Nitrate Rule Overview (SDWA)

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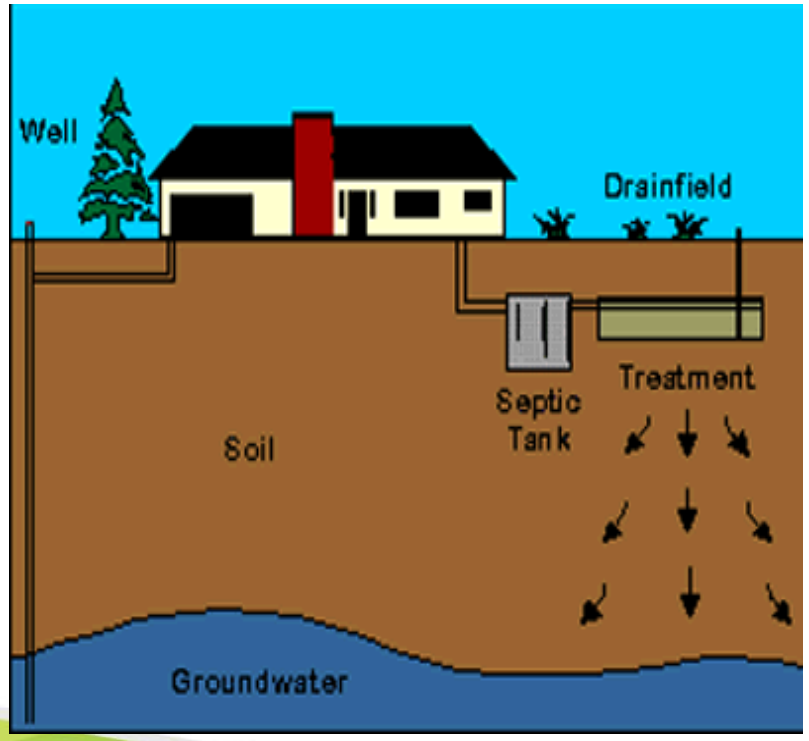
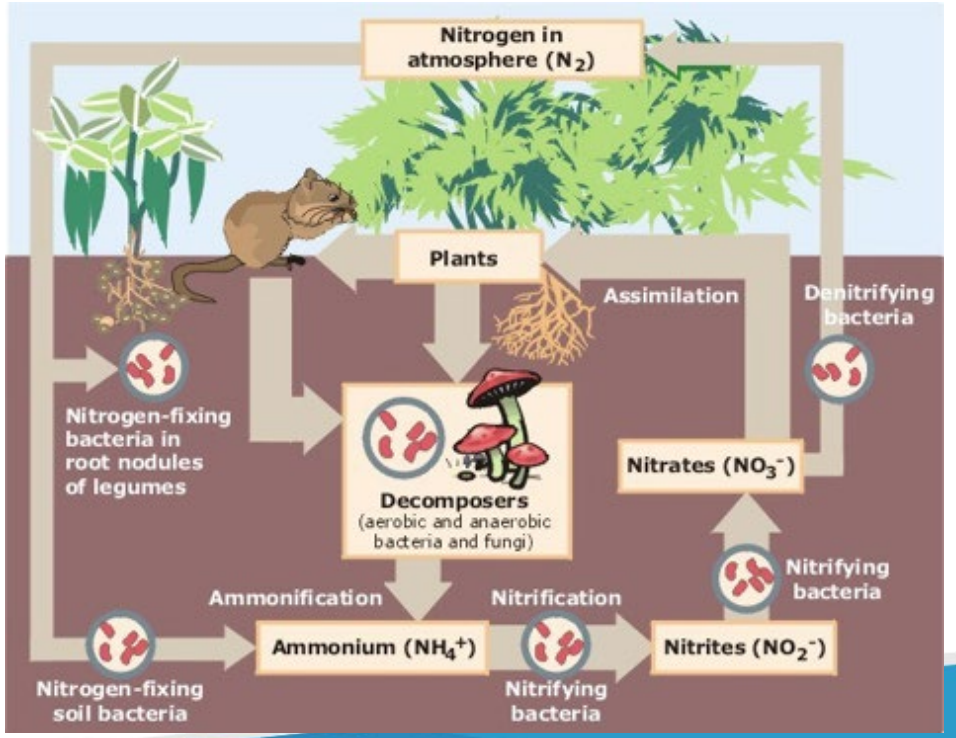
Outline

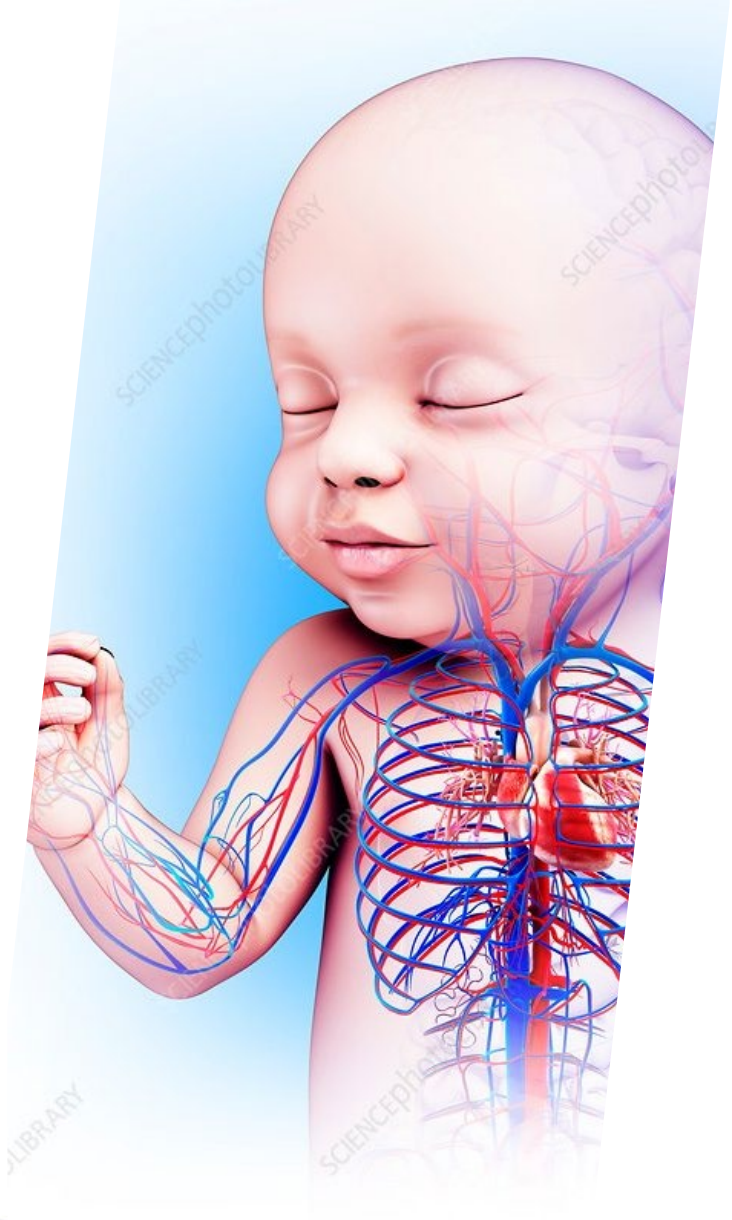
- What are Nitrates & Nitrites?
- Why are they important?
- Who does this rule apply to?
- Maximum Contaminant Level for Nitrate and Nitrite
- Monitoring & Sampling Requirements
- Types of Violations
- Public Notice Requirements
- Reporting & Recordkeeping Requirements

What are Nitrates (NO_3) and nitrites (NO_2)?

Originate from human/animal wastes (septic systems), fertilizers & crop residues







Why are they important??

- **<u>High Levels Can Lead to the Death of Infants</u>**

- may cause a potentially fatal blood disorder in infants under six months of age called methemoglobinemia or "blue-baby" syndrome

- With this disorder there is a reduction in the oxygen carrying capacity of blood, which can cause shortness of breath and a blueness of the skin of infants or even lead to the infant’s death

Who does this rule apply to?

- All Public Water systems
  - Community
  - Non-Transient Non-Community
  - Transient Non-community

- Consecutive systems
  - No additional sources of water – no sampling requirements
  - Additional sources of water – need to sample

Important Sections and Requirements

- Subpart G - National Primary Drinking Water Regulations: MCL & MRDL
  - § 141.62 Maximum Contaminant Levels (MCL) for inorganic contaminants
- Subpart C - Monitoring and Analytical Requirements
  - § 141.23 Inorganic chemical sampling and analytical requirements
  - § 141.28 Certified Laboratories
- Subpart D - Reporting and Recordkeeping
  - § 141.31 Reporting Requirements
  - § 141.33 Record Maintenance
- Subpart Q - Public Notification (PN) of Drinking Water Violations
  - § 141.202 & 204 Tier 1 and Tier 3 Public Notice

Maximum Contaminant Level (MCL)

Nitrate, Nitrite and Total Nitrate & Nitrite

MCL – what is it and what is the limit?

- MCL : Maximum permissible level of a contaminant in water which is delivered to any user of public water system

Contaminant	MCL (mg/L)
Nitrate (as Nitrogen)	10
Nitrite (as Nitrogen)	1
Total Nitrate and Nitrite (as Nitrogen)	10

Monitoring & Sampling Requirements

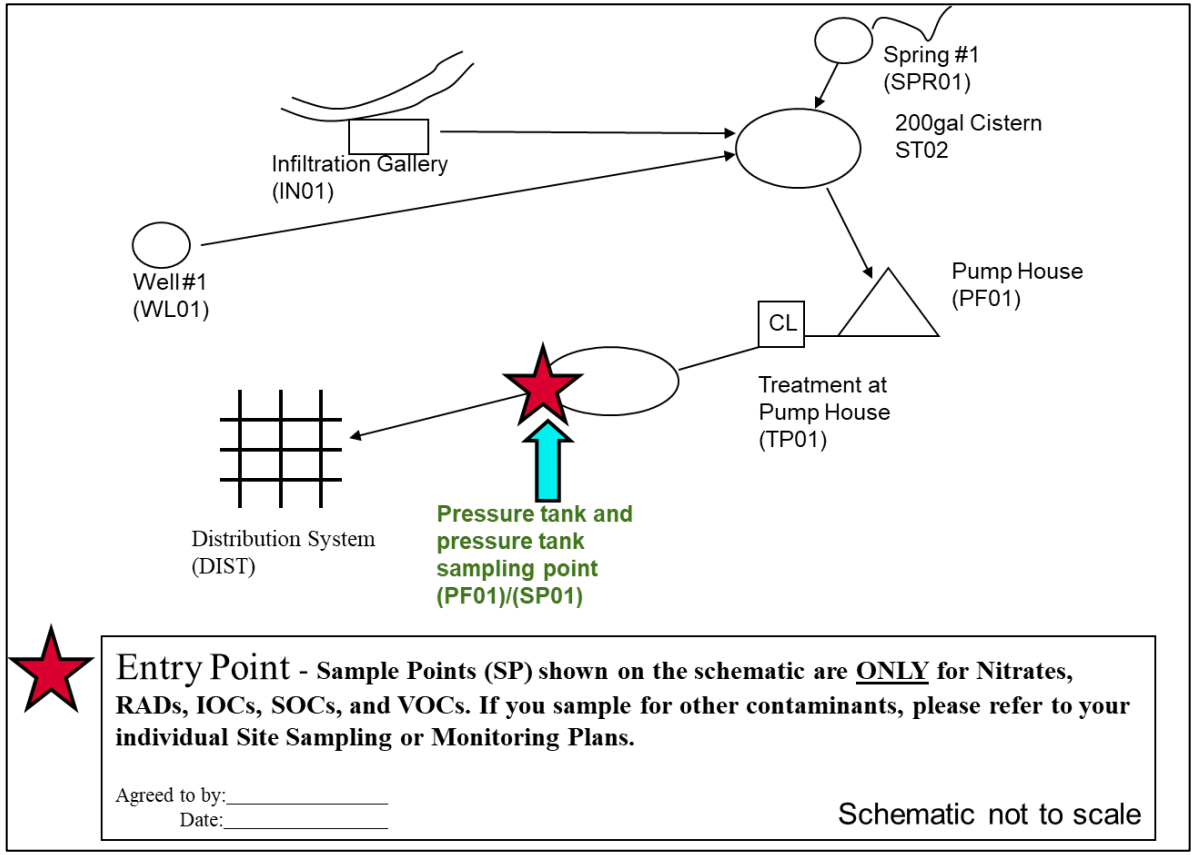
Where and when to sample

Sampling - Location & Frequency

Refer to your schematic and Monitoring & Reporting Requirements

Where should you sample

- At entry point to distribution system (EPDS)
- After all treatment
- During normal operating conditions
- Designated by ★ on the schematic
- More than one source?
  - Can sample at a location where:
    - the sources are combined, and
    - the sample is representative of all sources



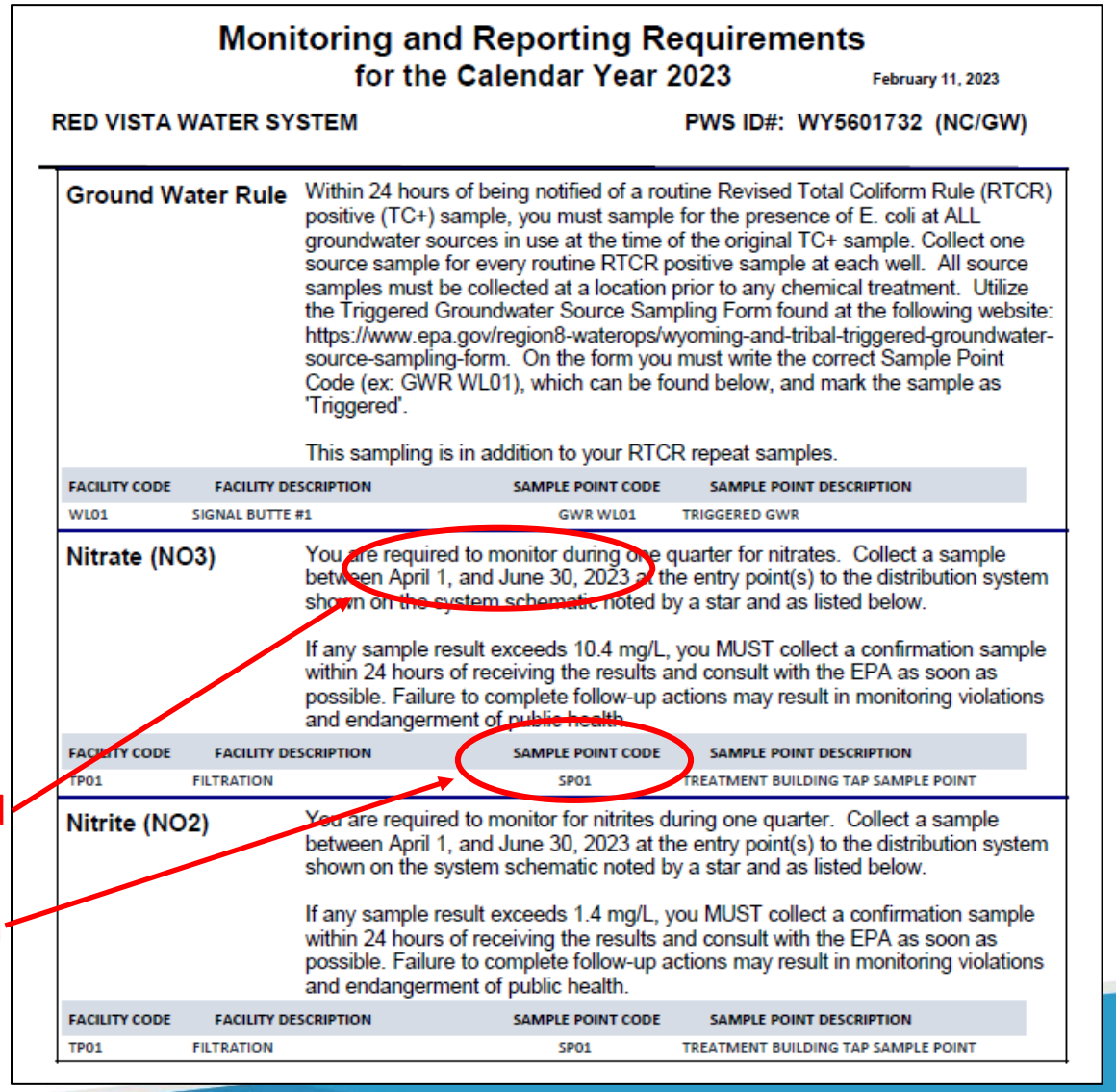
How often to sample

- Determined by:
  - source,
  - type of sampling required (initial or repeat)
  - Previous monitoring result, if any

- Refer to Monitoring & Reporting requirements if you have

Monitoring period

Sampling location



Monitoring and Reporting Requirements
for the Calendar Year 2023 February 11, 2023

RED VISTA WATER SYSTEM **PWS ID#: WY5601732 (NC/GW)**

Ground Water Rule

Within 24 hours of being notified of a routine Revised Total Coliform Rule (RTCR) positive (TC+) sample, you must sample for the presence of E. coli at ALL groundwater sources in use at the time of the original TC+ sample. Collect one source sample for every routine RTCR positive sample at each well. All source samples must be collected at a location prior to any chemical treatment. Utilize the Triggered Groundwater Source Sampling Form found at the following website: https://www.epa.gov/region8-waterops/wyoming-and-tribal-triggered-groundwater-source-sampling-form. On the form you must write the correct Sample Point Code (ex: GWR WL01), which can be found below, and mark the sample as 'Triggered'.

This sampling is in addition to your RTCR repeat samples.

FACILITY CODE	FACILITY DESCRIPTION	SAMPLE POINT CODE	SAMPLE POINT DESCRIPTION
WL01	SIGNAL BUTTE #1	GWR WL01	TRIGGERED GWR

Nitrate (NO3)

You are required to monitor during one quarter for nitrates. Collect a sample between April 1, and June 30, 2023 at the entry point(s) to the distribution system shown on the system schematic noted by a star and as listed below.

If any sample result exceeds 10.4 mg/L, you MUST collect a confirmation sample within 24 hours of receiving the results and consult with the EPA as soon as possible. Failure to complete follow-up actions may result in monitoring violations and endangerment of public health.

FACILITY CODE	FACILITY DESCRIPTION	SAMPLE POINT CODE	SAMPLE POINT DESCRIPTION
TP01	FILTRATION	SP01	TREATMENT BUILDING TAP SAMPLE POINT

Nitrite (NO2)

You are required to monitor for nitrites during one quarter. Collect a sample between April 1, and June 30, 2023 at the entry point(s) to the distribution system shown on the system schematic noted by a star and as listed below.

If any sample result exceeds 1.4 mg/L, you MUST collect a confirmation sample within 24 hours of receiving the results and consult with the EPA as soon as possible. Failure to complete follow-up actions may result in monitoring violations and endangerment of public health.

FACILITY CODE	FACILITY DESCRIPTION	SAMPLE POINT CODE	SAMPLE POINT DESCRIPTION
TP01	FILTRATION	SP01	TREATMENT BUILDING TAP SAMPLE POINT

Chain of Custody

Why is it important

Chain of Custody (CoC)

- Can be referred by a different name
- Essentially it follows the sample from the beginning to the end
  - Record of who collected the sample
  - When and how the sample for given to the lab
- It also tells lab what to do.
  - Transcribe the sample location, analyte name
  - If this is a routine or rush sample
- Labs include the CoC with the analytical report

Chain of Custody (CoC)

- Please remember via CoC YOU ARE TELLING THE LAB WHAT TO DO
- For nitrate and nitrite – if initial monitoring is required, provide the code
  - Nitrate and nitrite – 1038
  - Nitrite - 1041
- If the lab does not realize that you need nitrite result separately, it may just provide nitrate and nitrite result but not nitrite result.
- Ok, if the results is below 0.5 mg/L – I can determine compliance for both
- But if the result is above 0.5 mg/L – I cannot determine compliance for nitrite
  - Resample would be needed and you may also get a notice of noncompliance if the compliance period had passed.

Monitoring Requirements

What does the regulation say?

Initial and Repeat (Routine) Monitoring

- When is Initial Monitoring required?
  - New system
  - New source water for an existing system
- When is routine monitoring required?
  - After initial monitoring is completed

Nitrate Monitoring Requirements

- Initial Monitoring
  - Required beginning the first practical quarter (either the same quarter or the next full calendar quarter) based on when the system comes online

System Type	Groundwater system	Surface water system
Community	One Quarter	Quarterly for one year
Non-Transient Non-Community	One Quarter	Quarterly for one year
Transient Non-Community	One Quarter	Quarterly for one year

Nitrate Monitoring Requirements (contd.)

- Routine Monitoring

Sample type	Trigger Level	Groundwater system	Surface water system
Routine Monitoring	< Half the MCL	Annually	Annually after 4 consecutive samples are below half the MCL
Increased Monitoring	≥ Half the MCL	Quarterly for at least one year	Quarterly for at least one year
Reduced* Monitoring	< Half the MCL	Annually if the system is reliable and consistently below half the MCL	Annually if the system is reliable and consistently below half the MCL

*Only after EPA's approval in writing

Nitrite Monitoring Requirements

- Initial Monitoring

System Type	Groundwater system	Surface water system
Community	One Quarter	One Quarter
Non-Transient Non-Community	One Quarter	One Quarter
Transient Non-Community	One Quarter	One Quarter

Nitrite Monitoring Requirements

- Routine Monitoring

Sample type	Trigger Level	Groundwater system	Surface water system
Routine Monitoring	< Half the MCL	Determined by EPA as primacy agency	Determined by EPA as primacy agency
Increased Monitoring	≥ Half the MCL	Quarterly for at least one year	Quarterly for at least one year
Reduced* Monitoring	< Half the MCL	Annually if the system is reliable and consistently below half the MCL	Annually if the system is reliable and consistently below half the MCL

*Determined by EPA as primacy agency

Violation of the Nitrate Rule

What different violations are there?

MCL Violation

What to do?

MCL Exceedance v/s Violation

- What value matters
  - MCL is 10 mg/L
  - Significant figure is a whole number, so we need to round the result to this value

- MCL Exceedance: Initial sample result above the MCL
- MCL Violation: Average of initial & confirmation sample result above the MCL

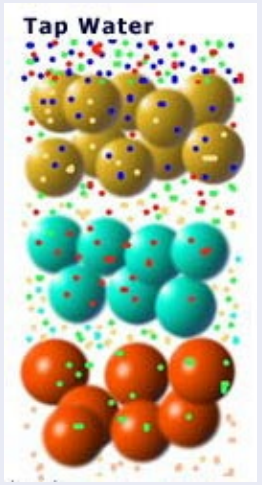
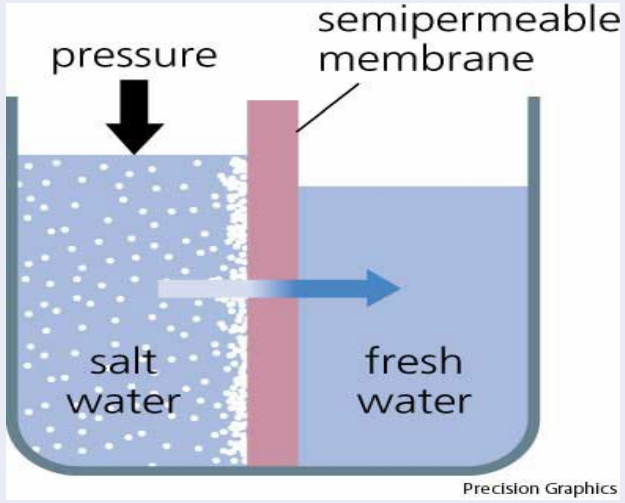
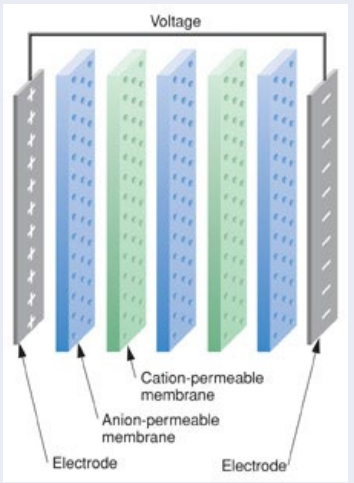
What to do when you have an MCL Exceedance

- Call EPA to notify of MCL exceedance
- Collect a confirmation sample within 24 hours
  - Required for nitrate or nitrite, as applicable
- If the system is unable to collect confirmation sample within 24 hours
  - Immediately notify public via a Tier 1 Public Notice
  - Collect and analyze confirmation sample within 2 weeks

MCL Violation

- Average of initial & confirmation sample result above the MCL
- Call EPA to notify of MCL violation
- Requires a Tier 1 Public Notice
- Will receive a Notice of Noncompliance
- May receive an Administrative Order
- May need to install treatment to return to compliance
  - Will work with EPA's Enforcement and Compliance Assistance Division

Treatment Options- Best Available Technology

Ion Exchange	Reverse Osmosis	Electrodialysis
Ion Exchange uses a resin, where other ions on the resin are exchanged for the nitrate ions, which get trapped in the resin.	Reverse osmosis (RO) is a method of producing pure water by forcing nitrate contaminated water through a semi-permeable membrane across which nitrates cannot pass.	Electrodialysis uses a direct electric current to cause ions to migrate through membranes, trapping the nitrates, etc.
		

Non-Treatment Options- Blending

- Blending with another source water
- Inform EPA right away if you choose this option
  - may require new monitoring requirements

Failure to Monitor (FTM) Violation

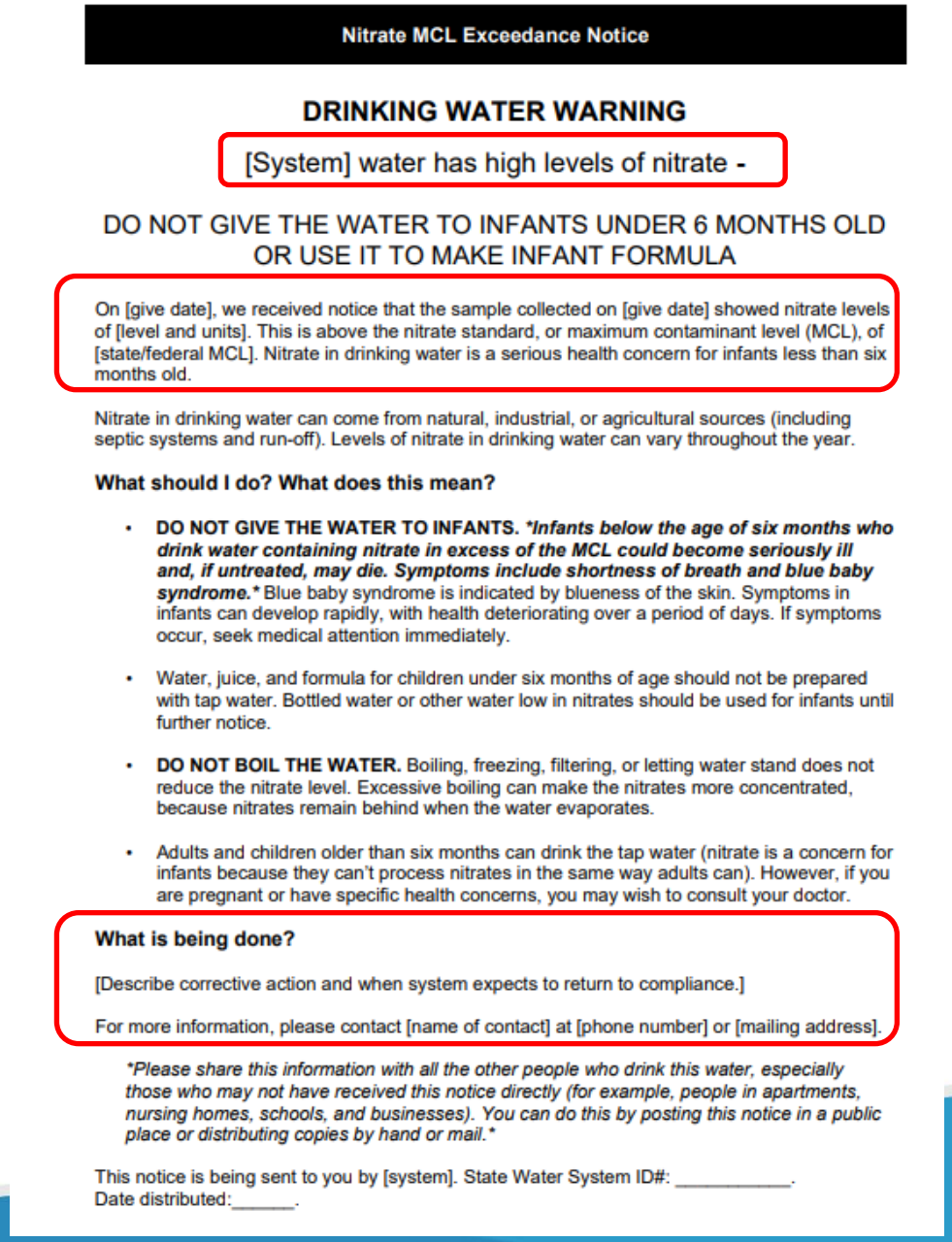
- Occurs when a system fails to monitor at the required frequency
- Need to sample as soon as you can
- Return to compliance after a sample is collected.
- Requires a Tier 3 Public Notice
- You will receive a Notice of Non-Compliance from the EPA

Public Notices

- Link to all PN Templates: Reporting Forms for Drinking Water Systems in Wyoming and Tribal Lands in EPA Region 8 | US EPA
- Link to Nitrate FTM PN Template: https://www.epa.gov/region8-waterops/nitrate-rule-failure-monitor-ftm-public-notification-template
- Link to Nitrate MCL PN Template: https://www.epa.gov/region8-waterops/nitrate-rule-maximum-contaminant-level-mcl-public-notification-template

Tier 1 Public Notice

- Need to fill the form
- Be sure to update the following:
  - Line 2
  - Paragraph 1
  - What is being done section
- Post or hand deliver
- Publish in the newspaper, etc.
- May require repeat notices until the violation is resolved



Nitrate MCL Exceedance Notice

DRINKING WATER WARNING

[System] water has high levels of nitrate -

DO NOT GIVE THE WATER TO INFANTS UNDER 6 MONTHS OLD OR USE IT TO MAKE INFANT FORMULA

On [give date], we received notice that the sample collected on [give date] showed nitrate levels of [level and units]. This is above the nitrate standard, or maximum contaminant level (MCL), of [state/federal MCL]. Nitrate in drinking water is a serious health concern for infants less than six months old.

Nitrate in drinking water can come from natural, industrial, or agricultural sources (including septic systems and run-off). Levels of nitrate in drinking water can vary throughout the year.

What should I do? What does this mean?

- **DO NOT GIVE THE WATER TO INFANTS.** ***Infants below the age of six months who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome.**** Blue baby syndrome is indicated by blueness of the skin. Symptoms in infants can develop rapidly, with health deteriorating over a period of days. If symptoms occur, seek medical attention immediately.
- Water, juice, and formula for children under six months of age should not be prepared with tap water. Bottled water or other water low in nitrates should be used for infants until further notice.
- **DO NOT BOIL THE WATER.** Boiling, freezing, filtering, or letting water stand does not reduce the nitrate level. Excessive boiling can make the nitrates more concentrated, because nitrates remain behind when the water evaporates.
- Adults and children older than six months can drink the tap water (nitrate is a concern for infants because they can't process nitrates in the same way adults can). However, if you are pregnant or have specific health concerns, you may wish to consult your doctor.

What is being done?

[Describe corrective action and when system expects to return to compliance.]

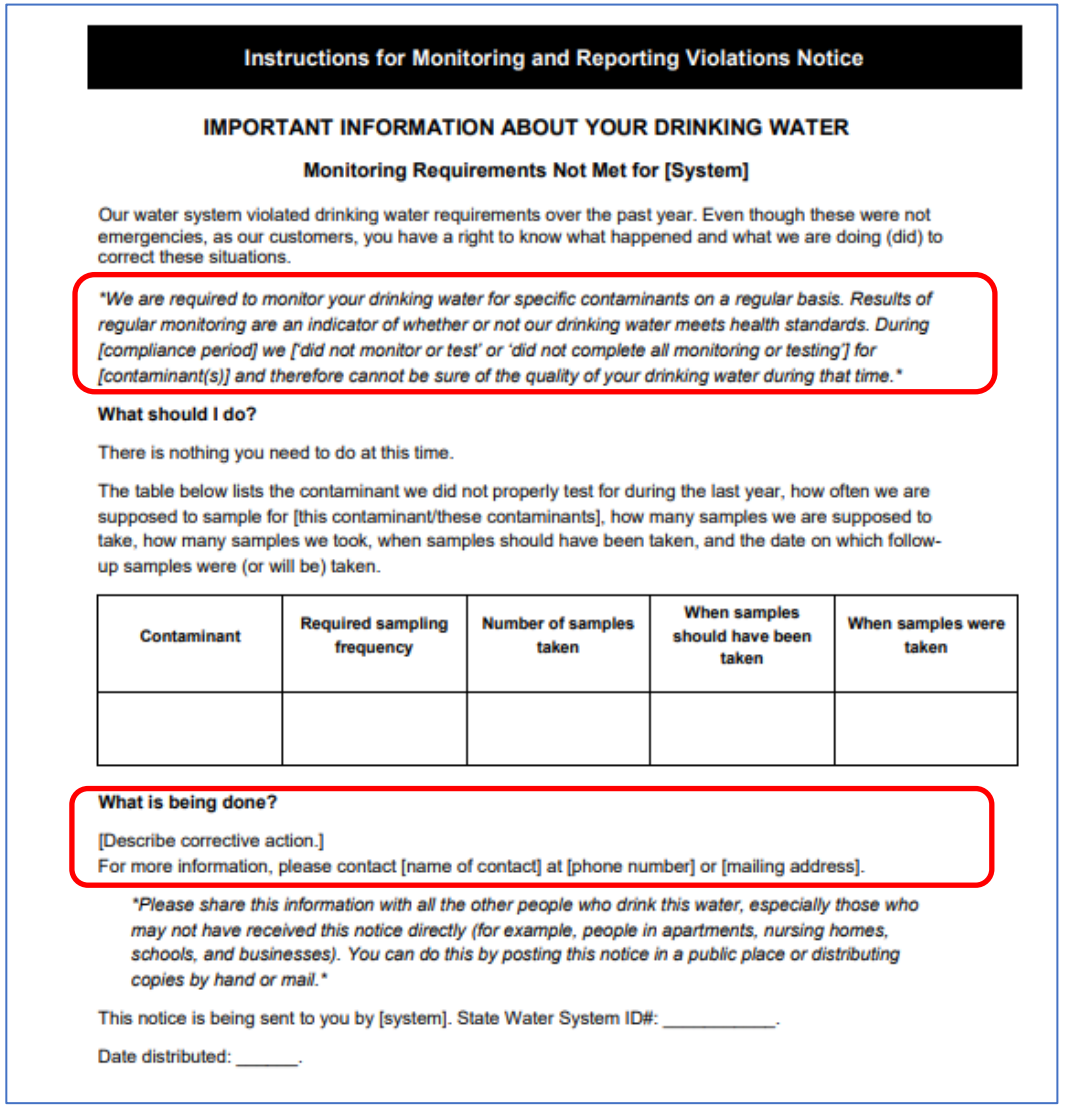
For more information, please contact [name of contact] at [phone number] or [mailing address].

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is being sent to you by [system]. State Water System ID#: _____.
Date distributed:_____.

Tier 3 Public Notice

- Need to fill the form
- Be sure to update the following:
  - Paragraph 2
  - What is being done section
- Sent to the customers via email, publish in the newspaper, post or combine with the CCR
- If you post the Notice, it must remail until the violation is resolved



Instructions for Monitoring and Reporting Violations Notice

IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER

Monitoring Requirements Not Met for [System]

Our water system violated drinking water requirements over the past year. Even though these were not emergencies, as our customers, you have a right to know what happened and what we are doing (did) to correct these situations.

We are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not our drinking water meets health standards. During [compliance period] we ['did not monitor or test' or 'did not complete all monitoring or testing'] for [contaminant(s)] and therefore cannot be sure of the quality of your drinking water during that time.

What should I do?

There is nothing you need to do at this time.

The table below lists the contaminant we did not properly test for during the last year, how often we are supposed to sample for [this contaminant/these contaminants], how many samples we are supposed to take, how many samples we took, when samples should have been taken, and the date on which follow-up samples were (or will be) taken.

Contaminant	Required sampling frequency	Number of samples taken	When samples should have been taken	When samples were taken

What is being done?

[Describe corrective action.]
For more information, please contact [name of contact] at [phone number] or [mailing address].

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

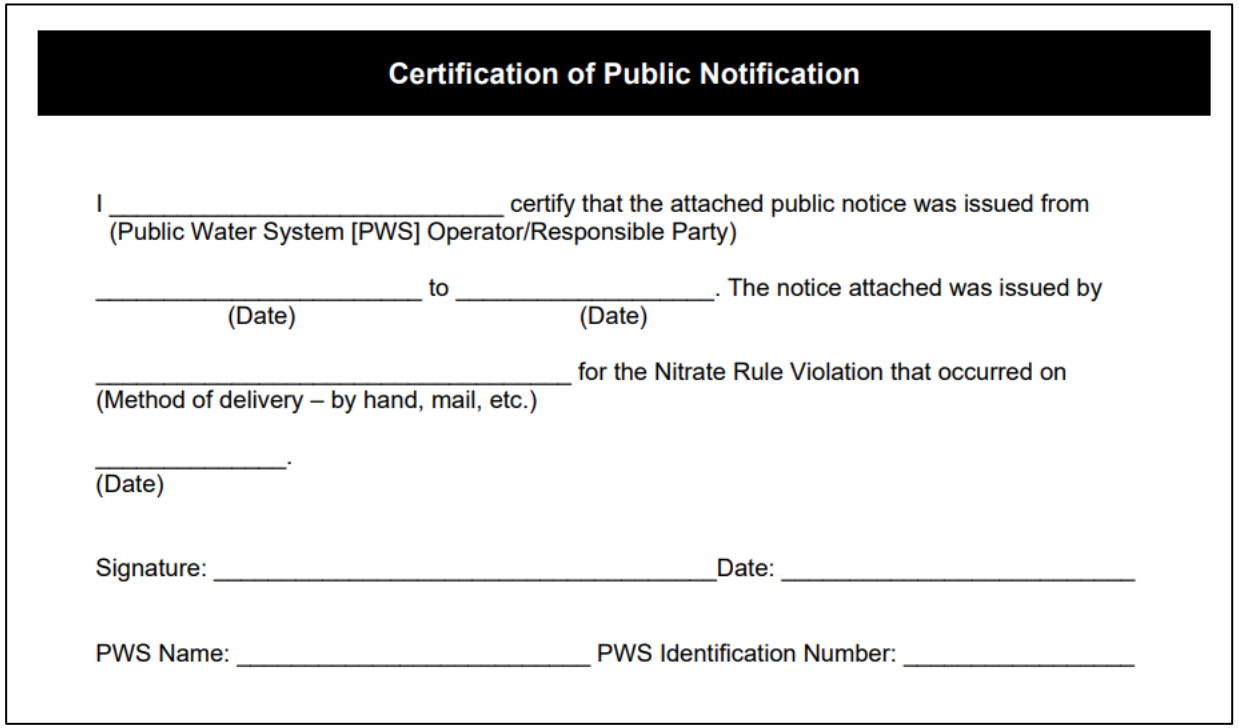
This notice is being sent to you by [system]. State Water System ID#: _____.

Date distributed: _____.

Certification

- Complete the form
- Sumit to the EPA
  - Via email, fax or mail
- Email: R8DWU@epa.gov
  - Include Nitrate PN in the subject line
- Fax: 877-876-9101
- Mail: Attn: Nitrate Rule Manager

US EPA Region 8, Drinking Water Program
1595 Wynkoop St., Denver, CO 80202
Mail code: 8WD-SR



Certification of Public Notification

I _____ certify that the attached public notice was issued from
(Public Water System [PWS] Operator/Responsible Party)

_____ to _____. The notice attached was issued by
(Date) (Date)

_____ for the Nitrate Rule Violation that occurred on
(Method of delivery – by hand, mail, etc.)

_____.
(Date)

Signature: _____Date: _____

PWS Name: _____ PWS Identification Number: _____

Reporting & Recordkeeping Requirements

What, When, and How to Report

What records to maintain

Reporting Requirements

What	When
Test Results	First 10 days following the end of the compliance monitoring period.
Violation	Within 48 hours
Public Notice & Certification (Initial and Repeat Notices)	Within in 10 days of completing the public notice requirements

How to Report

Submit results via

- Email R8DWU@epa.gov (preferred method, include Nitrate in the subject line)
- Fax 877-876 9101
- Mail: Attn: Nitrate Rule Manager
  US EPA Region 8, Drinking Water Program
  1595 Wynkoop St., Denver, CO 80202
  Mail code: 8WD-SR

- For after hours emergency: call 303-312-6327

Recordkeeping Requirements

Which record	For how long	What to keep
Test Results	10 years	Actual reports, or tabular summaries Must include: 1. Date, place & time of sampling 2. Person collecting the sample 3. Type of sample, sampling location, purpose 4. Date of analysis 5. Lab and person performing analysis 6. Analytical technique/test method 7. Analytical result

Recordkeeping Requirements (Contd.)

Which record	For how long	What to keep
Violation	3 years	Records of action taken to correct violation 3 years after the last action
Public Notice	3 years	Copies of PNs must be kept after issuance

Questions?

Thank you!