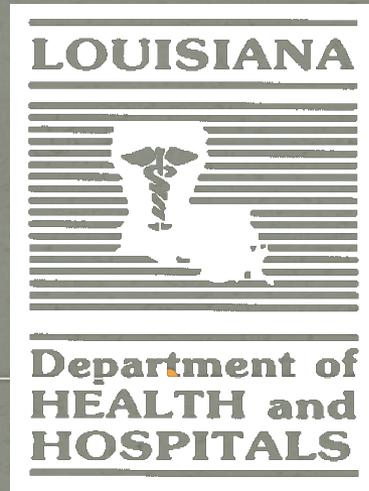


# GROUND WATER RULE



Office of Public Health  
Center for Environmental Health Services  
Engineering Services

# Ground Water Rule Effective Date

December 1, 2009

# Who Does the Rule Apply To?

- **The Ground Water Rule applies to:**
  - Both Community and Non-Community Public Water Supplies that use ground water, (not surface water) whether you produce your own water or purchase from another water system.

# 4 Tools Used By The GWR in Addressing Possible Contamination in the Source and Finished Water

- 1- Sanitary Surveys – 8 Categories
- 2- Source Water Monitoring - Testing Your Wells for Fecal Contamination
  - A. Triggered Monitoring
    - 1. Wholesale / Purchase Systems
  - B. Assessment Monitoring
- 3- Corrective Action – (addressing the problems)
- 4- Compliance Monitoring – (applies to systems using treatment capable of 4-log removal)

# 1- Sanitary Surveys

- Purpose

- For the surveyor to get a total understanding of a water system and to identify potential sources of contamination

- Frequency

- Every 3 years for Community Water Systems
- Every 5 years for Non-Community Water Systems

# 1- Sanitary Surveys

- Eight Categories Looked at during a Sanitary Survey
  - Source - Wells
  - Treatment
  - Distribution System Integrity
  - Finished Water Storage
  - Pumps, pump facilities, and control
  - Monitoring, reporting, and data verification
  - Water system Management and Operations
  - Water system operator compliance with State requirements

(Per GWR, the State must identify Significant Deficiencies and require corrective action)

# 1- Sanitary Surveys

- **Significant Deficiency** – per 40 CFR 141.403 significant deficiencies include, but are not limited to, defects in design, operation, or maintenance, or a failure or malfunction of the sources, treatment, storage, or distribution system that may cause, or have potential to cause, the introduction of contamination into the water delivered to consumers.

# 1- Sanitary Surveys

- Identifying Significant Deficiencies

Examples include but not limited to:

- Well located near potential sources of contamination
- Sanitary seal is not water tight
- Vent is not screened
- Well casing is rusted
- No raw or finished water sample tap
- No flow meter
- Well casing is not at least 12" above ground



# 1- Sanitary Surveys

- If a significant deficiency is identified as a result of a sanitary survey, the system must take corrective action.  
(In other words, the problem must be fixed)

# 1- Sanitary Surveys

## 4 Ways to take Corrective Action

1. Correct all violations
2. Provide an alternate source of water
3. Eliminate the source of contamination
4. Provide 4 – log treatment

# 1- Sanitary Surveys

## Time Frame to Correct Deficiencies

Within 60 days of receipt of the DHH Notice of Deficiencies letter, you must submit to DHH a signed and dated written response of:

- the actions you have taken to correct the deficiencies, and/or
- the specific dates for when the deficiencies will be corrected (*i.e.*, request an extension for correcting the deficiencies).

# Excerpt from Sanitary Survey Violation Letter

- The deficiencies listed in the above table titled “NOTICE OF DEFICIENCIES / NOTICE OF VIOLATIONS” **must be corrected and a written response submitted to the department within 60 days of the receipt of this letter.** The response must summarize what actions you have taken to correct these items, and **include all required documentation to support those actions.** If additional time is required to correct these deficiencies, then the written response must also contain a request with specific dates when the deficiencies will be corrected. (CAP)

# 1- Sanitary Surveys

- Example of Violation

- Violation – LAC 51:XII.327.A.10 -  
Every potable water well shall be provided with a watertight sanitary well seal at the top of the casing or pipe sleeve...

# 1- Sanitary Surveys

- Example of a Written Response to the Violation
- LAC 51:XII.327.A.10 - Every potable water well shall be provided with a watertight sanitary well seal at the top of the casing or pipe sleeve...

*The area around the well seal was cleaned with a wire brush and caulking was applied to eliminate any cracks in the sanitary seal.*

# 1- Sanitary Surveys

- Additional time may be requested, but must be made **IN WRITING** **TO THE REGIONAL OFFICE** with **justification** for requesting the additional time and **proposed** **dates** for completion must be included.

# 1- Sanitary Surveys

- It is not guaranteed that your request will be honored. It is based on proper justification and the system's plan to make corrections. **Decided by DE**

# 1- Sanitary Surveys

- The Regional Office must provide a written response to the water system within 15 days either granting or denying the additional time .

# 1- Sanitary Surveys

- What happens if violations go unaddressed or the Water System does not respond within the 60 day time period?

Treatment Technique Violation  
will be issued by EPA.

# 1- Sanitary Surveys

- A Treatment Technique Violation is a violation that requires a TIER 2 PUBLIC NOTICE ASAP but no later than **30 days** from the date you receive the notice

# 1- Sanitary Surveys

- What happens if a system corrects all violations but fails to notify DHH within the 60 day time frame?
- Type 5 Violation – Failure to Report – NO PN, CCR

# 1- Sanitary Surveys

- If a water system does not respond to a Notice of Violation or has not met any other state approved corrective action plan for correcting the significant deficiencies **after 120 days**, then the system will be targeted for an **Administrative Order**

# 1- Conclusion of Sanitary Surveys



# 4 Tools Used By The GWR in Addressing Possible Contamination in the Source and Finished Water

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  - A. Triggered Monitoring
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## 2- Source Water Monitoring – Testing Your Wells for Fecal Contamination

- **A. Triggered Monitoring** – Everyone automatically falls into this category unless you meet *4 log removal*. Sampling is triggered by TCR Routine monthly samples with a total coliform positive result
- **B. Assessment Monitoring** – State has to purposely put you on Assessment Monitoring

## 2- Source Water Monitoring – Testing Your Wells for Fecal Contamination

- **A. Triggered Monitoring** - A GWS that does not provide 4-log treatment of viruses must conduct Triggered Monitoring after being notified that a **TCR sample is total coliform-positive**. This sampling is in addition to repeats needed in the distribution system under the Total Coliform Rule.

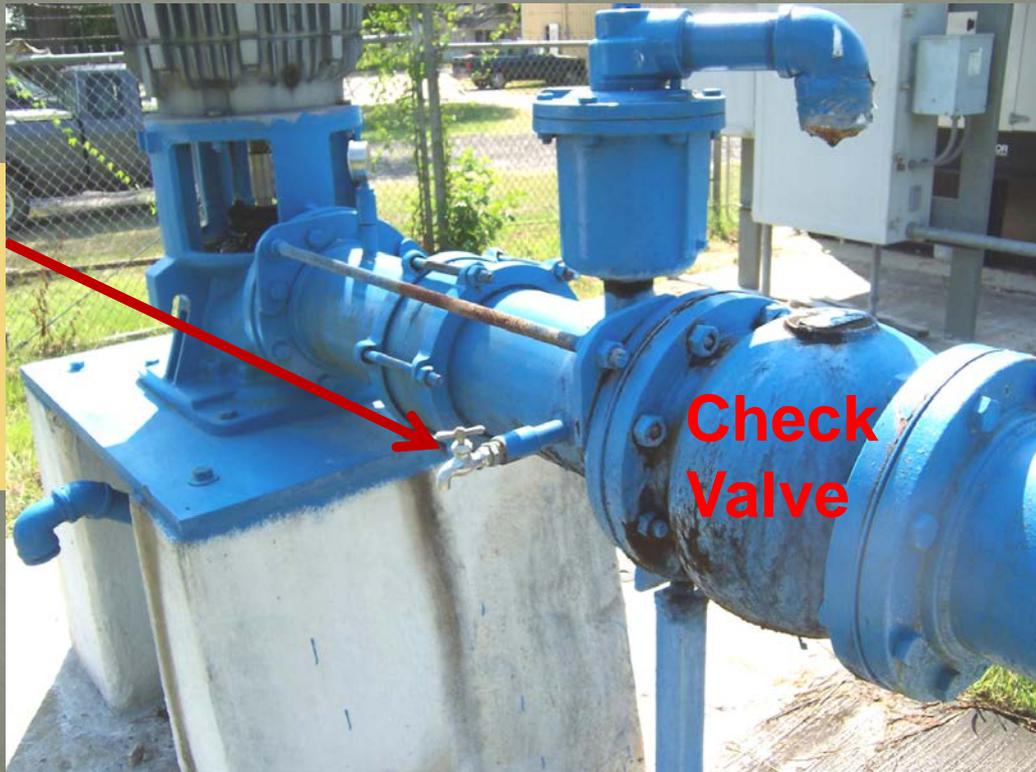
## 2- Source Water Monitoring – Testing Your Wells for Fecal Contamination

- **A. Triggered Monitoring** - After receiving notice that one of your monthly routine samples is total coliform-positive, the system must (within 24 hours) collect **one sample** at each active well, for each monthly routine sample with a total coliform positive result.

## 2. Source Water Monitoring – Testing Your Wells for Fecal Contamination

- Triggered samples must be taken prior to the check valve and prior to any treatment.

**Sample  
Tap for  
GWR  
Sample**



## 2. Source Water Monitoring – Testing Your Wells for Fecal Contamination

- Total Chlorine must be taken and recorded on the Lab 8 Form. The Total chlorine should be **Zero** to be considered a valid sample. If sample is considered invalid because it contains chlorine, then a GWR Monitoring Violation could be issued.

WRITE FIRMLY WITH BALL POINT PEN — DO NOT USE FELT PEN OR PENCIL  
DO NOT FOLD OR WRAP AROUND SAMPLE BOTTLE.

LAB 619 (5/95)

\_\_\_\_\_ of \_\_\_\_\_ Project Code \_\_\_\_\_

LAB USE ONLY  
Lab Sample & Lab Nos  
Lab Date and Time Received

LOUISIANA D.H.H. OFFICE OF PUBLIC HEALTH  
DIVISION OF LABORATORIES - WATER MICROBIOLOGY  
LABORATORY REQUEST AND REPORT FORM

Name of Supply \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_ Parish \_\_\_\_\_ Collected by \_\_\_\_\_

Public Water Supply ID (PWS ID) \_\_\_\_\_ (1-7)  
Date Collected \_\_\_\_\_ (8-13)  
Time Collected \_\_\_\_\_ (14-17)

Point of Collection (POC) or POC ID \_\_\_\_\_ (18-47)  
\*Note: All treated drinking water samples should have the tap sample no. of the treated positive sample in parentheses at the end of the POC - eg. (052405) (18-47)

TYPE OF SAMPLE

Drinking Water Program  
1. Routine  4. \*Repeat - Upstream Tap  7. Investigative   
2. Replacement  5. \*Repeat - Downstream Tap  8. Other - Describe above in POC  (48)  
3. \*Repeat - Original Tap  6. \*Repeat - Additional Tap

Other Potable  Non Potable   
1. New Facility (Line, Well, etc.)   
2. Well   
3. Private Supply   
4. Other - describe below in comments   
1. Raw Water   
2. Surface Water   
3. Recreation Water (Bathing Area)   
4. Sewage   
5. Other - describe below in comments

Comments / Special Tests \_\_\_\_\_  
Disinfectant Residual  
Free ppm \_\_\_\_\_ Total ppm \_\_\_\_\_

LABORATORY USE ONLY

MMO-MUG Total Coliform P/A  (49)  
0. Not Found  
1. Present  
MMO-MUG E. Coli P/A  (50)  
0. Not Found  
1. Present

MMO-MUG Total Coliform MPN / 100 ml \_\_\_\_\_  
Multiple Tube Fermentation Total Coliform MPN / 100 ml \_\_\_\_\_  
Standard Plate Count / 1ml \_\_\_\_\_  
MMO-MUG E. coli MPN / 100 ml \_\_\_\_\_  
Multiple Tube Fermentation Fecal Coliform MPN / 100ml \_\_\_\_\_  
Other Tests \_\_\_\_\_

Remarks \_\_\_\_\_

Date Analyzed: \_\_\_\_\_  
Time Analyzed: \_\_\_\_\_  
Analyst \_\_\_\_\_  
LABORATORY COPY Sample No. S 046483

DETACH AND PLACE NUMBERED TAG ON SAMPLE BOTTLE CAP S 046483

Check and then record the **TOTAL** chlorine residual right here. (pre-lube lines)

Disinfectant Residual  
Free ppm | Total ppm  
**0.0**

# TRIGGERED SOURCE WATER SAMPLE ESCALATION CHART

# of Routine Pos in Dist System	# of Samples Needed @ Each Well	# of Active Wells	Total # of Triggered Well Samples
1	1	3	3
2	2	3	6
4	4	3	12

## A. Triggered Source Water Monitoring

- If you have a well that can't be ran at the time Triggered samples are required, please notify your Regional DHH office.

# A. Triggered Source Water Monitoring

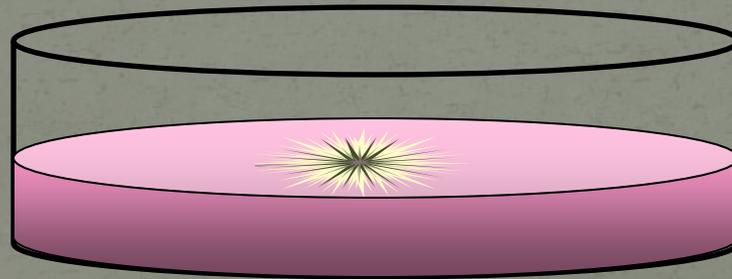
## 1. Wholesale / Purchase Systems

- If a purchase system has a total coliform-positive sample it must notify the wholesale system(s) **within 24 hours** of being notified of the total coliform-positive sample

## A. Triggered Source Water Monitoring

### 1. Wholesale / Purchase Systems

- The Wholesale system then has to sample all of its wells and test for a Fecal Indicator.



## A. Triggered Source Water Monitoring

### 1. Wholesale / Purchase Systems

- If any one of the wholesalers well samples is fecal positive, the GWR requires both the wholesaler and the purchase system to notify the public within 24 hours of receiving notice from the State. (Tier 1 PN)

## A. Triggered Source Water Monitoring

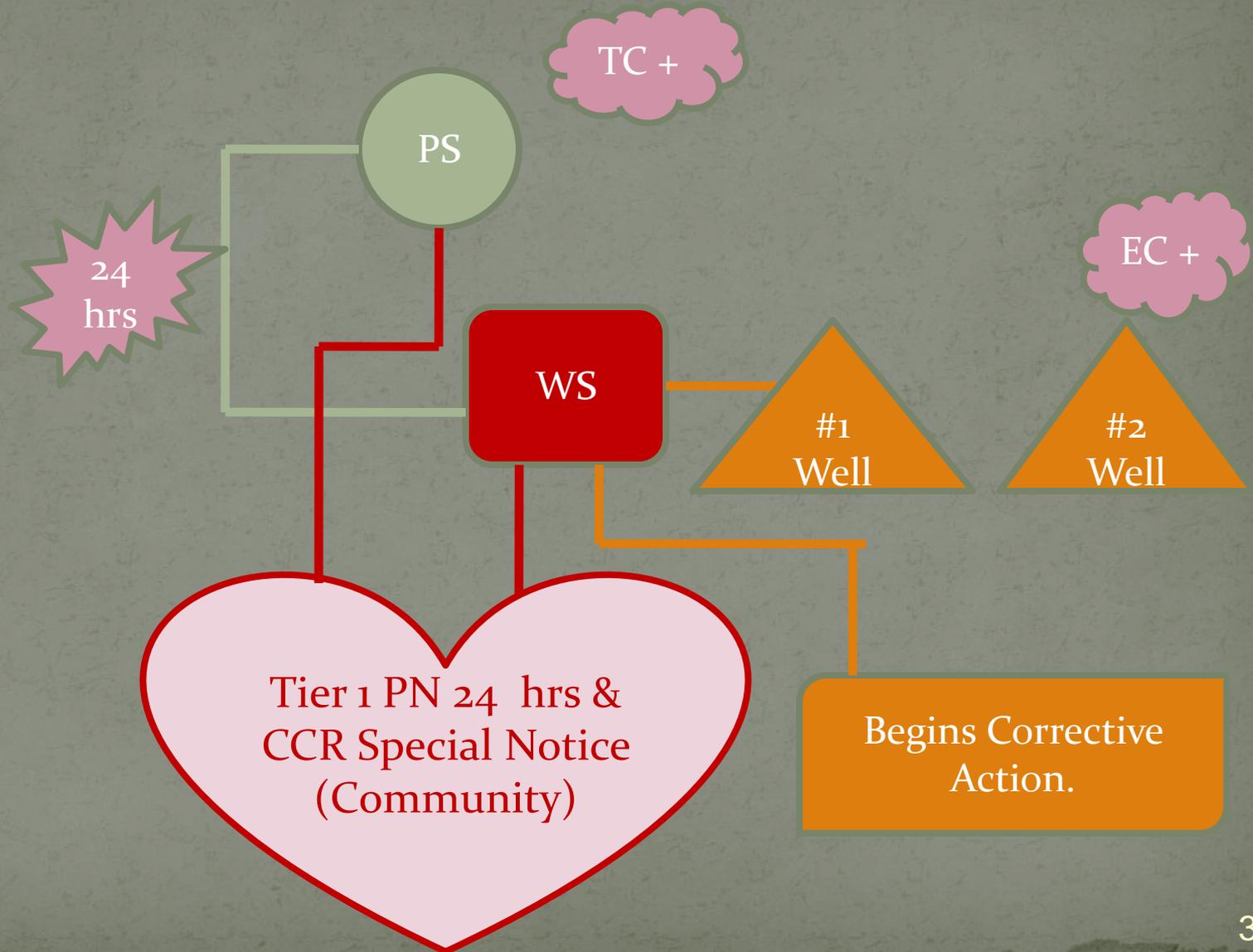
- **Community Systems** – In addition to the Tier 1 PN, have to put a Special Notice in their CCR
- The State will also direct the water system to take immediate corrective action

# A. Triggered Monitoring

## 4 Ways to take Corrective Action

1. Correct all violations
2. Provide an alternate source of water
3. Eliminate the source of contamination
4. Provide 4 – log treatment

# A. Triggered Monitoring - Scenario



# 4 Tools Used By The GWR in Addressing Possible Contamination in the Source and Finished Water

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## B. Assessment Source Water Monitoring

- Assessment Monitoring –  
Sampling your wells on a regular basis regardless if you have a positive in the distribution system.  
(continually assessing the water quality)

## B. Assessment Source Water Monitoring

- Assessment Monitoring – Is used by the State as a complement to Triggered Monitoring. The State has the option to require systems, at any time, to conduct Source Water Assessment Monitoring to help identify high risk systems.

## B. Assessment Source Water Monitoring

- The State will use TCR/Triggered Source Water Monitoring results, along with other information to identify **higher risk systems** for Assessment Source Water Monitoring. We currently do not have anyone on Assessment Source Water Monitoring.

## 2- Conclusion of Source Water Monitoring



# 4 Tools Used By The GWR in Addressing Possible Contamination in the Source and Finished Water

- 1- Sanitary Surveys – 8 Categories
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### 3. Corrective Action

- Corrective Action –  
Correct what is wrong  
and make it right.

### 3. Corrective Action

- Is Required For the Following:

Sanitary Survey Violations

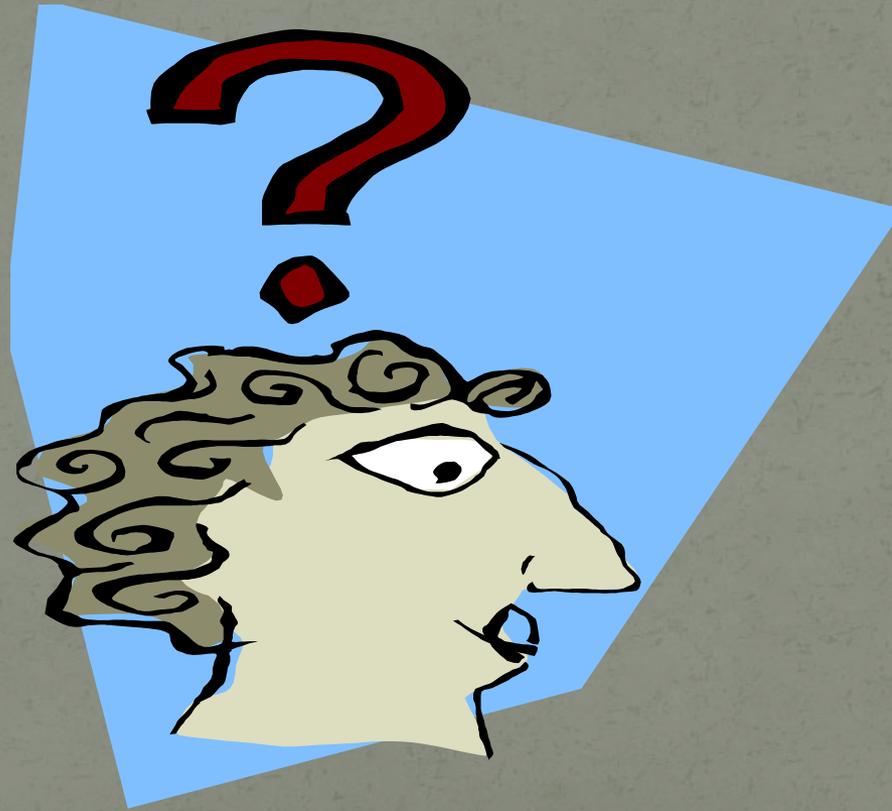
or

A Fecal Positive at a Well

### 3. Corrective Action

- The system must implement one or more of the following Corrective Action Options: (choices depend on violation)
  - 1- Correct all sanitary survey violations
  - 2- Eliminate the source of contamination
  - 3- Provide an alternate source of water
  - 4- Provide 4 – log removal.

## 2- Conclusion of Corrective Action



# 4 Tools Used By The GWR in Addressing Possible Contamination in the Source and Finished Water

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## 4. Compliance Monitoring - Need to Know Information

1. 4 Log removal - Very basically means maintaining a certain **chlorine residual** which is dependent on your PH, water temperature and time and then multiplying that residual by the **amount of time** that the water remains in storage, prior to having contact with the first customer. It boils down to a 99.99 % removal or inactivation of disease causing organisms.

# Understanding “log”

- “Log” refers to the percent of microorganisms that are removed or inactivated by treatment

Log	% removal/inactivation
1-log	90%
2-log	99%
3-log	99.9%
4-log	99.99%
5-log	99.999%

## 4. Compliance Monitoring Need to Know Information

2. If you can meet 4-log removal, you don't have to sample your wells if you have a positive routine monthly sample.

But... you do have to conduct what is called **compliance monitoring** at a point where 4-log removal or inactivation has been calculated.

# Plans Submittal for 4 - log

- Systems who think they might meet 4-log inactivation of viruses before or at the first customer, must submit the necessary engineering or operational documentation for review and approval to your DHH District office

## 4. Compliance Monitoring

- If you choose 4 log removal as a Corrective Action Option then you must conduct Compliance Monitoring

## 4. Compliance Monitoring

- What is Compliance Monitoring?

Monitoring your chlorine residual levels at a predetermined location to be certain you continuously meet the residual levels set in your plan submitted to the Health Department. It is critical to maintain these levels in order to assure 4 – log removal.

# 4. Compliance Monitoring

## Compliance is Based on Population

A. Systems Serving Less Than 3,300 People

And

B. Systems Serving Greater Than 3,300 People

# 4. Compliance Monitoring

## A. Less than 3,300 Population

1. Monitor residual daily during Peak Flow
2. Record Peak Flow Residual on Daily basis
3. If Residual Falls Below Pre-determined level, take a grab sample every 4 hours until residual is restored

# 4. Compliance Monitoring

## B. Greater than 3,300 Population

1. Monitor residual continuously at approved location (on line analyzer is required)
2. Record Lowest Daily Residual
3. If on line analyzer fails, you must take a grab sample every 4 hours until repaired
4. Your analyzer must be back in service within 14 days

# 4. Compliance Monitoring

## What is Considered a Violation?

- **Failure to maintain 4 – log for 4 hours.**  
(If you serve less than 3,300 you need to begin monitoring every 4 hours after your first peak reading falls below the predetermined required residual)

*Failure to maintain 4 – log is a treatment technique violation that requires a Tier 2 Public Notice (30 days to notify)*

# 4. Compliance Monitoring

## What is Considered a Violation

- Failure to conduct the required compliance monitoring or Failure to Report.

### **TIER 3 Public Notice (12 months)**

Community Systems may be able to comply by putting it in your Consumer Confidence Report  
( Violation Occurs July 1 – December 31)

# 4. Compliance Monitoring

## Reporting Requirements

Report to the State	Due Date
Fail to Meet 4 – Log for 4 hours	ASAP but at least by end of next business day
End of Month Compliance Monitoring Records	By the 10 <sup>th</sup> of the following month

# Record Keeping Requirements

- 3 Years Minimum

1. Public Notice Documentation

- 5 Years Minimum

1. Records of decisions and invalidations of fecal ground water source samples.

2. Purchase systems – Keep documentation of when they notified the wholesale system of any total coliform positive samples

# Record Keeping Requirements

- 5 Years Minimum

3. Records of the lowest daily residual concentration

4. Records of the date and duration of any failure to maintain the minimum residual concentration for a period of more than 4 hours.

# Record Keeping Requirements

- 10 Years Minimum

1. Documentations of Corrective Actions
2. Records of State specified minimum disinfectant residuals

# Resources

- <http://www.epa.gov/safewater/disinfection/gwr/regulation.html>



# QUESTIONS?