



## **Advancing Recycled Water in the Pacific Northwest**

### **Why Water Reuse**

For over 30 years, water recycling has proven essential for meeting the water demands of the Pacific Northwest. Whether used for irrigation, industrial reuse, or other means, the need for recycled water continues to grow throughout the states of Washington, Oregon, and Idaho. This is evidenced through the hundreds of active water reuse permits in these three states. The growing need for recycled water is further driven by global climate challenges, expanding populations, industrial growth, and aquifer depletion. Water availability is stretched thin across the Pacific Northwest, and we believe recycled water allows the region's rapidly growing communities to adapt and prepare for impacts resulting from shortening supplies and increasing demands.

Municipalities and utilities throughout the region have a unique opportunity to look at water recycling as a sustainable means of protecting river and stream temperatures and habitat, preserving potable water supplies, building climate resiliency for their local communities, and ensuring a healthy economy for generations to come. Recycled water is imperative to the water portfolio of the Pacific Northwest. Communities' commitment to recycled water will provide an environmentally and fiscally responsible future that benefits both the planet and the people.

### **Call to Action**

The Pacific Northwest section of the WateReuse Association (WR-PNW) encourages the three states (Idaho, Oregon, Washington) within the region and their respective organizations and communities to continue looking for effective ways to recycle water. By incorporating recycled water, communities are able to lower utility costs, preserve water resources, and prepare for a more sustainable future.

Many communities looking to implement reuse strategies have started the discussion on water recycling with their stakeholders. Yet, with diverse interest groups, communities are often challenged to come to a common reuse solution that meets the varied constraints and limitations of an audience with different goals. Barriers and constraints are unique to each member of that audience, but the overarching process can be similar.

The WR-PNW section advocates for a thorough and planned approach to recycled water implementation—an approach that is both sustainable and iterative. By choosing to actively advance water recycling now, communities can avert future water supply issues and choices that will be forced upon them in the future.

Historically, recycled water initiatives have provided incentives for municipal and industrial entities to invest in water recycling to achieve long-term goals. Recycled water generally comes from a centralized facility where treatment is more efficient. Energy can be conserved by avoiding costs associated with multiple pumping systems either in groundwater wells or distribution systems. Applications, such as agricultural and landscape irrigation, commercial reuse, and aquifer recharge, often increase a utility's resource resiliency and provide an overall decrease in operating and capital costs. Recycled water reduces the diversion of freshwater from sensitive ecosystems—water can be reused rather than continually collected from freshwater sources with fluctuating supply.

### **Adaptive Strategies**

Despite these benefits to varied stakeholders, views on implementation may vary widely. The WR-PNW section suggests a strategy of adaptive stewardship for water recycling implementation. The implementation framework outlined below seeks to merge the values and needs of municipalities, regulators, residents, and industry to arrive at an actionable solution. Communities should strive to be good stewards of the water resources available. An involved community should actively evaluate the benefits and risks inherent to any chosen recycled water strategy.

*Engaged communities demonstrate adaptability to present needs, while providing flexibility for changing demands in the future.*

A good starting point for municipalities is to consider the resources, values, and needs of their communities and best management practices to protect and preserve those resources. By continually examining the impact of recycled water initiatives, communities will be equipped with organizational agility to adjust to increasing water scarcity and risks.

Implementation requires collective buy-in from stakeholders. WR-PNW recommends the following implementation framework to unite stakeholders and successfully implement a recycled water program: evaluate, engage, enhance, and employ.

**Evaluate.** A careful evaluation should precede any implementation strategy, beginning with a qualitative and quantitative risk assessment. The risks of water supply shortages, increasing costs, and water quality concerns merit an evaluation that considers both direct users and those indirectly impacted.

**Engage.** Key stakeholders should be engaged early in the decision-making process to understand the evaluation process for assessing risks and benefits. Stakeholders who are educated about the impacts and benefits of recycled water should reach out to less involved members of the community early to achieve a common understanding and find commonality in purpose.

**Enhance.** After community engagement has achieved a collective understanding of drivers and constraints, utilities can enhance water recycling initiatives. This stage of the framework allows the community to adapt industry-wide principles to specific needs and optimize the impact of a given recycled water strategy.

**Employ.** With a well-crafted mission that has considered the specific needs of the community, stakeholders will be able to employ concrete programs in their communities. At this stage, those responsible for directing the recycled water program will work through final regulatory and implementation hurdles to bring the common community reuse vision to fruition.



This adaptive framework serves as a starting point and will require continued evaluation. An organizationally flexible water recycling program should revisit certain points of the framework to address emerging risks. One emerging risk of interest is the water quality concerns posed by emerging contaminants. This risk must be given consideration at the time of collaborative decision making. Although no human health problems associated with properly treated recycled water have been documented by the EPA<sup>1</sup>, the longer-term risks of prolonged indirect exposure to recycled water necessitate continual evaluation as new data emerge. Equally important weighting should be given to how these risks will be handled going forward during the implementation phases of a recycled water program.

The handling of a specific group of emerging contaminants, perfluoroalkyl substances (PFAS), by the water industry provides an example of how to collaboratively evaluate and mitigate emerging risks. In the early 2000s, industry-led initiatives significantly reduced the environmental loads of the two most prevalent PFAS, perfluorooctanesulfonate (PFOA) and perfluorooctanesulfonate (PFOS). Regulatory action by the United States Environmental Protection Agency advanced these initiatives to successfully reduce the longest-chain PFAS compounds by 2015. Human exposure to both PFOA and PFOS have been decreasing over the last two decades.<sup>2,3</sup>

<sup>1</sup> US EPA. Water recycling and reuse: the environmental benefits. Online. <https://19january2017snapshot.epa.gov/www3/region9/water/recycling/> [accessed 17 April 2021].

<sup>2</sup> Sunderland EM, Hu XC, Dassuncao C, Tokranov AK, Wagner CC, Allen JG. 2019. A review of the pathways of human exposure to poly- and perfluoroalkyl substances (PFASs) and present understanding of health effects. *J Expo Sci Environ Epidemiol* 29(2):131–147, PMID: 30470793, 10.1038/s41370-018-0094-1

<sup>3</sup> Zhang X, Zhang Y, Dassuncao C, Lohmann R, Sunderland EM. 2017. North Atlantic deep water formation inhibits high Arctic contamination by continental perfluorooctane sulfonate discharges. *Global Biogeochemical Cycles*, 31 (2017): 1332-1343.

Recycled water stakeholders, government regulators, and private enterprises should remain vigilant to continue reducing PFOA and PFOS, while monitoring other PFAS compounds and risks that are less well-known to the reuse industry. Through collaboration of these vested parties, emerging risks can be successfully mitigated. Communities that adopt recycled water initiatives will help prevent aquifer depletion, discourage detrimental effects to aquatic habitats, and ensure sustainable water supplies.

Utilities are uniquely positioned to provide sustainable water solutions to their communities. Numerous municipalities and industries are looking to be good stewards of water resources by developing high quality treated effluent for reuse in local irrigation waterways. Evaluation and review of existing information and studies has identified no significant risk to the environment, humans, or wildlife from exposure to recycled water. Therefore, WR-PNW continues to advocate for the prudent and calculated use of these important resources. Recycled water should be a key initiative for any community battling water scarcity and seeking water resource preservation.

WR-PNW recommends communities appropriately advance recycled water initiatives after determining community-specific risks and benefits. A carefully crafted implementation framework will help municipalities and utilities prepare for the water demand needs of the future. Recycled water is critical to the future livelihood of communities in the Pacific Northwest; finding the best means and methods of implementation for each community is key. Collective action in our communities to promote and effectively execute water reuse will diminish historical barriers and drive innovation forward. WR-PNW encourages regional stakeholders to actively implement water recycling and strive to promote a sustainable water future.