Ground Water Rule

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WARWS
April 18, 2012
Basic Information

- Ground Water Rule (GWR) was created to provide additional protection against fecal contamination in ground water systems.

- Compliance Started December 1, 2009.

- There are four main parts to the Ground Water Rule:

  1. Sanitary Surveys
  2. Monitoring
     - Triggered Source Water Monitoring (Uses TCR as Trigger)
  3. Corrective Actions
  4. Source Water Assessments (EPA Region 8 is not currently implementing)
The GWR Applies to Systems that:

- Operate a ground water system

- Operate a mixed system (ground water & surface water)-
  Ground water is added directly to the distribution system after surface water treatment (disinfection & filtration)

- Wholesaler/Consecutive systems that meets the aforementioned criteria
There are 4 main parts to the Ground Water Rule:

1. Sanitary Surveys
Sanitary Surveys will assess 8 elements:

1. Source
2. Pumps, Controls and Pump Facilities
3. Treatment
4. Distribution System
5. Finished Water Storage
6. Monitoring, reporting, & data verification
7. Water System Management & Operations
8. Operator Compliance with State Requirements
Sanitary Surveys

- Sanitary surveys are a way to identify significant deficiencies

- **Significant Deficiencies**
  Include, but are not limited to, defects in the design, operation, or maintenance, or a failure or malfunction of the sources, treatment, storage, or distribution system that EPA determines to be causing or have the potential for causing the introduction of contamination into the water delivered to consumers
Sanitary Surveys

- To avoid receiving a violation, you **MUST** respond within 30 days:
  - Of receiving the sanitary survey and survey cover letter;
  &
  - Of making system improvements to address the significant deficiencies.
Sanitary Surveys

Examples of Significant Deficiencies

- No Wellhead Sanitary Seal; Conduit & Wires Not Properly Sealed

- Conduit not sealed

- Potential sources of contamination surrounding wellhead
Sanitary Surveys

Examples of Significant Deficiencies

Cross connection with the venting/vacuum tied directly to the drain

Obvious Contamination
Sanitary Surveys

Examples of Potential Significant Deficiencies

Lack of an emergency response plan (ERP)

Conduit is not properly sealed.
Sanitary Surveys

Examples of Potential Significant Deficiencies

All storage tank vents, overflow and drain lines must be screened with a #24-mesh screen, or a properly sealed flapper valve to prevent birds, insects, rodents and other forms of contamination from entering the water system.

All water storage structures shall be provided with an overflow, which is brought down to an elevation between 12 and 24 inches (0.3-0.61 m) above the ground surface and discharges over a drainage inlet structure or a splash pad. All overflow pipes shall be located so that any discharge is visible.
Sanitary Surveys

Examples of Potential Significant Deficiencies

Lack of Storage Tank Cleaning- Example: Gideon, MO

- Untreated groundwater source
- Taste and odor complaints caused municipal to conduct a comprehensive flushing program
- Salmonella had contaminated the largest municipal tank (1993)
- Nearly 600 of the 1104 residents become ill and seven people died in a nursing home

Photos and information courtesy of James A. Goodrich, Ph.D. with EPA/ORD
There are 4 main parts to the Ground Water Rule:

2. Monitoring
Monitoring

Triggered Monitoring
Triggered Monitoring

- The Total Coliform Rule (TCR) & the GWR:
  - Run parallel
  - But are separate rules with separate requirements
Triggered Monitoring

- GWR Triggered Monitoring answers the question:

  Do coliforms in the distribution system mean fecal contamination in the ground water source???
Triggered Monitoring

- Under Triggered Monitoring:

  You **DO NOT have to do anything UNTIL**

  you have a Total Coliform Rule unsafe/positive routine sample
  (unsafe/positive = TC+, EC+ or FC+)
Triggered Monitoring Continued

- **ANYTIME** you have an unsafe/positive Total Coliform Rule routine sample and are not sure what to do:
  - Call Tiffany Mifflin at **303-312-6521**
  - If Tiffany is out of the office, call Bre at **303-312-6034**
Triggered Monitoring Continued

WHERE are we sampling for with Triggered Monitoring?

- Sample for the GWR at the source (or EPA approved location)
- Sample **B**EFORE treatment
- Mark the sample location as **S**OURCE!!!
- Might be necessary for GWS to install new sample tap
- You may take combined source samples, but ensure you notify Tiffany, GWR Manager, you took combined source samples
Triggered Monitoring Continued

Regular Sampling Location

Treatment

Sampling Location

(PRIOR to treatment)

Distribution System
Triggered Monitoring Continued

WHAT are we sampling for with Triggered Monitoring?

- One of these 3 fecal indicators (FI):
  1. E.coli- (Suggested FI to use due to familiarity, cheapest & know which labs are certified)
  2. Coliphage
  3. Enterococci

If you select Coliphage or Enterococci make sure the lab is certified by EPA to analyze that contaminant!
For the rest of this presentation I will be using E. coli as the fecal indicator for examples.
Triggered Monitoring Continued

http://www.epa.gov/region8/waterops/reporting/forms.html#gwr
This website is designed for the use of owners, operators, and administrative staff who work at public water supply systems in Wyoming and on Tribal lands within the jurisdiction of US EPA Region 8. You will be able to look at data we have for your system and sampling results, obtain reporting instructions and forms, and read about requirements and news that affect your water system. In the future, we will provide information to Tribal operators about their training and certification and will offer some noncredit learning opportunities online. Browse the links to the left for more specific information on drinking water operation and regulatory topics, including:

**Drinking Water Watch** – See what data EPA Region 8 has on your public water system, including inventory, sampling requirements, sample results, violations, and system contacts. Information is updated weekly from our Safe Drinking Water Information System (SDWIS). You may access the **Drinking Water Watch Login** page from here.

**Emergencies and Security** – Plan for emergencies and find out what to do regarding
Reporting, Forms and Instructions

Reporting Forms

Use the documents in this section to report on water system operational activities. For more information, please contact us.

You will need Adobe Reader to view some of the files on this page. See EPA's PDF page to learn more.

To download any of the files below, right-click on the link (or Ctrl-click on a MAC) and select “Save Target As” to download the file to a folder on your own computer.

On this page

- Changes to Public Water Systems (CHG)
- Consumer Confidence Reports (CCR)
- Emergency Response Plan Teachers' Guide (ERPT)
- Ground Water Rule (GWR)
- Lead & Copper Rule (LCR)
- Public Notification (PN)
- Sanitary Surveys (SS)
- Stage 1 Disinfectants/Disinfection By-Products Rule (Stage 1 DBPR)
As soon as you learn of the TCR+ routine sample follow these steps:

1. Call Tiffany at 303-312-6521 if you have any questions or need help!!!

2. Sample the source(s):
   At least 1 (100 mL) ground water source sample for **EVERY** positive TCR routine sample at **EACH** ground water source

3. Mark the samples as “**SOURCE**” on the **Source Water Sampling Form**

4. If your system has multiple sources inform me of that fact and we’ll work together to determine which sources need to be sampled. Be sure to include the location info on the bottle label- i.e. “**SOURCE Well #3**”

5. **ONLY** if the result is **E. coli positive** is further action required for the GWR!!! **TC+ and FC+ are not used for the GWR**
Example System

PWS# WY560123456

Note: Sanitary Survey 5/6/08 – Chlorinators for Wells #1, #3, and #6 (TP01 and TP02) have been removed.

Housed Well #6 (WL02)

Storage Tank 200 K Gal. (ST02)

Well #6 Sampling Point (SP02)

SOURCE-Well #6

Distribution System #2 (DS02)

Well #8 (WL05)

Well #8 Sampling Point (SP04)

SOURCE-Well #8

Vault Housed Well #1 (WL01)

Well #1 & #3 Sampling Point (SP03)

Well #9 Sampling Point (SP05)

Well #9 (WL06)

Combined SOURCE-Well #1, #3 & #9

Sample Points are for Nitrates, IOCs, RADs, SOCs, and VOCs.

SCHEMATIC NOT TO SCALE
1-6-2000

Aimee L. Majewski

Agreed to by
X____________________

Revised 11-07-2003 B Bockstahler
Revised 1-12-04 C Lamb
Revised 7-26-06 C Lamb
Revised 8-12-08 C Lamb
Revised 2-9-11 C Lamb
**WY and Tribal- Ground Water Rule**

**SOURCE WATER SAMPLING**

*Triggered Source Monitoring Sample Collection And Reporting Form*

<table>
<thead>
<tr>
<th>Sampler(s) Section (For field sampler use only):</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Utility Information</strong></td>
</tr>
<tr>
<td>Public Water System (PWS) Name: EXAMPLE SYSTEM</td>
</tr>
<tr>
<td>PWS Identification Number (PWSID): WY560123456</td>
</tr>
<tr>
<td>PWS Street Address: 8765309 TIFF MIFF WAY</td>
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<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Sample Collection Date</th>
<th>Sampling Location (i.e. &quot;SOURCE-Well #4&quot;):</th>
<th>Sample Type (Check One)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/9/11 9 am</td>
<td>SOURCE WELL #6</td>
<td>Routine</td>
</tr>
<tr>
<td>3/9/11 9 am</td>
<td>SOURCE WELL #8</td>
<td>Routine</td>
</tr>
<tr>
<td>3/9/11 9 am</td>
<td>SOURCE WELLS 3, 9, 1</td>
<td>Routine</td>
</tr>
</tbody>
</table>

Sampler(s) name (Print): TIFF MIFF  
Sampler(s) signature:  
Date signed: 3/9/11

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**Laboratory Section (For laboratory use only):**

<table>
<thead>
<tr>
<th>Laboratory Information</th>
<th>Laboratory Phone Number</th>
<th>Date/Time Sample Received:</th>
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<tbody>
<tr>
<td>Laboratory Name:</td>
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<thead>
<tr>
<th>Lab Specimen ID</th>
<th>Sample Location</th>
<th>Analytical Method Used</th>
<th>Total Coliform P/A/NA</th>
<th>E. coli P/A/NA</th>
<th>Analysis Start Date</th>
<th>Analysis Complete Date</th>
<th>Comments</th>
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Analyst(s) Signature:  
Date signed:  

Send Copies Of Completed Forms To: Ground Water Rule Manager, Tiffany Mifflin  
Email: mifflin.tiffany@epa.gov
GWR Triggered Monitoring 1000 or Less Population
The Fecal Indicator MUST be E. coli!

**TOTAL COLIFORM RULE MONITORING**

**TRIGGERED SOURCE WATER MONITORING**

Call Tiffany at 303-312-6521 if you have ANY questions or need assistance

Within 24 Hours of Notification of TCR+

Take 4 ALL repeat samples required under the Total Coliform in the distribution system
ADDITIONALLY, collect one ground water SOURCE sample from each source in use during original TCR+
Mark the sample as “SOURCE”
Ask lab to analyze sample(s) for presence of E. coli
ONLY if the sample result is E. coli positive is further action required.

If EC+
Tier 1 Public Notice in 24 hrs:

**ADDITIONAL SOURCE WATER MONITORING**

W/In 24 Hrs of EC+ Notification
Collect 5 additional ground water SOURCE samples from same source as EC+
Analyze sample(s) for E. coli; No further action unless any sample result is EC+

If E. coli +
Continue Providing Tier 1 Public Notice

4 Corrective Action Options (CA)

1) Correct All Significant Deficiencies
2) Provide Alternative Source
3) Eliminate Source Contamination
4) Provide 4-Log Inactivation/Removal Viruses

Call Tiffany at 303-312-6521
Triggered Monitoring Continued

- Consecutive Systems
  - Notify Tiffany at 303-312-6521
  - Notify all wholesaler system(s) within 24 hours
Triggered Monitoring Continued

- Wholesaler Systems
  - Upon receipt of notification from consecutive system:
    - Contact Tiffany at 303-312-6521
    - Collect samples from all ground water sources serving the consecutive system within 24 hours of notice
    - For any EC+ sample, notify all consecutive systems served by that ground water source and EPA within 24 hours
Triggered Monitoring Continued

- **Recap of Triggered Monitoring**
  - Call Tiffany if you have a TCR+ routine sample at 303-312-6521 & need assistance
  
  - Sample all your GW sources
  
  - Fill out the Source Water Sampling form to submit to your lab w/ the source sample(s).
  
  - Use regular lab form to submit your Total Coliform Rule repeat samples!
Monitoring-Triggered Monitoring + Disinfection

Disinfecting BUT

Conducting

Triggered Monitoring
Monitoring-
Triggered Monitoring + Disinfection

- If you are properly & continuously disinfecting you should NOT have any TCR+ routine samples:
  - Which means you should not have to do GWR source monitoring
  - Because there shouldn’t be any TCR+ routine samples to trigger the GWR!

- Before anyone goes crazy with disinfection-
  - C & NTNC systems adding chemical disinfectants will follow the D/DBPR regulations
  - TNC systems, as a general guideline, should:
    - Measure & record the chlorine residual when taking TCR samples
    - Keep the residual over 0.2 mg/L and under 2.0 mg/L

- Systems MUST continuously chlorinate for this option to work!!!!!!!!!!!!!!!
Triggered Monitoring
1000 or Less Population w/ One Source

TCR+ (1) Routine Sample

1 GWR Source Sample (If EC+)

4 Repeat Samples TCR

5 Additional GWR Source Samples (If EC+)

5 Routine TCR Samples (Next Month)

GWR Corrective Action(s)

Total Cost Estimate???
16 Samples (w/ initial routine) x ~$25 Test = $400 w/o Corrective Action Cost
There are 4 main parts to the new Ground Water Rule:

3. Corrective Actions
Corrective Actions

- Required with one, or both, of the following:
  
  1. Significant Deficiency
  
  2. Systems Conducting Triggered Monitoring
     E. coli Positive Ground Water Source Sample(s)
Corrective Actions

- 4 corrective action alternatives; one or more actions will be required:
  1. Correct ALL Significant Deficiencies
  2. Provide an Alternate Safe Source of Water
  3. Eliminate the Source of Contamination
  4. Provide Treatment that Reliably Achieves 4-Log Inactivation and/or Removal of Viruses and Conduct Compliance Monitoring from that Point Forward
     (Triggered Monitoring will no longer be an option)
Additional Fun Things!!!

PNs
and
Special Notices
Public Notice Requirements

- **Tier 1: Immediate Notice**
  Fecal indicator-positive source water sample(s)

- **Tier 2: Treatment Techniques**
  Failure to complete required corrective action or be in compliance with an EPA approved schedule

- **Tier 3: Failure to Monitors**
  Failure to conduct required triggered source water monitoring
Special Notice

COMMUNITY SYSTEMS

- Must inform the public of the EC+ source sample or any significant deficiency that has not been corrected

- The system must continue to inform the public annually until the significant deficiency is corrected or the EC+ in the ground water source is determined by EPA to be corrected
Special Notice

NON-COMMUNITY SYSTEMS

• Must inform the public of any significant deficiency that has not been corrected within 12 months of being notified by EPA. The system must continue to inform the public annually until the significant deficiency is corrected. The information must include:

a) The nature of the significant deficiency and the date the significant deficiency was identified by EPA;

b) The EPA-approved plan and schedule for correction of the significant deficiency, including interim measures, progress to date, and any interim measures completed;

c) For systems with a large proportion of non-English speaking consumers, as determined by the EPA, information in the appropriate language(s) regarding the importance of the notice or a telephone number or address where consumers may contact the system to obtain a translated copy of the notice or assistance in the appropriate language.
Recap

- Ground Water Rule (GWR) was created to provide additional protection against fecal contamination in ground water systems

- IT WENT INTO EFFECT ON DECEMBER 1, 2009

- There are four main parts to the new Ground Water Rule:
  1. Sanitary Surveys
  2. Monitoring
     - Triggered Source Water Monitoring
       (If a system has a TCR+ routine sample & you need assistance call Tiffany at 303-312-6521)
       (If CONTINUOUSLY disinfecting, in theory you should never have to monitor…)
  3. Corrective Actions
  4. Source Water Assessments (EPA Region 8 is not currently implementing)

- Any time you have questions call Tiffany at 303-312-6521!!!
Systems Subject to the GWR

Remember:

ANYTIME
You have a routine

TC+
and have questions

Call Tiffany!!!
Just Wanted to Say…

Thank You!!!!!