



# Oregon

Kate Brown, Governor

## Water Resources Department

725 Summer St NE, Suite A

Salem, OR 97301

(503) 986-0900

Fax (503) 986-0904

### MEMORANDUM

TO: Water Resources Commission

FROM: Brenda Bateman, Technical Services Division Administrator  
Kenneth Stahr, Surface Water Hydrology Manager  
Julia Ostapiej, 2018 Drought Impacts Intern

SUBJECT: Agenda Item M, November 16, 2018  
Water Resources Commission Meeting

#### **Drought Impacts 2018**

##### **I. Introduction**

During this informational item, Commission members will receive an update on the drought impacts project the Department conducted during 2018.

##### **II. Background – Need to Document Drought Impacts**

The State of Oregon has no single agency or organization responsible for recording the impact of drought. This makes it difficult to compare the severity of drought from year-to-year. It also makes it difficult to identify where resources are needed to better prepare for drought conditions.

The Drought Readiness Council, 2015 Drought Task Force, and Recommended Action 5.5A in the 2017 Integrated Water Resources Strategy (IWRS) have specifically called for documentation of drought impacts. As drought returned in 2018, and areas around the state experienced record-breaking conditions such as low streamflows, little precipitation, and high temperatures, the Department began an effort to collect information on drought impacts. As of the writing of this report, the Governor has declared drought in eleven Oregon counties in 2018.

##### **III. 2018 Project – Design and Implementation**

In June 2018, a Master's student from Oregon State University's School of Public Policy began an internship with the Department, in order to document the effects of drought, using interviews and an ArcGIS platform for story mapping.

Julia Ostapiej began by talking with Water Resources Department staff and Drought Readiness Council members to build a list of interviewees. The goal was to hear from a diverse group of water professionals, located across Oregon, in several different disciplines and roles. In a couple of instances, interviewees were difficult to reach or referred someone else who was more knowledgeable.

Julia conducted more than 30 interviews throughout the summer, asking interviewees to describe their experiences with this year's drought, what changes or challenges they observed, and how that compared with their memories or impressions of previous years. She also asked them to rate this year's drought, in the context of their professional capacity, on a scale of 0 to 4, with 4 being most severe.

This project was qualitative in nature and required quite a bit of work to analyze and organize results for posting online.

#### **IV. Findings**

Interviewees included 11 watermasters, six Oregon State University (OSU) extension agents, colleagues from four state agencies, four municipalities, four river outfitters, a botanist, an irrigation district, tribal staff, and the Drought Readiness Council.

The resulting narratives were wide-ranging and rich with description. In many cases, descriptions focused on the vocabulary often used at the Water Resources Department, emphasizing streamflow, temperature, snowpack, precipitation, groundwater recharge, soil moisture, supplemental water, stored water, acres in production, conservation, and curtailment.

Allowing interviewees to use their own words, however, resulted in new and interesting vocabulary, such as crop yield, alternative crops, hot wind, thick dust, wildfire, smoke, poor air quality, burn bans, harmful algal blooms, fishery closures, road closures, decline in wildlife and fish populations, and infestations of insects, pests, and weeds.

Many of the descriptions centered on record-breaking hydrological and meteorological conditions. They also had a strong element of "time," such as run-off occurring earlier, hot temperatures lasting longer, and Department regulation and distribution of water occurring four to eight weeks earlier than normal in many areas. Several watermasters noted that not only did their water distribution duties begin sooner than normal in 2018, but many more water users were regulated off, going back to older priority dates. During 2018, some watermasters even regulated streams that they normally do not regulate at all.

The final project is available on-line, at:

<https://geo.maps.arcgis.com/apps/MapSeries/index.html?appid=b73cfd610aad4a0482971ea321653648>.

#### **V. Lessons Learned**

Julia worked 25 hours a week for 11 weeks on this project. Other groups around the United States developed similar drought documentation projects during 2018, although most took the approach of crowd-sourcing the inputs, allowing the public to post their own stories. The Department took a more hands-on approach, curating stories by transcribing interviews, reviewing and spell-checking entries before posting publicly.



In the coming months, it will be informative to compare notes with other organizations, in terms of the diversity of perspectives reflected in the final product, quality of narratives, and time spent producing the story maps.

The story map format was created by the Department's GIS team specifically to capture stories around the 2018 drought. The software used in this project is flexible by design and is well suited to be used in subsequent years. The data can be stored and retrieved to provide future analysis and evaluation of drought-related impacts.

We are interested in receiving feedback from the Water Resources Commission and other readers:

- (1) What worked well in this project?
- (2) What would you suggest doing differently?
- (3) Is this type of documentation and format informative and useful?

## **VI. Conclusion**

This project confirmed that effects of drought are wide-ranging across water uses and experiences. The need to document drought impacts is not a one-time occurrence. As forecasters have begun to describe drought as the "new normal" in Oregon, we expect that vocabulary and descriptions about drought conditions will continue to evolve as well.

Brenda Bateman  
(503) 986-0879

Ken Stahr  
(503) 986-0838

