ODW Now

The Office of Drinking Water Newsletter

January 2023

CONGRATULATIONS TO OUR 2021 TOP PERFORMERS!

Surface water sources such as lakes and rivers are open to the environment and vulnerable to contamination. To protect public health, all systems using surface water sources must meet extensive federal and state requirements. Many systems go beyond regulatory requirements by optimizing particle removal as measured by turbidity. Their customers benefit with better water quality and improved public health protection.

We monitor 56 rapid rate treatment plants and rank the systems according to treatment optimization performance (TOP). Our monitoring data for 2021 shows that Washington State's conventional and direct filtration surface water treatment plants continuously perform above national regulatory standards. Four systems are continuing their run of excellence and have now reached 21 consecutive years of optimization!

From left to right: Paul Meyer, Evan Champion, Russ Higgins, Tom Norris, Rob Davis—Tolt Treatment Facility staff; Brietta Carter, Nancy Feagin—ODW staff.

We also award bronze, silver, gold, and platinum certificates to systems the first time they meet the turbidity goals for 3, 5, 10, and 15 consecutive years, respectively. This year, six systems were first-time award recipients.

See the winners and read more about turbidity optimization on our Rapid Rate Filtration Plants webpage.

OFFICE UPDATES

We are working to improve and build stronger relationships with our tribal, federal, state, and local partners. This helps us meet our mandate to ensure safe and reliable drinking water to all residents of Washington State. Although much of our work revolves around regulations and enforcement of the Safe Drinking Water Act (SDWA), the key elements to success lie within communication, collaboration, and partnership with all entities who serve our communities. Municipal water law is complicated and requires coordination with agency partners to implement and enforce.

We are collaborating with the Department of Ecology on our shared Memorandum of Understanding for implementation of Municipal Water Law. At the same time Ecology is updating its Policy 2030 (Muni Water Law Policy). Likewise, other partners with interest in water law and impacts are also seeking an increase in communication and development of agreements for shared information. Tribal partners are asking for more information and earlier inclusion in water supply determinations and water system planning process.

Within our own commitment to our tribal and state partners, we share project information and proposals to entities impacted by the State Environmental Policy Act (SEPA) projects and adjoining land impacts. There are multiple ways we can improve information sharing with our partners across the state.

First, we can share information with entities requesting project details within a specific Water Resource Inventory Area (WRIA) using a mapping layer accessible to our office staff who receive project proposals.

We just sent out our bi-monthly publications update for November and December. We list new and revised publications for the previous two months. Subscribe here to receive these emails.

We also seek to improve our public facing technology in the future. This allows residents and partners to request information as it overlaps with mapping requests or real-time data. This future goal requires planning, development, and implementation of new technology used by other state entities. This combines well with our drive to move to digital data and electronic access.

Lastly, we recognize the coordination need with our state partner agencies. The public relies jointly on us and our fellow agencies to meet water system demands throughout the state. Coordinating our regional staff with Ecology's regional staff is crucial in identifying water source issues, sharing concerns related to climate impacts, federal curtailments, ongoing municipal water law policy adjustments, and consistent state-wide service to our communities. We are committed to increasing our dedicated capacity to providing liaison activities with Ecology. Currently Ecology has a dedicated interagency liaison. These staff members will participate in multiple interagency workgroups and regional staff interactions to share consistent and clear messaging to the communities that both agencies serve. Additionally, this effort serves to identify any water source issues or water system concerns early in the project timeframe, while incorporating strong communication with external partners for input and comments. Ideally the partnerships with tribal, state, and local entities will benefit from added communication with our Ecology partners.

One other focus we recently identified is our commitment to include Environmental Justice in all our decisions. We created a workgroup made up of regional staff to focus on environmental justice throughout ODW. This workgroup supports the Drinking Water State Revolving Fund (DWSRF) team in identifying water systems with technical assistance needs to be eligible for DWSRF loans. The importance of identifying and serving disadvantaged communities is not only our objective, but also mandated through the EJ 40 executive order as well as the Healthy Environment for All (HEAL) Act that goes into effect in July 2023. This work is vital to make the most of our Bipartisan Infrastructure Law funds available through 2026.

DRINKING WATER WEEK NOMINATIONS CLOSE SOON. Get your nomination in today!

National Drinking Water Week is May 7-13, 2023. Anyone can nominate someone in the drinking water industry for excellent service, overcoming challenges, or going above and beyond their normal duties. Fill out a **nomination form** today!

Some award categories are Grace Under Pressure, Most Improved, and Lifetime Achievement for those who are retiring. There are more categories and we adjust titles to fit circumstances. Find more details on our **Drinking Water Week webpage**.

LEGISLATIVE AGENDA

We are ready for the 2023 Legislative Session, which started January 9. During session, legislators develop new biennial budgets and consider a number of issues, including a few from our office.

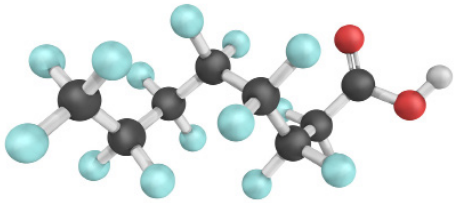
This session we put forward requests for funding related to:

- Assisting struggling water systems.
- Providing alternative drinking water sources or treatment to individuals impacted by widespread contamination.
- Increasing staffing and funding for the Operating Permit Program.
- Increasing funding for the Consolidation Grant Program.
- Increasing state match and maximum loan amounts for the Construction Loan program.
- Authority to spend increased set asides related to Drinking Water State Revolving Fund.

During session, our Policy and Planning Section and the management team will work closely with many subject matter experts across our office to review bills and participate in the legislative process. You can stay informed of the work by visiting our DOH 2023-25 Budget Proposal webpage, the Washington State Legislature webpage, and by staying in contact with professional organizations such as the Washington Water Utilities Council, Washington Public Utility Districts Association, Washington Association of Sewer & Water Districts, American Water Works Association, and others. You are welcome to contact Brad Burnham, Policy and Rules Section Manager, with questions about our work and our funding requests.

PFAS TREATMENT

Todd Krause, PE, WDMII; Northwest Water Systems



Overview

PFAS, or Perflouroalkyl Substances, are stable chemicals that typically do not break down in the environment. These "forever" chemicals have been linked to cancer, low birth weights, thyroid disease, and reduced immunological response to vaccines. These substances bioaccumulate, meaning that very small exposures to the chemical can accumulate to higher levels in the body over time and from one organism to another as one moves up the food chain. The Department of Health began regulating PFAS chemicals by setting five State Action Levels (SALs). Utilities with a confirmed result above a SAL, must conduct public notification. While systems are not required to treat the water, many choose to do so. This article summarizes treatment options for systems that want to treat to reduce exposure to their customers.

Treatment and Mitigation Methods

Three main methods for PFAS treatment or mitigation are options for drinking water systems:

1. Non-Treatment.
2. Treatment—Reverse Osmosis.
3. Treatment—Adsorption.

Non-Treatment Methods

First evaluate non-treatment methods to reduce exposure because water treatment is expensive to install and maintain. Further, treatment increases complexity in water system operations, introduces another point of failure, and may have unintended water quality consequences.

For a PFAS-contaminated aquifer, the only non-treatment alternative is switching to an uncontaminated source of water. Alternatives to consider are:

1. Drill a deeper well. You may need a relatively simple analysis or an in-depth full hydrogeologic study to ensure a lower aquifer exists and is not susceptible to contamination.
2. Consolidate with or purchase water from a neighboring water system. If another water system is nearby, you can study its feasibility as a viable alternative.
3. Drill a well in a different location. You may need a hydrogeologic study or other analysis to identify if the alternative site is also likely to be contaminated or become contaminated in the future as the PFAS plume travels through the aquifer.

Treatment—Reverse Osmosis

Reverse Osmosis is very effective in removing PFAS chemicals. However, typically it is too expensive to install and maintain for public drinking water systems. If there are other contaminants present, such as salts, nitrates, or arsenic, reverse osmosis might be a practical treatment option for multiple contaminants. Hard water and water with high iron, manganese, and/or organics require pretreatment before reverse osmosis can be used.

Treatment—Adsorption

Adsorption is a technology used where a contaminant adsorbs, or "sticks" to a specialized media. By far, adsorption is the most commonly used treatment for PFAS. Historically, granular activated carbon (GAC) has been the "go to" absorption media for PFAS and many other contaminants. When using GAC, bituminous coal-based media tends to be the most effective. Carbon filters can effectively remove all classes of PFAS molecules and are also able to remove most organic taste, odor, or color-causing molecules. GAC adsorption media lasts longer with low organic source water.

Adsorption—Advantages and Disadvantages

While carbon filters such as GAC have many advantages, they also have several disadvantages. Because these filters require an empty bed contact time (EBCT) of ten to twenty minutes for PFAS removal, this translates into needing a large space and volume of media. For example, if you are treating 100 gallons per minute (gpm), you would need 1,000-2,000 gallons (133-267 cu ft) of media to provide effective treatment. This requires a large

capital expense in filter vessels and pumphouse building infrastructure. In addition, coal-based GAC may require a significant amount of rinsing, because the first water run through these filters may have arsenic levels above the MCL. Source water leaches some of the arsenic naturally found in the GAC media into the finished filters.

Treatment—Resin-Based Adsorption: Ion Exchange

Another adsorption technology uses resin-based adsorption technology. Commonly referred to as "ion exchange," Northwest Water Systems prefers the terminology of resin-based adsorption (RBA). In most ion exchange processes, the media can be regenerated with a salt-brine; however, with PFAS, the ion-exchange can only occur once, making it a type of adsorption technology.

RBA—Advantages and Disadvantages

RBA media is significantly more expensive than GAC; however, the required EBCT is only 2.5-7.5 minutes. Therefore, the size of the initial treatment plant is much smaller, with an overall smaller capital expense. The RBA media is more specific to PFAS molecules, resulting in much higher adsorption capacities. Other anions in the water can negatively impact the media, especially sulfate and nitrate. Some organics may also foul the media. Some RBA media manufacturers recommend not backwashing their media. Not backwashing potentially results in more efficient media use; however, a non-backwashing filtration system design may require pre-treatment of the water to prevent media fouling or channelization over time. Fewer RBA filters are in service for PFAS removal; therefore, while many of the advantages of RBA systems appear very attractive, it could be that actual performance of the media may not be as good as theorized under all source water quality conditions.

Operational Considerations

With each technology, consider operational parameters when choosing and designing a PFAS treatment system. Consider: how much wastewater is generated in the treatment process, and how is it handled? How much spent media is generated and how is it handled? How does the PFAS removal process change water chemistry and what pre- or post-treatment technologies will you need to implement and/or redundancy incorporated to ensure finished water is safe and reliable? What staff time and expertise is required by the selected treatment system? A full discussion of these operational concerns is beyond the scope of this brief summary article. However, similar to many treatment systems, your treatment design should not only consider PFAS removal but also consider whether it provides your water system a sustainable operations and maintenance option for decades to come.

LEAD AND COPPER RULE REVISIONS—INVENTORY REQUIREMENTS

The U.S. Environmental Protection Agency (EPA) issued Lead and Copper Rule Revisions (LCRR) that went into effect on December 16, 2021. The rule requires all community and non-transient non-community (NTNC) Group A water systems to submit service line inventories to the state by October 16, 2024. This requires dedicated effort to review historic records and determine appropriate identification methods to obtain both private and utility owned service line information.

We presented on this subject at our December Drinking Water Advisory Group (DWAG) meeting. The presentation and meeting notes are available on our DWAG meeting webpage. To help you with how to complete a lead service line inventory, we developed a new publication—331-711 Lead Service Line Inventory Guidance.

The Lead Service Line Inventory Guidance assists water systems with developing a plan for meeting the submittal date. We outline the LCRR requirements specific to completing an inventory that meets our requirements. We define approved identification methods, what to use to collect the data, and the submittal process. We outline public notification processes and requirements for when your inventory is completed. We provide specific and general resources and links to help guide you in this task.

Coming soon, we will update our LCRR webpage to include Frequently Asked Questions. We are developing an upcoming funding cycle for lead service line related tasks. We are also developing a virtual training webinar for water systems to attend.

Please share this newsletter with anyone who might be interested. Sign up for future issues.

Read ODW Now online.