CAROLLO LAW GROUP

Dominic Carollo
*Managing Attorney*
dcarollo@carollolegal.com · 541-957-5900
PO Box 2456, Roseburg, OR 97470
2315 Old Hwy 99 S., Roseburg, OR 97471

September 12, 2023

**Via Email and US Mail**

Oregon Water Resources Department
Attn: Laura Hartt, Water Policy Analyst/Rules Coordinator
725 Summer Street NE, Suite A
Salem, OR 97301
Email: Laura.A.Hartt@water.oregon.gov

**Re: Comments on Proposed Revisions to Division 9 Rules**

Ms. Hartt:

As stated in our July 10, 2023 comment letter addressing the Oregon Water Resources Department's ("OWRD") ongoing "groundwater allocation" rules, my firm represents the Fort Klamath Critical Habitat Landowners, Inc., Sprague River Resource Foundation, Inc., Water for Life, Inc., Productive Timberland LLC, the Mosby Family Trust, and Sprague River Cattle Company ("Ft. Klamath *et al*."). These individuals and organizations consist of, and represent, a number of water right holders in the Upper Klamath Basin that rely on groundwater for irrigation. On our clients' behalf, we have been monitoring the Department's recent efforts to promulgate new "Groundwater Allocation" rules affecting divisions 8, 9, 300, 400, and 410.

Our July 10, 2023 comment letter addressed multiple large issues we have observed in the ongoing rulemaking. We were pleased that OWRD addressed one of these more significant concerns—the relationship between the proposed rules and OWRD's Division 10 critical groundwater area rules—before the last Rules Advisory Committee ("RAC") meeting. This letter is intended to supplement our previous comments. In particular, the focus of this letter will be on OWRD's proposed Division 9 rules, their impact to existing water right holders, inconsistency with law, and how OWRD may reform these rules to address major shortcomings. My clients appreciate OWRD's consideration of this comment letter and respectfully request that the issues raised herein be addressed in OWRD's proposed Division 9 rules.

## I. BACKGROUND

The purpose of Division 9 is to provide a process under which OWRD can regulate groundwater users on account of interference with a senior surface water right. OWRD's existing Division 9 rules require that this process follows two steps. First, OWRD determines whether a groundwater well draws from an aquifer that is hydraulically connected to a surface water source, and second OWRD determines whether there will be substantial interference between that well and a senior right on any hydraulically connected surface water source.

After this two-step process, the existing Division 9 rules allow OWRD to impose groundwater controls based on proximity between the pertinent well and surface water source. For wells over 500 feet from a surface water source, OWRD must first determine whether any control order would provide relief to the surface water source in an effective and timely manner. For wells greater than a mile from a surface water source, OWRD may only issue controls through a critical groundwater designation.

The existing Division 9 rules do not explicitly provide any opportunity for a contested case before groundwater users are regulated. However, a recent court case has held that a contested case would be required before OWRD regulated a groundwater user on account of surface water interference in order to protect due process rights. In the case of *Troy & Tracy Brooks v. OWRD*, Marion County Circuit Court Case No. 19CV27798 (Feb. 10, 2020), I, as counsel for Petitioners, challenged OWRD's regulation of the Brooks's groundwater right on statutory and due process grounds.

In that case, OWRD had regulated the Brooks's groundwater right under Division 25 because their well was within 500 feet of a surface water source with senior water rights. The Brooks's challenged that regulation order on the grounds that the Division 25 rules violated OWRD's statutory authority and, relevant here, that OWRD could not regulate a junior groundwater user without providing due process first. In other words, I argued that OWRD violated my client's due process rights by regulating their groundwater right on account of "substantial interference" without first providing the opportunity for a contested case hearing to address and dispute OWRD's evidence and provide evidence to the contrary.

The Court agreed with the Brooks's arguments on both accounts—first, that the Division 25 rules violated OWRD's statutory authority, and second, that OWRD could not regulate the Brooks's groundwater right based on a "substantial interference" with a senior surface water right without first providing due process—i.e., a contested case. The Court's holding on these two points remains law.

## II. OWRD'S PROPOSED CHANGES TO DIVISION 9

OWRD's proposed changes to the Division 9 rules modify how OWRD can regulate existing groundwater users. The proposed Division 9 rules generally retain the same "two step" process for determining substantial interference. OWRD must first find "hydraulic connectivity," and only then may evaluate whether there is a potential for substantial interference. However, whereas the existing Division 9 rules allow OWRD to *infer* hydraulic connectivity or substantial interference when certain conditions are met, the proposed Division 9 rules eliminate these inferences. If adopted, the rules would require that OWRD make an affirmative determination of hydraulic connectivity using "generally accepted hydrogeologic principals *[sic]*" and the "best available information." Next, OWRD must make an affirmative determination of substantial interference based on the "application of the generally accepted hydrogeological principles,"

which would include two treatises specifically identified by rule.[1] The proposed Division 9 rules *do not* require that site-specific evidence control—or even factor into—the analysis, nor does it require any kind of certainty for proving that a specific well will substantially interfere with a senior surface water right.

The proposed rules retain limitations on OWRD's authority to issue controls on groundwater rights. OWRD can only regulate wells that are over 500 feet from a connected surface water source if the regulation would provide relief to the surface water source in an effective and timely manner. Wells which are over one mile from a surface water source will only be regulated through a critical groundwater area designation.

## III. THE PROPOSED DIVISION 9 RULES DO NOT PROTECT GROUNDWATER USERS' DUE PROCESS RIGHTS TO A CONTESTED CASE HEARING

One glaring omission from the proposed Division 9 rules is any protection of due process rights. As explained above, the Court in the *Brooks* case very explicitly held that OWRD could not regulate a groundwater user—even a junior user—based on a determination of "substantial interference" without first providing the groundwater user an opportunity to contest OWRD's findings. The Court explained:

> Everyone agrees that water rights are property rights. Everybody agrees that the extent, if at all, to which the junior water right holder can use theirs is dependent on whether the senior people are satisfied.
>
> But nevertheless, I think there is still some kind of property right in that junior water right holder. And in particular, the Plaintiff's argument is the basis on which you are interfering with our rights is a finding that we are interfering with the surface water rights. And you made that finding without us having an opportunity to put on evidence and cross-examine your witnesses and talk specifically about our well.
>
> And I agree with the Petitioners that telling them they can go to the Court of Appeals and argue that there wasn't substantial evidence in the record is not a very good due process substitute for the reasons that were articulated. They're stuck with a limited kind of record from a rulemaking proceeding that doesn't include calling witnesses and cross-examine, and they're stuck with an extremely differential standard of review, the substantial evidence standard, as opposed to having an opportunity to put on evidence and so forth.
>
> And I would also add that even if they, I guess, enter the second claim for relief, which I'll confess to not having looked at very much since it wasn't an issue. But even if

[1] Ft. Klamath *et al.* supports OWRD's removal of inferences and presumptions in the Division 9 rules, but as explained herein takes the position that OWRD's proposed Division 9 rules do nothing to protect due process, including providing a process whereby OWRD can regulate groundwater users without site-specific data or even reasonable scientific certainties of substantial interference.

> they get this Court to review for substantial evidence and they would have the opportunity to make a record and call witnesses and cross-examine, but it's still a substantial evidence review standard. So I believe also that the Petitioners' due process rights were violated by regulating them off their well based on this administrative rule.

*Troy & Tracy Brooks v. OWRD* ("*Brooks v. OWRD*"), Marion County Circuit Court Case No. 19CV27798 (Feb. 10, 2020) (Transcript Volume 1 of 1 at 33).

The holding of the Court was that neither ORS 183.482 nor ORS 183.484, including "substantial evidence" review before the Circuit Court with the opportunity to develop a record, were sufficiently protective of groundwater users' due process rights. Therefore, the Court found that the Brooks's due process rights were violated by OWRD's substantial interference finding. Despite this explicit holding that a finding of substantial interference and subsequent groundwater regulation triggers due process rights, OWRD has not acknowledged this issue in the present proposed rules.

The proposed Division 9 rules require OWRD to make affirmative findings of hydraulic connection, substantial interference, and timely and effective relief prior to regulating groundwater rights which are at least 500 feet from a surface water source.[2] Nonetheless, the rules provide no due process for groundwater users to address and challenge these findings by presenting contrary evidence, calling or cross-examining witnesses, taking discovery, etc. This is a very substantial omission in the proposed rules. If OWRD applies the proposed Division 9 rule without allowing for such due process, *Brooks v. OWRD* tells us that such an order would violate groundwater users' due process rights.

Thankfully, this is a very straightforward fix that OWRD can implement in the proposed Division 9 rules. All OWRD must do to ensure that due process rights to a contested case hearing are respected is to add language to Division 9 requiring that any groundwater users regulated according to Division 9 have rights to a contested case hearing if one is requested. Ft. Klamath Landowners *et al*. propose the following language:

> **690-009-0050**
> **Ground Water Controls**
>
> These rules apply to the control or regulation of groundwater where it is determined that an existing groundwater appropriation will cause or has caused substantial or undue interference with a surface water source as described in OAR 690-009-0040.
>
> (1) The Department shall review existing groundwater appropriations to determine the potential to cause substantial interference with a surface water source on a case-by-case

[2] As explained in the following section, this requirement presents its own due process concerns which must be addressed.

basis, in accordance with OAR 690-009-0040, whenever the Department has cause to believe that substantial interference with a surface water source may exist.

(2) Whenever the Department determines that substantial interference with a surface water supply exists, the Department shall control those groundwater appropriations that have been determined under section (1) of this rule to have the potential to cause substantial interference. The controls shall be similar to or compatible with, but not more restrictive than controls on the affected surface water source, in accordance with the relative dates of priorities of the ground water and surface water appropriations:

(a) Prior to controlling the use of any well greater than 500 feet from a surface water source, the Department shall determine whether any control would provide relief to the surface water supply in an effective and timely manner. The Department shall make the determination on the basis of the best available information, employing at least one of the following methods:

(A) Suitable equations and graphical techniques that are described in pertinent publications (such as "Computation of Rate and Volume of Stream Depletion by Wells," by C.T. Jenkins, in Techniques of Water-Resources Investigations of the United States Geological Survey: Book 4, Chapter D1);

(B) A computer program or groundwater model that is based on such or similar equations or techniques

(b) The Department shall control the use of wells greater than one mile from a surface water source only through a critical groundwater area determination in accordance with ORS 537.730 through 537.740.

(3) As necessary, the Department shall determine the horizontal distance between any well in question and the nearest surface water source on the basis of the edge of the surface water source as also determined by the Department.

(4) Any groundwater user who is issued groundwater controls pursuant to section (2) of this rule shall have the right to a contested case hearing pursuant to OAR Chapter 690 Division 2. Groundwater users must request a contested case hearing or file a protest within 60 days of the date any groundwater control is served. Unless a protest is granted, the filing of a protest will constitute a request for a contested case hearing. A contested case hearing will be limited to the issues raised in the request for contested case hearing or protest submitted by the respective groundwater user.

The above language will ensure that groundwater users issued controls pursuant to the Division 9 rules will have the ability to contest those controls. This will address in part the holding of *Brooks*

*v. OWRD*, ensuring that OWRD does not unlawfully regulate groundwater users under this division without first providing the opportunity for a contested case.

For the reasons provided above, Ft. Klamath *et al*. encourages OWRD to modify the proposed Division 9 rules by explicitly providing for the due process protections of a contested case hearing, consistent with the Marion County Circuit Court's requirement in *Brooks v. OWRD*.

## IV. THE PROPOSED DIVISION 9 RULES MUST REQUIRE SITE-SPECIFIC, REASONABLY-CERTAIN SCIENTIFIC PROOF OF SUBSTANTIAL INTERFERENCE

Ft. Klamath *et al*. retained a professional engineer and water modeling expert with decades of groundwater modeling experience to review the proposed Division 9 rules. *See* Attachment A, submitted herewith. The opinion reached by Ft. Klamath *et al*.'s expert, and shared by Ft. Klamath *et al*. here, is that the proposed Division 9 rules take too-simplistic an approach to determining "substantial interference." By doing so, the proposed rules give OWRD a green light to order sweeping groundwater regulations based on oversimplified and downright incorrect assumptions about hydraulic connectivity and interference. This too presents a due process issue, as the proposed rules allow OWRD to deprive groundwater users of their property rights without even demonstrating the type of "reasonable scientific certainty" which must precede such a deprivation, largely shifting such a burden onto the groundwater users. *See, e.g., State v. Sampson*, 167 Or. App. 489, 505, 6 P.3d 543, 555 (2000); *State v. Trujillo*, 271 Or. App. 785, 794, 353 P.3d 609, 615 (2015); *Z R Z Realty Co. v. Beneficial Fire & Cas. Ins. Co.*, No. 9708-06226, 1999 WL 34001829, at *4 (Or. Cir. Oct. 15, 1999). Therefore, OWRD must modify the proposed Division 9 rules by better defining the tools OWRD must use when making determinations under Division 9, and identifying the evidentiary standard which should be satisfied.

The proposed Division 9 rules do little-to-nothing to identify the analytical process OWRD must follow to determine substantial interference and, ultimately, issue groundwater controls. Instead, the rules rely on generalized statements that any determination must be based on the application of "generally accepted hydrogeologic principles" using the "best available information." What constitutes these principles or the best available information is largely left to the agency's discretion. No limiting factors are placed on OWRD's ability to make its substantial interference determination. Most glaringly, the proposed Division 9 rules leave the door open for OWRD to determine substantial interference without any consideration of site-specific factors, or the *actual* effect of a given well on a given surface water source. Ultimately, what the proposed Division 9 rules authorize is for OWRD to regulate groundwater uses based on assumptions of substantial interference, without regard for actual site-specific hydrogeological conditions.

In what seems an attempt to describe what constitutes "generally accepted hydrogeologic principles," the proposed Division 9 rules reference papers by Theis, C.V. (1940) and Barlow & Leake (2012). However, the rules do not understand the limitations of these sources.

Barlow & Leak provides guidance on understanding the *theoretical* relationship between groundwater pumping and stream depletion and provides advice regarding how to analyze this relationship, but has limited real world examples, and does not propose how to determine if there is "the potential for substantial interference with a surface water source" in a real-world situation. Many of the examples used by Barlow & Leak are too simplistic and are only valuable for demonstrating theoretical concepts. While Barlow & Leak's paper contains strong citations, the paper is still limited to theoretical concepts. Ultimately, what Barlow & Leak demonstrate is that data and model used for determining substantial interference must be site-specific to the conditions at hand.

Theis has similar limitations. Theis's publication cited in the proposed rules contains *no* practical guidance on how to determine if there is "the potential for substantial interference with a surface water source" in a real-world situation. Instead, the paper is predominantly focused on simple systems, such as one unconfined aquifer systems, making bold statements about many situations which may or may not be accurate, depending on the physical groundwater system actually present.

Barlow & Leak and Theis are no more than background reading for a professional. These papers contain no guidance for how OWRD will determine "the potential for substantial interference with a surface water source." Instead, the papers present simple theoretical solutions. While these may be good starting points, they are insufficient to understand the type of complex, multi-layer aquifer systems OWRD will encounter, and assess how pumping from such aquifer systems may affect surface water sources. Freeze and Cherry (1979) (a groundwater textbook) has more comprehensive information on the basics of groundwater hydrology than these papers, while also citing Theis and many other papers.

Unfortunately, the proposed rules do not just ignore the limitations of the Theis and Barlow & Leak papers, they also allow OWRD to shield its analysis by relying on Barlow & Leak or Theis's oversimplified analysis. Simply put, under the proposed rules there is no guarantee that OWRD will go beyond simple assumptions and simple conceptual models to analyze whether substantial interference will occur. This can allow OWRD to adopt a simplified analysis in a complex, multi-layer aquifer system for the purpose of justifying groundwater controls. Ultimately, this results in a burden-shifting analysis, where the proposed rules put the burden on the groundwater user to demonstrate why controls *are not* justified, rather than keeping the burden on OWRD for demonstrating why controls *are* justified. This presents a due process issue, allowing OWRD to regulate groundwater uses without having to first demonstrate with reasonable scientific certainty that such regulation is necessary to alleviate substantial interference.

Ultimately, to respect groundwater users' due process rights OWRD must have the burden of proving that a given well will interfere with a given surface water source, based on a reasonable scientific certainty, before it issues a control for the groundwater use. Satisfying this burden cannot be accomplished without relying on site-specific data. To remedy this issue within the proposed rules, the rules must recognize that OWRD needs to use site-specific data to develop a site-specific "conceptual model" of the aquifer system in question, and then decide what tools, data analyses,

and models should be applied to analyze the physical system in question and assess if their conceptual model is accurate. Only then may OWRD assess if there is substantial interference.

## V. THE PROPOSED DIVISION 9 RULES MUST BETTER DEFINE "EFFECTIVE AND TIMELY MANNER"

While the requirement that groundwater controls provide relief in an effective and timely manner is vital to the Division 9 rules, the definition of "effective and timely manner" is amorphous, incapable of consistent application, ripe for abuse, and, like the above section indicates, allows for unlawful groundwater regulation.

The proposed definition of "effective and timely manner" "means that regulation will result in the addition of any water to the surface water source during the relevant time period." Given this definition, OWRD may arbitrarily define "the relevant time period." There is no limiting factor in this definition to prevent completely arbitrary agency action. The definition is therefore incapable of providing any assurances to groundwater users that OWRD will not regulate groundwater uses on indefensible grounds.

This definition of "effective and timely manner" is particularly relevant because the Division 9 rules allow OWRD to look infinitely into the future to determine whether substantial interference will result between a groundwater use and senior surface water use. And, as OWRD staff has explained in this RAC process, if *any* groundwater use is projected far enough into the future, it will *always* result in interference with surface water sources.

To provide a limitation on OWRD's authority to regulate groundwater users based on this assumption that groundwater uses *always* effect surface water sources *eventually*, the effective and timely manner standard is critical. Without it, there will be no bounds on OWRD's discretion to control any groundwater use which will eventually affect a senior surface water right, no matter the time or scope of such an impact. For this reason, the term "relevant time period" in the definition of "effective and timely manner" must be made more precise—if regulation does not have some appreciable impact on surface water within a matter of months (*e.g.*, a single irrigation season), any potential for interference is not really substantial.

The proposed rules attempt to create some sidebars to the "effective and timely manner" definition by stating that OWRD shall determine "effective and timely manner" "on the basis of the best available information"[3] and using "[s]uitable equations and graphical techniques that are described in pertinent publications (such as "Computation of Rate and Volume of Stream Depletion by Wells," by C.T. Jenkins, in Techniques of Water-Resources Investigations of the United States Geological Survey: Book 4, Chapter D1)" or "[a] computer program or groundwater model that is based on such or similar equations or techniques." But, like in the above section, the

[3] Use of the term "considering the best available information" seems to excuse OWRD from any obligation to gather information; that language should be stricken and replaced with "considering site-specific information". The definition of "best available information" can then be changed to the definition of "site-specific information" by eliminating the reference to models and other information.

paper by C.T. Jenkins is yet another premised on simplified assumptions. C.T. Jenkins' paper examines only idealized and simple conditions, not complex real-world situations. Even the author of the paper recognizes what OWRD so far has not—that is, that "[t]he usefulness of the tools presented in this report will depend to a large extent on the degree to which the user recognizes departures from ideal conditions, and on how well he understands the effects of these departures on stream depletion."

So yet again, the proposed Division 9 rules fail to acknowledge that site-specific conditions must control any analysis, including the analysis of whether groundwater regulations will result in effective and timely relief. OWRD must recognize that groundwater systems rarely (if ever) present the "ideal condition" envisioned by C.T. Jenkins. Therefore, OWRD again should modify the rules to require adherence to standard industry practice for analyzing *site-specific* groundwater systems. This requires using site-specific data to develop a site-specific "conceptual model" of the groundwater aquifer system in question, deciding what tools, data analyses, and models should be applied to analyze the groundwater aquifer system in question to test the conceptual model for accuracy, and then using the data, model and tools to assess if there would be "effective and timely" relief from the groundwater controls.[4]

To summarize, OWRD must establish limiting factors within the definition of "effective and timely manner" to correctly balance and regulate interference between surface and groundwater uses. The definition must contain a standard which will ensure that any groundwater control makes a measurable difference in surface water flows within some reasonable period of time (e.g., within an irrigation season). Without limiting factors, the "effective and timely" standard does nothing to prohibit OWRD from arbitrarily regulating all groundwater uses due to some amorphous "future" surface water interference based on projections looking infinitely into the future. Moreover, the rules should recognize that any analysis must be based on site specific

[4] Rules within the Oregon Department of Environmental Quality provide examples OWRD may follow to resolve the lack of specificity within the proposed Division 9. For example, DEQ uses a specific metric such as the 7-day average of the daily maximum (7dAM) water temperature to assess if surface water exceeds a state water temperature standard such as 17.8 C, for salmonid rearing on some rivers. The temperature standard (340-041) is specific to the water body, time of year and threatened and endangered species present in each water body. The numerical values of the temperature standard are based on the threatened and endangered species present and their life stages. The current understanding of the 7dAM statistic is that it's based fish habitat needs, while also acknowledging that one- or two-day spikes in water temperature may not be an issue for fish habitat purposes, and yet when a 7-day average of these daily maximum water temperatures exceeds the standards there is more concern for fish habitat the stream is listed under the Clean Water Act 303(d) list, and DEQ then develops a Total Maximum Daily Load (OAR 340-042) and Water Quality Management Plan. DEQ even has a published Internal Management Directive (IMD) (https://www.oregon.gov/deq /Filtered%20Library/IMDTemperature.pdf) for Temperature Water Quality Standard Implementation. The Division 9 rules need similar approaches to groundwater management, where specific definitions for hydraulic connection, substantial interference, and "effective and timely" are defined, perhaps even on a basin specific-basis, specific groundwater goals need to be develop for each basin, and a published IMD should be developed by OWRD on how groundwater-surface water systems will be analyzed and where simplified assumptions may be appropriate and where site-specific data and models are more appropriate. There should be a published IMD by OWRD on data quality objectives for groundwater data and a regular call (as DEQ does for surface water quality data) for groundwater data from the community and users before a science-based basin study is undertaken and groundwater wells are regulated. These science-based processes and objectives are missing from Division 9 rules.

information, not oversimplified assumptions which may have limited, or no, applicability to the aquifer systems present in Oregon. Ft. Klamath *et al*. strongly urges OWRD to address these issues in its Division 9 rules.

## VI. THE PROPOSED DIVISION 9 RULES SHOULD ELIMINATE ARBITRARY CLASSIFICATIONS

The existing Division 9 rules contain arbitrary distinctions between OWRD's regulatory duties depending upon a well's distance from a surface water source. If wells are within 500 feet of a surface water source (regardless of the depth or complexity of the aquifer system at issue), OWRD is not required to determine whether regulation of that well would provide relief to the surface water source in an effective and timely manner. For wells over 500 feet (but within one mile) of a surface water source, OWRD *would* need to determine whether regulation of the well would provide timely and effective relief to the surface water source. For wells over a mile from a surface water source, OWRD may only regulate them through a critical groundwater area designation.

The proposed Division 9 rules keep these same distinctions. Once again, wells within 500 feet of a surface water source can be regulated regardless of the time it takes to provide relief to the surface water, while wells over 500 feet from a surface water source can only be regulated if such regulation would provide effective and timely relief.[5]

Ft. Klamath *et al*. strongly urges OWRD to require that *any* regulation of groundwater users under Division 9 only occur if such action would provide effective and timely relief to a surface water source.[6] This will ensure that all groundwater users are treated fairly, and will require that OWRD not regulate groundwater users on account of arbitrary assumptions regarding the effect of wells in proximity to surface water sources.

## VII. ADDITIONAL CHANGES NEEDED TO PROPOSED DIVISION 9 RULES

There are many other issues with the proposed Division 9 rules which should be addressed in this rulemaking. Below is a brief, non-exhaustive list and description of these issues which Ft. Klamath *et al.* strongly encourages OWRD to address:

- Define "substantially interfere." The proposed Division 9 rules do not provide a threshold standard for determining when a groundwater interference with a surface water source becomes a "substantial interference." Like the effective and timely manner definition

[5] This very relaxed standard for wells within 500 feet of a surface water source is similar to that declared unlawful in the *Brooks* case, as it exceeds OWRD's statutory authority.

[6] Ft. Klamath et al. do not take issue with the Division 9 rules' statement that wells over one mile from a surface water source may only be controlled through a critical groundwater area designation, and believe that this one-mile threshold should be retained. Nonetheless, even those wells over one mile from a surface water source, which can only be regulated through a critical groundwater area, should only be regulated where controls would provide effective and timely relief.

discussed above, "substantial interference" must be defined to include limiting factors as discussed above. As written, any streamflow depletion over any time frame might be deemed "substantial".

- Define "generally accepted hydrogeologic principles." Currently, the Division 9 rules require OWRD to use generally accepted hydrogeologic principles. But what these principles are is undetermined, and they may even extend to staff's comment that essentially any groundwater use has some effect, however tiny, upon surface water. OWRD can and must extract and identify the specific principles it wishes to make into Oregon law through rulemaking from the sources it has cited. It is an independent violation of due process of law to make "law" that can only be guessed at by reference to sources outside the Oregon Administrative Rules.

- Staff's comments highlight a defect in the proposed definition of "hydraulic connection" which lacks any time or magnitude component. "[S]aturated conditions . . . that allow water to move" could refer to one molecule moving over 20,000 years, or appreciable flows that can actually impact users. At the least, the regulatory definition should be changed to require a measurable quantity of water to move between groundwater and surface within a single irrigation season. (Use of the phrase "the full term of the proposed or authorized groundwater use" in further defining "the potential for substantial interference with a surface water source" does not help since most groundwater authorizations are perpetual in nature.).

## VIII. CONCLUSION

There is significant attention which needs to be given to OWRD's proposed Division 9 rules. Ft. Klamath *et al.* therefore strongly encourage OWRD to address the issues raised herein in its proposed modification to the Division 9 rules.

Sincerely,

Dominic M. Carollo
Cc: clients

# Attachment A

ANNEAR WATER RESOURCES

September 12, 2023

**To:** **Dominic Carollo and Nolan Smith, Carollo Law Group, LLC**
**From:** **Rob Annear. Ph.D., P.E., Annear Water Resources, LLC**

**Subject: Technical Review of OWRD's Proposed Modifications to Division 9 Rules**

# Introduction

Annear Water Resources (AWR) was asked by Carollo Law Group on behalf of Ft. Klamath Critical Habitat Landowners, Inc. and Sprague River Resource Foundation, Inc. to conduct a technical review of the Oregon Water Resources Department's (OWRD) proposed modifications to Division 9 and 410 Rules related to "groundwater allocation."

While OWRD's Division 9 rules changes website (https://www.oregon.gov/owrd/programs/GWWL/GW/Pages/Groundwater-Rulemaking.aspx) lists 14 technical references only three references are cited in the rules attempting to explain how aspects of the rules will be considered or implemented. This memo focuses on the technical aspects of these three reference citations related to these rule changes and the discusses the issues surrounding the definition of "***hydraulic connection.***"

# Determination of Hydraulic Connection and Potential for Substantial Interference (690-009-040)

Subsection 3 states:

"*A determination of the potential for substantial interference with a surface water source shall at a minimum include application of the generally accepted hydrogeological principles described in the following subsections to the specific use and wells under consideration:*

> *(a) "The Source of Water Derived from Wells: Essential Factors Controlling the Response of an Aquifer to Development" by C. V. Theis, 1940; and,*
>
> *(b) "Streamflow Depletion by Wells – Understanding and Managing the Effects of Groundwater Pumping on Streamflow" by P. M. Barlow and S. A. Leake, 2012."*

Theis (1940) and Barlow and Leake (2012) were reviewed in the context of how this literature would address "***A determination of the potential for substantial interference with a surface water source**.*"

## Literature Review

- This Barlow and Leake (2012) provides a lot of basic hydrogeological principles for understanding the theoretical relationship between groundwater pumping and stream depletion and provides insights on how to analyze, but has limited real world examples.
- Barlow and Leake (2012) do not propose how to determine if there is "***the potential for substantial interference with a surface water source***" in a real-world situation.
- Many of the examples in Barlow and Leake (2012) are too simplistic and are only valuable for demonstrating theoretical concepts and not appropriate for site specific conditions where local data is essential.
- Barlow and Leake (2012) provide many well-known and respected citations in the field, which demonstrates the paper is well thought out and supported by literature but the majority of this paper is still focused on simplified groundwater systems that are more theoretical and simpler than real-world or site-specific systems.

- The real take home message from Barlow and Leake (2012) is that site-specific data and models are needed to understand the local groundwater conditions.
- Theis (1940) is predominantly focused on simple systems such as one unconfined aquifer and then the author makes broad statements about many groundwater situations using these simplified assumptions.
- The Theis (1940) paper has no practical guidance on how to determine if there is "***the potential for substantial interference with a surface water source*"** in a real-world situation.

### Implications for Division 9 Rules

- Theis (1940) and Barlow and Leake (2012) are background reading for any groundwater professional and are a "starting point" for understanding a groundwater system in the real-world. In fact, these papers are "***generally accepted hydrogeological principles***," as cited in this section of the rules, but nothing more. These two papers provide no guidance on how OWRD will determine "***the potential for substantial interference with a surface water source.***"
- Theis (1940) and Barlow and Leake (2012) present a theoretical understanding of how simplified groundwater systems work and possible solutions for analyzing. This is a good starting point but insufficient to understand complex multi-layer aquifer systems and assess if, for example, a well, drawn from the 3rd aquifer down will have "***the potential for substantial interference with a surface water source***."
- OWRD does not define "***substantial interference.***" The rules provide no guidance or process for how they will determine "***substantial interference***" and leaves it's definition to be open and arbitrary.
- The rules provide no guidance or guarantee OWRD will go beyond simple assumptions and simple conceptual models to analyze whether substantial interference will occur between a well and surface water.
- OWRD needs to clarify the rules and indicate they will follow the state of the practice for analyzing site-specific groundwater systems by:
    - using site-specific data to develop a site-specific "conceptual model" of the groundwater aquifer system in question; and
    - decide what tools, data analyses, and models should be applied to analyze the groundwater aquifer system in question to test the conceptual model for accuracy; and then
    - use the data, model and tools to assess if there is "***the potential for substantial interference with a surface water source.***"

## Ground Water Controls (690-009-0050)

Subsection 2(a) states:

*"Prior to controlling the use of any well greater than 500 feet from a surface water source, the Department shall determine whether any control would provide relief to the surface water supply in an effective and timely manner. The Department shall make the determination on the basis of the best available information, employing at least one of the following methods:*

> *(A) Suitable equations and graphical techniques that are described in pertinent publications (such as "Computation of Rate and Volume of Stream Depletion by Wells," by C.T. Jenkins, in Techniques of Water-Resources Investigations of the United States Geological Survey: Book 4, Chapter D1);*
>
> *(B) A computer program or groundwater model that is based on such or similar equations or techniques"*

Jenkins (1968) was reviewed in the context of how this literature would support OWRD to "***determine whether any control would provide relief to the surface water supply in an effective and timely manner***."

### Literature Review

- The Jenkins (1968) report examines idealized and simple conditions, not complex real-world situations and then calculates stream depletion and recovery for these simplified situations.
- Jenkins (1968) provides no guidance on assessing "***effective and timely***" relief.
- The Jenkins (1968) report includes several quotes revealing the author understands and appreciates the limits of making simplifying assumptions and their impacts:
    - "*When field conditions approach certain assumed conditions…"*
    - "*The usefulness of the tools presented in this report will depend to a large extent on the degree to which the user recognizes departures from ideal conditions, and on how well he understands the effects of these departures on stream depletion*."
    - "*Departure from idealized conditions may cause actual stream depletions to be either greater or less than the values determined by methods presented in this report. Although the user usually cannot determine the magnitude of these discrepancies, he should, where possible, be aware of the direction the discrepancies take*."

### Implications for Division 9 Rules

- Jenkins (1968) presents a theoretical understanding of how simplified groundwater systems work and possible solutions for analyzing. This is a good starting point but insufficient to understand complex multi-layer aquifer systems and assess if, for example, a well, drawn from the 3rd aquifer down will provide "effective and timely" relief, if controlled.
- These rules do not provide a definition of "***provide relief to the surface water supply in an effective and timely manner***" and leaves it being open and arbitrary.
- OWRD needs to define what is "***effective and timely***" relief.
- The rules provide no guidance or guarantee OWRD will go beyond simple assumptions and simple conceptual models to analyze whether there is "effective and timely" relief from groundwater controls.
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- OWRD needs to use site specific data to develop a site specific "conceptual model" of the aquifer system in question and then decide what tools, data analyses, and models should be applied to analyze the physical system in question and assess if their conceptual model is accurate and then.
- OWRD needs to clarify the rules and indicate they will follow the state of the practice for analyzing site-specific groundwater systems by:
    - using site-specific data to develop a site-specific "conceptual model" of the groundwater aquifer system in question; and
    - decide what tools, data analyses, and models should be applied to analyze the groundwater aquifer system in question to test the conceptual model for accuracy; and then
    - use the data, model and tools to assess if there is "***effective and timely***" relief from groundwater controls.

## Definitions (690-009-0020)

Subsection (3) states:

*'"Hydraulic Connection" or "Hydraulic Interconnection" means saturated conditions exist that allow water to move between two or more sources of water, either between groundwater and surface water or between groundwater sources.'*

### Review

- This definition is too vague and therefore inadequate.
- For example:

  - A site-specific groundwater aquifer system with the following hydrogeologic layers:
    - An unconfined "surficial" aquifer with an aquitard below it. (Aquifer 1)
    - A confined aquifer with an aquitard below it (Aquifer 2)
    - A confined aquifer with an aquitard below it (Aquifer 3)
    - A confined aquifer with an aquitard below it (Aquifer 4)
  - Based on the definition in the rules as currently stated Aquifer 4 has a hydraulic condition to surface water. While this "literally" may be true what is missing from this definition is a time component. If the time it takes for water to move from Aquifer 4 to Aquifer 1 and then to a surface water body is years (for example) then the hydraulic connection is "weak" compared to the hydraulic connection between the unconfined aquifer and the surface water which may be days or months (for example) and therefore "stronger."
- The rules need to provide a more robust definition of "hydraulic connection" and define it's significance to the rest of the rules for analyzing and regulating groundwater.

# Conclusions

While the literature cited in the Division 9 rules are useful, basic, and "***generally accepted hydrogeological principles...***", they are completely inadequate for assessing site-specific, real-world conditions analyzing potential interaction between a well in a multi-layer groundwater aquifer system and a surface water system.

The rules need to reflect of the state of the practice for studying, analyzing, and managing groundwater systems with extensive use of site-specific data and developing conceptual models of the groundwater aquifer system, and then using data analyses, numerical models and other tools to test these conceptual models before using this tool box of information to analyze groundwater-surface interactions for regulatory purposes.

The current set of rules allow for oversimplification of real-world groundwater-surface interactions, no need for site-specific data collection or testing out conceptual models of how the real-world system may or may not work before analyzing and declaring "***substantial interference***" or "***effective and timely***" relief.

This puts the burden of proving the oversimplifying assumptions are not appropriate on the water rights owner (after being regulated) and would require plenty of field data collection, existing data gathering, acquiring past studies, and possibly modeling only to try to demonstrate the groundwater-surface water system is more complex than OWRD oversimplifying assumptions state.

## Comparison Oregon Department of Environmental Quality (DEQ)

There is a striking difference between the level of specificity between how DEQ regulates water quality in surface water bodies vs. how OWRD regulates groundwater. For example, DEQ uses a specific metric such as the 7-day average of the daily maximum (7dAM) water temperature to assess if surface water exceeds a state water temperature standard such as 17.8 C, for salmonid rearing on some rivers. The temperature standard (340-041) is specific to the water body, time of year and threatened and endangered species present in each water body. The numerical values of the temperature standard are based on the threatened and endangered species present and their life stages. The current understanding of the 7dAM statistic is that it's based fish habitat needs, while also acknowledging that one- or two-day spikes in water temperature may not be an issue for fish habitat purposes, and yet when a 7-day average of these daily maximum water temperatures exceeds the standards there is more concern for fish habitat the stream is listed under the Clean Water Act 303(d) list DEQ then develops a Total Maximum Daily Load (OAR 340-042) and Water Quality Management Plan. DEQ even has a published Internal Management Directive (IMD) (https://www.oregon.gov/deq/Filtered%20Library/IMDTemperature.pdf) for Temperature Water Quality Standard Implementation.

The Division 9 and 410 rules need to approach groundwater management in a similar approach where specific definitions for hydraulic connection, substantial interference, and "effective and timely" are defined, perhaps even on a

basin specific-basis, specific groundwater goals need to be develop for each basin, and a published IMD should be developed by OWRD on how groundwater-surface water systems will be analyzed and where simplified assumptions may be appropriate and where site-specific data and models are more appropriate. There should be a published IMD by OWRD on data quality objectives for groundwater data and a regular call (as DEQ does for surface water quality data) for groundwater data from the community and users before a science-based basin study is undertaken and groundwater wells are regulated. These science-based processes and objectives are missing from Division 9 and 410 rules.

## References

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).

Jenkins, C.T., 1968, Computation of rate and volume of stream depletion by wells (U.S. Geological Survey publication: Techniques of Water-Resources Investigations of the United States Geological Survey, Book 4, Chapter D1).

Theis, C.V., 1940, The Source of Water Derived From Wells; Essential Factors Controlling the Response of an Aquifer to Development (published by American Society of Civil Engineers, Civil Engineering (p. 277-280)).