Preparing a Coliform Monitoring Plan

April 2016

Includes guidance on Triggered Source Monitoring

DOH 331-036 (revised)

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).

This and other publications are online at https://fortress.wa.gov/doh/eh/dw/publications/publications.cfm

TABLE OF CONTENTS

Introduction

All Group A public water systems must collect samples for coliform bacteria analysis (*chapter 246-290 WAC*). This rule requires you to collect coliform samples from the distribution system and the source(s) of supply. The specific basis for this monitoring is:

- Distribution system monitoring requirements: The Revised Total Coliform Rule.
- Groundwater source monitoring requirements: The Groundwater Rule.
- Surface water source monitoring requirements: The Surface Water Treatment Rule.

Use this manual to develop your coliform monitoring plan. Keep the plan on file at your system and make it available to us upon request. Revise or expand the plan when it no longer ensures the samples you take represent your system's water quality. Submit the plan to us for review and approval when requested and as part of your Water System Plan.

This manual provides guidance for your distribution system monitoring (based on the Revised Total Coliform Rule). It contains:

- Guidance for your triggered source monitoring (based on the Groundwater Rule).
- Guidance for planning your response to the presence of *E. coli* in either your source water or your distribution system.

This manual does not cover:

- Coliform monitoring at the source or the entry point to the distribution system, which is required for systems that have only a surface water source(s).
- Information for wholesale groundwater systems that may want to avoid collecting triggered source samples when a consecutive system has a total coliform-present distribution sample (WAC 246-290-320(2)(g)(vi)(A). If you are such a system, please refer to *Exceptions to Triggered Source Monitoring for Wholesale or Consecutive Systems* (DOH pub 331-475).

Your Coliform Monitoring Plan (CMP)

You must base your coliform bacteria sample collection on a written monitoring plan that identifies sampling sites throughout the distribution system. Systems served by multiple groundwater sources should also include information on triggered source sampling in their plan.

This manual explains how to develop a written plan that can include both distribution system sampling and triggered source sampling. We will refer to this plan as the CMP throughout the manual.

The primary purpose of a CMP is to help you comply with the regulations. Other benefits from a CMP include:

- Ensuring representative routine distribution sampling.
- Identifying repeat and triggered sample sites in case routine samples indicate a possible water quality problem.
- Providing a written guide so that more than one person associated with a water system—or a temporary or new operator—knows where and how to collect coliform samples.
- Enhancing water quality surveillance.

The "Plan Outline" section of this manual presents the specific elements of a successful CMP. Examples of CMPs are at http://www.doh.wa.gov/CommunityandEnvironment/DrinkingWater/Contaminants/Coliform/PreparingaColiformMonitoringPlan/LargeorMultipleSource.

A person with knowledge of the system's distribution facilities and the way the system operates should prepare and maintain the CMP. That person will also need a fundamental knowledge of coliform bacterial monitoring. When the CMP is complete, it must be kept in the water system's files and be available to all system personnel involved with coliform monitoring. You must update your CMP to reflect system or monitoring changes.

Each water system's CMP is subject to review by the Department of Health (DOH). You must make it available to us:

- During a sanitary survey.
- During a special site visit.
- As part of a Water System Plan.
- As part of a Small Water System Management Plan.
- Upon request.

You may find the following publications and references helpful while developing your CMP online at http://www.doh.wa.gov/CommunityandEnvironment/DrinkingWater/Contaminants/Coliform.aspx

Group A Public Water Supplies: Chapter 246-290 WAC

Publications

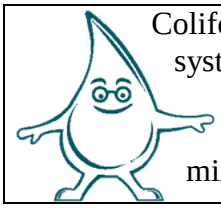
Treatment technique triggers, violations and public notification requirements (331-206)
Coliform Distribution System Sampling Procedure (331-225)
Coliform Bacteria and Drinking Water (331-181)
Follow-up to an Unsatisfactory Coliform Sample (331-187)
Groundwater Rule (331-447)
Groundwater Rule: Source Water Sample Taps (331-436)
Preparing a Coliform Monitoring Plan: Exceptions to triggered source monitoring for wholesale or consecutive systems (331-475)

Coliform Monitoring Program

Your coliform monitoring program should enable the operator to use economical tests to evaluate the microbial water quality of your water system. These tests help to ensure the water you provide to consumers is free of disease-causing organisms.

Routine Coliform Samples

The Revised Total Coliform Rule requires routine coliform samples be collected from representative points in the distribution system at regular time intervals. Routine coliform samples must never be collected from a source. A properly developed and implemented coliform monitoring program will ensure that you monitor each area of the distribution system adequately on a regular basis.



Coliform bacteria tend to cluster and do not evenly disperse within a distribution system. It is possible for two samples taken a few minutes apart from the same tap to have different results, one indicating the presence and the other indicating the absence of coliform. This happens because a cluster of bacteria can break up, mix up, and move to other parts of the distribution system.

The minimum number of required routine samples depends on the population the water system serves each month. The population for each month comes from the population you report on your *Water Facilities Inventory* form. The general coliform monitoring requirements are in Table 1 of WAC 246-290-300.

The minimum number of samples the rules require will likely ensure sufficient water quality monitoring throughout the distribution system of a “simple” water system. A “simple” system usually has one or two sources and a single pressure zone.

For complex systems, the number of samples the rules require may not be sufficient to ensure representative sampling of the entire distribution system. A “complex” system usually has multiple sources or multiple pressure zones, long transmission runs, or extensive distribution piping. We encourage complex water systems to take more than the minimal number of samples required each month, if the minimum number doesn’t cover all areas of the distribution system.

It is best to collect your routine sample at the beginning of the week. Many labs do not accept samples at the end of the week or on weekends. Even if your lab does accept samples, it is often hard for a water system to respond properly to sample results on a Friday afternoon or weekend.

When taking multiple samples in a month, a system should sample at regular daily, weekly, or biweekly intervals throughout the month instead of collecting all the samples on the same day.

Avoid collecting routine coliform samples during weeks that contain major holidays and vacations unless you know trained staff and lab capacity are available to respond to unsatisfactory sample results.

Repeat Coliform Samples and Triggered Source Samples

The Revised Total Coliform Rule requires the collection of **repeat samples** within 24 hours when a routine distribution system sample is unsatisfactory.

The Groundwater Rule requires the collection of **triggered source samples** within 24 hours when a routine sample is unsatisfactory if all or a part of the water supply comes from a groundwater source. If you continuously disinfect all of your groundwater sources and you perform compliance monitoring as defined by the Groundwater Rule, you do not need to collect triggered source samples. See insert on Page 5 for the details of compliance monitoring.

The Groundwater Rule requires you to collect source samples from every source that was in use when you collected the routine sample. With DOH approval, you may be able to reduce your triggered source monitoring requirements.

If you have one or more DOH-designated well fields, you may collect a single untreated triggered source sample from each well field, instead of collecting a sample from each well, as long as the piping blends the raw water together before the sample tap. When you collect the source sample the same wells must be operating that were in use when you collected the unsatisfactory routine sample. If you choose to collect a single well-field sample, we will view the results of the sample as representative of the aquifer at that location, and any required corrective action will apply to all of the wells in the well field. We recommend that you sample the raw water of every well in the well field when performing triggered source monitoring. We will not consider requests to reduce triggered source monitoring based solely on aquifer characterization; the sources must be part of a DOH-designated well field.

If you have multiple sources, it also is possible to reduce your triggered source-monitoring requirement by demonstrating in the CMP that a specific source cannot supply water to a particular routine sample site. If you want to conduct reduced triggered source monitoring, you must submit justification to us for review and approval. The analysis must provide compelling hydraulic evidence that a specific source cannot contribute water to a particular routine coliform sample site. The analysis should account for a range of operating and demand conditions. You should use more than one of the following tools (as available) to perform the analysis: simple hydraulics, operator experience, water quality information, tracer studies, or a hydraulic model. If you are using a hydraulic model as part of this analysis, you must calibrate the model for steady state and extended period simulations and you should include system-specific demand information.

Following our approval, you may reduce the number of triggered source samples you collect according to the schedule included in your CMP. If you took the unsatisfactory routine sample at a time when system operations differed from scenarios presented in the analysis, you may need to sample all wells that were in use when you collected the sample, depending on the extent of the operational changes.

Repeat Sampling Requirements

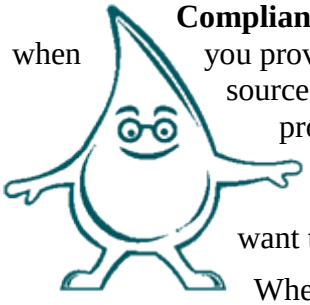
You **must** take a total of **THREE REPEAT** samples for each unsatisfactory routine sample. The samples must come from the following locations:

1. The same tap as the original unsatisfactory routine sample.
2. An active service within five active connections upstream from the original routine sample location.
3. An active service within five active connections downstream from the original unsatisfactory sample location.

Or:

You may use alternative sampling locations in lieu of the requirement to collect at least one repeat sample upstream and one downstream of the original sampling site. You may propose repeat monitoring locations that you believe to be representative of a pathway for contamination into the distribution system. With this approach in your CMP, you can choose to specify alternative fixed locations or present a standard operating procedure (SOP) that defines criteria for selecting repeat sampling sites on a situational basis. You must design your SOP to focus the repeat samples at locations that best verify and determine the extent of potential contamination of the distribution system area based on specific situations. You must submit the SOP to us for review and approval.

In addition to the requirements above, you must collect a triggered source sample from each groundwater source in use when you collected the unsatisfactory routine sample. You must collect source samples prior to any treatment.



Compliance monitoring is a Groundwater Rule requirement you must perform when you provide continuous treatment in response to discovering *E. coli* in your source water. EPA requires compliance monitoring to prove your treatment process is providing 4-log virus inactivation.

If not required to do so, you may choose to conduct compliance monitoring if you provide 4-log virus treatment (CT of 6 mg-min/L) and want to avoid collecting triggered source samples.

When using chlorine as a disinfectant, compliance monitoring means that you must demonstrate at least daily during peak-hour demand that your chlorine residual and your contact time will combine to provide a CT of 6 mg-min/L before the first customer. For larger systems (>3,300 people), compliance monitoring also means that you must continuously monitor the chlorine residual and record the lowest daily value.

Coliform Sample Site Selection

You must select **routine sample sites** that represent the varying conditions that exist throughout the **distribution system**. With properly located sites, you can identify changes in water quality and possible causes for the changes. Sample sites should reflect the complexity of the system and focus on areas of concern, such as low-pressure zones, cross-connection hazards, dead end lines, deteriorating water mains, areas susceptible to stagnation due to low water use, or other questionable conditions.

We recommend that most systems, whether "simple" or "complex," have more routine sample sites than needed each month. For example, systems that collect one sample each month should identify at least three routine sample sites in their CMP. These routine sample sites should be rotated throughout the year. For example, sample one site in January, April, July and October; a second site in February, May, August and November; and a third site in March, June, September and December.

We recommend collecting samples from sources and the storage reservoirs on a regular basis. Mark these samples as "investigative." They don't count as compliance samples.

Be careful when selecting sample taps. You can use both customer service connections and dedicated sampling stations. When selecting sites, it is important to remember that samples from a customer's tap may be affected by conditions that don't accurately reflect conditions in the distribution system.

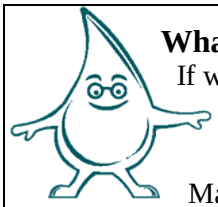
During routine and repeat sampling, you may determine a site no longer represents the conditions within the distribution system. You should remove this sampling site from the CMP and replace it with a site that better represents the conditions within the distribution system.

When selecting sample taps avoid:

- Swivel faucets
- Hot/cold "mixing faucets" (such as faucets with a single lever)
- Drinking fountains
- Janitorial sinks
- Frost-free hose bibs
- Leaking or spraying faucets
- Faucets below ground or near ground level
- Faucets served by home filters or other home treatment systems
- Hydrants

Responding to an E. coli*-present sample result*

The presence of *E. coli* bacteria in your distribution system or source water will create significant challenges for you and your customers. You may be required (or choose) to advise your customers to boil their drinking water or use bottled water. Your customers may not be able to drink their tap water while you investigate the problem or pursue corrective action. We recommend that your CMP include an *E. coli* Response Plan. The response plan should include operational changes or emergency procedures you could use to reduce the effect of *E. coli* bacteria on your customers.



What is Assessment Source Water Monitoring?

If we direct you to conduct "assessment source water monitoring," it means you must collect raw source samples every month for one year and have them analyzed for *E. coli* bacteria. If the lab finds *E. coli* in the source water, you must take corrective action.

Many water systems voluntarily sample their sources to create a water quality record that may help them establish context around an unsatisfactory triggered source sample result. This sampling approach is not the same as assessment source water monitoring.

Coliform Monitoring Plan Outline and Instructions

The CMP has nine parts:

- **A.** System Information and Plan Preparation Information
- **B.** Laboratory Information
- **C.** Wholesaling of Groundwater
- **D.** Routine, Repeat, and Triggered Source Sample Information
- **E.** Reduced Triggered Source Monitoring Justification
- **F.** Routine Sample Rotation Schedule
- **G.** Level 1 and Level 2 Assessment Contact Information
- **H.** *E. coli*-Present Sample Response Plan
- **I.** System Map

We designed the following instructions to help you complete the blank form on page 13. You may use this form as a template for your CMP. Delete portions of the template that do not apply to your water system. For example, if your only source of supply is surface water delete all references to groundwater, the Groundwater Rule, and *E. coli* response planning for your source.

A. System Information

Your CMP should include basic system information. You should update it whenever there are significant changes in the water system, such as a new pressure zone, line extension, new source, or major population change. If your system has multiple groundwater sources, please indicate whether you want us to consider reducing your triggered source monitoring requirements by checking the appropriate box. We will charge a review fee if you mark the "Yes" box.

B. Laboratory Information

List the contact information, hours of operation, and after-hours contact information for the accredited laboratory that normally analyzes your coliform compliance samples. In addition, list the same information for another lab that could serve as a backup to your primary lab during an emergency.

C. Wholesaling of Groundwater

If you are a groundwater wholesaler or consecutive water system, your Coliform Monitoring Plan should remind you to communicate with the operator of the other system. Consecutive systems must contact the wholesaler within 24 hours whenever they receive an unsatisfactory routine coliform sample result.

Wholesalers must* perform triggered source monitoring when a consecutive system informs them of an unsatisfactory routine distribution sample. If triggered source monitoring indicates that *E. coli* is in one or more sources, the wholesaler must alert all of its customers including the purchasing water system within 24 hours after finding *E. coli* in the source water. ***The bottom line: Relative to triggered source monitoring, groundwater wholesalers must treat their wholesale customers like additional coliform sample sites.***

***** Unless they are performing compliance monitoring at all of their operating groundwater sources.

D. Routine, Repeat, and Triggered Source Sample Information

Include the specific location of all **routine sample sites** in Box D. The "specific location" should include the address and the specific tap or faucet used. If possible, you should avoid collecting routine samples at the first two service connections and the last two service connections so you can collect repeat samples upstream and downstream of the routine site.

Repeat sample sites should include the original routine site, and at least one upstream and one downstream site within five active service connections from the original site. You may also use alternative repeat sampling locations if you believe they can help you identify the potential source of contamination. These can be fixed locations for each routine site or locations identified using criteria established in a standard operating procedure on a situational basis.

List sources for **triggered source sampling**. You should include all groundwater sources designated on your WFI as "permanent" or "seasonal" use. For seasonal sources, note the typical time of year the source is used. If your water system has multiple groundwater sources and you are seeking approval for reduced triggered source monitoring, you should list the sources that contribute to each of the routine sample sites.

This section should include advice on sample collection technique. For example, remind the sample collector to evaluate the representative status of each sample site every time, before a sample is collected. This includes authorizing the sample collector to choose NOT to sample from a scheduled site if the evaluation reveals current or recent off-normal events at the sample site. Off-normal events include construction at the facility where the sample site is located, modification to the plumbing at the sample site, or an activity at the sample site that may have compromised the sanitary integrity of the sample faucet. The sample collector should have the knowledge and authority to choose a different site when circumstances make the scheduled site unsuitable to give a sample that represents the distribution water quality.

Chlorinated systems should also remind sample collectors to measure the free chlorine residual when they collect each sample. Collectors should note the measurement on the sample form they will submit to the lab with the sample.

E. Reduced Triggered Source Monitoring Justification

When a routine distribution sample is total coliform present, all groundwater sources that were in use when the routine sample was collected must be sampled for *E. coli* unless we have approved reduced Triggered Source Monitoring. If you have more than one groundwater source and want us to approve a reduced number of required source samples please provide your justification for reducing the number of Triggered Source Samples. You may consider DOH well field designations or distribution system hydraulics to justify reduced monitoring.

F. Routine Sample Rotation Schedule

Small systems should rotate routine sample sites on a monthly basis. The sample collector should rotate through each sample site about three to four times each year.

G. Level 1 & Level 2 Assessment Contact Information

The Revised Total Coliform Rule includes several triggers that require you to perform an assessment of your water system. Anyone familiar with your water system can conduct Level 1 assessments. Only someone DOH deems qualified can conduct Level 2 assessments. The qualified include professional engineers, water distribution manager 2, 3, or 4, local health jurisdiction staff and DOH staff. Just because someone is qualified doesn't mean that they will perform the work. You should contact two or more individuals in advance to see if they are willing to do an assessment for your system if ever needed, and include their names and contact information in your plan.

H. *E. coli*-Present Response Plans

Your lab analyzes groundwater source samples and all unsatisfactory samples collected from the distribution system for the presence of *E. coli* bacteria. You should develop two *E. coli*-present response plans, one in case *E.coli* occurs in the distribution system and the other in case *E.coli* occurs in a groundwater source. This publication includes two checklists to help you prepare your plans. The checklists ask a series of questions to help you arrive at a suitable response plan for your water system. If a topic covered by a question requires more work for your water system, we suggest that you mark the topic for inclusion on a water system 'to do' list. You should file the checklists with your CMP. If you submit your CMP to us, you can decide whether to submit the checklists.

E. coli-present in a distribution system

The Revised Total Coliform Rule only requires immediate public notification (within 24 hours) when two related samples (a routine and one or more of its corresponding repeat samples) test positive for total coliform bacteria—and there is *E. coli* bacteria in one or more of the samples. In our experience, many customers appreciate it when their water system tells them about the presence of *E. coli* bacteria in a routine sample even when the rules do not require a notice. Early notification gives customers the opportunity to choose whether to consume the water before it is treated. There are pros and cons associated with early notification that your policy-makers should discuss while your CMP is under development; that is, before you discover *E. coli* bacteria in the drinking water.

The checklist helps you consider the following when developing your response plan:

Background Information

- Water system records detailing information such as new construction, water main breaks, and other off-normal events.
- Status of cross-connection control program.
- Status of treatment operation (if treatment present).
- Possibility of batch or temporary disinfection.
- Availability of alternate water supply.
- Map to help individuals know whether they are customers of your water system.
- Details about water users: Type, location, accessibility to bottled water.
- Logistics of message production: Language, necessary translations, printing.

Policy Direction

- Discussion with water system governing body
- Governing body decision on timing of notice distribution

Potential Public Notice Delivery

Available methods for notice delivery

News release

Immediate Follow-up Actions

E. Coli-present in a groundwater source

If a groundwater source contains *E. coli* bacteria, your response to the corrective action requirements of the Groundwater Rule may take considerable time. Your *E. coli*-Present Response Plan should identify one or more steps you will take if the lab notifies you of an *E. coli*-present triggered source sample. Preparing a response plan *before* an *E. coli*-present sample result occurs should reduce the effect that an inadequately treated source will have on the community.

When you develop your plan, you should consider the following:

Background Information

DOH sanitary surveys

Activities within wellhead protection area(s)

Staff well-site inspections

Best practices used relative to work on well(s)

Alternate Sources

Discontinue use of source

Intertie with adjacent system

Provide bottled water to all or part of the distribution system

Construct a replacement source

Temporary Treatment

If continuous treatment exists, alter dose to provide 4-log virus treatment (CT of 6)

Introduce chlorine at the source

Reduce pumping production and/or reconfigure operational storage

Alter consumption patterns

Alter the demand through conservation messages

Public Notice

Discuss content and distribution methods with policy-makers and wholesale customers

Prepare templates

Immediate Follow-up Actions

The checklist for the *E. coli*-present groundwater sample asks you to evaluate the corrective action alternatives available under the Groundwater Rule to select the option that best fits your system. You may find that you can get by without one source, or by chlorinating a source that provides adequate treatment to a large part of your service area, while customers close to the affected source of supply rely on boiling their water or using bottled water.

I. System Map

You may base a system map on a schematic, distribution system drawing (as-built), or street map. If a detailed map is not available, you may use a detailed sketch. Title the map, "Coliform Monitoring Plan," and include the System Name, System ID Number, and a legend, as necessary.

Your map must show the following locations:

- All water sources
- Distribution system area served by each source
- Coliform sampling sites, both routine and repeat

In addition, when applicable, your map should indicate the following locations:

- Treatment facilities
- Storage tanks and reservoirs
- Pressure regulation facilities (reducing stations and booster stations)
- Pressure zones and schematic drawings demonstrating how water flows through the system
- Critical valves
- Interties with other water systems

Coliform Monitoring Plan Template and Checklists

You may use the form on page 13 as a template for your CMP. Delete portions of the template that do not apply to your water system. For example, if your only source of supply is surface water delete all references to groundwater, the Groundwater Rule, and *E. coli* response planning for your source.

Coliform Monitoring Plan for: _____

A. System Information

Plan Date:_____

Water System Name	**County**	**System I.D. Number**
Name of Plan Preparer _____	**Position** _____	**Daytime Phone** - -
Sources: DOH Source Number, Source Name, Well Depth, Pumping Capacity	_____	
Storage: List and Describe	_____	
Treatment: Source Number & Process	_____	
Pressure Zones: Number and name	_____	
Population by Pressure Zone	_____	
Number of Routine Samples Required Monthly by Regulation:	_____	
Number of Sample Sites Needed to Represent the Distribution System:	_____	
***Request DOH Approval of Triggered Source Monitoring Plan?**	**Yes** ☐ **No** ☐	

*If approval is requested a fee will be charged for the review.

B. Laboratory Information

Laboratory Name _____	**Office Phone** - - **After Hours Phone** - -
Address _____	**Cell Phone** - - **Email** _____
Hours of Operation _____	
Contact Name _____	
Emergency Laboratory Name _____	**Office Phone** - - **After Hours Phone** - -
Address _____	**Cell Phone** - - **Email** _____
Hours of Operation _____	

Contact Name
_____

C. Wholesaling of Groundwater

	Yes	No
We are a consecutive system and purchase groundwater from another water system.	☐	☐
If yes, Water System Name: Contact Name: Telephone Numbers Office - - After Hours - -		
We sell groundwater to other public water systems.	☐	☐
If yes, Water System Name: Contact Name: Telephone Numbers Office - - After Hours - -		
If yes, Water System Name: Contact Name: Telephone Numbers Office - - After Hours - -		
If yes, Water System Name: Contact Name: Telephone Numbers Office - - After Hours - -		
If yes, Water System Name: Contact Name: Telephone Numbers Office - - After Hours - -		
If yes, Water System Name: Contact Name: Telephone Numbers Office - - After Hours - -		

D. Routine, Repeat, and Triggered Source Sample Locations*

Location/Address for **Routine Sample Sites**	Location/Address for **Repeat Sample Sites**	Groundwater Sources for **Triggered Sample Sites****
X1.	**1-1.**	**S___**
	1-2.	**S___**
	1-3.	**S___**
		S___
		S___
X2.	**2-1.**	**S___**
	2-2.	**S___**
	2-3.	**S___**
		S___
		S___
X3.	**3-1.**	**S___**
	3-2.	**S___**
	3-3.	**S___**
		S___
		S___

*NOTE: If you need more than three routine samples to cover the distribution system, attach additional sheets as needed.

**** When you collect the repeats, you must sample every groundwater source that was in use when the original routine sample was collected.**

Important Notes for Sample Collector:

_____

_____

_____

_____

_____

_____

E. Reduced Triggered Source Monitoring Justification (add sheets as needed):

F. Routine Sample Rotation Schedule

Month	Routine Site(s)	Month	Routine Site(s)
January		July	
February		August	
March		September	
April		October	
May		November	
June		December	

G. Level 1 and Level 2 Assessment Contact Information

Name	**Office Phone - -** **After Hours Phone - -**
Address	**Email**
Name	**Office Phone - -** **After Hours Phone - -**
Address	**Email**

H. *E. coli*-Present Sample Response

Distribution System *E. coli* Response Checklist				
Background Information	**Yes**	**No**	**N/A**	**To Do List**
We inform staff members about activities within the distribution system that could affect water quality.	☐	☐	☐	☐
We document all water main breaks, construction & repair activities, and low pressure and outage incidents.	☐	☐	☐	☐
We can easily access and review documentation on water main breaks, construction & repair activities, and low pressure and outage incidents.	☐	☐	☐	☐
Our Cross-Connection Control Program is up-to-date.	☐	☐	☐	☐
We test all cross-connection control devices annually as required, with easy access to the proper documentation.	☐	☐	☐	☐
We routinely inspect all treatment facilities for proper operation.	☐	☐	☐	☐
We identified one or more qualified individuals who are able to conduct a Level 2 assessment of our water system.	☐	☐	☐	☐
We have procedures in place for disinfecting and flushing the water system if it becomes necessary.	☐	☐	☐	☐
We can activate an emergency intertie with an adjacent water system in an emergency.	☐	☐	☐	☐
We have a map of our service area boundaries.	☐	☐	☐	☐
We have consumers who may not have access to bottled or boiled water.	☐	☐	☐	☐
There is a sufficient supply of bottled water immediately available to our customers who are unable to boil their water.	☐	☐	☐	☐
We have identified the contact person at each day care, school, medical facility, food service, and other customers who may have difficulty responding to a Health Advisory.	☐	☐	☐	☐
We have messages prepared and translated into different languages to ensure our consumers will understand them.	☐	☐	☐	☐
We have the capacity to print and distribute the required number of notices in a short time period.	☐	☐	☐	☐
Policy Direction	**Yes**	**No**	**N/A**	**To Do List**
We have discussed the issue of *E. coli*-present sample results with our policy makers.	☐	☐	☐	☐
If we find *E. coli* in a routine distribution sample, the policy makers want to wait until repeat test results are available before issuing advice to water system customers.	☐	☐	☐	☐
(Cont.)				

Distribution System *E. coli* Response Checklist				
Potential Public Notice Delivery Methods	**Yes**	**No**	**N/A**	**To Do List**
It is feasible to deliver a notice going door-to-door.	☐	☐	☐	☐
We have a list of all of our customers' addresses.	☐	☐	☐	☐
We have a list of customer telephone numbers or access to a Reverse 9-1-1 system.	☐	☐	☐	☐
We have a list of custo	☐	☐	☐	☐
We encourage our customers to remain in contact with us using social media.	☐	☐	☐	☐
We have an active website we can quickly update to include important messages.	☐	☐	☐	☐
Our customers drive by a single location where we could post an advisory and expect everyone to see it.	☐	☐	☐	☐
We need a news release to supplement our public notification process.	☐	☐	☐	☐

Distribution System *E. coli* Response Plan

If we have *E. coli* in our distribution system we will immediately:

1. Call DOH.
2. Collect repeat and triggered source samples per Part D. Collect additional investigative samples as necessary.
3. _____ _____
4. _____ _____
5. _____ _____
6. _____ _____
7. Discuss with DOH whether to issue a Health Advisory based on the findings of steps 3-6.

***E. coli*-Present Triggered Source Sample Response Checklist – All Sources**				
Background Information	**Yes**	**No**	**N/A**	**To Do List**
We review our sanitary survey results and respond to any recommendations affecting the microbial quality of our water supply.	☐	☐	☐	☐
We address any significant deficiencies identified during a sanitary survey.	☐	☐	☐	☐
There are contaminant sources within our Wellhead Protection Area that could affect the microbial quality of our source water, and If yes, we can eliminate them.	☐ ☐	☐ ☐	☐ ☐	☐ ☐
We routinely inspect our well site(s).	☐	☐	☐	☐
We have a good raw water sample tap installed at each source.	☐	☐	☐	☐
After we complete work on a source, we disinfect the source, flush, and collect an investigative sample.	☐	☐	☐	☐
Public Notice	**Yes**	**No**	**N/A**	**To Do List**
We discussed the requirement for immediate public notice of an *E. coli*-present source sample result with our water system's governing body (board of directors or commissioners) and received direction from them on our response plan.	☐	☐	☐	☐
We discussed the requirement for immediate public notice of an *E. coli*-present source sample result with our wholesale customers and encouraged them to develop a response plan.	☐	☐	☐	☐
We have prepared templates and a communications plan that will help us quickly distribute our messages.	☐	☐	☐	☐

E. coli*-Present Triggered Source Sample Response Checklist – Source S__				
Alternate Sources	**Yes**	**No**	**N/A**	**To Do List**
We can stop using this source and still provide reliable water service to our customers.	☐	☐	☐	☐
We have an emergency intertie with a neighboring water system that we can use until corrective action is complete (perhaps for several months).	☐	☐	☐	☐
We can provide bottled water to all or part of the distribution system for an indefinite period.	☐	☐	☐	☐
We can quickly replace our existing source of supply with a more protected new source.	☐	☐	☐	☐
Temporary Treatment	**Yes**	**No**	**N/A**	**To Do List**
This source is continuously chlorinated, and our existing facilities can provide 4-log virus treatment (CT = 6) before the first customer. If yes, at what concentration? _____ mg/L	☐	☐	☐	☐
We can quickly introduce chlorine into the water system and take advantage of the existing contact time to provide 4-log virus treatment to a large portion of the distribution system.	☐	☐	☐	☐
We can reduce the production capacity of our pumps or alter the configuration of our storage quantities (operational storage) to increase the amount of time the water stays in the system before the first customer to achieve CT = 6.	☐	☐	☐	☐
We can alter the demand for drinking water (maximum day or peak hour) through conservation messages to increase the time the water is in the system prior to the first customer in order to achieve 4-log virus treatment with chlorine.	☐	☐	☐	☐

*NOTE: If your system has multiple sources, you may want to complete a separate checklist for each source.

E. coli-Present Triggered Source Sample Response Plan – Source ___

If we have *E. coli* in Source ___ water, we will immediately:

1. Call DOH.
2. _____ _____
3. _____ _____
4. _____ _____
5. _____ _____

I. System Map