



Bend, Culver, La Pine, Madras, Maupin
Metolius, Prineville, Redmond, Sisters

PROPOSED GROUNDWATER ALLOCATION RULES 9/28/2023

REQUEST

The current draft rules, specifically the definition of “Water is Available” under OAR 690-300-0010 (57), which includes “Reasonably Stable Water Levels” defined in OAR 690-008-0001 (9) are of great concern to Central Oregon Cities Organization (COCO). In particular, the one-size-fits-all criteria for determining “reasonably stable groundwater levels” (0.5 feet per year of decline and total decline of 25 feet) are not appropriate for the Upper Deschutes Basin Aquifer and will have a disproportionate impact on the basin’s municipal water providers. As currently written, the draft rules will result in a moratorium on issuance of new groundwater permits in the Upper Deschutes Basin.

COCO is requesting that the Commission support development of administrative rules that ensure the basin’s municipal water providers can meet land use, housing, and other legal responsibilities and that recognize the unique hydrogeologic framework of the Deschutes Aquifer.

SOLUTIONS

COCO urges the Commission to recognize the unique requirements placed on cities to plan for and provide water and to develop rules that incorporate the abundant data and reports that document the hydrogeologic framework of the Upper Deschutes Basin. COCO is providing the following rule revision concepts for the Commission’s consideration.

- (1) Specifically **adding** the following text to the draft rule definition of “Water is Available” in OAR 690-300-0010(57) to allow the basin’s cities to plan for and meet water supply obligations while further rulemaking discussions in a basin program are underway. The suggested time frame of a sunset is also consistent with the current “sunset” on the Deschutes Basin Groundwater Mitigation Rules. This would provide a “bridge” to allow continued municipal water supply planning and for additional rulemaking under a Deschutes Basin-specific process that will address a basin-specific definition of “Reasonably Stable Water Levels” in Division 8 and refinements to the mitigation program rules.

(x) Water is available for a municipal water use groundwater permit application submitted by a city, a franchisee thereof, or other entity that provides water to a city to appropriate groundwater within the Deschutes Groundwater Study Area and is processed under the Deschutes Basin Groundwater Mitigation Rules. This rule shall sunset on January 1, 2029.

- (2) In combination with (1) above, COCO urges the Commission to revise draft rule 698-008-001 (9)(d) regarding “Reasonably Stable Water Levels” to not bind future basin-specific Commission rulemaking outcomes. This provides basin stakeholders the flexibility needed to develop place-based solutions in the context of all the basin water planning efforts underway.

(d) The limits in part (a) of this definition may be superseded by limits defined in a basin program rule adopted pursuant to the Commission’s authority in ORS 536.300 and 536.310. However, the

maximum allowable rate of decline in the revised part (a)(A) may not exceed 3 feet per year, and the maximum allowable total decline in part (a)(B) may not exceed the smaller of 50 feet and 15% of the greatest known saturated thickness of the groundwater reservoir.

BACKGROUND

Groundwater is a major source of water supply for COCO's member cities. COCO members have a strong interest in this water source and take pride in being responsible stewards of the resource. COCO supports OWRD's efforts to manage and protect the groundwater resource in the Upper Deschutes Basin. However, OWRD's current draft Groundwater Allocation administrative rules fail to consider:

- Long-term planning needs and legal requirements placed on cities to plan for and provide water to meet land use objectives, to protect public health, safety, and welfare and to meet the Governor's affordable housing goals;
- The explosive population growth and demands for affordable housing in Central Oregon;
- The well documented hydrogeologic framework of the Upper Deschutes Basin; and
- More than 25 years of Upper Deschutes Basin planning and collaboration which has led to measurable improvements to streamflow, increased efficiency for cities and irrigation districts and a mitigation program to offset the impact on surface water from groundwater pumping.

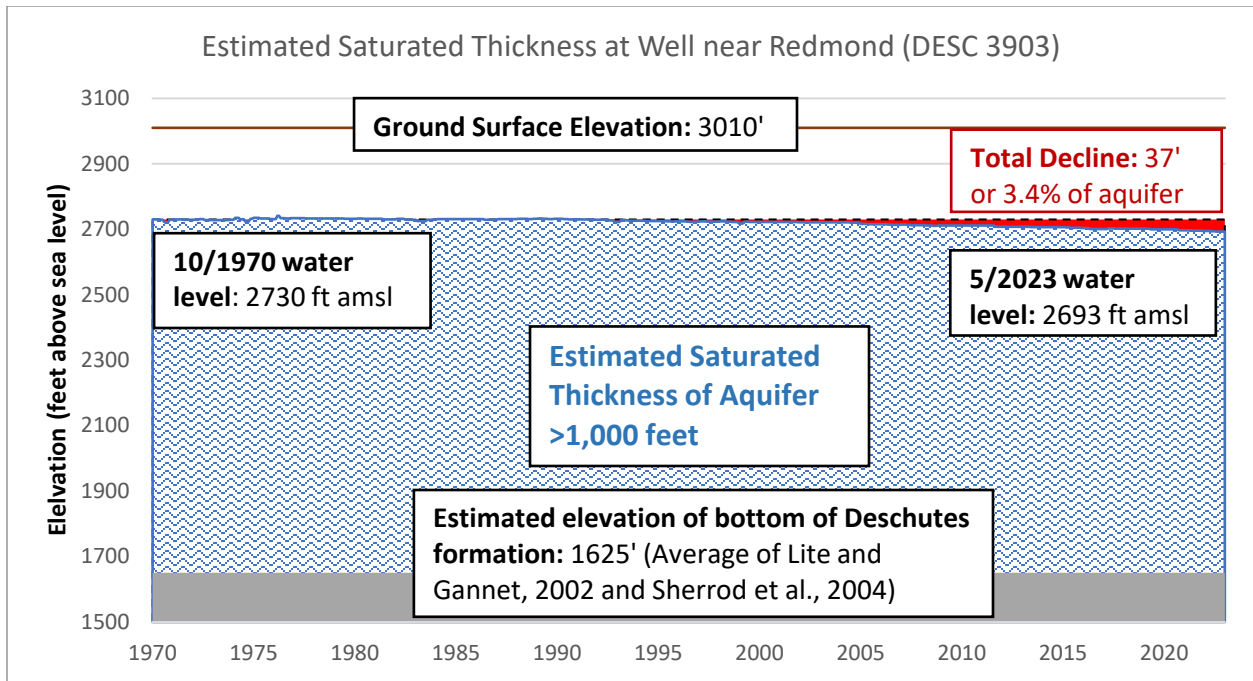
The draft rules also fail to consider the well documented attributes of the Upper Deschutes Basin, including:

Deschutes Basin Groundwater Mitigation Rules. The Deschutes Basin Groundwater Mitigation Rules, which have been in place since 2002, were developed to address impacts on surface water from groundwater pumping. These mitigation rules, which include a cap and a current sunset of 2029, provide a unique limitation on groundwater allocation that can be used by the Department for additional groundwater management if needed. COCO welcomes the opportunity to continue efforts to improve the mitigation program and associated rules.

The groundwater flow system is not over-appropriated in the Upper Deschutes Basin. The Upper Deschutes Basin receives over 4,000 cubic feet per second (cfs) of annual recharge. Groundwater pumping is equivalent to approximately 2 percent of the annual groundwater recharge (Gannett et al., 2017).

Precipitation drives the groundwater flow system in the Upper Deschutes Basin. Groundwater levels in wells near the Cascades closely reflect variability in annual precipitation. In wells more distant from the Cascades, the response of groundwater levels to precipitation is attenuated. Recent groundwater level trends seen at these wells are the result of an ongoing decrease in precipitation that is not without historical precedent. Precipitation data shows similar patterns that occurred in the 1930's, with similar effects on the groundwater system. An estimated 75 percent of groundwater declines were, and continue to be, caused by an extended period of lower precipitation that began in the early 1990s. While climate models predict a decline in snowpack because of climate change, they predict a small *increase* in precipitation. Due to the high permeability of the Deschutes Aquifer, a shift from snowmelt to rainfall will not have a significant impact on groundwater levels in areas distant from the Cascades.

The Deschutes aquifer is very thick. The central part of the Deschutes Aquifer has a saturated thickness of approximately 1,000 feet within a single geologic formation. In the Redmond area, observed declines of 37 feet over the entire period of record from well DESC 3903 amount to less than 3.5 percent of the saturated thickness of the aquifer. Moreover, using the ratio of contributing factors (aquifer stressors) from Gannett and Lite (2013), 29.5 feet of this decline is from reduced precipitation and irrigation district canal piping. The figure below shows groundwater level declines in the central part of the basin in the context of the estimated saturated thickness of the aquifer.



Imposing a moratorium on the issuance of new water rights to municipal water suppliers in the Upper Deschutes Basin does not achieve the Commission’s policy objectives. COCO understands that the Commission’s policy objective is to protect existing groundwater users and to manage the state’s groundwater resources in a sustainable fashion. However, given the hydrogeologic framework of the Upper Deschutes Basin described above, a moratorium will do little to help the Commission achieve its policy objectives and would have disproportionate consequences for municipal water suppliers’ ability to plan for and secure needed water supply.

We look forward to discussing COCO’s rule concepts with the Commission and OWRD staff.
Sincerely,

Michael Preedin, Mayor of Sisters, and Chair of Central Oregon Cities Organization

Cc: COCO Members

From: [LANE Mindy J * WRD](#)
To: [WRD Commissioners](#)
Subject: FW: Comment for Agenda item B
Date: Thursday, September 28, 2023 8:30:00 AM

From: Calla Hagle <callahagle@gmail.com>
Sent: Wednesday, September 27, 2023 8:05 PM
To: LANE Mindy J * WRD <Mindy.J.LANE@water.oregon.gov>
Subject: Comment for Agenda item B

You don't often get email from callahagle@gmail.com. [Learn why this is important](#)

Dear Commissioners,

I am unable to comment in person at your meeting in Burns but I would like to submit written support for improving and strengthening OWRD's groundwater allocation rules. OWRD's existing groundwater allocation rules are what got Harney Basin into the very tough spot we are in and those rules need to be fixed ASAP. The existing rules have caused significant harm to the Harney Basin, its people, and its environment. Many domestic wells have been impacted and will continue to be more and more impacted, even if pumping stopped today. The department's over-issuance of groundwater permits – to the tune of 110,000 acre-feet of year of pumping beyond recharge – has put us in a terrible spot. I support the department's efforts to overhaul the groundwater allocation rules to make them more science based and sustainable so that other parts of the state do not need to suffer as we are here.

Sincerely,
Calla Hagle
Harney County Resident, rural landowner and concerned citizen



Oregon Ground Water Association

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www.ogwa.org

September 26, 2023

Oregon Water Resources Commission
Oregon Water Resources Department
725 Summer St. N.E. Ste. A
Salem, Oregon 97301

RE: Comments on Proposed Groundwater Allocation Rules

Dear Chair Reeves, Members of the Commission:

On behalf of the Oregon Ground Water Association, I am providing comments previously submitted to the Oregon Water Resources Department as a member of the Rules Advisory Committee for the Groundwater Allocation Rulemaking, along with some additional supporting information.

Qualifications

I am a hydrogeologist with professional licenses in Oregon as a Registered Geologist (G-1384) and Certified Water Rights Examiner (432CWRE). I live in Mulino, Oregon, and have been providing water right consulting services primarily in the Willamette Valley for over 20 years. I also worked for many years as a contractor to the Oregon Water Resources Department assisting with the processing of extension applications, transfer applications, and water right certificates through the Department's Reimbursement Authority Program. As such, I have gained considerable knowledge about Oregon water rights and the operations of the Oregon Water Resources Department. My abbreviated resume is provided as an attachment to this letter.

Comments on the Proposed Groundwater Allocation Rules

As a member of the Rules Advisory Committee (RAC) for the Groundwater Allocation Rulemaking process, representing the Oregon Groundwater Association (OGWA), I participated actively in all meetings and made extensive comments both verbally during the meetings and in writing. Most of the concerns of the OGWA are incorporated within two letters I submitted to the OWRD following the fourth and fifth RAC meetings, respectively. Copies of those letters are provided as attachments to this letter.

A Broader View

The OGWA urges the Commission to take a broader view for management of Oregon's water resources than is implicit in the proposed Groundwater Allocation Rulemaking process. As stated in the attached comment letters, the proposed rules represent an effective moratorium on new groundwater permits throughout Oregon, and will result in the denial of applications in areas where groundwater is available for further development. We acknowledge the need for better options for managing Oregon's water resources, which is why we believe these rules need to be reconsidered in the context of a broader view of what is possible. In fact, these rules might not be necessary at all if the

State could adopt new strategies aimed at promoting natural and artificial recharge of our aquifers while managing both groundwater and surface water conjunctively according to the specific needs and conditions within each basin.


One of several strategies for promoting natural recharge would be to re-introduce beavers into areas they formerly inhabited. The impact that beaver dams can have on the local hydrogeology is illustrated by a case in Harney County described in the story entitled "Beaver on Trial." A copy of this story, as published in 1941, is provided as an attachment to this letter. The story makes for entertaining and informative reading.

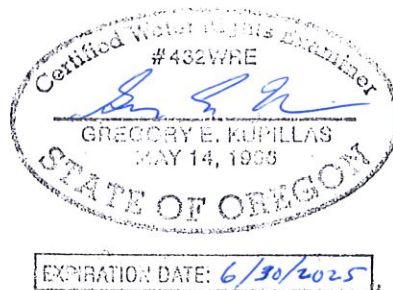
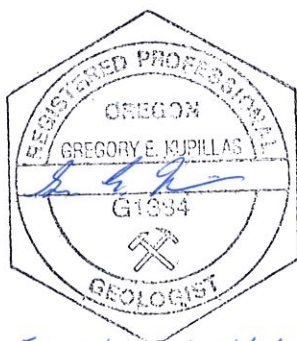
Artificial recharge (AR) should be an important component of our future water management strategy. One method of AR could involve recharging a shallow aquifer in the winter either naturally or artificially and simultaneously withdrawing some of the recharged water for an aquifer storage and recovery project in a deeper aquifer. However, these proposed rules could preclude the issuance of the groundwater rights needed to use the recharged water from the shallow aquifer.

My business partner and wife, Malia Kupillas (resume attached), is currently working on her PhD in Water Resource Science at Oregon State University. The topic of her dissertation is a strategy for management of water resources that could be applied almost anywhere. That strategy, as focused on Oregon, is summarized in the attached document entitled "A Vision for Managing Water in Oregon." This plan, or some variation of it, would allow for a more dynamic and flexible system of water resources management, adaptable to the various characteristics of each basin and to changing conditions over time. The proposed rules, which will effectively shut down further groundwater development and thereby eliminate management options (e.g., prevent the use of recharged shallow groundwater, as discussed above), seem reactive and short-sighted in comparison.

We therefore urge the Commission to put a pause on this rulemaking process and allow more time for development of an approach better suited for the long-term sustainable management of the water resources everywhere in Oregon. In the short term, we believe that some simple changes to the existing rules could be made to better evaluate groundwater availability for new groundwater permit applications, as discussed in the attached comment letter dated July 7, 2023.

Respectfully,


Gregory E. Kupillas, R.G., C.W.R.E.
Pacific Hydro-Geology Inc.
Chair, Government Affairs Committee
Oregon Ground Water Association



Attachments

- Resume, Gregory E. Kupillas
- Letter from OGWA re. Comments on Proposed Groundwater Allocation Rules, July 7, 2023
- Letter from OGWA re. Comments on Proposed Groundwater Allocation Rules, August 11, 2023
- Beaver on Trial by Paul Schaffer, December 22 1941
- Resume, Malia Rosner Kupillas
- A Vision for Managing Water in Oregon

GREGORY E. KUPILLAS, R.G., C.W.R.E.
Pacific Hydro-Geology Inc.

PROFESSIONAL REGISTRATIONS:

Licensed Hydrogeologist, Washington (913) - 2002
Certified Water Rights Examiner, Oregon (#432WRE) - 1996
Registered Professional Geologist, Oregon (G1384) - 1992

PROFESSIONAL COMMITTEES AND ORGANIZATIONS:

Oregon Ground Water Association, Past President
Oregon Water Resources Department, Ground Water Advisory Committee – two terms (2005 – 2011).
Served as committee chair in second term.

PROFESSIONAL HISTORY:

Pacific Hydro-Geology Inc., Vice President and Principal Hydrogeologist, 2/2002 to Present
Hart Crowser, Inc., Associate Hydrogeologist, 7/1991 to 2/2002
James M. Montgomery Consulting Engineers, Senior Staff Hydrogeologist, 4/1989 to 7/1991
Tetra Tech, Inc., Staff Geologist, 4/1988 to 4/1989
U.S. Geological Survey, Ground Water Division, Hydrologic Technician, 10/1983 to 12/1984

ACADEMIC/TRAINING HISTORY:

Certified Water Rights Examiner Workshops, Sponsored by the Oregon Water Resources Department
Annually, Fall 2002 through 2009, 2011 through 2019, and 2022
The Modflow Course, Waterloo Hydrogeologic, Phoenix, Arizona - 2004
OSHA Training
OSHA 8-Hour Refresher Course – Annually, 1988 – 2022
OSHA 8-Hour Hazardous Waste Supervisor Training - 1989
OSHA 40-Hour Hazardous Waste Training - 1988
M.S. in Hydrology and Water Resources, University of Arizona, Tucson, Arizona - 1988
Thesis: Development and Investigation of a Multiparameter Microbial Toxicity Test Using the
Bacterium Salmonella typhimurium
B.A. in Geology, University of Oregon, Eugene, Oregon - 1983

PUBLISHED WORKS:

Kupillas, G.E. and Arnold, R.G., "A Multiparameter Toxicity Test Using Salmonella typhimurium,
presented at the 15th Annual Aquatic Toxicity Workshop, Montreal, Canada, November 28-30,
1988.
Kupillas, G.E., K.E. Pill, F.W. Picardal, and R.G. Arnold, 1991, "A Multiparameter Toxicity Test Using
Salmonella typhimurium and Spirocheata aurantia," Environmental Toxicology and Water
Quality: An International Journal, Vol. 6, p. 293-307.



Oregon Ground Water Association

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July 7, 2023

Ms. Laura Hartt
Water Policy Analyst/Rules Coordinator, Policy Section
Oregon Water Resources Department
725 Summer St. N.E. Ste. A
Salem, Oregon 97301

RE: Comments on Proposed Groundwater Allocation Rules

Dear Ms. Hartt:

As the Chair of the Government Affairs Committee for the Oregon Ground Water Association (OGWA), I am presenting these comments officially on behalf of the OGWA in support of all groundwater users in Oregon and the groundwater professionals who provide the services and supplies that support them.

As a representative of the OGWA, I cannot support the proposed rule changes being developed through this RAC. These rule changes will not create an environment where groundwater is protected and sustainably utilized for the benefit of all Oregon residents. Rather, these rule changes will unnecessarily inhibit the ability of the agricultural producers in the State to provide more food for an ever-growing population, will likely have a significant negative economic impact on the rural and agricultural areas of Oregon, and will effectively impose a moratorium on any further groundwater development needed by Oregon's agricultural industry. The proposed rule changes seem to go far beyond the directives set forth by the Commission, and were created from the application of scientific theory to justify an arbitrary, policy-driven decision process. I would suggest instead of implementing these proposed rules changes that the current Division 9 rules be retained with minor changes to the Groundwater Review process. The Commission should then look to collect more definitive, basin-specific groundwater data in order to provide models that would help shape future rules changes that would allow for a more holistic and sustainable approach to the management of the groundwater resources in Oregon.

The rule changes I propose, which are discussed in further detail below, would likely result in achieving the objective reiterated in RAC meeting number 4 to "update groundwater allocation rules to be more sustainable and protective of existing water right holders, both instream and out-of-stream." Further, I propose that these changes could serve as a *temporary, interim* measure to allow time to assemble a work group of highly qualified professionals (e.g., highly experienced hydrogeologists, water resources policy experts, attorneys specializing in water law, members of the agricultural community who are active in water resources issues, etc.) to complete a more in-depth analysis of the technical and policy issues surrounding groundwater availability in Oregon in order to come up with recommendations for future rulemaking.

The members of this Groundwater Allocation RAC offer a diverse range of perspectives and opinions. One thing I think we can all agree on is that we can, and should, do a better job of managing the groundwater resources of this State in a more sustainable manner. The proposed rules offer a one-size-fits-all solution that may be relevant for application in some areas, but are inappropriate for application in many other parts of the State. Given more time, more in-depth study, and careful consideration, I think the OWRD could come up with rules that would be more applicable to all areas in Oregon.

In the sections below, I discuss some of the reasons why I believe the current rulemaking process is the wrong approach, followed by more in-depth discussion of my proposed rule changes.

Proposed Rules Go Beyond Original Directive of the Commission

My understanding from observations of the evolution of the current Groundwater Allocation rulemaking process from the inception is that the core issue of concern to members of the Commission was the fact that the Department was issuing groundwater permits when Groundwater Section staff were checking a box on the application Groundwater Review form that indicated it "cannot be determined" if groundwater is over-appropriated. The Commission found this to be unacceptable, and directed the Department to stop issuing new permits when it "cannot be determined" if groundwater is over-appropriated.

The written guidance used by the Department for completing the Groundwater Reviews refers only to evaluating water level data to determine if groundwater is, or is not, over-appropriated, or if it "cannot be determined" (OWRD, 2004). Based on the discussions in the Commission meetings and the public meetings held on Groundwater Allocation, it seemed reasonable and logical to expect that this new rulemaking process would involve development of a more detailed and prescriptive methodology by which the Groundwater Section would evaluate the available groundwater level data to determine whether groundwater is, or is not, over-appropriated.

However, what we have with the proposed rules is basically a system that identifies if pumping from a new proposed well will have *any* impact on a nearby surface water source, and denies the application if there is *any* impact, whether large or insubstantial. This system will result in summarily denying potential future groundwater development without any evaluation of whether the impacts will result in actual injury. This approach seems to go far beyond the basic directive given by the Commission.

Though Based on Sound Scientific Theory, the Proposed Rules are Arbitrary

The theory of groundwater-to-surface water interactions as discussed in the Barlow and Leake paper (USGS, 2012) is valid and indisputable. Nevertheless, it is important to recognize that the theoretical effects of pumping groundwater on a nearby surface water source can only be accurately applied if the natural environment closely resembles the idealized conditions embodied in the theory. The Barlow and Leake report (USGS, 2012) states on page 2 that "In many areas of the United States, groundwater systems are composed of a vertical sequence of aquifers in which an upper, unconfined aquifer is underlain by a series of one or more confining beds and confined aquifers. . . . In many other areas, however, the ground-water system consists of a single, often unconfined, aquifer underlain by geologic formations, such as crystalline rock, whose permeabilities are so low that the formation can be assumed to be impermeable to groundwater flow. Aquifers of this type are used throughout the report to illustrate many of the factors that affect streamflow depletion by wells." In other words, the factors affecting streamflow depletion by wells are best illustrated if the hydrogeologic system consists of a single, unconfined aquifer which discharges to a single stream. In many places throughout Oregon, and especially within the alluvial deposits in the Willamette Basin, the aquifers often consist of many

different layers of clay, silt, sand, and gravel with varying thickness and aerial extents. Furthermore, as illustrated during one of our RAC meetings, pumping from a single well in these complex systems will likely impact multiple streams to varying degrees. As a result, while the general theories discussed in Barlow and Leake still hold broadly, they cannot be applied directly to such complex groundwater systems.

In order to accurately model even simple groundwater flow systems, you must know the value of several aquifer properties, and these properties must be the same throughout the aquifer within the study area. This rarely occurs in nature, so we have to make estimates of average aquifer properties within the study area. When you add multiple layers of varying thicknesses with different aquifer properties, and try to parse out the impacts to all of the various effected streams, the complexity increases dramatically, making it very difficult to model the system. And so, when using simple analytical models such as are used by the Department to estimate pumping impacts on nearby streams, the results are only as good as the estimates of the parameters. Furthermore, these models cannot easily apportion the impacts to the various effected streams. As a result, the models will give us numbers that cannot be relied upon with a high degree of confidence. In other words, these models work fine for determining *if* there will be some impact, and, may also be valuable for determining if those impacts will be relatively small or large, or will occur within a short or long timeframe, but they are not very good for accurately determining the actual impact.

Therefore, while the theory and the models do well to inform us about how the pumping of groundwater may impact nearby surface water sources, they are limited in their usefulness for determining the extent of those impacts. To deny a new proposed use of groundwater because the application of scientific theory says it will cause an impact (without determining the actual impact or whether that impact causes injury) may sound scientific to some, but in actuality, this determination relies more on a policy decision (i.e., any impact = denial), which is arbitrary and unscientific.

The Proposed Rules Rely on Flawed Water Availability Data

As mentioned during our RAC meetings, the existing Water Availability Reporting System (WARS) was established based on the record of stream flows from 1958 to 1987. Department staff have indicated that the system is overdue for an update. When and if that happens, the updated estimates for natural flows in many of our streams may change in ways that are not favorable to issuing new ground water permits. However, I believe it is likely that the groundwater uses and out-of-stream uses, which are factored into the surface water availability calculation, are grossly overestimated. Grossly overestimating these uses would result in significant underestimates of surface water availability. Practical experience tells us that farmers use far less than the authorized annual duty. For example, in the Willamette Valley, we understand anecdotally that most farmers use 1.5 acre-feet (AF) per acre or less of their annual maximum allowed 2.5 AF per acre. Also, farmers rarely irrigate throughout the entire irrigation season. It is unclear to me to what extent the estimates of uses in WARS accounts for these factors. In any case, given the large amount of actual water use data the Department has been collecting over many years, it seems that better estimates of both groundwater and surface water uses could be made. My guess is that if better estimates of actual water use were applied to WARS, the data would show more water available in the streams than is currently reported.

Under the proposed rules, a determination of groundwater availability depends on the water availability data reported in WARS. Notwithstanding the other issues I have discussed above, how can we make fair and reasonable determinations about the impacts from pumping groundwater on the nearby surface water sources if we are relying on an outdated and flawed WARS?

The Proposed Rules Do Not Achieve the Proper Balance

ORS 537.525 obligates the Department to, among other things, manage the State's groundwater resources in a balanced manner for multiple uses. Specifically, ORS 537.525(5) states it is necessary that "Adequate and safe supplies of ground water for human consumption be assured, while conserving maximum supplies of ground water for agricultural, commercial, industrial, thermal, recreational and other beneficial uses." In an apparent attempt to correct what is perceived to be a current imbalance which is weighted in favor of groundwater use at the expense of surface water use, I think the proposed rules will shift the balance too far the other way.

If we could calculate everything in terms of economic costs, I think we would find that the proposed approach would result in disproportionate economic costs to agricultural producers and to the groundwater professionals who support those producers. The best solution should be one that minimizes the overall costs to all water users.

I believe we can manage the water resources of this State so that there are no losers, but if we are ever able to succeed in that goal, it will take many years, and is a subject that is outside the scope of this rulemaking process. So, under the current systems in place, use of water in one place may mean the reduction in water availability in another place. Reductions in water availability can be avoided and minimized with better knowledge and proper management, but this requires first establishing a policy that recognizes that certain, minimal impacts are acceptable in order to maintain the proper balance. The proposed rules completely disregard the concept of acceptable impacts, which is not compatible with the obligations stated in ORS 537.525(5).

Recommendations

Given the foregoing discussion, I think that the rules need to be fundamentally re-written in a way that will meet the Commission's directive, but allow more future development of groundwater resources than would be allowed under the currently proposed rules. As I mentioned above, this could be done as a temporary, interim measure while the State assembles a work group or committee of highly qualified professionals to carefully evaluate all of the relevant issues and develop recommendations for future rulemaking. I believe the Department needs to take more time to develop a better understanding of our water resources, basin by basin, including robust estimates of groundwater recharge and discharge, and a comprehensive update of the surface water availability data. This cannot happen quickly, and is outside the scope and capabilities of this RAC.

The interim objectives could be achieved by retaining the current Division 9 rules for now, with some minor changes to tighten up on the groundwater availability portion of the Groundwater Review process. During this interim period, the best proxy we have for evaluating the stability of aquifers is water level data. If groundwater levels are returning to the same elevations every year (accounting for annual variations in precipitation and influences from improper well construction) and there is no clear evidence of depletion of flows in nearby streams, then we should be able to say that groundwater is available.

Accordingly, the rule changes I propose should include adoption of the methodology developed by the Groundwater Section for evaluating available groundwater level data (as currently defined in proposed OAR 690-008-0001(10)) as part of the groundwater availability portion of the Groundwater Review. As part of the water level data review process, it will also be important to recognize that water levels can be declining for reasons other than groundwater over-appropriation. For example, wells improperly constructed to commingle multiple aquifers often exhibit declining water levels for years until the new composite water level finds its equilibrium. Therefore, the groundwater level evaluation should include

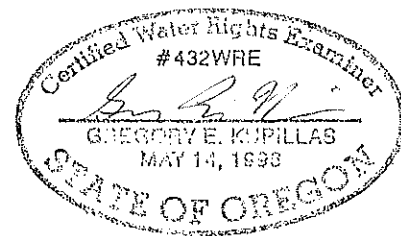
a careful review of the construction details of the wells being evaluated to check for possible influences from improper well construction.

The groundwater availability review could also include an evaluation of the regulation history of nearby streams. If there is no clear evidence of increasing regulation of the nearby streams (also while accounting for annual variations in precipitation) and water levels are determined to be stable, then Groundwater Section staff can make the determination that "groundwater is not over-appropriated." If, on the other hand, groundwater levels are found not to be stable, and/or the regulatory history of a nearby stream (within 1 mile of the well) shows a historical increase in regulation, a finding that "groundwater is over-appropriated" can be made. If there is not enough available groundwater level data to make a determination, but all other criteria are met to issue a permit, then the Department could offer to put the permit application on administrative hold and issue a 5-year limited license that would start when water use begins. During the 5-year limited license period, the license holder would be required to measure and report water levels annually. If water levels are not reported, the limited license and the permit application would be canceled. If all 5 years of water levels are reported, and found not to be stable, then the limited license would be allowed to lapse and the permit application would be cancelled. On the other hand, if water levels were determined to be stable after 5-years of monitoring, then the permit could be taken off administrative hold and issued.

These interim measures would serve to identify those areas where there is clear evidence of groundwater over-appropriation based on analysis of hard data and actual observations, and would likely result in significant reductions in the numbers of groundwater permits being issued. In cases where there is not enough water level data to make a determination, offering the limited license option could provide additional water level data where it is needed, with no obligation to issue a permanent water right if the water level data are unfavorable. By preventing issuance of new, permanent groundwater right permits in areas which demonstrate clear evidence of groundwater over-appropriation, these interim measures will also meet the directive of the Commission to "update groundwater allocation rules to be more sustainable and protective of existing water right holders, both instream and out-of-stream" and allow more time for the development of a long-term approach that will better achieve the overall objectives and better serve the people of Oregon.

Respectfully,

Gregory E. Kupillas, R.G., C.W.R.E.
Pacific Hydro-Geology Inc.
Chair, Government Affairs Committee
Oregon Ground Water Association



EXPIRATION DATE: 6/30/2025

Expiration Date: 1/1/2024

References

OWRD, 2004, Draft Oregon Water Resources Department Ground Water Review Guidance Document, Sections B1 and B1a, page 3. (Provided as an attachment to an email message from Justin Iverson, September 4, 2019.)

USGS, 2012, Streamflow Depletion by Wells – Understanding and Managing the Effects of Groundwater Pumping on Streamflow, by P. M. Barlow and S. A. Leake, USGS Circular 1376.



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August 11, 2023

Ms. Laura Hartt
Water Policy Analyst/Rules Coordinator, Policy Section
Oregon Water Resources Department
725 Summer St. N.E. Ste. A
Salem, Oregon 97301

RE: Comments on Proposed Groundwater Allocation Rules

Dear Ms. Hartt:

On behalf of the Oregon Ground Water Association, I am providing the following comments in response to the proposed draft rules presented and other topics discussed in the fifth RAC meeting on August 2, 2023.

Economic Impacts to Well Construction Industry

The implementation of the proposed rules will result in negative economic impacts to the well construction industry from lost revenues resulting from a significant reduction in the number of wells drilled for new groundwater permits. I have assumed that the rules will result in a 90% reduction in the number of new groundwater permits being issued, resulting in a similar reduction in the number of wells drilled for new permitted uses. This may be underestimating the impacts, as it could be more like a 95%, or greater, reduction in the number of wells drilled for new permits.

Travis Kelly, Well Construction Program Coordinator, Oregon Water Resources Department (OWRD), has provided me with data indicating that the average number of irrigation wells drilled per year in the last five years leading up to 2020 (i.e., post pandemic) was about 166. I did not get any data for commercial use permits, but it is probably reasonable to estimate that the average number of permitted wells drilled each year, including for irrigation and commercial/industrial uses, is about 180.

I contacted a well constructor who drills many wells every year throughout the Willamette Valley to get an idea of the proportion of permitted wells that are drilled for new permits, as opposed to wells drilled for transfers or replacement wells. Based on the information from this driller, I have estimated that about 65% of permitted wells drilled each year are constructed for new groundwater permits. Accordingly, about 117 wells (65% of 180) are drilled each year in Oregon for permitted uses. A 90% reduction in this number results in 105 fewer permitted wells being drilled each year as a result of the proposed rules.

I contacted three drillers who operate in different regions to make an estimate of the average cost of a permitted well. One was the aforementioned driller in the Willamette Valley; one works primarily in southeastern Oregon; and one constructs high-capacity wells in eastern Oregon. Costs for irrigation wells range widely from less than \$50,000 for relatively shallow, small diameter wells, up to \$1 million for a deep (1,000 feet or more), large diameter well (16-inch or larger casing). Relatively few of the deep, large diameter wells are drilled each year, so the average cost is skewed by the larger number of shallower, smaller diameter wells. Based on the information

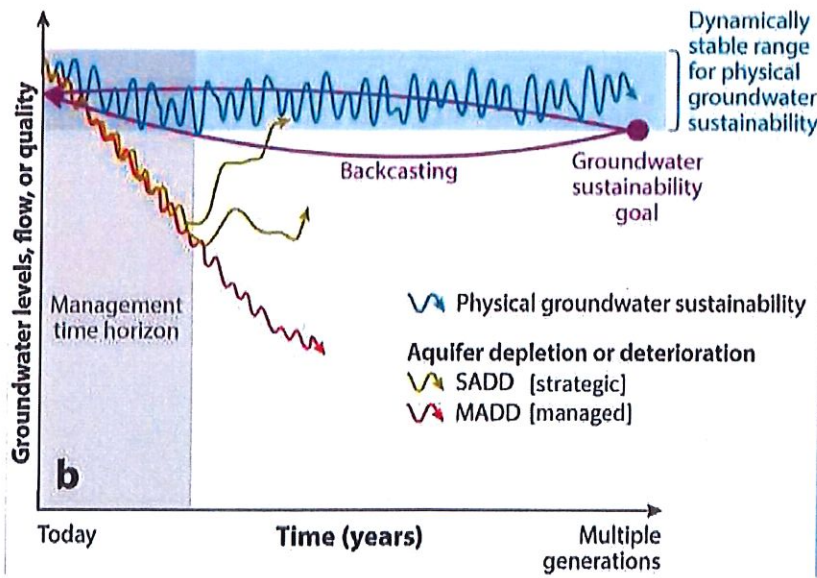
obtained from the three drillers, I estimate the average cost for a permitted well in Oregon is about \$140,000 (including well construction, pump installation, controls, and power connection).

At an average cost of \$140,000 per well, constructing 105 fewer permitted wells in a year will result in a potential loss of revenues of \$14.7 million. While my estimates are somewhat rough, and rely on some assumptions that are difficult to verify at this point, I think it is reasonable to say that the proposed rules will result in annual losses of potential revenue to the well construction industry of \$10 million to \$15 million.

Use of WARS in Determination of Groundwater Availability

I also want to comment about our concerns with the Department relying on the current surface water availability data (Water Availability Reporting System, or WARS) for determining if a proposed new use will have the potential for substantial interference with a nearby stream. According to proposed OAR 690-008-001(10)(a)(A), a proposed new use of groundwater will be found by the Department to cause "Substantial Interference" with a nearby surface water source if the proposed, hydraulically connected well will contribute to depletion of the surface water source that is already over-appropriated during any period of the year. Further, under the Division 9 rules, a finding of the potential for substantial interference with a surface water source may mean that water is not available for the proposed groundwater use if the use will substantially interfere with the surface water source according to the definitions in OAR 690-008-0001. The WARS data will be used to determine if the surface water source in question is already over-appropriated during any period of the year. The list of surface water sources in the State that are not "already over-appropriated" according to WARS is very short. It includes the Willamette River, the Columbia River, and I suppose a few others that I am not aware of. But needless to say, except for the Willamette and Columbia Rivers, practically all surface water in the State is "already over-appropriated" according to WARS.

I would like to direct our attention for a moment to a figure from the Meeting 5 presentation, shown below.



According to the above figure adapted from Gleeson et al. (2020), groundwater sustainability is demonstrated when groundwater levels and flows are maintained within a normal range of seasonal variability. This definition of groundwater sustainability is, nevertheless, rendered irrelevant by the proposed rules. According to the rules cited above, it doesn't matter if a new groundwater permit application is in an area where water levels are demonstrably stable. This is because whenever the Department uses an analytical model to estimate surface water depletion, and runs that model "over the full term of the proposed or authorized groundwater use" (OAR

690-009-0040(5) as proposed), there is no question that the model results will show some depletion if the application is for a permanent water right. That is how these simple analytical models are programmed to operate. There is, in fact, no way to run such a model and have absolutely no depletion in the results. And since there are no provisions in the rules to qualify such results as negligible, or de minimis, or to evaluate whether the estimated depletion will actually cause injury, then the outcome will be a finding of "Substantial Interference," practically every time, regardless of the amount of depletion, because pretty much every surface water source in the State is "already over-appropriated" according to WARS.

This is why we think that reliance on WARS is one of the most glaring flaws in the current proposed rules. Under WARS, the amount of water available for appropriation is calculated by starting with an estimated natural stream flow (at 80% exceedance, or what can be expected 80% of the time) in a given month, subtracting out the known consumptive uses and storages, and then subtracting the instream flow requirements. Consumptive surface water uses are estimated based on the full paper rights, which as I have argued before, grossly overestimate the consumptive use. In the Willamette Valley, water rights are issued for a maximum annual volume of 2 ½ acre-feet per acre. There is an AG opinion issued February 15, 1994 (attached), that states the full duty of a water right does not need to be used in order to preserve the right. OAR 690-250-001(3) defines "Beneficial Use" as "Reasonably efficient use of water without waste for a purpose consistent with the laws and the best interests of the people of the State." When OWRD advised Marion County for adoption of guidelines for preparing Hydrogeology Reviews for proposed new developments, they informed the County that irrigators do not use the full duty, and set the limit of use at 1 ½ acre-feet per acre for irrigation and 1 acre-foot per acre for supplemental use and drip irrigation for the purposes of performing water balance calculations. In addition, many if not all, of the recently issued groundwater use permits contain the condition that best management practices are to be followed to maximize efficiency. Therefore, irrigators are required by State rules and permit conditions to not waste water and use the least amount of water for irrigation.

So, on one hand the OWRD is telling irrigators they don't need to use the full allowed duty and should, in fact, minimize their use by maximizing efficiency, while on the other hand, the Department assumes for their purposes that irrigators are using their full duty. This means that actual consumptive uses are likely less than 60% of the values used in WARS. On top of that, we have the instream flow requirements that are determined according to the amount of water available on a 50% exceedance (i.e., what can be expected 50% of the time), which is a lower bar than 80% exceedance, but are nevertheless subtracted from the amount of stream flow availability at 80% exceedance.

There is also the issue of cumulative effects from groundwater pumping on streams. It is my understanding that WARS does not account for these impacts. However, the Department presumably has methods for estimating stream depletion resulting from cumulative consumptive uses of groundwater for the purposes of administering the Scenic Waterways rules. Basically, the State Scenic Waterways rules (OAR 690-310-0260) call for withdrawal of an area from new groundwater appropriations if the cumulative consumptive uses from groundwater pumping in the area surrounding the designated Scenic Waterway exceed one cubic foot per second (cfs). It was our experience that when OWRD determined around 2006 or 2007 that cumulative impacts from groundwater use in the Grand Ronde River basin had met the one cfs criterion, they were unable to provide documentation to support that finding.

Recently, in 2020, the Department withdrew one of the Scenic Waterways in the Rogue River basin (SWW Rogue R – Applegate R to Lobster Ck) from further groundwater appropriation because supposedly the one cfs criterion was triggered. We would like to see the documentation and studies completed by the Department to reach that conclusion. Assuming that the Department has the ability to estimate cumulative impacts from pumping groundwater, it is interesting that only recently those impacts to the Rogue River exceeded one cfs after decades of groundwater use in the area. It is also worth noting that one cfs represents 0.09% of the minimum natural flow of the Rogue River above the Applegate River (Water Availability Basin Rogue R > Pacific Ocean - AB Applegate R) at 80% exceedance (1,140 cfs in September), and is well below the flow measurement error (i.e., is not measurable). This also suggests that cumulative impacts from groundwater pumping are generally very small.

Thus, if we could use more realistic estimates of consumptive surface water use, and if the added cumulative impacts from pumping groundwater are relatively small, we would likely find that our estimates of available surface water would be significantly higher than currently reported in WARS. In fact, more realistic estimates of

consumptive water use for estimating surface water availability could be made using the vast database of actual reported water use available to the OWRD. These data could be evaluated to determine the upper range (to be conservative) of average seasonal uses in acre-feet per acre within a given area, and applied to the water availability calculation. Similarly, the Department could use the methods applied to regulating groundwater in the areas surrounding the scenic waterways to estimate cumulative impacts from groundwater pumping.

There has been a lot of talk about how these rules are based on good science, but we should really ask ourselves: is it good science to base a determination solely on the affirmative results of a computer model that by design cannot give anything but an affirmative result? Is it good science to assume consumptive use based on the maximum paper water rights when we know those values overestimate actual use? Is it good science to establish instream water rights based on water availability at 50% exceedance and then subtract those values from stream flows calculated at 80% exceedance? If you ask me, I will answer all three of those questions with a resounding NO! These approaches result from the application of policy decisions that have not been part of the discussion. As a result, we have a set of proposed rules which are arbitrary and not based in sound science, which is why I stand by my conviction that we need to take a pause in this rulemaking process to allow for the time we really need to develop a truly scientific approach that will be in the best interests of all water users in Oregon.

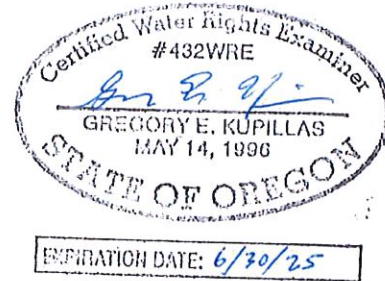
Respectfully,



Gregory E. Kupillas, R.G., C.W.R.E.
Pacific Hydro-Geology Inc.
Chair, Government Affairs Committee
Oregon Ground Water Association



Expiration Date: 1/1/24



Attachments

AG Opinion dated February 15, 1994, re: Forfeiture of Rate and Duty, DOJ File No. 690-001-NR001-94

References

Gleeson and others, 2002, Annual Review of Earth and Planetary Science, Volume 48, 2020, pp 431-463 (Figure 2b). Available at: <https://www.annualreviews.org/doi/10.1146/annurev-earth-071719-055251>

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THOMAS A. BALMER
DEPUTY ATTORNEY GENERAL

DEPARTMENT OF JUSTICE
GENERAL COUNSEL DIVISION

February 15, 1994

Water Resources Commission
3850 Portland Road, N.E.
Salem, OR 97310

Re: Forfeiture of Rate and Duty
DOJ File No. 690-001-NR002-94

Dear Commission Members:

This letter addresses whether a water right is subject to forfeiture if a user fails to use the entire rate or duty^{1/} for the non-use period. I conclude that a user who uses the amount of water necessary to accomplish the purpose for which the water right is granted does not forfeit any of the right, even if the user did not use the maximum amount allowed by the right.

The answer depends on how a water right is viewed. A water right may either 1) authorize a beneficial use, capped by a rate and duty, or 2) authorize use of a rate and duty, capped by beneficial use. Although these seem to be the same expression of the nature of a water right, the difference is important. If a water right is viewed as the right to make a particular beneficial use of water on a certain place, so long as the duty and rate limitations are not exceeded (the first interpretation), if less than the upper-limit rate and duty is used for five successive years, but enough water is used to grow the crop or otherwise accomplish the beneficial purpose for which the right was granted, the right has been completely exercised and none of the right is subject to forfeiture for non-use. If, on the other hand, a water right is viewed as a rate and duty, subject to an upper limit of what can be beneficially used (the second interpretation), then if a user does not divert the maximum amount allowed for five years, the right has not been completely exercised and a part of the right would be subject to forfeiture.

^{1/} Rate is the volume of water per unit of time allowed by a right, typically expressed as cubic feet per second (cfs) or gallons per minute; duty is the total volume of water that can be used, typically expressed as acre feet (the volume of water necessary to cover one acre to the depth of one foot).

An analysis properly begins with the statutes, case law and the right (i.e., the certificate) itself. The forfeiture statute is premised on the legal foundation that "[b]eneficial use shall be the basis, the measure and the limit of all rights to the use of water in this state." ORS 540.610(1). But water rights also include specific limitations as to rate, duty and season which restrict the right's exercise.^{2f}

While a number of cases support the proposition that a portion of a water right can be subject to forfeiture for non-use,^{3f} no case squarely answers the commission's question. Case law establishes that a user must be ready, willing and able to use the water (Day v. Hill, 241 Or 507 (1965)), but is not subject to forfeiture if water is unavailable for the proposed use, either because senior rights claim all available water^{4f} or because another has unlawfully prevented water from reaching a user's point of diversion. Tudor v. Jaca, 178 Or 126 (1945). Use of water outside the terms of the right does not constitute "use" to avoid forfeiture.^{5f}

^{2f} A typical water right certificate reads: "the amount of water to which such right is entitled * * * is limited to an amount actually beneficially used for said purposes, and shall not exceed 0.38 cubic feet per second or its equivalent in case of rotation, measured at the point of diversion from the stream. * * * The amount of water used for irrigation, together with the amount secured under any other right existing for the same lands, shall be limited to one-eightieth of one cubic foot per second per acre, or its equivalent for each acre irrigated and shall be further limited to a diversion of not to exceed 2 1/2 acre feet per acre for each acre irrigated during the irrigation season of each year." Certificate No. 34953.

^{3f} See, e.g., Crandall v. WRD, 290 Or 771 (1981) (15.6 cfs of a 40 cfs right for power production forfeited for non-use, since turbines had only been able to accommodate 24.4 cfs for the forfeiture period); Crumpton v. Dept of Water Resources, 28 Or App 413 (1977) (5.2 acres of water right canceled, 2.8 acres not; rate and duty reduced to amount necessary to serve remaining acres); In Re North Powder River, 75 Or 83, 94 (1915) (water right existed only for those months when actual use was made), Hutchinson v. Stricklin, 146 Or 285, 301-2, 28 P2d 255 (1934) (non-use during part of each year, for statutory period would support loss of right for that period of the year).

^{4f} But see Crandall v. WRD, 290 Or 771 (1981) (court finds water was available to satisfy use, but implies that if it had not been, some of the right would have been forfeited for non-use).

^{5f} See, e.g., Hennings v. WRD, 50 Or App 121 (1981) (diversion of water to moisten the soil for plowing did not constitute use of the water for irrigation); Rencken v. Young, 300 Or 352 (1985) (use of water outside the irrigation season did not constitute use of the irrigation right); but see Crumpton v. WRD, 28 Or App 423 (1977) (taking water from an

(continued...)

Some support is found in both the case law and the statute for the first interpretation, that a water right's limit is the beneficial use that can be made of the water, but that in no case can that amount exceed the rate and duty limitations. See, e.g., Broughton v. Stricklin, 146 Or 259, 273 (1934): "the amount to which the [users] are presently entitled for irrigation purposes is governed by the amount of water necessary for the land cultivated, not exceeding the amount awarded [in the decree]" and, "[b]eneficial use shall be the basis, the measure and the limit of all rights to the use of water in this state." ORS 540.610(1)(emphasis added). If viewed from this perspective, irrigators who apply that amount of water necessary to grow their crops cannot forfeit any of their right, since although they did not exercise their right to the full extent of the allowed rate and duty, they used the amount necessary to accomplish the authorized beneficial use and did not exceed the allowed rate and duty. As a result, even with rights which authorized a three acre foot duty that had never been used, users wishing to change cropping patterns would be entitled to use a three acre foot duty, if their system had been capable of diverting the full amount had it been necessary.⁶⁷

It could be argued that requiring users to exercise the full rate and duty of their right at least once in five years is consistent with the underlying general principles of the cases cited above requiring users to "use it or lose it" by diligently exercising their right to the full extent authorized. Changes in irrigation practices are allowed to address changes in cropping patterns, however. See, e.g., Sears v. Orchards Water Co., 115 Or 291, 298, 236 P 502 (1925). Thus, an interpretation of the forfeiture law which would penalize growers who grew low water-use crops would need clear statutory language to overcome the Supreme Court's recognition of the flexible nature of a water right. A requirement to use the maximum rate and duty would presumably require irrigators to shift to high water-use crops (or wastefully irrigate a low water-use crop) to maintain their full water right. No statutory language or case holding supports such a result.

I conclude, therefore, that as long as a user has a facility capable handling the full allowed rate and duty, and is otherwise ready, willing and able to make full use of the right, using less water to accomplish the beneficial use allowed by the right does not subject the right to forfeiture for non-use.

⁵⁷ (...continued)

unauthorized point of diversion still constituted use, but would not allow the user to call for the water.)

⁶⁷ See Crandall, fn 4, which forfeited part of a right's rate because the user could not have physically used the entire amount of the right for the forfeiture period.

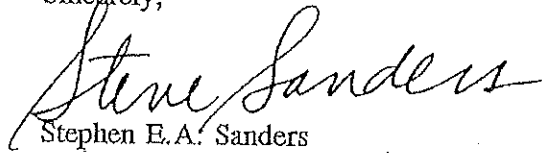
Water Resources Commission

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February 15, 1994

If you have further questions about this advice, please do not hesitate to call.

Sincerely,

A handwritten signature in cursive script that reads "Steve Sanders". The signature is written in black ink and is positioned above the typed name.

Stephen E.A. Sanders
Assistant Attorney General
Natural Resources Section

SEA:sea:tmt/JGG08B0E
c: Martha Pagel, WRD

Prepared for SOIL CONSERVATION

December 22, 1941

BEAVER ON TRIAL

by Paul W. Schaffer 1/

The judge took his place at the bench. He spoke, "I find the defendant -- not guilty!".

The true defendants of the case were not in court to hear their acquittal, but when word of the court's decision reached the wilds of the State of Oregon in the late evening, it might be presumed that the nocturnal silence of the wilderness exploded with the thunderous report of thousands of beaver tails slapping the dark waters of their ponds in celebration. It was the beavers who had been on trial! It was the beavers who had been set free!

This figuratively-interpreted but actual court case was tried in Oregon, in October 1939. That was a couple of years ago. Since then, inquiries have come in from various parts of the country for full information on the probably unparalleled litigation involving the right of the flat-tails to live and work and enjoy their watery homes. Meanwhile, the beavers whose fate hung in the balance before the Oregon Court have thrived and multiplied -- but that is a bit ahead of the story.

Actually, the right of a landowner to protect his land from the ravages of soil erosion with the allied assistance of a colony of beaver was subjected to court decision.

1/ Regional Biologist, Pacific Northwest Region, Spokane, Washington.

had been able to drive his team across this very waterway -- protected then by beaver dams.

Stewart turned toward his meadowlands. More desolation! Dust stirred by the hoofs of a few range cows rose and settled again across a near barren waste broken only by clumps of new sage and sparse remnants of the original grasses. Other cattle stood at a tank, drinking the last water that a pump had been able to raise from the once abundant supply of the nearby well.

Something had to be done! And something was done! Engineering assistance was needed. Paul Stewart reasoned that if beavers had protected his land once, they could do it again. He sent an emergency call to the Oregon State Game Commission. Later that year, 1936, sixteen of Nature's hydraulic engineers -- native beavers -- were transported to the scene at Stewart's request.

The beavers began their reclamation work at once. They erected strong dams almost overnight; they sent huge cottonwoods and aspen crashing into the gully; they built more and more dams.

When the heavy spring run-off came, water that for the past twelve years had rushed through the stream channel to be lost in the river below was caught behind the beaver dams and stored in large ponds. The ponds acted as settling basins for the silt-laden waters. At each flood stage of the stream, inches of soil were added to the bottom of the deepened channel. As the ponds were filled, excess water flowed over well-designed spillways and continued down the stream.

The average summer streamflow of the preceding twelve years

After a short walk along the creek channel, Johnson arrived at the lower outpost of the beaver stronghold. The sight that greeted him was one of an abundant water supply held behind strong dams, and bordering fields of knee-deep alfalfa and green native hay.

Johnson decided that the salvation for his own crops that were suffering from lack of water was to drain the beaver ponds in order that the water might flow on down through his own property. As indicated in later briefs and argument at the trial, Johnson did not foresee that little would be accomplished by draining the beaver ponds, or that the unchecked water truly would flow through his own land to the river beyond. He discussed the matter with Stewart, who refused to heed Johnson's request that he dynamite the dams.

"Why," Stewart pointed out, "if those beaver dams were blown out, as soon as the water had drained, you wouldn't have any more water down there than you've got now, and my ranch would go back to sagebrush."

The question remained under the law whether Stewart had the legal right to impound more water than he had filed rights on, even though he was protecting his land. That, in effect, is what Johnson told officials when he obtained an order for Stewart to show cause why he should not release the beaver-impounded water. Johnson was in desperate need of water, and it was now a matter for court decision. The beavers were on the spot!

The case was brought to the circuit court in Harney County, and Stewart now becomes the actual defendant in this story. Johnson's contention was that Stewart was violating his decreed water rights. Stewart's counsel replied that the defendant was within his legal

"The question of soil erosion in this case," he stated, "is of national importance and the decision of this court will affect every erosion-control program in the Nation. This court must decide whether or not the landowner has the right to protect his chattel from destruction by erosion."

For more than an hour the court listened to his argument.

"All my client wants," Stewart's counsel finally concluded, "is the right to protect his land!"

Johnson's attorney, opposed the defending counsel with, "It is peculiar that the court should be listening to a soil erosion case when it is not the true issue. Soil erosion is being used here as a subterfuge."

"Mr. Stewart has retained water on his property," he continued, "that belongs to Mr. Johnson. Soil erosion wasn't even heard of when the water rights decree was written. We are just now beginning to get erosion conscious."

Came time for the opinion of the higher court, that significant ruling reversing the eviction order against the beaver back along Crane Creek.

"After giving the matter our best consideration, we think that defendant would have the right to construct dams or permit them to be constructed by beavers to control the erosion, without diverting the water over the land or from the diversion works of another appropriator, and restore the bed of the stream to its original condition as near as may be, if he can do so without materially interfering with the right of the lower appropriator, Johnson."

Then it added: "To deny our water users the right to control

"I know that Johnson is getting more water now and for a longer season than he has for many years," Stewart observed in answer to a question. "I am sure the beavers had something to do with it. They should be down on his place too by now, in fact, if they were not molested."

"You should see the creek channel on my old ranch now," Stewart added, "places that used to be twenty feet deep have silted up to within three or four feet of the top. Oh, there are still some spots where the channel is plenty deep, but the beavers are on the job and have it under control."

-- Paul M. Schaffer

M-19

MALIA ROSNER KUPILLAS, R.G., C.W.R.E., L.H.G.
Pacific Hydro-Geology Inc.

PROFESSIONAL REGISTRATIONS:

Licensed Hydrogeologist, Washington (914) – 2002 to present
Certified Water Rights Examiner, Oregon (60772WRE) – 1999 to present
Registered Professional Geologist, Oregon (G1354) – 1993 to present

PROFESSIONAL COMMITTEES:

Oregon Geology Map Advisory Committee, member since 2002 and Co-Chair since 2008 (26 members)
State of Oregon's Ground Water Advisory Committee for 6 years and chair for two of the years (9 members)
Oregon Water Resources Department Ground Water Advisory Subcommittee (13 members)
Oregon Water Resources Department Well Construction Rules Advisory Committee
Closed Loop Ground Source Heat Pump Boring Rules Committee (15 members)
Marketing and Technical/GWAC Committees, Oregon Ground Water Association
Nestucca, Neskowin, Sand Lake Watershed Council Board Member, 2020 to present
Water Technical Committee and Assessment Team for developing the Hydrogeomorphic Wetland Classification System
Clackamas County Emergency Preparedness Council, 2021 to present

PROFESSIONAL HISTORY:

Pacific Hydro-Geology Inc., President, 5/1994 to Present
ATEC Associates, Inc., Staff Scientist, 5/1994 to 2/1995
Landau Associates, Inc., Senior Staff Hydrogeologist, 8/1988 to 2/1994
Kansas Geological Survey, Groundwater Section, Research Assistant, 9/1986 to 6/1988
Ground Water Associates, Subcontractor, June 1986

ACADEMIC/TRAINING HISTORY:

Oregon State University, Water Resource Science PhD program - Fall 2006 to present
Certified Water Rights Examiner Workshops, sponsored by the Oregon Water Resources Department - Fall 2003, 2004, 2008 through 2022
DEQ Certificate of Training for Wellhead Protection Plan - 1996
Basic Wetland Delineation Training Course, Portland State University - 1996
Managing Forest Riparian Areas, Field Exercise, Oregon State University Extension Service - 1996
Managing Your Woodlands, Oregon State University Extension Service - 1995
Protecting Stream Corridors Workshop - Oregon State University Extension Service - 1995
DEQ Soil Matrix Cleanup License, Oregon (14262) - 1994 to 1996
Behavior of Dissolved Organic Contaminants in Groundwater, University of Waterloo - 1992
OSHA Training
 OSHA 8-Hour Refresher Course – 1989 through 2023
 OSHA 8-Hour Hazardous Waste Supervisor Training - 1990
 OSHA 40-Hour Hazardous Waste Training - 1988
M.S. in Geology (Hydrogeology), University of Kansas, Lawrence, Kansas - 1988
 Thesis: Stratigraphy of the Quaternary Alluvium in the Great Bend Prairie, Kansas. Funded by Ground Water Management District No. 5
B.S. in Geology (minor in mathematics), Wichita State University, Wichita, Kansas - 1986

PUBLISHED WORKS:

Geology near Blue Lake County Park, Eastern Multnomah County, Oregon. Oregon Geology. 1993.
Bet, J. N. and Rosner, M. L. (Describes and maps the subsurface stratigraphy in east Multnomah County).

A Vision for Managing Water in Oregon

Conceptual Ideas for Managing Oregon's Integrated Water Resources

Provides "long-term plan and measurable goals for water sustainability" (State Audit)

By: Malia Kupillas, R.G., C.W.R.E.

Goal:

Conjunctively manage surface water and groundwater for all uses in a sustainable way. Recharge aquifers using artificial recharge (AR) and aquifer storage and recovery (ASR) to offset the loss of recharge from road side ditches, impervious surfaces, drain tiles, dikes to control floodwater, straightening of channels to reduce flooding and other impacts to recharge. Conserve and store enough water in the subsurface so all prime agricultural land can have a water right, and those with junior surface water rights that may be regulated off have a supplemental groundwater right. Fill in the water right gaps and make water resources sustainable regardless of climate changes using conservation, beaver dams, artificial recharge and aquifer storage and recovery.

Measurements of Success:

- Water levels stabilize or increase in groundwater limited and critical areas.
- Surface water flows are maintained at acceptable levels for fish, not wished-for levels.
- Fish have areas where temperature is met along stream reaches for refugia during hot days. Make sure there are adequate refugia for sustainable fish and aquatic populations.
- Cover with water rights the farm fields that are identified as illegally irrigating without a water right or are covered periodically through temporary transfers.
- Primary surface water rights periodically regulated off are covered with supplemental groundwater rights. This allows surface water to be left in the stream when needed by the fish to control TMDL's taking advantage of the delay in stream impact from pumping groundwater. Allows farmers to harvest their crop if weather pattern changes during the summer and balance out water use between wet and dry years.
- AR and ASR projects completed where needed to make groundwater use sustainable and allow the above water rights to be issued.
- Establish beavers and beaver dams in the areas previously occupied by them to store water instead of building additional man-made reservoirs.

Key Statutes

ORS 531.110: "All water within the state from all sources of water supply belongs to the public."

Note: Everyone should help pay in some manner for the management of the State's water resources.

ORS 537.120: "all waters within the state may be appropriated for beneficial use,"

ORS 537.525(3): "Beneficial use, **without waste**, within the capacity of available resources, be the basis, measure and extent of the right to appropriate ground water."

ORS 537.525(5): "Adequate and safe supplies of ground water for human consumption be assured, while conserving maximum supplies of ground water for agricultural, commercial, industrial, thermal, recreational, and other beneficial uses." **Note: No use has a greater priority over another use.**

The Vision for Water Management

Conservation (Everyone)

- Municipalities:
 - Implement water conservation every year. **State Audit, public education.**
 - Alternate days people can irrigate lawns by neighborhood in summer.
 - Each summer, have the media report about water conservation techniques.
 - Other methods to keep people used to thinking about and conserving water.
- Agriculture:
 - Use best management practices for irrigation including soil moisture sensors, Low Elevation Sprinkler Application (LESA), nozzle control, mobile drip irrigation, web-based irrigation scheduling, etc.
 - Use cover crops, no-till or other practices that improve soil health and increases soil moisture.
 - Use rangeland best management practices to restore riparian area health and store more water in hyporheic zone. Fencing is used only when other options do not work.

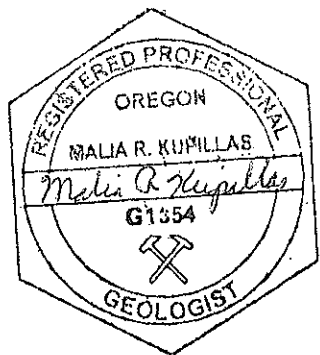
Establish Water Management Districts for each watershed similar to Kansas for "**Place Based Planning**" (One option is to integrate with Watershed Districts or change Watershed Councils to Watershed Management Districts)

- Establish a Water savings bank like the Central Kansas Water Bank Association (K.A.R. 82a and K.A.R. 5-17) for the state that the Water Management Districts can use. **Encourages conservation.**
- Artificial Recharge (AR) and Artificial Storage and Recovery (ASR) projects, beavers and beaver dams where appropriate. In 2018, Idaho recharged 530,000 acre feet in the Eastern Snake Plain aquifer through AR. Recharge projects replace some recharge lost to road ditches, drain tiles, and altered stream channels. **Could be considered mitigation under State Audit and Integrated Water Resource Strategy (IWRS).**
- OWRD manage some of the AR and ASR projects like Idaho, or have the Water Management Districts manage the AR ASR projects.
- AR through drain tile storage.
- Address local commingling issues from illegally constructed wells. State Audit concerns regarding well construction.
- Have pre-approved temporary transfers for droughts where POD and/or POA are not changed or past temporary transfers have been approved.
- In-stream rights should not exceed amount of water fish and other aquatics really need to maintain a sustainable population (or estimated natural flow). Should be realistic.
- Combine wetland mitigation with AR and winter water storage. We have lost recharge through road ditches, straightening streams, building dikes for flood control, and drain tiles.

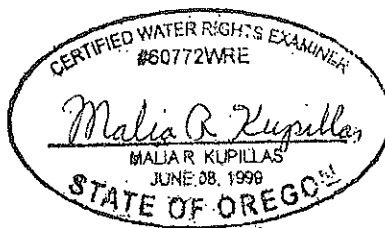
Funding:

- Each Water Management District has a water tax that stays in the District to fund research, water management projects, and specific staff positions. Kansas water assessment tax for 2017 was \$0.05/acre land assessment and \$0.67/acre-foot water use charge. We paid \$8.00 for our quarter of land in Barton County. I think everyone should be taxed in Oregon. GWMD5 is now dealing with water use issues from the municipalities. Now the districts are beginning to recognize that everyone should be contributing financially.
- Water Bank is independently funded through the fees it collects to process the proper forms for its programs.
- Grants for ASR and AR projects.

- State or Water Management Districts sells stored water from AR/ASR projects to water rights using the stored water. Similar program to BOR sale of stored water.
- Savings from streamlined temporary transfers and fewer regular transfers. Water management is more streamlined. Annual water management becomes more routine and agriculture has more reliable sources of water with drought management built into the system.



Exp. 6/1/24



EXPIRATION DATE: 6/30/25

DATE: September 25, 2023

VIA EMAIL: mindy.j.lane@water.oregon.gov



TO: Oregon Water Resources Commission

FROM: Oregon Water Partnership

RE: Comments on Agenda Item B, **Groundwater Allocation Rulemaking Update**



Chair Reeves and Members of the Commission,

Oregon Water Partnership supports the proposed science-based rules, which will benefit people and nature by limiting further unsustainable over-allocation of groundwater in Oregon.

Oregon Water Partnership is a diverse group of statewide conservation organizations with a common goal: to advocate for balanced water policies that ensure cold clean water to sustain healthy communities, livelihoods, and ecosystems. Our priorities are to build resilience for Oregon's water future, bring water data into the 21st century, support smart water management, and protect and restore our waters. We collectively have tens of thousands of members in Oregon communities across the state, and our organizations work collaboratively with cities, counties, Tribes, farmers, ranchers, and forest owners to restore habitat and improve watershed function.

Over-extraction of groundwater is a substantial threat to Oregon's aquifers and rivers, and the communities and economies reliant upon them. Declining groundwater levels threaten water accessibility and reliability for agricultural production, drinking water security for rural communities, and existence of important recreational and cultural resources. Unsustainable groundwater use due to over-allocation of groundwater rights is already happening in many parts of the state. Chronic well level declines have been identified in state agency reports¹, peer-reviewed literature², and a recent investigative report in The New York Times.³ Unsustainable groundwater use affects hydrologically connected surface water⁴, which can injure senior surface water rights supplied by streams and rivers. More than 36,000 miles of streams, nearly half of all wetlands, and almost two-thirds of all lakes in Oregon rely on groundwater to persist⁵. These are some of Oregon's most charismatic, biodiverse, and climate-resilient habitats, and they are threatened by the over-allocation of groundwater rights.

Oregon is facing a future with more frequent, intense, and widespread drought⁶;



¹ Scandella, B., & Iverson, J. 2021. Oregon groundwater resource concerns assessment. Oregon Water Resources Department, Salem, OR.

² Saito, L., Freed, Z., Byer, S., & Schindel, M. 2022. The vulnerability of springs and phreatophyte communities to groundwater level declines in Oregon and Nevada, 2002-2021. *Frontiers in Environmental Science* 10:1007114.

³ New York Times. 2023. Uncharted Waters: America is Using Up Its Groundwater Like There is No Tomorrow. Available at: <https://www.nytimes.com/interactive/2023/08/28/climate/groundwater-drying-climate-change.html>

⁴ Barlow, P.M., & Leake, S.A. 2012. Streamflow depletion by wells—Understanding and managing the effects of groundwater pumping on streamflow. U.S. Geological Survey Circular 1376, 84p.

⁵ Freed, Z., Schindel, M., Ruffing, C., & Scott, S. 2022. Oregon Atlas of Groundwater-Dependent Ecosystems. The Nature Conservancy, Portland, OR.

⁶ Ahmadalipour, A., Moradkhani, H., & Svoboda, M. 2016. Centennial drought outlook over CONUS using NASA-NEX downscaled climate ensemble. *International Journal of Climatology* 37:2477-2491.

increased evapotranspiration⁷; and a shift in winter precipitation from snow to rain⁸—all of which will affect groundwater supply and demand. These climate trends intensify the need for the Oregon Water Resources Department (OWRD) to follow a rigorous, science-based process when evaluating applications for new groundwater rights. Oregonians are already suffering the consequences of past allocation decisions⁹, and allocations made today will affect aquifer sustainability in future decades.

The existing groundwater allocation rules are not sufficiently protective of the resource, do not align with statutory directives governing groundwater allocation, and have resulted in unsustainable groundwater use—leading, for example, to the ongoing groundwater crisis in the Harney Basin. The existing rules also fail to fully account for reductions in surface water resulting from groundwater allocation decisions. Changes to the existing groundwater allocation policy are long overdue. Oregon Water Partnership appreciates the extensive public outreach and stakeholder engagement that OWRD staff have undertaken in working on this critical issue, from holding facilitated public meetings starting in September 2022 to convening a diverse and representative rules advisory committee through September 2023.

Oregon Water Partnership also appreciates the significant progress that OWRD has made in recent years in characterizing the state’s groundwater resources, such as cooperative studies in the Harney and Walla Walla basins, the installation of new observation wells to augment the existing statewide network of more than 1200 wells, and the 2021 Oregon Groundwater Resource Concerns Assessment. These efforts, combined with ongoing and future projects like the Statewide Recharge Project, continue to provide evidence indicating that groundwater has been overallocated throughout much of the state (Fig. 1).

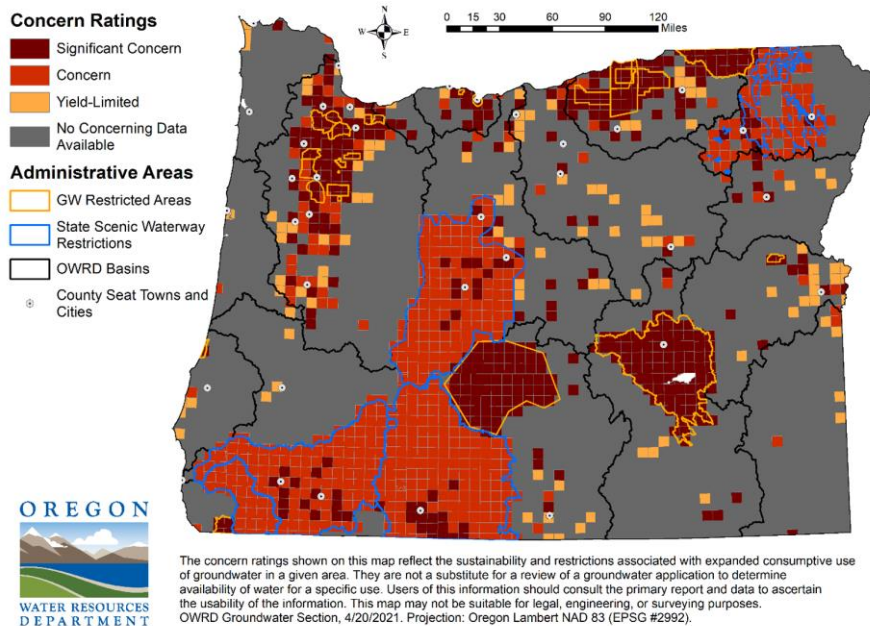


Figure 1: Map of concern ratings for groundwater in Oregon from the 2021 Oregon Groundwater Resource Concerns Assessment. The Assessment noted that concern ratings often underestimate likely long-term impacts on surface water from increased groundwater development.

In particular, the Groundwater Resources Concerns Assessment found that over 80% of applications for groundwater permits since 2010 are in areas of concern or significant concern, and about 80% of those applications were either approved or proposed for approval. This growing body of evidence compels more

⁷ Oregon Water Resources Department. 2015. Oregon Statewide Long-Term Water Demand Forecast. Salem, OR. 76p.

⁸ Nolin, A.W., & Daly, C. 2006. Mapping “at risk” snow in the Pacific Northwest. Journal of Hydrometeorology 7:1164-1171.

⁹ Oregon Public Broadcasting. 2022. Race to the Bottom: How Big Business Took Over Oregon’s First Protected Aquifer. Available at: <https://www.ijpr.org/environment-energy-and-transportation/2022-03-19/race-to-the-bottom-how-big-business-took-over-oregons-first-protected-aquifer>

sustainable and protective resource management.

Oregon Water Partnership supports the draft proposed rules because they meet the stated objective of the rulemaking: updating OWRD’s rules for evaluating and issuing new groundwater rights to protect existing water rights and manage Oregon's finite water resources sustainably. They are science-based and utilize the precautionary principle by only allocating new groundwater rights when sufficient evidence exists that the resource can sustainably support that use. We urge the Commission to adopt these draft rules in a timely manner to avoid further over-allocation of Oregon’s aquifers. The draft proposed rules align the state’s groundwater allocation policy with statute and will help the Oregon Water Resources Department achieve its mission to “**ensure the long-term sustainability** of Oregon’s ecosystems, economy, and quality of life¹⁰.”

Thank you for considering Oregon Water Partnership’s comments and please reach out to the organizational contacts below if you have any questions.

Oregon Water Partnership

Zach Freed, The Nature Conservancy in Oregon, zach.freed@tnc.org

Kimberley Priestley, WaterWatch of Oregon, kjp@waterwatch.org

Karen Lewotsky, Oregon Environmental Council, karenl@oeonline.org

Caylin Barter, Wild Salmon Center, cbarter@wildsalmoncenter.org

James Fraser, Trout Unlimited, james.fraser@tu.org

Dylan Kruse, Sustainable Northwest, dkruse@sustainablenorthwest.org

Rachel O’Connor, Environmental Defense Fund, roconnor@edf.org

cc: Doug Woodcock, OWRD Acting Director (WRD_DL_Director@water.oregon.gov); Ivan Gall, OWRD Interim Deputy Director (Ivan.K.Gall@water.oregon.gov); Annette Liebe, OWRD Technical Services Division Administrator (Annette.I.Liebe@water.oregon.gov); Laura Hartt, OWRD Water Policy Analyst (Laura.A.Hartt@water.oregon.gov); Geoff Huntington, Senior Natural Resources Advisor to Governor Kotek (geoff.huntington@oregon.gov)

¹⁰ Oregon Water Resources Department. 2019. Strategic Plan 2019-2024. Salem, OR.



To: Members of the Oregon Water Resources Commission

From: Deschutes County Commissioner Phil Chang

Re: Groundwater Allocation Rulemaking

September 26, 2023

Dear Oregon Water Resource Commissioners,

Thank you for your stewardship of Oregon's water resources and your efforts to slow or reverse the decline of groundwater levels across the state. I would like to share some thoughts on how to accomplish those goals within the fast growing communities and unique hydro-geologic setting of the upper Deschutes Basin. I offer these comments both as a County Commissioner and as a natural resource professional who has worked in water resources for over 25 years.

The new groundwater allocation rules being drafted by OWRD may put the agency on a collision course with other state agencies charged with advancing the Governor's ambitious housing production goals and with managing Oregon's unique land use planning system. Governor Kotek has set a target of producing 36,000 additional housing units per year to address dire shortages in our state and Oregon's land use planning system directs most growth and housing development to occur within incorporated cities through Urban Growth Boundary (UGB) expansions.

As drafted, the new groundwater allocation rules would treat any new permit application for groundwater extraction in the Deschutes Basin the same whether that application came from an incorporated city, a new rural residential subdivision, or a proposed destination resort. This would be like using an axe on new applications when a scalpel is what is needed. Incorporated cities are the place where the Governor's housing goals will need to be met and they are required by state statute to maintain a 20 year supply of buildable land to accommodate anticipated future growth. As drafted, these new rules could make it extremely difficult for incorporated cities to line up an adequate supply of water to match the required land supply.

Cities need to be prioritized over other applicants for new groundwater permits for residential development. This prioritization also makes sense because urban homes - with smaller landscaped area and access to municipal utility efficiency programs - typically use less water than rural homes. If we need to dedicate additional water to future housing to accommodate growth, that housing should be as water efficient as possible. We can learn important lessons about efficiency from the City of Bend whose service population grew by over 26,169 people (34%) in the past 18 years but has only increased its annual surface and groundwater extraction by 8.5% in that time. Prioritizing incorporated cities for new groundwater allocations could be coupled with requirements to pursue ambitious municipal conservation and efficiency programs and also with supportive technical and financial assistance.

Besides differentiating between homes in incorporated cities and homes in rural subdivisions or resort communities, groundwater policy needs to address individual rural residential homes on exempt wells. With very high daily use





thresholds, no metering to determine whether those thresholds are being observed, and up to a half acre of irrigated landscape allowed, exempt well homes are some of the least water efficient households in the Oregon high desert. But if the new groundwater allocation rules make it very difficult for any community water system to get a permit for additional groundwater utilization, and if Deschutes County faces tremendous growth pressure in the coming decades, the new rules could have the perverse outcome of channeling more future growth into exempt well properties which are not addressed by the draft rules. We currently have 17,000 exempt wells in Deschutes County. Adding thousands of additional exempt wells – even as many existing exempt wells are currently going dry – would not be water smart.

I very much appreciate the Department and the Commission's intent with this rule making process and want to suggest that to meaningfully slow the decline of groundwater levels in the Deschutes Basin it will likely take more than denying future groundwater rights applications. A massive amount of groundwater moves through the Deschutes Basin. Historically, this has been replenished by a massive amount of precipitation in the Central Cascades. After many years of below historic average precipitation we should be asking whether this is the 'new normal' and whether we need to adjust our overall water usage accordingly.

So beyond constraining additional groundwater permits we need to get current groundwater rights holders to become more efficient so that as a basin we can maintain the current benefits of water use while using less. Incorporated cities, unincorporated communities, resort communities, and our 17,000 exempt well properties all need to be incentivized and encouraged to reduce their per household consumption of groundwater. A broad scale efficiency initiative could provide a significant portion of the 'new' water we need to accommodate future growth in Deschutes County without placing additional strain on our declining groundwater resources.

OWRD staff have mentioned the possibility of a local planning process or designation of a critical groundwater area to address our unique needs and unique resource in the Deschutes Basin. This is a community that is capable of such sophisticated analysis, planning, and allocation and we do have a substantial amount of the required data already. But these processes are also huge undertakings and financial and technical assistance from the state would likely be needed to make one of these processes possible.

In summary, I would like to ask that as the Water Resources Commission considers new groundwater allocation policies that you:

- 1) Provide special consideration and priority for incorporated cities for new groundwater allocations which can be paired with ambitious conservation and efficiency requirements
- 2) Address exempt wells in your rule making to avoid the perverse outcome of directing more future growth into very water-inefficient exempt well home development
- 3) Consider how to motivate and incentivize conservation and efficiency among current groundwater users as a way to make 'new' supply available.
- 4) Provide technical and financial assistance for local planning processes or critical groundwater area designation processes.





COMMISSIONER PHIL CHANG

The Commission has a greater role to play in achieving a sustainable groundwater future than just saying no to new permits and depending on water users to figure it out. The Commission can play a proactive role in ensuring that key water users get the water they need and that existing water users are using groundwater as efficiently as possible and then sharing any savings to stretch our limited water resources further.

Thank you for your consideration. If you would like to discuss the upper Deschutes basin or any of the suggestions in this letter further please do not hesitate to contact me.

Sincerely,

Phil Chang
Deschutes County Commissioner

