



the Pipeline

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Oregon Drinking Water News

On April 1, 2016, the EPA Revised Total Coliform Rule will change how owners and operators of public water systems must monitor for coliform bacteria and respond to detections. States are required to adopt and implement rules no less stringent than these EPA requirements in order to retain Primacy. In Oregon, adoption of these EPA requirements is underway. Since every public water system must monitor for coliforms, and the absence of these bacteria is essential to assuring drinking water safety, this edition of the Pipeline newsletter is dedicated to helping readers understand these new requirements. *—Dave Leland, Manager, Drinking Water Services*

Coliform monitoring changes

by Brad Daniels

Unless your water system serves more than 4,100 people, there will be a change in the frequency of monitoring or number of samples required. This article summarizes the forthcoming changes so you can be prepared when the new rules take effect.

Routine monitoring

This is the regular monitoring that takes place either every month or every calendar quarter. There is only one change to these monitoring requirements:

- At non-community water systems operated seasonally, monthly monitoring will be required.

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Is your water system's coliform sampling plan up-to-date?

by Michelle Byrd

The monitoring described in the previous article must be conducted according to a written plan. With Oregon's coliform rule changes a few months away, now is a good time to review your water system's coliform sampling plan to make sure it meets the requirements.

The plan must identify routine and repeat sampling sites in the distribution system and define a regular collection schedule. A well thought-out plan ensures coliform sampling represents water being served through all of

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Visit Oregon Drinking Water Services at <http://healthoregon.org/dwp>

All other routine monitoring frequencies remain the same. As a reminder, these frequencies are:

- At community water systems and water systems using surface water sources, monthly monitoring is required;
- At water systems serving more than 1,000 people, monthly monitoring is required with the number of required samples based upon population; and
- At non-community water systems using only groundwater sources and serving 1,000 people or less, quarterly monitoring is required.

Repeat monitoring

This is the monitoring required immediately after bacteria are found in a routine sample.

- The number of samples is reduced to three at all water systems. Previously, four samples were required at many water systems.

Additional routine monitoring

These are the extra samples required the month after coliform bacteria is found in a routine sample.

- The number of samples is reduced to three samples at non-community water systems using only groundwater sources and serving 1,000 people or less. Previously, five samples were required at all water systems where less than five routine samples collected every month.
- No additional samples are required at water systems where at least one routine sample is required every month.

Increased monitoring

This refers to more frequent routine monitoring at non-community water systems using only groundwater sources and serving 1,000 people or less. Monitoring will be increased to one sample every month if any of the following situations occur:

- The MCL for *E. coli* is exceeded;
- One level 2 coliform investigation or two level 1 coliform investigations are required

within a rolling 12 month period;

- A level 1 or level 2 coliform investigation is not completed as required or corrective action is not completed as appropriate after an investigation is completed; or
- Monitoring or sample analysis isn't conducted as required twice during a 12-month period or monitoring isn't conducted once and a coliform investigation is triggered once during the 12-month period.

Monitoring will be increased for at least 12 months until all of the following conditions are met:

- A sanitary survey, level 2 coliform investigation or equivalent site visit is completed and the water system is found to be free of sanitary defects and has a protected water source;
- All required coliform samples were collected and reported during the previous 12 consecutive months; and
- The MCL for *E. coli* was not exceeded and no coliform investigations were required during the previous 12 consecutive months.

Monitoring at groundwater sources

There are no changes to the source water monitoring requirements for water systems with groundwater sources. As a reminder, these requirements apply to water systems where 4-log treatment for viruses is not used, and take two forms:

- A triggered sample must be collected from every groundwater source in use at the time a routine sample is coliform-positive; and
- An assessment sample must be collected every year at groundwater sources where treatment is used but doesn't achieve 4-log inactivation of viruses. Assessment monitoring may be increased to every month due to a source's susceptibility to contamination.

Brad Daniels is the rules and enforcement coordinator for Drinking Water Services / 971-673-0407 or bradley.k.daniels@state.or.us

the distribution system. It can be useful for new operators and sample collectors and to help evaluate problems when a coliform-positive result occurs.

Choosing sample sites

Locations to consider when selecting routine and repeat sampling sites are customers' premises, dedicated sampling stations or other selected locations where you have access when needed. Be sure to identify all distribution system and source water sites in your sampling plan.

Collecting repeat samples

If any routine samples are coliform positive, water suppliers will need to collect three repeat samples for each coliform-positive sample. Be sure to collect at least one repeat sample from:

- The tap where the original sample was coliform positive;
- A tap within five service connections upstream of the original sampling site; and
- A tap within five service connections downstream of the original sampling site.

Water systems with groundwater sources

Coliform sampling plans must also identify locations for triggered source water monitoring if water from the well or spring in question does not receive 4-log treatment for viruses.

Alternative repeat sampling options

Water suppliers can propose an alternative sampling location in place of a repeat upstream or downstream sample, or suggest repeat sampling locations that represent a pathway for contamination in the distribution system. Suppliers can identify criteria for selecting repeat sampling sites on a situational basis and develop a standard operating



Revised COLIFORM SAMPLING PLAN
For public water systems serving up to 1,000 persons

1. **System Name:** _____ **PWS ID #:** 41
Contact Person: _____ **Phone #:** () - -
Date: / /

2. **Distribution System Sampling:** Collect _____ routine sample(s) every Month / Quarter.
(Add Number) (Circle One)
Source Water Assessment Sampling Required? Yes / No every Month / Year.
(Circle One) (Circle One)

3. **Sampling Sites and Collection Rotation Schedule** (Include additional sites if necessary):

Distribution Routine Sites (Address/Locations)	Distribution Repeat & Source Sampling	Distribution Repeat & Source Sites (Address/Locations)
Routine Site 1	Repeat Site 1A	Same as Routine Site 1
	Repeat Site 1B	
	Repeat Site 1C	
	Triggered Source*	
Routine Site 2	Repeat Site 2A	Same as Routine Site 2
	Repeat Site 2B	
	Repeat Site 2C	

procedure (SOP) as part of their coliform sampling plan. The SOP can then be used to evaluate the extent of possible contamination in the distribution system for specific situations. It is a good idea to discuss any alternative sampling locations with your regulator.

Keep in mind, even if the maximum contaminant level for *E. coli* is exceeded or a coliform investigation is required, water suppliers must still collect the minimum number of samples required during the monitoring period. If more than the minimum number of samples are collected, all of the results will be used to determine whether a coliform investigation is needed.

Coliform sampling plans are essential to evaluate water quality in the distribution system. Remember to update your sampling plan by April 1, 2016 when the rule change takes effect. If you need help creating a coliform sampling plan or updating an existing plan, please contact your water system's regulator.

Michelle Byrd is a Field Sanitarian in the Technical Services Unit for Drinking Water Services / 971-673-0425 or michelle.p.byrd@state.or.us

When all of the routine and repeat monitoring required in a calendar month is completed, each water supplier will determine if an investigation, as described in this article, is required.

Level 1 and level 2 coliform investigations

by Gregg Baird

One of the big changes taking effect on April 1, 2016, is the elimination of the requirement to provide public notice based solely on the presence of total coliforms in the distribution system. Under the new rules, the same conditions that previously triggered a violation and public notice (the presence of total coliforms) will instead trigger a coliform investigation. The purpose of performing either a level 1 or level 2 coliform investigation is to enhance public health protection by identifying sanitary defects that may have allowed contaminants to enter the system and correct the identified problems. Performing level 1 or level 2 coliform investigations will also help identify problems with sampling practices.

Level 1 coliform investigations are triggered by the following:

1. Two or more total coliform-positive samples from the distribution system in the same month at water systems that collect fewer than 40 samples per month;
2. Exceeding 5.0% total coliform-positive samples from the distribution system for the month at water systems that collect 40 or more samples per month; or
3. Failure to collect every required repeat sample after any single routine total coliform-positive sample.

A level 1 coliform investigation is a basic examination of the source water, treatment, distribution system and relevant operational practices. It is a self-assessment performed by a responsible party of the water system using a form provided by the regulatory agency. The water system operator will look for conditions that may have caused the total coliform-positive results such as recent

treatment process interruptions, pressure loss events, maintenance activities and operational changes. In addition, the operator will check the condition of sample sites, source water, storage tanks and the distribution system.

Level 2 coliform investigations are triggered by the following:

1. An *E. coli* MCL violation; or
2. A second level 1 coliform investigation trigger within a rolling 12-month period. This may be waived if the regulatory agency has determined a likely cause for the total coliform-positive results that triggered the first level 1 coliform investigation and has verified the water supplier corrected the problem(s).

A level 2 coliform investigation must be conducted by the regulating agency (state, county or Department of Agriculture). It is a more detailed examination of the water system, operational practices, and monitoring program and results. The elements of a level 2 coliform investigation are the same as those of a level 1, but investigated in greater detail. The incidents that trigger a level 2 coliform investigation are more critical and may directly affect public health.

Timeline for completing a level 1 or level 2 coliform investigation

Your regulating agency (state, county or Department of Agriculture) will contact you if an investigation is required. An operator must complete a level 1 or make themselves available for the regulatory agency to conduct a level 2 coliform investigation as soon as practical, correct any sanitary defects found, and submit the form to the OHA-DWS **within 30 days** after learning it has triggered the coliform investigation. For corrective actions not completed when the form is submitted, the operator must include a timetable for completing the remainder and report to

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When water systems are depressurized or drained of water, it increases the opportunity for contamination to be introduced into or spread through the system. The rules taking effect on April 1, 2016, include new requirements for water systems that aren't operated continuously.

New requirements for seasonal water systems

by Betsy Parry

Oregon's revised rules will define seasonal water systems as non-community systems not operated as a public water system on a year-round basis and that start up and shut down at the beginning and end of an operating season. Examples include recreational sites, campgrounds, ski resorts, summer camps, some schools, some restaurants, and some inns or motels. If unsure whether your system is currently defined as seasonal, check the "Operating Period" listed for your water system's page in our Data Online website, <https://yourwater.oregon.gov>. Year-round systems will list an operating period of Jan. 1–Dec. 31. If the website lists only certain months for your water system, it is considered a seasonal system.

The following changes will apply specifically to seasonal systems:

1. The frequency for routine monitoring will be monthly while the water system is in operation (a change from the previous requirement at water systems using only groundwater sources where monitoring was quarterly).
2. At the beginning of each operating period, before serving water to the public, operators at seasonal water systems must:
 - Complete a state-approved start-up procedure; and
 - Certify completion of the procedure by filling out a state-issued checklist form, signing and returning it to Drinking Water Services (DWS) before opening day.

Failure to meet these requirements before opening will result in a violation and require public notice be posted at the water system.

In Oregon, the following seasonal systems will be exempt from the start-up procedure requirement:

- Those that maintain pressure throughout the distribution system during non-operating periods; and
- Those consisting solely of a hand pump.

Operators at these water systems should check the reason for an exemption at the top of the start-up checklist, then sign and return it to DWS either by mail, fax or email.

For the majority of seasonal systems (those not exempt above), the start-up procedure will include, at a minimum:

1. Inspecting system components for damage during the off season;
2. Flushing water through the system;
3. Disinfecting system components; and
4. Sampling for coliform before opening.

Water suppliers should plan ahead in case more time will be required to complete these steps in 2016 than in previous practice. Allow sufficient time (two to four weeks) to inspect and perform any needed maintenance, flush the system, shock chlorinate the system, collect and receive the pre-season coliform test results, and return the completed checklist before opening to the public. Start-up and shut-down procedures already recommended at the DWS website should provide a good idea of the general steps involved. (See <https://public.health.oregon.gov/HealthyEnvironments/DrinkingWater/Operations/Pages/management.aspx>)

Seasonal water contacts will receive a letter and checklist form by mail in early spring of 2016. This form and additional information will also be available online at that time.

Betsy Parry is a Field Sanitarian in the Technical Services Unit for Drinking Water Services / 541-726-2587 ext. 30 or betsy.l.parry@state.or.us

their regulatory agency when each outstanding corrective action has been completed.

Eliminating pathways to contamination

It is possible that, even after conducting a coliform investigation, the cause of the positive samples cannot be conclusively linked to a sanitary defect. In this case, operators must document this conclusion in their coliform investigation form. Even though the investigator might not identify a sanitary defect, the operator should consider performing actions such as flushing, increasing disinfectant residual, collecting additional investigative samples, examining whether samples were collected from appropriate sample sites and retraining staff on proper sampling procedures. The rule revisions also list “best available technologies” or BATs to help operators comply with the rule. Water systems operators may choose to take advantage of these BATs (e.g., installing chlorination to provide residual maintenance) to avoid future triggers and/or violations, even if they are unable to find a likely cause or sanitary defect.

Triggering a coliform investigation is not a violation in itself but failure to conduct a coliform investigation, submit the form or complete the corrective action(s) within the required time is a violation. You must notify your users of the violation. Operators should also be aware the regulatory agency may require water suppliers to add treatment for disinfectant residual maintenance if three or more coliform investigations are triggered within a rolling 12-month period, or if four or more coliform investigations are triggered within a rolling two-year period.

Through coliform investigations, we hope operators become more knowledgeable about identifying and eliminating potential pathways to contamination in their systems and thereby increase public health protection.

Gregg Baird is a Field Sanitarian in the Technical Services Unit for Drinking Water Services / 971-673-0410 or gregg.c.baird@state.or.us

Staff updates

Laura Burns retired from Drinking Water Services in September 2015. Laura began working for DWS as a natural resource specialist in December 2013. Laura has been a valued member of technical services unit where she was responsible for regulatory oversight of Public Water Systems in Lincoln, Benton and Linn counties. Laura has made many contributions to our program and will be missed!

Fred Kalish, a regional engineer in the Portland office, left state service in July 2015. He started at Drinking Water Services in our Springfield office in 2008, working in Lincoln County. In 2010 he moved up to Portland, covering Tillamook and Yamhill counties. He conducted water system surveys, reviewed plans and was a core member of the Surface Water Treatment Optimization team. Fred’s attention to detail, willingness to help and calm demeanor are missed but we wish him well in his future endeavors! Gregg Baird is temporarily assigned oversight of Tillamook County water systems, and Evan Hofeld is overseeing Yamhill County systems.

Kelly Marlin retired January, 2015. She had a long career with Department of Human Services in fiscal services before coming to the Data Management, Compliance and Enforcement Unit (DMCE) and working as a data entry specialist. Kelly and her peers helped create a staff-driven data management team focused on customer service and data quality. She is enjoying retirement.

Alphonso Powell worked for DMCE for one year as a data analyst specialist. He created a number of internal tools for staff such as a data backlog tracking report. He was the project coordinator for DWS’s migration to Windows 7. He completed his MBA while in DMCE. He had a career opportunity to move into project management. He accepted a position with Multnomah County. He is missed but we are all excited for his new career opportunity.

Congratulations to our “Outstanding Performers”!

Jobs well done by the operators of these systems:

WATER SYSTEM NAME	COUNTY SERVED
Alsea County Service District	Benton
Anglers Cove/SCHWC	Jackson
Arrowhead Mobile Home Park	Marion
Banks Water Department	Washington
Bay Hills Water Association	Lincoln
Bear Creek Mobile Home Park	Jackson
Beaverton, City of	Washington
Bley-Was Heights Wtr System	Klamath
Bly Water District	Klamath
Camelot Mobile Home Park	Linn
Clayton Creek MH Estates	Jackson
Corvallis, City of	Benton
Cove, City of	Union
Dexter Oaks Mobile Home Park	Lane
Dufur, City of	Wasco
Elkton, City of	Douglas
Fern Ridge Shores	Lane
Grass Valley Water System	Sherman
Hiland WC - Riverbend Park Water System	Lincoln
Ice Fountain Water District	Hood River
Junction City Water Utilities	Lane
Junipine Acres	Deschutes
Knoll Terrace Park	Benton
Kozy Acres Water System	Lincoln
Lakeshore Water District	Lane
Lakewood Utilities	Marion
Long Butte Water System Inc	Deschutes
Lowell, City of	Lane
Luckiamute Domestic Water CoOp	Polk
Mckenzie Palisades Water Brd	Lane
Mobilife Water Company Inc	Lane
Myrtle Creek, City of	Douglas
Nesika Beach-Ophir WD	Curry

Newport, City of	Lincoln
Phoenix, City of	Jackson
Ponderosa Pines Water Co	Deschutes
Prairie Winds of Junction City	Lane
Rainbow Ends Water System	Washington
Rainbow Rock Village MHP	Curry
Rieth Water District	Umatilla
Riverwood MHP Lane Co	Lane
Roberts Creek Water District	Douglas
Rogue River, City of	Jackson
Shorewood Estates	Linn
Silverton Mobile Estates	Marion
Sodaville, City of	Linn
Southwood Park Water District	Clackamas
Staffordshire Water System	Lane
Sutherlin, City of	Douglas
Sweet Home, City of	Linn
Tone Water District	Tillamook
Tri-City JW&SA	Douglas
Troutdale, City of	Multnomah
Vida-Lea Community Cooperative	Lane
Weslinn Water Company	Linn
Willamettans, The	Lane
Willamette Water Co - Goshen	Lane
Wood Village, City of	Multnomah
Yamhill, City of	Yamhill

These public water systems have most recently met the established criteria for outstanding performance (9/26/2014–9/23/2015). Outstanding performers are systems with no significant deficiencies identified, as well as no unresolved violations. All systems are evaluated during their routine Water System Survey, and those that meet the outstanding performer criteria have their survey frequency (and fee) reduced from every three years to every five years. To find out how to qualify, visit <http://public.health.oregon.gov/HealthyEnvironments/DrinkingWater/Partners/Pages/osp.aspx>.



PUBLIC HEALTH DIVISION

Drinking Water Services
P.O. Box 14450
Portland, OR 97293-0450

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The following websites provide links to upcoming meetings and trainings related to drinking water.

Meeting Calendar

Drinking Water Advisory Committee

▶ <http://public.health.oregon.gov/HealthyEnvironments/DrinkingWater/Pages/members.aspx>

Cross Connection Advisory Board

▶ <http://public.health.oregon.gov/HealthyEnvironments/DrinkingWater/CrossConnection/Pages/advisoryboard.aspx>

Training Calendar

▶ <http://public.health.oregon.gov/HealthyEnvironments/DrinkingWater/OperatorCertification/Pages/training.aspx>