



# Oregon

Kate Brown, Governor

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## MEMORANDUM

TO: Water Resources Commission

FROM: Ken Stahr, Hydrographics Section Manager *KSS*  
Keith Mills, State Engineer *KM*  
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SUBJECT: Agenda Item B, June 18, 2015  
Water Resources Commission Meeting

### Drought and Climate Conditions for Oregon

#### I. Introduction

Oregon is experiencing its fourth consecutive year of conditions that are much warmer and drier than normal. As of June 1, 2015, Governor Kate Brown has declared drought emergencies for 15 Oregon counties.

This staff report summarizes water conditions statewide and provides observations about long-term trends in precipitation, snowpack, and streamflow conditions. Featured during this agenda item are three experts who interact regularly with the Department to assess drought conditions across the state.

- Dr. David Rupp, Research Associate  
Oregon Climate Change Research Institute (OCCRI) at Oregon State University
- Mr. Andy Bryant, Service Hydrologist  
National Weather Service (NWS) of the National Oceanic and Atmospheric Administration (NOAA)
- Mr. H. Scott Oviatt, Snow Survey Supervisory Hydrologist  
Natural Resources Conservation Service (NRCS) of the U.S. Department of Agriculture.

#### II. Summary of Statewide Water Supply Conditions

Some areas of the state are encountering conditions that are warmer than observed in recorded history. The resulting streamflow forecasts for areas east of the cascades are expected to range from 10 to 50 percent of average for the summer season. The west side forecast is slightly better, ranging from 30 to 60 percent of average. With the lack of snowpack this past winter and spring, it is not likely that water conditions will improve much going into the summer. The National Weather Service is predicting above average temperatures for the months of June, July, and August.

**Snowpack** – The NRCS May 2015 water supply forecast describes the winter of 2015 as “one that will go down in Oregon’s history books as the year dominated by bare ground in the mountains.” Sixty percent of the long-term snowpack monitoring sites set new records for the lowest and earliest peak snowpack in over 30 years. The NRCS is also reporting that the 2015 statewide snowpack set new record lows, replacing the previous lows of 1977, 1981, 1992 and 2005.

As of May 27, all but one of the 81 SNOTEL sites in Oregon are snow-free and many sites melted out significantly earlier than normal. In a typical year, 15 of these sites would still have measurable snowpack on this date.

The low snowpack is primarily due to above-average temperatures. Oregon experienced its second warmest winter on record, resulting in much of the precipitation falling as rain, rather than snow.

**Precipitation** – As of June 1, total precipitation for the water year ranges from 96 to 85 percent of average, with higher percentages predominant in the eastern half of the state. However, since January, precipitation has been below average for much of the state, leading to dry spring conditions.

**Streamflow** – Summer streamflow forecasts for basins east of the Cascades range from 10 to 50 percent of average for the season. Forecasts for basins west of the Cascades range from 30 to 60 percent of average.

A number of streams throughout Oregon are breaking historic low flow records, many of which are measuring around 10 percent of normal. Some examples of low flow events that occurred during the month of May are noted below.

- In the Sandy Basin, the Salmon River measured near Government Camp was flowing at its lowest levels since the stream gage was established in 1911.
- The Hood River gage located at Tucker Bridge was at the lowest recorded since 1965.
- The Molalla River, measured near Canby, was at its lowest level since the gage was installed in 1928.
- The Umatilla River gage at Pendleton was at its lowest since 1905.

**Reservoir Storage** – The Rogue Basin reservoirs are at 86 percent of capacity. The Willamette Valley Project reservoirs are at 48 percent full. Deschutes Basin reservoirs range from 69 to 86 percent of capacity. In Eastern Oregon, reservoirs range from 88 percent for Unity Reservoir to 21 percent for Warm Springs. In the Umatilla Basin, McKay and Cold Springs reservoirs are at 69 and 49 percent respectively.

### III. Status of State Emergency Declarations

The Governor has authority to issue emergency declarations during periods of drought. A state drought declaration provides water right holders access to transfer and permitting tools via an expedited review process.

Drought declarations issued by the Governor are administered through a three-step process. First, a county commission will meet to determine whether a Governor's declaration is needed. Second, these recommendations are forwarded to the state's Water Availability Committee for technical review of water and weather conditions. The Oregon Drought Council is responsible for assessing the impact of drought conditions and making a final recommendation to the Governor. The Governor then reviews the request and recommendation, having sole authority to issue an Executive Order declaring a drought emergency.

Several state agencies are responsible for coordinating assessment and response actions during a Governor-declared drought emergency. The Oregon Water Resources Department works closely with the Oregon Department of Agriculture, the Oregon Office of Emergency Management, and other agencies on drought-related activities and will continue to do so throughout the 2015 water year.

As of June 1, the Governor has declared drought emergencies for the following counties: Baker, Crook, Deschutes, Grant, Harney, Jackson, Josephine, Klamath, Lake, Lane, Malheur, Morrow, Umatilla, Wasco, and Wheeler. Pending county requests will be evaluated at the next Water Availability Committee meeting, scheduled for June 11, 2015.

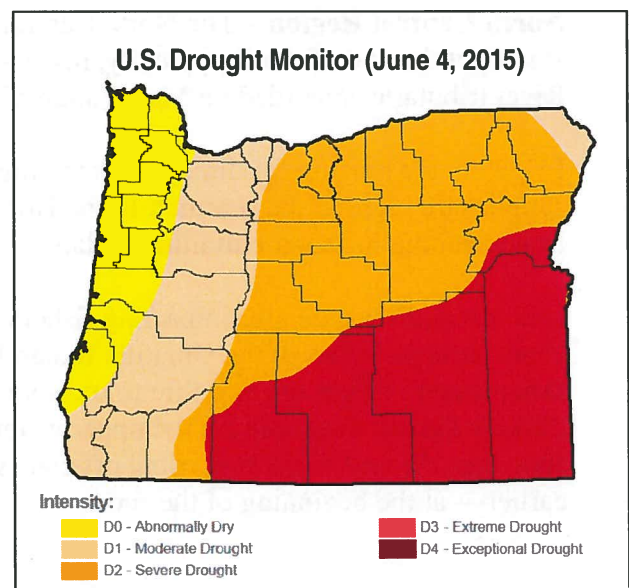
The Department has compiled state drought declarations issued since 1990, which are shown in Attachment 1. In the past 25 years, Oregon has only issued one statewide drought declaration covering all 36 counties, back in September 1992.

### IV. Status of Federal Drought Designations

The Drought Monitor for June 4, 2015 shows 34 percent of the state is experiencing extreme drought (D3), whereas at this time last year, only 9 percent was categorized as such.

The Drought Monitor, which focuses on broad scale conditions, is produced in partnership between the National Drought Mitigation Center at the University of Nebraska-Lincoln, the United States Department of Agriculture, and the National Oceanic and Atmospheric Administration.

When any portion of a county meets the D2 (Severe Drought) drought intensity value for eight consecutive weeks, a disaster designation is issued



for that county. A county that has a portion of its area in a drought intensity value of D3 (Extreme Drought) or higher at any time during the growing season is also designated as a disaster area. Federal secretarial drought designations are issued by the U.S. Department of Agriculture and address both primary and contiguous counties. As of June 1, ten Oregon counties are under a primary drought designation, with an additional twelve counties listed as contiguous.

The U.S. Bureau of Reclamation, U.S. Department of Agriculture's Natural Resources Conservation Service, and the U.S. Small Business Administration have all announced funding opportunities to help with drought response and mitigation activities.

## **V. Discussion: Monitoring Drought-Related Impacts**

Staff and others from around the state have begun documenting the effects of the 2015 drought. In many areas, regulation of water rights to benefit calls by senior users has occurred earlier than normal. Some additional observations are included below:

**East Region** – On June 1, Owyhee Reservoir was reported as 21 percent full. With the capacity to store two years' worth of water, this reservoir last filled in 2010. In normal years, irrigators are allocated 4 acre-feet of water per acre. In 2015, water allocations for project irrigators have been set at 1.5 acre-feet.

Regulation throughout the East Region is occurring approximately one month earlier than normal. On average years, the peak flow occurs in April or May. In 2015, the Silvies River peaked on February 8 with a high of 637 cubic feet per second (cfs). This is both early and low for the river. In 2012, by comparison, the peak flow occurred in late April at 861 cfs. Similarly, the Malheur River measured at Drewsey also peaked in early February. The early runoff, especially in areas without storage or other supplemental supplies, has made farming particularly difficult.

**North Central Region** – The North Central Region began regulation in the Umatilla River system at the end of April; typically, regulation begins in June. Streamflows in the John Day River tributaries recorded on May 1 approximated those normally seen in mid-to-late June.

Irrigators are bracing for drought-related impacts and are responding in hopes of stretching water supplies throughout the summer. In the Hood River Basin, Farmers Irrigation District has begun implementing its water curtailment plan.

Low streamflows are also impacting fishery management operations in the region. The Confederated Tribes of the Umatilla Indian Reservation (CTUIR) are working with the Oregon Department of Fish and Wildlife to transport adult spring Chinook salmon from Three-Mile Dam directly to spawning areas in the upper watershed. While fish transport usually occurs in early June near the end of the run, tribal officials say low water levels are forcing transport a month earlier— at the beginning of the run.

**Northwest Region** – The Willamette Valley Project reservoirs are well below average for this time of year, as noted earlier. Detroit Lake, one of the more popular boating lakes in the region, is well below its average capacity. Eight out of nine boat ramps are closed at the state recreation area due to low water levels.

The U.S. Army Corps of Engineers, which owns and operates the reservoirs, anticipates difficulties meeting some tributary and main-stem flow targets to support fish and wildlife needs in the Willamette system. The Corps is working closely with agency partners to identify minimum acceptable flow targets for each location and to determine release priorities. It is also anticipated that some of the late summer temperature operations on the North Santiam and Middle Fork Willamette systems will be affected by the lack of available storage.

Similar to other regions, flows are far below average and regulation is occurring about a month earlier than typical years.

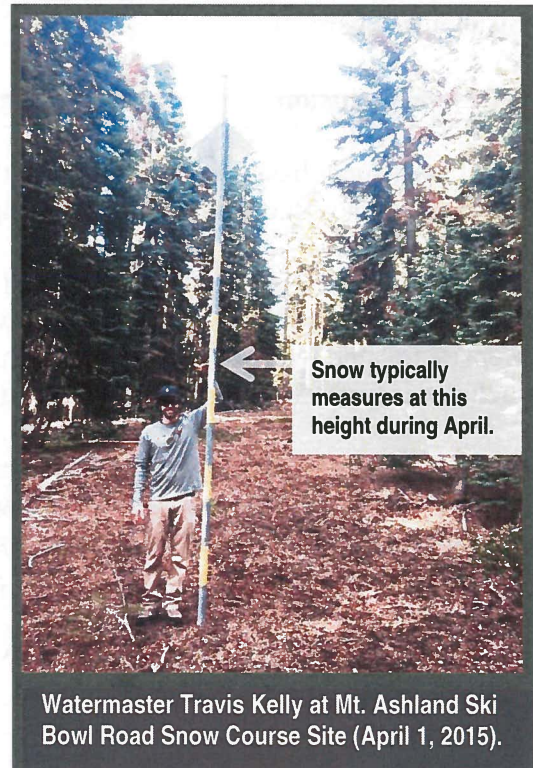
**Southwest Region** – In the Southwest region, the Chetco River historically flows at an average rate of 1,230 cfs during May. The lowest recorded average monthly flow for May was set in 1973 at 430 cfs. This May, provisional data show that flows in the Chetco River were about half of average, setting a new record low of 222 cfs.

Similarly, the Illinois River should see an average flow of 935 cfs during May. The all-time average low for May was measured in 1992 at 315 cfs. However, during May 2015, the Illinois River, with hot, dry terrain and no supplement from stored water releases, registered an average low of 220 cfs.

During a snow survey of Mount Ashland on April 1, no snow was measured for the first time since the site was established in 1966. The average depth for April 1 is 68 inches (see photo insert).

Low streamflows in the Rogue River basin have Oregon Department of Fish and Wildlife (ODFW) officials concerned. ODFW has requested additional stored water releases from Lost Creek Lake to help spring and fall runs of Chinook salmon migrate safely to upstream spawning grounds. The releases are also intended to avoid an outbreak of disease that strike Fall Chinook runs when water warms above 68° F. This additional release is similar to operations taken during previous drought years of 1992, 1994, and 2001.

**South Central Region** – The Little Deschutes River was flowing at less than thirty percent of its average rate during May 2015. Flows into Prineville Reservoir were less than ten percent of





average for this time of year. Most of the major project reservoirs in the basin, however, were able to fill to within at least seventy percent of capacity during the winter.

Oregon's recreational ski areas, in this region and in other parts of the state, also felt the effects of warm winter conditions during 2014-15. Mt. Bachelor, for example, closed its season on May 10, which marks the second earliest it has closed since 1977. That year, the resort closed April 30, 1977. On average, Mt. Bachelor receives 462 inches of snow, or 38½ feet, each ski season. In 2015, Mt. Bachelor received 212 inches of snow, or about 17½ feet, according to data from the ski resort.

The lack of snow affected U.S. Bank's Pole Pedal Paddle event, a multi-sport race held mid-May in Central Oregon. Organizers were forced to cancel the ski leg portion of the event, marking the first time the race has not included it since its inaugural event in 1977.

Water managers within the Klamath Project are also facing a potentially severe reduction in water deliveries. Water managers were notified in mid-May that the allocation will be reduced by about 35 percent.

## **VI. Conclusion**

The Department has been working with the Governor's office, stakeholders, and other state and federal agencies in order to assess the impacts of the drought and needed responses.

On May 22, 2015, the Governor released a public service announcement reminding Oregonians how they can play a part in using water wisely. The Department maintains a "Drought Watch" website to keep water users informed of current conditions and assistance tools. The website also includes informational resources to encourage wise water use measures across the state.

The Water Resources Department also has plans to collect additional surface water measurements this summer to capture low flow events at locations that are comparable to flow measurements taken during past droughts. The Department will partner with the U.S. Geological Survey on these activities.

Agencies will continue to work closely with the Governor's Office to ensure a coordinated drought response across the state.

Attachment 1: Statewide Map of County Declarations (1990 – 2015)

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**Attachment 1: Statewide Map of County Declarations (1990 – 2015)**

