



Oregon

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Groundwater Allocation Rules Advisory Committee Hybrid Meeting #7 (8:30 am – noon, December 14, 2023) Meeting Summary

This is a summary of the Groundwater Allocation Advisory Committee (RAC) Meeting held in person (Salem office, Oregon Water Resources Department) and virtually (Zoom platform), on December 14, 2023, from approximately 8:30 to noon. For more information, see the Meeting Agenda, Meeting Presentation, Draft Rules, and other Meeting Materials, available online at <https://www.oregon.gov/owrd/programs/GWWL/GW/Pages/Groundwater-Rulemaking.aspx>

Rules Advisory Committee (RAC) members in attendance

Adam Sussman, Central Oregon Cities Organization, GSI Water Solutions
April Snell, Oregon Water Resources Congress
Bill Jaeger, Applied Economics, Oregon State University
Casey McClellan, Seven Hills Winery
Cheyenne Holliday, Verde
Dave Wildman, Anderson Perry & Associates
Greg Kupillas, Pacific Hydro-Geology, Inc., Oregon Groundwater Association
Jeff Stone, Oregon Association of Nurseries
Karen Lewotsky, Oregon Environmental Council
Kate Fitzpatrick (proxy), Deschutes River Conservancy
Kelly Warren, Confederated Tribes of the Umatilla Indian Reservation
Lauren Poor, Oregon Farm Bureau
Lisa Brown, WaterWatch
Misty Buckley, Homeowner, Klamath County
Nick Siler, Atmospheric Science, Oregon State University
Phil Brown, Northwest Groundwater Services
Robyn Cook, GSI Water Solutions
Sarah Liljefelt, Oregon Cattlemen's Association
Scott White, Klamath Irrigation District
Tammy Wood, Oregon Lakes Association
Zach Freed, The Nature Conservancy

RAC members not in attendance

Brad Parrish, Klamath Tribes
Darrick DeGroot, Klamath County Commission, Association of Oregon Cities

Kelly Simmelink, Jefferson County Commission
Laura Masterson, 47th Ave Farms
Margaret Durner, Citizen at Large
Michael Martin, League of Oregon Cities
Obie Strickler, Grown Rogue
Susan Lea Smith, Willamette University Law School
Tyler Hufford, Rancher

Oregon Water Resources Staff in attendance

Oregon Water Resources Department (OWRD) staff: Annette Liebe, Justin Iverson, Laura Hartt, Ben Scandella, Travis Brown, Kelly Mainz, Darrick Boschman, Jeana Eastman, Ivan Gall, Jon LaMarche, Jeffery Pierceall, and Tim Seymore.

Others in attendance

Rex Barber (Big Falls Ranch), Glenn Barret (Water for Life), Doni Bruland (Baker City Council), Mike Buettner (City of Bend), Anton Chiono (Confederated Tribes of the Umatilla Indian Reservation), Jessica Dorsey (City of Hillsboro), (Danette Faucera (Oregon Department of Fish and Wildlife), Chris Hall (Water League), Cole Hendrickson (Oregon Department of Environmental Quality), Richard Kosesan (RDK & Company), Malia Kupillas (Pacific Hydro-Geology, Inc.), Chris Marks (Confederated Tribes of the Umatilla Indian Reservation), Devon Morales (Crosswater Strategies), David Piltz (AMP Insights), Jim Powell (citizen), Jesse Ratcliffe (Oregon Department of Justice), Nolan Smith (Carollo Law Group), Christina Witham (Baker County Commission), Ken Yates (Oregon Water Resources Congress)

Welcome, Introductions, & Agenda

OWRD staff welcomed participants, led a round of introductions, and reviewed the agenda.

RAC Meeting 6 Summary

OWRD staff noted that RAC comments following the sixth RAC meeting were distributed to RAC members and posted online. OWRD staff then asked if RAC members had any comments, questions, or concerns regarding the RAC 6 Draft Meeting Summary; the RAC had none.

Ongoing Outreach Efforts

Staff presented a summary of past and planned outreach efforts related to the rulemaking effort.

One RAC member noted the changes to the proposed rule language since the September 13th RAC meeting as well as the addition of two more RAC meetings. He asked staff to elaborate on the changes and need for additional meetings. Staff responded that the RAC was reconvened to address concerns raised following the September RAC meeting and the September Oregon Water Resources Commission meeting, including those made by representatives of central Oregon municipalities.

A COCO representative asked what the definition of “science-based” is. Staff responded that the RAC would be addressing that issue.

A RAC member asked if the staff have been proactive in their efforts to engage interested

stakeholders beyond offering presentations. Staff responded that efforts have included both presentations to inform as well as conversations to hear from stakeholders. Staff also indicated they would continue to offer and solicit further engagement.

Another RAC member noted potential oversight by the Oregon Legislature. Staff responded that the Department has statutory authority to act and interpret through rulemaking.

A RAC member asked who the instream interests should contact for a conversation with staff. Staff responded that Laura Hartt would be the right contact.

Determining Hydraulic Connection

Staff noted that inclusion of this agenda item was in response to RAC feedback requesting clarification as to whether the proposed rules increase the likelihood of finding a hydraulic connection and therefore finding more occurrences of potential for substantial interference.

Staff presented the proposed definition of Hydraulic Connection and its relation to the Potential for Substantial Interference (PSI). Staff then briefly described the current process for making a finding of Hydraulic Connection, emphasizing that the process is detailed and site-specific, with the ultimate finding being based on a preponderance of the evidence. Staff also affirmed that the process for making a finding of Hydraulic Connection will not change under the proposed rules. The information considered in making a finding of Hydraulic Connection includes a conceptual model of the site-specific and regional hydrogeology, groundwater and surface water elevation data, stream periodicity, and other relevant and available data, including information from the application or public comments. Staff provided examples of how each type of information would or would not lead to a finding of Hydraulic Connection.

A RAC member asked whether there was a specific threshold of similarity between groundwater and surface water elevations that would support a finding of hydraulic connection. Staff responded that sufficient similarity would be dependent on the hydrogeologic setting. For example, in an alluvial aquifer system with a vertical gradient, groundwater levels deep in the aquifer may appear quite different from surface water elevations, but if one was to install a series of nested piezometers to measure pore pressure at different elevations, one could see a relatively smooth gradient of water levels consistent with hydraulic connection. By contrast, abrupt changes in groundwater level with depth would more likely indicate that deeper aquifers are not hydraulically connected to nearby surface water.

A RAC member asked if there are cases where Hydraulic Connection would be found with an ephemeral stream. Staff responded that they could not think of one, stating that while it may not be impossible, it was not probable.

A RAC member asked if the existence of water rights associated with an intermittent stream would factor into whether that stream would be considered in the analysis of Hydraulic Connection. Staff responded that there has been discussion about what constitutes a surface water source; one indication of a surface water being a source is the presence of a surface water right. However, presence alone does not establish a hydraulic connection with groundwater because that surface water could be intermittent due to other factors apart from a fluctuating

water table.

A RAC member cited studies (*Cartwright et al., 2020, Oases of the future? Springs as potential hydrologic refugia in drying climates (Frontiers in Ecology and the Environment, 18(5), pp.245-253)*) which noted that, as groundwater levels decline, streams and surface water bodies can shift in character from perennial to intermittent to ephemeral. The RAC member asked whether the analysis for Hydraulic Connection considers the potential for groundwater declines to affect stream periodicity. Staff responded that Department hydrogeologists assess impacts to groundwater storage (declines) separately from Hydraulic Connection and surface water capture (streamflow depletion). If groundwater declines have already dried up a reach of a stream, then there is no streamflow subject to depletion. When assessing potential interference with surface water, staff would base the finding on the condition of the stream at the time of the analysis. The RAC member characterized the assessment of Hydraulic Connection as forward-looking, despite the lack of consideration of how or why streams may have become intermittent or ephemeral. Staff agreed with that characterization.

Staff listed data sources used in assessing stream periodicity, including older topographic maps, which sometimes included field observations, as well as more modern data sources. A RAC member noted that some topographic maps used by the Department have shown stretches of streams to be perennial while older maps do not depict those same stretches as perennial. The RAC member described their own research on how stream periodicity is determined for topographic maps, which suggests to the RAC member that newer USGS topo maps base stream periodicity on the National Hydrographic Dataset (NHD). The RAC member stated that the NHD is not derived from field observations but rather classifies stream periodicity according to stream order classification based on branching. Consequently, the RAC member characterized the method as less accurate, noting at least one case where the newer topographic map did not correspond to water level data. The RAC member asked staff to what extent they acknowledge that issue and cautioned against relying on the NHD to determine stream periodicity. Staff responded they are aware of the issue and for that reason, incorporate older topographic maps in the assessment of stream periodicity. However, staff disagreed with the characterization of the NHD as inaccurate, instead referring to the NHD as a model for assessing stream periodicity. Staff further noted that the NHD does incorporate field observations and that multiple agencies have stewards with authorization to provide data to the NHD. Applicants also can share other available information with the Department. Staff again reiterated that the proposed rules do not change the approach for determining Hydraulic Connection. The RAC member expressed appreciation for the Department's indicating a willingness to have discussions about Hydraulic Connection.

A COCO representative asked if there were additional sources of data that staff would like to have to inform Hydraulic Connection assessments. Staff offered some examples of how other data might be used in a Hydraulic Connection determination, noting most of these data sources are not available in many areas of the state and collection of such data would not be feasible on a statewide scale.

A RAC member asked how many subbasins have current data on hydraulic connections and if there are areas of the state where the Department would like to have more data. The RAC

member suggested that if the RAC had a better sense of where data are insufficient, then the RAC could work toward directing more resources to those areas. Staff responded that the Department has some data everywhere in the state which can be used to make Hydraulic Connection determinations; however, staff did acknowledge that having more data might lead to more precise determinations of Hydraulic Connection in terms of timing and/or magnitude. This additional data might be helpful to applicants seeking to develop a time-limited right with only seasonal impacts; in such cases, additional data could be gathered as needed. However, staff noted that an appropriate amount of data already exists to make site-specific determinations of Hydraulic Connection based on preponderance of the evidence.

The RAC member then asked how lined canals are treated when assessing Hydraulic Connection, noting that in some instances, the NHD has treated canals as waterways. Staff acknowledged the challenge of how to treat canals, noting that in some cases natural streams may be channelized and used for water conveyance. Staff further noted that the assessment of Hydraulic Connection is focused on natural surface water sources from which water could legally be appropriated, which is generally not true of canals. In other words, to the extent that canals can be identified as purely artificial, the Department would not find a Hydraulic Connection. Alternatively, in the case of channelized streams, the Department looks to the reviewing hydrogeologist to determine Hydraulic Connection.

A RAC member commented that his understanding is that the Department is just trying to determine whether Hydraulic Connection exists and is not concerned with the timing or amount or effectiveness of that Hydraulic Connection. Staff confirmed the RAC members observation, noting that Hydraulic Connection is a prerequisite for subsequent findings of the Potential for Substantial Interference and Substantial or Undue Interference.

A RAC member suggested that the presentation on Hydraulic Connection was not addressing the most relevant issue, which is how the rules are changing to consider senior rights and regulation. Staff responded that the presentation was intended to address the concern that Hydraulic Connection would be presumed and noted that future discussion will be focused on the determinations regarding the Potential for Substantial Interference, Substantial or Undue Interference, and Water Is Available under the proposed rules.

A RAC member expressed their appreciation for the presentation and responsiveness to RAC concerns. The RAC member said the presentation had shown that Hydraulic Connection is a site-specific determination. The RAC member was curious to learn more about how specific conductance could be used as a tracer for baseflow. Staff responded the specific conductance data could be used to demonstrate how dependent a given stream is on groundwater discharge, but not to demonstrate specifically from which aquifers that groundwater discharge is coming. Staff also noted that the presentation on House Bill 2018 (2021) would address that.

Staff reviewed the proposed rule language pertaining to Hydraulic Connection.

A RAC member asked whether the proposed rules allow for mitigation programs to define Hydraulic Connection independently, referencing the Deschutes Basin mitigation program. Staff noted that the Deschutes program does not mitigate to address Hydraulic Connection but to

address the Potential for Substantial Interference (PSI) with Deschutes Scenic Waterways. Staff responded that the Department would need to develop a statewide mitigation program to standardize the criteria for allowing mitigation programs to bypass Hydraulic Connection/PSI determinations. Staff also noted that mitigation programs are not always feasible, due to difficulties in obtaining a source of water that mitigated properly in time and space.

Staff further noted that applications are reviewed on a case-by-case basis; sometimes sister agencies such as the Oregon Department of Fish and Wildlife or the Oregon Department of Environmental Quality identify impacts and require mitigation of those impacts. A RAC member noted that sister agencies typically require gallon-for-gallon mitigation, which is not always feasible. The RAC member cited past examples of mitigation to deal with convenience or water quality concerns. The RAC member noted that the Department did and may still allow cancellation of surface water rights to mitigate for a proposed new groundwater use. The RAC member then noted that the current rules have certain distance thresholds, such as assuming Potential for Substantial Interference (PSI) within a quarter mile and applying other criteria to assume PSI between 0.25 and 1 mile. However, beyond one mile, the Department does not evaluate PSI at all. In contrast, the RAC member noted that the proposed rules have no distance thresholds and are likely to trigger more Division 33 reviews by sister agencies. Staff responded that even when PSI is found, groundwater may still be available for appropriation if water is available in the surface water source.

Staff presented a map illustrating the earliest priority date to which 2018 through 2020 surface water use had been regulated in each administrative basin. Staff stated that the map was intended to show that surface water sources across the state are already being regulated to satisfy senior users. Staff stated that under a prior appropriation system, the Department cannot authorize additional groundwater use where that added use could result in the need to regulate off existing surface water users.

A RAC member noted that although the map provides a lot of information, it does not depict the number of rights, or the number of rights regulated off. The RAC member also noted that the Department cannot provide a similar map depicting regulation of groundwater rights which also have priority dates and, in theory, could be regulated off to protect senior groundwater rights. The RAC member suggested that regulation between groundwater rights typically does not happen despite widespread interference between groundwater rights, because of the difficulty of determining which well is interfering with which other well. The RAC member characterized the issue of trying to regulate groundwater under a prior appropriation system as trying to fit a square peg in a round hole. Staff responded that regulation from one well to the other does happen in rare cases; however, groundwater regulation typically happens only via critical groundwater area designations.

A RAC member asked how many wells would make it past the proposed Division 9 rules, given that very few wells in the past have been found to not have Hydraulic Connection to surface water. Another RAC member asked why that would be a problem, because, given the physics of the situation, it would not be surprising to find Hydraulic Connection with a surface water source in majority of cases.

The previous RAC member responded by noting that the current rules could provide a pathway to a water right despite hydraulic connection; however, the proposed rule changes narrow that pathway. He noted that as a RAC member he wanted the public to understand the policy implications. Staff responded that, where there is hydraulic connection, surface water regulation has occurred. A RAC member suggested providing an example that would highlight what has happened to springs, rivers, and wildlife over time because of issuing groundwater permits under the current Division 9 approach instead of the proposed rules which are much more protective.

A RAC member noted that the map appears alarming but does not reflect how the regulation history has changed over time. The RAC member suggested that more regulation over time would be a good indication of increasing impacts from groundwater pumping, but the map does not include that information. The RAC member stated that it was unknown to what extent what was shown on the map was a function of over-allocation of surface water by the Department historically.

A RAC member suggested that the extent of the hydraulic connection is what matters, not just that there is an over-generalized connection. The RAC member also asked for a review of an area that is not stressed by additional groundwater development and what the proposed rules would do in that area. She also noted that the Department could show an overlay of groundwater regulation through critical groundwater areas. The RAC member felt it important that at the end of the process the people most impacted by the proposed rules understood the potential outcome. The RAC member suggested that part of what was missing from the map was why surface water rights were regulated in each instance. She noted that in several areas there were reoccurring droughts; some information about the impact of climate change is basin-specific and could inform the rulemaking.

The RAC member also suggested that part of the reason why mitigation projects have been unsuccessful in the past is the Department's requirement for permanent mitigation. She invited further conversation on the topic. The RAC member felt that the burden of proof will fall on the applicant to prove that Water Is Available, which poses equity issues in rural areas and for water users who are not as affluent as developers. The RAC member noted that water is something that connects all of us, and managing it is something the state needs to get better at doing.

The RAC member asked whether the Department has similar confidence in the data for making other findings under the proposed rules as it does for making a finding of Hydraulic Connection. The RAC member also asked how exempt wells would be considered, given the new rules effectively shut down the pathway toward new permits. The RAC member suggested that one potential outcome of the proposed rules would be that larger uses would be carved up into smaller uses to qualify as exempt uses. The RAC member said that they felt the Department was selecting maps and data to justify the rulemaking without taking a more holistic approach. The RAC member also asked how the pressure for senior users with open canals to modernize and put more water back in stream would affect hydraulic connection and water availability. The RAC member said they expected a scenario where there would be more conflict and only the rich people would be able to survive.

A COCO representative stated they were interested in transparency and were struggling with

how to understand and convey the impacts of these rules to other city managers and mayors, who see the regulation coming and need time to adapt. The RAC member suggested that some case studies would be helpful.

A RAC member agreed with an earlier comment that it would be interesting to see a map of water conflict trends over time and whether that covaries with increasing groundwater development.

Reasonably Stable Groundwater Levels – Technical methodology

Department staff presented on an analysis of water levels fluctuations in precipitation-correlated wells to help determine the quantitative thresholds on the rate and total magnitude of groundwater declines which would be incorporated in the proposed definition of Reasonably Stable Groundwater Levels (OAR 690-008-0001(9) in proposed rules). A draft memo detailing the analysis was shared with the RAC; staff noted that the memo was undergoing peer review by the U.S. Geological Survey (USGS). Objectives for setting the thresholds for rate and magnitude included consistency with hydrogeologic interpretation, consistency in determining when water levels are within the dynamically stable range, sensitivity to groundwater declines, definition of the minimum data necessary to make determinations, limited burden of collecting water level data, and transparency and easy implementation.

Department staff suggested that the greatest expense in groundwater data collection is the cost to drill a well. In many instances, existing wells can be used to collect the data and, thereby, substantially reduce the cost of collecting data. A RAC member familiar with well drilling noted that the cost of drilling a well varies but suggested that an irrigation well in the Willamette Valley could easily cost \$100,000. Another RAC member stated that using an existing well for data collection may require the consent of other private property owners to access and measure their wells for up to 5 years; the RAC member also noted that the cost of hiring a consultant for 5 years is not insignificant.

A RAC member characterized the point of the analysis of precipitation-correlated wells as being able to distinguish oscillations within the dynamically stable range from undesirable water level behaviors. Staff concurred with that characterization, noting that some of the objectives for setting the decline thresholds are in tension; as such, the Department's goal is to achieve balance between those objectives.

Staff summarized the proposed definition of Reasonably Stable Groundwater Levels, noting the insertion of temporary variables ("XX" and "YY") in place of the quantitative limits on rate and magnitude of decline pending the USGS peer review of the analysis of water level fluctuations in precipitation-correlated wells. Staff also noted a change in the proposed reference groundwater level for the total magnitude of declines from "highest known" to "pre-development" groundwater levels, although in many cases those groundwater levels would be expected to be approximately the same.

A RAC member noted that there was not a definition of "pre-development" and asked OWRD staff for clarification. Staff responded that the proposed use of the term "pre-development" was intended to address instances where development of water infrastructure had caused groundwater

levels to rise, citing Lake Billy Chinook's construction and its effect on surrounding groundwater levels as an example. Staff suggested that "pre-development" groundwater levels would be determined using best professional judgement on a case-by-case basis, taking all pertinent information from applicants, commenters, protesters, and other sources into account. Staff clarified that they expected "pre-development" groundwater levels to significantly differ from "highest known" groundwater levels only in a minority of cases. Staff also invited suggestions for an alternative term to "pre-development" and definition language for "pre-development." Other RAC members voiced their support for "pre-development" to be defined in rule, with one RAC member noting that using "pre-development" groundwater levels may be unfeasible because of the vagueness of the term and the very low likelihood of having pre-development groundwater data. Another RAC member voiced their opposition to using "highest known" groundwater levels as the highest known groundwater level could be anomalous – the result of record precipitation in a single year – and not representative of typical conditions in the aquifer. Staff clarified that the precipitation-correlated well analysis did not attempt to differentiate between pre-development and highest known groundwater levels.

A RAC member asked what was the "management time horizon" indicated on the figure on slide 25 of the presentation. Staff responded that the label comes from the paper from which the figure was taken and that the term essentially meant the length of time necessary to establish rules on groundwater allocation.

A RAC member asked whether staff had considered using a partial auto-correlation function to figure out which time lag for each well corresponded most closely with water level fluctuations. The RAC member was concerned that averaging precipitation over 2-10 years would buffer out specific time lags that might be most relevant for a given well. Staff responded that the analysis compared all precipitation averaging periods between 2 and 10 years (2 years, 3 years, 4 years, etc.) against each well; if any of those precipitation averaging periods correlated sufficiently with the well water level record, then that well's water level data was included in the analysis. The analysis did not require deciding which time period of averaging was the best for any particular well, although the precipitation averaging period was indicated on each of the example hydrographs in the presentation.

A RAC member asked how the long-term rate of decline was determined and whether any wells were included that showed a long-term rate of increase. Staff responded that a minimum of 25 annual high water levels (spanning at least a 24-year period) were required and the least-squares linear best fit was used to determine the long-term trend. If that long-term trend was declining by less than 0.5 feet per year, data for that well was included in the analysis. In other cases, wells determined to have increasing trends were included in the analysis. The RAC member considered that a good sign, suggesting that if the included wells were dynamically stable one would expect some of them to be increasing over the period. Staff concurred and noted that all included well water level time series were detrended to assess what they would look like if they were perfectly stable. Staff offered to follow up with RAC members interested in discussing the more technical elements of the analysis in a subsequent technical information session to be held at a later date.

A RAC member asked whether the "characteristic magnitude" indicated on each of the example

hydrographs represented the total range from minimum to maximum water level or the greatest decline from a given high value to the subsequent low value. Staff responded that it was the latter. The RAC member then asked from what time period the indicated rate was derived. Staff responded the rate was derived from any period spanning between 5 and 20 years. The RAC member asked how the maximum slope was derived. Staff responded that the Sen's slope (a nonparametric estimate of the trend) was used to define the maximum slopes for each well's data.

A RAC member asked for staff's interpretation of the water level behavior over the past ~20 years in the example hydrograph for DESC 3016 (a well in Deschutes County). Staff responded that the mechanistic causes of various water level behaviors in the included well data was beyond the scope of this analysis. The RAC member noted that they were concerned with understanding the data behind the example hydrographs because other factors besides precipitation can drive water level changes. The RAC member hoped the USGS peer review would address some of the mechanistic causes. Another RAC member suggested that the referenced water level behavior might look more typical with a longer period of record. The RAC member suggested that any visual interpretation of the hydrographs would be affected by the short period record, though the record may seem long because of the difficulty in obtaining the data.

Regarding the figure on slide 31, depicting cumulative percent distribution of well clusters with maximum declines less than the given value on the vertical axis, one RAC member suggested that the value corresponding to the maximum decline among the 90th percentile of well clusters represented a much higher percentile of all wells with groundwater level data across the state. The RAC member noted that the wells included in the analysis were already those determined to be sensitive to changes in precipitation. Staff responded that the maximum decline value might encompass the water level behavior of a higher percentile of all wells across the state with groundwater level data but emphasized that the analysis only tried to identify a reasonable sample of observed variability that's consistent with the concept of Reasonably Stable. Staff therefore declined hypothesize about how applicable the analysis would be to all wells. The RAC member suggested that other wells not included in the analysis could be inferred to be less sensitive to precipitation and therefore would oscillate less frequently. Staff responded that other wells could have different trends entirely, like consistent declines.

A RAC member asked whether the cumulative distribution graph was showing percentiles for both rate of decline and total decline. Staff responded that the graph was only showing percentiles for the total magnitudes of decline.

A RAC member asked for clarification on potential refinement of the decline limit thresholds through basin program rules. Staff responded that the consistency across the state of the variability of declines in the included dataset supported the Department's development of a statewide definition of Reasonably Stable Groundwater Levels. In the proposed rule, the Department left open the option for further refinement of the definition through basin program rulemaking.

A RAC member asked for clarification regarding the figure on slide 35, depicting the cumulative

percent distribution of well clusters with rates of decline less than the given value on the vertical axis based on the analysis method and comparing that cumulative distribution to the results of a standard, statistical Mann-Kendall test. Staff clarified that for the values corresponding to the portion of the cumulative distribution curve which was above the dashed line indicating the results of the Mann-Kendall test, the proposed rate test would more often find groundwater levels to be Reasonably Stable. The RAC member therefore characterized the proposed rate test as being in favor of applicants. Another RAC member asked how the Department currently uses the Mann-Kendall test. Staff responded that the Mann-Kendall test is primarily used by the USGS and academic researchers, not less so by the Department. The RAC member questioned the utility of comparing the proposed rate test to the Mann-Kendall test if the Department doesn't use the Mann-Kendall test, suggesting that it would be more helpful to know how the proposed rate test would compare to current Department practice. Staff responded that it was not possible to compare the proposed rate test to a current rate test because Reasonably Stable Groundwater Levels is currently undefined. Instead, OWRD staff rely on hydrogeologist's professional judgement during reviews. Staff emphasized that a common desire had been expressed in previous RAC discussion to establish a quantitative metric for Reasonably Stable Groundwater Levels which could be broadly understood and would lead to less subjective determinations of Reasonably Stable Groundwater Levels.

Staff continued summarizing the results of the precipitation-correlated water level analysis, highlighting that analyzed water levels fluctuate by less than -0.6 feet per year and 25 feet total roughly 97-99% of time over the periods of record. Staff also highlighted that the proposed rate test yields a result of "stable" more often than applying a standard statistical test (Mann-Kendall) does. Staff again noted that they are seeking technical peer-review from the USGS and welcomed RAC feedback on the analysis.

A RAC member asked for confirmation that the USGS peer-review was trying to help define which limits should be written into the proposed rule where there are currently placeholders. Staff confirmed that the analysis was intended to inform the selection of those thresholds but clarified that the USGS peer-review would only assess the methodology used in the precipitation-correlated well analysis and would not suggest appropriate thresholds for use in rule.

A RAC member, noting that they have worked with hydrogeologists familiar with the Deschutes Basin, asked how outside technical review of the analysis could be incorporated during the peer review process. The RAC member also suggested that technical analysis should have been completed and shared at the beginning of the RAC process to guide subsequent discussion of the policy stemming from the analysis. The RAC member stated the analysis would benefit from the USGS as well as additional peer-review. Staff welcomed technical comments on the analysis, requesting that such comments be submitted as soon as possible so that they may be incorporated in the final document. The RAC member later asked what format the USGS peer-review would take and how that would be shared with the RAC. Staff responded that they expected to receive written comments from the USGS that would be shared with the RAC, along with the subsequently updated version of the precipitation-correlated analysis memo.

Staff clarified that the analysis was agnostic to the mechanistic cause of groundwater water level

fluctuations. Instead, the analysis assesses whether groundwater level fluctuations are correlated with precipitation and whether they are stable over the long run; the analysis does not require groundwater level fluctuations be purely natural. Another RAC member asked whether it was true that stationary hydrographs could be divided into 3 components, i.e., trend, seasonality, and stochasticity. Staff generally agreed, preferring to characterize “seasonality” as “decadal cycles” instead. Staff also clarified for other RAC members that stochasticity meant random fluctuations caused by, for instance, measurement error.

A RAC member expressed their appreciation for the analysis, characterizing it as very rigorous and supportive of science-based rulemaking. The RAC member appreciated that the analysis did not find systematic variations between basins in the results, citing this as supportive of statewide rules as opposed to basin-specific rules. The RAC member also stated that the analysis provided good justification for the thresholds already reviewed and discussed by the RAC, suggesting that those thresholds did not need to be changed.

A RAC member said they had not been asked to specifically agree or disagree with any part of the rules but that they did intend to provide comments. The RAC member hoped that the proposed rules would be revised to have a more balanced approach compared to the rules that would have been sent out for public comment in the fall. The RAC member noted that they would likely have to pay hydrogeologists to review the analysis memo, though they supported the USGS peer-review. The RAC member echoed another RAC member’s comments that the analysis should have been presented earlier in the RAC process. The RAC member suggested that the areas of wells included in the analysis which exhibited the greatest decline correspond with existing critical groundwater areas or groundwater limited areas, where the Department already can control well use. The RAC member asked whether the analysis indicated significant declines outside of critical groundwater areas, limited groundwater areas, or similar designated areas. Staff responded that they had not performed that specific analysis but were reasonably confident that at least some of the analyzed well clusters where declines exceeded 25 feet were outside existing administrative areas. The RAC member expressed their opposition to staff stating that everywhere in the state has a problem while also claiming there are areas of the state that are known to be problematic. The RAC member contrasted the proposed rules with current practice, stating that, under the current practice, substantial data is required to designate a critical groundwater area, even at the request of community members. By contrast, according to the RAC member, under the proposed rules OWRD would make assume that declines exist everywhere and require substantial data to prove that an area does not have a problem before additional groundwater use would be authorized. The RAC member felt that the proposed rules did not balance the protection of existing uses and the further development of groundwater resources. The RAC member suggested that it would be helpful to have an overlay of the analytical results with maps of areas with known problems and associated data. The RAC member advocated focusing attention on areas of known problems rather than implementing a blanket approach that, in their opinion, may not be appropriate for certain basins.

The RAC member also asked how exempt wells would be considered under the proposed definition of Reasonably Stable Groundwater Levels (proposed OAR 690-008-0009), specifically pointing to part (c), which allows for the presumption that groundwater levels are Reasonably Stable where no groundwater extraction has occurred or been authorized. Staff

responded that exempt wells would be considered in the groundwater extraction history of given areas, noting that undeveloped aquifers have been uncommon in groundwater applications.

A RAC member stated that the analysis seemed carefully constructed and seemed to address some comments in previous RAC meetings requesting statistics. Another RAC member suggested that the 90th percentile of analyzed well clusters was too high a value to use for setting a threshold as it would include outliers. Staff reiterated the request that RAC members schedule a subsequent meeting with staff to discuss the technical aspects of the analysis in more detail.

Reasonably Stable Groundwater Levels – Revised proposed rule language (Division 8)

Staff presented the proposed language for Reasonably Stable Groundwater Levels, reiterating their intention to replace the temporary variables (“XX” and “YY”) with numeric values and to reconsider the “pre-development” language. Staff noted the removal of the reference to 8% of saturated thickness of the groundwater reservoir from the total decline test. Staff noted that the ability in part (d) to supersede the statewide definition in basin program rules had been modified to remove the restriction that such basin program rule definitions be consistent with excessive declines. Staff also noted that part (e) had been added to specify that the statewide definition does not apply to Critical Groundwater Areas, which are a special subset of basin program rules. Staff emphasized that the Department sees basin program rulemaking as the appropriate venue to modify the statewide rule.

A RAC member suggested that there is no scenario where a water level that Excessively Declining is Reasonably Stable nor could they foresee a scenario where the Department would want to allow a water level trend to be both Excessively Declining and Reasonably Stable. The RAC member stated that the former sideboards in part (d) limited the flexibility on Reasonably Stable. Another RAC member agreed, noting that there has been a lot of effort put into developing statewide thresholds and that allowing modification without sideboards will lead to a lot of time spent without being productive.

A RAC member – who supports statewide stewardship of groundwater but also sees basin-specific needs – appreciated the proposed rules but wondered what the state could do to support the science for a basin program rules process that might not necessarily go into rule but could add clarity for embarking on this path.

A COCO representative supported the proposed change, suggesting that removing the sideboards provides the flexibility that is sought in establishing a basin-specific rule. The RAC member felt that limiting what a basin rulemaking group could come up with conflicts with the spirit of the process. The RAC member echoed concern about resources required to facilitate those processes, noting that basin-specific planning efforts require support and requesting that future Department budgets support rulemaking and place-based planning.

A RAC member suggested that the proposed changes to parts (d) and (e) were a step in the right direction. The RAC member thought it would be better if these rules were being developed basin-by-basin, rather than starting with a statewide rule and then putting pressure on basins to reverse the rules if they do not work for that basin.

Overview of House Bill 2018

Staff acknowledged the request from RAC members for the rulemaking to wait until the completion of the research contracted under House Bill 2018 (2021). Staff also clarified that there may be situations where basin-specific rules are determined to be more appropriate, but such a determination should not likely be the result of localized dynamically stable groundwater fluctuations that are significantly greater than those used to establish the proposed definition of Reasonably Stable Groundwater Levels. For example, rules established in the Fort Rock limited area (established 1980) are, in fact, more restrictive than what the Department has proposed for Reasonably Stable Groundwater Levels; the more restrictive rules should forestall or delay the need for future curtailment of groundwater use in the Fort Rock area.

Staff presented the expected deliverables from the HB 2018 work from the USGS in 2 phases: Phase 1 (2026) and Phase 2 (2032).

Staff reiterated that the fact that the statewide distribution of water level declines covers all the individual basins, supporting the Department's proposal to create statewide rules. Staff emphasized that the results of HB 2018 will not impact the determination of Reasonably Stable Groundwater Levels

Public Comment

Christopher Hall (Water League) shared the Department's bar chart comparing percent of water wells and volume of groundwater pumped by type (e.g., irrigation, domestic). He suggested that applying equity issues to support irrigators is "equity-washing," because agriculture accounts for fewer than 10% of wells while using more than 80% of the groundwater. He suggested that place-based planning is a valuable tool that has been stymied by lobbying, ineptitude, and lack of funding. He called for overarching state-based planning, pointing to the Department of Land Conservation and Development as an example of an agency developing planning goals which local groups apply. He also noted that exempt wells are limited to 0.5 acres of noncommercial lawn or garden which should not be cobbled together to support widespread water use. Lastly, he noted that cities and municipalities use a small portion of water, and that irrigation is largest user. He further noted that cities should not suffer because of limited groundwater availability especially as they try to meet the Governor's affordable housing goals.

Glen Barrett (Water for Life) expressed concern about the scope of the rules. He requested data concerning well impacts over the past 5 years as well as the economic impacts of not having those wells. He recommended that the rules include a requirement to review and report 10 years into the future how new applications may be affected by the proposed rules. Mr. Barrett suggested that the Department already has tools in place to address groundwater management concerns, e.g., water management areas. He further suggested that a basin area pilot effort may be more appropriate than a statewide rulemaking effort.

David Pilz (AMP Insights) expressed appreciation for the hard work on a challenging, complex, and technical topic. He noted that the Environmental Defense Fund also supports policies that protect the resource without sacrificing the economic vitality of communities. He noted that many communities face large financial costs to slow groundwater level declines. He further noted the proposed rule provides some water certainty and hopes that the RAC can agree on

proposed rules.

RAC Roundtable Discussion

One RAC member noted appreciation of the Department's work, commenting that she sees an inflection point and urged the RAC not to throw out all the hard work done. She stated agreement with the approach of focusing on reasonably stable water levels as opposed to well capture. She also commented that WaterWatch has evaluated the City of Redmond's Water Management and Conservation Plan, finding that housing is not driving additional demand-- outdoor watering is. She encouraged the RAC to explore more creative solutions than simply drilling more wells. She also noted she looked forward to further discussions concerning the Reasonably Stable Groundwater Level analysis.

One RAC member noted appreciation for every one's time and effort as well as appreciation of the emphasis on science. However, she also was also mindful of limitations based on available data inputs. She stated concerns that it may be easy for non-scientists to take a cursory look at data and approve it, so she appreciates the USGS review. She also asked that staff wait to hear back from RAC members prior to updating the rules before the next RAC meeting.

A COCO representative noted appreciation for the technical memo on Reasonably Stable Groundwater Levels. He noted that COCO generally supports the rulemaking effort and appreciates the flexibility discussed during the meeting. He noted some concerns regarding proceeding without knowing more about the rulemaking impacts on cities, particularly the affordable housing goals. He noted that much of seasonal water use is driven by tourism, which is beneficial to the economy. He also noted that the cost of securing additional water supply through conservation measures is high, and the City of Redmond has committed \$10 million to securing additional water supply over the next 20 years.

A RAC member appreciated the Reasonably Stable Groundwater Level (RSGL) analysis and patience to discuss details. She expressed support for the rule changes which are based on foundational principles such as surface water-groundwater interaction. She also expressed eliminating the 1-mile threshold used in current PSI evaluations, noting there is no basin in the state that does not follow the laws of physics. She noted that using rigorous statistics to compile basin-specific information regarding RSGLs can make rules widely applicable across the state. She suggested that the 90th percentile may not be protective enough and suggested evaluating other percentiles.

A RAC member noted appreciation for the changes that have occurred throughout the RAC process. He further noted the narrow focus on one aspect of how groundwater rights are allocated. He also stated there are other, larger issues the RAC has discussed. Ultimately, he felt the process achieved what it set out to do and was pleased with the outcome.

A RAC member noted she would provide comments in advance of the next RAC meeting. She also noted appreciation for the staff's effort to get information to the RAC in advance of the meeting. She asked for a synthesis of the technical conversations concerning Reasonably Stable Groundwater Levels. In the case of exempt wells, she suggested there is a need to identify where data is lacking. With respect to HB 2018 (2021), she noted her constituents supported the

legislation along with WaterWatch members. She acknowledged that it may take time to acquire the data authorized by HB 2018 but that enough time already had passed without acting. She also noted her support for additional funding to get data to make better decisions and feels there are opportunities for RAC members and other stakeholders to advocate for additional federal funding. She noted that the last legislative session authorized funding for the Department to request reports from folks who are already collecting well data. She felt that much of the focus has been on surface water, and that more focus is needed for groundwater. She acknowledged support for place-based planning efforts, including those occurring in the Deschutes and Hood River.

A RAC member noted his support for the proposed rules. He had some questions concerning why the Department was using the slowest rate of decline over a 5-to-20-year period. He noted that the statistical rates of decline proposed seem to align with what already was discussed during RAC Meeting 6. He was not sure it made sense to remove the numeric values pertaining to excessively declined which would establish minimum criteria for basin program rules to meet.

A RAC member noted that the proposed rules cut both ways for his constituents. He also stated that he anticipates the Commission will adopt the proposed rules. With that in mind, he urged RAC members to make the proposed rules as good as possible. He noted his opposition to the statewide approach, sharing his view that a basin-by-basin approach would be more accurate. He also mentioned the option of a phased-in approach. He further suggested that mitigation be a part of this equation. He also expressed concern over the data gaps with respect to exempt wells and the apparent conflict between the Governor's housing goals and the proposed rules.

A RAC member noted appreciation for the work and presentations. He also noted support for the rules put before the Commission in September and views the technical review as supporting those. However, he stated that he found the proposed rules presented during the RAC meeting concerning, because he finds it hard to reconcile the statewide applicability of thresholds for Reasonably Stable Groundwater Levels with the removal of sideboards pertaining to basin program rules. The RAC member was concerned about the additional time required for basin program rulemaking. The RAC member noted that the analysis showed that 85% of the analyzed well clusters declined by less than 0.5 feet/year over their entire periods of record and that all the clusters declined by less than 0.5 feet/year for greater than 90% of their periods of record. Similarly, he noted that more than 90% of the clusters declined overall by less than 25 feet over their entire periods of record and that all the clusters declined overall by less than 25 feet over 95% of their periods of record. The RAC member stated that these are important quantitative justifications for the thresholds already discussed by the RAC.

A RAC member noted that while the Reasonably Stable Groundwater Level (RSGL) analysis seemed to be a scientifically rigorous approach, there was a discrepancy between that rigor and the rigor applied to the analysis of Potential for Substantial Interference (PSI). He noted that PSI relies on a determination of Hydraulic Connection, which then assumes PSI if the stream effected is over-appropriated. He also stated that a finding of over-appropriation will happen most of the time under the rules currently proposed, while RSGLs only will apply to a small percentage of applications. The RAC member suggested that a similar level of scientific rigor be applied to an analysis of PSI. He also commented that reliance on Barlow and Leake (2012,

Streamflow depletion by wells: Understanding and managing the effects of groundwater pumping on streamflow, U.S. Geological Survey Circular 1376) to assume that eventually 100% of a pumping rate will come from a stream only holds true when a single aquifer discharges to that stream. He offered to share a figure from the Barlow and Leake (2012) report depicting a multi-layer aquifer system seen around the state, where flowpaths suggest water may take millennia to flow from aquifer to the stream. He stated that in those cases, involving a relatively deep irrigation well, confined by significant low-permeability zones, the Barlow and Leake model cannot be applied appropriately to determine how much impact stems from a particular stream. He further stated that in some cases, stream impacts may be negligible, suggesting that a finding of PSI amounts to a “rubber-stamp.” of a minor impact.

A RAC member noted she had some concerns about how the proposed rules might impact future Aquifer Storage and Recovery projects.

A RAC member noted appreciation for the presentation providing insight on hydraulic connection, which was a concern of his. He noted that the Tribe may have additional comments that will be submitted in writing.

A RAC member noted appreciation for Department’s efforts and science-based information. She expressed some concern that complexity of the underlying science could be a distraction from the important work of conserving the resource. She also asked that basin program rule process also be supported using the same scientific rigor.

Schedule/Wrap- Up and Next Steps

Staff presented the updated timeline, including expected notice of proposed rulemaking issued on March 1st, a 90-day public comment period, and hybrid public hearings around the state. After incorporating public input, OWRD anticipated bringing the final proposed rules to the Commission for consideration at the mid-September meeting.

The eight RAC meeting will cover final draft rules and fiscal and economic impacts. The RAC was asked to provide any feedback on RAC 7 meeting materials by January 5, 2024, noting that the deadline may need to change depending on whether RAC members wanted to meet with OWRD staff for a technical session to review the methodology for determining reasonable stable groundwater level parameters.