Bierly and Associates, LLC
Natural Resource Consulting
2308 Ptarmigan St. NW
Salem, OR 97304
(503) 576-9389

January 10, 2026

Eric Hartstein, Senior Policy Coordinator
Oregon Watershed Enhancement Board
725 Summer St. NE, Suite 360
Salem, OR 97301

Re: Public Comment on Water Acquisition Rulemaking Chapter 695 Division 46

Dear Eric-
I am writing to suggest how groundwater is important for supporting Oregon fish and wildlife and provides habitat for groundwater dependent ecosystems. I also provide information on how groundwater pumping can adversely affect those species, communities, and habitats. I further identify conditions in which Oregon Watershed Enhancement Board (OWEB) funding to acquire groundwater rights could meet the constitutional and statutory requirements for the use of dedicated Oregon Lottery funds.

Background

I believe it might help the discussion about water rights acquisition using OWEB funds if some of the history of the program was explained. The notion that public funds could assist in improving water dependent species predates OWEB. While I was program manager of the Governor's Watershed Enhancement Board, I met with Geoff Huntington (then Deputy Director of OWRD) and worked with him to fund an effort between OWRD and ODFW to identify stream flow restoration priorities. The resulting product was a series of maps that can be found at https://nrimp.dfw.state.or.us/nrimp/default.aspx?pn=streamflowmaps .

There was clear recognition during the legislative deliberation about the creation of OWEB in the 1999 Legislative session that use of the constitutionally dedicated Lottery funds for acquisition of land and other forms of title was important. As one of the people directly involved, there was significant pushback from the legislative body (the Salmon Committee) to any form of using public funds for acquisition of interests in land. Under threat of veto, the opportunity to use Lottery funds for land and other interests in title for conservation purposes was retained in the foundational statutory language creating OWEB consistent with Constitutionally adopted language.

All these discussions occurred between 1996 and 1999 when OWEB was created. It is important to recognize that there was a foundational understanding that water was critical for the support of aquatic wildlife in Oregon ecosystems. It was also recognized that out of stream uses of water through time had affected the ability of Oregon's streams to support

the full compliment of aquatic life. While the early focus was on salmon and steelhead, the priorities were not set by those species.

It is important to understand that there was a foundational recognition of the need to evaluate the potential for water right acquisition as a tool for ecological protection from the beginning of OWEB.

Groundwater Dependent Ecosystems

It wasn't until 2009 when the Nature Conservancy (TNC) published information about groundwater dependent ecosystems in Oregon[1]. The work was followed up by a journal article in Frontiers in Ecology and the Environment in 2011[2] and a hydrology article in 2014[3]. With further refinement, TNC published an atlas of groundwater dependent ecosystems in 2022[4]. Groundwater-dependent ecosystems (GDEs) include wetlands, lakes, rivers, springs, estuaries and off-shore marine environments, subterranean ecosystems and some terrestrial vegetation such as phreatophytes, as well as the many species that rely on groundwater to meet part or all of their water requirements. As summarized in the TNC atlas: "GDEs are characterized by their disproportionate biodiversity, their resilience to short- and long-term climate variation, and their ecological importance as they are often the only perennial sources of water in semi-arid or arid regions. Despite their climate resilience, GDEs are vulnerable to hydrologic alterations and anthropogenic impacts."

The Atlas identified GDE's as: "There are at least seven ecosystems that rely on groundwater: springs, phreatophytes, subterranean ecosystems, rivers, wetlands, lakes (Eamus and Froend 2006), and estuarine or marine habitats that rely on subaquatic groundwater discharge (Paytan et al. 2006). These GDE types can be classified into two types of groundwater dependence: obligate GDEs which can only persist in the presence of groundwater, and facultative GDEs which situationally utilize groundwater depending on climate, hydrogeologic setting, and/or lifecycle stage. Springs and subterranean ecosystems are obligately groundwater dependent, while rivers, wetlands, lakes, most marine habitats, phreatophytes, and many other species are facultatively groundwater dependent."

[1] Brown J, Wyers A, Bach L, and Aldous A . 2009. Groundwater-dependent biodiversity and associated threats: a statewide screening methodology and spatial assessment of Oregon. Portland, OR: The Nature Conservancy. www.conserveon-line.org/library/groundwater-dependent-biodiversity-associated/view.html.

[2] Brown, J., Bach, L., Aldous, A., Wyers, A. and DeGagné, J. 2011. Groundwater-dependent ecosystems in Oregon: an assessment of their distribution and associated threats. Frontiers in Ecology and the Environment, 9: 97-102. https://doi.org/10.1890/090108

[3] Aldous, Allison R. & Leslie B. Bach. 2014. Hydro-ecology of groundwater-dependent ecosystems: applying basic science to groundwater management, Hydrological Sciences Journal, http://dx.doi.org/10.1080/02626667.2014.889296

[4] Freed, Zach, Michael Schindel, Claire Ruffing, and Shonene Scott. 2022. Oregon Atlas of Groundwater-Dependent Ecosystems. 128 p. https://www.groundwaterresourcehub.org/content/dam/tnc/nature/en/documents/groundwater-resource-hub/Oregon_Atlas_of_Groundwater_Dependent_Ecosystems_2022.pdf

General awareness of GDE information was not available at the time OWEB water acquisition funding program was initiated and GDEs are clearly fish and wildlife habitat that can be protected using OWEB funds.

Groundwater Conditions in Oregon

In June of 2021 the Oregon Water Resources Department published Oregon Groundwater Resource Concerns Assessment – 2021 that identified the areas of concern and significance of concerns. The preliminary analysis identified some 38% of the state as having concerns of some kind associated with groundwater over appropriation and over pumping. To date only a few areas have been classified to limit new permitting or classified as critical groundwater management areas subject to curtailment of existing permitted pumping. Larger groundwater restricted areas are the Harney Basin (as of December 12, 2025), Fort Rock, and the Deschutes Basin. Smaller areas in the Willamette hills (Columbia River Basalts), Walla Walla Basin and areas of the Umatilla Basin have been restricted for new uses and in some areas current uses are curtailed. OWRD is developing basin scale information on the status of groundwater in relation to recharge. Further, the Oregon Water Resources Commission adopted rules in 2024 to only issue groundwater permits where available groundwater can be demonstrated. With the new rule change in permitting of groundwater use, and the restriction of new permitting by classification or other reservoir characterization, there are areas of Oregon where groundwater permit acquisition can be of long-term benefit to GDEs.

There is growing evidence and information on the overallocation and over pumping of groundwater throughout Oregon.

Groundwater Pumping and its Effects on GDEs

Groundwater pumping can be a threat to groundwater dependent ecosystems. The TNC atlas states “Groundwater extraction by pumping directly impacts the hydrogeologic regime and can disrupt connectivity between groundwater and GDEs.” Groundwater withdrawals are a primary stressor of GDEs in Oregon. By lowering the static groundwater level, groundwater dependent systems such as springs, spring fed lakes, spring fed wetlands, etc. can be converted to dryland eliminating habitat for GDE dependent species[5]. Barlow and Leake state: “Groundwater and surface-water systems are connected, and groundwater discharge is often a substantial component of the total flow of a stream. Groundwater pumping reduces the amount of groundwater that flows to streams and, in some cases, can draw streamflow into the underlying groundwater system. Streamflow reductions (or depletions) caused by pumping have become an important water-resource management issue because of the negative impacts that reduced flows

[5] Barlow, P.M., and Leake, S.A., 2012, Streamflow depletion by wells—Understanding and managing the effects of groundwater pumping on streamflow: U.S. Geological Survey Circular 1376, 84 p. (Also available at http://pubs.usgs.gov/circ/1376/.)

can have on aquatic ecosystems, the availability of surface water, and the quality and aesthetic value of streams and rivers."

Barlow and Leake (2012) conclude: "Groundwater pumping causes streamflow depletion in streams and stream reaches that are both upgradient and downgradient from the location of withdrawal; the effect of pumping is not confined to those reaches that are immediately adjacent to the well. Some stream reaches will be affected more than others, depending on the distance of the pumped well from each reach and the three-dimensional distribution and hydraulic properties of the sediments that compose the groundwater system and adjoining streambeds. Cumulative streamflow depletion increases in the downstream direction of a basin, and the total amount of depletion in the direction of the outflow point (or points) from the basin will, over time, tend toward the total pumping rate of the well or wells that pump from the basin."

For example, OWRD made the calculation that groundwater contributes some 1,800 cfs to streams above Upper Klamath Lake. Pumping groundwater reduces this amount and OWRD has determined that wells within 500 feet of gaining reaches of streams can have a within-year effect on flows necessary to support listed short nosed and Lost River suckers and habitat for newly accessed Chinook salmon.

Groundwater pumping can and often does impact GDEs and can adversely affect stream flow.

Challenges to the use of OWEB Funding

Language adopted by the Oregon Legislature states: "The Oregon Watershed Enhancement Board may fund projects involving the acquisition of lands and waters, or interests therein from willing sellers, for the purpose of maintaining or restoring watersheds and habitat for native fish or wildlife. Interests in these lands and waters may be held by local, state and federal agencies, tribes, not-for-profit land conservation organizations and trusts, public universities listed in ORS 352.002, independent not-for-profit institutions of higher education or political subdivisions of this state, as long as the entity continues to use the land or water for the purposes specified under section 4b, Article XV of the Oregon Constitution." The constitutional language about the use of dedicated lottery funds by OWEB specifies: "These moneys, including grants, shall be used for all of the following purposes: (1) Watershed, fish and wildlife, and riparian and other native species, habitat conservation activities, including but not limited to planning, coordination, assessment, implementation, restoration, inventory, information management and monitoring activities. (2) Watershed and riparian education efforts. (3) The development and implementation of watershed and water quality enhancement plans. (4**) Entering into agreements to obtain from willing owners determinate interests in lands and waters that protect watershed resources, including but not limited to fee simple interests in land, leases of land or conservation easements**..." What the constitutional language and legislative direction specify is that there must be a benefit to fish and wildlife habitats and water quality to be eligible for funding.

There needs to be conditions that assure that reduced groundwater pumping can result in "benefit" to GDEs.

Challenges to Regulatory Protection of GDEs

Oregon does not have explicit authority to regulate groundwater dependent ecosystems. An exploratory evaluation of mechanisms to protect groundwater dependent ecosystems under Oregon law was explored by Adell Amos, Professor, University of Oregon School of Law with assistance of Clinton Donegan Burke, Senior Research Assistant[6] . The authors explored "existing policy mechanisms for protecting groundwater, made "available" through possible irrigation efficiency projects, or other conservation efforts, in a way that leads to a water table rise or increased discharge to groundwater dependent ecosystems." The report identifies how existing authorities could be used to protect *in situ* groundwater rights. The report specifically identifies OWEB as a potential funding source for obtaining groundwater protection.

The report was updated in 2025[7] and provides background on public benefits of *in situ* groundwater and Oregon's regulatory frameworks for managing groundwater and protecting instream flows. This report then describes two models for using an instream water rights framework to protect GDEs: instream water rights for surface water expressions of GDEs and in situ groundwater rights. For each model, the report identifies its benefits and limitations and legal and applied barriers to implementation. One model is to use the in-stream water rights statute for surface expression of groundwater dependent ecosystems; the other approach would be to provide *in situ* groundwater rights as in-stream rights. Both approaches have limitations and without legislative action any approach will be experimental.

Oregon does not have explicit regulatory authority to protect GDEs.

Groundwater Permit Acquisition as a Benefit to Oregon Fish and Wildlife

I would argue that funding for projects that acquire groundwater rights that have benefits for groundwater dependent ecosystems are fully within the scope of authority for the use of OWEB dedicated lottery funds. I suggest it is time for OWEB to explicitly acknowledge that groundwater rights are eligible for acquisition funding. There is a separable argument about what criteria might be used to ensure the benefits of groundwater protection provide to fish and wildlife resources. I would suggest you add to the Purpose section of the rules (OAR 694-046-0010) a provision like "OWEB may consider grant applications that propose to acquire groundwater rights from willing sellers that result in reduced pumping with beneficial effects on groundwater dependent ecosystems." Such a condition could include that funding would only be available where additional

[6] Amos, Adell and C.D. Burke. 2018. Mechanisms for Protecting Groundwater-Dependent Ecosystems. A White Paper of the University of Oregon School of Law Environmental and Natural Resources Law Center Oceans, Coasts and Watersheds Project. September 2018. 54 p.

[7] Smith, Michelle, Andrew Archer, Max McCool, Adell L. Amos, and Clayton R. Hess. 2025. Allocating In Situ Groundwater Rights in Oregon to Protect Groundwater-Dependent Ecosystems: Opportunities and Challenges. A Report of the ENR Center's Oceans, Coasts and Watersheds Project. November 2025. 25 p.

groundwater permitting was restricted or subject to curtailment or where there is a local and direct relationship between pumping curtailment and GDE benefit.

The more challenging part of using OWEB dedicated Oregon Lottery funds for groundwater permit acquisition is to ensure the benefit to GDEs is as permanent as possible given climate change and other exogenous effects.

Suggested Administrative Rule Approach

The following are suggestions on how acquisition of groundwater permits could meet the funding limitations of constitutionally dedicated Oregon Lottery funds.

1. Add a definition in OAR 695-046-0020 that states: "Groundwater-dependent ecosystems (GDEs) include wetlands, lakes, rivers, springs, estuaries and off-shore marine environments, subterranean ecosystems and some terrestrial vegetation such as phreatophytes, as well as the many species that rely on groundwater to meet part or all of their water requirements." Or more generally "Groundwater-dependent ecosystems (GDEs) refer to ecosystems that rely on groundwater for their existence, including those that receive groundwater discharge at the surface, vegetation that accesses groundwater through roots, and organisms that inhabit the pore spaces of aquifers."
2. Since groundwater rights are "water rights" I see no reason to distinguish between surface and groundwater.
3. You should consider using a term like "Restricted Groundwater Use" means basins or reservoirs classified to limit new groundwater permits, areas designated as Critical Groundwater Management Areas, or other areas as determined by Oregon Water Resource Department as closed to further groundwater permitting.
4. Add to OAR 695-046-0035 that states: "The Board will only consider groundwater acquisition projects involving legal rights not subject to forfeiture that: (a) are in a restricted groundwater use area, or (b) can show a direct and demonstratable impact on a groundwater dependent ecosystem.
5. Add to OAR 695-046-0195: "(3) Provide the assurance that the water right is valid, not subject to forfeiture and that groundwater rights are within a Restricted Groundwater Use area as determined by the Oregon Water Resources Department.
6. Add to OAR 695-046-0196: Groundwater acquisition grant applications will be evaluated on the extent to which the application describes:
    a. The GDE affected by pumping from the subject permit,
    b. The significance of the impact of the pumping on the designated GDE,
    c. The significance of the GDE to Oregon fish and wildlife resources, and
    d. The measures to monitor effects of the acquisition on the designated GDEs to be protected.
7. The above provision would be in addition to OAR 695-046-0196 (2), (3) and (4) the terms of which would apply to groundwater permits.

I believe that the use of the language proposed would both recognize the importance of GDEs and allow for protection of Oregon Lottery Funds in the acquisition of groundwater rights.

It would seem to be short sighted to exclude the consideration of GDEs in the protections promised by the constitutionally dedicated funds to benefit Oregon's fish and wildlife resources. With the recent compilation of information about GDEs and the recognition of the impact of over pumping on those resources there are surely conditions and situations where acquisition of groundwater rights can have as much beneficial impact as surface water acquisition. The major problem is that groundwater is "out of sight" while everyone can see surface water. While it is true that the law protecting groundwater is not as well developed as surface water, there are protections that can be leveraged to assure the benefits of a given acquisition proposal can provide to Oregon's fish and wildlife habitats. I believe what I have laid out can provide the protection of both the GDEs and Oregon Lottery funds in an appropriate manner.

Protection of Groundwater Dependent Ecosystems is clearly within the authority for the use of Oregon Lottery Funds for acquisition of groundwater permits where a clear demonstration can be made that there is a benefit to Oregon's fish and wildlife habitats.

I would be pleased to answer any questions you may have about this matter. Please consider my comments at your upcoming RAC meeting.

Sincerely,

Kenneth F. Bierly

Kenneth F. Bierly