



Ground Water Rule Factsheet: Monitoring Requirements

WHAT IS THE GROUND WATER RULE?

The U.S. Environmental Protection Agency (EPA) published the Ground Water Rule (GWR) on November 8, 2006. One goal of the GWR is to provide increased protection against microbial pathogens, specifically bacterial and viral pathogens, in public water systems (PWSs) that use ground water. Instead of requiring disinfection for all ground water sources, the GWR establishes a risk-targeted approach to identifying ground water sources that are susceptible to fecal contamination. The GWR requires systems with ground water sources at risk of microbial contamination to take corrective action to protect consumers from harmful bacteria and viruses. Monitoring is a key element of this risk-targeted approach.

There are two types of monitoring required by the GWR:

- **Source Water Monitoring:** *Triggered* source water monitoring is used to determine if fecal contamination is present in the ground water source. Triggered source water monitoring is required for any GWS that has a positive total coliform result under the Total Coliform Rule (TCR) routine sampling and does not provide and monitor for 4-log treatment of viruses. Alternatively, states may require GWSs with sources that seem susceptible to fecal contamination to conduct *assessment* source water monitoring.
- **Compliance Monitoring:** Systems that notify the state that they provide and monitor for 4-log treatment of viruses are required to conduct compliance monitoring.

WHAT ARE THE SOURCE WATER MONITORING REQUIREMENTS?

Some ground water systems (GWSs) will be required to conduct triggered source water monitoring or assessment source water monitoring of a fecal indicator (e.g., *E. coli*, enterococci, or coliphage) to detect microbial contamination in the source.

Triggered Source Water Monitoring

Within 24 hours of being notified of a positive total coliform result under routine TCR monitoring, a GWS must collect at least one ground water source sample from each source in use when the positive total coliform result under the TCR was collected. These samples are **triggered source water samples**.

If a triggered source water sample is positive for a fecal indicator, the state will require the system to take corrective action or take five **additional samples** from the same source within 24 hours of notification of the fecal indicator-positive result and analyze the additional samples for a fecal indicator. If any one of the five additional samples is fecal indicator-positive, the system must take corrective action.

Triggered Source Water Monitoring Exceptions

A state may waive the triggered source water monitoring requirement if the state determines and documents, in writing, that the total coliform-positive routine sample is the result of a documented distribution system deficiency.

In addition, states may develop criteria for distribution system conditions that cause total coliform-positive samples. A GWS can document to the state that it met the state criteria within 30 days of the total coliform-positive sample and be exempt from collecting the triggered source water sample(s).

Representative Source Water Monitoring

With state approval, GWSs with more than one ground water source may fulfill the triggered source water monitoring requirements by taking a ground water sample at a representative source. The state may require the system to submit a triggered source water monitoring plan that identifies the sources that are representative of its TCR sampling sites.

GWSs providing at least 99.99 percent (4-log) treatment of viruses (using inactivation, removal, or a state-approved combination of inactivation and removal) of all of their ground water can notify the state of this treatment and would not be required to conduct triggered source water monitoring. Those systems are, however, required to conduct compliance monitoring to show they are providing consistent and sufficient treatment. Compliance monitoring requirements depend on the system's size and the type of treatment it is using. Compliance monitoring requirements are discussed below.

Small Systems

GWSs serving fewer than 1,000 people that have a total coliform-positive result under the TCR may use the triggered source water monitoring sample collected from the ground water source to meet both the triggered source water monitoring requirement of the GWR as well as part of the repeat sampling requirement of the TCR (if the state approves the use of *E. coli* as a fecal indicator for source water monitoring).

Consecutive Systems

A consecutive system with a positive routine total coliform result under the TCR must notify its wholesale system(s) within 24 hours of being notified of the positive sample.

Wholesale Systems

A wholesale system that receives notice from a consecutive system of a positive total coliform result under routine monitoring of the TCR must collect a triggered source water sample from its ground water source(s) and analyze the source water sample(s) for a fecal indicator within 24 hours of being notified by the consecutive system. If the triggered source water sample is positive for the fecal indicator, the wholesale system must notify all consecutive systems served by that source within 24 hours of the positive sample result. The wholesale system and any consecutive systems served by the fecal indicator-positive source must all notify their consumers within 24 hours of learning of the result. If the state does not require corrective action for this fecal indicator-positive sample, the wholesale system must collect five additional source water samples from the same source within 24 hours of receiving notification of the fecal indicator-positive sample.

Invalidation of Source Water Monitoring Samples

If the state provides written documentation that a fecal indicator-positive sample does not reflect source water quality, or if a GWS provides the state with written notice from the laboratory that improper analysis of a sample occurred, the state may invalidate the fecal indicator-positive sample. Within 24 hours of receiving the state sample invalidation notification, a GWS is required to take another sample and have it analyzed for the same fecal indicator.

Assessment Source Water Monitoring

States may require GWSs with sources that seem susceptible to fecal contamination to conduct assessment source water monitoring. States may require assessment source water monitoring at any time, on a case-by-case basis. Based on the results of the assessment source water monitoring, systems may have to take corrective action.

Assessment source water monitoring requirements are in addition to triggered source water monitoring requirements. A system may, however, use a triggered source water sample to meet part of the assessment source water monitoring requirement.

Analytical Methods	
Fecal Indicator	Method Name
<i>E. coli</i>	9223 B EPA Method 1604 9221 F 9222 G
Enterococci	9230B 9230C EPA Method 1600
Coliphage	EPA Method 1601 EPA Method 1602

New Sources and Systems

GWSs that begin service from a new source after November 30, 2009, may be required by their state to conduct assessment source water monitoring. The state may require the system to begin assessment source water monitoring before the new source provides water to the public.

Other Source Water Monitoring Details

Sampling Locations for All Source Water Monitoring

Triggered, additional, and assessment source water monitoring samples must be collected prior to treatment or at a state-approved location.

Sample Volume

All source water samples must be at least 100 mL for all fecal indicator analytical methods.

WHAT ARE THE COMPLIANCE MONITORING REQUIREMENTS?

Compliance monitoring requirements apply to systems that provide 4-log treatment of viruses and are not subject to triggered source water monitoring requirements. These systems must:

- Notify the state that they provide 4-log treatment of viruses.
- Conduct compliance monitoring rather than triggered source water monitoring.
 - Systems with existing ground water sources must notify the state in writing by December 1, 2009, that they provide at least 4-log treatment of viruses for the sources.
 - Systems with ground water sources placed into service after November 30, 2009, must notify the state in writing that they provide at least 4-log treatment of viruses of those sources and begin compliance monitoring within 30 days of placing the source in service or conduct triggered source water monitoring.

Compliance Monitoring

Compliance monitoring ensures that systems already providing 99.99 percent (4-log) inactivation, removal, or a state-approved combination of inactivation and removal of viruses are achieving this level of treatment.

After November 30, 2009, GWSs that begin providing at least 4-log treatment of viruses must notify the state and conduct compliance monitoring to avoid being required to conduct triggered source water monitoring. Systems that provide 4-log treatment should check with their state regulators to see if they need to satisfy any additional state compliance monitoring requirements (e.g. Stage 1 Disinfectants and Disinfection Byproducts Rule (DBPR)) beyond the requirements listed below.

System Type	Monitor For	Frequency	Sample Location
Disinfecting GWSs serving $\leq 3,300$	Residual disinfectant concentration (must meet state minimum)	Daily or continuous ^{1,2}	State-approved location(s)
Disinfecting GWSs serving $> 3,300$		Continuous only ^{1,3}	
GWSs using membrane filtration	Membrane filtration process effectiveness	Consult state for specific information	
GWSs using state-approved alternative treatment	Alternative treatment effectiveness		
<p>1. Provisions available for equipment failure.</p> <p>2. If any daily grab sample is less than the minimum disinfectant residual concentration, the system must take follow-up samples every 4 hours until the residual meets or exceeds the minimum.</p> <p>3. System must record the lowest residual disinfectant concentration each day water from the ground water source is served to the public.</p>			

WHAT ARE THE COMPLIANCE DEADLINES ASSOCIATED WITH GWR MONITORING?

Individual states may have earlier compliance requirement dates.

Requirements	Deadline:
<i>Source Water Monitoring</i>	
☀ Triggered	Beginning December 1, 2009
☀ Additional	
☀ Assessment	
<i>Notification of 4-log treatment of viruses (for existing ground water source(s))</i>	By December 1, 2009
<i>Compliance Monitoring (for systems with 4-log treatment of viruses)</i>	Beginning December 1, 2009

WHAT ARE THE MONITORING VIOLATIONS ASSOCIATED WITH THE GWR?

If a system is in violation of a GWR monitoring requirement, the system must report the problem to the state and notify the public. Systems are required to send a copy of the public notification (PN) to the state within 10 days of the notification. Note that when a system has a ground water source with a fecal indicator-positive sample, it is a *situation* and not a violation.

Situation or Violation	Report to State	Notify Public	Tier	PN Method
Source water monitoring sample is fecal indicator-positive for <i>E. coli</i> , enterococci, or coliphage and not invalidated by the state	Within 24 hours	Within 24 hours	1	TV, hand-delivery, public postings, or other state-approved method (consult your state)
Failure to conduct required source water monitoring (triggered, additional, or assessment)	Consult your State	Within 12 months	3	Consumer Confidence Report (CCR) ¹ (consult your state for other specific PN requirements)
Failure to conduct required compliance monitoring	Consult your State	Within 12 months	3	CCR ¹ (consult your state for other specific PN requirements)
<p>1. The CCR may be used by CWSs to make this notification if it meets the requirement to notify the public within 12 months. Non-community water systems must use an alternate form of Tier 3 notice approved by their state.</p>				

Community GWSs must also report any fecal indicator-positive samples in their CCR that addresses the year in which the samples were collected.

ADDITIONAL GUIDANCE MATERIALS

The following guidance materials for states and PWSs have been released or will be released in 2008:

Ground Water Rule: A Quick Reference Guide - This guide provides a description of the GWR and includes critical deadlines and requirements.

www.epa.gov/ogwdw/disinfection/gwr/compliancehelp.html.

Ground Water Rule Factsheets - Including factsheets on GWR general requirements, monitoring requirements, and Public Notice, Consumer Confidence Reports, and Special Notices.

Ground Water Sanitary Survey Guidance Manual. November 2007. EPA 815-D-07-006 - This guidance provides states, tribes, and other primacy agencies with a brief review of the sanitary survey regulatory provisions, give examples of what may constitute a significant deficiency, and provide a checklist of elements that should be evaluated during the course of a sanitary survey inspection.

www.epa.gov/ogwdw/disinfection/gwr/compliancehelp.html.

Source Water Assessment Guidance Manual. September 2007. EPA 815-R-07-023 - This guidance provides states, tribes, and other primacy agencies with a brief review of hydrogeologic sensitivity assessments, an overview of the characteristics of a sensitive aquifer, information about how source water assessments may be used, and information about how to determine if a sensitive aquifer has a hydrogeologic barrier. www.epa.gov/ogwdw/disinfection/gwr/compliancehelp.html.

Ground Water Rule Source Water Monitoring Methods Guidance Manual. July 2007. EPA 815-R-07-019 - This guidance provides GWSs, states, tribes, and other primacy agencies with a brief review of the source water monitoring provisions. Primacy agencies may select fecal indicators (e.g., *E. coli*, enterococci, coliphage) that systems would be required to test for in the ground water source sample. The source water monitoring guidance manual provides criteria to assist primacy agencies in their determination of which fecal indicator(s) may be most appropriate.

www.epa.gov/ogwdw/disinfection/gwr/compliancehelp.html.

Corrective Action Guidance Manual (under development) - This guidance will provide states, tribes, other primacy agencies and GWSs with an overview of the treatment technique requirements of the GWR. The guidance manual will provide assistance with determining the information that should be included in a system's corrective action plan.

Consecutive System Guide for the Ground Water Rule. July 2007. EPA 815-R-07-020 - This guidance describes the regulatory requirements of the GWR that apply to wholesale GWSs and the consecutive systems that receive and distribute that ground water supply.

www.epa.gov/ogwdw/disinfection/gwr/compliancehelp.html.

Complying with the Ground Water Rule: Small Entity Compliance Guide: One of the Simple Tools for Effective Performance (STEP) Guide Series. July 2007. EPA 815-R-07-018 - This document is intended to be an official compliance guide to the GWR for small PWSs, as required by the Small Business Regulatory Enforcement Fairness Act of 1996. This guide contains a general introduction and background for the GWR, describes the specific requirements of the GWR and provides information on how to comply with those requirements. www.epa.gov/ogwdw/disinfection/gwr/compliancehelp.html.

For additional information, please contact the Safe Drinking Water Hotline at 1-800-426-4791, or visit www.epa.gov/safewater/disinfection/gwr.