Bacteriological Sample Site Plan

Rural Utility District
PWSID #0000007

Last Updated: February 3, 2016

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Purpose/Objective

The Tennessee Department of Environment and Conservation, Division of Water Resources regulations require that bacteriological samples are to be collected according to a written sample siting plan. This plan is to ensure that collection sites are representative of water throughout the distribution system. Samples will be collected from areas used by all customers and will include…

- Residential areas (at least 30%)
- Dead end lines
- Low use areas
- Commercial areas
- Areas near storage tanks

Sampling sites will be distributed to ensure that no area served by the system is neglected during the year. The justification for selecting sampling sites is to aid our operators in understanding the bacteriological quality of the water throughout the system and to monitor and evaluate the quality of the water consumed by all the users of the system.

General System Information

The official name and address for this system is

Rural Utility District
6464 River Road
Somewhere, TN 393939

The PWSID number for this system is
TN0000007

The population served by this system is __3501_____.

The Person(s) responsible for reporting to the Division of Water resources and keeping the plan updated is _John Johnson, Utility Manager_____.

Date of last plan update __December 25, 2015__ _____.

The Rural Utility District (RUD) PWSID #s: 0000007 provides drinking water to 1395 customers serving an estimated population of 3501 people. RUD operates a surface water filtration treatment facility utilizing the Rocky River as the water source. The treatment facility supplies water to approximately 80% of the customers utilizing two distribution storage tanks and two pressure zones. The RUD also purchases and distributes water from the TLB Utility. The purchased water serves approximately 20% of RUD customers and constitutes a third hydraulic pressure zone. The system is required to collect four (4) routine bacteriological samples per month. Population densities and pressure zones were utilized in selection of sampling sites to insure an approximate equal ratio of samples to population coverage through each hydraulic zone. Since pressure zone 2 serves approximately 50% of the population, two (2) of the four (4) monthly sample will be collected from this zone. The remaining samples will be split equally among the remaining two zones each month.

The RUD primarily utilizes the State of TN Health Department laboratory for bacteriological sample analyses. If a sample needs to be analyzed after hours, on a weekend or holiday, the Broadview Utility District laboratory will be utilized.

Special purpose samples are collected during repairs, in response to complaints, or for other maintenance reasons. Collection of these types of samples is necessary to ensure that coliform bacteria have not entered the distribution system as a result of events such as installation of mains, main line repair or routine maintenance. Special purpose samples cannot be included in compliance or assessment trigger calculations. Special purpose samples are collected in addition to any samples collected in accordance with this plan for compliance with the Revised Total Coliform Rule.

This plan contains examples of responses to treatment triggers which may require level 1 and or level 2 assessments to be conducted. It is anticipated that the systems certified water and distribution system operators will conduct any required level 1 assessments jointly. The RUD has made arrangements with Broadview Utility operators who are qualified to conduct a level 2 assessment if needed. The plan also contains example public notification documents that can be used in conjunction with the systems Emergency Operations Plan if needed.

John Johnson, Utility Manager and Certified Distribution Operator, is responsible for insuring that proper sampling procedures are followed and that samples are collected in accordance with this plan. John Johnson will annually review the sampling plan and update the plan when the population served increases sufficiently to require an increased number of samples and at any time significant changes are made impacting hydraulic flows in the system. A copy of this plan will be kept in the RUD main office. Copies will also will also be distributed and kept at the water treatment plant and distribution warehouse offices.

Number of Samples Required

The number of samples to be taken by Rural Utility District is determined by the Tennessee Department of Environment and Conservation, Division of Water Resources, Rule 0400-45-1-.07(b)

The population served by RUD is determined to be 3501. The number of samples is based on Division Rule 0400-45-01-.41-.07(b) as indicated in the chart below.

Population Served	Samples Per Month
1,001 to 2,500	2
2,501 to 3,300	3
3,301 to 4,100	4
12,901 to 17,200	15
17,201 to 21,500	20

Routine samples

Presently, based on a population served of approximately 3501 RUD is required to take four (4) routine samples each month.

Our system can take the required number of samples, or more than is required. The number of samples our system will take is four (4) each month.

Repeat samples

If a routine bacteriological sample is total coliform-positive, the number of repeat samples required is three (3). The system must collect at least one repeat sample from the sampling tap where the original total coliform-positive sample was taken, and at least one repeat sample at a tap within five service connections upstream and at least one repeat sample at a tap within five service connections downstream of the original sampling site. A set of three (3) repeat samples will be collected for each positive sample. The repeat sampling procedure will continue until all samples are total coliform negative or a treatment technique trigger has been exceeded. Reference page 11 for additional actions required in the event of a positive sample.

The number of routine samples required the month following a total coliform-positive sample is four (4).

The person(s) responsible for reporting to the Division of Water Resources is (are):

John Johnson

The Division of Water Resources can be contacted at the following numbers:

Every Environmental Field Office
1-888-891-8332
(XXX) 891-8332

Selected Sampling Sites

The Public Water System will collect four (4) routine samples per month. The System has been divided into three (3) sampling/hydraulic/source zones. If a primary sampling site is not available, a secondary sampling site will be selected from the same zone for routine monitoring. Sampling will be conducted throughout the month with a goal of sample collection as follows.

Samples are to be taken from each sampling zone each month. Sampling sites from each zone will be alternated each month to ensure all areas of the system are represented during the course of a year.

Samples will be collected throughout the month as follows.

First Week Number of Samples: _____1_____ Zone(s) _____ 1_____
Number of Samples: _____1_____ Zone(s)_____2_____

Second Week Number of Samples: _____1_____ Zone(s)_____ 3_____

Third Week Number of Samples: _____1_____ Zone(s)_____2_____

*Fourth Week Number of Samples: _____ Zone(s)_____
*System may elect to collect all samples prior to the fourth week.

(All primary and secondary sites should be selected at least one tap from the end of a line to allow for proper downstream repeat sampling)

Primary Routine Total Coliform Sampling Sites:

Map Site ID	Specific Addresses or GPS Coordinates	Zone	Water Source
1	2525 Circle Drive	1	TLB
2	623 Perkins Lane	1	TLB
3	840 Lakeview	2	WTP
4	2484 Callie Lane	2	WTP
5	26 Stubby Road	2	WTP
6	427 Rocket Road	3	WTP
7	3870 Pleasant Valley	3	WTP

Alternative Routine Total Coliform Sampling Sites: (to be used if primary sites are not available or used in the rotation of samples)

Map Site ID	Specific Addresses or GPS Coordinates	Zone	Water Source
8	11 Church lane	1	TLB
9	2768 Bell Bridge	2	WTP
10	1004 Water Tank Rd	2	WTP
11	747 Jet Way	3	WTP

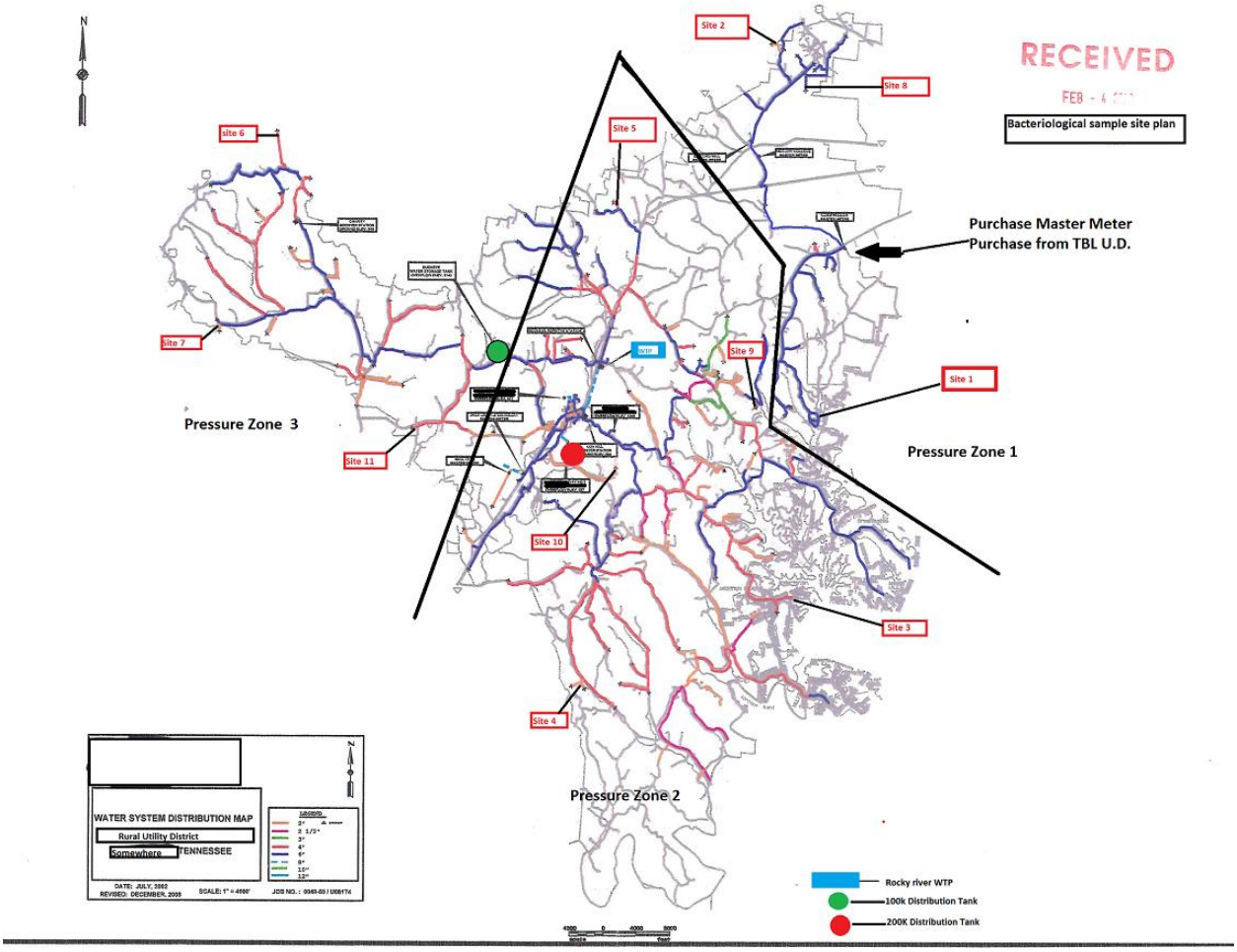
The goal should be to collect all required samples by the beginning of the third week in the month. This is to allow ample time to collect another sample should one arrive at the laboratory

and not be able to be analyzed. (i.e. leaked in transit, out of holding time, lab accident, etc…). Samples must be analyzed within 30 hours of collection.

If there is a total coliform or E. coli positive sample, three repeat samples will be collected within 24 hours of notification. Reference page 13 for additional guidance.

Distribution System Map with Sample Sites and Pressure Zones

Full size copy of map is located in RUD Mangers Office



Sampling Procedure

1. Review the sample siting plan to determine where and when samples are to be taken.
2. After arriving at the sampling site, remove any attachments on the faucet.
3. Consider the use of a sodium hypochlorite spray solution or flaming to disinfect the faucet. Flaming should not be used on plastic faucets.
4. Turn the water on and let it run for several minutes until temperature stabilizes.
   - Flush out the customer lines, and
     - Ensure that the water being sampled is from the distribution lines, not the plumbing fixture. (A thermometer can be used to determine when water is being drawn from the distribution system and not the plumbing fixture. The water temperature will stabilize once all the water from the fixture has been flushed out and the water flowing from the faucet is coming from the distribution system.)
5. Adjust the flow from the faucet to a slow, steady stream.
6. Take a sample of water flowing from the tap and determine and document the free chlorine residual.
7. Open the laboratory supplied container used to take the bacteriological sample. Consider using latex gloves to prevent contamination.
8. Do not touch the inside of the bottle or lid.
9. Do not set the lid down.
10. Do not rinse the bottle out.
11. Grasp the container near the bottom and quickly place it under the flowing stream.
12. Fill the bottle to the neck or indicated fill line. Do not overfill. Collect at least 100 mL of water, this is the volume the laboratory must have for testing.
13. Remove the sample container from the flow as soon as it is filled. SEAL THE CONTAINER IMMEDIATELY.
14. Turn off the water and replace any fixtures or attachments that were removed previously.
15. Fill out the bacteriological sample slip. Instructions are included on page 10.
16. Place the container and completed forms in the shipping box.
17. Insure that the sample is delivered to the laboratory in a timely manner. Analysis must be initiated with within 30 hours from the time sample is collected.
18. Record sampling event and information in the bacteriological sampling log. Refer to page 12 .

Faucets to Avoid

Avoid taking samples at these faucets if at all possible.

- Unprotected Outdoor Faucets
- Frost-proof Faucets

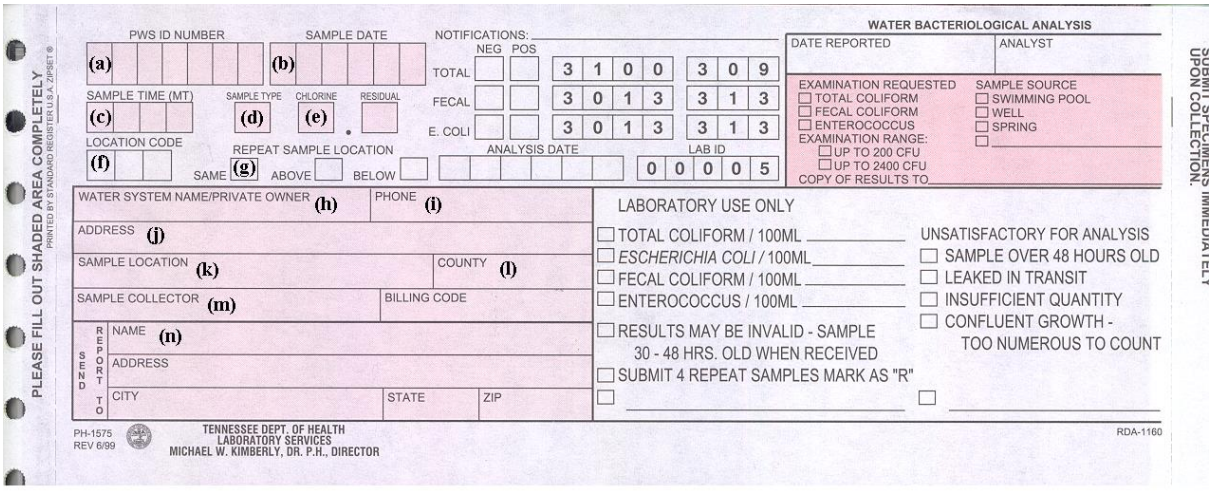
If you cannot avoid these, be sure to use good sampling techniques. Avoid dust, obvious contamination, splashing rain, snow and other possible sources of contamination, such as:

- An indoor faucet connected to a pressure tank, or water heater.
- A new faucet.
- A hot water faucet.
- A recently repaired faucet.
- Faucets with threaded taps.
- Mixing faucets.
- Sites with a higher-than-usual possibility for bacterial contamination.
- Swing/swivel faucets.
- Faucets positioned close to a sink or the ground. (It must be high enough to keep it from touching the sampling container.
- Leaky faucets or faucets which allow water to seep around the valve stem.
- Faucets that supply areas, such as janitorial or commercial sinks, where bacterial contamination is likely.
- Faucets that have aerators. (If such faucets are to be used, the aerators should be removed before a sample is collected.)

What does this all mean? Avoid any faucet that will threaten to contaminate a sample. The idea is to sample the water in the distribution system, not necessarily the condition of the plumbing fixture. You may not always be able to avoid all these types of faucets. If you have to take a sample from one of these faucets, you should exercise extreme care and use good sampling techniques including spray disinfection or flaming of the faucet where appropriate.

Bacteriological Sample Slip Information

Sample Information Slip
Figure 1


PLEASE FILL OUT SHADED AREA COMPLETELY
PRINTED BY STANDARD REGISTER U.S.A. ZIPSET ®

PWS ID NUMBER (a) SAMPLE DATE (b)
SAMPLE TIME (MT) (c) SAMPLE TYPE (d) CHLORINE (e) RESIDUAL
LOCATION CODE (f)
REPEAT SAMPLE LOCATION SAME (g) ABOVE BELOW
NOTIFICATIONS:
NEG POS
TOTAL 3100 309
FECAL 3013 313
E. COLI 3013 313
ANALYSIS DATE
LAB ID 00005

WATER BACTERIOLOGICAL ANALYSIS
DATE REPORTED
ANALYST
EXAMINATION REQUESTED
TOTAL COLIFORM
FECAL COLIFORM
ENTEROCOCCUS
EXAMINATION RANGE:
UP TO 200 CFU
UP TO 2400 CFU
COPY OF RESULTS TO
SAMPLE SOURCE
SWIMMING POOL
WELL
SPRING

WATER SYSTEM NAME/PRIVATE OWNER (h) PHONE (i)
ADDRESS (j)
SAMPLE LOCATION (k) COUNTY (l)
SAMPLE COLLECTOR (m) BILLING CODE
SEND REPORT TO
NAME (n)
ADDRESS
CITY STATE ZIP

LABORATORY USE ONLY
TOTAL COLIFORM / 100ML
ESCHERICHIA COLI / 100ML
FECAL COLIFORM / 100ML
ENTEROCOCCUS / 100ML
RESULTS MAY BE INVALID - SAMPLE 30 - 48 HRS. OLD WHEN RECEIVED
SUBMIT 4 REPEAT SAMPLES MARK AS "R"
UNSATISFACTORY FOR ANALYSIS
SAMPLE OVER 48 HOURS OLD
LEAKED IN TRANSIT
INSUFFICIENT QUANTITY
CONFLUENT GROWTH - TOO NUMEROUS TO COUNT

PH-1575 REV 6/99
TENNESSEE DEPT. OF HEALTH
LABORATORY SERVICES
MICHAEL W. KIMBERLY, DR. P.H., DIRECTOR
RDA-1160

SUBMIT SPECIMENS IMMEDIATELY UPON COLLECTION.

a. **PWSID number**. XXXX Water System's PWSID # is 0000XXX. In order to get credit for the sample, the PWSID number must be correct.

b. **Sample date**. Record the date the sample is collected. Example: August 22, 2002 would read 082202.

c. **Sample time**. Record the time of day in military time. 8:30 a.m. would be recorded as 0830. 1:30 p.m. would be recorded as 1330.

d. **Sample type**. Sample types are recorded as follows:

D – Routine	S – Special
R – Repeat	Q – Quality Control
N – New lines	F – Fix or Repair

Failure to record the correct sample type can result in a monitoring requirement violation. Most samples will be coded as a "D" for a routine sample. Follow-up samples immediately following a positive routine sample are repeat samples and are coded as "R".

e. **Chlorine Residual**. All systems that disinfect their water must record the chlorine residual when coliform samples are collected. Chlorine residuals should be reported to the nearest one tenth of a milligram per liter or one tenth of a part per million.

f. **Location code**. This 3-digit block would only be used when repeat samples are collected. The laboratory will furnish the numbers to be put in these blocks.

g. **Repeat Sample Location**. Same ☐ Above ☐ Below ☐
Only used when collecting repeat "R" samples.

h. **Water System Name/Private Owner**. Provide the name of the Water System or Utility District where the sample was collected.

i. **Phone**. Provide a daytime telephone number to be called by the laboratory if they need to contact you about the sample.

j. **Address**. Provide the complete mailing address of the Water System from which the sample was collected.

k. **Sample Location**. Provide sufficient information so that you can return to the sample site for repeat samples if necessary and sufficient information that the sample site can be identified on your sampling site plan.

l. **County**. Record the county where the public water system is located.

m. **Sample Collector**. Record the name of the person who actually collected the sample.

n. **Name, Address, City, Zip**. Please record the full address of the person or organization the coliform sample results should be mailed to. Make sure that this information is printed clearly because the laboratory uses this information to return the results to you.

Bacteriological Sample Log

Date Sample Taken MM/DD/YY	Time Sample Taken (Military time)	Sample Location (Describe, i.e. Cedar Lodge Kitchen Sink)	Chlorine Residual	Date Sample Mailed MM/DD/YY	Date Sample Results Reviewed	Sample Results Positive (+) Negative (-)	If Sample * Results +, Repeat Samples Taken (Yes=Y)	Date Public Notice Given

Military Time

8:30 a.m. is 0830 in MT (essentially clock time)
1:30 p.m. is 1330 in MT (clock time plus 12)

*Show Date, Time, Place, and provide for Results of each repeat sample taken on this log.

Actions to be taken if a Sample is Total Coliform-Positive

Should one of the routine samples be total coliform-positive, we are required to take a set of three (3) repeat samples. The set of repeat samples will be taken as follows:

- at least one of the repeat samples must be taken from the sampling tap where the original total coliform-positive samples was taken;
- at least one of the repeat samples must be taken at a tap within 5 service connections downstream from the original sampling site;
- at least one of the repeat samples must be taken at a tap within 5 service connections upstream from the original sampling site;
- the complete set of repeat samples must be taken within 24 hours of the system being notified of a positive coliform result, or when instructed to sample by the Division of Water Resources;
- the entire set of repeat samples must be taken on the same day.

- If a total coliform-positive sample is at the end of the distribution system, or one service connection away from the end of the distribution system, the system must still take all required repeat samples. However, the State may allow an alternative sampling location in lieu of the requirement to collect at least one repeat sample upstream or downstream of the original sampling site. The State will be contacted in the event this scenario occurs.

Should one of the repeat samples be positive, another set must be taken.

Repeat samples must be taken until:

- total coliforms are not detected in one complete set of repeat samples, or
- the system exceeds the total coliform treatment technique trigger during the month and notifies the State Department of Environment and Conservation, Division of Water Resources.

Sampling During Weekends and Holidays

Routine should be taken on Mondays and Tuesdays to avoid a problem with repeat samples. This should allow ample time for repeat samples to be collected before the weekend if they are required. If a holiday should occur, which could cause a problem with either routine or repeat sampling being submitted to the state laboratory, samples must be taken to the Broadview Utility District laboratory for analysis. Planning ahead, and following these guidelines, should avoid any sampling problems associated with weekends or holidays.

Should it not be possible to collect repeat samples and submit them for analysis within the required 24-hour period because of a holiday or weekend, the system will provide for a "boil water notice" to be issued until sufficient samples can be collected and analyzed to verify that the contamination has been eliminated. Refer to page 17 for an example of a "boil water notice".

Treatment Technique Triggers

Level 1 Assessments

A level 1 assessment is required to be conducted as soon as practical but no later than 30 days of the following events. A Division of Water Resources Level 1 Assessment form must be completed and submitted to the Division of Water Resources. Refer to Appendix A for Level 1 Assessment forms.

- For systems, which take less than 40 samples during a month**,** the system has exceeded the Level 1 treatment technique trigger if the system has more than one total coliform-positive sample, including repeat samples during a month.

- The system fails to collect every required repeat sample after any single total coliform positive sample.

Level 1 assessment for a CWS must be conducted by a licensed certified operator. John Johnson or other RUD certified operator will conduct Level 1 assessments if a trigger is exceeded. A State approved Level 1 Assessment form must be completed and submitted to the Division of Water Resources within 30 days of the trigger exceedance. Any sanitary defects or deficiencies must be corrected within 30 days of the trigger exceedance or in accordance with an approved schedule from the Division of Water Resources.

Treatment Technique Triggers

Level 2 Assessments

A level 2 assessment is required to be conducted as soon as practical but no later than 30 days of any of the following events.

- An E.Coli Maximum Contaminant Level (MCL) violation
- A second Level 1 assessment trigger within a rolling 12 month period.

Level 2 assessments for all systems must be conducted by an licensed operator who is certified to at least the same level as the public water system being assessed and who has completed an approved level 2 training certification course from the Division of Water Resources. A system serving a population of less than 50,000 must use a 3rd party assessor. The RUD has made arrangements with Broadview Utility operators who are qualified to conduct a level 2 assessment if needed.

A Division of Water Resources Level 2 Assessment form must be completed and submitted to the Division of Water Resources within 30 days of the trigger exceedance. Any sanitary defects or deficiencies must be corrected within 30 days of the trigger exceedance or in accordance with an approved schedule from the Division of Water Resources.

E.coli Maximum Contaminant Level (MCL) Violations

An E.coli MCL violation occurs when any of the following conditions exist.

- An E.coli positive repeat sample follows a Total Coliform positive routine sample.
- A Total Coliform positive repeat sample follows an E.coli positive routine sample.
- A system fails to take all required repeat samples (3) following an E.coli positive routine sample.
- A system fails to test for E.coli when any repeat sample tests positive for total coliform.

Actions to be taken if an E. coli-Positive Sample is involved in the Violation (A Violation Requiring a Tier 1 Public Notification)

If any repeat sample is E. coli -positive or any repeat sample following an E. coli-positive routine sample is total coliform-positive:

- Report the violation to the State no later than the end of the day when the system was notified of the results, unless the system is notified after the Department office is closed, in which case it must notify the State before the end of the next business day.

  Person to Contact: _Mr. State Inspector at the Local Environmental Field Office
  Telephone: _____ or 1-888-891-8332
- Notify the public using this procedure:
  - Furnish a copy of the notice to customers via direct delivery and or the local radio and television stations served by the public water system as soon as possible, **but no later than 24 hours after the violation;**
- Refer to the EPA Public Notification Handbook for specific content and delivery requirements. An example PN is contained on the following page.
  - The notice should contain the language shown in the example notice on the next page;
  - The system may want to describe what is being done to correct the problem:
    - Total number of samples taken,
    - Total number of positive samples,
    - Problem areas,
    - Mains are being flushed, etc.
    -
- A Level Two Assessment must be conducted within 30 days of the E. coli positive sample.

Tier 1 PN for Violating the *E. coli* MCL

DRINKING WATER WARNING
E. coli is Present in Rural Utility Districts Water
BOIL YOUR WATER BEFORE DRINKING OR USING

Our water system detected *E. coli* bacteria in our distribution system. As our customers, you have a right to know what happened and what we are doing to correct this situation. On April 4, 2016, we learned that coliform bacteria were present and one of our routine samples collected on April 2, 2016, was total coliform-positive (TC+). As required by the Revised Total Coliform Rule, one of our follow-up steps was to collect repeat samples at and near the location where the TC+ sample was originally taken. One of these repeat samples collected on April 5 tested positive for *E. coli*. We are now conducting additional sampling to determine the extent of the problem and are conducting a thorough investigation to determine the source of the contamination.

What should I do?
DO NOT DRINK THE WATER WITHOUT BOILING IT FIRST. Bring all water to a rolling boil, let it boil for one minute, and let it cool before using it. Boiling kills bacteria and other organisms in the water. You may also use bottled water. Use boiled or bottled water for drinking, making ice, preparing food and washing dishes until further notice.
Also, if you have a severely compromised immune system, have an infant, or are elderly, you may be at increased risk and should seek advice about drinking water from your health care providers. General guidelines on ways to lessen the risk of infection by microbes are available from EPA's Safe Drinking Water Hotline at (800) 426-4791. If you have specific health concerns, consult your doctor. We are also providing regular updates on this situation on Channel 22 or Radio Station WZYX (90.3 FM).

What does this mean?
Inadequately treated or inadequately protected water may contain disease-causing organisms. These organisms can cause symptoms such as diarrhea, nausea, cramps and associated headaches. *E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Human pathogens in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a greater health risk for infants, young children, some of the elderly, and people with severely-compromised immune systems.* These symptoms are not caused only by organisms in drinking water. If you experience any of these symptoms and they persist, you may want to seek medical advice.

What is being done?
We are conducting a thorough investigation to determine the source of the contamination and will be working with the State to implement corrective actions to ensure that our water supplies are protected against contamination. We will keep you informed of the steps we are taking to protect your drinking water and will provide information on any steps you should be taking. We will inform you when tests show no bacteria and you no longer need to boil your water. We are also providing regular updates on this situation on Channel 22 or Radio Station KMMM (97.3 FM).

For more information, please contact John Johnson, manager of Rural Utility District , at (555) 555-1234 or write to 2600 Winding Rd., Townsville, TM 12345.

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 Rural Utility District State Water System ID# Tn 0000007
12/25/2015

Treatment Technique Violations

A treatment technique violation occurs when any of the following conditions occur.

- The system exceeds a treatment technique trigger and then fails to conduct an assessment or complete corrective actions within required timeframes.

Actions to be taken in the event of a Treatment Technique Violation (A Violation Requiring a Tier 2 Public Notification)

A public water system that has violated the treatment technique for total coliforms by failing to conduct an assessment, complete corrective actions or fails to complete the approved seasonal start up procedure must;

- Report the violation to the State no later than the end of the next business day after system learns of the violation.

  Person to Contact: Mr. State Inspector at the Local Environmental Field Office
  Telephone: _____ or 1-888-891-8332
  - A Tier 2 Public Notice must be issued:

  Tier 2 notices must be issued within 30 days of learning of the violation.
- Refer to the EPA Public Notification Handbook for specific content and delivery requirements. Examples are contained in the next two pages

- Notify the public using this procedure:
  - Furnish a copy of the notice to the customers served by the public water system via mail or other direct delivery as soon as possible, **but no later than 30 days after the violation;**
    - The notice should contain the language shown in the example notices on the next pages;
    - The system may want to describe what is being done to correct the problem:

Tier 2 PN for Failure to Perform a Level 1 or 2 Assessment

DRINKING WATER NOTICE

RUD Failed to Conduct an Assessment of the Facility and Distribution System

Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, waterborne pathogens may be present or that a potential pathway exists through which contamination may enter the distribution system. In one sample we collected on June 12, 2016, and one sample collected on June 16, 2016, we found coliforms, indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct an assessment to identify problems and to correct any problems that are found. We were required to conduct a Level 1 assessment within 30 days of learning of the second total coliform-positive (TC+) sample. A Level 1 assessment is a study of the water system to identify potential problems and determine (if possible) why total coliform bacteria have been found in our water system. As our customers, you have a right to know what happened and what we are doing to correct this situation. As required by the Revised Total Coliform Rule, *we failed to conduct the required Level 1 or 2 assessment* within 30 days, and have therefore, violated a requirement of the Revised Total Coliform Rule.

What does this mean?

This is not an emergency. If it had been an emergency, you would have been notified within 24 hours.
Failure to conduct an assessment to identify the sanitary defect that triggered the assessment has the potential to cause distribution system contamination. *Inadequately treated or inadequately protected water may contain disease-causing organisms. These organisms can cause symptoms such as diarrhea, nausea, cramps, and associated headaches.* Failure to perform the assessment prolonged the risk of fecal contamination of our distribution system water. While we have not detected any evidence of fecal contamination in our distribution system, we are committed to correcting the deficiency to eliminate the potential threat of contamination.

What should I do?

- You do not need to boil your water or take other corrective actions. However, if you have specific health concerns, consult your doctor.

- If you have a severely compromised immune system, have an infant, are pregnant, or are elderly, you may be at increased risk and should seek advice from their health care providers about drinking this water. General guidelines on ways to lessen the risk of infection by microbes are available from EPA's Safe Drinking Water Hotline at (800) 426-4791.

You do not need to boil your water or take other corrective actions. If a situation arises where the water is no longer safe to drink, you will be notified within 24 hours. We will announce any emergencies on Channel 22 or Radio Station KMMM (97.3 FM).

What is being done?

We have since completed the Level 1 assessment and identified the cause of the sanitary defect; damage to the storage tank. We are implementing the corrective action plan established by the State. Under this plan, the damage will be repaired and the tank will be disinfected by August 31, 2016.

For more information, please contact John Johnson, manager of System B, at (555) 555-1234 or write to 2600 Winding Rd., Townsville, TM 12345.

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 posted by System B. State Water System ID# TN 1234583. Sent: 8/10/2016

Example of a Tier 2 PN for Failure to Perform Corrective Action
DRINKING WATER NOTICE
RUD Failed to Perform Corrective Action Following an Assessment of the Facility and Distribution System

Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, waterborne pathogens may be present or that a potential pathway exists through which contamination may enter the distribution system. We found coliforms, indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct assessment(s) to identify problems and to correct any problems that are found. This past summer, we were required to conduct a Level 1 assessment. We completed the required Level 1 assessment and identified the cause of the sanitary defect to be damage to the storage tank. *While we failed to correct the sanitary defect within the required timeframe,* we are implementing the corrective action plan established by the State. As our customers, you have a right to know what happened and what we are doing to correct this situation. As required by the Revised Total Coliform Rule, we failed to complete the corrective action within the required timeframe, and have therefore, violated a requirement of the Revised Total Coliform Rule.

What does this mean?
This is not an emergency. If it had been an emergency, you would have been notified within 24 hours.
Failure to correct the identified defect that was found during the assessment has the potential to cause distribution system contamination. *Inadequately treated or inadequately protected water may contain disease-causing organisms. These organisms can cause symptoms such as diarrhea, nausea, cramps, and associated headaches.*
What should I do?

- You do not need to boil your water or take other corrective actions. However, if you have specific health concerns, consult your doctor.

- If you have a severely compromised immune system, have an infant, are pregnant, or are elderly, you may be at increased risk and should seek advice from their health care providers about drinking this water. General guidelines on ways to lessen the risk of infection by microbes are available from EPA's Safe Drinking Water Hotline at (800) 426-4791.

You do not need to boil your water or take other corrective actions. If a situation arises where the water is no longer safe to drink, you will be notified within 24 hours. We will announce any emergencies on Channel 22 or Radio Station KMMM (97.3 FM).

What is being done?
Since being informed of the failure, we have begun to correct the sanitary defect identified during the Level 1 assessment. During the assessment, the sanitary defect was determined to be damage to the storage tank. We are in communication with the State and have modified the corrective action plan's schedule to repair and disinfect the storage tank.

For more information, please contact John Johnson, manager of System B, at (555) 555-1234 or write to 2600 Winding Rd., Townsville, TM 12345.

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 posted by System B. State Water System ID# TN1234583. Sent: 9/20/2016

Monitoring and Reporting Violations

A Monitoring or Reporting violation occurs when any of the following conditions exist.

- A system fails to collect all routine or additional routine samples
- A system fails to take/analyze for E-coli after a total coliform positive routine.
- A system fails to submit a monitoring report, assessment report or certification of start- up procedure completion.
- A system fails to notify the State of an E.coli positive sample.

Actions to be taken in the event of a Monitoring/ Reporting Violation (A Violation Requiring a Tier 3 Public Notification)

A public water system that has violated the Monitoring and or Reporting requirements must;

- Report the violation to the State no later than the end of the next business day after system learns of the violation.

  Person to Contact: Mr. State Inspector at the Local Environmental Field Office
  Telephone: _____ or 1-888-891-8332
  - A Tier 3 Public Notice must be provided to customers:

  Tier 3 notices must be issued within 360 days of learning of the violation.
- Refer to the EPA Public Notification Handbook for specific content and delivery requirements. Examples are contained in the next two pages
- Notify the public using this procedure:
  - Furnish a copy of the notice to the customers served by the public water system via mail or other direct delivery as soon as possible, **but no later than 365 days after the violation;**
    - The notice should contain the language shown in the example notices on the next pages;
    - The system may want to describe what is being done to correct the problem:

Example Tier 3 PN for Failure to Take All Routine Total Coliform Samples in the Required Compliance Period

IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER
Monitoring Requirements Not Met for System D

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 your drinking water meets health standards. During December 2016, we did not complete all monitoring or testing for total coliform, and therefore, cannot be sure of the quality of your drinking water during that time.

On January 11, 2017, we became aware that our water system failed to collect all of the required monthly routine total coliform distribution system samples in December 2016. Although this incident was not an emergency, as our customers, you have a right to know what happened and what we did to correct the situation. None of the 12 samples that we did collect was positive for total coliform or *E. coli* bacteria.

What should I do?
There is nothing you need to do. You do not need to boil your water or take other corrective actions. You may continue to drink the water. If a situation arises where the water is no longer safe to drink, you will be notified within 24 hours. We will also announce any emergencies on Channel 22 and Radio Station KMMM (97.3 FM).

What was done?
We collected all 15 of the required routine total coliform samples in January and tested them for *E. coli*. None of the samples collected in January was positive for *E. coli*.

For more information, please contact John Johnson, manager of System D, at (555) 555-1234 or write to 2600 Winding Rd., Townsville, TM 12345.

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 D. State Water System ID# TM1234585. Sent: 1/10/2018

Example Tier 3 PN for Failure to Notify the State Following an *EC*+ Sample Result

IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER
Reporting Requirements Not Met for System F

Our system failed to notify the state of an *E. coli*-positive (*EC*+) routine sample by the end of the day that we learned of the violation. The water system has not exceeded the *E. coli* MCL standard set by the Revised Total Coliform Rule. Although this incident was not an emergency, as our customers, you have a right to know what happened and what we did to correct the situation.

What should I do?
There is nothing you need to do. You do not need to boil your water or take other corrective actions. You may continue to drink the water. If a situation arises where the water is no longer safe to drink, you will be notified within 24 hours. We will also announce any emergencies on Channel 22 and Radio Station KMMM (97.3 FM).

What was done?
We notified the state of the routine monitoring sample that was *EC*+.

For more information, please contact John Johnson, manager of System F, at (555) 555-1234 or write to 2600 Winding Rd., Townsville, TM 12345.

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 F. State Water System ID# TN1234585. Sent: 3/11/2017

Appendix A – Level 1 ASSESSMENT FORM

TENNESSEE DEPARTMENT OF ENVIRONMENT & CONSERVATION
DIVISION OF WATER RESOURCES – DRINKING WATER UNIT
William R. Snodgrass Tennessee Tower
312 Rosa L. Parks Ave., 11th Floor
Nashville, TN 37243-1102
615-532-0191

REVISED TOTAL COLIFORM RULE LEVEL 1 ASSESSMENT

Water System Name:	_____
PWSID #:	_____
Assessment Performed By:	_____
Date of Assessment:	_____
	(1.) Sampling
☐Yes ☐No If Yes, explain	(a.) Review total coliform sample results and chlorine residuals for the past three months (six months, if sampling quarterly). Are there any trends in bacteria samples or chlorine residuals?
	_____
	(b.) Sampling Guidance
	• The water should be allowed to run for a few minutes to ensure it was from the distribution system and not household plumbing. • The faucet should be disinfected. • The chlorine residual should be taken but not using the bacteria sample bottle. • Care should be taken not to touch the inside of the bottle or lid, not to set the lid down and not rinse the bottle out. Container should not touch faucet. • The water should be flowing in a slow, steady stream. • Container should not be overfilled and should be sealed immediately. • Outdoor faucets, frost-proof faucets should be avoided. • If possible, avoid faucet connected to water heater, pressure tank; hot water faucet, new faucet, swing/swivel faucets, janitor sink faucets or other potentially contaminated faucets.
	(c.) Describe below the sampling technique used for bacteria sampling:
	_____
	(d.) Name of Sampler
	_____

Sample

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□Yes □No If Yes, explain	(e.) Are conditions at the sample tap unsanitary and prone to external contamination?
	_____ _____ _____ _____
□Yes □No Explain setting/use of tap	(f.) Has the sample site been in regular use? Would the typical use of the tap be prone to contamination (food preparation, utility sink, etc.)?
	_____ _____ _____ _____
	(g.) Describe how the samples were processed:
	I. Samples shipped or delivered? _____ _____ II. Time between sample collection and delivery to lab? _____ _____ III. Samples cooled or ambient temperature? _____ _____ IV. Fresh sample bottles? _____ _____ V. Properly stored sample bottles? _____ _____
	(h.) If the system has a certified bacteriological lab, review their lab procedures, QA/QC and the cleanliness of the lab. Provide observations below:
	_____ _____ _____ _____
	(2.) General – File Review
	(a.) Review last sanitary survey and survey letter for identified problems affecting water quality, particularly repeat issues. Provide observations below:
	_____ _____ _____ _____ _____ _____ _____
	(b.) Review Monthly Operating Reports (MORs) for past 6 months paying special attention to chlorine residual leaving plant and turbidity levels.

Sample

	Provide observations below:
	(c.) Review files for filter exceedance reports, filter performance reports, identify filter run times. Provide observations below:
□Yes □No If Yes, explain	(d.) Has there been a loss of service due to a failure of water transmission or distribution facilities?
□Yes □No If Yes, explain	(e.) Could any operation or maintenance activities have introduced contamination?
□Yes □No If Yes, explain	(f.) Has there been recent delivery of new treatment chemicals? Were they confirmed to be the correct chemical and strength?
□Yes □No If Yes, explain	(g.) Has there been vandalism or unauthorized access to facilities identified?
	(3.) Distribution System
□Yes □No	(a.) Have all issues identified in the last professional tank inspection and sanitary survey been addressed? Describe below:
□Yes □No	(b.) Have there been line replacements, water line breaks or repairs or new construction within the past 3 months? Describe disinfection techniques employed below:

Sample

□Yes □No	(c.) If the tank or clearwell inspection or repair was within the past 3 months, was proper disinfection employed afterward? When were the tanks last cleaned out? Describe disinfection technique below:
□Yes □No	(d.) Is there an ongoing flushing program and when was the last flushing performed? Describe below:
□Yes □No If yes, explain	(e.) Are there any areas where it is difficult to maintain chlorine residual without flushing?
□Yes □No If Yes, explain	(f.) Has there been any firefighting in the area within the past 3 months that would have dropped water pressure or other low pressure events such as line breaks?
	(4.) Cross Connections
□Yes □No	(a.) Are backflow prevention devices being tested annually?
□Yes □No If Yes, explain	(b.) Are there backflow prevention devices in the vicinity of the total coliform positive site or places that should have backflow prevention devices?
□Yes □No If Yes, explain	(c.) Have any failed backflow prevention devices missed being repaired/replaced and retested within the previous 12 months?
□Yes □No	(d.) Within the area of concern, have there been surveys conducted for the detection and elimination of hazards associated with cross-connections? Describe the area (e.g., residential, commercial, sparsely populated rural, etc.) and any known backflow prevention devices and potential risks.

Sample

	(5.) Plant Operation/Treatment
□Yes □No If No, explain	(a.) Are all of the facilities secure to prevent unauthorized access?
□Yes □No	(b.) Is the treatment facility operated and manned 24 hours a day? Explain below:
	(c.) If unmanned while in operation, what monitoring/shutdown alarms are in place at the treatment facility (turbidity, chlorine residual, etc.) and are they operational? Describe below:
□Yes □No If Yes, explain	(d.) Has there been any unusual filter performance within the past 3 months?
□Yes □No If Yes, explain	(e.) Review turbidity records for the past three months. Have there been any turbidity exceedances of more than 1 NTU in either the individual filters or combined?
	(f.) Have there been any other parameters out of normal range within the past 3 months? Describe below:
□Yes □No If Yes, explain	(g.) Have there been any disruptions within the past 3 months that could have affected turbidity or disinfection (chlorine feed or UV disinfection)?

Sample

□Yes □No If Yes, explain	(h.) Are there any unsanitary conditions, rodents, birds, general housekeeping problems at any of the facilities?
	_____ _____
□Yes □No If Yes, explain	(i.) Were there any observed leaks or other signs of poor maintenance within the facilities? :
□Yes □No	_____ _____ _____ _____
□Yes □No	(j.) If there is a pressure tank present, is it maintaining appropriate pressure?
□Yes □No	(k.) If the system is using a cartridge filter, is the filter the correct absolute 1 micron cartridge and is it changed according to manufacturer's recommendation? Provide comments below:
	_____ _____ _____ _____ _____
	(6.) Chlorine Residual
□Yes □No	(a.) Has the system been achieving the proper contact time, if required (minimum of 15 minutes)? Indicate below if system is not chlorinating and discuss system's contact time below:
	_____ _____ _____ _____
□Yes □No	(b.) Is there consistent chlorine residual in the water leaving the plant? Describe below: Indicate below if system is not chlorinating. Describe below:
	_____ _____ _____ _____
	(7.) UV Disinfection – If applicable
□Yes □No	(a.) Is the unit operational?
□Yes □No	(b.) Is the turbidity low enough for it to work properly?
□Yes □No	(c.) Does the unit have the proper UV lamp?
□Yes □No	(d.) Does the lamp need replaced?
□Yes □No	(e.) Is the lamp sleeve clean?
	(8.) Source
□Yes □No If Yes, explain	(a.) Have there been any new or auxiliary sources brought online?
	_____ _____ _____

Sample

□Yes □No If Yes, explain	If seasonal, were there any problems with the startup procedure?
	(9.) Well/Spring
□Yes □No	(a.) Is springbox in good condition? Describe springbox below:
□Yes □No	(b.) Is springbox/well head protected from surface water drainage/infiltration? Describe below:
□Yes □No	(c.) Is well casing above grade/flood zone? Describe setting below:
□Yes □No	(d.) Is the sanitary seal on the well casing is intact?
□Yes □No	(e.) Is well vent screened?
□Yes □No If Yes, explain	(f.) Was there any heavy precipitation or flooding within the 30 days prior to the total coliform positive event?
	(10.) Intake
□Yes □No If Yes, explain	(a.) Any conditions that might increase turbidity or introduce contamination?
□Yes □No If Yes, explain	(b.) Is the intake or equipment in need of repair?
□Yes □No	(c.) Was there any heavy precipitation or flooding within the 30 days prior to the

Sample

If Yes, explain	total coliform positive event?
	_____ _____ _____ _____
□Yes □No If Yes, explain	(d.) Have there been any changes in sources of potential contamination in proximity of the water source?
	_____ _____ _____ _____
	(11.) Assessment Statement and Proposed Remedy
	_____ _____ _____ _____

Attach additional sheets if necessary

Certification Statement

I certify, under penalty of law, including but not limited to penalties for perjury, that this document and all attachments were prepared by me, or under my direction or supervision; that all of the submitted information is to the best of my knowledge and belief true, accurate, and complete, and that I am lawfully present in the United States as a U.S. citizen or a qualified alien as defined in 8 U.S.C. §1641(b). As specified in Tennessee Code Annotated Section 39-16-702(a)(4), this declaration is made under penalty of perjury. I understand that the penalties for providing false information and making false or fraudulent statements or representations include revocation in a fine, permit or license, civil penalties, and/or criminal prosecution resulting in a fine, imprisonment or both.

_____ _____

Signature Date

Sample