

Report to the Governor

2020-2023 Water System Capacity

September 2023

Safe Drinking Water
Act



Prepared by
The Office of Drinking Water
Environmental Public Health



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September 27, 2023

Governor Jay Inslee
Office of the Governor
PO Box 40002
Olympia, WA 98504-0002

Subject: Washington State Capacity Development Program Triennial Report 2020-2023

Dear Governor Inslee:

Enclosed is a copy of the Washington State Capacity Development Program Triennial Report for state fiscal years 2020-2023. This report is submitted to the Environmental Protection Agency (EPA) annually and to the State Governor's office every three years, as required by EPA. This document addresses asset management requirements outlined in America's Water Infrastructure Act (AWIA). A copy of the report is available on our [Water System Capacity Development webpage](#).

This report was developed in accordance with EPA guidelines and satisfies two issues mandated under section 1420 (c)(3) of the Safe Drinking Water Act (SDWA). The issues include efficacy of the Capacity Development strategy and identification of progress made towards improving technical, managerial, and financial capacity of public water systems.

This three-year reporting period was both challenging and rewarding in several ways:

1. We successfully worked through an updated capacity development strategy to incorporate additional asset management details and address future needs of our state, focusing on increased understanding of water needs, including climate change impacts.
2. Working remotely was challenging as the pandemic continued. Since transitioning to remote work, our agency focused efforts on supporting staff and providing needed resources, including scanning paper copies for electronic availability. We became more efficient by addressing remote work needs and created rewarding, time-saving efficiencies, including reduction of travel time, faster communication tools, and reduced hard copy communication.
3. The ongoing state-wide pandemic response resulted in re-assigning a considerable number of office staff to COVID-19 response roles in 2020 and 2021. The duration of the assignments varied and caused a shortage of ODW staff resources. During this time staff

not assigned to pandemic response covered for those staff reassigned to the pandemic. There was substantial uncertainty about when ODW staff would return to their regular positions.

4. We were successful in embracing the new world of virtual trainings. We worked with staff and our vendors to create opportunities for virtual trainings, seminars, and meetings. We also promoted virtual learning with our stakeholders and partners. Although virtual meetings and outreach is not the same as face-to-face social interactions, the lack of travel and cost resulted in strong attendance for stakeholder and agency organizational meetings.
5. We support utilities in understanding and responding to unregulated contaminants including per and polyfluoralkyl substances (PFAS) and building their capacity to respond to their impacted communities with communications and move toward water treatment.

We look forward to continuing to discover improvements and implement efficiencies in our work to assist water systems with their technical, managerial, and financial (TMF) capacity. We will continue our commitment to support public water systems to maintain the equitable provision of safe and reliable drinking water for residents of Washington state.

Please see the attached report for more information and details. If you have questions, please contact Brad Burnham, Policy and Planning Section Manager, at brad.burnham@doh.wa.gov.

Sincerely,



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This report satisfies a requirement of the Safe Drinking Water Act (SDWA; 42 U.S.C. §300f et seq. (1974)), requiring states to produce a report for their governor on the effectiveness of capacity development efforts. Information in this report also addresses the Environmental Protection Agency’s (EPA) criteria for assessing the implementation of the Capacity Development Program in Washington state.

Executive Summary

The Washington State Department of Health, Office of Drinking Water (DOH) receives funding from the U.S. Environmental Protection Agency (EPA) to focus on capacity development assistance to small public water systems serving fewer than ten thousand people. Water system “capacity” is the technical, managerial, and financial (TMF) capability to operate in accordance with local, state, and federal drinking water standards. Maintaining adequate capacity is difficult for the roughly four thousand small systems in the state due to a variety of challenges in each of the TMF categories.

The SDWA requires each state to have a strategy to ensure water systems have the TMF capacity to deliver safe water to their customers. This report satisfies the requirement for states to report to EPA each year on their strategy and provide a progress report every three years to the Governor.

DOH staff retain strong relationships with many of our key local, state, federal, and non-governmental partners. At the local level, we partner with the thirty-five local health jurisdictions (LHJs) in Washington. We also have strong partnerships with other state agencies, including the Department of Commerce (Commerce), Department of Ecology (Ecology), and the Utilities and Transportation Commission (UTC). In addition, we rely heavily on our federal partners. We coordinate with EPA and other federal agencies that have a role with water supply forecasting, emergency preparedness and response, funding and financial management, and many other topics. The information we gather and relationships we build through our programs help us assess the specific capacity challenges each small water system faces and focus our efforts on their needs.

This 2020–2023 report outlines the work done over the three-year period to assist small water systems in our state and meet requirements embodied within the federal Safe Drinking Water Act (SDWA). Please note that we followed EPA’s criteria for writing the report and we provide specific information in Appendices B and C about how we answered these prompts.

In this reporting period, we continued to support our small water systems in a variety of ways.

- We provided financial assistance, especially to economically disadvantaged communities, through our Drinking Water State Revolving Fund (DWSRF) program.
- We invested in statewide and regional partnerships such as the Small Communities Initiative (SCI) program in concert with at the departments of Ecology and Commerce.
- We partnered with Commerce and the Columbia Basin Sustainable Groundwater Coalition to support water systems in Adams, Franklin, Grant, and Lincoln Counties affected by groundwater depletion in the Mid-Columbia Basin.
- We partnered with staff from Association of State Drinking Water Administrators (ASDWA), EPA, and other states on the Area Wide Optimization Program (AWOP).
- We worked face-to-face with individual water systems to address the unique needs of each one through our sanitary survey program. As a result, DOH and local health staff connect one-on-one with more than eight hundred water systems in the state every year.

We also initiated new work and projects during this time period, including:

- **Responding to the COVID-19 pandemic.** During the last three years, the pandemic impacted our operations in multiple ways. For the first twelve to eighteen months, staff from our office and other offices were temporarily reassigned to the agency's Incident Management Team to participate in the state's pandemic response. Due to the reduction in staff in our office, we adjusted our time and effort to focus on the most important and impactful work. We also supported our staff as we transitioned to remote work so we could maintain efficiency in this new way of working. For essential work, such as conducting sanitary surveys, we developed safety guidelines and explored new ways to conduct the work. We used new strategies to maximize social distancing, including review of paperwork by phone and coordinating with the purveyor to utilize video options for observation of water system conditions when available. Now that the pandemic is over, we are continuing to utilize some of the new strategies adopted during the pandemic for increased efficiency.
- **Responding to discoveries of PFAS in drinking water sources in Washington state** and community needs to address contamination and related concerns. We updated our educational materials to spread awareness of the EPA health advisory levels and EPA's continued work on PFAS. We partnered with other agencies and organizations to coordinate communications and provide interactive meetings with the public and water systems. In addition, we are tracking EPA's rulemaking efforts. We reviewed and commented on EPA's draft rule language. In our state, we partner with the State Board of Health on developing regulations related to drinking water contaminants. Once EPA completes the rulemaking, we will work with the Board to establish new state requirements, if needed. Until then, we will continue to regulate PFAS in our public water systems based on our existing state action levels (SAL).
- **Preparing to receive and distribute additional funds from the Bipartisan Infrastructure Law (BIL).** As a result of BIL, Washington state will receive an increase in funding to the DWSRF program. This funding represents more than a seven-fold increase in federal funds injected into DWSRF through fiscal year 2026. Since BIL passed, we have been preparing for the increased funds and updating our construction loan guidelines to reflect the related new requirements. The new funding provides us an opportunity to expand and enhance our assistance to community drinking water projects and focus on some priorities, including projects related to lead service line inventories and emerging contaminants, like PFAS. In addition, we have been focusing on communicating the opportunity BIL provides to our water systems and communities through our newsletters, webpages, and presentations to associations and at conferences.
- **Updating our Drinking Water Strategy.** In 2021 and 2022, our office updated Washington's Drinking Water Strategy (Strategy) to meet EPA's requirement for states to submit a capacity development strategy that incorporates asset management. At the beginning of the project, we decided to completely update the Strategy and go beyond just working on the asset management elements. We also wanted to conduct the work collaboratively, so we partnered with EPA, water utilities, the public, and our Drinking

Water Advisory Group (DWAG). The finished Strategy, which we submitted to EPA last year, is in line with our vision of supporting our communities to address competing water challenges, such as climate change, water resources, aging infrastructure, and economic development. It also expresses our commitment to ensure and promote the value of safe and reliable drinking water to all people of Washington, now and for generations to come. The completed Strategy effectively assists our leadership team in its work to continue developing improvements and efficiencies in our work supporting water systems. We look forward to continuing to implement our Strategy and communicate our successes to you and our other partners.

1.0 Introduction

DOH regulates water systems under state law (Title 70A Revised Code of Washington) and a formal “primacy” agreement with EPA to carry out the SDWA. EPA provides funding to states as part of this agreement. In Washington, EPA funds about 60 percent of the safe drinking water programs.

In the 1996 amendments to SDWA, Congress mandated states to create capacity development strategies to enhance the ability of small public water systems to provide safe and reliable drinking water. These strategies focus on helping water systems build and maintain the ability to operate, manage, and finance their systems properly.

EPA refers to these strategies as a “Capacity Development Program” and can withhold up to 20 percent of a states’ funding if the strategy is not sufficient. EPA regularly reviews the effectiveness of state programs.

Water system capacity is the TMF capability to operate in accordance with applicable local, state, and federal drinking water standards. These three areas are interrelated.

- **Technical capacity** refers to the physical system, including source, treatment, storage and distribution, and the ability of skilled staff to operate the water system.
- **Managerial capacity** describes a system manager’s ability to conduct necessary activities, such as staffing, planning, decision making, maintaining accountability, and interacting with customers and regulatory agencies.
- **Financial capacity** represents the system’s ability to generate sufficient revenue, maintain credit worthiness, and manage funds through budgeting, accounting, and other fiscal control methods.

Maintaining adequate capacity is a particular challenge for small water systems. EPA defines small water systems as those water systems supplying drinking water to fewer than ten thousand people. These systems face TMF challenges, affecting their capacity to provide safe and reliable drinking water to customers.

As a result of these challenges, DOH works to support the consolidation of small water systems in urban and peri-urban areas with larger water systems that have well-developed TMF capacity to sustain the safe and reliable provision of drinking water. Physical consolidation is not always

a feasible option for many small and more rural water systems. Some examples of barriers to consolidation include the following.

Technical Challenges

Compared to larger water systems, small water systems have more water quality violations and are more likely to fail at properly monitoring for contaminants, making timely repairs, or replacing faulty materials. This can lead to decreased water system reliability, poor water quality, and failing water system infrastructure—all of which pose significant health risks to their customers. In addition, many small water systems, especially very small systems serving fewer than five hundred people, lack a full-time operator.

Managerial Challenges

Homeowners' associations—with volunteer board members—own and operate many small water systems. Often, these part-time volunteers do not have the background and training to understand their responsibilities to ensure the safe and reliable delivery of drinking water to their customers.

Financial Challenges

Small water systems struggle financially because there are fewer households to pay for the overall cost of maintaining and improving their water system. These costs include the capital financing to periodically replace physical assets such as wells, pumps, distribution mains, and reservoirs when they reach the end of their useful life. In addition, maintenance, monitoring, and personnel costs also tend to be much higher per household for small systems.

1.1 Water Systems in Washington State

There are over 4,100 water systems in Washington state that meet the definition of a public water system under the SDWA (USC 42 chapter 6A, subchapter XII, 300f(4)(a)). These public water systems, commonly referred to as Group A water systems, are regulated under Chapter 246-290 Washington Administrative Code (WAC). They range in size from those serving more than 100,000 people such as Tacoma Water, to small campgrounds that seasonally serve a few dozen people.

In general, water systems that serve cities, towns, and homes where people live year-round are called community water systems. Those that serve only schools or businesses where people use water at least 180 days per year are called “nontransient noncommunity” water systems. Small water systems that serve recreational sites such as camps and campgrounds are called “transient noncommunity” water systems. The monitoring and regulatory requirements under the SDWA are tailored to each system, based on population served, and frequency of the populations' access to the water system. Small water systems must manage complex regulations, keep up with new testing and monitoring methods, and improve water infrastructure—often with fewer resources than larger water systems.

Table 1

Type	Number of Public Water Systems
Community (Total Number)	2,224
Community—serving more than 100,000 people	8
Community—serving 10,000 to 100,000 people	101
Community—serving 1,000 to 9,999 people	247
Community—serving fewer than 1,000 people	1,868
Nontransient noncommunity (NTNC)	314
Transient noncommunity (TNC)	1,629

Data updated: 07/11/2023.

While this report identifies challenges that water systems, especially very small water systems, face in maintaining capacity of providing safe and reliable drinking water, it also highlights successes. Many of these successes are outcomes from special projects, training, and relationships we developed with local, state, and other partners in support of smaller water systems. Our work with small systems includes two focus areas: support and assessment. Small water system support describes the work we do to train and assist these small systems in developing their capacity. Water system assessment describes the work we do to monitor and evaluate system performance and respond to emergencies.

We support improved water system capacity for all sizes of water systems, using:

- Infrastructure investments.
- Board and commission training.
- Water quality monitoring.
- Asset management training.
- Treatment optimization programs.
- Workforce development.

1.2 Partnerships to Support Water System Capacity

Our staff members partner with key local, state, federal, and non-governmental entities to support the provision of safe and reliable drinking water to the people of Washington state.

At the local level, we partner with Washington’s thirty-five LHJs. These LHJs serve one or more of the thirty-nine counties in the state, perform about half of all sanitary surveys, and are important partners in responding to water system emergencies. Our relationships with LHJs vary depending upon the financial support we can provide them, the capacity of the LHJ themselves, and the degree of support they receive from their governing bodies such as county councils.

We also have strong partnerships within Washington state government and our peers in other states. Our staff who support the financial capacity of water systems work closely with people at Commerce, Ecology, and UTC to provide financing and financial literacy tools to people working with and for public water systems on topics such as asset management and rate setting. On water resources, our staff collaborate with people at Ecology, the state Department

of Agriculture (Agriculture), Department of Natural Resources (DNR), and others on water resources and drought response. For emergency preparedness and response, we have strong relationships with other state agencies, most notably Ecology and the Emergency Management Division of the Washington State Military Department to support water system's capacity to respond to emergencies. Our coordination with other state drinking water programs cuts across a multitude of TMF frameworks. Lastly, being placed within, DOH keeps us focused on the essential public health service that is embodied within the provision of safe and reliable drinking water to people in Washington state. On specific topics such as responding to health risks posed by *Legionella pneumophila*, we coordinate closely with staff throughout DOH, as needs arise.

At the federal level, EPA is the key federal partner in the provision of safe and reliable drinking water as SDWA and National Primary Drinking Water Regulations are within the regulatory purview of EPA staff. DOH also coordinates with EPA on TMF topics ranging from asset management to optimization of water treatment. In addition to EPA, we coordinate with other federal agencies that provide water supply forecasting, emergency preparedness and response, funding and financial management, as well as other tasks related to safe and reliable water supply.

DOH also works closely with many non-governmental organizations (NGOs) to sustain water system capacity. Within Washington state, organizations DOH partners with to provide TMF capacity development services include:

- Evergreen Rural Water of Washington (ERWOW).
- Pacific Northwest Section of the American Water Works Association (PNWS-AWWA).
- Rural Community Assistance Corporation (RCAC).
- Washington Association of Sewer and Water Districts (WASWD).
- Washington Certification Services.
- Washington Environmental Training Center (WETRC).
- Washington Public Utility Districts Association (WPUDA).
- Washington Water Utility Council (WWUC).

At the national level, DOH coordinates with NGOs that support the programmatic and capacity development of water systems in a variety of ways.

2.0 Water System Support

DOH supports capacity development within water systems at a multitude of levels ranging from investments in statewide and regional partnerships to direct, hands-on assistance for the operators and utility managers who run public water systems in our state. Our diverse approach reflects the unique needs of water systems across our state.

2.1 Statewide and Regional Partnerships

Statewide and regional partnerships are essential tools for building and maintaining water system capacity. In Washington state, we have many small water systems in rural areas with challenges ranging from aging infrastructure, declining aquifers, and limited technical expertise. By working with third parties like the Small Communities Initiative and utility partners such as

Public Utility Districts and Water Districts, we leverage our limited resources, pursue additional resources, and provide valuable training to those systems with the greatest needs. DOH brings technical assistance providers across the state together to share information, discuss water utility needs, and all parties share resources and expertise. We also work with representative utilities and expertise across the state to participate in DWAG. This group of drinking water partners help us understand the needs of utilities and the impacts our programs have on the public and the water systems that serve them.

2.1.1 Small Communities Initiative

The SCI program at the Dept. of Commerce provides technical advice and facilitation services to small public water systems across the state to develop infrastructure projects, make strategic decisions, and identify and access appropriate funding sources. This program is a collaborative effort among DOH, Ecology, and Commerce. All three agencies fund this program to support upgrades for community drinking water or wastewater systems. The SCI program helps local leaders, staff, and residents to define, prioritize, and identify links between public health, environmental protection, and local development issues. The program aids communities in the development and implementation of necessary infrastructure improvement action plans.

Three staff members make up the SCI program and participate in multiple inter- and intra-agency efforts to provide technical assistance and funding to water systems. This includes:

- Plan and facilitate the Infrastructure Assistance Coordinating Council (IACC). conference, including sessions and technical teams.
- Facilitate the Maximizing Resources workgroup.
- Coordinate with funding agencies on projects.
- Promote regionalization efforts in targeted geographic areas.

Over twenty water systems received these services between 2020 and 2022.

2.1.2 Rural Community Assistance Corporation

The RCAC is a 501 (c)(3) nonprofit organization. The RCAC Program provides TMF capacity development assistance to dozens of small water systems each year. This program helps build small system capacity by providing a variety of services, such as board training, rate studies, planning assistance, and asset management planning. We contract with RCAC to provide a variety of technical, managerial, and financial capacity development assistance to our small systems across the state. RCAC has trained field staff throughout the state and works closely with DOH to assist systems in becoming self-reliant and knowledgeable of roles and responsibilities.

RCAC has been DOH's partner in capacity development of water systems since 2007. In 2022, RCAC held thirty-one training events for Washington water systems using GoTo Training, with 339 attendees. Washington Certification Systems allotted 0.3 CEUs for each training course.

So far in 2023, RCAC has held twenty-one training events for Washington water systems using GoTo Training, with 698 attendees. Washington Certification Systems allotted 0.3 CEUs for each training course.

2.2 Organizational Partnerships

2.2.1 Organizational Partnership: ASDWA/EPA

Area Wide Optimization Program (AWOP)

More than 60 percent of Washington citizens receive drinking water from a surface water source. Surface water treatment requires a high degree of operator skill and experience, with significant risk to public health if not performed properly. As a participant in EPA's AWOP, our vision is to protect public health by assuring that surface water treatment facilities are properly designed, constructed, staffed, operated, and maintained. The training, tools, and networking we receive through AWOP participation yield enormous benefits to our staff, utility operators, and drinking water consumers. The 2020-21 AWOP workshops on harmful algal blooms helped guide our response when anatoxin-a was detected in the Columbia River, the drinking water source for nearly a quarter-million Washington residents (more below). The 2022 workshops focusing on removal of organics to reduce disinfection by-products provided our staff with practical tools and hands-on experience.

Each year we recognize water utilities that meet voluntary turbidity goals based on national goals established by AWOP. Low turbidity means better water treatment and better public health protection. We review turbidity data submitted by all 56 rapid rate treatment plants and present bronze, silver, gold, and platinum certificates or plaques to systems the first time they meet the turbidity goals for three, five, ten, fifteen and twenty consecutive years. Based on plant performance from 2001 to 2022, we have given 113 awards and recognized 40 individual systems.

We don't limit AWOP workshops to surface water topics. The 2022 manganese optimization workshop gave us tools for measuring manganese, understanding its health significance, and optimizing manganese treatment. As a result, we are considering changes to our approach to regulating secondary contaminants.

Columbia River Cyanotoxin Response Study

Dog deaths along the Columbia River in 2021 were linked to the neurotoxin anatoxin-a. We collaborated with four utilities operated by the Cities of Kennewick, Pasco, Richland, and West Richland, the Benton-Franklin Health District, the King County Environmental lab, and EPA. Our goals were to develop local cyanotoxin lab capacity, proactively monitor source water for cyanotoxins and water quality parameters associated with cyanobacterial blooms and develop a cyanotoxin treatment optimization approach for each water treatment plant. The four utilities developed a joint cyanotoxin response plan. Throughout the May-November 2022 bloom season, the utilities tested each surface water intake for microcystins and anatoxin-a. Low levels of anatoxin-a were detected in October and the City of Richland successfully demonstrated use of potassium permanganate to bring finished water anatoxin-a levels below the detection limit. The four cities are continuing their cyanotoxin monitoring activities in 2023, using the health district lab previously set up to run screening samples. Fortunately, there have been no cyanotoxin detections yet this year.

2.2.2 Partnering with Local Health Jurisdictions (Regional Offices)

In addition to the statewide sanitary survey training for our LHJ partners who conduct surveys on our behalf, we also hold smaller, regional meetings with the LHJs. Topics covered in these meetings range from office updates, tips, and reminders on conducting surveys, and continued

professional development topics such as emergency response, chlorine residual testing best practices, and well drilling and pump tests. Regional offices may also meet individually with each LHJ to review the DOH-LHJ contract and discuss items and issues in more detail in a smaller setting.

2.2.3 Partnering with Emergency Management Division

During the COVID-19 pandemic, DOH staff participated in Emergency Support Function (ESF) 3 Public Works and Engineering meetings and provided support and technical assistance to ensure water systems and their personnel continued to deliver safe and reliable drinking water.

DOH staff developed COVID-19 safety plan guidance and templates for critical infrastructure workers and construction sites.

Staff also sent routine updates between March and August of 2020 to keep water systems and their operators updated on the latest information. Staff developed guidance on chemical supply chain impacts, laboratory availability, and water quality monitoring safety. As people returned to buildings, staff also provided guidance on building plumbing management and legionella.

2.2.4 Partnering with Other EPA Region 10 Drinking Water Programs

In the fall of 2021, DOH drinking water leadership staff met with drinking water leadership staff from Oregon, Alaska, and Idaho to discuss high-level implementation issues and share information. During the monthly meetings, we discussed implementation of new federal regulations and worked to develop a relationship to share guidance, experiences, and newly developed informational technology as we all move into a paperless work environment.

2.2.5 Partnering with Pacific NW Section American Water Works Assoc. (PNWS-AWWA)

2.2.5.1 Day with DOH

The Day with DOH is an agency sponsored annual training that provides an excellent opportunity to inform water system operators and managers about our drinking water program and current water supply issues. In addition, we chose to present our information through a series of panels, which gave the attendees a chance to interact with DOH staff members on an informal basis and learn more about the people behind the regulation.

After a brief hiatus due to COVID, DOH resumed offering Day with DOH to PNWS-AWWA subsections in 2023 to a remote and in-person audience and covered a wide range of topics, including electronic records, water facilities inventories, coliform, PFAS, cyanotoxins, lead/copper rule revisions, operator certification, SRF, chemical overfeed prevention, and disinfection by-products.

2.2.5.2 Chlorine Residual Measurement and Lab Skills Class

Disinfection of drinking water is widely regarded as one of the most important advances in the field of public health. Chlorine, the primary disinfection method in Washington state, kills or inactivates harmful microorganisms present in source waters that can cause illnesses such as typhoid, cholera, hepatitis, and giardiasis, and provides a disinfection barrier in water distribution systems.

Accurately and precisely measuring chlorine residuals applies to all aspects of public water systems—surface and groundwater source treatment, distribution residual maintenance,

installation, routine water quality monitoring, water main break repair, and investigation of potential cross connection backflow events and water quality investigations.

After a brief break due to COVID, we currently deliver the class to a wider audience in partnership with PNWS-AWWA subsections, local health jurisdictions and other partners. Our goal is to have all field staff proficient in chlorine residual measurement with multiple staff willing and able to teach these classes. We gave classes at Camano Island, Coupeville, Covington, Lynnwood, and Port Townsend. We held the most recent class at the Western Washington Short School, a conference setting serving both water and wastewater operators.

We developed the chlorine residual lab skills class as a “training in a box” to give drinking water staff and operators a better understanding of good chlorine measurement techniques and why they matter. The three-and-a-half-hour class provides attendees with hands on lab skills to answer the question, “How do I know my instrument is working?” To maximize participation in the hands-on activities, class size is limited to twenty participants. Students work individually and in pairs to complete five workshops. Each participant is required to have their own chlorine test kit.

2.2.5.3 Lead and Copper Rule Training

In May 2021, DOH staff provided lead and copper rule (LCR) sampling and corrosion control treatment and monitoring training at the AWWA-PNWS virtual annual conference and updates on the lead and copper rule revisions (LCRR) that became effective on October 16, 2021.

The LCRR requires all water system community and non-transient non-community water systems to complete a service line inventory by October 16, 2024, that identifies all service lines, both utility and customer-owned portions, as either lead, galvanized requiring replacement, non-lead, or unknown.

In addition to information on the new requirements, the training focused on sample site selection and proper sample collection to ensure accurate lead and copper exposure levels at customers taps.

The presentation on corrosion control treatment and monitoring focused on importance of water quality in distribution and the chemistry behind corrosion of lead and copper. The presentation looked at different treatment options for corrosion control, and pros and cons for each treatment option and operation controls and monitoring required to ensure water systems minimize lead and copper at customers taps.

2.2.5.4 Inland Empire Sub-Section Truck Rodeo

The Inland Empire Sub Section (IESS) of the AWWA is active in the Spokane area with membership covering Northeast Washington and North Idaho. The IESS Annual Truck Rodeo provides learning sessions (with CEUs) for water system personnel along with opportunities to network with fellow professionals and participate in activities including the service truck contest. ODW staff routinely attend the annual IESS Truck Rodeo, conducting presentations and networking with members and local industry leaders. Presentation topics include fluoridation, preparing for a sanitary survey, and lead and copper rule revisions.

2.2.6 Department of Commerce Utility Assistance (Commerce)

Due to the COVID-19 pandemic and [Governor’s Proclamation 20-23](#), Ratepayer Assistance and Preservation of Essential Services DOH and Commerce partnered to develop technical assistance for water utilities and guidance for developing customer assistance plans.

Governor's Proclamation 20-23 prohibited all energy, telecommunications, or water providers from conducting the following activities.

- Disconnecting any residential customers from energy, telecommunication, or water service due to nonpayment on an active account, except at the customer's request.
- Refusing to reconnect any residential customer who has been disconnected due to nonpayment.
- Charge fees for late payments or reconnection of energy, telecommunications, or water service.
- Disconnecting service to any residential customer who has contacted the utility to request assistance from the utility's COVID-19 customer support program.

DOH provided direct guidance to utilities during the COVID-19 emergency about the proclamation and developing a customer assistance plan. DOH also worked with partners at Commerce and Ecology to develop door hangers and bill stuffers for utilities to use to contact customers with delinquent accounts to discuss customer assistance programs and notify customers when the Proclamation ended in October 2021.

DOH also provided water systems and their customers with resources on how to apply and be eligible for the federal Low-Income Household Water Affordability Program (LIHWAP) administered by Commerce through local Community Action Agencies.

2.2.7 Partnering through Foundational Public Health Services

Washington's approach to Foundational Public Health Services (FPHS) creates a state-funded, collaborative effort across the entire Washington State public health system. FPHS funding was received for drinking water purposes for the first time in 2022. Once fully implemented, FPHS will deliver services to counties, cities and towns, local health jurisdictions, and other local and regional organizations involved in making drinking water decisions in their communities.

The program is designed around two initial projects: the Model Water Programs project, assisting local health jurisdictions, and the Community Water Planning project, assisting local planning and building departments. These projects will provide:

- **Technical assistance**, by publishing guidance and providing developmental technical assistance to empower local planning authorities and local health jurisdictions.
- **Policy development**, by jointly developing policy updates to improve local collaboration in addressing twenty-first century drinking water challenges.
- **Financial assistance**, by facilitating proposals for the expansion of foundational public health services.

The program was launched in collaboration with the Water Core Team (WCT). The WCT is group of FPHS-funded and volunteer local health jurisdictions. The program facilitates the WCT in developing a model water program. Each element of the model water program can be adopted or adapted by local health jurisdictions to build complete local water programs.

2.3 Technical Assistance

2.3.1 Asset Management in the Office of Drinking Water

DOH recognizes that asset management (AM) plays a substantial role in assuring water systems have the technical means to provide safe and reliable drinking water. A complete AM program helps a system budget to replace old and failing infrastructure. DOH wants water systems to realize that managing assets is a way to identify and prioritize systems needs for money, staff resources, both O&M, capital, etc. Each utility needs to know its own “good, bad, and ugly” list. Prioritizing what will cause the most liability or greatest loss of service is something that comes from an AM criticality assessment.

Every Group A water system must have a water system plan (WSP) (WAC 246-290-100) or a Small Water System Management Program (SWSMP) (WAC 246-290-105). DOH included asset management concepts in planning requirements for some time; however, clarified requirements were added to the Water System Planning Guidebook before 2020. Asset inventory tables were already provided in the SWSMP Guidebook. DOH continues to emphasize AM concepts at preplan meetings for WSPs and SWSMPs, including inventory and analysis of asset age, condition, remaining useful life, criticality, and cost of replacement to financially plan for replacement at or near the time of asset failure.

For a water system to be eligible for DWSRF loans, the water system is required to have a current WSP or SWSMP. All funded DWSRF applicants are also required to develop an AM program as part of their project. There may also be additional money in the funding package to help systems with program development. Asset inventories can be provided in a variety of different formats, depending on system needs. DOH does not suggest, nor require, water systems to buy expensive software or hire consultants to make an AM program. DOH and DWSRF recommend that most water systems use RCAC’s free excel spreadsheet (linked on our DWSRF webpage).

2.3.3 Surface Water

2.3.3.1 Area Wide Optimization Program

The Area-Wide Optimization Program (AWOP) provides tools and approaches for drinking water systems to meet water quality optimization goals and provide an increased – and sustainable – level of public health protection to their consumers. The program teaches problem-solving skills designed to improve operations at drinking water systems without costly capital improvements.

As an active participant in EPA’s Area Wide Optimization Program (AWOP), our vision is to protect public health by assuring that surface water treatment facilities are properly designed, constructed, staffed, operated, and maintained. We meet three times per year with staff from other western states, EPA Regions 8 and 10 EPA, ASDWA, and EPA’s Technical Service Center to improve our capacity to achieve our public health mission. Maximizing performance of existing drinking water facilities is AWOP’s key focus. The training, tools, and networking we receive through AWOP participation yield enormous benefits to our staff, utility operators, and drinking water consumers. Most of the programs and initiatives described below stem from our AWOP participation.

Rapid rate filtration is the most common surface water filtration technology in Washington, used by about two-thirds of plants. Turbidity monitoring results show that our conventional and direct filtration surface water treatment plants continue to perform above regulatory

standards. Figure 1 below demonstrates Washington State Rapid Rate Treatment Plant Performance Trends with turbidity reduction performance improvement by all rapid rate treatment plants in Washington as a group from 2001 through 2023.

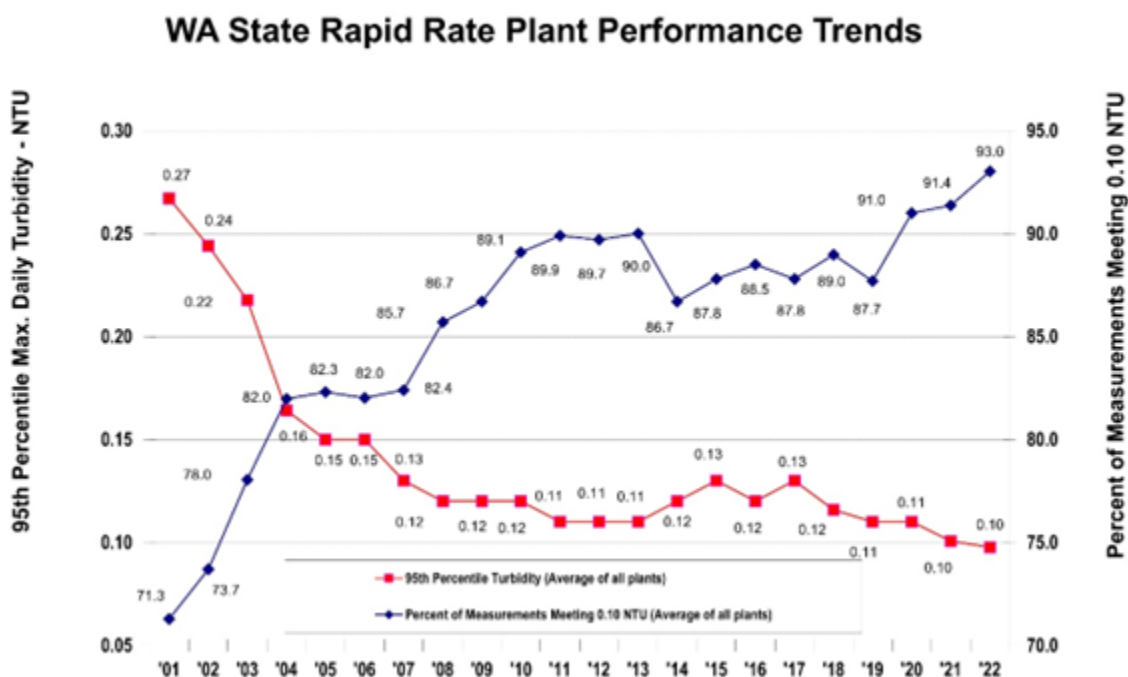


Figure 1: Optimization of rapid rate water treatment plants for turbidity removal in Washington state.

2.3.3.2 Washington Optimization Network (WON)

WON grew from and sustains the capacity-developing elements which were identified and strengthened with the large system performance based training (PBT) program. A culminating objective of PBT was nurturing the formation of a self-directed alliance of large system operators for on-going technical support, knowledge-sharing, and problem-solving. WON operators (and some managers) from eight of the original nine PBT systems continue to meet for optimization workshops held approximately twice per year on a rotating basis at participating plants. Visiting other treatment plants and networking with other treatment plant operators yields the benefits of shared knowledge, equipment, and procedures. After a brief break during COVID we resumed in-person training activities in July 2023.

2.3.3.3 Treatment Optimization Guidance.

We updated our filter backwashing guidance for rapid rate filtration plants to include new material optimizing the filter-to-waste step after backwashing. Properly operated filter-to-waste processes can significantly reduce the risk that disease-causing organisms will enter the distribution system. The guidance provides multiple strategies to improve plant performance while minimizing wasted water.

Building on our successful optimization guidance for slow sand filtration, we developed a similar publication for systems using diatomaceous earth (DE) filtration. DE or diatomite is the skeletal remains of microscopic unicellular plants that lived in ancient fresh and saltwater bodies. Its unique properties—strength, high pore volume, and low resistance to flow—make it

an excellent filter medium for small systems. Written with the operator in mind, this document gives concise tips for efficient and effective operation of this technology.

2.3.4 Data Integrity Initiatives

2.3.4.1 Membrane filtration data integrity

Membrane filtration is a relatively new surface water filtration technology that provides a consistently high level of treatment when properly operated. The high level of automation inherent in this technology means the internal workings are often hidden from view, making it challenging for operators to know how the system works and when something is wrong.

Building on past AWOP workshops, we visited six membrane filtration plants to identify potential data integrity issues and opportunities to correct them. Findings included 1) key sensors not routinely verified and calibrated, 2) critical alarm setpoints not visible to the operator, 3) alarm setpoints set too high, and 4) incorrect units or incorrectly calculated parameters on monthly operations reports submitted to ODW. The lessons learned from this project help us focus and improve our sanitary surveys and plan reviews. We are incorporating them into our publication, [Monitoring Surface Water Treatment Processes 331-620](#).

2.3.5 Technical Assistance—Engineering and Planning Review

DOH’s three regional offices provide several services to the over four thousand Group A public water systems. Each region’s team of engineers and planners are the main points of contact with these systems. DOH staff review engineering reports, construction documents, and planning documents. Regional engineers review these documents with a focus on risk reduction and public health. They ensure compliance with regulatory standards, but also share our collective experience. DOH’s goal is to help the design engineer and the water system owner build a project that is safe and reliable now and into the future. We strive to ensure our review is value added, by asking questions, exploring risk versus resources in the design phase, and helping owners and design engineers identify potential consequences of operational failure.

Table 2 shows combined regional offices engineering projects and water system plans by year from 2020-2022.

Table 2

Items	2020	2021	2022	Total
Engineering	344	296	309	949
Planning	88	89	86	263
Grand Total	432	385	395	1,212

Prior to water systems submitting an engineering project for DOH’s review, our engineers and planners spend significant time on technical assistance, discussing treatment options, design constraints, operational concerns, and funding opportunities with system owners, operators, and design engineers.

Types of projects reviewed and approved include:

- **Corrosion Control—Lead and Copper Reduction at Customers Taps**—While lead service lines are not common in Washington state, corrosion control remains a focus to help protect consumers from potential impacts from home plumbing.

- **Perfluorinated Alkyl Substances (PFAS) Treatment**—PFAS occurrence is better understood in Washington as utilities complete their required testing under state rules. While treatment is not yet required, many utilities are working to treat their water to protect their customers once detections are found.
- **Surface Water Treatment**—Surface water continues to serve more than half of the population of the state. As treatment systems age they require replacement or updating to effectively treat potential risks from surface water.
- **Consolidations for Public Health Protection**—It remains a significant challenge for small systems to maintain public health protection levels due to the cost of ongoing monitoring and treatment. With larger systems, the cost is spread out over larger populations. Consolidation remains one of our greatest tools for supporting the long-term capacity of our public water systems.
- **Disinfection Treatment**—Disinfection as a requirement to address microbiological risk is one of our highest-focus programs. Microbiological contamination and associated acute risk are the primary reasons for water systems to have emergency notifications.
- **Arsenic Treatment**—Arsenic is naturally occurring in many of Washington’s aquifers. ODW pursues ongoing efforts to ensure appropriate treatment and optimization of existing treatment plants.
- **Water system plan approvals**—Water systems planning is our cornerstone effort to document and provide tools for water systems to successfully ensure current and future capacity.
- **Water system source, storage, and distribution projects**—Utilities expand their capacity through many improvements and infrastructure replacement.

2.3.6 Water System Design Manual

DOH released the third edition of the [Water System Design Manual \(WSDM\) 331-123](#) in December 2009. Over the past several years, there have been many changes in the drinking water profession. After years of work and input from dozens of people in the drinking water profession, we released the WSDM fourth edition in October 2019. This comprehensive technical reference for engineers and water system staff now weighs in at more than five hundred pages and about 150,000 words. Over the last three years, we used errata sheets to update the WSDM.

While the WSDM is used as an essential reference in Washington state, it is also widely used by drinking water professionals in other states and countries. For example, both the Indian Health Service (IHS) and the United States Agency for International Development (USAID) use it as technical reference. As such, it supports the technical capacity of water systems throughout the world.

2.3.7 Source Water Protection Program

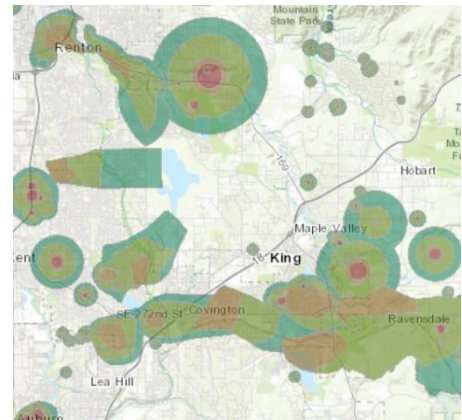
DOH’s SWP provides information, tools, resources, guidance, and support to water systems and others to promote and achieve source water protection statewide. DOH priorities include:

- Providing technical assistance and grants to help water systems develop, enhance, and implement their source water protection plan (using SWP DWSRF set-aside funds).

- Maintaining and enhancing a public geographic information system (GIS) mapping database that includes source water protection areas, potential contaminant sources, water system service area boundaries, and other key information.
- Establishing interagency partnerships with key federal, state, and local agencies to ensure their programs, messages, and decisions incorporate source water protection as appropriate.

Mapping Tool and Data

DOH maintained and improved our SWAP GIS web-mapping tool with source water protection area data. This tool is an important part of Washington’s approach to educating and informing agencies and the public about source water protection. DOH provided Source Water Assessment Program (SWAP) GIS data to other state and federal agencies. For example, DOH regularly provided up-to-date source water protection area data to the state departments of Natural Resources, Ecology, Agriculture, Transportation, and local governments. They make permitting decisions for facilities, water quality, timber buffers, road construction, and pesticide management compliance advised by this information.



Example SWAP GIS map.

Technical Assistance

DOH continues to provide technical assistance to water systems through presentations at multiple conferences, site visits to the source protection areas, and one-on-one consultations. DOH engages and educates water systems and other partners on the principals of source water protection. We emphasize how efforts today protect a system’s source into the future.

In 2022 DOH committed additional resources to review and advocate for drinking water’s beneficial use in Clean Water Act programs in Washington. It is clear that surface water protection occurs through many permitting programs at Ecology. Through these programs, we achieve substantial implementation of the source water protection program by advocating for surface water as a drinking water source. An additional dedicated FTE was added to the program and has expanded our technical assistance and interagency coordination.

DOH regularly provides information to local governments about their role in source water protection, including evaluating and commenting on local land use ordinances and State Environmental Policy Act (SEPA) decisions that relate to ground water protection and routine Critical Aquifer Recharge Area (CARA) ordinance updates. Our goal is to provide direct and targeted technical assistance to local jurisdictions developing statutorily required updates to comprehensive plans and development regulations, focused on critical areas/critical aquifer recharge areas and related aspects; and occasionally related to local permitting issues.

Additional examples of local government source water protection related activities include:

- Provided formal written comments on periodic notices of updates and amendments to local comprehensive plans and development regulations, with emphasis on critical areas/critical aquifer recharge areas, and the public water component of utilities and capital facilities elements.

- Provided formal written comments on notices of environmental determination under SEPA for source water protection implications. Most represent development projects statewide with relationships to established wellhead protection areas, or those established in conjunction with public water system requirements for the project. Upon local agency request, we provided follow-up technical assistance associated projects and comments.
- Participated in the virtual PFAS forum (legislative request for outreach), to understand potential impacts of testing on source waters and critical aquifer recharge areas.

DOH continued to disseminate source water protection tools, resources, notices about funding availability, and training opportunities via our website and partners. DOH updated three existing publications this year: [Sanitary Control Area Sanitary Control Area Fact Sheet 331-453](#), [Legal Protections for your Sanitary Control Area 331-048](#), and [Collecting Water System Data Electronically 331-391](#). We regularly review and update other source protection related publications.

DOH worked with various local governments to identify emerging source water protection issues and identify possible solutions (such as feasibility studies, facilitation, development of ordinances, and seeking additional funding).

Partnerships

We strengthened partnerships with key state and federal agencies including Ecology (Clean Water Act lead agency), Agriculture, DNR, and the U.S. Forest Service, to raise awareness about the Source Water Program and the need for, and importance of, protecting drinking water from contamination and loss of supply. We collaborated on projects with mutual benefits to drinking water and fish through the Drinking Water Providers Partnership. We worked closely with Ecology on Underground Injection Control program guidance for storm water.

Grant Funding

Our Source Water Protection Grant Program, which uses DWSRF set-aside funds, is available to Group A public water systems. Funds are used for projects that result in improved source water protection or resolve water quantity and water quality issues. Typical grants are \$30,000. In this reporting period, DOH issued fourteen grants for a total of \$326,000 to fund a number of high-priority source water protection projects. Examples include:

- Groundwater monitoring and modeling of nitrates from onsite septic systems.
- Purchasing security equipment including sensors, lighting, and cameras for the sanitary control area.
- Install pressure transducer to monitor declining aquifer.
- Develop source protection planning documents.
- Alternate source feasibility studies.

2.3.8 Legionella and Building Water Systems

The incidence of Legionellosis, a respiratory infection caused by bacteria in the genus *Legionella*, increased 550 percent since 2000. It is now the most commonly reported cause of drinking waterborne outbreaks (Benedict et al., 2017; CDC, 2019). The biggest threat of Legionnaires' disease appears to come from building plumbing systems when the organisms proliferate and become aerosolized. Outbreaks are associated with potable water within

building plumbing systems, cooling towers, hot tubs, decorative fountains, and industrial waters (Garrison et al., 2016). The Centers for Medicare and Medicaid Services (CMS) issued a June 2017 letter (S&C 17-30 Medicare/Medicaid Legionella Requirement) requiring all Medicare certified healthcare facilities to have water management policies and procedures in place to reduce the risk of growth/spread of *Legionella* and other opportunistic pathogens in building water systems (CMS 2017). This directive and increased awareness by insurance companies prompted many large institutions across the USA to install whole-building treatment systems in order to minimize the risk of Legionellosis.

DOH responded to this augmented Legionella awareness by increased participation in ASDWA building water system investigation and development efforts. Staff participated in AWWA premise plumbing sub-committees, including co-authoring a Legionella article in AWWA's OpFlow magazine, and development of guidance for staff.

Early identification of *Legionella* risk associated with low occupancy buildings (resulting from COVID pandemic) led DOH to publish one of first publications on [Guidance for Legionella and Building Water System Closures 331-658](#) (April 2020), with follow up publications for conducting shock chlorination for buildings and more specific guidance for schools, [School Water Plumbing Re-Opening Following Extended Closures Guidance 331-667](#). This guidance served as basis for Sept 2020 JAWWA article.

Steve Deem of our Engineering and Technical Services section, an engineer from the Portland Water Bureau, and a private sector consulting engineer wrote the potable water systems chapter of the 2022 AWWA-IAPMO publication, [Manual of Recommended Practice for: The Safe Closure and Reopening of Building Water Systems](#). This manual provides building owners and maintenance crews with best practices for protecting public health as they shut down the water-related infrastructure for a period of non-use, and then restart those systems in preparation for putting the building back into service.

ODW staff provide public health input to continuing efforts addressing building water system quality issues. ODW staff are participating in the International Code Council (ICC) 815 Sizing Water Distribution, Drainage and Venting Standard Consensus Committee (IS-SWDDV).

2.3.9 Sanitary Survey Program

Sanitary surveys of public water systems are key to capacity development. Regular water system inspections provide opportunities for education and technical assistance for operators and other water system personnel.

The Sanitary Survey Program coordinates and administers inspections of all water systems in Washington. Inspections occur every three or five years, depending on system type, source, and performance. During an inspection, surveyors physically inspect the water system components, review the management and operations of the water system, identify significant deficiencies that would allow contaminants to enter the system, and provide other observations and recommendations for improvement. When we find significant deficiencies, we explain how to correct them, set deadlines, and follow up to make sure the system addresses the deficiencies. We also document our observations and recommendations associated with steps the water system can take for improved TMF capacity.

DOH encourages water systems to find and fix deficiencies as part of their ongoing operations and maintenance activities, reducing the number of deficiencies found during surveys. We

include information on how to conduct a self-inspection in our survey notification letters to water systems.

Our LHJ partners survey the state's numerous smaller public water systems on our behalf. (We also have a limited number of independent contractors who conduct surveys for us.) DOH maintains LHJ survey tools, including the Field Guide for LHJ and third-party surveyors. The field guide helps ensure consistency in follow-up to survey findings and provides comprehensive information and guidance for helping water systems be successful. The third-party checklist covers technical issues as well as many aspects of water system capacity. Where capacity is lacking, standard language is inserted into correspondence to the water system to aid them in addressing the gap.

LHJ staff conduct more than half of the hundreds of (and sometimes more than one thousand) sanitary surveys performed each year. Collaborating with our local health partners is essential for DOH to meet our responsibilities to complete effective sanitary surveys within required timeframes.

DOH contracts with LHJs allow for the provision of technical assistance outside of regular survey activities. Technical assistance is provided to help water systems overcome barriers to success. On behalf of DOH, LHJs perform Special Purpose Investigations (SPIs) in follow-up to water quality issues, within the terms of the DOH-LHJ contract. The SPI checklist is designed not only to determine the cause of current water quality problems, it also serves to prevent future water quality problems.

The pandemic caused us to suspend field work during spring of 2020 until we could develop Covid field safety measures and conduct safety training. Many water systems associated with small businesses were shut down. DOH staff who conduct surveys were reassigned to Covid response activities. This set us back in completing all assigned surveys for the year. We caught up by 2023 and are back to completing nearly all assigned surveys within each calendar year.

The pandemic also presented challenges to our usual ways of conducting formal and informal training with local health partners. Our statewide training, scheduled for June 2020, was cancelled due to the pandemic. Many local health staff were reassigned to pandemic response activities, and co-surveys where individual training could take place were less frequent. We did not hold in-person regional meetings with the LHJs.

However, we developed remote processes that allowed us to meet our responsibilities. DOH and LHJ staff learned how to conduct some elements of the surveys remotely—for example, review of planning documents and increased use of photos. We offered the EPA virtual sanitary survey training to LHJ and DOH surveyors multiple times during the pandemic. We are currently planning an in-person statewide training in 2024.

Table 3 shows the number of surveys completed for each calendar year, 2020, 2021, and 2022.

Table 3

2020				
Region/Surveyor	CWS	NTNC	TNC	Totals
ERO DOH Surveyors	101	18	50	169
ERO LHJ/3rd Party Surveyors	25	15	123	163
NWRO DOH Surveyors	80	4	14	98
NWRO LHJ/3rd Party Surveyors	60	8	42	110
SWRO DOH Surveyors	72	4	11	87
SWRO LHJ/3rd Party Surveyors	37	15	82	134
Totals	375	64	322	761
2021				
Region/Surveyor	CWS	NTNC	TNC	Totals
ERO DOH Surveyors	111	18	33	162
ERO LHJ/3rd Party Surveyors	30	21	73	124
NWRO DOH Surveyors	115	6	40	161
NWRO LHJ/3rd Party Surveyors	85	2	36	123
SWRO DOH Surveyors	58	8	26	92
SWRO LHJ/3rd Party Surveyors	73	11	77	161
Totals	472	66	285	823
2022				
Region/Surveyor	CWS	NTNC	TNC	Totals
ERO DOH Surveyors	127	16	28	171
ERO LHJ/3rd Party Surveyors	47	17	95	159
NWRO DOH Surveyors	134	6	44	184
NWRO LHJ/3rd Party Surveyors	82	4	38	124
SWRO DOH Surveyors	85	11	26	122
SWRO LHJ/3rd Party Surveyors	112	6	64	182
Totals	587	60	295	942

Training is key to a competent sanitary survey workforce.

Regional meetings

- Each of our three regional offices generally holds an annual regional meeting for additional training, mentoring, networking, and professional development of the sanitary surveyors. Capacity development is an underlying theme of the regional training with emphasis on water systems success.

Co-surveys and mentorship

- Regional engineers and other DOH staff periodically conduct co-surveys with the LHJ staff. Reviewing and providing feedback on LHJ survey reports boosts improved proficiency in conducting independent sanitary surveys.

Individual meetings with LHJs

- DOH staff meet with LHJ staff individually to discuss the DOH-LHJ contract and address other issues. These meetings serve as supplemental training and provide clarification on DOH expectations.

LHJ Survey Tools

- We maintained the Field Guide for LHJ and third-party surveyors. The field guide helps ensure consistency in follow up to survey findings and provides comprehensive information and guidance for water systems success.
 - The third-party checklist covers not only technical issues but also many aspects of capacity. Our LHJs are required to use the checklist. We insert standard language into water system correspondence to address any capacity gaps identified.

Technical Assistance and Other Field Work

- DOH contracts with the LHJs also provide technical assistance outside of the regular survey activities. Technical assistance is provided to help the water system overcome barriers to success. Special Purpose Investigations (SPIs), in response to water quality issues, are also performed on behalf of DOH within the terms of the DOH-LHJ contract. The SPI checklist is designed to determine the cause of current water quality problems and prevent future water quality problems.

2.4 Managerial Assistance

2.4.1 Operator Certification

The Waterworks Operator Certification and Training section (OpCert) ensures the success of this mission by coordinating, collaborating, and communicating with water systems, certified operators, governing bodies, and our third-party training partners. This program focuses on supporting waterworks operators and certifying qualified and capable professionals. A waterworks operator's certification is more than just proof of their knowledge; the certification shows integrity and commitment to protecting public health and upholding our rules and standards.

The OpCert program facilitates the certification, renewals, and professional growth of over 4,000 waterworks operators and 1,700 backflow assembly testers. We also ensure compliance with our operator rules. Over 99 percent of the 3,236 drinking water systems required to have a certified operator maintain that capacity.

OpCert overcame the following challenges since our last report.

- We adopted and codified WAC 246-292-085 (Grand parented certification rule) to become the "Legacy Certification Rule."
- The original term "grandfather" has aspects of racist and gender discrimination. During the 2014 rule amendment, we changed "grandfathered" to "grandparented" to distance ourselves from the problematic original term. To completely disconnect from the original term, we changed our rule to "legacy."
- The rule affects waterworks operators certified in 2001 without taking a certification exam (only 47 left). This is only a verbiage change and has no effect on the implementation or enforceability of the Operator Certification Rule.

- The State’s COVID-19 pandemic response is the foremost feature of this reporting period.
- The new online exam application and payment platform was the last step in taking OpCert completely paperless. This transition made the social distancing, limited resources, and working from home during the COVID-19 response more successful.
- We developed a new remote training policy to allow operators to continue working toward their professional growth requirement while social distancing or working from home. Many of our third party trainers embraced online platforms and provide virtual conferences.
- Unreliable availability of exams, caused by periodic and extended certification exam test site closures. We extended all Temporary Certifications and Certification Exam approvals to allow flexibility to our public water systems and potential operators.
- To mitigate the risk of all operators for a water system being unavailable at the same time, we contacted all current (and recently retired) operators and asked if they were willing to be added to a list of [Emergency Operators](#). Over three hundred operators volunteered to help neighboring systems if needed.
- We experienced challenges getting the state to formally identify Certified Waterworks Operators System as an essential workforce and were fortunate we did not suffer a more significant impact due to this oversight.
- Backflow Assembly Testers (BAT) must pass a hands-on practical exam once every three years to meet their professional growth requirement. These exams are monitored in-person and usually in an enclosed room. These parameters made practical examinations of BATs impossible during the pandemic. We worked with our Policy Team and Assistant Attorney General to extend the professional growth period for BATs.

2.4.2 Workforce Development and Succession Planning

Our Certified Waterworks Operators (Operators) face an aging infrastructure, increased water system demands, declining aquifers, workforce challenges, advancing technologies, equipment and chemical sourcing issues, and water system funding demands. Operators are responsible for maintaining public water systems with care and diligence to protect public health and comply with state and federal drinking water laws and regulations.

An Operator must be available to public drinking water systems twenty-four hours per day, every day, and perform appropriate actions such as:

- Making necessary repairs or resolving problems.
- Conducting water quality monitoring and maintaining adequate records.
- Implementing preventive maintenance programs.
- Analyzing, reviewing, and maintaining records of instrument readings and laboratory test results.
- Taking emergency actions and following departmental directives.

Utility infrastructure affects the social, economic, and environmental health for every community in Washington. Waterworks operators are the most important asset within drinking water utilities. Our existing infrastructure is aging concurrently with the workforce operating, maintaining, and repairing it. We are witnessing mass operator retirements while our infrastructure fails. DOH also sees new opportunities to organize, collaborate, and act by

ensuring a highly trained, dedicated, and experienced certified operator workforce is in place to protect public health.

Twenty percent of our certified operator workforce left the industry over the last two years. While we continue to bring in new operators, the total number of operators in the state remains lower than historically observed. Workforce development is a pipeline that can help address the challenges of workforce recruitment, retention, and retirement, especially when the pipeline is full and functional.

A certified operator must have experience working for a public drinking water system to be eligible for certification. The more complex the system, the more experience is required. Generally, a community's constrained financial position limits their ability to offer training or to even be fully staffed. Without the opportunity to gain the requisite experience, it is a significant challenge for systems to find certified operators. The barrier is that communities cannot consistently pay competitive wages for certified operators or compensate staff for training.

We must continue to help utilities consider employee needs as much as water utility needs when recruiting and retaining new staff and a diverse workforce.

2.4.3 Cross-Connection Control Program

A cross-connection is an actual or potential connection between a drinking water system and an unapproved water supply or other potential source of contamination. When the pressure of a potential contaminant source exceeds the potable source, the flow of water can reverse direction and pull the potential contaminant into the water system. Chemical and microbial contamination from cross-connections can cause waterborne disease outbreaks.

The following examples of backflow incidents occurred in Washington since our last report.

1. Leaking sluice gates and failed sump pumps allowed untreated lake water to enter the potable water distribution system. The configuration is designed to allow lake water into the potable water main in the event of an emergency.
2. Ten service meters were observed spinning backward during a water main break. Water was pulled from 36 homes on "dead end" laterals when the increased flow caused by the main break created a negative pressure.
3. The investigation of an *E-coli* positive sample identified a rainwater catchment system being used for "non-potable" uses in a small church. Close investigation revealed a cross-connection between the rainwater storage and the potable water make-up line.
4. An unapproved well used for "non-potable" uses in a small restaurant was found to be cross connected to the building plumbing.
5. Ten instances of compressed air injected into the distribution system through a lawn irrigation system. Air compressors were incorrectly hooked to backflow assembly test cocks to winterize lawn sprinkler systems.
6. An investigation of "muddy" water reports revealed a customer using compressed air to blow out the fire sprinkler system in a small business.
7. The water from four homes at a higher elevation reported hearing sucking sounds from their fixtures during a water main break.

8. Due to a change in flow patterns, caustic soda was back-siphoned into the distribution system and delivered to two homes.
9. An unapproved “on-site” well was connected to bathroom plumbing in the restroom of a home creating a cross-connection with the public water supply.
10. The meters at six homes were observed spinning backward when the increased flow caused by a main break created a venturi effect.

We continue to focus on those public drinking water systems with one thousand or more connections. These utilities represent over 75 percent of the population and are most likely to serve high health hazard facilities. One hundred percent of water systems with over one thousand connections submitted annual summary reports of cross connection control (CCC) activities using our on-line platform.

We also worked with other state and local agencies and offices as they develop new rules and enforcement strategies for CCC.

- Department of Ecology.
- Department of Agriculture.
- Department of Corrections.
- State Parks Department.
- DOH and LHI lodging and food Inspectors.

We continue to take advantage of speaking opportunities at conferences and workshops to emphasize the importance of CCC and backflow protection. We also support regional groups focused on this topic and provide countless hours of technical assistance directly to water utilities.

With an aging water system infrastructure in the United States, having certified operators trained in CCC is critical to protecting the public from potential waterborne illnesses. Workforce issues (see Workforce Development and Succession Planning section above) are a challenge to fully implementing the state’s CCC program. Figure 3a below shows the number of certified CCC Specialists in WA State since 2014. Figure 3b below shows the number of BAT in the WA State since 2016. Figure 3c, below, shows the historical trends in protecting public drinking water utilities from high health cross connection hazards. These connections pose a significant risk to public health and are required to have appropriate backflow protection installed at the meter or property line.

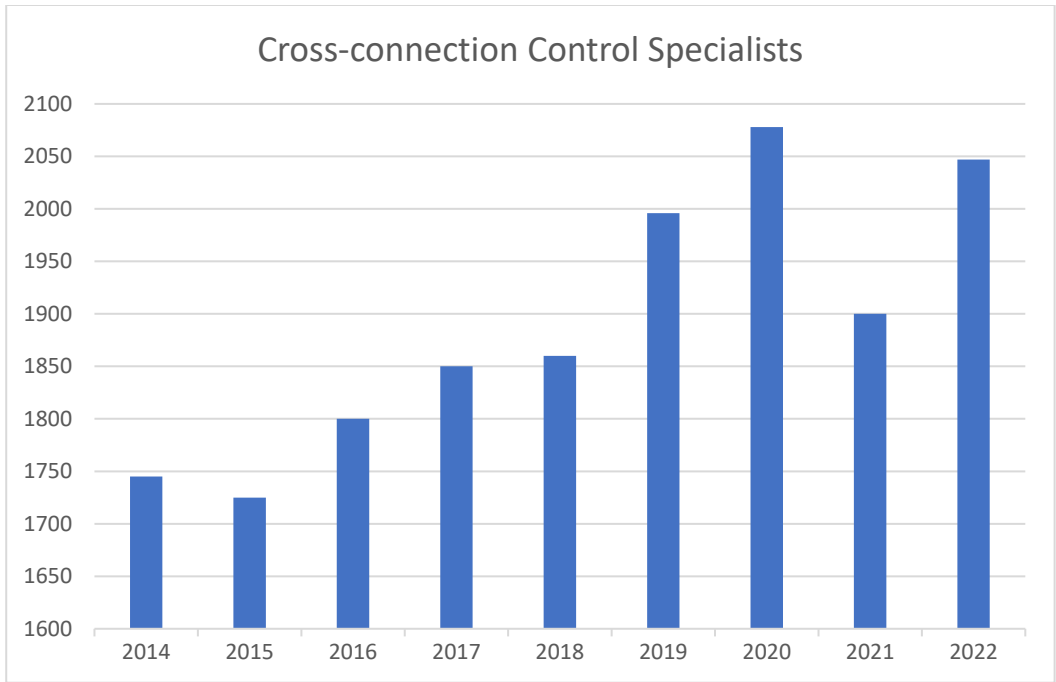


Figure 3a: Cross-connection control Specialists in Washington state.

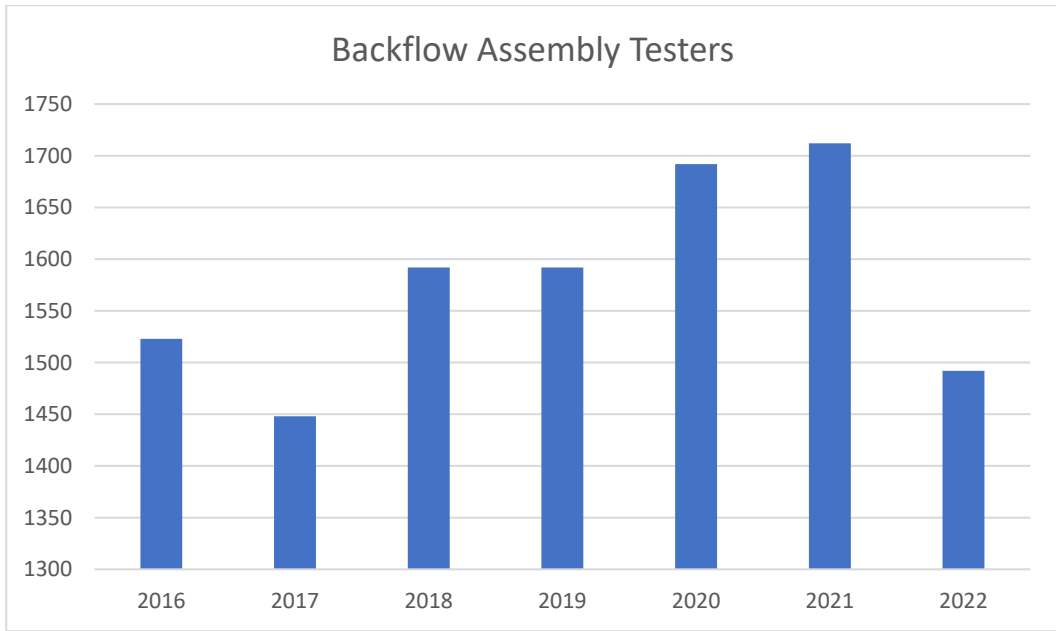


Figure 3b: Backflow Assembly Testers in Washington state.

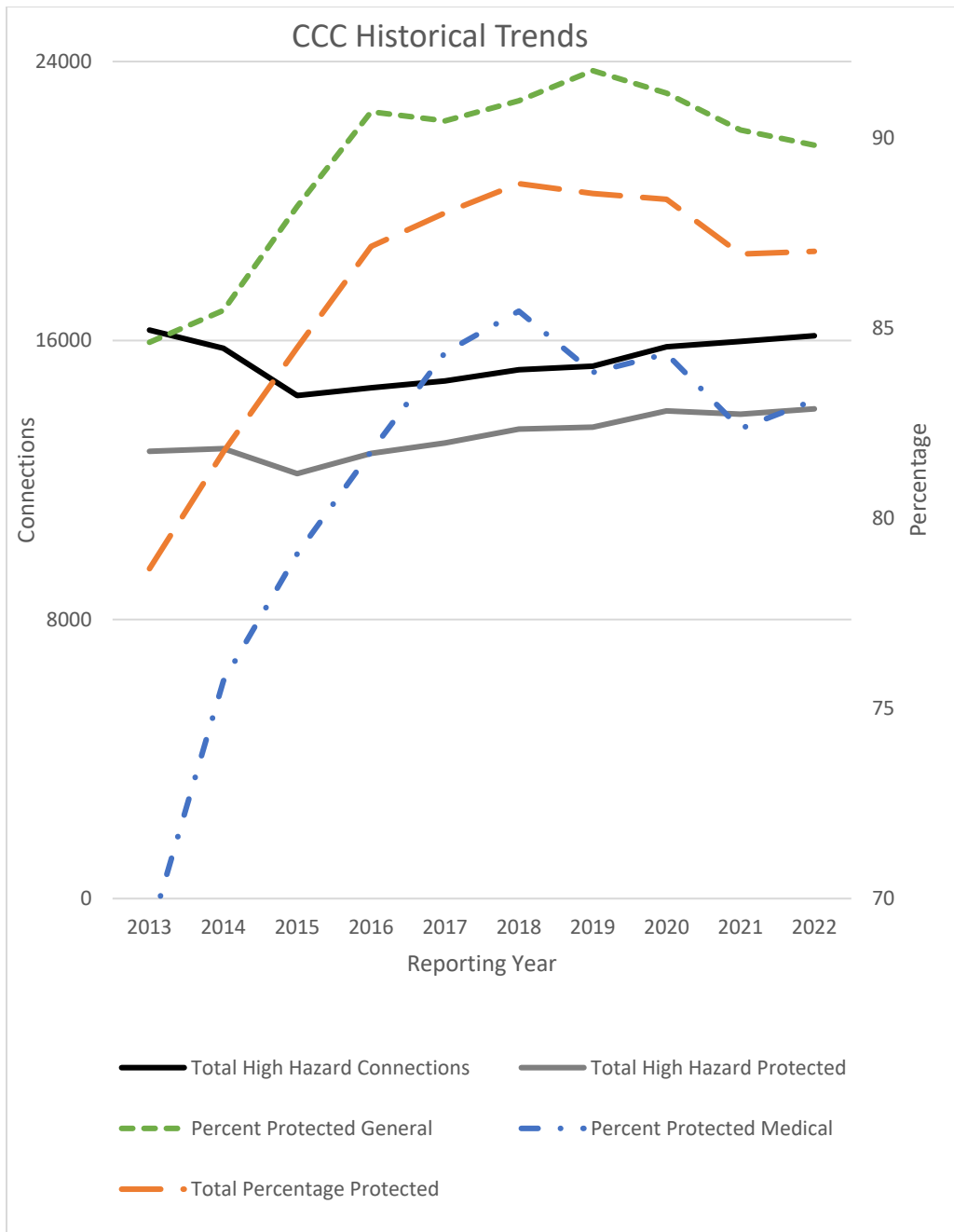


Figure 3c: Cross-connection control coverage for high hazard locations in Washington state.

2.4.4 Water System Planning Overview

While ODW is devoted to development of specific elements of the TMF capacity of the state’s over 4,000 Group A water systems, the planning program focuses on bringing all three concepts together in one document. The cornerstone of the planning program is working one-on-one with water systems and water system managers, helping them develop their Water System Plan (WSP), Small Water System Management Program (SWSMP), Coordinated Water System Plan, or Satellite Management Program (SMP), as outlined in following subsections.

ODW is comprised of three regional offices (RO), Northwest (NWRO), Southwest (SWRO), and Eastern (ERO). Each office manages about the same number of water systems, but vastly

different numbers of connections and counties. NWRO has only seven counties, but includes predominately large cities like Everett, Seattle, and Tacoma, and the highest population. ERO is more rural, predominantly agricultural and forest lands with a mixture of city sizes ranging from rural small towns to large cities like Spokane, with twenty counties and covering over half of the state's land mass. SWRO fits in the middle with twelve counties and a mix of large sized cities, suburban areas, and agricultural and forest lands.

Each RO has two planners. Each planner, accompanied by a regional engineer, conducts at least ten to twenty pre-planning conferences each year. The pre-plan is the opportunity for the purveyor and RO to discuss the WAC requirements for WSPs and SWSMPs and focus on which WAC areas to emphasize. This is known as determining the appropriate level of planning (ALOP).

Usually, the purveyor's consulting engineer submits the WSP to the regional office six to twelve months from the date of the pre-plan. The planner and engineer review the WSP for consistency with the WAC and issue comments explaining any deficiencies found in the submittal. After an iterative process, the WSP is approved and can receive up to a ten-year plan approval.

Other planner's duties include providing technical assistance to water systems, being a technical liaison with other state agencies, like Ecology, regarding water rights and watershed planning, providing technical expertise to county and city planning efforts, working with county planners to process local government consistency for water system plans, and working internally to develop policies, procedures, and standards to promote ODW's mission. This last category is exemplified by the planning team's efforts to develop a Water System Planning Guidebook, addressed below.

2.4.5 Water System Planning and Technical Assistance

Planners provide education in primarily managerial and financial capacity areas. We provide resources by phone, email, or in person; at conferences or meetings; or one-on-one. Planners lead and facilitate meetings preparing short- and long-range water system planning, on a wide variety of topics: asset management, budgeting, funding, governance, rates, resiliency and preparedness, source water protection, regional collaboration and consolidation, receivership, and water use efficiency, etc.

In NWRO, staff collaborate with various organizations to promote safe and reliable drinking water. The Regional Cooperative of Pierce County meets monthly with DOH staff as part of their regular agenda. Staff provide presentations on water quality and proposed rule changes such as the Lead and Copper Revised Rule (LCRR), the emerging PFAS issues, and Coordinated Water System Planning. In Island County, there is a non-profit called Whidbey Island Water System Associations with quarterly meetings, where DOH provides subject matter expertise. Camano Island systems hold bi-annual meetings supported by volunteers, who are mentored by their DOH regional planner for agenda topics and presenters. These partner groups do much to advance planning for water system infrastructure replacement, board member responsibilities, rate setting, budgeting, and even emergency preparedness and response. In Skagit County, there is an annual meeting to discuss drinking water with the local environmental health staff and planning staff who administer the Coordinated Water System Plan for Skagit and help review and comment on water system plans and service area boundaries.

In ERO, staff worked closely with several small water systems in Stevens and Ferry County impacted by lack of TMF due to various reasons. Planners worked to connect the smaller water systems to outside third-party technical assistance providers to assist with financial planning and coordination with satellite management agencies. If a small water system fails to provide the necessary TMF and lacks the ability to address maintenance and operational issues that cause noncompliance, receivership is likely. Planners worked with county elected officials, DWSRF staff, local health, and satellite management agencies to attempt to find alternatives to placing the systems into receivership.

In SWRO staff are working with the Squaxin Island tribe to identify areas of improved communication for plans and projects within their usual and accustomed fishing and hunting areas. The Squaxin Island tribe proposed to enter into a Memorandum of Agreement with DOH in order to access plans and project submittals early in the process, as well as other requests for input and coordination. This effort is ongoing and likely to culminate in a signed Memorandum of Agreement by the end of 2023. Planners in the region are key to meeting obligations of our tribal partners.

2.4.5.1 Water System Planning Guidebook

The planning team is making the final edits to our updated Water System Planning Guidebook. The Guidebook includes up-to-date, and comprehensive guidance to help water system owners, operators, engineers, and consultants prepare WSPs. The Guidebook builds on the information included in our recently released fourth edition Water System Design Manual (WSDM).

We released the updated Guidebook to more than one thousand partners and interested parties for a ninety-day review with comments closing December 11, 2019. We received more than one hundred comments from seventeen individuals. DOH released the completed Guidebook in August 2020.

Revisions include updates driven by the Municipal Water Law and other regulatory changes.

Here is a summary of the elements and updates included in the *Water System Planning Guidebook*.

- Chapters 1–10 include a stated objective, a list of chapter topics, and a publications reference list. We included Planning Tip dialogue boxes throughout to highlight useful information.
- WSPs assist water systems in developing and demonstrating strong technical, managerial, and financial capacity. To that end, we included elements of technical capacity in Chapters 2, 3 and 6; managerial capacity in Chapters 1, 4, 5, 7 and 10; and financial capacity in Chapters 8 and 9.
- Where available, the *Water System Planning Guidebook* refers to or links to other publications, such as the WSDM and the *Water Use Efficiency Guidebook* rather than duplicating information contained in other documents.

2.4.5.2 Small Water System Management Programs

All community and noncommunity Group A water systems not required to submit a WSP must develop and implement a SWSMP, which has two guidebooks with fill-in templates to complete the program. One is for community systems and the other is for non-community systems. These templates are designed to guide the water systems through the planning process, with little-to-

no need for the help of a hired consultant. The SWSMP benefit small water systems by providing:

- A central location for water system records and policies.
- A process to evaluate current and future water system needs and improvements needed for continued reliable system operations.
- A list of operation and maintenance duties that can be used, reviewed, and improved by system personnel so they have the information they need and can easily keep it current.

While all Group A systems without WSPs are required to have a SWSMP, only certain circumstances require submittal of a SWSMP to the RO for review and approval:

- A new non-transient, non-community (NTNC) water system is created.
- A Group A water system without a WSP seeks to be eligible for DWSRF loan.
- A Group A water system with operational, managerial, and/or financial problems is directed by DOH to complete a SWSMP in order to address and correct the problems.
- An existing Group A water system is seeking “as-built” approval under WAC 246-290-140.

During the 2020-2022 timeframe, DOH discussed SWSMP elements via virtual meetings due to the pandemic. Regional engineers started to include improvements to SWSMP on their list of recommendations on Sanitary Survey letters, referring the water system to contact the regional planner for assistance. The regional planners also identified SWSMPs as an area of focus for the next ten years. They will continue to consider options for increasing the number of valid SWSMPs and ways to keep track of these numbers without the requirement for review and approval.

2.4.6 Coordination Act and Coordinated Water System Planning

The Coordination Act is a Washington state law that applies to all counties, or portions thereof, who chose to plan under the Act, and allows the county to analyze water availability, designate a lead purveyor for each service area, and evaluate planned growth. DOH has regulatory oversight; however, the law gives counties who chose this regional planning tool legal responsibility and authority to implement this program. Under this RCW and corresponding WAC, counties, or portions of counties, may designate a Critical Water Supply Service Area (CWSSA) and develop a Coordinated Water System Plan (CWSP) to regulate the CWSSA.

The CWSP identifies individual service areas for water systems within the CWSSA and the service agreements between these systems. CWSP service area maps benefit the CWSSA by clearly identifying the water purveyor for a piece of land to avoid the unnecessary creation of additional water systems or overlapping water systems. The water systems are required to provide water service with adequate pressures in a timely and reasonable manner. Also, the CWSP designates which water purveyor has first right of refusal to own and operate new water systems that are developed within its designated service areas. This assures the water system that as their system expands to the full limits of its service area it can seamlessly consolidate with new water systems on the way.

The Public Water System Coordination Act (PWSCA) provides statutory planning authority to evaluate public water systems in a defined geographical area and to identify and correct

problems that affect the water utilities' ability to provide safe and reliable drinking water to their customers. The PWSCA identifies and corrects problems related to:

- Inadequate water quality.
- Unreliable water service (quantity and delivery issues).
- Uncoordinated planning (creation and proliferation of new small public water systems).
- Inadequate water quantity to serve projected population growth.

The PWSCA addresses and corrects the above highlighted issues by directing requests for new public water service to existing water utilities with demonstrated expertise and TMF capacity. Water utilities demonstrate this capacity through preparation of comprehensive water system plans on a required, ongoing periodic schedule.

There are currently twenty-two PWSCA areas in Washington state.

In NWRO, all seven counties have active CWSP plans with four counties very active in providing comments on those water systems' planning ten to twenty years ahead. The two NWRO planners coordinate, collaborate, and provide guidance, structure, and timelines for plan review, comments, and in the end, issue the approval letter.

Island County's water resource advisory committee discussed the CWSP and updating it in order to solve small water system issues for the last three years, but funding and clarifying objectives are still needed. DOH planners presented and educated about the philosophy, history, and provision of water service as intended by the CWSP.

In the eastern region, there are only four CWSSAs and none of them cover entire counties. All four CWSPs need updates. There are several areas in the region that could benefit from CWSSA designation; however, without requiring these areas to implement CWSPs, they are unlikely to do so on their own.

Four of SWRO's twelve counties plan under the CWSA: Jefferson, Kitsap, Thurston, and Clark. These CWSAs have not been updated recently but are still regularly consulted any time an individual water purveyor submits a WSP.

2.4.7 Satellite Management Agency Program

In 1991 the Washington State Legislature developed a new program to develop a professional group of water managers, known as Satellite Management Agencies (SMA). The SMA program establishes minimum criteria that SMAs must meet in order to be granted and maintain this title. The SMA is required to submit an SMA Plan to DOH every five years. Upon approval of the SMA plan, we will list the SMA in the Secretary of Health's list of SMAs. This list is an easy desktop reference for those systems and the counties who need to identify qualified managers and owners of water systems.

In 1995 the legislature made having an SMA as either the owner or manager of new water system a prerequisite for approval of that water system.

The SMA fulfills the need for water systems to have technical and managerial capabilities to deliver safe and reliable drinking water.

The SMA program has changed over the decades since it was implemented. It created huge successes in water quality compliance. However, as the entities involved in the beginning changed business models, or aged out of the business, DOH saw the list become smaller and

smaller. Some who were in the “operations and management” only business realized they don’t control the money and left the business to save their reputations and decrease their frustrations with volunteer revolving board members who don’t understand how expensive it is to run water systems well.

Planners are available to help SMA’s with their plan updates, review and approve their plans, hold pre-plan meetings, and provide technical assistance. Planners worked with some SMAs to help with regionalization, restructuring, and consolidation.

In the three-year time period, planners held pre-plan meetings, reviewed SMA plans, assisted new SMAs to complete their plan, and approved SMA plans.

2.4.8 Water Use Efficiency Program

In 2003, the Washington State Legislature passed the Municipal Water Supply-Efficiency Requirements Act. This law, commonly known as the Municipal Water Law, provides flexibility for municipal water rights to serve growing communities by reducing the risk of relinquishment. In exchange for this water right flexibility, the law required new standards for water use efficiency (WUE).

Water is a precious, limited resource. In the Pacific Northwest, drinking water for our growing population competes with other users that include agriculture, industry, recreation, and maintaining adequate stream flow for fish. By working with public water systems to implement WUE programs, we strive to ensure safe and reliable drinking water supplies for current and future needs.

Water systems help prevent potential health and sanitation risks to their customers by effectively planning and implementing WUE measures. This means fewer emergencies when water supplies are scarce, especially during summer months when it rains less, and user demands are high.

Any Group A community water system that serves at least fifteen residential service connections is a designated “municipal water supplier” and must comply with the WUE Rule (whether publicly or privately owned). The rule says municipal water suppliers must:

- Publicly establish water-saving goals for their customers.
- Evaluate or implement specific water-saving measures to achieve customer-based goals.
- Develop a WUE planning program to support the established goals.
- Install meters on all customer connections.
- Achieve a standard of no more than 10 percent water loss.
- Submit a Water Loss Control Action Plan (WLCAP) if they exceed 10 percent water loss.
- Report annually on progress toward achieving these goals.

In 2022, 2,212 systems were designated as municipal water suppliers. More than 92 percent of them submitted WUE annual reports. Along with improvements in reporting compliance, we’ve seen improved metering compliance and a reduction in apparent water losses. By using water efficiently, water systems help to protect against temporary water service interruptions during peak usage, long-term or repeated water disruptions due to limited water supply, and contamination of the water supply due to leaky pipes.

WUE also promotes good stewardship of the state's water resources, ensures efficient operation and management of water systems, reduces energy use, and saves money. Table 4 below demonstrates WUE statistics for 2020-2022.

Table 4: WUE System Data

Year	Total Gallons Produced	Authorized Consumption	% Loss	Total Connects	Population Served
2020	345,682,837,469	316,765,481,171	8.36%	2,604,207	6,522,000
2021	1,623,128,987,341	1,478,206,842,157	8.92%	2,626,149	6,574,274
2022	333,161,558,642	309,674,372,734	7.05%	2,444,955	6,180,436

The WUE program manager position was eliminated at DOH since the last report. This is attributed to long running budget issues in the drinking water program and a shift in office priorities to focus more on immediate public health impacts. As a result, the six regional planners play a key role in educating water systems on all aspects of the WUE program.

The goal setting, development of measures intended to achieve that goal, and development of the WLCAP are updated every six or ten years, dependent upon the applicable planning cycle for each water system, as part of the water system's WSP or SWSMP. Also, the planners provide WUE technical assistance upon request by phone call, email, attending meetings and giving presentations.

2.5 Financial Assistance

2.5.1 Drinking Water State Revolving Fund

Congress established the Drinking Water State Revolving Fund (DWSRF) program when it reauthorized the SDWA in 1996. EPA manages DWSRF funds at the federal level and DOH administers DWSRF at the state level. The DWSRF Loan Program provides low-interest loans to eligible public water systems to build, repair, and redesign their infrastructure. In some instances, up to 50 percent principal forgiveness is available, based on an affordability index and consolidation projects. Now twenty-plus years old, the DWSRF Construction Loan Program has provided over \$1 billion in construction loan funds. Congress passed the Infrastructure and Investment Jobs Act (IIJA) or Bipartisan Infrastructure Law (BIL) in November 2021. This appropriated more than \$11 billion additional dollars into the DWSRF through EPA from 2021 through 2022. Capital improvements to our public water systems are critical to the long-term health and economic vitality of Washington's communities. DOH oversees all aspects of the DWSRF loan program.

Most construction loan projects funded between 2020 to 2022 benefited small water systems. Table 5 below shows applications for DWSRF construction projects, by system size, during the 2020 to 2022 reporting period.

Table 5: 2020-2022 Funded DWSRF Construction Loan Projects by System Size

System Size	Population	Projects Funded
Large Systems	Greater than 100,000	4
Medium Systems	Between 10,000 and 100,000	21
Small Systems	Less than 10,000	42

In addition to the DWSRF Construction Loan Program, DOH continues to offer Emergency Loans, Planning and Engineering Loans (previously called Preconstruction Loans), and Consolidation Feasibility Study Grants. During this reporting period, the DWSRF program provided over \$152-million in financing to eighty-nine grant or loan projects to help improve public health and water system sustainability.

- Planning and Engineering Loan:** Water systems not ready for construction or that need to develop or update a planning document, may apply for a planning and engineering loan. In the event a current DWSRF Construction Loan recipient is unable to make progress and proceed to construction within eighteen months, DOH can convert the construction loan to a planning and engineering loan. The water system can continue with preconstruction activities with the planning and engineering loan and prepare for construction. This loan can provide up to \$500,000 with 0 percent interest rate for a term of ten years. If the project is later funded with a DWSRF construction loan, the planning and engineering loan may be incorporated into it. Twenty-seven applications were received from 2020 through 2022 and fifteen planning and engineering projects were funded.
- Emergency Loan:** The Emergency Loan Program was modified to better align with the Clean Water State Revolving Fund Emergency Loan Program, per applicant requests. Emergency loans are available for up to \$500,000 at 0 percent interest rate for a term of ten years. This program is limited to not-for-profit community water systems serving fewer than ten thousand people. No emergency projects were funded from 2020 through 2022.
- Consolidation Feasibility Study Grant:** This grant provides funding to community water systems to study the feasibility of owning, maintaining, or serving smaller, struggling water systems serving ten thousand and fewer people. Up to \$50,000 per consolidation project is available. We did not offer this funding opportunity in 2021 to prepare for receiving the Infrastructure and Investment Jobs Act (IIJA) funding. However, the merits of the program warranted offering this program again and it is now funded from DWSRF construction loan origination fees and some SRF set asides. From 2020 and 2022, these grants were made available with twenty-five applications received and seventeen projects funded.

Table 6 below provides a summary of each DWSRF funding cycle for the 2020-2022 period.

Table 6: 2020-2022 DWSRF Applicants and Recipients by Funding Type

DWSRF Funding Cycle	Number of Applications Received	Amount of Funding Requested	Number of Projects Funded	Total Award Amount
Construction Loan	98	\$216,575,000	57	\$146,901,000
Emergency Loan	1	\$95,000	0	\$0
Consolidation Feasibility Study Grant	25	\$1,062,000	17	\$640,000
Planning and Engineering Loan (Preconstruction Loan)	27	\$6,157,000	15	\$4,578,000

2.5.2 Sync

DOH continues to participate as a Core Member of Sync—Washington’s Infrastructure System Improvement team. It was formed to meet the objectives of RCW 43.155.150. The Legislature continues to support Sync and extended this multi-agency partnership in 2021 (SB 5403(2021)). Sync is a collaborative partnership among the Public Works Board (PWB), the departments of Commerce, Ecology, Health, and Transportation, and the Transportation Improvement Board. In 2021, Sync expanded to include broadband infrastructure, partnering with the Washington State Broadband Office, the Public Works Board Broadband Program and Community Economic Revitalization Board (CERB) to explore broadband coordination opportunities. Sync partners share strategy to engage communities and transform the delivery of state financial and technical assistance for infrastructure improvements that promote recovery, resiliency, and energy efficiency for a more equitable and sustainable Washington. Beginning in 2021, SYNC expanded its objectives and updated the Memorandum of Understanding (MOU) with partner agencies to incorporate equity, environmental justice, and climate change resilience to create a stronger foundation for coordinated infrastructure investment. The following list highlights enhancements to Sync’s objectives (bold text reflects added language).

- Promote the development of projects that maximize value, minimize overall costs and disturbance to the community, and ensure long-term durability and resilience.
- Promote investment in public health and safety, environmental protection, resiliency, and restoration.
- Ensure projects are designed to meet the unique needs of each community, including addressing and when possible rectifying historical environmental impacts, rather than the needs of particular funding programs.
- Ensure project designs that maximize long-term value and climate resilience by fully considering and responding to anticipated long-term environmental, technological, economic, social, demographic and population changes.
- Provide the flexibility to innovate, including utilizing natural systems, addressing multiple regulatory drivers, and forming regional partnerships.

- Collaborate across programs and jurisdictions so that different investments are complementarily packaged, timely, and responsive to community needs.
- Build local capacity for communities, to meet their unique financial, planning, and managerial needs, so they can design, finance, and build projects that meet their long-term goals including addressing historical environmental justice impacts and projected climate impacts.
- Provide optimal use and leveraging of federal and private infrastructure dollars.
- Ensure periodic, system-wide review and ongoing achievement of the designated outcomes including systems-level review and sharing of environmental justice concerns and strategies.

These foundational concepts support:

- Financial stability of programs and communities.
- Community engagement and technical assistance.
- Proven planning strategies such as value planning, asset management and regionalization.

Sync also continues to coordinate and amplify activities of the funding agency as follows.

- **Co-funding Process**
This activity seeks to organize a consistent process for coordinating and packaging investments. This assists Sync to leverage federal dollars and make projects whole, particularly if coordination between multiple infrastructure projects is needed.
- **Income Surveys**
Update currently available income survey guidance and coordinate with organizations on alternative data and metrics.
- **Secure the Public Works Assistance Account**
Request a phased return of all diverted Public Works Assistance Account tax revenues and loan repayments for local infrastructure projects by 2023.
- **Support to the Legislature**
Become a resource that provides expertise and support to legislators in making infrastructure related funding decisions.
- **Alternative Finance**
Create consistent state funding resources for applicants that don't have access to reasonable rates in the private credit market. Also, to access and leverage additional state and federal funding.
- **Workforce Development**
Sync will explore options to raise visibility of infrastructure-related careers. This includes partnerships with institutions of higher learning and studying gaps in the workforce.

DOH staff participate in both the monthly Sync meetings and Sync work groups for key activities, providing input and resources for Sync activities. Updates and reports are available on the [Sync website](#).

3.0 Protecting Public Health and Keeping People Informed

3.1 ODW Now Newsletter

We published six editions of *ODW Now* in 2022.

Our [ODW Now newsletter](#) replaced *H₂Ops* and *Water Tap* newsletters. The newsletter is sent out every other month and features timely articles and current topics of interest to water system owners and operators. We send the newsletter to subscribers, certified operators, water system owners, engineering consultants, LHJ drinking water contacts, and others in the drinking water industry. Publishing every other month gives us the opportunity to address issues as they come up.

3.2 Health Advisories

The number one priority for our staff is emergency response in support of water systems. As such, we work to maintain our own capacity as well as that of water systems to respond to emergencies.

With more than four thousand public water systems in Washington state, it is almost inevitable that at least a few times a month we need to support water systems as they issue health advisories. Most of these health advisories are voluntary, issued by water systems due to main breaks and loss of pressure within distribution systems. In addition, we also work with water systems to issue health advisories due to microbial risks, chemical risks—nearly all due to high levels of nitrate, process upsets at water treatment plants, and malevolent actions affecting water system facilities. Most of these health advisories are associated with very small water systems, who rely upon us heavily since it is rare, thankfully, that any individual system must issue a health advisory.

To make sure we are **always** available to water systems and our public health partners at local health, other state, and federal agencies, a small group of senior managers within our Operations Section are available after-hours, on holidays and weekends 24/7/365. This group commonly handles “routine” health advisories. In addition, the people on this team handle more unusual situations that may not result in a drinking water health advisory but are nonetheless an important part of the service we provide to the people of Washington state.

Table 7: Health Advisory Summary Table 7/1/2020–6/30/2023

Year	Boil Water		Do Not Drink		Do Not Use	
	Comm	NTNC	Comm	NTNC	Comm	NTNC
2020 (7/1/20-12/31/20)	29	1	0	0	0	0
2021	42	6	3	1	0	0
2022	61	5	7	1	0	0
2023 (1/1/23-6/30/23)	25	1	1	3	0	0
Total Reporting Period	157	13	11	5	0	0

1. Data does not include TNC systems.
2. Both 2020 and 2023 are 6-month time intervals.
3. Information includes precautionary notifications reported to ODW.

3.3 Water Quality Programs

3.3.1 Source Monitoring

DOH's source monitoring program performs technical assistance with the following activities to help assure that water systems deliver safe and reliable water to their customers.

- Generate and maintain chemical water quality monitoring requirements for 5,385 sources associated with over 2,500 community and NTNC water systems.
- Implement a waiver model for water systems to grant federally allowable relief from monitoring when technically defensible while still protecting public health.
- Maintain tools like the Water Quality Monitoring Schedule (WQMS) to communicate SDWA distribution and source monitoring requirements to water systems.
- Track compliance with required chemical water quality monitoring and respond to unmet requirements.
- Assess water quality data to verify the safety of drinking water sources, obtain information about known contaminants, and confirm effectiveness of treatment.
- Provide technical assistance to water systems to help them comply with established water quality standards, resolve violations, and communicate with their customers during health advisories.

3.3.1.1 WQMS

DOH developed monitoring schedules in 2000 to help water systems understand and meet their SDWA requirements. The general benefits are numerous:

- Clear communication of complex monitoring requirements and other deadlines while reducing demand for state resources.
- Simple for water system to participate and understand an otherwise complex set of requirements.
- Allows long-term budgeting for sampling and greater focus on system asset management and infrastructure issues.
- Includes enhanced waiver process, which is simpler to implement and technically defensible.

In 2014, DOH moved the WQMS from the original annual paper mailings to an interactive online tool with increased capabilities. The WQMS recalculates in real time to show when samples are entered, and sampling requirements are met; it is updated for the public weekly. In the last three years, we greatly improved the accuracy of WQMS and added programmatic calculations for radionuclide and most disinfection byproduct requirements, which were previously added manually each year. In 2023 we added state-based requirements to monitor for PFAS from 2023 through 2025.

DOH is now equipped with resources and strategy to notify systems that do not meet monitoring requirements. In our efforts to get to 100 percent compliance, we use reminder postcards and emails, especially for TNC systems without a WQMS.

3.3.1.2 Waivers

Washington's waiver program focuses on protecting public health while minimizing impacts to utilities for monitoring when appropriate. In 1994 the Legislature directed DOH to develop a program to grant relief from a major increase in costly new and ongoing monitoring

requirements while still protecting public health. We require monitoring where the risk of contamination is greatest and reduce or eliminate monitoring where the risk is least.

DOH continues to base associated risk determination on information from water systems regarding the physical characteristics of the actual water source, water quality history from the source, and additional water quality information from our sister agencies. We're proud that we successfully reduced the burden of monitoring requirements to utilities while ensuring public health protection.

The waiver program continues to be:

- Simple for both the systems and the state.
- Technically defensible.
- Sustainable (for eighteen to twenty-seven years—two to three nine-year compliance cycles).
- Able to assign simple monitoring requirements that can be completed at the lowest frequency, while still protecting public health.

Reduced monitoring waivers are assessed by each analyte group, since different source characteristics can create different chemical risks. For example, an extremely deep and confined source may be at low risk for pesticides, but at higher risk for naturally occurring inorganic contaminants, such as arsenic. In the waiver model, systems/sources will fit in three groups.

- Those with sufficient data to know they are at lower risk and considered for lower frequency sampling. Most water system sources are in this group.
- Those we know are at increased risk due to water quality issues or system defects.
- Systems/sources that, due to lack of information, we do not know enough about. These are new systems/sources, or they have not sampled enough in the past and we cannot put them into one of the other groups.

Some assumptions made for the waivers include:

- Approximately 80 percent of system/sources are "stable," and we can assign baseline "core" monitoring requirements on a six- to nine-year compliance cycle versus the three-year compliance period for chronic chemicals. This can only be assessed after sufficient data from each source is analyzed.
- Approximately 10 percent of the systems/sources are found to be at risk and will have assigned appropriate monitoring requirements based on the system/source specific situation.
- DOH will have insufficient information in some instances, such as new sources or emerging contaminants, to place them in the prior two groups and they require additional monitoring and program resources.

State waivers: Some waivers are based on both statewide and existing system-specific historic information. This is appropriate for some of the contaminants that have never been found or were not used in the state.

3.3.2. Coliform Monitoring—RTCR

The Revised Total Coliform Rule (RTCR) is one of the few SDWA rules that applies to all Group A water systems (over 4,000) in Washington state. From 2020 to 2022, the number of coliform incidents has remained consistent each year, with an overall compliance success rate of 98.8 percent.

Transient non-community (TNC) water systems have the highest potential to improve their Technical, Managerial, and Financial (TMF) capacities. Table 8 below illustrates this system type incurs the most monitoring violations by missing their monthly sample requirement or failing to collect repeat (follow-up) samples. Just under 40 percent of systems statewide are TNCs while they make up about 58 percent of the coliform incidents. DOH’s Coliform Program spends most of its time providing technical assistance to these systems to explain the importance of monitoring, sample locations, sampling technique, troubleshooting contamination issues, and encouraging proactive use of best management practices.

Table 8: Annual Average Number of Incidents by Incident and System Type from 2020 through 2022

	TNC	NTNC	Comm	All Systems
Monitoring	386	40	173	599
<i>E. coli</i> MCL	5	<1	7	12
Contamination Confirmed (TTPS)	94	15	134	243
Follow-up Failure (TTTR)	28	2	8	37

Assessments Summary

The RTCR added an assessment requirement. An assessment is a self-inspection of a water system’s facilities, operations, and management practices, that seeks to find pathways for bacteriological contaminants to enter or occur in the system. It consists of a written review of the system’s maintenance and operations as well as an inspection of its facilities. In the assessment, the assessor lists any “sanitary defects” and whether these defects have been fixed. If not fixable in a short time period, the assessor must provide a timeline for fixing sanitary defects. This corrective action is intended to prevent future contamination. Part of the assessment is to determine gap areas in their TMF capacity. We find that assessments provide an insight into system functioning as shown below.

- Eight hundred seventy-eight assessments have been required for 578 unique systems (some systems incurred multiple assessment requirements).
- Eighty-six-point one percent of systems have **not** been required to complete an assessment—or are in compliance with repeat sampling and did not confirm contamination in the distribution system.

Sun Tides Community LLC

As part of the routine sampling, the Sun Tides Community LLC in Yakima County detected *E. coli* in their public water system. Further testing confirmed the presence of *E. coli* and identified *E. coli* in the source well also. The amount of *E. coli* present was able to overpower the chlorination unit installed and allowed it to enter the distribution system. We put into place a

boil water advisory, and a special purpose Investigation was conducted. This investigation found and assisted the system in correcting three potential sources of contamination:

1. Possible septic components buried near the well.
2. A hole on the underside of the well cap.
3. Potential holes in the well casing below the soil line.

After repairs were made, and approved by DOH, the system was allowed to lift their boil water advisory. We directed the system to sample their source well monthly, in addition to normal monthly sampling. Since the incident, all samples have been coliform free.

By identifying pathways for contamination, the purveyor also has an opportunity to add preventative measures to protect the system from future contamination. By knowing when and where contamination is most likely to occur, purveyors can better focus their TMF capacity. The ownership group is committed to continually improving their technical and managerial capacities in an effort avoid the high cost of engineering an elevated chlorination system while maintaining good water quality.

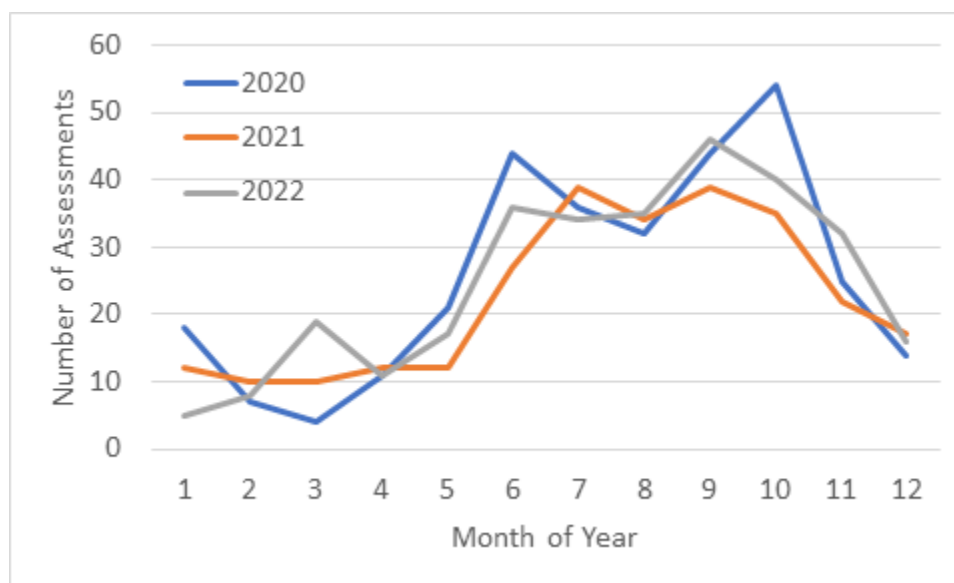


Figure 4. Seasonal trends in triggered assessments in Washington state.

Figure 4 above illustrates the number of assessments performed by month from 2020-2022. Over 80 percent of the systems required to perform an assessment due to bacteriological contamination do not have permanent on-going disinfection treatment. However, through the process of monitoring for coliform bacteria, many systems realize the need and benefit of adding continuous chlorination to protect the water quality from microbial contamination. Permanent and effective disinfection treatment installed at a system provides an added barrier of protection against contamination.

3.3.3 Nitrate Program

The Nitrate Program is managed by regional and central DOH staff. Regional office staff oversee compliance with the water quality standards while central staff issue compliance documents pertaining to nitrate monitoring.

Of the over 2,538 community and NTNC Group A waters systems in Washington state, twenty-one (0.8 percent) of those systems exceeded the nitrate MCL of 10.0 mg/L at least once between 2020 and 2023. These exceedances resulted in fifty-eight Health Advisories over the same period of time.

Regional water quality, compliance, and engineering staff work with systems that exceed the nitrate MCL to communicate with their customers, develop a compliance solution, and implement it. Pathways to compliance include drilling a new well, consolidating with a neighboring water system, blending with a low nitrate source, or installing nitrate removal treatment. Currently, Washington has sixty-six water systems (1.5 percent of the total number of systems) treating to remove or blending to reduce nitrate.

3.3.4 Lead and Copper Program

Over the last three years, Washington state re-evaluated its lead and copper program to ensure that consumers are protected and informed about the quality of water at their taps. Lead and copper are not normally found in source water but leaches from the metals used in a home’s plumbing. Over the years, bans in lead plumbing, most recently in 2014, reduced the amount of lead allowed to be used in pipes, valves, and fixtures, but there is legacy of lead in Washington state plumbing.

Washington state conducted a lead service line and lead component survey of water systems in October 2016 in accordance with the Governor’s Directive 16-06. Out of the over 4,000 Group A water systems surveyed, 686 water systems responded, representing 2.2 million of 2.5 million connections statewide. Since the 2016 survey one large system has removed all their lead service lines. We estimated three hundred lead service lines remaining in service at the time but do know there may be additional unknown lead service lines in approximately five other systems. Approximately fifteen water systems report that they have an estimated 4,841 lead goosenecks in service and twelve systems report that they have unknown numbers of lead goosenecks. DOH continues to provide technical assistance to water systems as they identify and replace their lead service lines and/or lead components. Table 9 below identifies the percentage of connections relating to lead service lines and lead goosenecks in service.

Table 9

Lead component	% of connections
Lead service line in service	0.02
Unknown service line may be lead	1.2
Service line—definitely not lead	98.8
Lead goosenecks in service	0.21
Unknown gooseneck may be lead	7.6
Goosenecks—definitely no lead	92.2

All community and non-transient non-communities (2,532 systems) are required to test for lead and copper in their distribution systems at least every three years. Over the last three years, twenty-nine water systems exceeded the lead action level and seventeen water systems exceeded the copper action level. These action level exceedances are followed up by additional sampling and treatment adjustment or installation as necessary. Lead action level exceedance

requires public education and notification within sixty days and yearly until the system no longer exceeds the lead action level.

Two hundred eighty-three water systems, serving almost four million people in Washington, have some type of corrosion control treatment installed, including pH adjustment and corrosion inhibitors. DOH will continue working with these systems to ensure corrosion control treatment is optimized, with a focus on system monitoring over the next couple of years.

3.3.6 Known Areas of PFAS Contamination in Drinking Water Aquifers in Washington State

PFAS contamination has been found in groundwater used for drinking water supplies in most areas of the state (Figure 5). EPA supplied funding to DOH for water systems to conduct monitoring for PFAS in late 2021 through early 2023. Of roughly 1,200 sources that have sampled thus far, approximately 20 percent have detections above 2 parts per trillion (ppt). The most common compounds detected are PFOA, PFOS, PFHxS, PFBS, and PFPeA.

DOH worked with the Washington State Board of Health to adopt State Action Levels (SAL) that became effective in January 2022 for 5 PFAS compounds: PFOA—10ppt, PFOS—15ppt, PFHxS, PFBS—365ppt, and PFNA—9ppt.

SALs require many Group A public water systems to test for PFAS. If there is a confirmed detection of a PFAS compound above its respective SAL, the system must notify its customers of that detection within 30 days and continue to monitor quarterly. Approximately 1 percent of the sources sampled so far have detections above a SAL for one or more of the 5 pfas compounds with SALs. **Any detection of PFAS in the sampling must also be reported annually—typically in the Consumer Confidence Report.**

DOH worked over the last three-year period to provide technical assistance and community support to communities that detected PFAS in their drinking water sources. You can find many of our tools on our [PFAS webpage](#) along with the [PFAS Dashboard](#). Figure 5 below represents data from the DOH PFAS dashboard. This includes many presentations from conferences across the state. At the conferences, we support and inform utilities through public meetings and work sessions to support impacted communities. We provide fiscal support when available through our DWSRF loans and BIL funding.

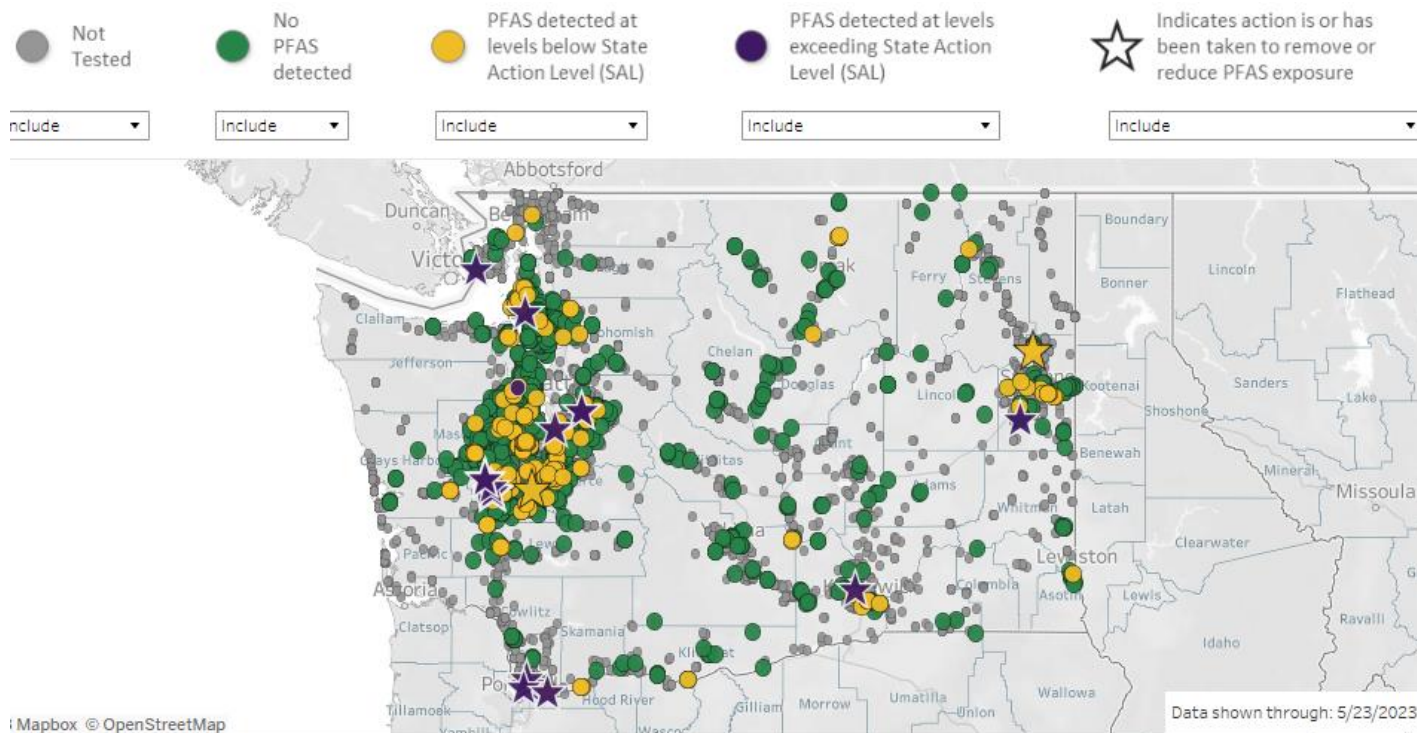


Figure 5 PFAS Dashboard.

3.4 Emergency/Incident Response

3.4.1 Covid

Incident Period: Jan 20, 2020–May 11, 2023

Declaration Date: Mar 22, 2020

2020

- Approximately 30 percent of ODW staff were redirected to work with the COVID-19 Incident Management Team. DOH shifted the work world to largely home-based, which required a shift from paper to electronic administrative processes. ODW prioritized work on emergency response, follow up to acute water quality concerns, project review, and technical assistance. We halted sanitary survey field work. We mostly deferred formal enforcement unless addressing a significant public health issue. The personal impacts of the pandemic affected all staff. Utilities were significantly impacted as well.

2021

- Internal and external capacity issues under COVID-19.
 - Water and wastewater workers, as well as the manufacturers and suppliers who provide vital services and materials to the water sector, are considered essential workers and businesses by state authorities when enacting restrictions to curb the spread of COVID-19. Our critical infrastructure and the operators who ensure the safe supply of water to our homes and hospitals depend on treatment chemicals, laboratory supplies, and related goods and materials.
 - The impact of COVID-19 on the water sector from the perspective of businesses and partners has been enormous. For instance, Homsy and Warner (2020) note that water poverty is an increasing concern in the United States. In the wake of the pandemic, several states suspended water shutoffs, and more than four hundred cities placed moratoriums on water shutoffs. Homsy and Warner (2020) examined the impact of public utility commission (PUC) regulation in the water sector and found the factors that differentiate communities with water policies relate to equity and the environment. Ownership matters, as communities with municipally owned utilities appeared more inclined to protect residents from water service shutoffs and engage in water resource management. Salazar-Adams (2021) revealed that privately managed utilities appear to be more efficient than publicly managed ones in developing countries.
- Force majeure chlorine shortages and other supply chain issues almost resulted in large-scale Boil Water Advisories.
 - From 2020 through 2022, a combination of events resulted in reduced production capacity, including extreme weather events, equipment failures, and planned reductions. The loss in production capacity was compounded by increased demand for other uses of chlorine, such as the production of high-value chemicals.
 - The water sector has experienced widespread chlorine supply disruptions in the past. From 2020 through 2022 disruptions in the supply of chlorine occurred due to an increase in demand because of the COVID19 pandemic and a decrease in supply as a result of both temporary losses in production capacity due to

- equipment failures and extreme weather events and permanent, planned reductions in production capacity.
- The 2022 chlorine supply chain shortages are due to a combination of factors, including:
 - **Pandemic-related demand.** Increased demand from pool owners spending more time at home during the pandemic.
 - **Production capacity.** Temporary losses due to equipment failures and weather events, plus planned reductions in production.
 - **Destroyed plant.** The destruction of a key chlorine manufacturer, including the Louisiana chemical plant that makes most of the country's chlorine tablets.
 - **Fire.** A fire in April 2022 triggered a chlorine leak at the Olin Corp. factory in Louisiana, which exacerbated the shortage.
 - **Labor and material shortages.** These shortages make it difficult for plants to operate efficiently.
 - **Rebuilt plant.** The BioLab plant is being rebuilt and is expected to open in spring 2022.
 - During the COVID-19 pandemic there was a significant increase in the demand for many chlorine-derivative products due to increased disinfection of buildings, equipment, surfaces, etc. to reduce the spread of COVID-19. Concurrent with this increased demand, there was a temporary loss of approximately 28 percent of domestic chlor-alkali production capacity when Winter Storm Uri directly hit the Gulf Coast region in February 2021 (The Chlorine Institute, 2021). Furthermore, in spring and summer of 2021, several chlor-alkali production facilities experienced significant equipment failures resulting in additional, temporary losses in production capacity. While some of these impacted facilities were in the Gulf Coast region, others were in West Virginia, Utah, and Washington. Later in the summer of 2021, there was a permanent reduction in chlor-alkali production capacity at facilities located in New York, Alabama, Louisiana, and Texas. The reductions in chlor-alkali production capacity that occurred in 2021 were compounded by the impacts of COVID-19 (Powder and Bulk Solids, 2021; Prohaska, 2021). Changes to domestic chlorine production are known to have a direct impact on the availability of chlorine for domestic consumption, since imports represent a small fraction of overall consumption (Kreuz et al., 2022). This was exemplified by decreased allocations of chlorine and sodium hypochlorite for drinking water and wastewater systems in California, Oregon, Washington, Alaska, Utah, Missouri, Ohio, Pennsylvania, New York, Massachusetts, Louisiana, and Florida, as reported directly to EPA. A threatened rail carrier work stoppage in September 2022 highlighted the dependence of the domestic chlorine supply chain on a complex national rail network for producers, suppliers, and end-users. Due to the concentration of chlor-alkali facilities along the Gulf Coast combined with widespread need for chlorine, long distance transport of chlorine is often required. Additionally, a significant number of domestic manufacturers of derivative water treatment chemicals are almost exclusively reliant on rail delivery of chlorine for production needs (Branscomb et al., 2010).

3.4.2 Drought Response

During a drought emergency, the Office of Drinking Water works with the Governor's Office, the Department of Ecology, and other state agencies to monitor drought impacts on water supplies. We also provide technical assistance to help water systems manage and conserve water and restore safe and reliable water in the event shortages or outages do occur.

From 2020-2023, the state has been abnormally dry over the entire period. A brief summary from each year is below.

2020

- In 2020, Washington did not have any drought declarations, as defined in Chapter 43.83B RCW. However, drought emerged across the Pacific Northwest in spring 2020 due to several months of below-average precipitation.

2021

- 2021 Pacific Northwest Heatwave: From June 26 to July 2, 2021, the National Weather Service in Seattle reported a long-duration, unprecedented heat wave throughout the Pacific Northwest. It resulted in some of the highest temperatures ever recorded in the region. Much of the Pacific Northwest, normally known for its temperate weather in June, received maximum temperatures 20–35°F above normal during this heat wave. In fact, the temperatures were so anomalous that nighttime lows were higher than the average high temperatures that this region would normally observe at this time of year. Ground temperatures were also reaching extremes—Wenatchee, Washington reached 145°F. It was considered a one-thousand-year weather event. This extreme heat event resulted in a high to very high risk of heat-related impacts/illness for much of the population, especially those who are heat sensitive and those without effective cooling and/or adequate hydration. Between June 26 and July 2, there were over one hundred heat-related deaths.
- A drought emergency declaration was issued for most of Washington on July 24, 2021.
- Three watersheds, including the Everett, Seattle, and Tacoma metropolitan areas, were excluded from the declaration because they had adequate water supplies.

2022

- The drought declaration from 2021 extended into July 2022.
- 2022 was the third dry year, but it was not as extreme as the previous year in terms of temperature or precipitation.
- 57.79 percent of the Pacific Northwest was in drought as of May 31, 2022.
- The decision to end the drought declaration came after the second-wettest May through June in Washington since 1895.
- Unanticipated cool, wet weather in May and June prompted the Washington Department of Ecology to cancel the drought declaration for Central and Eastern Washington.

Drought declaration areas are illustrated in Figures 9 and 10, below.

The Washington State Drought Plan (plan) identifies public drinking water supplies as a high-risk sector and makes DOH responsible for completing several tasks described in the plan.

Actions completed by DOH during the 2020-2023 timeframe regarding drought and considered high value for reducing a water system's vulnerability to drought:

- Consulted with Ecology and the Governor's Office on anticipated effects to public water systems.
- Surveyed large and medium water systems (>20,000) to assess existing conditions, drought preparedness, and response capability.
- Established regional operations contacts to answer drought questions from water systems.
- Distributed drought-related technical assistance and publications targeted to size and level of risk.
- Coordinate with local health jurisdictions on Group B and private water system issues and concerns.
- Develop an action plan for DOH's response to water systems during the drought.
- Proactively communicate with utilities in drought-sensitive water sources or locations when a drought is declared, including filling raw water reservoirs, and monitoring groundwater withdrawal and drawdown.
- Provide technical assistance to Ecology by evaluating requests for relief from public water systems—including emergency grant applications, temporary water rights transfers, and action on new water rights.

During a declared drought emergency, DOH completed the following mandatory response actions.

- Map "at-risk" areas to enable targeted communications to water systems most vulnerable to drought.
- Respond to phone calls, emails, and requests for information from the public.
- Provide direct technical assistance to water systems dealing with immediate effects from drought conditions.
- Assist water systems with access to emergency funding and grant applications. Offer technical and financial assistance through Ecology's emergency fund for infrastructure improvements, such as deepening an existing well, rehabilitating an inactive source, constructing an intertie with an adjacent utility and other appropriate projects.

DOH also supported Ecology with a legislative request for future drought funding and enhancements of drought authority that passed in the 2023 Legislative Session.

3.4.3 Wildfires

Water systems must develop water system plans or small water systems management programs that include response plans for emergencies, such as wildfires (Chapter 246-290 WAC). The Office of Drinking Water (ODW) provides technical assistance to water systems for preparing these response plans and for dealing with the damage after an emergency. In addition, during wildfire season, ODW staff monitor new fires and contact systems that may be

affected by them to offer real-time technical assistance. Staff in our regional offices are also available to provide information and technical assistance to water systems and local emergency management agencies when multiple communities or entire regions are affected.

2020

- April saw the beginning of wildfires on the west coast, as Washington experienced two fires: the Stanwood Bryant Fire in Snohomish County and the Porter Creek Fire in Whatcom County.
- In late July, a brush fire in Chelan County, the Colockum Fire, burned at least 3,337 acres and caused evacuation of homes. A fire on the Colville Reservation near Nespelem called the Greenhouse Fire burned at least 5,146 acres and caused evacuation of the Colville Tribal Corrections Facility and other structures.
- On August 19, Governor Jay Inslee declared a state of emergency for all of Washington, with fires burning on the Olympic Peninsula and in Eastern Washington. Among the active fires was the 24,000-acre Taylor Pond Fire near Yakima. By August 20, the Palmer Fire near Oroville reached 13,000 acres and forced evacuation of up to 85 homes.
- The Evans Canyon Fire shut down Washington State Route 821 in the Yakima River Canyon, burned several homes and caused hundreds of families to evacuate, and caused unhealthy air quality in Yakima County.
- On September 7, a historic fire event with high winds resulted in 80 fires and nearly 300,000 acres burned in a day. Malden and Pine City, in the Palouse region of Eastern Washington, were mostly destroyed by one of the fires. Smoke blanketed the Seattle area and caused unhealthy air conditions throughout the Puget Sound region and affected Southwest British Columbia.
- By the end of September, wildfires burned over 713,000 acres, 181 homes were lost, and one death occurred. The 2020 fire season saw more individual fires than in any other recorded year.

2021

- The 2021 Washington wildfire season officially began in March 2021.
- The month of April had more fires than the previous year, and a year-to-date record 410 fires occurred on state-managed lands by the second week of June.
- By late April, all of Eastern Washington had been classified by the United States Drought Monitor as "abnormally dry" with moderate to severe drought conditions.
- Smoke from British Columbia fires that occurred during the 2021 Western North America heat wave began to enter Washington in early July.
- The state had more than 630 wildfires by the first week of July, on par with the state's record 2015 wildfire season.
- The governor declared a state of emergency on July 6.
- Seven homes were lost in the Chuweah Creek Fire at Nespelem, Washington on July 12–13, which caused evacuation of the town and burned over 37,000 acres by July 16. The town of Keller, Washington was also evacuated.
- The Red Apple Fire prompted the evacuation of thousands of residents in the Wenatchee area. U.S. Route 97 Alternate was closed due to the fire.

- The Cub Creek 2 Fire broke out on July 16. Evacuations were ordered around Winthrop. Two dwellings were destroyed. All state forest lands in Eastern Washington were closed to the public due to fire danger.
- The air quality index in Twisp was rated hazardous on July 19. Due to ongoing and widespread particulate content in the air from multiple wildfires, children, the very old or pregnant, and other residents with respiratory conditions in parts of Okanogan County were advised in July to leave the area for their health. Air quality in the Methow Valley was the unhealthiest in the nation at several points in July. The U.S. National Weather Service Spokane office tweeted that Methow Valley's air quality could be the worst anywhere on the Earth on July 23.

2022

- The 2022 wildfire season started later than normal due to cool and moist conditions in the spring. Drier than normal conditions in the fall, however, meant that larger fires continued to burn later in the season.
- The first large fire of the season was the Vantage Highway Fire which started on August 1, 2022, and ultimately grew to 24,690 acres in size. No water systems were damaged from this fire.
- A fire south of Lind, Washington, in Adams County, started the morning of August 4 and grew quickly to 2,000 acres. The town was evacuated, and ten homes were destroyed.
- The White River fire northeast of Lake Wenatchee started August 16, causing evacuations. Over 14,000 acres were burned.
- Smoke from the Cedar Creek Fire in central Oregon moved into southwest Washington and the Puget Sound region on September 10, and Seattle went on record as the worst air quality of any major city in the world.
- The Bolt Creek Fire started on September 10, and caused the closure of U.S. Highway 2 for over one week and the evacuation of Skykomish, Washington. This fire burned over 14,800 acres and created poor air quality in western Washington.
- Goat Rocks Fire started August 9 near Packwood, Washington by lightning and burned over 3,600 acres in remote terrain. Evacuations were in place, but no structures burned.
- Nakia Creek Fire started October 9 in steep terrain near Larch Mountain in Clark County. The fire spread very quickly due to dry conditions.

3.5 Operating Permits—A Simple Capacity Snapshot

Every year, DOH issues all Group A public water systems an operating permit after they pay their annual fee statement. The operating permit system allows us to assess the capacity of water systems to provide safe and reliable drinking water. The permit provides usable information about a water system's adequacy to serve existing services or to grow. Water system owners and operators, consumers, permitting authorities, and lending institutions use the operating permit category to make decisions that are based upon the capacity of the water system to serve existing and potential customers.

The color-coded operating permit system provides an easy method for water consumers to understand the status of the system providing their drinking water. During the previous three-

year reporting period, over 75 percent of the water systems maintained green, and 20 percent of the systems maintained blue operating permits. During this same time period less than 1 percent of the systems had red operating permits. Table 10 below shows the actual number of operation permits issued by color by year, and Table 11 contains the specific definition of each operating permit color.

Table 10—Operating Permit Color by Yearly Reporting Period

Year	Permit Color			
	Green	Yellow	Blue	Red
2020	3106	16	915	14
2021	3132	18	921	26
2022	3150	17	954	25
2023	3169	19	957	32

Table 11

Category	System is	We view this system as
Green	Substantially in compliance with regulations.	Adequate for existing uses and for additional service connections up to the number of approved connections.
Yellow	Substantially in compliance with all requirements. But it: <ul style="list-style-type: none"> • Was notified to submit a legally compliant water system plan and has not satisfied this planning requirement. • Is under a compliance agreement to address the system’s status as a state significant non-complier and is also acting in accordance with that agreement. 	Adequate for existing uses and for additional service connections up to the number approved by the Department in a water system plan or modified by the Department in a compliance document.
Blue	Substantially in compliance with requirements. However, the system does not have a department-approved water system design or is no longer operating consistently with that design, or the system has exceeded the number of Department-approved connections.	Adequate for existing uses, but not adequate for adding new connections.
Red	Substantially out of compliance with requirements.	Inadequate for existing uses and no additional connections are allowed. This may result in denial of home loans, building permits, on-site sewage disposal permits, food service permits, liquor licenses, and other permits or licenses for properties the system serves.

3.6 Compliance Assurance and Enforcement Program

DOH's mission is to ensure safe and reliable drinking water. When water systems and certified operators are unwilling or unable to achieve timely compliance, we use escalating informal and then formal enforcement tools to ensure that public health priorities are met.

DOH's enforcement philosophy is to:

- Remain focused on protecting public health.
- Educate and inform water consumers.
- Ensure water system purveyors and operators understand their legal requirements.
- Allow a fair opportunity to attain compliance.
- Support water system regulatory compliance in every reasonable way.
- Hold purveyors and operators accountable for compliance.
- Follow through with enforcement actions in a consistent, fair, and timely manner.

DOH views its Compliance Assurance and Enforcement Program broadly to encompass both "soft" and "hard" enforcement tools.

We work to motivate and assist water systems with their return to compliance before those systems reach our Formal Enforcement Trigger (FE trigger) and formal enforcement becomes necessary. These actions and activities are typically identified within DOH programmatic plans as compliance-enforcement strategies. When DOH undertakes hard enforcement for non-compliant water systems—such as issuing formal orders under Washington Administrative Procedures Act (APA), turning a system's operating permit red, issuing civil penalties, seeking court-ordered water system receivership, or seeking court-ordered specific performance of DOH's orders—DOH continues to use soft enforcement tools, where appropriate.

While DOH is concerned about, and takes enforcement action for, any drinking water violation, it calibrates its program to prioritize situations that present the highest public health risks. By focusing first on acute contaminants and next on chronic contaminants, the program functions consistently with national drinking water regulations and EPA's [Enforcement Response Policy \(ERP\)](#), which EPA implements through its Enforcement Targeting Tool (ETT).

Through routine reporting, DOH notifies EPA when Group A public water systems violate the national drinking water regulations. Quarterly and annually, EPA tracks DOH's efforts to return systems to compliance. DOH and EPA use the ETT to track water system violations and DOH's efforts to bring systems back into compliance. EPA can "over file," or pursue direct federal enforcement against a water system if it finds doing so is necessary to gain compliance or at the state's request.

The ERP and ETT's goals are to allow EPA and states to:

- Align violations with a prioritization that is more protective of public health.
- View comprehensively public water system compliance.
- Ensure drinking water violations are resolved.
- Recognize that informal enforcement responses are valid while ensuring that timely enforcement is taken when these efforts prove to be ineffective.

- Ensure enforcement efforts are escalated based on EPA’s ETT prioritization.
- Provide a tool to calculate comprehensive non-compliance status for all systems and identify those not meeting national expectations.
- Provide another resource to identify systems that may need assistance in capacity development and sustainability.

The ERP and ETT rank water system violations based on a formula that identifies systems having the highest total non-compliance across all rules within a designated period. Higher violation scores are given for violations that pose the greatest risk to human health. The formula calculates scores based on open ended violations and violations that have occurred over the past five years. ETT scores do not include violations that RTC or are on the path to compliance through a specified enforcement action—an enforcement action where enforceable consequences result if the milestones in the enforcement action are not met. Any water system with a score greater or equal to 11 is considered an ETT EPA designated priority system for enforcement response.

The ERP sets forth a model for escalating response to violations. This model begins with the primacy agency—DOH—responding to each violation and escalating in enforcement formality as the violation continues or recurs. For violations that pose a very serious and imminent risk to public health, proceeding directly to a formal enforcement action is appropriate.⁴

EPA recognizes that states carry out both formal and informal enforcement activities. These activities are effective tools for achieving compliance. Nevertheless, systems specifically identified by the targeting tool as priorities must RTC or EPA will expect formal, enforceable mechanisms to RTC such systems. States are expected to escalate their response to ensure that RTC is accomplished. Systems that are unable to sustain compliance should receive additional scrutiny.

For the state’s action to be considered timely enforcement, once a system is an ETT-EPA-designated priority system for enforcement, the state must conduct an appropriate formal enforcement action, or the system must RTC, within two calendar quarters. For example, if a system becomes an ETT EPA designated priority system on the January ETT for enforcement priority, the state has until June to RTC the system or take adequate enforcement action by issuing ERP formal enforcement documents, also referred to by EPA as “addressing documents.”

An adequate enforcement action has the intent and effect of bringing the non-compliant system back into compliance by a certain time with an enforceable consequence if the schedule is not met. An adequate enforcement document, also known as the ERP addressing document, must describe the non-compliant violation, state the law being violated, state what is required to RTC, provide a schedule for returning to compliance, and provide the state with authority to impose penalties for violation of the enforcement document.⁶

DOH reports violations to EPA on a quarterly basis by uploading Sentry data to the federal database (SDWIS). When entering enforcement documents into Sentry, staff normally attach existing violations for which the document is being issued. The ETT process now in effect

provides an additional tool in evaluating DOH enforcement efforts by providing a way to look at overall water system compliance with Safe Drinking Water Act programs.

New Systems

We use EPA’s ETT Tracker, which shows ETT trends over consecutive quarters. We appreciate the tool’s ability to show trends and filter in various ways, including “by new system.” We used the ETT Tracker to identify new systems and determine whether they appeared as priority systems on any previous ETT lists.

During the last three years, we added twenty-two new systems to the state’s inventory. Of those, fifteen are community water systems and seven are nontransient noncommunity water systems. Table 12 below identifies the number of new water systems within the reporting period.

Table 12

	Community Water Systems	Nontransient Noncommunity Systems	Total
New in 2020–2023	15	7	22
On ETT list with score ≥ 11	2	0	2

Dakota Heights Water System (listed in 2021 Annual Report)

First reported to SDWIS 6/28/2021

Group A Community

PWSID WA53AC681

This system was on the ETT for SOC and VOC monitoring and reporting violations that occurred in 2017. This system was reclassified as a group B system in 2016, and the 2017 violations on the ETT are not valid. In 2021, the water system returned to Group A status and now back within EPA and ODW jurisdiction and we will track the system for continued compliance with drinking water regulations.

Chico Heights Community (listed in 2021 Annual Report)

First reported to SDWIS 9/23/2020

Group A Community

PWSID WA5324042

This system was on the ETT for SOC and VOC monitoring and reporting violations in 2021. For both, ODW sent a violation letter to the system directing the system to take the samples. The system took the samples and returned to compliance. The system has also had other violations and EPA Addressing Documents have been issued in 2021 for additional violations. A Notice to Correct Violation was issued for coliform monitoring and reporting violations. These have now returned to compliance. An Order to Correct Violation was issued for failure to maintain a certified waterworks operator. These violations are now returned to compliance.

Conclusion

This past triennial reporting period presented unprecedented challenges to providing safe and reliable drinking water due to the global COVID-19 pandemic. Staff were reassigned to our agency IMT during COVID, which resulted in considerable staffing shortages and challenges. Staff also transitioned from working within a traditional office setting to working from home during this time, which also presented considerable challenges.

Traditional methods of providing support to water systems and other drinking water partners were not possible during this time. We closely collaborated with our partners (including water systems) to continue to successfully provide the essential support required to attain this goal. We discovered and implemented new and different methods and approaches during this time to provide essential support and we continued many of these post-pandemic.

ODW is proud of successfully supporting and sustaining the capacity of water systems to provide safe and reliable drinking water despite considerable challenges over the last three years. We focused on using water system planning to help systems define and understand their long-term needs. We focused on building the capacity of water systems through each of our programs supporting utilities in planning, engineering, water quality, funding, and more.

Local, state, and federal partnerships we develop and maintain are vital to the success of our TMF capacity development programs and our efforts to meet the unique needs of water systems, especially small water systems serving financially disadvantaged communities. Investments in the human, institutional, and physical infrastructure are essential to protecting public health and the economy.

Throughout this period, we still had major progress in the short- and long-term support of our public water systems. This included our work to address emerging contaminants like PFAS, increased support for small water systems, implementing new programs from supported federal funding, and increased support for local jurisdictions.

We were able to completely review and re-write our capacity development strategy and build upon previous success to expand and be more explicit, not only on asset management requirements, but also expanding work to ensure systems are prepared for new challenges like the impacts of climate change. While we haven't yet had time to assess the impact of our new strategy, we are looking forward to the ongoing work moving forward.

APPENDICES

Appendix A—DWSRF Success Stories

Appendix B—EPA Suggested Report Content

Appendix C—Regional Office Success Stories

Appendix A—Drinking Water State Revolving Fund (DWSRF) Success Stories

Lewis County Water District 2

Evergreen Apartments Consolidation Project

Evergreen Apartments served two apartment buildings and five single detached dwellings within the town of Onalaska. Their well was impacted by arsenic above the maximum contaminant level (MCL) with iron and manganese above the secondary MCLs. The source had a history of coliform contamination, but the previous owners removed disinfection. Lewis County Water District 2 serves Onalaska and had planned to serve the apartment complex once the district made improvements to its own water system. In order to facilitate this connection, a new water main was installed in summer of 2022.

Lewis County Water District 2 received two grants for a total of \$465,500 since the project consolidated a troubled water system. One grant was a federal EPA Small Underserved and Disadvantaged Community grant and the other was a Washington state Drinking Water System Rehabilitation and Consolidation grant.

Public Health and Environmental Benefits

The residents of Evergreen Apartments now receive safe and reliable drinking water from Lewis County Water District 2.

Yakima County—Terrace Heights

Treener Water Company and Treener Addition Water Company Consolidation Project

Treener Water Company was a Group B water system serving four detached residences and established in 1980 while Treener Addition Water Company was a Group B water system serving nine detached residences was established in 1995. The distribution systems of both water companies had coliform issues for years.

All three wells serving the two systems were decommissioned and a 2,500-foot water main was extended to provide water from Yakima County's Terrace Heights water system in 2022. The county received two grants totaling more than \$714,300 since the project consolidated two troubled water systems. One grant was a federal EPA Small Underserved and Disadvantaged

Community grant and the other was a Washington state Drinking Water System Rehabilitation and Consolidation grant.

Public Health and Environmental Benefits

The residents of the Treneer area now receive safe and reliable drinking water from Yakima County's Terrace Heights water system.

Appendix B—EPA Suggested Report Content

1. *What is your assessment of the efficacy of your strategy?*

Our historical strategy has served our state well for many years. We highlighted many of the successes of our work in this report. We also determined that the strategy needed to be updated to address new challenges and more complex regulatory oversight. We completed an extensive review of our strategy and worked collaboratively with EPA, water utilities, the public, and our Drinking Water Advisory Group (DWAG). The finished Strategy, which we submitted to EPA last year, is in line with our vision of supporting our communities to address competing water challenges, such as climate change, water resources, aging infrastructure, and economic development. It also expresses our commitment to ensure and promote the value of safe and reliable drinking water to all people of Washington, now and for generations to come. The completed Strategy is effective in assisting our leadership team in its work to continue to develop improvements and efficiencies as we work to support water systems. We look forward to continuing to implement our Strategy and communicate our success to you and our other partners.

This report highlights many of our efforts in coordination with utilities, other state agencies, and changes through legislation of our program. Our program continues to enjoy success of our requirements for utilities to plan for their current and future capacity needs. Our greatest challenge is the continued growth/discovery of very small water systems that have limited our ability to focus on consolidation of these systems into larger utilities or management structures that have better demonstrated success in the long-term provision of water.

2. *From a statewide perspective, what progress are you making (through your strategy) in improving the technical, managerial, and financial capacity of public water systems?*

We are continuing to make progress in improving the TMF capacity of public water systems through each of our programs. One core program that is still a key success in Washington state is our planning program. The requirement for all water systems to plan is a tremendous success to help communities understand their TMF needs both now and into the future. Explicitly including asset management enables us to help utilities better understand the limitations of their infrastructure and consider costs of maintenance, repair, and replacement.

We also highlight in this report many of the key partners in supporting utility success. Partners that helped technically with our operators, managerially and financially with utilities to complete plans and understand their eligibility for various funding opportunities, and rebuild governance in failed communities.

The greatest challenge we are working to address are the lack of capacity of small systems to be able to provide oversight to an infrastructure project that meets all of the federal crosscutters as well as providing updated information on their water system plan or small water system management program to demonstrate their capacity to maintain the infrastructure and pay back a loan.

We are working on going to bid for services to provide contract management oversight, engineering/design support, and water system planning support for these utilities in 2023.

We also consider new and developing risks to utilities.

- Our new Capacity Development strategy also considers the long term impact of climate change on utilities.
- Our legislature mandated that climate resilience be a part of our water system planning process.
- We worked with the Board of Health on new regulations requiring testing for per and polyfluoroalkyl substances.
- We supported utilities with federal funding on unregulated contaminants.

3. *How do you prioritize your actions to support the communities that need the most assistance?*

We identified in this report many of the ways we work to identify water systems with infrastructure and capacity needs. We correlate compliance data to review potential violations indicating capacity issues, we review water system planning documents to understand a community's current and proposed future status, we conduct sanitary surveys with an intent of also communicating with operators and managers of water systems to ensure they understand the scope of their responsibilities.

4. *What assistance is available in your state for public water systems to develop or implement asset management plans?*

Washington State has long included asset management concepts in its water system planning process. While we redirected focus on that aspect of our planning and also boosted training opportunities both directly and through contracted services. Our recently update Capacity Development Strategy addresses four approaches to supporting utilities:

- Periodic review of larger water system or expanding water systems that must submit a water system plan for review.
- Opportunistic approach to all other Group A (federally regulated) water systems that request support or seek funding through SRF.
- Emergent impacts demonstrated by significant non-compliance and other water systems experiencing problems requiring a resolution of capacity issues.
- Universal approach that applies to all water system personnel through training on asset management topics associated with any technical service intervention.

5. *What additional efforts in your investment in capacity development have not been mentioned above, but wish to include in this report?*

We include a broad range of information and activities we undertake as state support to public water systems and communities in our report.

6. *How will you make this report available to the public?*

We value maintaining open communication with our water systems and partners about our work and products so we will share the report through our regular communication channels, including posting it on our website, announcing it in an email through our distribution list, and referring to it in articles in our periodic newsletter. We will also include information about how to access it in our presentations during public meetings and at conferences. In addition, we will share a link for the report with participants of our Drinking Water Advisory Group (DWAG), which includes partners and water systems of all sizes.

Appendix C—Regional Office Success Stories

Northwest Regional Office

2020

- COVID-19 emergency response required that approximately 30 percent of ODW staff were redirected to work with the COVID-19 Incident Management Team. DOH shifted the work world to largely home-based which required a shift from paper to electronic administrative processes. ODW prioritized work on emergency response, follow up to acute water quality concerns, project review, technical assistance. Sanitary survey field work was halted. Formal enforcement was largely deferred unless addressing a significant public health issue. The personal impacts of the pandemic affected all staff. Utilities were significantly impacted as well.

2021

- Force majeure chlorine shortages and other supply chain issues almost resulted in large-scale Boil Water Advisories.
- State Board of Health adopted State Advisory Levels SALs.

2022

- Bethel Green Acres (Pierce County) was a struggling HOA owned water system that, over years and agonizing circumstances, successfully transferred ownership to another utility with a proven record of technical, managerial, and financial capacity. The stewards of the struggling HOA ownership were awarded a DOH Drinking Water Week award.
- Holiday Hills (Pierce County) is a struggling HOA owned water system. Struggling so much that, for a while, the system was un-governable. Over the past few years, several property owners stepped up to take a turn and organize the community. With help from the Small Communities Initiative, the system is ready to approve new bylaws, collect past due revenue, and perhaps avoid default on their SRF loan.
- Lake Bay Marina (Pierce County) is an old time, privately held marina that serves water to the public. The marina is in a beautiful, yet depressed area in need of major investment. The marina/water system owner served water from a well that was highly vulnerable to contamination (biological and organic chemical risks in the sanitary control area). A changing business climate, a ready purchaser, and formal drinking water enforcement lead to a transfer of ownership to a land stewardship entity. The marina and park are now closed, but with the hope of new investment and revival in the future.
- Western State Hospital and Rainier School water systems (Pierce County) are owned by Washington State and managed by the Department of Health and Human Services. Unfortunately, DSHS has little experience in owning and operating public water systems. Both systems have vulnerable sources and suffered from decision making based on finance rather than public health. Both systems continue to struggle with capacity and are being encouraged to consolidate with adjacent, well run, water purveyors. This has been a decade long process that continues.

- McNeil Island (Pierce County) water system once served a population of about 1,000, but now serves only a facility used to house an imprisoned population. The system is owned by DSHS and operated by Corrections. This year we celebrated a transition from an outdated surface water treatment facility to a groundwater source.
- The history of some marginally capable water systems in Pierce County led the county to explore a more robust ability to provide assistance. Kapowsin has been in receivership for seven years with no real solution on the horizon apart from continued operation on a highly vulnerable source or condemnation of properties. This experience, along with the potential for other potential struggling water systems, lead Pierce County to expand their operation of wastewater utility line of business to possibly include ownership and operation of drinking water utilities. Policies and funding are still being worked out.
- Delta Water Association -15 years of seeking a solution to regional nitrate contamination in Whatcom County.

Southwest Regional Office

Water System Customer Assistance

During the Covid-19 pandemic Governor Inslee instituted a utility shut-off moratorium to prevent utilities from shutting off water service if they couldn't pay their bills. In 2021, in anticipation of lifting the moratorium, SWRO staff (Fern Shultz) worked to coordinate resources and develop guidance for water systems and customers who were facing a back-log of bills. ODW provided guidance to water systems on how to develop a [Water System Customer Assistance Programs](#). We also encouraged them to offer this help to customers and to incorporate a permanent customer assistance program for their disadvantaged customers as an ongoing service after the pandemic recovery. These efforts led to a broader question about water rate affordability, equity, and environmental justice.

Partnering with University Students to Study Water Affordability in Washington State

In 2022, SWRO staff (Fern Schultz and Cecilia Welch) led an effort to obtain better data about the impacts of affordability in Washington state. Through their coordination efforts ODW partnered with masters students at the University of Washington, Evans School of Public Policy and Governance to conduct a study to assess drinking water affordability in Washington state. With the help of ODW staff and water utilities the students developed survey that was designed to answer two questions.

- What communities in Washington state, if any, face an increased risk of drinking water unaffordability and shut-off frequencies?
- What demographic, geographic, and other factors are associated with drinking water rates and/or drinking water shut offs? (Demographics analyzed included region, service water provider, rural-urban classification, income, age, sex, and race).

To answer these questions, they designed and implemented a survey to public water systems (PWS) in Washington State, specifically asking for 2022 data that included drinking water rate structures, average customer water usage amounts, and shut-off frequencies. The data was

used to analyze whether any patterns or correlations exist between key demographic indicators and what individuals across Washington state pay. The analysis focused on four metrics to assess affordability: 1) median household income (MHI), 2) household burden at the twentieth percent of income (HB), 3) minimum wage hours, and 4) income dedicated to water services (IDWS).

A draft of the study report was presented to ODW in Spring 2023, and we are evaluating how to incorporate the data into our efforts to address environmental justice and inequity.

We Talk with Female Engineers

Cecilia Welch and Jocelyne Gray presented “Public Health Engineering” at the Society of Women Engineers’ [WE Local Seattle](#) on April 1. The focus of the presentation was engineering in public drinking water and potential career pathways. The conference included college students, working professionals, and retired engineers from around the world. There were more than 700 attendees.

[Society of Women Engineers](#) is a national professional organization supporting women in engineering and technology. Their mission is to empower women to achieve their full potential in careers as engineers and leaders, expand the image of the engineering and technology professions as a positive force in improving the quality of life, and demonstrate the value of diversity and inclusion.

Eastern Regional Office

Columbia Basin Sustainable Water Coalition

ODW staff attends bi-monthly meetings and provides technical support to the Columbia Basin Sustainable Water Coalition, a local coalition group formed in about 2021 whose vision is to protect and maintain a water supply for present and future generations of the Columbia Basin through local and regional action. For generations, much of this area’s water has come from ancient underground aquifers that are no longer being replenished. Over a hundred small drinking water purveyors lack the capacity to respond to this significant and complex problem. ODW staff attend meetings to provide information about groundwater monitoring tools, alternative water supply technologies and funding opportunities in support of regional solutions.

[With groundwater supplies in dire straits, Columbia Basin communities mobilize together to preserve their future | by Washington State Department of Commerce | Medium](#)

Partnership with EPA Compliance Advisor contractor, Eastern Research Group

ODW staff coordinated with an EPA contractor, Eastern Research Group (ERG), to assist several rural communities in eastern Washington, including Curlew Water and Sewer District and Hunter’s Water District. In consultation with ODW, ERG evaluated the water system status, made recommendations for steps to return to compliance, and developed hands-on materials such as operational standard operating procedures, sampling plans, and public outreach materials. The work concluded for Curlew WSD in 2023 with a final report than included a

summary of completed improvements and outstanding areas of concern. ERG continues to assist Hunters WD.

Spokane Aquifer Joint Board

The Spokane Aquifer Joint Board (SAJB) successfully applied for a DOH Source Water Protection Grant and completed an aggregate quarries risk analysis. There are over one hundred quarries in the region. One of the recommendations was for the SAJB to track the renewal cycle and provide comments to Ecology regarding the potential impact of gravel mines that are permitted to depths below the groundwater levels.

Partnering with local leaders

Small, non-profit associations lack resources to address failing infrastructure. ODW staff provided technical assistance to communities in northeast rural Washington during this period including Trails West Subdivision (Stevens County) and Fourth of July Creek Estates (Ferry County). When efforts fail to bring about compliance, receivership is considered, and the county is the receiver of last resort. ODW partnered with local health and county leaders to continue to work with the communities to avoid receivership, if possible. ODW facilitated a successful WIIN grant award to Ferry County to help them build capacity to own and manage failing or struggling water systems. Ferry County is currently assisting via interlocal agreements two communities, the Town of Orient and the Curlew Water and Sewer district.