

**REVISED TOTAL COLIFORM RULE (RTCR)**  
**COLIFORM SAMPLING PLAN FOR ALL PUBLIC WATER SYSTEMS**  
**SERVING A POPULATION OF 1,000 OR LESS**

System Information			
<b>System Name:</b>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%; padding: 5px;"><b>WSID Number:</b></td> <td style="padding: 5px;"><b>System Type</b> (check one):  <input type="checkbox"/> TNC   <input type="checkbox"/> NTNC   <input type="checkbox"/> Community                             </td> </tr> </table>	<b>WSID Number:</b>	<b>System Type</b> (check one): <input type="checkbox"/> TNC <input type="checkbox"/> NTNC <input type="checkbox"/> Community
<b>WSID Number:</b>	<b>System Type</b> (check one): <input type="checkbox"/> TNC <input type="checkbox"/> NTNC <input type="checkbox"/> Community		
<b># of Service Connections:</b> <small>(if there are only a few connections, also write in the total number of available sampling taps)</small>	<b>Source Water Type</b> (check one): <input type="checkbox"/> Groundwater <input type="checkbox"/> Surface Water/GWUDI <input type="checkbox"/> Consecutive		
<b>System Population:</b>	<b># of Pressure Zones</b> (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"):		
<b>Dates of Operation (SEASONAL SYSTEMS ONLY):</b>			
<b>Open:</b>	<b>Close:</b>		
<b>Number of Distribution Systems (check one):</b> <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> more than 3.			
If the system has more than one distribution system, identify the distribution system to which this form pertains: DS00 _____			

**Instructions for completion:** This form is designed to be completed by all public drinking water systems serving a population of 1,000 or less. For systems with multiple distribution systems, a separate sampling plan for each distribution system is required. Attach a map to this plan. The map must include the water system name and identification (WSID) number, clearly labeled coliform sampling locations that are included in this plan, clearly labeled groundwater source sample tap locations (if the system uses groundwater), locations served by the system, directional flow of the system and major water system infrastructure such as: all sources, treatment facilities, storage tanks, pump stations, pressure zones and major distribution lines. If the system consists of a single or few buildings, a sketch of the layout of the rooms, sampling locations, and/or connections will suffice. If the system has only one or a few service connections, identify the number of connections and the number of available sample taps available in the "#of Service Connections" box above.

**For Community Systems, any system served by surface water or Groundwater Under the Direct Influence of Surface Water, or seasonal TNC systems:** Fill out **Table 1 and Table 3**. These types of systems are required to sample monthly. If the system uses groundwater or a combination of groundwater and surface water, also fill out **Table 4**.

**For year-round NTNC and TNC systems served by only groundwater:** fill out **Table 1, Table 2, Table 3, and Table 4**. Filling out Table 3 is required because while these systems are allowed to sample quarterly, if certain events happen, the system will be required to sample monthly. See the attached guidance for more information.

**For all systems:** If the system has a total coliform or E. coli presence in a routine compliance sample, collection of 3 repeat samples is required for each routine positive sample. Repeat sampling locations include: Repeat Sample #1 at the location where the original positive sample was taken; Repeat Sample location #2 within 5 connections upstream (toward from the well/source of water) of the original positive; and Repeat Sample location #3 within 5 connections downstream (away from the well/source of water). This form allows a system to list all 5 connections upstream and downstream although only one location is required. **All sample locations used for compliance purposes under the Revised Total Coliform Rule must be identified on this form.**

	Routine Location Address	Justification	5 Connections Upstream For repeat locations Numbers 2 – 5 are optional	5 Connections Downstream For repeat locations Numbers 2 – 5 are optional
1	Routine Location 1 (Base):		1	1
			2	2
			3	3
			4	4
			5	5
2	Routine Location 2:		1	1
			2	2
			3	3
			4	4
			5	5
3	Routine Location 3:		1	1
			2	2
			3	3
			4	4
			5	5
4	Routine Location 4:		1	1
			2	2
			3	3
			4	4
			5	5
5	Routine Location 5:		1	1
			2	2
			3	3
			4	4
			5	5
6	Routine Location 6:		1	1
			2	2
			3	3
			4	4
			5	5
7	Routine Location 7:		1	1
			2	2
			3	3
			4	4
			5	5

Table 1 – Sampling Locations

**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 1 and up to 5 repeat samples within 5 connections upstream and 5 connections downstream for each Routine sampling location listed.

**Table 2 – Quarterly Monitoring**

To be completed only by **year-round NTNC and TNC systems using groundwater**. Systems must 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 quarter each Routine sample location will be sampled.

<b>Quarter</b>	<b>Routine Sampling Location</b>
1 <sup>st</sup> : January 1 through March 31	
2 <sup>nd</sup> : April 1 through June 30	
3 <sup>rd</sup> : July 1 through September 30	
4 <sup>th</sup> : October 1 through December 31	

**Table 3 – Monthly Monitoring**

To be completed by any **public water system serving 1,000 people or less**. Systems must 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.

<b>Month</b>	<b>Routine Sampling Location</b>
January	
February	
March	
April	
May	
June	
July	
August	
September	
October	
November	
December	

**Table 4 – Source Information**

Provide the names/numbers of groundwater sources (wells, springs, etc.) and the source sample tap location where 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/faucet closest to where the water enters the system.

Attach additional sheets if necessary

<b>Source Name/Number</b>	<b>Source Sample Tap Location</b>	<b>Is this a combined source sample location?</b>
Source 1:		
Source 2 (if applicable):		
Source 3 (if applicable):		
Source 4 (if applicable):		

Checklist Prior to Form Submission:

- A map, including the following information:
  - Water system name and identification (WSID) number,
  - Clearly labeled coliform sampling locations that are included in this plan,
  - Clearly labeled groundwater source sample tap locations for systems that utilize groundwater in any portion of the system,
  - Locations served by the system,
  - Directional flow of the system and
  - All major water system infrastructure such as:
    - Sources,
    - Treatment facilities,
    - Storage tanks,
    - Pump stations,
    - Pressure zones, and
    - Major distribution lines.
  
- All required tables are complete, including:
  - Complete basic system information on page 1,
  - Justification for each routine sampling location,
  - At least 1 repeat location within 5 connections upstream and 5 connections downstream of each routine location,
  - Monthly and/or quarterly locations identified as required in Tables 2 and 3,
  - All ground water sources and source sample tap locations identified in Table 4.
  
- Make and retain a copy of this plan for Water System records.

<b>Signature of System Owner or Administrative Contact</b>	
I have read the Coliform Sampling Plan Guidance document and certify that the above information is true and accurate to the best of my knowledge.	
Signature:	Date:
Printed Name:	Title:

Return this form to:

TNC Systems	Community and NTNC Systems
Tanya Dyson Drinking Water and Groundwater Protection Division 1 National Life Drive, 2 Main Montpelier, VT 05620-3521 Phone: 802-461-6143 Fax: 802-828-1541	David Love Drinking Water and Groundwater Protection Division 1 National Life Drive, 2 Main Montpelier, VT 05620-3521 Phone: 802-585-4902 Fax: 802-828-1541

### COLIFORM SAMPLING PLAN GUIDANCE

The Revised Total Coliform Rule requires all public water systems to sample in accordance with a written sampling plan subject to review, revision and approval by the Drinking Water and Groundwater Protection Division (Division). The purpose of the sampling plan is to ensure that sample locations monitored for contamination represent the entire distribution system. For systems with multiple distribution systems, a separate monitoring plan is required for each distribution system. For smaller systems with only a few service connections, please use “tap” or “faucet” interchangeably with “connection” as used throughout this plan and guidance. It is understood that smaller systems may not have up to five connections upstream and/or downstream of original locations.

#### Instructions for completing the tables

- **Table 1:** This table is intended to capture all possible routine coliform monitoring locations within a water system. Routine sample locations include the Routine Location 1 (Base) site and additional locations. It is likely that a water system will not identify all seven routine sampling locations as provided in the table. Two or three sampling locations may be sufficient to represent the entire the distribution system. The use of seven sample locations allows a system to alternate with the Routine Location 1 (Base) and take a sample from a different location each month of the year, when sampling monthly. These locations should not be located at the ends of lines, to allow for repeat locations to be further downstream than the routine sample location. In the “justification” column, identify why each location has been selected for sampling. Possible justification for sampling locations can be: “center of distribution”, “hospital with vulnerable population”, “west end of distribution”, “high pressure zone”, “low pressure zone”, etc. in order to capture the population served by the system, the system complexity, and potential changes in water quality that may arise throughout the distribution system.
- **Table 2:** This table identifies sampling locations selected for routine monitoring by quarter for a system sampling on a quarterly monitoring frequency. The only systems that are eligible to be considered for a quarterly monitoring frequency are year-round (not identified as “seasonal” by the Division) NTNC and TNC systems, 1,000 or less in population, using only groundwater. A qualified system is permitted to sample on a quarterly basis until any ONE of the following events occur, at which time the system will be required to sample on a monthly frequency for coliform monitoring: 1) The system triggers a Level 2 Site Assessment; 2) The System receives an E. coli MCL violation; 3) The system receives a Total Coliform Treatment Technique Violation; or 4) The system receives 2 monitoring violations or one monitoring violation and triggers a Level 1 Site Assessment within 12 months. Please see the Division’s website for guidance on sampling frequencies: [www.drinkingwater.vt.gov](http://www.drinkingwater.vt.gov). A system must alternate sampling locations between the Routine Location 1 (Base) and other locations, likely 2 other locations in addition to the Routine 1 (Base) location so that during Quarter 1 the system will sample Routine Location 1 (Base), during Quarter 2 the system will sample from Routine Location 2, during Quarter 3 the system will return to sample at Routine Location 1 (Base), and during Quarter 4 the system can either sample at a new site, which would be Routine Location 3 or go back to the previous Routine Location 2. Choosing between identifying a Routine Location 3 or reverting back to Routine Location 2 depends on system complexity and availability for sampling locations.
- **Table 3:** This table identifies sampling locations for a system sampling on a monthly monitoring frequency. Because it is possible for an NTNC or TNC system that normally samples on a quarterly basis to trigger increased (monthly) monitoring as discussed above, this Table must be completed by all public water systems. The intent of this table is to allow systems to alternate between its Routine Location 1 (Base) sample location and several other locations, if necessary. Systems must alternate between the Routine Location 1 (Base) and other locations each month, depending on system complexity and the availability of sampling locations.
- **Table 4:** Identifies groundwater source water sample tap locations. This must be completed by groundwater systems and systems that utilize a mixture of surface water and groundwater.

#### Sample Number and Frequency

Systems under 1,000 are required to take one routine sample, for compliance purposes, per monitoring period.

### **Distribution Sampling Location and Rationale**

Locate the Routine Location 1 (Base) compliance sample location near the center of the distribution system, either geographically or based on the population center of the system if the two are different. The Routine 1 (Base) location must be sampled every other monitoring period. Select additional sample locations, based on the complexity of the water system and the availability of suitable sampling locations, to represent the entire distribution system. All samples collected at these locations are considered distribution samples and must be denoted as such on the laboratory sample collection / chain-of-custody forms.

Collect the first monitoring period sample from the Routine Location 1 (Base). The next sample must come from one of the other pre-selected locations from **Table 1**. Up to 6 other Routine sampling locations may be added to reflect the rest of the distribution system, always alternating with the Routine Location 1 (Base). Repetition of this pattern will ensure that the entire system is monitored effectively over the course of a year.

Please note that if there is more than one pressure zone, each zone must have a sample that is representative of that zone. Different pressure zones create isolation zones from the rest of the system which may produce areas of vulnerability. These locations must be listed as Routine Sampling locations in **Table 1**.

### **Sample Collection and submittal to the Laboratory**

Please refer to the laboratory's sampling instructions for important collection information. If the system is chlorinating at the time the coliform sample is collected, the free chlorine residual must be measured at the time when the coliform sample is collected and recorded on the sample collection/chain-of-custody form that is submitted with the coliform sample to the laboratory. If chlorinating and no free chlorine is present, measure and record the total chlorine and record on the form. Identify sample locations on the form using the 911 address wherever possible. The Water System Identification (WSID) Number must be included on the sample collection /chain-of-custody form as well as other sample identification information. This information is listed on the system monitoring schedule issued by the Division (Facility ID, Sample Point ID) and outlined in the attached TCR/Chemical Sample Collection Form Guidance. Remember to record the coliform sample type – Routine (RT), Repeat (RP) or Triggered Groundwater source sample (TG).

### **Repeat Samples**

If the system receives a positive result during routine monitoring, collection of three repeat samples within 24 hours of notification of the positive result is required. Always keep four to seven sample containers on hand at any given time so that the system is able to collect repeat samples within the 24-hour time requirement. The Revised Total Coliform Rule requires that the extent and severity of the contamination be examined. If the water system does not normally disinfect, please do not turn on the disinfection system before all repeat samples are collected, unless directed to do so by the Division. All repeat samples must be taken on the same day. The system must take:

1. One sample from the original sample location.
2. One sample from a tap within five connections upstream of the original sample point.
3. One sample from a tap within five connections downstream of the original sample point.
4. If the system is served by any groundwater sources, then source samples will be required from each groundwater source that was active as of the time of the routine positive sample for Groundwater Rule compliance purposes.

### **Return to Routine Monitoring Schedule**

Systems with routine quarterly coliform monitoring frequencies are required to take three “additional routine” samples during the month following a routine positive sample result and will only return to quarterly monitoring frequency if no additional positive coliform sample results are reported. In the month following a positive sample result, systems with a routine monthly coliform monitoring frequency are required to resume normal monitoring by continuing to sample at

This form and related environmental information are available electronically via the internet. For information visit the Vermont Homepage at [www.vermont.gov](http://www.vermont.gov) or visit the Drinking Water and Groundwater Protection Division website directly at [www.drinkingwater.vt.gov](http://www.drinkingwater.vt.gov).

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