88%	83%	78%	113%	107%
Wickiup	136.4	115.8	185.5	200.0	68%	58%	93%	74%	62%
Basin Inde	ĸ				64%	36%	75%	85%	48%
# of reservoir	S				5	5	5	5	5

STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 101% to 134% of median.



Hood, Sandy, Lower Deschutes Basin Summary

SNOWPACK



► View snowpack for individual sites by accessing the basin data report <u>here</u>.

As of March 1, the basin snowpack is 96% of median. Last month on February 1 the basin snowpack was 79% of median.

PRECIPITATION

FoM = First of Month



 View precipitation for individual sites by accessing the basin data report <u>here</u>.

February precipitation is above normal at 112% of median. Precipitation since the beginning of the water year (October 1 - March 1) is 103% of median.

As of March 1, volumetric storage for Clear Lake is below normal at 64% of median.

Hood-Sandy-Lower Deschutes	Current (KAF)	Last Year (KAF)	Median (KAF)	Capacity (KAF)	Current % Capacity	Last Year % Capacity	Median % Capacity	Current % Median	Last Year % Median
Clear Lake	2.2	2.2	3.5	13.1	17%	17%	27%	64%	62%
Basin Index	[17%	17%	27%	64%	62%
# of reservoirs					1	1	1	1	1

STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 84% to 109% of median.



Willamette Basin Summary



► View snowpack for individual sites by accessing the basin data report <u>here</u>.

As of March 1, the basin snowpack is 101% of median. Last month on February the basin snowpack was 79% of median.



February precipitation is above normal at 125% of median. Precipitation since the beginning of the water year (October 1 - March 1) is 111% of median.

As of March 1, storage at major reservoirs in the basin ranges from 6% of median at Fall Creek to 120% of median at Lookout Point.

Willamette	Current	Last Year	Median	Capacity	Current %	Last Year %	Median %	Current %	Last Year %
winamette	(KAF)	(KAF)	(KAF)	(KAF)	Capacity	Capacity	Capacity	Median	Median
Fern Ridge	37.2	20.1	40.6	97.3	38%	21%	42%	92%	50%
Cottage Grove	10.8	5.0	11.2	31.8	34%	16%	35%	97%	45%
Henry Hagg Lake	45.9	42.4	46.6	53.3	86%	80%	87%	99%	91%
Dorena	25.9	16.3	24.4	72.1	36%	23%	34%	106%	67%
Lookout Point	241.2	117.4	201.8	433.2	56%	27%	47%	120%	58%
Cougar	31.9	38.1	80.7	174.9	18%	22%	46%	40%	47%
Foster	24.8	20.5	27.8	46.2	54%	44%	60%	89%	74%
Hills Creek	147.7	57.8	149.8	279.2	53%	21%	54%	99%	39%
Detroit	272.9	168.3	253.2	426.8	64%	39%	59%	108%	66%
Timothy Lake	60.3	56.4	54.6	63.6	95%	89%	86%	110%	103%
Blue River	38.4	17.2	33.2	82.3	47%	21%	40%	116%	52%
Fall Creek	2.8	1.5	44.0	116.0	2%	1%	38%	6%	3%
Green Peter	276.5	185.1	265.0	402.8	69%	46%	66%	104%	70%
Dexter	25.8	24.3	25.4					102%	96%
Basin Index	(53%	33%	54%	99%	61%
# of reservoirs	3				13	13	13	14	14

STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 90% to 107% of median.



Rogue, Umpqua Basin Summary

SNOWPACK Rogue-Umpqua Basin Snowpack Median Snowpack **Current Snowpack** Historic Range Basin Snowpack Index Oct Nov Dec lan Feb Mar Apr May Jun Jul Aug Sep

► View snowpack for individual sites by accessing the basin data report here.

As of March 1, the basin snowpack is 82% of median. Last month on February 1 the basin snowpack was 75% of median.



PRECIPITATION

FoM = First of Month

February precipitation is above normal at 129% of median. Precipitation since the beginning of the water year (October 1 - March 1) is 99% of median.

As of March 1, storage at major reservoirs in the basin ranges from 60% of median at Emigrant Lake to 104% of median at Applegate Reservoir.

Rogue-Umpqua		Current	Last Year	Median	Capacity	Current %	Last Year %	Median %	Current %	Last Year %
		(KAF)	(KAF)	(KAF)	(KAF)	Capacity	Capacity	Capacity	Median	Median
Fish Lake		4.5	3.3	4.4	7.9	57%	41%	56%	102%	74%
Emigrant Lake		15.7	8.6	26.0	39.0	40%	22%	67%	60%	33%
Applegate		25.9	13.2	24.8	75.2	34%	18%	33%	104%	53%
Lost Creek		206.1	144.0	224.1	315.0	65%	46%	71%	92%	64%
	E	asin Index				58%	39%	64%	90%	61%
	# c	f reservoirs				4	4	4	4	4

STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 97% to 113% of median.

			,	ROGUE-UMP Water Supply For March 1, 202	QUA recasts 24			
Forecast Point	Forecast Period		< Labels or	Forecast - Drier n chart represent vol	Exceedance P Future Conditior umes of water ex	robabilities ns Wetter xpressed in thousand acre	> ə-feet.	
South Umpqua R at Tiller	Apr-Sep		120	162	190 	220	260	
Cow Creek	Apr-Sep		8.3	13	16	19	24	
Above Galesville Reservoir, OR	Apr Son		210	310	375	440	540	
R nr Brockway	Дрг-Зер		585	750	860	970 1,1	30	
North Umpqua R at Winchester	Apr-Sep		P					
Lost Creek Lk Inflow	Apr-Sep			515	615	685 755	855	
Rogue R at Raygold	Apr-Sep			600	755	860 965	1,120	
Rogue R at Grants Pass	Apr-Sep			575	765	895 1,020	1,210	
Applegate Lake Inflow	Apr-Sep		55	88	110	132	165	
Sucker Ck nr Holland	Apr-Sep	21		39 	52	65		83
Illinois R nr Kerby	Apr-Sep	53		125	174	l	225	295
-	20	% 40%	60%	80% Percen	100% t of Median (19	120% 91-2020)	140%	160% 180

Klamath Basin Summary



View snowpack for individual sites by accessing the basin data report <u>here</u>.

As of March 1, the basin snowpack is 90% of median. Last month on February 1 the basin snowpack was 78% of median.



February precipitation is above normal at 141% of median. Precipitation since the beginning of the water year (October 1 - March 1) is 98% of median.

As of March 1, storage at major reservoirs in the basin ranges from 47% of median at Gerber Reservoir to 89% of median at Upper Klamath Lake.

Klamath	Curre (KAF	nt Last Yea) (KAF)	Median (KAF)	Capacity (KAF)	Current % Capacity	Last Year % Capacity	Median % Capacity	Current % Median	Last Year % Median
Howard Prairie	24	.0 11.) 35.4	62.1	39%	18%	57%	68%	31%
Fourmile Lake	4	.7 4.) 6.7	15.6	30%	25%	43%	70%	59%
Upper Klamath Lake	342	.3 361.	3 385.4	523.7	65%	69%	74%	89%	94%
Clear Lake	82	.7 56.	3 137.4	513.3	16%	11%	27%	60%	41%
Hyatt Prairie	8	.1 2.	11.1	16.2	50%	15%	69%	73%	22%
Gerber	21	.8 9.	46.0	94.3	23%	10%	49%	47%	21%
	Basin Index				39%	36%	51%	78%	72%
	# of reservoirs				6	6	6	6	6

STREAMFLOW FORECAST

The streamflow forecasts for the primary period in the basin range from 71% to 164% of median.



Lake County, Goose Lake Basin Summary

SNOWPACK



► View snowpack for individual sites by accessing the basin data report here.

As of March 1, the basin snowpack is 100% of median. Last month on February 1 the basin snowpack was 80% of median.



February precipitation is above normal at 140% of median. Precipitation since the beginning of the water year (October 1 - March 1) is 94% of median.

As of March 1, storage at major reservoirs in the basin ranges from 109% of median at Drews Reservoir to 125% of median at Cottonwood Reservoir.

	Lake County-Goose Lake	Current (KAF)	Last Year (KAF)	Median (KAF)	Capacity (KAF)	Current % Capacity	Last Year % Capacity	Median % Capacity	Current % Median	Last Year % Median
Cottonwood		4.8	1.8	3.8	9.3	51%	19%	41%	125%	47%
Drews		31.6	4.2	28.9	63.5	50%	7%	46%	109%	14%
	Basin Index					50%	8%	45%	111%	18%
	# of reservoirs					2	2	2	2	2

STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 79% to 148% of median.



Harney Basin Summary



► View snowpack for individual sites by accessing the basin data report <u>here</u>.

As of March 1, the basin snowpack is 140% of median. Last month on February 1 the basin snowpack was 126% of median.



February precipitation is above normal at 157% of median. Precipitation since the beginning of the water year (October 1 - March 1) is 122% of median.

STREAMFLOW FORECAST

The April through September streamflow forecasts in the basin range from 133% to 188% of median.



Additional Resources

Development and Interpretation of Water Supply

Forecasts

User Guide to Forecast Charts

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