



June 24, 2021

Jing Chao, P.E.  
Division of Drinking Water  
State Water Resources Control Board  
1350 Front Street, Room 2050  
San Diego, CA 92101

**Subject: Comment Letter DPR Criteria**

Dear Ms. Chao:

On behalf of WaterReuse California, the Association of California Water Agencies, the California Association of Sanitation Agencies, the California-Nevada Section of the American Water Works Association, and the California Urban Water Agencies, I want to thank the Division of Drinking Water (DDW) for the release of the draft criteria for direct potable reuse (DPR) and for the opportunity to provide comments. We appreciate that DDW developed draft requirements for both raw water augmentation (RWA) and treated drinking water augmentation (TWA) particularly when AB 574 only required the development of RWA criteria. Having early clarity on both of the forms of DPR will help the industry plan for and assess the pros and cons of the full spectrum of options from indirect potable reuse (IPR) projects regulated by existing groundwater replenishment (GWR) and surface water augmentation (SWA) regulations to DPR.

We appreciate the careful consideration that is evident in the draft DPR criteria, but believe certain modifications have the potential to expand the implementation of DPR in California while also being protective of public health. These modifications are discussed below.

**RWA vs. TWA**

At present, the draft criteria appear to impose the same requirements for both RWA and TWA. This uniform set of criteria was unexpected given that the State Water Board's 2016 DPR Feasibility Report recognized different "risk profiles" for these two forms of DPR and that AB 574 established separate statutory definitions with the expectation that they would have differing regulatory requirements. Similarly, we believe that RWA offers unique public health protections that distinguish it from TWA. These features include:

- Longer response times associated with the conveyance and storage of purified water
- Contaminant reduction through *blending* with other source waters and additional *treatment* at the water treatment plant
- Peak attenuation, longitudinal mixing, and retention time in small reservoirs, engineered storage facilities, and conveyance infrastructure

Furthermore, RWA may reduce the probability of failures going undetected by spreading operations and treatment across multiple facilities, including existing drinking water treatment plants with long histories of public health stewardship. By not accounting for these differences, our concern is that the regulations will undercredit these unique protections and saddle RWA with unduly strict requirements. Beyond the public health benefits, RWA maintains the historical direction of flow from centralized facilities, uses existing infrastructure for the control of pressure zones, and may more equitably distribute the finished water to consumers compared to TWA. We request that DDW enlist the new DPR Expert Panel to distinguish the requirements for these two forms of DPR and more fully credit RWA for the additional benefits it provides. During their review of the Surface Water Augmentation regulation, the 2016 Expert Panel quantified the benefits of management (i.e., non-treatment) barriers including peak attenuation, dilution, and pathogen die-off. **DDW should consider a framework that balances the treatment, monitoring, and/or operational requirements to account for RWA benefits.** This framework could draw off of the “toolbox” approach used in the Long Term 2 Enhanced Surface Water Treatment Rule that provides flexibility to take advantage of the site-specific elements that are available to a project.

One topic that would benefit from additional clarity to distinguish RWA from TWA is the crediting of surface water treatment plants. DDW implied in its April 22, 2021 DPR webinar that it will require validation studies for all surface water treatment plants seeking pathogen credit in an RWA scenario. In many cases, these plants already treat blends of different sources with a wide range of water qualities, including low-turbidity imported source waters. A blanket requirement to recredit these facilities does not capture the fact that the introduction of purified water may lead to negligible changes in the historical quality of the existing feed waters, or lead to improvements in water quality and treatability. This largely duplicative validation requirement for RWA projects will also be time consuming for agencies and DDW staff. **We recommend that DDW develop criteria to identify the conditions that trigger revalidation studies and not make this a blanket requirement for all RWA water treatment plants.** Requiring such studies of all surface water treatment plants seeking pathogen credit places an additional, high burden on RWA and may drive project sponsors to actively exclude their use. Greater clarity on the crediting of other barriers—such as small reservoirs and blending—would further help the industry consider and leverage the benefits of RWA.

### Pathogen Control Requirements

Treatment redundancy is an effective approach to ensure compliance with DDW’s daily risk goal of  $2.7 \times 10^{-7}$  infections per person per day. However, the 20/14/15-log reduction requirements for enteric virus, *Giardia* cysts, and *Cryptosporidium* oocysts (§64669.45(a)) are significantly higher than anticipated. During the April 22, 2021 webinar, DDW indicated that they used conservative point estimates of pathogen concentrations in raw municipal wastewater to develop the log-

reduction values (LRVs) for each pathogen. We would like to understand the rationale for this approach when a) the 2016 Expert Panel report recommended the use of a probabilistic method and b) well-defined distributions with high-quality data were developed from the recent, large-scale DPR-2 pathogen monitoring campaign. We would also like clarification on the use of norovirus as the basis for the enteric virus LRV including a) how DDW accounted for the uncertainty related to the use of molecular data, and b) why this dataset was selected when the culture-based data offer more straightforward interpretation. Finally, we would like to understand the details of the failure analysis that led to the 4 logs of redundancy included in the 20/14/15 requirements given that DDW determined that 16-log reduction enteric virus, 10-log reduction *Giardia* cysts, and 11-log reduction *Cryptosporidium* oocysts was sufficient for public health protection (§64669.45(b)(3)). **We request that DDW work with the new DPR Expert Panel to identify the multiple layers of conservatism in the pathogen requirements and define the appropriate levels to achieve DDW's daily risk goal for both RWA and TWA.**

### Chemical Control Requirements

We acknowledge the need for more robust chemical control in DPR due to the lack of an environmental buffer. However, the prescriptive requirements for ozone and biological activated carbon (BAC) leave little room for innovation. We believe the draft criteria—as prescriptively written—will drive projects to pursue alternatives (§64669.115). The inclusion of the alternatives clause is a valuable and appreciated component of the draft criteria. However, we worry the regulations do not provide sufficient detail on what criteria DDW will use to assess the equivalency of those alternatives. To address this, we believe **it would provide greater flexibility if DDW defined the performance requirements that they are seeking rather than requiring specific design criteria—e.g., ozone to TOC ratio or empty bed contact times (§64669.50(c)).** For example, the IPR regulations require that advanced oxidation achieve 0.5-log reduction of 1,4-dioxane (a performance requirement) without specifying the technology (e.g., UV or ozone) or their required doses. A similar performance-based requirement for chemical control would make it easier to assess the equivalence of alternative options. We support performance requirements, such as the 1-log reduction of formaldehyde (§64669.50(c)), and ask DDW to specify any other requirements that would define equivalence for robust chemical control.

Continuous monitoring of TOC in the reverse osmosis (RO) permeate is an important strategy to detect and respond to chemical peaks and potential treatment excursions. While we understand the concept of the new TOC-dependent operational triggers, the requirement to perform a 5-day total trihalomethane formation potential study when the RO permeate TOC exceeds 0.1 ppm for more than 24 hours (§64669.50(h)) is not anticipated to provide valuable information. Exceedances of the total trihalomethane MCL are not anticipated even with TOC concentrations as high as the maximum allowable 0.5 ppm, meaning that this monitoring requirement is unlikely to necessitate any corrective action. **We suggest that DDW consider eliminating the 0.1 ppm TOC trigger while maintaining the remaining three triggers at their existing levels.**

In addition to treatment and monitoring, we recognize the valuable role wastewater source control can play in DPR and believe prevention is a valuable tool for public health protection. However, we do not believe that requiring each project to perform a quantitative chemical risk assessment (§64669.40(a)(4)) is the right approach to control the risks from chemical

contaminants. Risk assessments are used to *establish* the effluent concentrations that are acceptable for public and environmental health; these thresholds may take many forms including MCLs and NLs. Source control programs take these thresholds and use various mechanisms—including local limits—to ensure that projects can *meet* these thresholds. Source control programs have never borne the responsibility of *establishing* thresholds through chemical risk assessment, nor do we feel that each project should take on this responsibility. As described in the State Water Board’s 2010 and 2018 CEC Expert Panel Reports for Recycled Water Monitoring, there are multiple bases for determining acceptable chemical concentrations in drinking water. The absence of a uniform basis for chemical risk assessment will likely lead to inconsistency in the “acceptable” concentrations that are determined at each DPR site. This lack of uniformity was one of DDW’s principal drivers for developing a consistent framework for *microbial* risk assessment through the DPR-1 research project. **Rather than reviewing the disparate results of quantitative risk assessments from multiple projects, the State Water Board may be better served by enlisting their Recycled Water CEC Expert Panel to provide guidance on chemical monitoring for DPR projects.** The CEC Panel contains experts in the multiple disciplines needed to assess the risk of emerging chemical constituents, and could provide consistent guidance to the State Water Board on acceptable, risk-based concentrations for unregulated contaminants in DPR. To date, the CEC Expert Panel has helped to inform the chemical monitoring requirements for both GWR and SWA; this role could be expanded to evaluate and periodically update the chemical monitoring and control requirements and advise on unregulated chemical method selection (§64669.70) for DPR. This approach would eliminate the need for identifying specific chemical constituents in the regulation (§64669.65(b)(4)) and provide greater adaptability for future chemicals of concern via updates to the Recycled Water Policy.

**We also oppose the requirement for online monitoring of the sewershed (§64669.40(d)(1)).**

While sewershed surveillance may prove to be valuable in the future as this technology advances, the industry has yet to demonstrate the feasibility and reliability of this approach in preventing chemical excursions. Beyond these technical considerations, the draft regulations do not specify what the required responses would be in the event of elevated chemical detections in the sewershed. We note that the draft regulations already require high-frequency TOC monitoring in the RO permeate to rapidly identify and respond to peaks. DDW should continue to evaluate sewershed surveillance, but this strategy is not sufficiently established at this point to justify inclusion as a regulatory requirement.

**Technical, Managerial, and Financial (TMF) Capacity**

We understand DDW’s rationale for requiring higher TMF capacity in DPR settings. While the requirements should help identify capable agencies, we believe some of the submittals could be streamlined while still meeting these goals. For example, the Operations Plan (§64669.80) typically covers the topics that are required in the new Pathogen and Chemical Control Point Monitoring and Response Plan (§64669.85), including the monitoring and responses needed to meet the pathogen and chemical control requirements. We encourage DDW to look at other plans that could be combined or integrated into existing Public Water System and Safe Drinking Water Act plans, and share information across divisions to streamline reporting (e.g., Division of Water Quality, Department of Financial Assistance, and DDW). **Eliminating TMF**

**redundancies will reduce complexity and make project development and review less onerous for both project sponsors and DDW.**

The draft regulations significantly raise the operator certification and staffing requirements for DPR projects. While we understand the motivation for this requirement at the advanced water treatment facility (AWTF), the extension of these requirements to the drinking water treatment plant poses an undue burden on RWA projects. The goal of the AWTF in an RWA scheme is to create a water that is equivalent to or better than the waters currently being treated at the drinking water treatment plant. Given that water treatment plant operators have successfully protected public health using existing staffing and certifications, the presence of a new source water should not trigger the need for additional AWT5 certifications and 24/7 staffing requirements. These onerous operational requirements will further disincentivize RWA in spite of the additional public health protection it can provide. **We recommend that the requirement for onsite staffing at all facilities be re-evaluated, particularly at the drinking water and wastewater treatment plant where we do not believe 24/7 onsite staffing is necessary.**

Finally, the requirement that budgets be set aside for maintenance and capital replacement (§64669.30(a)(3)) will pose an important challenge to many direct potable reuse responsible agencies (DiPRRAs) who currently allocate funds on a periodic basis through approved capital improvement plans. One alternative would be to evaluate whether an agency can pass certain criteria, such as having access to diverse funding sources or contingency alternatives that could be drawn from in the event of a failure.

### **Alternatives Clause**

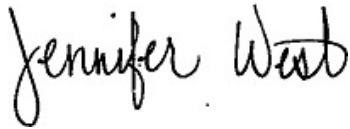
We would like to emphasize our appreciation for the alternatives clause (§64669.115) and the flexibility to propose alternatives to any of the requirements in Article 10. We support an adaptable regulation that allows for the inclusion of future innovations. We understand that the alternatives clause could be used to implement a new technology that has been validated and shown to meet the requirements for public health protection. Along these lines, we request that DDW articulate in the Statement of Reasons what criteria they would use to evaluate technologies that could be used as alternatives to the ozone/BAC pre-treatment. With these equivalency criteria identified, we could develop a research agenda for agencies interested in pursuing such alternatives.

### **Conclusion**

We appreciate the time, energy, and thoughtful consideration that was spent by DDW in preparing these draft regulations. We believe they will provide critical regulatory certainty for DPR projects in California. We ask that you consider the modifications above, which we believe will further improve these draft regulations.

Please do not hesitate to contact us if you have any questions regarding these comments, or to schedule a meeting.

Sincerely,



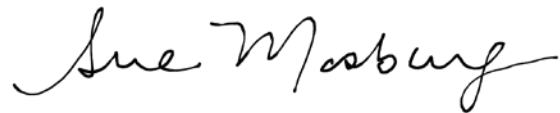
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