

Ground Water Rule Compliance Monitoring: A Quick Reference Guide

Overview of the Rule

Title	Ground Water Rule (GWR) 71 FR 65574, November 8, 2006, Vol. 71, No. 216 Correction 71 FR 67427, November 21, 2006, Vol. 71, No. 224
Purpose	Reduce the risk of illness caused by microbial contamination in public ground water systems (GWSs).
General Description	The GWR establishes a risk-targeted approach to identify GWSs susceptible to fecal contamination and requires corrective action to correct significant deficiencies and address source water fecal contamination in all public GWSs.
Utilities Covered	The GWR applies to all public water systems (PWSs) that use ground water, including consecutive systems, except that it does not apply to PWSs that combine all of their ground water with surface water or with ground water under the direct influence of surface water prior to treatment.

Purpose of Compliance Monitoring

- ▶ Compliance monitoring ensures that GWSs that provide at least 4-log treatment of viruses using chemical disinfection, membrane filtration, or a State-approved alternative treatment technology are consistently and effectively achieving this level of treatment.

When is Compliance Monitoring Required?

- ▶ GWSs that provide at least 4-log treatment of viruses **as a corrective action** must conduct compliance monitoring.
- ▶ GWSs that provide at least **4-log treatment of viruses** at or before the first customer using chemical disinfection, membrane filtration, or a State-approved alternative treatment technology and do not conduct GWR triggered source water monitoring must **notify their State in writing** that they provide treatment and begin compliance monitoring.
- ▶ The compliance dates for systems that provide 4-log treatment in lieu of GWR triggered source water monitoring are as follows:
 - GWSs with **existing ground water sources** must notify the State by **December 1, 2009**, that they provide at least 4-log treatment of viruses and begin compliance monitoring.
 - GWSs with **new ground water sources** placed into service **after November 30, 2009**, must notify the State that they provide at least 4-log treatment of viruses and begin compliance monitoring within 30 days.

What are the Compliance Monitoring Requirements for Chemical Disinfection?

GWSs Serving 3,300 or Fewer

- ▶ GWSs using chemical disinfection and serving 3,300 or fewer persons must monitor for the **residual disinfectant concentration** and meet the **State specified** minimum concentration at or before the first customer.
- ▶ GWSs must monitor on a **daily** basis and collect a grab sample during the hour of peak flow or at another time specified by the State.
 - If any daily grab sample is less than the minimum disinfectant residual concentration, the system must take follow-up samples **every four hours** until the residual meets or exceeds the State-specified minimum concentration.
 - These systems also have the option to monitor **continuously**.
 - If the GWS monitors continuously, the system must meet the monitoring requirements for GWSs serving greater than 3,300 persons (see below).
- ▶ GWSs must monitor at a State-approved location.

GWSs Serving Greater than 3,300 Persons

- ▶ GWSs using chemical disinfection and serving greater than 3,300 persons that conduct compliance monitoring must monitor for the **residual disinfectant concentration** and meet the **State specified** minimum concentration at or before the first customer.
 - GWSs of this size must monitor **continuously** and record the lowest residual disinfectant concentration each day that water from the ground water source is served to the public.
- ▶ GWSs must monitor at a State-approved location.

Failure of Continuous Monitoring Equipment

- ▶ In the event of equipment failure for continuous monitoring, provisions are available for all GWSs serving greater than 3,300 persons and GWSs serving 3,300 persons or fewer who opt to monitor continuously.
 - If there is a failure in continuous monitoring equipment, the ground water system must **conduct grab sampling every four hours** until the continuous monitoring equipment is returned to service.
 - The system must resume continuous residual disinfectant monitoring **within 14 days**.

What are the Compliance Monitoring Requirements for Membrane Filtration?

- ▶ GWSs that use membrane filtration systems to achieve 4-log virus treatment to meet GWR requirements must:
 - Operate the process in accordance with State-specified compliance requirements.
 - Monitor the membrane filtration process in accordance with all State-specified monitoring requirements.
 - Verify that the integrity of the membrane is intact.
- ▶ The **frequency** and **location** of samples for systems conducting membrane filtration will be determined by the State.

What are the Compliance Monitoring Requirements for Alternative Treatment?

- ▶ GWSs that use alternative treatment systems to achieve 4-log virus treatment to meet GWR requirements must:
 - Operate the process in accordance with State-specified compliance requirements.
 - Monitor the process in accordance with State-specified monitoring requirements.

Compliance Monitoring and Validation Testing for Ultraviolet (UV) Disinfection

- ▶ GWSs using UV disinfection as an alternative technology to meet GWR requirements should:
 - Monitor for UV intensity, as measured by a UV sensor, flow rate and UV lamp status and any additional State-specified parameters.
 - Verify the calibration of UV sensors, and recalibrate in accordance with a State-approved protocol, at least monthly.
- ▶ UV reactors should undergo validation testing to determine the operating conditions under which the reactor delivers the UV dose corresponding to the virus log removal credit received. See “Ultraviolet Disinfection Guidance for the Final Long Term 2 Enhanced Surface Water Treatment Rule” (http://www.epa.gov/ogwdw/disinfection/lt2/pdfs/guide_lt2_uvguidance.pdf) for more information.

Summary

- ▶ The following table summarizes the compliance monitoring requirements for systems providing 4-log virus treatment in lieu of triggered source water monitoring or as a corrective action under the GWR.

System Type	Monitor For	Frequency	Sample Location
GWSs serving ≤ 3,300 using chemical disinfection	Residual disinfectant concentration (must meet State minimum)	Daily or continuous	State-approved location(s)
GWSs serving > 3,300 using chemical disinfection		Continuous only	
GWSs using membrane filtration	Membrane filtration process effectiveness	Consult State for specific information	
GWSs using State-approved alternative treatment	Alternative treatment effectiveness		

- ▶ If operation according to the criteria or requirements for compliance monitoring (minimum residual disinfectant concentration, membrane operating criteria or membrane integrity, alternative treatment operating criteria, etc.) is not restored **within four hours**, a GWS must **notify the State as soon as possible**.
- ▶ For all GWSs conducting compliance monitoring, failure to conduct required compliance monitoring (Sec. 141.403(b)) requires a **Tier 3 public notice**.
- ▶ If any GWS wishes to **discontinue** 4-log treatment of viruses before or at the first customer, the GWS then becomes subject to the **GWR triggered source water monitoring requirements**.
 - See “Ground Water Rule Factsheet: Monitoring Requirements” and “Ground Water Rule Triggered and Representative Monitoring: A Quick Reference Guide” for more information.