



GROUND WATER RULE

Compliance Date
December 1, 2009

Prior Notification of Ground Water Rule (GWR)

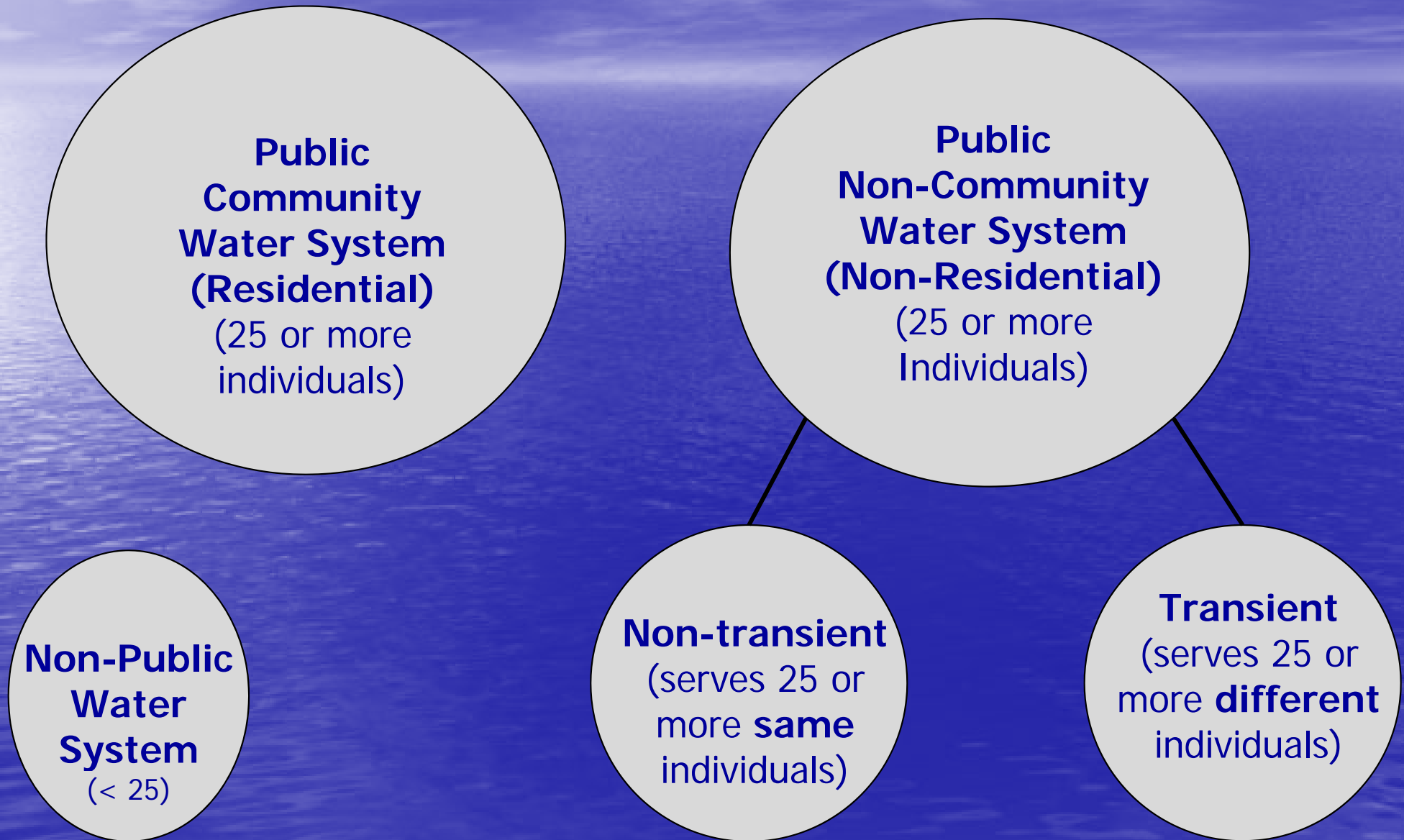
- February 26, 2009
 - SCDEPHS memo E2 reporting & GWR
- Multiple training sessions in Wharton
 - March thru May 2009 by NJDEP
- October 27, 2009
 - Bureau Safe Drinking Water package re: GWR

WHY ARE YOU HERE TODAY?

- Your facility is served by a well.
- Your well provides water to 25 or more individuals on a non-residential basis.
- Your well is subject to new regulations under the Ground Water Rule (GWR).



Types of Water Systems



Public vs. Non-Public Water System

- **Public** – regularly provides potable water to at least 15 service connections or **25 or more** individuals 60 days/year or more
- **Non-public** – provides potable water to individual dwellings or regularly serves **fewer than 25** individuals



Public Water System

- A water system that serves at least 15 service connections.
i.e. building with at least 15 residential units
or development with at least 15 homes that share
a water source
- A water system that regularly serves at least 25
individuals 60 days per year or more.
i.e. school, restaurant, office, library, campground

Is your system Public or Non-public?

- Do 25 or more persons have access to your water system at least 60 days per year or more?
 - If no, your system needs to be taken off the public non-community water system list.
 - If yes, your system must remain on the list and it is subject to the Ground Water Rule.

Public Water Systems

Public Water System

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graph TD; A[Public Water System] --- B[Public Community]; A --- C[Public Non-Community]
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Public Community

Public
Non-Community

Community vs. Non-Community

Community -
Serves individuals on
residential basis
(i.e. Newton, Sussex, Franklin)



Non-community -
Serves individuals on
non-residential basis
(i.e. offices, schools, libraries)



Summary

Public Community Water Systems

- A public water system which serves at least 15 service connections (homes) used by year round **residents** or at least 25 year-round **residents**.
- Examples – municipal water supply, some lake communities

Summary

Public Non-Community Water System

- A public water system that is **not** a public community water system (**non**-residential).
- A system that is either a non-transient or transient water system serving 25 or more individuals.

Non-Transient Non-Community

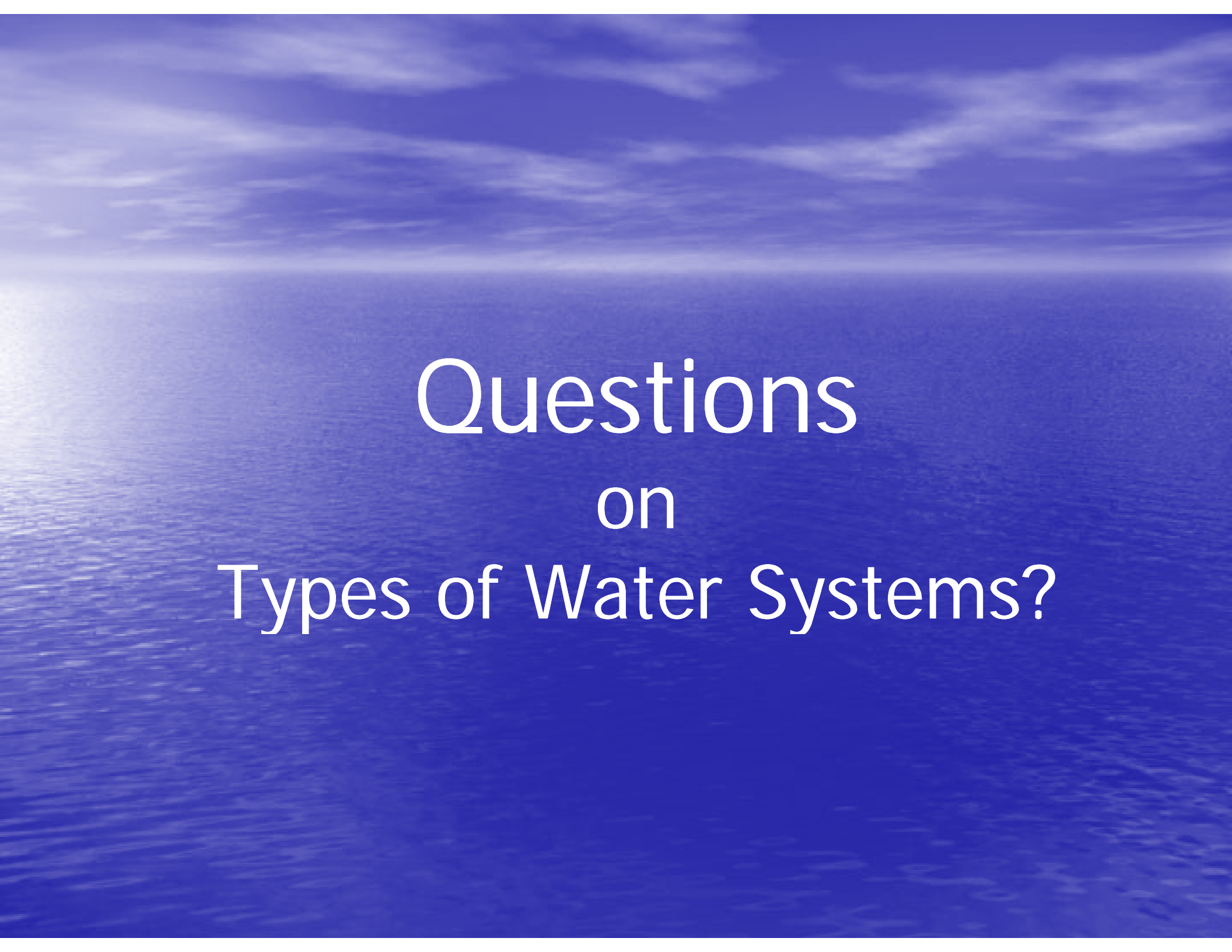
- Routinely serves at least 25 of the **same** persons on a non-residential basis, 6 months or more in any calendar year.
- “Routinely” is defined as at least 4 days per week, 4 hours per day.
- Examples – schools, large office buildings



Transient Non-Community

- Serves at least 25 transient (**come and go**) individuals for at least 60 days in any given calendar year.
- Examples – Restaurant, library, small office





Questions
on
Types of Water Systems?

Monitoring Responsibilities

Safe Drinking Water Act

Total Coliform Rule

Ground Water Rule

Safe Drinking Water Act

- Regulations that govern sampling of wells
 - Public Community
 - Public Non-Community
 - Non-public
- Public Water Systems
 - Monitoring responsibilities include:
 - Total Coliform Rule
 - Ground Water Rule
(newly adopted from EPA)

Total Coliform Rule * (TCR)

- Routinely sample distribution system checking for Total Coliform (TC)
 - If positive, 4 repeat TC required immediately
 - 5 TC required month following
- Ground Water Rule is triggered when routine TC is positive

*Effective since onset of Safe Drinking Water Act 1974

Ground Water Rule (GWR)

- Affects public water systems
- You have a public water system that may be affected by the GWR
- You are here to find out **how** the GWR might affect your water system.

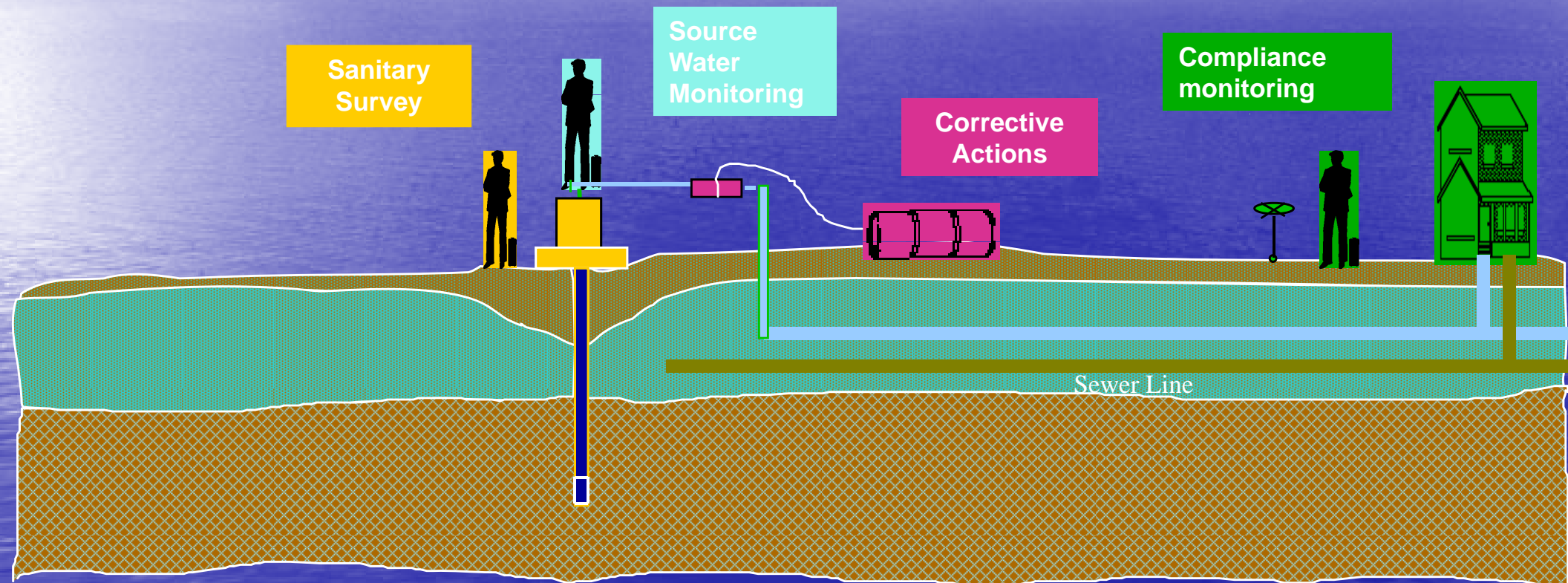
Purpose of the GWR

- To provide for **increased protection against microbial pathogens** in public water systems that use ground water sources (wells).
- To determine **which ground water systems are susceptible to fecal contamination** since disease-causing microorganisms (pathogens) may be found in fecal contamination.
- E. coli (EC) is designated as the fecal indicator.

Ground Water Rule

- Became effective December 1, 2009
- Requires source (raw) water monitoring in addition to TC repeat testing (distribution system) when routine TC fails
- Testing must be performed within 24 hours of notification of positive TC
- Identify and correct source of contamination
- No more “grandfathering”
- Can no longer shock chlorinate a well without prior Bureau of Safe Drinking Water approval

GROUND WATER RULE REGULATORY APPROACH



**Sensitivity
Assessments**

Sensitivity Assessments under the GWR

- Conduct **Source Water Monitoring**
- If source is E. coli (EC+), conduct **Sanitary Survey**
 - Obtain well information
 - Locate potential pollution sources
- Develop and follow **written corrective action plan**
- Correct deficiencies
- Conduct **compliance monitoring**
- Provide **public notification**

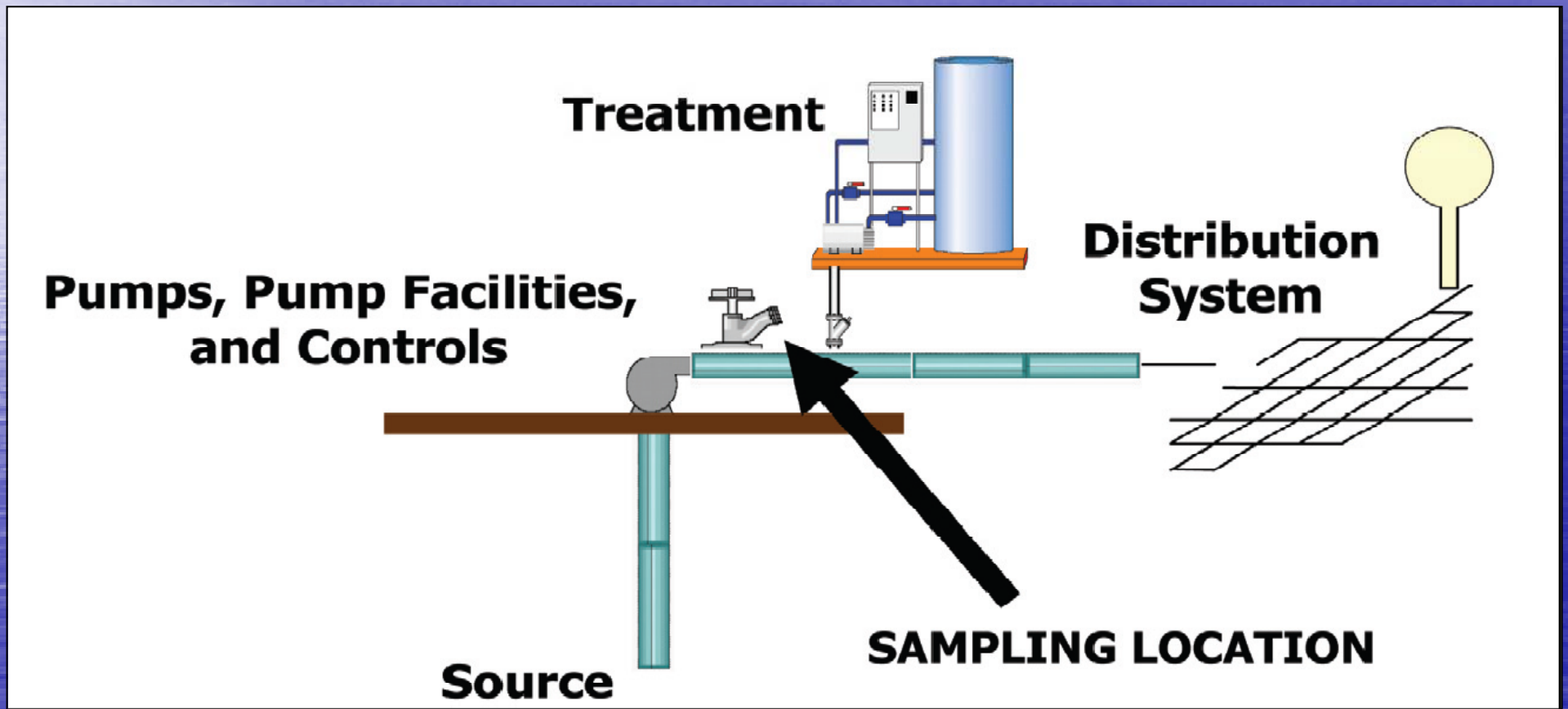
Routine Monitoring under TCR

- Quarterly testing for TC from distribution system
 - From spigot normally used for potable water
 - After any treatment
- If routine TCR sample fails for TC, GWR sampling is triggered
 - From source (raw) spigot prior to treatment
 - Preferably prior to pressure tank

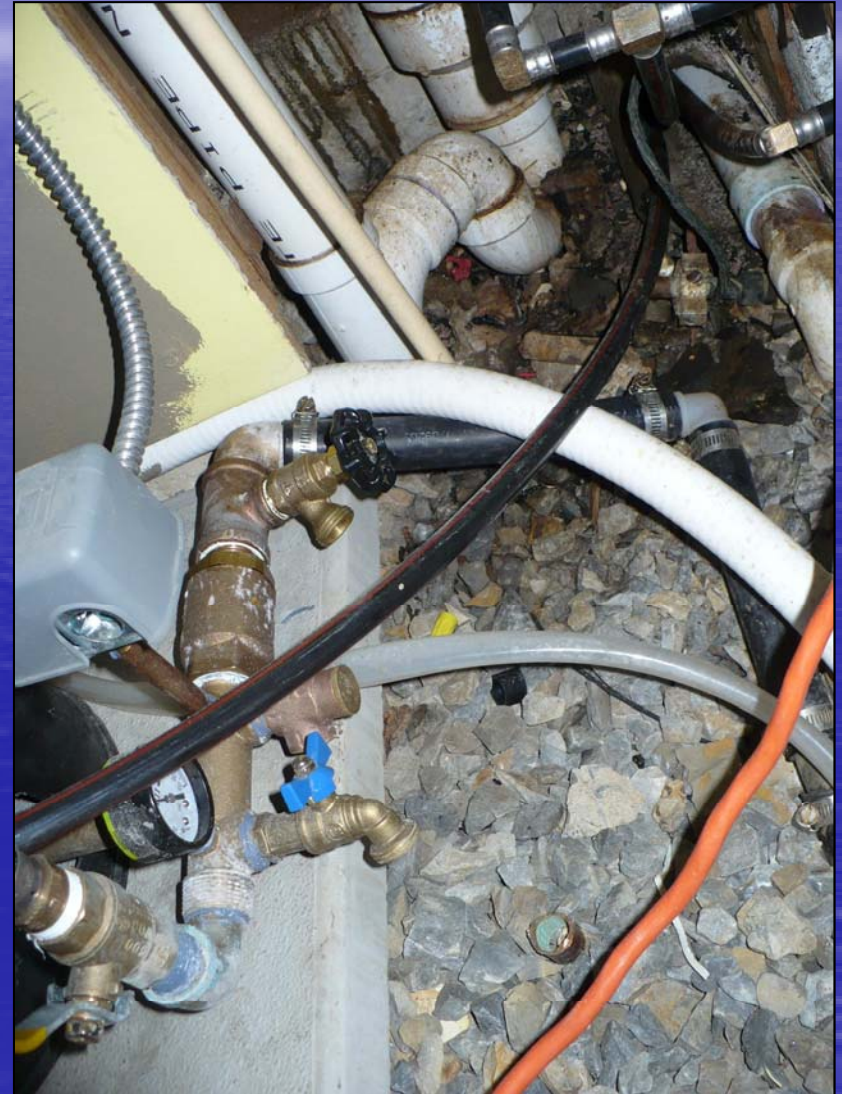
Source Water Monitoring

- Source water is the raw water from well
- Source water monitoring is triggered when routine TCR sample is TC+
- Source water sample must be collected from source (raw) water sampling spigot as close to well as possible (preferably prior to pressure tank) prior to treatment within 24 hours of notification of TC+
- May need to install source water sampling spigot

Sample Location



Source Water Sampling Spigot



Identify Deficiencies

If Source Water Sample (SWS) is E. coli (EC)+:

Conduct Sanitary Survey including -

- Obtain copy of well record to determine constructional integrity of well; does it meet current standards?
(i.e. 50 ft casing)
 - Options for obtaining information
 - File search
 - Well search questionnaire submitted to state
 - Hire licensed professional to remove cap and physically obtain well depth, casing length, yield
- Identify nearby pollution sources within 200 feet of well
(i.e. septics)

Corrective Actions

- Develop/submit a written corrective action plan to state
- Correct any deficiencies found with well
 - Examples
 - Raise casing above grade
 - Replace cap
 - Drill new well
- Eliminate any pollution sources
 - Examples
 - Repair septic
 - Reroute surface water

Monitoring and Treatment

- Monthly source water monitoring may be required for wells testing positive for EC (12 months)
- Treatment can be installed provided well meets current construction standards
 - If no EC then Ultraviolet lights are permitted
 - If EC, then must have 4 log disinfection
- Prior approval for treatment installation must be obtained
 - SCDEPHS approval for Ultraviolet lights
 - NJDEP approval for 4 log disinfection (chlorination)

4 Log Treatment (Inactivation)

This log-reduction terminology was developed by engineers as a way to express levels of decreased biological contamination in water by factors of 10 that could be easily converted to percent reduction.

The log of 10 in the base 10 logarithmic system is 1
The log of 100 is 2, the log of 1000 being 3, etc.

1-log reduction is 9 out of 10 or 90 % reduction.

2-log reduction is 99 out of 100 or 99 % reduction.

3-log reduction is 999 out of 1000 or 99.9 % reduction.

4-log reduction is 9999 out of 10000 or 99.99 % reduction.

And we are talking about reduction/inactivation of pathogens.

4 log Disinfection

Difficult to achieve

- Contact time
- Storage
- Must be designed by engineer
- Must be approved by state
- Presently UV not accepted means
- Compliance monitoring required to avoid triggered monitoring

Compliance Monitoring VS. Triggered Monitoring



Compliance Monitoring



- Applies to systems that notify state that they provide 4-log treatment of viruses and do not want to be subject to triggered source water monitoring.
- Systems must continuously monitor disinfectant concentration or take daily grab samples.

Triggered Monitoring Requirements Under New GWR

- Systems without 4-log virus inactivation and/or removal (chlorination) must conduct triggered monitoring if notified of TC + beginning 12/1/09.
- Source water sample must be collected from each well **within 24 hours of notification of TC +** at a location prior to treatment (a.k.a. triggered source water sample) in addition to 4 repeats from distribution system.
- If any sample is fecal indicator + (EC), **5 more source water samples must be collected within 24 hours of notification.**
- Corrective action required if any of the five source water samples is EC +.

Differences between GWR & TCR

- Effective 12/1/09, GWR and TCR now work together
- Under GWR, TC + distribution sample triggers source water monitoring (sample prior to treatment)
- TCR does not require source to be sampled only distribution sample

New Requirements:

1. Pre-treatment tap must be available for sampling
2. Samples must be collected w/in 24 hours of notification of TC +
3. Source must be tested, not just distribution system
4. Well record documentation must be available
5. Corrective action plans must be submitted to BSDW

GROUND WATER RULE

(by December 1, 2009)

To maintain compliance:

- Install source water spigot
- Obtain well information documentation
 - Depth, casing length, capacity (yield)
- Systems with 4-log disinfection must Notify Bureau Safe Drinking Water (BSDW)
 - Conduct compliance monitoring of residuals
 - Via daily log or continuous monitoring (meter)

Percentage Removal of Virus

2-log 99%

3-log 99.9%

4-log 99.99%

GWR actions required:

- **Source** (raw) water testing
- **Identification of deficiencies** in water systems that could lead to contamination (**Sanitary survey**).
- **Corrective actions** to reduce risk from any identified deficiencies.
- The rule includes provisions for monitoring for systems with sources at risk, and actions to remove or inactivate contaminants, if found, to prevent them from reaching drinking water consumers.
- Mandatory minimum \$1,000 fine for non-compliance

Concerns

- If no source water spigot is available, system will be unable to comply with GWR requirements
- Repeat tests w/in 24 hrs of notification of + (may result in weekends)
- Budget expense of additional samples/collection time and lab analysis
- Availability of Well records

Questions?

Sussex County Department of Environmental
and Public Health Services
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