South Dakota
Drinking Water Program
Revised Total Coliform Rule (RTCR)
Level 2 Assessment Form

What is the purpose of this form?

The attached Revised Total Coliform Rule (RTCR) Level 2 Assessment form was designed for use by public water system (PWSs) and any Level 2 assessors to fulfill the requirements to perform an assessment.

Where do the PWSs submit the assessment form?

The completed form should be submitted to-SD Drinking Water Program (DWP)-DENR, 523 E Capital, Pierre SD 57501. Faxed to 605-773-5286. It can also be scanned/ emailed.

How to complete the form?

The assessment form is designed as an electronically fillable form. Just click in the open fields and type in text or click in the appropriate [yes/no] field.

How do PWSs document the completion of the assessment?

The PWS must use this form to document completion of the Level 2 Assessment. The PWS must submit the completed form to the DWP within 30 days after they have learned that they have exceeded an RTCR treatment technique trigger. DWP makes the final determination on the adequacy and completeness of the assessment. DWP will review the assessment form and if it determines that the assessment is insufficient, it will consult with the system on follow-up efforts that may be required. PWSs should be familiar with the form and required submittals so that they are prepared for an assessment in advance, should one be required. For example, PWSs may wish to create a standard operating procedure (SOP) for what to do when coliform results trigger an assessment.

Why do systems need to conduct a Level 2 Assessment?

- The purpose of performing an assessment is to enhance public health protection by identifying the presence of sanitary defects and correcting all such defects identified. Performing assessments will also help identify if there are deficiencies or problems in the sampling practices.
- Sanitary defects are defined as "defects that could provide a pathway of entry for microbial contamination into the distribution system or that are indicative of a failure or imminent failure in a barrier that is already in place". Identifying and correcting sanitary defects early will provide some assurance that issues have been addressed that may compromise public health. The Level 2 Assessment should be conducted thoroughly enough to capture the possibility that there may be multiple sanitary defects. In some cases, a sanitary defect may not be found despite conducting a thorough assessment. Ideally, a well-performed Level 2 Assessment will prevent most systems from developing conditions that lead to fecal contamination.

When is a Level 2 Assessment required?

A Level 2 Assessment is triggered if RTCR sampling results in any one of the following scenarios:

1. An *E. coli* maximum contaminant level (MCL) violation; or

2. Triggering of a second Level 1 Assessment within a rolling 12-month period, unless the primacy agency has determined a likely cause for the situation that resulted in the initial Level 1 treatment technique trigger and establishes that the system has fully corrected the problem.

Who is responsible for conducting a Level 2 Assessment?

A Level 2 Assessment must be conducted by a party approved by the DWP due to the higher level of complexity. The party conducting the assessment could be the DWP itself or a third party approved by DWP. The PWS is ultimately responsible to make sure that the assessment is completed.

PWS ID#:	PWS Name:	
System Type: CWS ☐ NTNC ☐ TNC ☐	SEASONAL: YES ☐ NO ☐	Source: Ground Water ☐ Surface Water ☐
Population served:		
Primary Operator:	Phone:	PWS Address: City/Town:
Person who collected TC samples if different than Primary Operator:		Phone:
State Personnel Consulted For Assessment:		Phone:
Compliance Period (mm/yyyy):	Assessment Trigger Date (mm/dd/yyyy):	
Date Assessment Completed (mm/dd/yyyy):	Laboratory Notification Date (mm/dd/yyyy):	

Assessment Elements		Reviewed?			Issues?		Issue Description	Corrective Action Taken and Date
		Y	N	N/A	Y	N		
1.	**Review of the Locations Where the Positive RTCR Samples Were Collected**						**Indicate Element number being described.**	
1.1	Were the samples taken at routine/ repeat locations on RTCR site plan?	☐	☐	☐	☐	☐		
1.2	Were these samples routine and/or repeat samples?	☐	☐	☐	☐	☐		
1.3	Sample locations-Were these samples taken from a kitchen, bath or outside faucet? Describe precautions taken at the outside spigot or other sample locations.	☐	☐	☐	☐	☐		
1.4	Were the samples taken from a threaded or smooth tap? Was a swivel or autosensing tap used? Was a hot water tap used? Other types of taps? Bacteria can grow in the area the tap swivels, threads, on the aerator, or in hot water.	☐	☐	☐	☐	☐		
1.5	Were the tap areas unsanitary at the time of sampling? Unsanitary areas can have high concentrations of bacteria.	☐	☐	☐	☐	☐		
1.6	Did the taps have a POU device on them, or does the house use POE device? If these filters are not changed regularly, it can lead to higher levels of bacteria.	☐	☐	☐	☐	☐		
1.7	Have the locations undergone any plumbing replacements or repairs? Repairs can disturb the biofilm and lead to high levels of bacteria being released.	☐	☐	☐	☐	☐		

Assessment Elements		Reviewed?			Issues?		Issue Description	Corrective Action Taken and Date
		Y	N	N/A	Y	N		
1.8	Does the underground sprinkler system have an atmospheric vacuum breaker? Without this device, bacteria can migrate from the piping in the yard into the home plumbing.	☐	☐	☐	☐	☐		
1.9	Is the atmospheric vacuum breaker at least two feet higher than the highest sprinkler head? These devices do not protect against back pressure.	☐	☐	☐	☐	☐		
1.10	Are there any cross connections from an outside spigot, hose in bucket of water/pond/animal trough, or from an inside tap, a hose in a sink, or other locations in the house? Cross connections allow non-potable water into a potable water system.	☐	☐	☐	☐	☐		
1.11	Is this location near a storage tank or dead end? Biofilm can accumulate in dead ends and lead to higher levels of bacteria. Flow out of a storage tank at low levels can stir up bacteria laden sediments on the bottom of the tank.	☐	☐	☐	☐	☐		
2.	**Review of How the Samples Were Collected**							
2.1	Is the sampler from the PWS-the regular sampler or a replacement sampler? A sampler who is not trained is more likely to contaminate the sample.	☐	☐	☐	☐	☐		
2.2	Were proper sample bottles used? Improper bottles have not been sterilized by the lab and can contain bacteria.	☐	☐	☐	☐	☐		
2.3	If it is a seasonal system, were there any problems during the most recent start-up procedure?	☐	☐	☐	☐	☐		
2.4	Was the aerator removed? The aerator can trap bacteria and can lead to higher levels of bacteria that are not from the distribution system.	☐	☐	☐	☐	☐		
2.5	Was the gasket removed? Bacteria can accumulate in and around the gasket and can lead to higher levels of bacteria.	☐	☐	☐	☐	☐		
2.6	Was the water flushed for five minutes? Flushing is necessary to test the water from the mains where compliance is based.	☐	☐	☐	☐	☐		
2.7	Was the cap laid face down? The cap needs to be laid face up to avoid picking up bacteria from the surface upon which it was laid.	☐	☐	☐	☐	☐		
2.8	Was there other sampler error? Describe	☐	☐	☐	☐	☐		

Assessment Elements		Reviewed?			Issues?		Issue Description	Corrective Action Taken and Date
		Y	N	N/A	Y	N		
2.9	Was tap disinfected? Describe what method was used.	☐	☐	☐	☐	☐		
2.10	Was the sample mailed immediately upon being taken?	☐	☐	☐	☐	☐		
2.11	Describe any other type of error reported by the lab. For example-received above the proper temperature, leaking bottle, etc.	☐	☐	☐	☐	☐		
3.	**Review of the Distribution System**							
3.1	Have mains been replaced/repaired or service lines added? These practices can disturb the biofilm and release bacteria.	☐	☐	☐	☐	☐		
3.2	Have fire hydrants or blow offs been flushed? Higher volumes/velocities of flow can scour the biofilm and release large numbers of bacteria.	☐	☐	☐	☐	☐		
3.3	Have valves been exercised, opened, or closed to direct flow differently? Different flow patterns can disturb the biofilm releasing bacteria.	☐	☐	☐	☐	☐		
3.4	Leaks? Distribution leakage rates are about 10%, any pressure differentials or intermittent low pressures will bring non-potable water back into the distribution system.	☐	☐	☐	☐	☐		
3.5	Are all of the backflow prevention devices operational and maintained? Devices need to be tested annually. Devices not properly maintained can introduce non-potable water.	☐	☐	☐	☐	☐		
3.6	Was there a total loss of pressure, low pressure (<20 psi), or changes in water pressure? If yes, please describe?	☐	☐	☐	☐	☐		
3.7	Low disinfectant levels? Areas in the distributions system can have low or no disinfectant for many reasons including cross connections, nitrifying bacteria, dead ends, etc.	☐	☐	☐	☐	☐		
3.8	Was a hydrant sheared off or damaged during an accident?	☐	☐	☐	☐	☐		
3.9	Was there an illegal use of hydrants? Construction or other companies may have access to tools that can open hydrants.	☐	☐	☐	☐	☐		

Assessment Elements		Reviewed?			Issues?		Issue Description	Corrective Action Taken and Date
		Y	N	N/A	Y	N		
3.10	Appurtenance failure: altitude valves, surge control, pump stations, water in vaults, air relief valves leaking, etc.? Leaking air relief valve means the internal fragile parts are broken, and a bubble of air can be trapped disturbing the biofilm.	☐	☐	☐	☐	☐		
3.11	Water filling station overused? Filling stations can create the same high flows that flushing can create and disturb biofilm. Also, they can cause local low pressure during filling.	☐	☐	☐	☐	☐		
3.12	Have trees fallen? Tree roots entangle themselves around/into pipes, falling trees uproot pipes causing excessive leaking or main breaks.	☐	☐	☐	☐	☐		
4.	**Review of Storage Tanks**							
4.1	Are there rodents/birds/bats/snakes/insects in tank? All can transport pathogens. They are vectors for disease.	☐	☐	☐	☐	☐		
4.2	Are there breaches or holes of any sort into tank? There should be no opening other than afforded by a #24 mesh screen or no opening > 0.0027 inches.	☐	☐	☐	☐	☐		
4.3	Is there any presence of animal droppings around openings, vents, or overflows? If a mouse is infected, a single mouse pellet can contain 105 salmonella.	☐	☐	☐	☐	☐		
4.4	Is there sediment buildup and floating debris in tank? The sediment builds harmful levels of bacteria and higher organisms and needs to be removed at least every 3 to 5 years.	☐	☐	☐	☐	☐		
4.5	Has the tank been cleaned in a 3 to 5 year time frame? If pathogen laden sediment is washed out of the tank, it could lead to a waterborne disease outbreak.	☐	☐	☐	☐	☐		
4.6	Is there at least a #24 mesh screen installed on vents and overflows? Biting midges can get through a #16 mesh and can fly to the top of an elevated tank. Insects are a vector for disease. Elevated tanks must have a pressure/vacuum relief mechanism on vents (e.g. movable palette).	☐	☐	☐	☐	☐		
4.7	Is the #24 mesh screen damaged or not properly installed? The best installation of a screen is between two flanges.	☐	☐	☐	☐	☐		

Assessment Elements		Reviewed?			Issues?		Issue Description	Corrective Action Taken and Date
		Y	N	N/A	Y	N		
4.8	Are the vents and overflows at least 24 inches above the closest horizontal surface? Vents are an inhalation hazard and can inhale bird droppings that can contain salmonella.	☐	☐	☐	☐	☐		
4.9	Is the overflow pipe directly connected to a tank drain, sanitary sewer, or storm drain? An overflow pipe breathes just like a vent. When connected, they breathe from a moisture laden environment that breeds high levels of bacteria.	☐	☐	☐	☐	☐		
4.10	Is the hatch at least 24 inches above the roof for a ground level tank? The hatch needs to be raised above flood and snow levels.	☐	☐	☐	☐	☐		
4.11	Does the hatch have a solid, water proof, shoebox type lid? Rain and dust are laden with bacteria and sunlight increases algae growth. The lid must be solid with a 2 inch lip on all sides.	☐	☐	☐	☐	☐		
4.12	Does the hatch move when it is pushed down on? If a hatch moves when pushed down, the rubber gasket is not tight against the lip possibly allowing insects and small rodents in.	☐	☐	☐	☐	☐		
4.13	Has the tank been accidently drained? This can scour bacteria laden sediment from the tank.	☐	☐	☐	☐	☐		
4.14	Have there been high flows through the tank? High flows can stir up bacteria laden sediment.	☐	☐	☐	☐	☐		
4.15	High water age? This can lead to increased bacteria levels.	☐	☐	☐	☐	☐		
4.16	Was the sample taken when the tank was at the low level mark? Higher levels of bacteria may be present at low tank levels especially if it has not been cleaned.	☐	☐	☐	☐	☐		
4.17	Was the tank recently cleaned? The tank may have been inadequately cleaned and disinfected.	☐	☐	☐	☐	☐		
4.18	Did the tank telemetry or other appurtenances fail? This can lead to the tank draining pulling bacteria laden sediment into the distribution system.	☐	☐	☐	☐	☐		
4.19	Was there a power outage? This can lead to the tank being drained	☐	☐	☐	☐	☐		
4.20	Was the tank vandalized or subject to tampering?	☐	☐	☐	☐	☐		

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		Y	N	N/A	Y	N		
5.	**Review of Treatment (if applicable)**							
5.1	Has the treatment been bypassed altogether at any time or have individual processes been interrupted by power outages or other causes? If yes, provide details on when, which processes, and for how long?	☐	☐	☐	☐	☐		
5.2	Have there been any new treatment processes added or new equipment installed?	☐	☐	☐	☐	☐		
5.3	Have there been any recent repairs of major unit processes or treatment equipment?	☐	☐	☐	☐	☐		
5.4	Have there been any changes in the operational procedures used for treating the water for example, changes in chemical dosages or changes in coagulant chemicals used? If yes, provide details of the change and when it occurred.	☐	☐	☐	☐	☐		
5.5	Has a coagulant been added at all times the plant has been filtering water? Rapid sand filtration is designed to always be used with a coagulant even when the raw water turbidity is less than 0.3 NTU. Without it, the filter is a simple sieve achieving less than 0.5 log of removal and allowing cysts to pass.	☐	☐	☐	☐	☐		
5.6	Have there been changes in raw water quality? For example, diurnal swings in pH caused by algae blooms? Algae growth can cause the pH to swing > 2 units between the morning and evening causing alum to become ineffective during the high pH times of the evening.	☐	☐	☐	☐	☐		
5.7	Is the finished water turbidity increasing during the evening? Alum will not work at high pH levels in the evening, and the turbidity of the finished water will increase.	☐	☐	☐	☐	☐		
5.8	Has filter clogging algae caused more frequent backwashing? Filter clogging algae blind off the top few inches of the filter. This can lead to increased turbidities due to the depth of the filter media not being effectively used.	☐	☐	☐	☐	☐		
5.9	Has a disinfectant been added at all times or have there been any failures in adding disinfectant for any length of time? Failure to add chlorine sends a slug of undisinfected water into the distribution system.	☐	☐	☐	☐	☐		
5.10	Has there been any vandalism or tampering at the plant?	☐	☐	☐	☐	☐		

Assessment Elements		Reviewed?			Issues?		Issue Description	Corrective Action Taken and Date
		Y	N	N/A	Y	N		
6.	**Review of Sources**							
6.1	Is the sanitary seal intact?	☐	☐	☐	☐	☐		
6.2	Is the well cap defective, damaged, or not water tight?	☐	☐	☐	☐	☐		
6.3	Does the vent have a #24 mesh screen? Is the vent screen damaged or not installed properly?	☐	☐	☐	☐	☐		
6.4	Does the vent and pump to waste terminate in an air gap of at least three pipe diameters above the ground? Has there been flooding above this air gap?	☐	☐	☐	☐	☐		
6.5	How is the well used? (check if applicable)	☐	☐	Primary ☐	Backup ☐	Emergency ☐	Not a PWS ☐	Not Drinking Water ☐
6.6	Are there any unprotected cross connections at the wellhead? Are there any unprotected openings in the pump or pump assembly?	☐	☐	☐	☐	☐		
6.7	Is the pitless adapter damaged?	☐	☐	☐	☐	☐		
6.8	Is there a missing or damaged grout seal?	☐	☐	☐	☐	☐		
6.9	Has there been any recent work performed on the pump?	☐	☐	☐	☐	☐		
6.10	Is the wellhead secured to prevent unauthorized access?	☐	☐	☐	☐	☐		
6.11	Does the ground slope away from the well? Is there evidence of standing water near the wellhead?	☐	☐	☐	☐	☐		
6.12	Is the casing at least 18 inches above the ground?	☐	☐	☐	☐	☐		
6.13	Have there been any sewer spills, source water spills, or other disturbances?	☐	☐	☐	☐	☐		
6.14	Is the well pit in standing water or evidence of flooding?	☐	☐	☐	☐	☐		
6.15	Is there evidence of flooding or infiltration of surface water runoff around the spring?	☐	☐	☐	☐	☐		
6.16	Is the spring box improperly developed or poorly maintained?	☐	☐	☐	☐	☐		
6.17	Are there dead animals near the spring?	☐	☐	☐	☐	☐		
6.18	Other comments on the well or spring system. (Are there aspects of construction and operation that would potential cause positive total coliform samples?)	☐	☐	☐	☐	☐		
6.19	Has an unapproved source been used?	☐	☐	☐	☐	☐		

Assessment Elements		Reviewed?			Issues?		Issue Description	Corrective Action Taken and Date
		Y	N	N/A	Y	N		
6.20	Has there been a change in sources?	☐	☐	☐	☐	☐		
6.21	Has there been recent rapid snowmelt, heavy rainfall, or flooding?	☐	☐	☐	☐	☐		
6.22	Have there been algae blooms?	☐	☐	☐	☐	☐		
6.23	Are any of the GWR triggerred source samples *E. coli* positive? This may indicate that the positive sample is originating from the source and may be a continuous source of contamination.	☐	☐	☐	☐	☐		
6.24	Are there any unaddressed significant deficiencies/defects from previous assessments?	☐	☐	☐	☐	☐		

Certification: I certify under penalty of law that I am the person authorized to fill out this form, and the information contained herein is true, accurate and complete to the best of my knowledge and belief.

Print Name: _____ Title: _____

Signature: _____ Date: _____

Phone #: _____ Email: _____

Please return this form w/in 30 days to: Drinking Water Program-DENR, 523 E Capital, Pierre SD 57501 or fax to 605-773-5286

DENR Use Only:

Level 2 Assessment Sufficient: ☐ YES ☐ NO PWS Corrected Problem: ☐ YES ☐ NO

Corrective Action Plan Approved: ☐ YES ☐ NO ☐ NA Approved w/changes (attached)

Consultation Date: Revisions Required: ☐ YES ☐ NO

Comments: