Disclaimer: This article is not a rule and is not legally enforceable. As indicated by the use of non-mandatory language such as "may" and "should," it does not impose any legally binding requirements. This article describes requirements under existing laws and regulations, and does not replace any existing established laws or regulations.

Mapping Ground Water Rule Requirements:

Compliance Monitoring and Assessment Source Water Monitoring

This is the third article in a series of five developed by US Environmental Protection Agency (EPA), Office of Ground Water and Drinking Water (OGWDW) that summarize key components of the Ground Water Rule (GWR). As with all drinking water rules, please check with your Primacy Agency for specific state-related requirements.

As stated in the first article, the GWR has four basic requirements: (1) Triggered and Additional Source Water Monitoring, (2) ***Compliance and Assessment Source Water Monitoring***, (3) Sanitary Surveys and (4) Corrective Action. This article discusses in further detail the *compliance monitoring* and *assessment source water monitoring* components. As seen in Figure 1 below, *compliance monitoring* is required for those ground water systems (GWSs) that have notified the state that they reliably provide 4-log treatment of viruses. *Compliance monitoring* is required as a form of corrective action or in lieu of triggered source water monitoring. *Assessment source water monitoring* is a tool available to the states that suspect that a system's ground water source might be vulnerable to fecal contamination.

Compliance Monitoring

GWSs that provide at least 4-log treatment of viruses were required to provide written notification to the state and begin compliance monitoring by December 1, 2009, to avoid triggered source water monitoring (see Article #2). The purpose of compliance monitoring is to ensure that systems are reliably and consistently achieving 4-log treatment (i.e., inactivation, removal, or a state-approved combination of removal and inactivation) before or at the first customer. GWSs providing 4-log treatment as a corrective action must also conduct compliance monitoring. Figure 1 provides a graphic representation of these requirements.

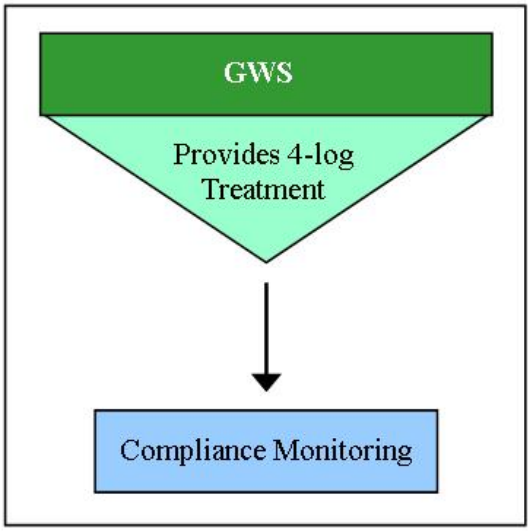

Figure 1. GWR Requirements for GWSs Providing 4-log Treatment

GWSs using chemical disinfection that will be conducting compliance monitoring and serve more than 3,300 people must monitor the residual disinfectant concentration continuously before the first customer or at a location approved by the state. The system must maintain a state-determined minimum disinfectant residual and record the lowest daily value. The rule allows for the system to collect grab samples every four hours if the continuous monitoring equipment fails; however, the system has 14 days to repair the

equipment and bring it back online.

GWSs using chemical disinfection and conducting compliance monitoring that serve 3,300 people or less can either monitor continuously to meet the requirements described in the previous paragraph, or take daily grab samples during the peak hourly flow at a location approved by the state. The system must maintain a state-determined minimum disinfectant residual and record the lowest daily value. If the residual falls below the established minimum concentration, then the system must take samples every four hours until the residual meets the required level.

Systems that use membrane filtration or alternative treatment technologies, alone or in combination, to reliably provide 4-log treatment of viruses must operate and monitor according to the state-specified requirements. Table 1 below provides a summary of compliance monitoring requirements.

Table 1: Summary of Compliance Monitoring Requirements

<table>
<tr><th>System Type</th><th>Monitor For</th><th>Frequency</th><th>Sample Location</th></tr>
<tr><td>GWS > 3,300 using disinfection</td><td>Residual disinfectant concentration
(must meet state minimum)</td><td>Continuous only [2,3]</td><td rowspan="2">state-approved location</td></tr>
<tr><td>GWS ≤ 3,300 using disinfection</td><td>Residual disinfectant concentration
(must meet state minimum)</td><td>Daily[1,2] or continuous [2,3]</td></tr>
<tr><td>GWS using membrane filtration</td><td>Membrane filtration process performance</td><td colspan="2" rowspan="2">Consult state for specific information</td></tr>
<tr><td>GWS using state-approved alternative treatment</td><td>Alternative treatment performance</td></tr>
</table>

1. If any daily grab sample is less than the minimum disinfectant residual concentration, the system must take follow up samples every four hours until residual meets or exceeds the minimum.
2. Systems must record the lowest residual disinfectant concentration each day that water from the ground water source is served to the public.
3. If the continuous monitoring equipment fails, the system must take grab samples every four hours and has 14 days to repair the equipment and bring it back online.

A GWS may discontinue providing 4-log treatment and compliance monitoring if the state makes the determination that the system has met the state's criteria for discontinuing treatment. If the system discontinues 4-log treatment and compliance monitoring then the system is subject to triggered source water monitoring.

Assessment Source Water Monitoring

The GWR provides the states with the authority to direct GWSs that the state believes may have sources that may be vulnerable to fecal contamination to conduct assessment source water monitoring. States may

require assessment source water monitoring at any time and on a case-by-case basis. It is up to the state to determine the frequency and duration of monitoring as well as the fecal indicator to be monitored**.** Due to the monitoring costs and possible seasonal variations in the source water, EPA recommends that states consider requiring collection of a minimum of one sample per month for 12 months. Assessment source water monitoring might also be used by the state before a new ground water source comes online and provides water to the public.

Assessment source water monitoring samples may not be used to satisfy Total Coliform Rule (TCR) routine or repeat samples. However, a triggered source water monitoring sample may be used to meet the assessment source water monitoring requirement if approved by the state and analyzed for *E.coli* using an EPA-approved method. The same public notification requirements that apply to a fecal indicator-positive (FI+) triggered source water monitoring sample will apply to any FI+ sample collected during the assessment source water monitoring. This means that for any FI+ source water sample collected under assessment source water monitoring, the GWS is required to provide Tier 1 Public Notification (PN). PN and the Consumer Confidence Report requirements for the GWR and how they apply to community and non-community water systems will be discussed in further detail in the fifth article, entitled "Mapping Ground Water Rule Requirements: Consumer Confidence Report, Public Notification, and Special Notice".

Frequently Asked Questions regarding Compliance Monitoring and Assessment Monitoring

Question #1: For a consecutive system that purchases water from a wholesaler that does not provide 4-log treatment, where the consecutive system learns of a total coliform-positive (TC+) sample in its distribution system, what must the consecutive system do?

Answer #1: Within 24 hours of being notified of the TC+ sample result the consecutive system must notify the wholesaler of the TC+ sample result. If the consecutive system has its own groundwater source, does not provide 4-log treatment, and purchases water from the wholesaler, it must begin triggered source water monitoring.

Question #2: If a wholesaler not providing 4-log treatment is notified of a TC+ result from a consecutive system, what does the wholesaler have to do?

Answer #2: The wholesaler would have to begin conducting triggered source water monitoring. The wholesaler would also have to notify all other consecutive systems that receive water from the source if the triggered source water monitoring reveals a FI+ source water sample result. However, if the wholesaler has been

approved by the state to provide 4-log treatment and is conducting compliance monitoring, it would not have to comply with the triggered source water monitoring requirements.

Question #3: If a system takes corrective action at the direction of the state to install 4-log treatment, does that system have to conduct compliance monitoring?
Answer #3: Yes. If the 4-log treatment of viruses is installed as part of a corrective action, the system must conduct compliance monitoring.

Training Opportunities

USEPA Headquarters has concluded conducting its workshops and webcast trainings on the GWR at this time; however there still may be trainings sponsored by your state, EPA Region, or technical assistance providers. Contact your EPA Region or state for more information on workshops or trainings that might be conducted near you. For more information on the GWR, please visit the GWR homepage at: www.epa.gov/safewater/disinfection/gwr. The next article will cover the GWR requirements for sanitary surveys and corrective actions.

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