



MEMORANDUM

TO: Water Resources Commission

FROM: Justin Iverson, Groundwater Section Manager
Brenda Bateman, Technical Services Division Administrator

SUBJECT: Agenda Item B, October 13, 2016
Water Resources Commission Meeting

Overview of Groundwater Management in Oregon

I. Introduction

Since 2012, the Department and Commission have highlighted the need for additional groundwater data to inform management decisions. Greater public awareness and interest in groundwater is a welcome development, and presents a good opportunity for the Commission and Department to discuss this important topic. This report provides a high-level overview of Oregon's groundwater policy, management issues, current work focus, and future challenges and opportunities. This is an informational report.

II. Background

Groundwater occurs almost everywhere beneath the land surface. Because of its connection to surface water, it is a major contributing source of water for many surface water features in Oregon. More than half of the state's population is directly dependent on groundwater for drinking, industrial, or irrigation water. The remainder may rely on groundwater as a backup supply to surface water sources.

With surface water supplies fully appropriated in most parts of the state during the months when the need to use water is greatest, many new potential users are seeking groundwater as their water source. Balancing the need for new uses with the responsibility to protect existing uses and maintain reasonably stable groundwater levels is a challenging task.

III. Policy and Legal Framework for Groundwater Management

The mission of the Water Resources Department is to practice and promote responsible water management through directly addressing Oregon's water supply needs and to restore and protect streamflows and watersheds in a manner that protects the long-term sustainability of Oregon's ecosystems, economy, and quality of life.

The Groundwater Act of 1955 (ORS 537.505 to 537.795 and ORS 537.992) established the authority for groundwater management and monitoring statewide to ensure the preservation of the public welfare, safety, and health. The Legislative Assembly recognized, declared and found that the right to reasonable control of all water within the state from all sources of water supply belongs to the public. The Act directs the State to determine rights to the use of public

groundwater and to manage groundwater in conjunction with surface water within the prior appropriation system, recognizing the hydraulic connection between the two water sources.

The Groundwater Act also directs the State to determine the extent, capacity, quality, and other characteristics of its groundwater bodies, which are used to inform resource management decisions. Other important aspects of the State's groundwater management policy provide that rights to use groundwater be protected, reasonably stable groundwater levels be determined and maintained, and groundwater overdraft be prevented.

In addition to the Groundwater Act, the Commission has adopted numerous administrative rules to further guide the Department's responsibilities and functions related to groundwater management. Some of these Chapter 690 rules include:

- Groundwater Interference with Surface Water (Division 9);
- Appropriation and Use of Groundwater (Division 10);
- Exempt Groundwater Use Recording Requirements (Division 190);
- Water Supply Well Construction and Maintenance (Division 200);
- Licensing (Division 205);
- Well Construction Standards (Division 210);
- Maintenance, Repair and Deepening of Water Supply Wells (Division 215); and
- Abandonment of Wells (Division 220)

In addition to statutes and rules, the Commission adopted Oregon's first Integrated Water Resources Strategy (IWRS) in 2012 to understand and meet Oregon's water needs. The IWRS identifies groundwater as one of four cross-cutting issues of vital importance to Oregon's water future. The IWRS also acknowledges that significant work remains to characterize Oregon's groundwater resources and calls for additional groundwater investigations and improved water resources data collection in Recommended Actions 1A and 1B. The Department has acted on these and many other IWRS recommendations in the intervening years as has been discussed in past reports to the Commission.

III. The Importance of Data

Understanding the groundwater resource requires integration of geologic and hydrologic data from wells, streams, and springs, as well as broader field studies and climatic data. The Department uses a number of data sources, as available, to understand the groundwater resource including: geologic maps and subsurface maps, water-level data, pump and aquifer tests, well logs, and other technical information, as well as local, regional and basin reports and studies.

The Department uses subsurface data to define the characteristics of Oregon's groundwater resources in order to better manage them. The amount of subsurface data collection increased markedly in 1955 when well logs were required to be submitted for every well drilled in the state. Subsurface data collection has grown in scope and scale since that time, coincident with increasing groundwater development.

The Department collects groundwater data directly, uses data collected by other state and federal agencies (e.g., ODEQ, USGS), and requires data collection and reporting in conjunction with activities regulated under the Groundwater Act of 1955 (e.g., well construction and groundwater rights).

Water level measurements provide a means of monitoring aquifer response to groundwater development and to other factors such as climate variation. Water levels provide information about the amount of water stored in an aquifer and changes in storage over time. The Department maintains an observation well network throughout the state to track water level trends as a measure of groundwater in storage. This network ranges from wells equipped with dataloggers to wells with periodic manual measurements. The Department's strategy is to ensure adequate budget and staff to collect and analyze groundwater data acquired at these monitoring stations, to archive the data in a database, and to provide data for the public's use on the Department's web page. The Department works with the U.S. Geological Survey, U.S. Bureau of Reclamation, and other partners in collecting and sharing data from these wells. The Department and its partners have collected water level data from more than 1,250 wells across the state in the past year.

Basin-scale studies are also an important tool for the Department, providing the most in-depth analysis of the groundwater and surface water resources within an area. During these studies, the Department characterizes the surface and groundwater budgets, including groundwater recharge and discharge rates. These investigations help the Department make decisions about permitting and management of groundwater in the context of an entire basin.

IV. Current Status of the Groundwater Resource

Groundwater use across Oregon has been estimated by the USGS to be approximately 2.5 million acre-feet per year. Of this total approximately 90 percent is used for irrigation, five percent for municipal and community supply, three percent for domestic use, and the remaining two percent for other permitted and exempt uses including livestock, industrial, aquaculture, and other uses. There are approximately 25,000 wells with water rights and more than 250,000 wells producing water for all uses, including exempt uses such as domestic, stockwatering, and other relatively small uses. In recent years, most new water right applications seek to use groundwater. For example, about 90 percent of new water right applications in the current fiscal year have been for groundwater (53 of 59 applications since July 2016).

Attachment 1 presents a very broad overview of the condition of dynamic groundwater storage across the state expressed as a "groundwater vulnerability index". Groundwater level declines, indicating use of stored groundwater, have occurred in many areas of the state (orange shaded areas). Declines are generally associated with large-scale development of groundwater for irrigation or municipal uses. Decreasing recharge from precipitation also contributes to declines, especially during multi-year cycles of lower than average precipitation. Many areas of the state are not shown as declining (blue shaded areas). This is partly due to the lack of observation well data, however, most areas that are classified as having a low Groundwater Vulnerability Index have undergone relatively little groundwater development or appear to have sufficient recharge from precipitation to balance current withdrawals.

V. Groundwater Management Tools

There are a number of regulatory and administrative tools available to the Department to manage the use of groundwater. Regulatory tools include enforcing permit conditions or regulating junior users where there is substantial interference with a senior user. In addition, the State of Oregon has more than 20 groundwater administrative areas designated by the Commission to address water level declines. A map of these areas is included in Attachment 2. These

designations are intended to protect existing water rights by preventing excessive groundwater declines, restoring aquifer stability, and preserving aquifers with limited natural recharge for designated high public value uses. There are four types of administrative areas provided for in law including Critical Groundwater Areas (ORS 537.735), Groundwater Classified Areas (ORS 536.340), Groundwater Withdrawal Areas (ORS 536.410), and Serious Water Management Problem Areas (ORS 540.435).

In general, administrative areas exist where significant groundwater development for irrigation or domestic use has coincided with Columbia River Basalt Aquifers that have limited connection to sources of recharge. As groundwater development continues across the state, the Department may find other areas where use must be limited. Such limitations generally target specific aquifers or geologic formations.

Staff will provide an overview of groundwater management tools at the October meeting.

VI. Looking Ahead

Since the IWRS was published in 2012, the Department has highlighted the need for more resources to improve groundwater data collection and analysis. Since 2013, the Legislature has authorized increased funding and staff resources for groundwater data collection and studies, as well as for the repair and replacement of commingling wells.

With some of the resources provided by the Legislature, the Department began the Greater Harney Valley Groundwater Study, which will be ongoing through 2020. The Department also received funding to assist landowners with commingling wells in the Mosier area. In addition to the Greater Harney Valley and Mosier, the Department is also working with communities in the Fifteenmile Subbasin and the Walla Walla Subbasin to address groundwater declines.

All of these efforts are staff and resource intensive—not only involving continuing data collection and analysis, but also requiring significant staff time working with these communities to build understanding of the problem and developing solutions that can help address the declines and put groundwater uses on a more sustainable path for the long term.

The Department recognizes the value of developing strong communication tools to help the public, water users and others better understand groundwater management issues in Oregon. Toward that end, over the past year the Groundwater Section has been working on a “State of the Groundwater Report in Oregon.” The report is intended to provide a broad overview of policy, management issues, current work priorities and future challenges and opportunities. The report will communicate the Department’s current knowledge of groundwater systems in the state to a non-technical audience and is planned for completion ahead of the 2017 Legislative Assembly.

Through the Agency Request Budget for 2017-2019, the Commission and Department are seeking additional resources that will help with groundwater management needs. The proposals include the following:

1. Package 101 seeks funds and position authority for five positions and additional funding to allow the Department to conduct more than one basin study at a time. Based on available resources, the Department hopes to conduct future studies in the Umatilla

and its Walla Walla subbasin, as well as in the Hood, Sandy, Grande Ronde, and Powder Basins.

2. Package 103 provides additional resources for our well construction and compliance staff as well as establishes fees that will further help to protect against groundwater waste and contamination through proper well construction practices.
3. Package 105 requests funding that would support five additional regional assistant watermasters. This would increase the Department's capacity to ensure compliance in the field as well as give greater bandwidth for watermaster districts to continue to implement the Commission's water measurement strategy and address groundwater concerns.

We will know if some or all of these packages make it into the Governor's Recommended Budget when it is released in December.

VII. Conclusion

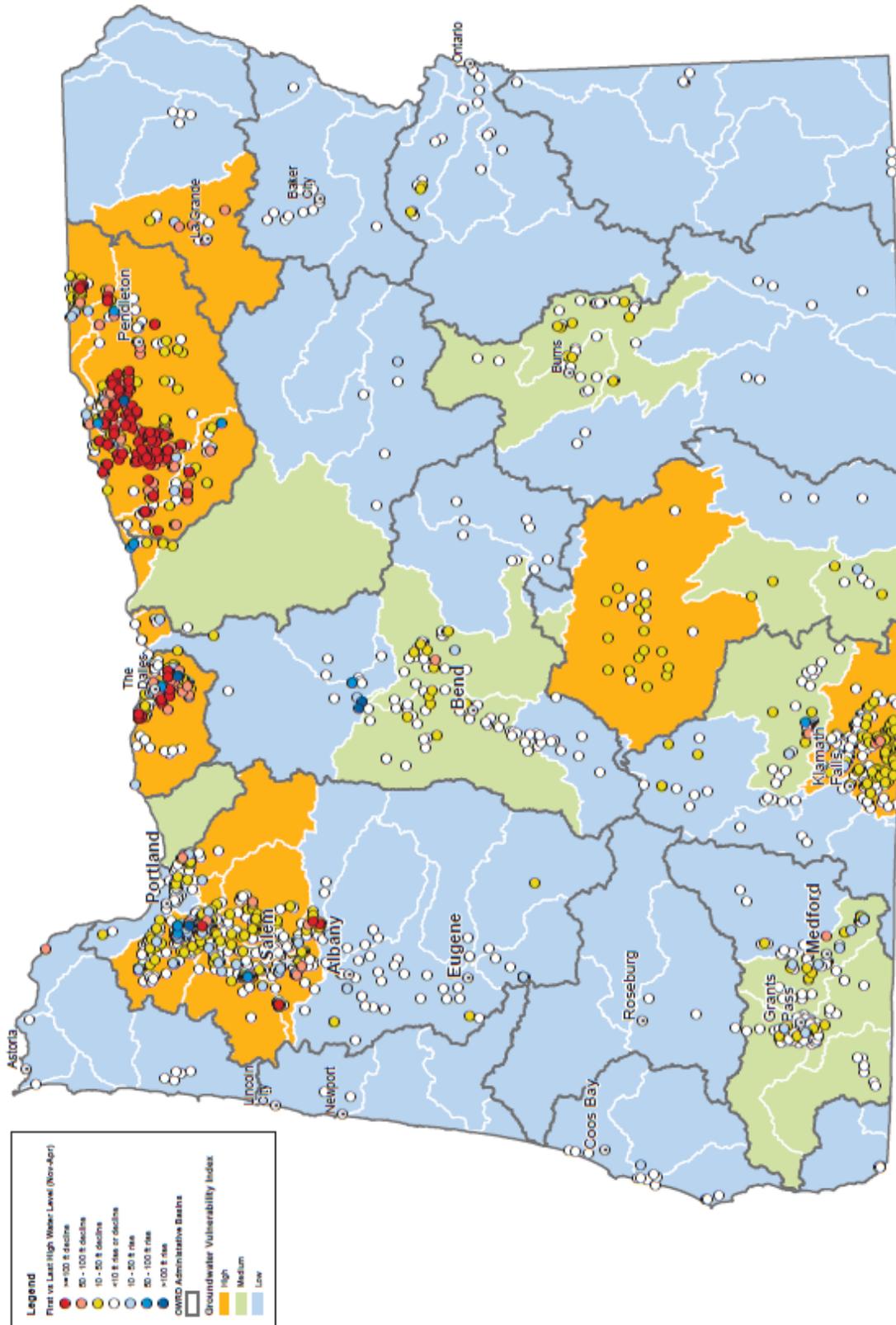
This report provides an overview of groundwater management issues in Oregon. Due to state budgeting and policy development timelines, the Commission and Department are not in the position to make new requests for the 2017 legislative session. However, it is appropriate for the Commission and staff to discuss longer term policy and budget objectives. Toward that end, at the October meeting staff will seek commissioner feedback on interest in developing a "long-term groundwater workplan" that identifies priority actions and objectives as well as potential timelines and costs associated with those timelines. The workplan would serve as a tool to help prioritize future activities and inform policy and budget discussions.

Attachments:

1. Groundwater Vulnerability Map
2. Groundwater Administrative Areas Map

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Attachment 1: Groundwater Vulnerability Map



Attachment 2 - Groundwater Administrative Areas Map

