REVISED TOTAL COLIFORM RULE (RTCR)

Implementation Date: April 1, 2016

http://www.drinkingwater.vt.gov
Published 1989, effective 1990

There are a variety of waterborne pathogens that can cause health issues:

- Total coliform is an indicator of the presence of waterborne pathogens
- Regular monitoring of total coliform bacteria to:
  - Verify the integrity of the distribution system
  - Evaluate the effectiveness of treatment
  - Signal possible fecal contamination
Total coliform MCL Goal = 0

Routine monitoring for TC at a frequency proportional to system population

Follow-up sampling required for TC+

MCL Violations (based on sample results)
  - Non-acute (total coliform):
    - Systems under 33,000: 2 or more TC+ samples in a month
    - Systems above 33,000: 5% or more samples are TC+ in a month
  - Acute (E. coli):
    - TC+ RT with EC+ RP
    - EC+ RT with TC+ RP

Monitoring and Reporting Violations for failure to report sample results

Public Notice required for MCL and Monitoring and Reporting Violations

All violations must be reported in the Consumer Confidence Reports
The TCR has been successful in protecting against waterborne disease and outbreaks.

However

• The number of violations have remained steady
• Any improvements likely to occur under the TCR have largely been achieved

Question:

How can we achieve greater public health protection?
Goal

Increase protection of public health by reducing sanitary defects that allow fecal contamination and/or waterborne pathogens to enter a distribution system or could indicate a failure or imminent failure in a barrier that is already in place.
TRANSITION TO THE RTCR

What will stay the same?

1. Continue to conduct bacteriological monitoring
2. Continue to use total coliform and E. coli as indicators

What will change?

1. “Find and Fix”
2. More stringent requirements for maintaining quarterly monitoring for Non-Community systems (where applicable)
3. Increased requirements for “seasonal” systems
   1. Monthly Sampling for groundwater systems
   2. Completion of State-approved start-up procedure
4. Completion of Bacteriological Monitoring Plans
• Total Coliforms are still used as an indicator of system integrity
• However, total coliforms are not an immediate health concern on their own

NO MORE TOTAL COLIFORM MCL
• E. coli still an indicator for fecal contamination
• E. coli MCL Goal = 0 maintained from the TCR
• E. coli MCL Violations under the RTCR
  • TC+ RT → EC+ RP
  • EC+ RT → TC+ (or EC+) RP
  • TC+ RT → TC+ RP and E. coli not analyzed
  • EC+ RT → No RP samples collected
• Public Notice within 24 hours required
<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
<th>TC+ Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC MCL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Precautionary for:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Failure to collect RP within 24 hours following EC+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Operational Issues (leaks, fire events, bulk water hauling, depressurization)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Following certain findings in Level 1 and 2 site assessments</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
“FIND AND FIX”

• TC as a more suitable indicator of system operation and integrity not public health
• Improved consumer confidence and public perception in water systems
SITE ASSESSMENTS UNDER THE RTCR

**Level 1 Site Assessment**
- 2 or more TC+ samples in a month
- Failure to take EVERY repeat sample following TC+ Routine sample

**Level 2 Site Assessment**
- E. coli MCL
- Second Level 1 trigger in 12 months
BENEFITS OF RTCR

The RTCR will result in:

- Increase in site assessments
- Decrease in TC/EC +
- Decrease in public health risk
- Increase in operator knowledge of system operation
- Better system performance over time
- Certain “violations” under the current TCR become “triggers” under the RTCR
### Number of Samples per Monitoring Period

<table>
<thead>
<tr>
<th>Population</th>
<th>Number of Samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 – 1,000</td>
<td>1</td>
</tr>
<tr>
<td>1,001 – 2,500</td>
<td>2</td>
</tr>
<tr>
<td>2,501 – 3,300</td>
<td>3</td>
</tr>
<tr>
<td>3,301 – 4,100</td>
<td>4</td>
</tr>
<tr>
<td>4,101 – 4,900</td>
<td>5</td>
</tr>
<tr>
<td>4,901 – 5,800</td>
<td>6</td>
</tr>
<tr>
<td>5,801 – 6,700</td>
<td>7</td>
</tr>
<tr>
<td>6,701 – 7,600</td>
<td>8</td>
</tr>
<tr>
<td>7,601 – 8,500</td>
<td>9</td>
</tr>
<tr>
<td>8,501 – 12,900</td>
<td>10</td>
</tr>
<tr>
<td>12,901 – 17,200</td>
<td>15</td>
</tr>
<tr>
<td>17,201 – 21,500</td>
<td>20</td>
</tr>
<tr>
<td>21,501 – 25,000</td>
<td>25</td>
</tr>
<tr>
<td>25,001 – 33,000</td>
<td>30</td>
</tr>
<tr>
<td>33,001 – 41,000</td>
<td>40</td>
</tr>
<tr>
<td>41,001 – 50,000</td>
<td>50</td>
</tr>
</tbody>
</table>

- Systems taking more than 1 sample must take the samples at regular intervals throughout the month.
- Groundwater Systems under 4,900 may take all samples on the same day if taken from different locations.
SAMPLING FREQUENCIES UNDER RTCR

- All Surface Water/GWUDI Systems: **Monthly** (Same as TCR)
- Community Water Systems: **Monthly** (Same as TCR)
- Non-Community, GW, over 1,000 in population: **Monthly** (Same as TCR)
- **Seasonal**, Transient Non-Community Systems: **MONTHLY**
- Year-round Non-Community, served by GW, 1,000 and under in population: **Quarterly** (Same as TCR) until...
### Transition to Monthly Monitoring

Year-round, Non-Community, on Groundwater, under 1,000 in population: Sample Quarterly unless and until **ONE** of the following happens:

| 1) Level 2 Trigger | • E. coli MCL Violation  
|                    | • 2 X Level 1 Site Assessments over 12 month period |
| 2) E. Coli MCL Violation | • TC+ RT ➔ EC+ RP  
|                          | • EC+ RT ➔ TC+ RP (or EC)  
|                          | • TC+ RT ➔ TC+ RP and E. coli not analyzed  
|                          | • EC+ RT ➔ No Repeats Taken |
| 3) Total Coliform TT Violation | • Fail to conduct Level 1 or Level 2 within 30 days of trigger  
|                              | • Fail to correct sanitary defects in 30 days or by state-approved schedule |
| 4) Two RTCR Monitoring Violations or one RTCR Monitoring violation and one Level 1 site assessment in 12 months | • Fail to RP sample  
|                                                                 | • Fail to analyze EC following TC+ RT |
Year-Round, Non-Community on Groundwater, under 1,000 in population.

Systems will be required to sample monthly until the issue that caused the increased monitoring is corrected and BOTH:

1) The system has had a sanitary survey or voluntary level 2 site assessment within the last 12 months, be free of sanitary defects, and have a protected source that meets construction standards;

2) Have a clean RTCR compliance history for the last 12 months. A clean compliance history means: No E. coli MCL violations, no monitoring violations, no TT Triggers (level 1 or 2 site assessments), and no TT violations (failure to conduct a level 1 or 2 assessment within 30 days of trigger, failure to correct sanitary defect within 30 days or under the state-approved schedule).

Transition (back) to Quarterly Monitoring
Every Water System must take 3 repeat samples for **EACH** routine TC+ sample.

1. Same sampling site as RT TC+
2. +/- 5 connections/locations upstream
3. +/- 5 connections/locations downstream

and GW Systems must take 1 triggered source water sample from each source that was active at the time of the TC +.
The Month Following a TC + Routine Sample:

- **Monthly Systems**: Resume normal monthly sampling according to plan and schedule.

- **Quarterly Systems**: must take 3 Additional Routine samples the month following the TC + sample.
SYSTEM TAKING SINGLE MONTHLY SAMPLE

Month 1

RT → RP 1

Same site as original TC+
5 connections upstream
5 connections downstream
and 1 TG for each active GW source

Month 2

RT

If TC+

RP 1
Same site as original TC+
w/in 5 connections downstream

RP 2
w/in 5 connections upstream

RP 3
and 1 TG for each active GW source
HYPOTHETICAL – SINGLE MONTHLY SAMPLE

System taking single monthly sample

Month 1

RT +

RP 1 -

RP 2 +

RP 3 +

and 1 TG for each active GW source

Site Assessment Triggered

Month 2

RT -

No further action needed (upon completion of Site Assessment)
Sampling Example: Multiple Monthly Routine Samples

Month 1

- RT1 → TC +
  - RP 1
  - RP 2
  - RP 3

- RT2 → TC +
  - RP 1
  - RP 2
  - RP 3

- RT3 → TC -

Same site as original TC+
5 connections downstream
5 connections upstream

5 connections downstream
5 connections upstream

and 1 TG for each active GW source

*Since 2 RT samples are TC+, it triggers an assessment*

Month 2

- RT1
  - RP 1
  - RP 2
  - RP 3

- RT2
  - RP 1
  - RP 2
  - RP 3

For each TC +

Same site as original TC+
w/in 5 connections downstream
w/in 5 connections upstream

and 1 TG for each active GW source

RP 1

RP 2

RP 3
System Taking Multiple Monthly Samples

Month 1

- RT 1 TC +
  - RP 1 TC +
  - RP 2 TC +
  - RP 3 TC +

- RT 2 TC +
  - RP 1 TC +
  - RP 2 TC -
  - RP 3 TC +

- RT 3 TC -
  - RP 1 TC +
  - RP 2 TC -
  - RP 3 TC +

and TG for each active GW source

Assessment triggered, >2 TC+ samples in a month

Month 2

- RT 1 TC +
  - RP 1 -
  - RP 2 -
  - RP 3 -

- RT 2 TC -
  - RP 1 +
  - RP 2 -
  - RP 3 +

- RT 3 TC +
  - RP 2 -
  - RP 3 +

and TG for each active GW source

Second, separate assessment triggered, >2 TC+ samples in a month
Sampling Example: Quarterly Routine Sample

Month 1

RT → TC +

RP 1
Same site as original TC+

RP 2
5 connections downstream

RP 3
5 connections upstream

and 1 TG for each active GW source

If any of the RP are TC +, an assessment is triggered

Month 2

Additional RT 1

Additional RT 2

Additional RT 3

(If TC +)

RP 1

RP 2

RP 3

RP 1

RP 2

RP 3

RP 1

RP 2

RP 3

and 1 TG for each active GW source
HYPOTHETICAL - QUARTERLY MONITORING

Month 1

RT → RP 1 -
→ RP 2 -
→ RP 3 -

and TG for each active GW source

Month 2

RP 1 + → RT 1 +
→ RP 2 -
→ RP 3 +

RT 2 -
→ RT 3 -

and TG for each active GW source

Assessment triggered

Month 3

If assessment from Month 2 is a Level 1:

RT 1 -
→ RP 1 +
→ RT 2 -
→ RP 2 -
→ RP 3 +

If assessment from Month 2 is a Level 2:

Month 1 Monitoring is Triggered.
WORST CASE SCENARIO:
QUARTERLY SYSTEM WITH PERSISTENT ISSUES

*It may be possible to take 18 samples over 2 months before triggering monthly monitoring.
System taking a single compliance sample (monthly or quarterly)

**Month 1**

- RT 1 TC +
- RP 1 TC +
- RP 2 TC -
- RP 3 EC +
- and TG for each active GW source

**EC MCL VIOLATION**

1. Boil Water Notice Required
2. Level 2 Site Assessment Automatically triggered
3. If on quarterly monitoring: Increase to Monthly Monitoring in Month 2
1) Introduction and Background
2) Paradigm Shift
3) Monitoring
4) Sampling and Sitting Techniques
5) Sampling Plans
6) Labs and Analytics
7) Site Assessments
8) Seasonal Systems
9) Violations
10) Public Notice and Consumer Confidence Reports
11) Reporting and Recordkeeping
SAMPLE TAP SELECTION – DOS AND DON’TS
Sample sites must be representative of water in the entire distribution system.
SAMPLE SITING – MULTIPLE BUILDINGS
SAMPLING TECHNIQUE

• RCAP Guidance: https://vimeo.com/136001193

• Select sites representative of water in the entire distribution system.

• Assemble supplies, including good, clean, sample bottles

• If the system chlorinates, make sure to have a chlorine residual test kit.
• Make sure the sample tap is in good working order, no attachments, no outdoor hose bibs.

• Disinfect faucet/tap.

• Run the COLD water 5-10 minutes to clear the internal plumbing and service lines – consider using a thermometer to identify when the temperature stabilizes.
• While the water is running, complete the lab forms and associated paperwork.

• Adjust the flow down to 1/8-inch, about the width of a pencil.

• Remove the sample bottle cap, keep it away from the running water and pointed down.
• Do not rinse the bottle, do not remove preservative/dechlorinating agent in the bottle.

• Fill the bottle to the neck. Need to leave some space, but make sure to have enough (at least 100 mL) volume to be analyzed.

• Once full, replace the cap.

• Put the bottle into a cooler, refrigerator, or on ice.

• Should be kept between 0 and 10 °C
• If chlorinating, take a chlorine residual from the tap, write it on the lab paperwork.

• Turn off the tap and re-connect any aerators or accessories.

• Make sure laboratory form is filled out completely and correctly.

• Coolers used to transport samples should be cleaned daily.

• Get sample(s) to the lab within **24 hours** of collection.

• Sample early in the week and early in the monitoring period.
STEP 1: FINDING THE FORM
GO TO: WWW.DRINKINGWATER.VT.GOV
Public Water Systems - Applications & Forms

APPLICATIONS
- Operations Permit Applications:
  - Consistency System Efficiency Application
  - Operating Permit Application
  - Certified Operator Application (Class 2, 3, 4 & D)
  - Statement regarding Child Support and UT Taxes
  - Certified Operator Renewal Application (Class 2, 3, 4 & D)
  - Phase IV Monitoring Water Application
- Removal Application

Construction Permit Application:
- Construction Permit Application

Source Water Permit Application Process - Effective Immediately
- Source Water Permit Applications:

Public Water System Rules
- Public Community Water System
- Non-Transient Non-Community Water System
- Transient Non-Community Water System
- Domestic Bottled or Bulk Water Systems

Wells:
- Well ID Sheet
- Production Well
- Well ID Sheet
- Observation Well

Water Quality:
- Source Water Quality
- Certification of Water Source Likely Affected by Agricultural Land
- GWUWQ Examination Application & Guidance
- Laboratory performing Microbiological Examination Analysis (WPA) Testing

File Transfer Protocol (FTP) Instructions
- NEW

FORMS
- Source Water System Officials Contact Form
- Public Water Supply Survey Form
- Public Water Certification Form
- Lead and Copper Sampling Plan
- Lead and Copper Sampling Plan Guidance
- MTCB Uniform Sampling Plan & Guidance Less than 1000 Population
- MTCB Uniform Sampling Plan & Guidance Greater than 1000 Population
- Billed Water Utility Meeting an Emergency Form and Guidance
- Extended Permit - Billed Water Utility Meeting an Emergency Source
- Monthly Operations Report for Filtered Surface Water Systems
- Monthly Operations Report for Non-Filtered Surface Water Systems
- Monthly Operations Report for Gravel Water Systems
- Monthly Operations Report for Gravel Water System Purchasing Gravel Water
**STEP 2: BASIC SYSTEM INFO**

### System Information

<table>
<thead>
<tr>
<th>System Name:</th>
<th>WSID Number:</th>
<th>System Type (check one):</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>TNC □ NTNC □ Community</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th># of Service Connections (if there are only a few connections, also write in the total number of available sampling taps):</th>
<th>Source Water Type (check one):</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Groundwater □ Surface Water/GWUDI</td>
</tr>
<tr>
<td></td>
<td>Consecutive</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>System Population:</th>
<th># of Pressure Zones</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(if the system relies on a well pump, gravity storage, or single pump station to deliver water to all users in the distribution system, enter “1”):</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dates of Operation (SEASONAL SYSTEMS ONLY):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open: ___________________________</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of Distribution Systems (check one):</th>
<th>1 □ 2 □ 3 □ more than 3.</th>
</tr>
</thead>
</table>

If the system has more than one distribution system, identify the distribution system to which this form pertains: DS00 □

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For systems with multiple distribution systems, a map is required. [Attach a map to this plan](#). The map should clearly label coliform sampling locations and tap locations (if the system uses groundwater).
STEP 2 CONTINUED: MAP SUBMISSION (COMMUNITY)
STEP 2 CONTINUED: MAP SUBMISSION (TNC)

Entrance / Porch

Bar
- Bar Faucet #1
- Bar Faucet #2

Dining Room

Water equipment in basement

Flow Direction

Closet

Restroom
- Base Routine Sample Location #1

Kitchen
- Kitchen Faucet #1
- Kitchen Faucet #2

Drilled Well

This is a suitable Routine Location

First tap in distribution system: suitable for raw water sample location

This is a suitable Routine Location
### Step 4: Complete Sample Locations and Justification

<table>
<thead>
<tr>
<th>Routine Location Address</th>
<th>Justification</th>
<th>5 Connections Upstream For repeat locations Numbers 2 – 5 are optional</th>
<th>5 Connections Downstream For repeat locations Numbers 2 – 5 are optional</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Routine Location 1</td>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>(Base):</td>
<td></td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>7 Routine Location 7:</td>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>2</td>
</tr>
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<td>4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

**Instructions:** The locations for all routine samples taken for compliance purposes must be identified in this table. 1) List up to 7 routine monitoring locations. These are the locations where the required routine compliance samples (monthly or quarterly) are collected. If possible, list the 911 addresses for each location. If those addresses are not available, list where the samples are taken. 2) Explain why the system chooses to sample at each location under the “Justification” column. 3) List at least one and up to five repeat samples within 5 connections upstream and 5 connections downstream for each Routine sampling location listed.
STEP 5: SAMPLE SCHEDULE AND SOURCE INFORMATION

Fill out sample schedule

Don’t forget to sign the form!

Fill out source information (Groundwater systems only)

---

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Routine Sampling Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st: January 1 through March 31</td>
<td></td>
</tr>
<tr>
<td>2nd: April 1 through June 30</td>
<td></td>
</tr>
<tr>
<td>3rd: July 1 through September 30</td>
<td></td>
</tr>
<tr>
<td>4th: October 1 through December 31</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Month</th>
<th>Routine Sampling Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td></td>
</tr>
<tr>
<td>February</td>
<td></td>
</tr>
<tr>
<td>March</td>
<td></td>
</tr>
<tr>
<td>April</td>
<td></td>
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<tr>
<td>May</td>
<td></td>
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<tr>
<td>June</td>
<td></td>
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<td>July</td>
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<td>August</td>
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<tr>
<td>September</td>
<td></td>
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<tr>
<td>October</td>
<td></td>
</tr>
<tr>
<td>November</td>
<td></td>
</tr>
<tr>
<td>December</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Source Name/Number</th>
<th>Source Sample Tap Location</th>
<th>Is this a combined source sample location?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source 1:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Source 2 (if applicable):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Source 3 (if applicable):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Source 4 (if applicable):</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2 – Quarterly Monitoring

Table 3 – Monthly Monitoring

Table 4 – Source Information

To be completed only by year-round NTNC and TNC systems using groundwater. Systems may alternate between the Routine 1 (Base) location and at least one other Routine location as identified on the previous page, depending on system complexity. Identify in what month each Routine sample location will be sampled.

Provide the names, numbers of groundwater sources (wells, springs, etc.) and the source sample tap location at which each source may be sampled prior to any treatment. If a raw water sampling tap is not available prior to the first user, identify the first tap or faucet closest to where the water enters the system. Attach additional sheets if necessary.
Samples must be analyzed by a VT Department of Health certified drinking water lab.

List of Laboratories certified for drinking water analysis:

http://healthvermont.gov/enviro/ph_lab/water_test.aspx

Labs must be certified for each method used for analysis & each contaminant analyze.

Colilert® Analytical Method for TC & EC – VT Labs
ANALYTICAL REQUIREMENTS

• Standard sample volume required for analysis:
  100 mL – Regardless of analytical method

• Only required to determine the presence or absence of total coliform & *E. coli*.

• The time from sample collection to initiation of test medium incubation: **May not exceed 30 hours**

• Sodium thiosulfate will typically be included by the lab to neutralize the chlorine in the water sample.
REJECTION OF SAMPLES

BR – Broken
CL – Chlorine Present
EH - Exceeds hold Time
HS – Excessive head space
FZ – Frozen sample
IN – Insufficient Information
VO – Insufficient Volume
LA – Lab accident
LT – Leak in transit
IP – Invalid sampling protocol

When notified by lab: Collect replacement sample within 24 hours
Mark the type of compliance sample on form for lab:

• Routine (RT):
  • Sample(s) required by monitoring schedule.
  • Additional Routine (NTNCs and TNCs on quarterly only) 3 samples the following month after TC+ Routine sample.

• Repeat (RP): Samples required immediately after TC+ Routine sample.

• Trigger Source (TG): Ground water source sample required immediately after TC+ Routine sample.

*NOTE – If sample is marked “Special” or “Other” it will not be used for compliance purposes (SP)!
• Mark sample collection information on lab form

• Sample location information is on the system’s monitoring schedule:

### COLIFORM BACTERIA MONITORING

<table>
<thead>
<tr>
<th>Facility ID</th>
<th>Facility Name</th>
<th>Sample Point ID</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DS001</td>
<td>DIST SYSTEM-BROOKWELL (UNITS 1-2)</td>
<td>TC001</td>
<td></td>
</tr>
<tr>
<td>DS002</td>
<td>DIST SYSTEM-ROAD WELL (UNITS 3-2)</td>
<td>TC002</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Analyte Group Name</th>
<th>Monitoring Period</th>
<th>Monitoring Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>COLIFORM BACTERIA</td>
<td>1/1 - 12/31</td>
<td>2 every Month</td>
</tr>
</tbody>
</table>

![Web paper](image-url)
### RTCR & GWR SAMPLE TYPE, FACILITY ID & SAMPLE POINT ID

<table>
<thead>
<tr>
<th>Sample Type</th>
<th>Facility ID</th>
<th>Sample PT ID</th>
<th>Sample Location Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Routine, Distribution (RT)*</td>
<td>DS001, DS002..etc.</td>
<td>TC001, TC002..etc.</td>
<td>Specific Address/Name for sample location</td>
</tr>
<tr>
<td>Repeat, Distribution (RP)*</td>
<td>DS001, DS002..etc.</td>
<td>TC001, TC002..etc.</td>
<td></td>
</tr>
<tr>
<td>Trigger, Source (TG)**</td>
<td>WL001, WL002..etc.</td>
<td>RW001, RW002..etc.</td>
<td>Groundwater systems</td>
</tr>
<tr>
<td>Replacement Routine, Repeat or Trigger Source</td>
<td>See above, same as original sample.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special (SP)</td>
<td>See above for “Special” distribution or source sample</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* TCR = Total Coliform Rule

** GWR = Groundwater Rule
SITE ASSESSMENTS UNDER THE RTCR

Level 1 Site Assessment
• 2 or more TC+ samples in a month
• Failure to take EVERY repeat sample following TC+ Routine sample

Level 2 Site Assessment
• E. coli MCL
• Second Level 1 trigger in 12 months
• Bacteria may be present in the distribution if the following simultaneously occur:

1. **Source** of bacteria
2. **Pathway** into the distribution system or breach in system integrity
3. **Mechanism** that allows bacteria to be carried on this pathway or that allows bacteria within biofilms, corrosion tubercles, or sediment to break free and enter the water.
CAUSES OF CONTAMINATION

Source
Water contaminated with E. coli

Hole Pathway

Mechanism
Low/ Negative pressure
LEVEL 1 SITE ASSESSMENTS

1. Level 1 Site Assessment trigger:
   a) Two or more TC + samples in a month; or
   b) System fails to take EVERY required repeat sample following at TC + routine sample.

Resulting in a Level 1 Site Assessment to be performed within 30 days of the trigger

Level 1 Site Assessments can be performed by any validly-certified drinking water system operator with the same class certification as the water system or greater.
Well cap is cracked, missing bolts, loose bolts. Cracked electrical conduit.
4/15/2015 Replaced cap with modern sanitary cap. Replaced conduit with new parts and installed a frost sleeve.
### Section 5: Storage Tank(s)

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a)</td>
<td>NA</td>
<td>Y</td>
<td>N</td>
<td>improper maintenance practices</td>
</tr>
<tr>
<td>b)</td>
<td>NA</td>
<td>Y</td>
<td>N</td>
<td>presence of dead animals or insects</td>
</tr>
<tr>
<td>c)</td>
<td>NA</td>
<td>Y</td>
<td>N</td>
<td>cover/access hatch not sealed</td>
</tr>
<tr>
<td>d)</td>
<td>NA</td>
<td>Y</td>
<td>N</td>
<td>incorrect operation of level control valves</td>
</tr>
<tr>
<td>e)</td>
<td>NA</td>
<td>Y</td>
<td>N</td>
<td>vent/overflow construction inadequate</td>
</tr>
</tbody>
</table>

### Section 7: Written Description of Sanitary Defect(s) that were Circled Above

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This space must be filled out. Use this space to expand upon and provide additional information that supports the findings identified in Sections 1 through 6 above.

Explain those defects that are circled above. If no sanitary defects were identified, you must state so below.

Storage tank level control probe penetrations not sealed. Evidence of rodent and insect activity in vault.
7/10/2015 – Install watertight and sanitary conduit and fittings. Sealed extra penetration. Performed shock disinfection of storage tank and flushed via distribution system.
### Section 2: Sampling Site(s)/Protocol

<p>| | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a)</td>
<td>NA</td>
<td>Y</td>
<td>N</td>
<td>unclean or unsuitable sample tap</td>
<td>f)</td>
<td>NA</td>
<td>Y</td>
</tr>
<tr>
<td>b)</td>
<td>NA</td>
<td>Y</td>
<td>N</td>
<td>hot water intrusion</td>
<td>g)</td>
<td>NA</td>
<td>Y</td>
</tr>
<tr>
<td>c)</td>
<td>NA</td>
<td>Y</td>
<td>N</td>
<td>change in conditions at sample site</td>
<td>h)</td>
<td>NA</td>
<td>Y</td>
</tr>
<tr>
<td>d)</td>
<td>NA</td>
<td>Y</td>
<td>N</td>
<td>improper sample container</td>
<td>i)</td>
<td>NA</td>
<td>Y</td>
</tr>
<tr>
<td>e)</td>
<td>NA</td>
<td>Y</td>
<td>N</td>
<td>aerator was not removed</td>
<td>j)</td>
<td>NA</td>
<td>Y</td>
</tr>
</tbody>
</table>

### Section 7: Written Description of Sanitary Defect(s) that were Circled Above

This space must be filled out. Use this space to expand upon and provide additional information that supports the findings identified in Sections 1 through 6 above.

Explain those defects that are circled above. If no sanitary defects were identified, you must state so below.

- Used unsuitable sample tap – tub faucet with mixing valve and internal shower valve.
7/22/2015 Reviewed online resources for taking samples. Will no longer sample from a bathtub faucet. Will use only clean, non-mixing, non-swivel faucets with external threads for future sampling.
Identified a leak on Market Street near where the positive samples were located. Fixed the leak but have reason to believe there are other leaks on that main, further down due to lower than normal system pressure and increased production.
July 29, fixed the initial leak then shocked and flushed the main. We need to trace this line and assess if another leak may be present. Pressure on the south side of town is lower than usual and system production is higher than normal for this time of year.

We need additional time to find and fix the leak. We propose a completion date of September 1, 2015 for the repair.
CORRECTIVE ACTIONS

• Correct all sanitary defects found during the assessment.

• Within 30 days of triggering the assessment:
  • Complete Assessment & form
  • Submit assessment form
  • Correct Defects

• If the system needs more time, propose a schedule to State.

The State determines if the assessments and schedules are sufficient.
CORRECTIVE ACTIONS

• Must be permanent or be able to be made permanent under a schedule.
• Must follow industry best management practices.
• Must meet the construction and operation standards of the Water Supply Rule.
INCORRECT LEVEL 1 ASSESSMENT FORMS

• Incomplete:
  • Unsigned, no WSID, no system name, no date, system type or operator classification

• Sanitary defects circled but not explained in section 7

• No completion date or proposed timeline for corrective action(s)
2. Level 2 Site Assessment Trigger:
   a) E. coli MCL Violation:
   b) Second Level 1 assessment Trigger in 12 rolling months

Resulting in a **Level 2 Site Assessment** to be performed within 30 days of the trigger

Level 2 Site Assessments are more in-depth and must be performed by the state or a party approved by the state.
## TRIGGERED SITE ASSESSMENTS SUMMARY

<table>
<thead>
<tr>
<th></th>
<th>Level 1 Site Assessment</th>
<th>Triggered Level 2 Site Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Who</strong></td>
<td>Certified operator of the same class or greater</td>
<td>State or party approved by the state (likely a contractor)</td>
</tr>
<tr>
<td><strong>What</strong></td>
<td>A 2 page form that walks through the system and identifies sanitary defects</td>
<td>A more complicated inspection, document review, and sample site analysis.</td>
</tr>
<tr>
<td><strong>When</strong></td>
<td>Within 30 days of the second TC+ in a month or after failing to take all repeat samples.</td>
<td>Within 30 days of triggering a second Level 1 assessment in 12 months or an EC MCL.</td>
</tr>
<tr>
<td><strong>Why</strong></td>
<td>Protection of Public Health, identify pathways or potential pathways of contamination.</td>
<td></td>
</tr>
</tbody>
</table>
VOLUNTARY LEVEL 2 ASSESSMENTS

• Year-round, Non-Community Systems, on Groundwater, under 1,000 in population
  • When required to sample monthly
  • Need a voluntary Level 2 Assessment or Sanitary Survey within last 12 months (among other criteria) to be graduated to quarterly monitoring.
Seasonal Systems:

- Do not serve water to a public population (25 or more people) year round.
- Starts-up and Shuts-down at the beginning and end of an operating season.
- Does not necessarily de-pressurize.

Requirements:

1. Monthly Routine Monitoring
2. State-Approved Seasonal Start-Up Procedure and Certification
• Required to collect 1 TC sample in each month the system is in operation.
Seasonal systems are required to complete a State-Approved Seasonal Start-Up Procedure & Certification prior to serving water to the public.

**Goal**: Identify and eliminate pathways of contamination prior to serving water to the public.

1. Comprehensive visual inspection of the water system.
2. Shock-Chlorinate and/or Flush the Water System.
3. Collect Your Monthly Sample.
4. Sign the Certification of Completion.
5. Submit the Form to DWGWP.
# SEASONAL STARTUP PROCEDURE

## Seasonal Start-Up Procedures and Certification

**Public Water Systems Serving Groundwater**

The use and submission of this form is recommended for all seasonal groundwater public water systems at the beginning of the 2015 operating season before serving water to the public. These procedures are recommended for the 2015 operating season, but will be required for the 2016 operating season according to the Revised Total Coliform Rule.

### System Information

<table>
<thead>
<tr>
<th>System Name</th>
<th>WDPI</th>
<th>Class of System</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1A 1B 2 3 4A 1A 4B 4C D</td>
</tr>
</tbody>
</table>

- What months are you open?
- What day was this start-up procedure completed?
- What day do you plan on opening in 2015?

### Instructions

The Department of Health recommends that all water systems complete the form at the beginning of the 2015 operating season before serving water to the public.

Complete Steps 2 and 3 below. Certification is required only if the “Complete” box is checked or if any system is not in compliance with the Water System Standards and Rules. The department may request that all systems complete Step 4 and return the form to the Division of Water Supply Protection, along with any additional documentation.

### Step 1: Visual Inspection of the Water System

**Water intake, treatment, storage, and distribution system for sanitary deficiencies:**

- **a.** If the system has a well: Check the well. Make sure that the well cap is tight and intact and that no bolts are missing. Make sure that the electrical conduit is not cracked or broken. Confirm that the vent screen is in place and intact. Make sure the area around the well is graded to prevent water from ponding around the casing.

- **b.** If the system has a spring: Check the spring. Make sure the cover is adequately sealed and is intact; rodents, debris, or debris that is not accessible to the public or that is not visible from the public area is not visible or accessible. Make sure any vents or overflows have adequate drainage. Make sure the spring is properly maintained and that traffic does not interfere with the spring.

- **c.** If the system utilizes treatment: Make sure the treatment equipment is in good condition. Make sure the chemical storage tanks are clean and sealed, and all items are stored in a secure location. Make sure any backup or emergency source of supply is of good quality and is not mixed with the primary supply.

- **d.** If the system utilizes water storage: Make sure the storage tank or tanks are clean and sealed, and that the storage tank is free from debris, rodents, and insects. Make sure any overflow, drain, or vents have screens covering the pipes. Make sure the overflow and drain pipes are open and that water does not directly enter the storage tank or tanks.

- **e.** Distribution: Make sure the system maintains adequate pressure. Make sure there are no connections directed towards wells or springs. Make sure pumps and valves are operating properly. Make sure all valves are in their correct position.

- **f.** Routine Sample Location: Make sure routine sampling locations are identified, that the location is appropriate for total coliform testing (no sludges, debris, and采样管路无污染)，and that sample caps and seals are clean.
## SEASONAL STARTUP PROCEDURE

**Step 2: Shock-Chlorinate and/or Flush the Water System**

After visually inspecting the water system and making any necessary improvements, shock chlorinate and/or flush portions of the water system that may include, but not be limited to, the source, storage facilities, treatment, and the distribution system. Write a brief summary of the shock-chlorination procedure implemented in the space provided.

<table>
<thead>
<tr>
<th>Complete</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

- Chlorine residual introduced to distribution system (if measured):

- Duration of time chlorine maintained in the distribution system (if applicable):

**Step 3: Collect a Routine Monthly Sample**

After shock chlorinating and/or flushing the system, collect a total coliform bacteria sample any time during the first month of operation and send it to a certified laboratory for analysis.

<table>
<thead>
<tr>
<th>Complete</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

- Collect one sample at any time during the first month of operation. The sample may be collected before or after water is made available to the public.

- Code the sample as Routine (RT) on the laboratory chain of custody.

**Step 4: Certification of Completion**

Upon completion of all necessary steps above, fill out the certification below:

<table>
<thead>
<tr>
<th>Print Name</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signature</td>
<td>Date</td>
</tr>
</tbody>
</table>

I certify that I am the person authorized to fill out this form and that the information contained herein is true, accurate, and complete to the best of my knowledge and ability at the time the procedure was performed.

**Step 5: Return Form to the DWGPD**

Submit a copy of the completed form to the Drinking Water and Groundwater Protection Division no later than 10 days following the month of service start-up (e.g., report due by June 30th for systems returned to service in May). Keep a copy of this form for your records.

THC Program Specialist
Drinking Water and Groundwater Protection Division
One National Life Drive - Main 2
Montpelier, VT 05602-2501
Fax: 802-828-1541
SEASONAL STARTUP PROCEDURE WALKTHROUGH

Step 1: Visual Inspection of the Water System

a) Visually inspect the Source: Well
   • Is the cap bolted and tight?
   • Is the electrical conduit secured to the cap?
   • Is the cap / conduit broken or cracked?
   • Is there a screen on the vent?
   • Is there adequate drainage?
Step 1: Visual Inspection of the Water System

b) Visually inspect the Source: Spring

- Is the cover sealed and tight?
- Does the source need to be cleaned of debris and sediment?
- Are there indications of insect / rodent activity?
- Are the vents / overflows screened?
- Do the vents / overflow terminate 18” above grade?
c) Visually inspect the Treatment Plant

- Maintained and operational?
- Is your chemical solution fresh?
- Are chemical storage cleaned and sealed?
- Did your chemical reagents expire? Is your equipment calibrated?
- Backwash / discharge line have air gaps?
Step 1: Visual Inspection of the Water System

d) Visually inspect the Storage Tank

• Has the tank been inspected / cleaned?
• Is the integrity of your storage tank maintained?
• Watertight cover?
• Sealed penetrations?
• Is the vent / overflow / drain screened?
• Does the vent / overflow / drain terminate 18” above grade?
Step 1: Visual Inspection of the Water System

e) Visually inspect the Distribution System
   • Does the system maintain adequate pressure?
   • Are there any cross-connection hazards?
   • Are hoses fitted with vacuum breakers / backflow prevention devices?
   • Are pumps and valves operating properly?
   • Are valve pits free of standing water?
   • Are there signs of leaks / line breaks?
e) Visually inspect Sample Locations

- Identify routine sample locations.
- Avoid swivel / mixing faucets.
- Avoid automatic faucets.
- Avoid internal threads.
- Remove aerators.
- Make sure sample tap is clean and accessible.
### Step 2: Shock-Chlorinate and/or Flush the Water System

**Guidance Documents:**
- VT Rural Water
- VT DOH

**Step 2: Shock-Chlorinate and/or Flush the Water System**

After visually inspecting the water system and making any necessary improvements, shock chlorinate and/or flush portions of the water system that may include, but not be limited to, the source, storage facilities, treatment, and the distribution system. Write a brief summary of the shock/chlorination procedure implemented in the space provided.

<table>
<thead>
<tr>
<th>Complete</th>
</tr>
</thead>
<tbody>
<tr>
<td>□</td>
</tr>
</tbody>
</table>

- a) Chlorine residual introduced to distribution system (if measured):
- b) Duration of time chlorine maintained in the distribution system (if applicable):

![Wear PPE!](http://www.health.state.mn.us/divs/eh/wells/waterquality/disinfection.pdf)
SEASONAL STARTUP PROCEDURE WALKTHROUGH

Steps 3 – 5: Sample, Sign, Submit

Step 3: Take your Sample!
- Collect your monthly routine monitoring bacteria sample.

Step 4: Sign the Certification of Completion
- Upon completion of Steps 1 – 3 sign the certification form.

Step 5: Submit to DWGWP
- Submit signed form to the DWGWP no later than 10 days following the month of startup.
OUTLINE

1) Introduction and Background
2) Paradigm Shift
3) Monitoring
4) Sampling and Siting Techniques
5) Sampling Plans
6) Labs and Analytics
7) Site Assessments
8) Seasonal Systems
9) Violations
10) Public Notice and Consumer Confidence Reports
11) Reporting and Recordkeeping
RTCR Violation Types

1. E. Coli MCL Violation (Tier 1)
2. Treatment Technique Violation (Tier 2)
3. Monitoring Violation (Tier 3)
4. Reporting Violation (Tier 3)
E. COLI MCL VIOLATION

- TC+ routine sample followed by a EC+ repeat sample
- EC+ routine sample followed by TC+ (or EC+) repeat sample
- Fails to test for E. coli when a repeat sample is TC+
- EC+ sample followed by a failure to collect all repeat samples

E. coli MCL Violation
- TC+ RT → EC+ RP
- EC+ RT → TC+ RP (or EC)
- TC+ RT → TC+ RP and E. coli not analyzed
- EC+ RT → All Repeats not Taken

E. Coli violations are Tier 1 which require public notice within 24 hours.
• Failure to conduct the required assessment within 30 days of the trigger

• Failure to correct all sanitary defect(s) found through an assessment within 30 days of the trigger or in accordance with a State-approved schedule.

• Seasonal system does not complete start-up procedure prior to serving water to the public.

Treatment Technique Violations are Tier 2 which require public notice within 30 days.
MONITORING VIOLATION

• Failure to collect every required routine or additional routine sample in a compliance period
• Failure to test for E. coli following a routine sample that is TC+

Monitoring violations are Tier 3 which require public notice within 1 year
REPORTING VIOLATION

• Failure to submit a monitoring report or completed assessment form after a system properly conducts monitoring or an assessment in a timely manner.

• Failure to notify the State of an EC + sample the day the system learns of the EC detection.

• Failure of a seasonal system to submit a certification of completion of the State-approved start-up procedure.

Reporting violations are Tier 3 which require public notice within 1 year.
# COMPLIANCE GUIDE

<table>
<thead>
<tr>
<th>Sample Results</th>
<th>E. Coli MCL Violation?</th>
<th>Required Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>RT Sample</td>
<td>RP Sample</td>
<td></td>
</tr>
<tr>
<td>EC +</td>
<td>TC +</td>
<td>YES</td>
</tr>
<tr>
<td>EC +</td>
<td>Any Missed</td>
<td></td>
</tr>
<tr>
<td>TC +</td>
<td>EC +</td>
<td></td>
</tr>
<tr>
<td>TC +</td>
<td>TC+ (E.coli not analyzed)</td>
<td></td>
</tr>
<tr>
<td>TC +</td>
<td>Any Missed</td>
<td>NO</td>
</tr>
<tr>
<td>TC +</td>
<td>TC+</td>
<td></td>
</tr>
<tr>
<td>TC +</td>
<td>TC -</td>
<td>NO</td>
</tr>
<tr>
<td>EC +</td>
<td>TC -</td>
<td></td>
</tr>
</tbody>
</table>

* Level 2 Assessment is required for second Level 1 in a rolling 12-month period
OUTLINE

1) Introduction and Background
2) Paradigm Shift
3) Monitoring
4) Sampling and Siting Techniques
5) Sampling Plans
6) Labs and Analytics
7) Site Assessments
8) Seasonal Systems
9) Violations
10) Public Notice and Consumer Confidence Reports
11) Reporting and Recordkeeping
# PUBLIC NOTICE FOR RTCR VIOLATIONS

<table>
<thead>
<tr>
<th>Tier</th>
<th>Deadline to provide notice</th>
<th>RTCR Violation</th>
<th>Repeat Notices</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>24 hours</td>
<td>E. Coli MCL Violation</td>
<td>Every 3 months until the situation is resolved</td>
</tr>
<tr>
<td>2</td>
<td>30 days</td>
<td>Treatment Technique Violation</td>
<td>Every 3 months until the situation is resolved</td>
</tr>
<tr>
<td>3</td>
<td>1 year</td>
<td>Monitoring Violation Reporting Violation</td>
<td>Annually until the situation is resolved</td>
</tr>
</tbody>
</table>
**Description of violation**

Fecal coliform or E. coli bacteria were found in the water supply on 01/10. These bacteria can make you sick, and are a particular concern for people with weakened immune systems.

**When the violation occurred**

D.O. NOT DRINK THE WATER WITHOUT BOILING IT FIRST. Bring all water to a boil, let it cool for one minute, and let it cool before use or use bottled water. Simmer or boiled water should be used for drinking, making ice, brushing teeth, washing dishes, and food preparation until further notice. Boiling kills bacteria and other organisms in the water.

**Actions consumers should take**

Fecal coliform and E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, and people with severely compromised immune systems.

**Should alternate water supplies be used**

The symptoms above are not only caused by organisms in drinking water. If you experience any of these symptoms and they persist, you may want to seek medical advice. People at increased risk should seek advice about drinking water from their health care providers.

**Potential health effects**

**What happened? What is being done?**

Bacterial contamination can occur when increased run-off enters the drinking water source (for example, following heavy rains). It can also happen due to a break in the distribution system (pipes) of the failure in the water treatment process.

**Population at risk**

Two samples tested positive for E. coli in the main well distribution following a heavy rain event. Inspection of the well found some clogging in the casing and further investigation identified corrosion holes in the casing above the ground surface to a depth of 2 feet. We have contacted a well drilling company to remove and replace the damage portion of the well casing. We will inform you when tests show no bacteria and you no longer need to boil your water. We anticipate resolving the problem within 1 week.

**When the system expects to resolve the violation**

For more information, please contact First Last at 002-123-4567 or 1 National Rd. Montpelier, VT 05602.

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.

**Name and phone number for more information**

**What is being done to correct the violation**

**Required distribution language**

**Certification**

[ Certification text ]
Complete/distribute by July 1 of each year to cover the previous year.

CCRs summarize information regarding:
- the sources used
- detected contaminants
- compliance issues
- health and educational information

CCRs are also a good opportunity to provide any updates:
- system improvements over the last year
- anticipated improvements (short and long term)
- staff recognition (new staff, education, awards)
- The number of assessments required and completed
- The corrective actions required and completed (derived from the assessments)
- What triggered the assessments (E.coli MCL or not)
- If an assessment or corrective action was not completed (Treatment Technique violation)
READ AND COMPLETE THE CCR TEMPLATES

• Date and time of water system meetings
• Name and contact information for the person who can answer questions about the CCR
• Tables are complete and accurate
• Explanation of violations including steps taken to address them
• Progress made or a schedule to address significant deficiencies and the Permit to Operate compliance schedule activities.
• All sections must be complete prior to distributing
DISTRIBUTING YOUR CCR

There must be at least one form of DIRECT DELIVERY of the CCR which may include:

• Mailing a copy to each bill-paying customer
• Hand delivering a copy to each service connection
• Electronic delivery* (must meet certain requirements)
  • Paper or electronic communication (e.g. email, water bill, post card notification) must provide the specific URL providing a direct link to the CCR
  • If a customer is unable to receive a CCR by the chosen electronic method, the CCR must be provided by an alternative method allowed by the Rule
  • If using an electronic delivery, a prominently displayed message and the direct URL must be include in ALL notifications of CCR availability
1) Introduction and Background
2) Paradigm Shift
3) Monitoring
4) Sampling and Siting Techniques
5) Sampling Plans
6) Labs and Analytics
7) Site Assessments
8) Seasonal Systems
9) Violations
10) Public Notice and Consumer Confidence Reports
11) Reporting and Recordkeeping
# REPORTING REQUIREMENTS

**Systems Must Report To The State:**

<table>
<thead>
<tr>
<th>REQUIREMENT</th>
<th>TIMING</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>E. coli</em> MCL violation, or <em>E. coli</em> positive routine sample</td>
<td>By end of current business day (or next business day if state office is closed)</td>
</tr>
<tr>
<td>TT violation</td>
<td>By end of next business day</td>
</tr>
<tr>
<td>Level 1 or 2 assessment report</td>
<td>Within 30 days of learning that the system has exceeded a TT trigger</td>
</tr>
</tbody>
</table>
## Reporting Requirements, (Cont.)

Systems Must Report To The State:

<table>
<thead>
<tr>
<th>REQUIREMENT</th>
<th>TIMING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coliform monitoring violation</td>
<td>Within 10 days of learning of violation</td>
</tr>
<tr>
<td>Completion of corrective action, if occurring after submittal of an assessment report</td>
<td>When each corrective action is completed</td>
</tr>
<tr>
<td>Seasonal system certification of compliance with state-approved start-up procedures</td>
<td>No later than 10 days following the end of the month in which the system opened.</td>
</tr>
</tbody>
</table>
# PWS RECORDKEEPING

Systems Must Maintain Records:

<table>
<thead>
<tr>
<th>REQUIREMENT</th>
<th>TIMING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Records of action taken by the system to correct violations</td>
<td>3 years</td>
</tr>
<tr>
<td>Public notices issued &amp; certifications made</td>
<td>3 years</td>
</tr>
<tr>
<td>Records of microbiological analysis</td>
<td>5 years</td>
</tr>
<tr>
<td>Copies of monitoring plans</td>
<td>As long as analyses are required</td>
</tr>
</tbody>
</table>
Systems Must Maintain Records:

<table>
<thead>
<tr>
<th>REQUIREMENT</th>
<th>TIMING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1 or 2 assessment forms</td>
<td></td>
</tr>
<tr>
<td>Documentation of corrective actions</td>
<td></td>
</tr>
<tr>
<td>Other available summary documentation of sanitary defects &amp; corrective actions</td>
<td>5 years</td>
</tr>
<tr>
<td>Records of any repeat samples taken that meet the state’s criteria for an extension of the 24-hour period for collecting repeat samples</td>
<td></td>
</tr>
</tbody>
</table>
Search for operator certification information

OR

Search for Water System information
- Bacterial data
- Chemical data
- Current and following year Monitoring Schedules
- Always to date with latest info available to the state

HTTPS://ANRWEB.VT.GOV/DEC/DWGWP
KEY TAKEAWAYS OF THE RTCR

- The RTCR goes into effect April 1, 2016
  - There is no more Total Coliform MCL, E. coli MCL remains
  - No more Total Coliform-based Public Notice or Boil Water requirements in Vermont, E. coli-based boil and PN remains
- Systems must take 3 repeat samples for each positive routine sample
  - Monthly systems resume normal monthly monitoring the month following a routine positive sample
  - Quarterly systems must perform 3 additional routine samples the month following a routine positive sample
  - Systems must complete each “set” of samples, regardless of sample results or triggers
- 2 or more total coliform samples in a month triggers a site assessment
- E. coli MCL violation requires a boil water notice and a Level 2 Site Assessment.
- State precautionary boil may apply.
REQUIRED ACTIONS

Before April 1st

• Submit new bacteriological sampling plan (templates/forms forthcoming)
• Attend RTCR training – Level 1 Assessments and Sampling Plans
• Check out DWGWP website

After April 1st

• Seasonal systems perform seasonal startup procedures and submit completed startup form to DWGWP

Sample early in monitoring period!
QUESTIONS AND CONTACTS

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For questions regarding TNC systems

For questions regarding Community or NTNC systems
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>TC</td>
<td>Total Coliform</td>
</tr>
<tr>
<td>EC</td>
<td>E. coli</td>
</tr>
<tr>
<td>RT</td>
<td>Routine sample</td>
</tr>
<tr>
<td>RP</td>
<td>Repeat sample</td>
</tr>
<tr>
<td>TCR</td>
<td>Total Coliform Rule</td>
</tr>
<tr>
<td>RTCR</td>
<td>Revised Total Coliform Rule</td>
</tr>
<tr>
<td>MPN</td>
<td>Most Probable Number</td>
</tr>
<tr>
<td>TG</td>
<td>Triggered groundwater source water sample</td>
</tr>
<tr>
<td>NC</td>
<td>Non-Community Water System (either TNC or NTNC)</td>
</tr>
<tr>
<td>TNC</td>
<td>Transient Non-Community water system</td>
</tr>
<tr>
<td>NTNC</td>
<td>Non-Transient Non-Community water system</td>
</tr>
<tr>
<td>CWS</td>
<td>Community Water System</td>
</tr>
<tr>
<td>TT</td>
<td>Treatment Technique</td>
</tr>
<tr>
<td>MCL</td>
<td>Maximum Contaminant Level</td>
</tr>
<tr>
<td>GW</td>
<td>Groundwater</td>
</tr>
<tr>
<td>SW</td>
<td>Surface Water</td>
</tr>
<tr>
<td>GWUDI</td>
<td>Groundwater Under the Direct Influence of Surface Water</td>
</tr>
<tr>
<td>CCR</td>
<td>Consumer Confidence Reports</td>
</tr>
<tr>
<td>DWGWP</td>
<td>Drinking Water and Groundwater Protection Division</td>
</tr>
<tr>
<td>PN</td>
<td>Public Notice</td>
</tr>
</tbody>
</table>