H_2Ops

Washington's newsletter for waterworks operators.

A cut above

Washington's Treatment Optimization Program

When Ethan Moseng and Stephen Baker began exploring ways to reduce turbidity in drinking water, they didn't know they were on the cutting edge; but they were. The Surface Water Rule the Department of Health Office of Drinking Water adopted in 1989 was more stringent than the federal rule, and laid the foundation for our Treatment Optimization Program (TOP). **See TOP Performers on Page 5.**

A few years later, following a disastrous *Cryptosporidium* outbreak in Milwaukee, Wisconsin, there was a national movement to reduce turbidity. Environmental Protection Agency (EPA) invited Washington to participate in a regional optimization group. "It was a hard sell for us," said Baker, water treatment adviser. "We were already doing well and, after we saw the proposed turbidity levels, we looked at each other and said, 'We can do better than that!'"

In 1999, Moseng, surface water program manager, and Baker started using newly available software to study turbidity levels. Since 2001, they have recorded and analyzed turbidity data from all of the surface water systems using conventional or direct filtration. At the end of each year, they pour over huge spreadsheets, comparing and verifying data, trying to tease out systems that aren't performing up to capacity. When they find one, they schedule a comprehensive evaluation to outline what needs to happen to overcome limitations.

In most cases, operators can bring their treatment plants up to capacity without spending a lot of money. We encourage them to pursue optimized performance and improved water quality while using existing facilities.

TOP is so successful that we are trying to adapt many of the program's tools and techniques to the challenge of removing arsenic from groundwater. **See page 2.**

Stephen Baker (L), water treatment adviser, discusses water quality monitoring and reporting issues with Chris McMeen, City of Tacoma water quality manager. Tacoma's brand new water treatment plant will be the largest filtration facility in the Pacific Northwest.

Introducing H_2Ops

By Chris McCord, Operator Certification and Training Section Manager

I hope you enjoy the first issue of H_2Ops, a newsletter designed for waterworks operators. The Department of Health will mail H_2Ops to operators and water systems four times a year. We decided to print H_2Ops because many of you told us that you prefer the hard copy. In January, we will also start printing Water Tap in an abbreviated format that we will publish twice a year.

Each issue of H_2Ops will feature:
A topic relevant to water system operations. We selected treatment optimization for this first issue because it is always a popular topic at workshops, and many operators who participate in optimization exercises ask for more information. The articles cover challenges and tools you can use to solve problems and improve plant performance.

The High 5 Award to recognize an outstanding individual or organization. In this edition, we recognize water systems that maintained our treatment optimization goals for more than 10 years. See page 5.

The Bulletin Board with training, events, reminders, monitoring deadlines, and other announcements. See page 6.

The next issue will focus on succession planning. If there are topics you would like us to cover, please email H2Ops@doh.wa.gov

The newsletter will always be available on our website at http://www.doh.wa.gov/H2Ops

Hilltop Water Owners Association
The little system that could

ARSENIC TREATMENT CHALLENGE

When EPA finalized the Arsenic Rule in 2001, the maximum contaminant level (MCL) for arsenic went from 50 parts per billion (ppb) down to 10 ppb. The revised MCL went into effect for existing systems in 2006.

In our state, most water systems that had to install treatment to remove arsenic did so successfully. However, some systems that installed treatment had to work harder to achieve compliance. One was the Hilltop Water Owners Association (WOA) in Whatcom County.

Hilltop WOA is similar to many water systems that have to contend with arsenic in groundwater: It's small. It serves about 48 residential connections and a peak population of 137 people. It had challenges making its treatment work well. It is frustrating for everyone when a system spends thousands of dollars on a treatment system that doesn't work well, or at all.

Hilltop WOA tried several treatment approaches. They started with an adsorbent, which proved uneconomical because arsenic breakthrough occurred quickly. Next, they installed a coagulation-filtration treatment system, which was only partially effective. They also evaluated novel approaches, such as in situ arsenic stabilization.

After a sanitary survey in 2011, Hilltop WOA Board President Richard Frye pursued an offer for technical assistance from the Office of Drinking Water. This led to an in-depth analysis of many possible treatment issues, including the pre-oxidant (chlorine) dose, coagulant (iron) dose, filter-loading rate, filter design, filter run-length, and backwash process.

After much discussion, Jeremy Robinson, Hilltop WOA operator, and our staff conducted a detailed analysis of a single treatment run. The water quality data revealed that the iron dose was too low for adequate arsenic removal. Robinson increased the iron dose from 1.5 parts per million (ppm) to 2.5 ppm, and the filtered-water arsenic concentration dropped below the MCL.

"Your assistance provided an essential 'missing piece' for us that we might never have sorted out on our own," said Frye.

Questions? Contact Sam Perry at sam.perry@doh.wa.gov or 253-395-6755.

Jeremy Robinson continues to monitor and improve his treatment facility. The filtered water arsenic level remains low, and Hilltop has met the MCL since he adjusted the process in 2012.

Our 1st Disinfection Data Integrity Workshop

By Janet Cherry and Stephen Baker, Office of Drinking Water

In February 2014, Office of Drinking Water staff and the Region 10 Area Wide Optimization Group conducted a Disinfection Data Integrity Workshop at Hoquiam. It was the first workshop in the state designed to assess the accuracy and consistency of disinfection data monitoring for CT compliance (see sidebar).

The workshop focused on:

- On-line and laboratory instrument verification.
- Disinfection segment verification.
- Disinfection data handling and reporting.

The assessment found that Hoquiam is doing a great job monitoring, applying, and reporting data for CT compliance.

It also identified a few areas for improvement, such as relocating the online pH monitoring location.

Thank you John Olson (L) and Shane Peterson, Hoquiam Water Treatment Plant operators, for hosting this event.

We intend to develop a standardized procedure for evaluating disinfection data integrity that applies to all surface water plants in the state. Look for more information in future issues of H_2Ops.

CT measures the effectiveness of a disinfection process.

CT = the strength of the disinfectant X the contact time between the disinfectant and the water.

Reminder: Verify on-line chlorine residual analyzers

If you use an on-line instrument to measure chlorine residual for compliance with the federal Surface Water Treatment Rule or the Groundwater Rule, here are some things to keep in mind.

Both rules require you to verify the performance of your on-line instruments with a grab-sample measurement at least once every five days. Many utilities choose to do this more frequently—daily or even once per shift.

If the routine verification checks and the grab sample reading do not agree to within about 15 percent or +/- 0.1 ppm, investigate further.

Here are some more tips:

- The laboratory or portable instrument used to analyze the grab sample must use an EPA-approved method. Follow the manufacturer's instruction for instrument calibration.
- In addition to the routine verification checks, complete grab-sample verification after changing reagents or doing any other maintenance on the instrument.
- Remember to record the verification checks in your instrument logbook.
- Incorporate all manufacturer-recommended instrument maintenance into your routine maintenance program.
- If you have remote monitoring sites, consider a portable kit like the one the Kent Water Department uses to verify performance of on-line instruments.

A portable kit for testing on-line monitoring equipment.

Partnership for Safe Water® recognizes Bellingham's optimization efforts

By Barb Martin, CWP – AWWA Partnership for Safe Water and Bob Bandarra – City of Bellingham

The City of Bellingham's Whatcom Falls Water Treatment Plant received the Partnership for Safe Water's 15-Year Directors Award at the 2014 AWWA Annual Conference this June. The award recognizes utilities that earn a Directors Award by completing a self-assessment of treatment plant or distribution system performance and then maintaining Directors Award performance for 15 years.

The Whatcom Falls Water Treatment Plant joins a group of only 30 water treatment facilities to achieve this level of performance. The City of Bellingham has participated in the Partnership for Safe Water since 1996, and originally received the Directors Award in 1998. The self-assessment helps utilities identify factors limiting optimized performance so they can develop an action plan for improvement.

"Our utility had no formalized mechanism to communicate our prioritization for water quality improvement until we began participation in the Partnership," says Bob Bandarra, operations superintendent for the City of Bellingham. "The input from the Partnership gave us invaluable second-party insight toward improved operations."

Founded in 1995, the Partnership for Safe Water established its treatment plant and distribution system optimization programs to encourage water utilities to voluntarily improve water quality and enhance public health protection by optimizing operational practices.

Benefits for the City of Bellingham

Meeting annual Partnership goals helps prioritize staff's workload and resources toward endeavors that make water safer for the citizens of Bellingham. Being a member of the Partnership adds a layer of accountability that helps the utility continue to strive to meet the stated operational targets. When a plan of action for improving water quality is clearly stated, staff are more committed to getting the desired outcome.

Read about the Partnership for Safe Water at www.awwa.org/partnership

Bob Bandarra, operations superintendent for the City of Bellingham, receives the 15-Year Directors Award from John Donahue (L), AWWA president, and Peter Grevatt (R), director of EPA's Office of Ground Water and Drinking Water.

High 5 Award winners

High Five! In August, Director Clark Halvorson gave a High Five Award to four water systems that have maintained TOP turbidity goals for 13 years. From left are Reuel Klempel, City of Pasco; Kevin Cook, Lake Whatcom Water and Sewer District–South Shore Water System; Don Smith and Mike Wolanek, Arlington Water Department; Halvorson, and Skagit County PUD #1–Judy Reservoir System (not present).

2014 TOP PERFORMERS

In Washington, surface water systems using conventional or direct filtration consistently perform above regulatory standards and provide better public health protection.

We award bronze, silver, and gold certificates to systems that meet or exceed our treatment optimization (TOP) goals for 3 years, 5 years, and 10 years, respectively.

"These operators aren't interested in just getting the job done," says Stephen Baker, water treatment adviser. "They have an inner fire that makes them want to exceed top performance. They are passionate, engaged, and focused. They understand the value of excellence."

Gold Award winners (above) received the High 5 Award. The Silver and Bronze Award winners are below left.

Silver Award 5 to 9 years of continuously optimized performance	*Bronze Award* 3 to 4 years of continuously optimized performance
• City of Everett Department of Public Works (2009-2013)* • City of Leavenworth (2009-2013)* • City of Woodland (2009-2013)* • Stevens Pass Water System (2005-2013) • City of Kelso (2006-2013) • Department of Energy 200W (2007-2013) • Blakely Island Maintenance Commission (2008-2013) • Lummi Island Scenic Estates Commission (2008-2013) • Ryderwood Improvement & Service Association (2008-2013)	• City of Bellingham Water Division (2011-2013)* • City of Chelan Water Department (2011-2013)* • Eastsound Water Users Association (2011-2013) • Lynden Water Department (2011-2013)* • Island View LUD 9 (2010-2013) • City of Yakima Water Division (2010-2013) * First-time award recipient

TOP GOALS

Set above regulatory standards, encourage water systems to:

Meet 0.10 nephelometric turbidity units (NTU) or less in 95 percent of the maximum daily combined filter effluent (CFE) measurements taken during the year.

Never exceed 0.30 NTU in any CFE measurement.

By contrast, the standard requires 95 percent of samples in a month to be 0.3 or less NTU and never above 1 NTU.

Washington State Department of Health
Environmental Public Health
Office of Drinking Water

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Reminder:

Basic Treatment Operators who don't have a Water Treatment Plant Operator 1 (WTPO1) or a WTPO-in-training certification, may be qualified to upgrade without an exam. For qualifications and application information, visit http://www.doh.wa.gov/BTOupgrade.aspx

DOH 331-500

For people with disabilities, this document is available on request in other formats. To submit a request, please call 1-800-525-0127 (TDD/TTY call 711).

Operators, watch for renewals in mid-November

We will mail 2015 renewals to waterworks operators the second week of November. If you moved, or will be moving in the near future, we need your new mailing address. The Post Office *will not* forward them.

Report your new address: It's the law

Every year, operators miss the renewal deadline because they move, but don't report their new address. You can report changes by email at dwopcert@doh.wa.gov or online at www.doh.wa.gov/opcert

Upcoming Deadlines:

- SEPTEMBER 30 - Annual and 3-year Lead and Copper Rule samples must be complete
- OCTOBER 1 - *Consumer Confidence Report Certification Form* due
- JANUARY 31 - *Epichlorohydrin and Acrylamide Certification Form* due

View your system's water monitoring requirements in your *Water Quality Monitoring Schedule* online at https://fortress.wa.gov/doh/eh/portal/odw/si/Intro.aspx Follow the prompts to the "Find Water System" page, then enter only the first 5 digits of your water system ID.

Save the Date:

Fall 2014 Small Water Systems Workshops

- OCTOBER 22 - Tri-Cities
- NOVEMBER 5 - Tacoma
- NOVEMBER 18 - Kelso/Longview

Register at: http://www.erwow.org/