

**Environmental Management Division
Bureau of Drinking & Groundwater
Public Water Supply Program**

The federal government revised the Total Coliform Rule portion of the Safe Drinking Water Act on February 13, 2013. As part of this revision the required frequency of bacteria monitoring at public water systems was altered. These requirements are now part of Administrative code ch. NR 809 (published March 2016).

The Public Water Section has developed guidance for staff that are responsible for assisting public water systems to meet regulatory monitoring requirements. This guidance is a revised version of outdated sections in the Public Water Section's operations handbook chapter 6.

The DG Program is now soliciting comments from the public on this proposed guidance, for a 21-day notice period. Once the 21-day notice period is complete, all comments will be considered, revisions will be made as needed, and the final sections will be inserted into the Public Water Section's operations handbook chapter 6.

Comments related to this draft guidance should be sent to:
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6.4 Routine Monitoring Frequencies – Initial, Reduced, & Increased (Revised 6/14/16)

Initial monitoring frequencies are the default level of monitoring for public water systems. In some cases monitoring can later be reduced based on the results of vulnerability assessments, monitoring, annual site visits, RTCR assessments, and sanitary surveys.

6.4.1 Microbiological Monitoring (Revised 6/14/16)

Public water systems must monitor for coliform bacteria according to the monitoring frequencies specified in 809.31. The following table summarizes that information.

Total Coliform Monitoring Frequencies

SYSTEM TYPE		POPULATION	ROUTINE	REDUCED	INCREASED
Community ¹		All	Monthly	N/A	N/A
Non-Community	TN	≤1,000	Quarterly	Annually ²	Monthly
	NN and Schools	≤1,000	Quarterly	N/A	Monthly
	NN & TN	>1,000	The same as a similarly sized community system	N/A	N/A
	Seasonal TN	≤1,000	Monthly	Annually ²	Monthly
	Seasonal NN	≤1,000	Monthly	Quarterly	Monthly
	Surface Water & GWUDI systems ¹	All	The same as a similarly sized community system	N/A	N/A

Note: ¹ Surface Water & GWUDI systems that don't filter must collect a daily sample if turbidity exceeds 1 NTU.

² State parks do not get reduced sampling. They remain on quarterly. This is a requirement of Manual Code 3313.1(A)

Community - All municipal systems and all OTMs monitor Total Coliform (TC) monthly at the population based frequencies found in NR 809.31(1)(b). There is no possibility for reduced TC monitoring at community systems.

TNs (population ≤1,000) – The initial TC monitoring frequency for TN systems with populations ≤1,000 is quarterly. Monitoring can be reduced to annually if conditions are met. TN schools do not get reduced monitoring. (See “Conditions for Granting Reduced Monitoring” below). Monitoring can also be increased to monthly (See “Conditions Requiring Increased Monitoring” below).

NN systems and Schools (population ≤1,000) – These systems must monitor TC quarterly. There is no possibility of reduced monitoring. This is more stringent than the Revised Total Coliform Rule (RTCR), which does allow these types of systems to reduce their monitoring to annually.

Non-Community Systems (population >1,000) - Non-community systems, both TNs

and NNs, serving >1,000 people per day are required to monitor TC as frequently as a like-sized community system. See NR 809.31(b)(1). Reduced monitoring is not possible for these systems. During months when <1,000 persons/day are served, sampling could revert to annually at TN's with department permission.

Seasonal Systems – Non-community systems that operate seasonally and are subject to a seasonal system start-up procedure have a routine monitoring frequency of monthly. TN systems meeting requirements (See “Conditions for Granting Reduced Monitoring” below) can be granted reduced annual monitoring. NN systems can be granted reduced quarterly monitoring.

Surface Water & GWUDI systems – Both community and non-community systems must monitor TC according to the population based frequencies found in the table in NR 809.31(b)(1). Non-community systems must monitor at the same frequency as a liked sized community system. There is no opportunity for reduced monitoring. When a source water turbidity measurement exceeds 1 NTU, systems that do not filter must collect a daily TC sample near the first service connection. They must collect this TC sample within 24 hours of the first exceedance, unless the department determines that the water supplier, for logistical reasons beyond their control, cannot have the sample analyzed within 30 hours of collection.

Water systems that disinfect - These systems must routinely sample raw water for total coliform from each active well on a quarterly basis (NR809.31(5)). See section 6.6.

Conditions for Granting Reduced Monitoring

Reduced monitoring is an option at TN systems with a population $\leq 1,000$. For reduced monitoring to be granted the following conditions must be met:

- 1) The source is **not** surface water or GWUDI.
- 2) The system is not a school.
- 3) The system must have a clean compliance history
 - a. No *E. coli*. MCLs in the past 12 months
 - b. No monitoring violations in the past 12 months
 - c. No RTRC Treatment Technique Violations (TTVs) in past 12 months (see chapter 12 for information on TTVs)
 - d. No RTRC Assessment triggers in past 12 months
- 4) The system must have had an annual site visit or a sanitary survey in the last year.
- 5) The most recent sanitary survey or annual site visit shows no deficiencies or sanitary defects

- 6) The well should not be excessively vulnerable to future bacterial contamination, i.e. short cased, old well, near obvious sources, vulnerable aquifers (Door County).
- 7) Increased monitoring is not part of an Enforcement Agreement or Order.

Procedure for Granting a Reduced Sampling Frequency

Regional staff will approve (or deny) all requests for a reduced sampling frequency based upon the above criteria. Granting reduced monitoring frequency requires issuance of an approval letter signed by regional staff and review by their supervisor. The approval may be combined with the sanitary survey inspection letter.

The approval letter must include information that conveys the following:

- (1) The department's authority to allow reduced monitoring. Section NR 809.31(1)(d)(1), Wis. Adm. Code, requires each non-community water system serving fewer than 1,000 persons to monitor for coliform bacteria each quarter that the system provides water to the public. The department may reduce this frequency to one sample per year at transient non-community systems, if the conditions for granting reduced monitoring (described above) are met.
- (2) Statement of sampling record upon which the decision is being made (Example: one year of total coliform negative samples).
- (3) Statement that no sanitary defects are known.
- (4) Statement that quarterly or annual sampling privileges may be terminated if any of the conditions to remain on reduced monitoring (described below) are not met.
- (5) Statement that a missed quarterly or annual sample may result in loss of quarterly/annual privileges.

Conditions to Remain on Reduced Monitoring

To remain on reduced monitoring, systems must have the following:

- (1) A clean compliance history. Monitoring violations will place systems back on quarterly if the system fails to collect a make-up sample and their regular routine sample before the end of the next monitoring period.
- (2) An annual site visit.
- (3) Seasonal systems must complete their seasonal system start-up procedure before serving water to the public.

Conditions Requiring Increased Monitoring

Any of the following conditions listed below may be grounds for increased monitoring.

- 1) A Treatment Technique Violation (see chapter 12 for information on TTVs)
- 2) An *E. coli* MCL violation
- 3) A monitoring violation that was not addressed in a specified time period

If any of the above occur staff will send a letter to the water system owner explaining why increased monitoring is required. To return a system to reduced monitoring frequencies, the procedure for granting reduced monitoring must be followed again.

For TNs that miss a sample, put a warning in the NON letter that unless the sample is collected by the end of the next monitoring period the system owner may have to collect quarterly samples.

6.5 MCL- Exceeding and Returning to Compliance

6.5.1 Microbiological Monitoring (Revised 6/14/16)

Check and Repeat Samples

Systems must collect a complete set of check and repeat samples for every positive routine sample even if the assessment trigger or MCL has already been exceeded. One of these repeat samples can serve as a “dual purpose” triggered sample for ground water systems with a single well serving $\leq 1,000$ people. (See figures 1 and 2 below).

Exceeding the MCL

The MCL for *E. coli* is exceeded if any of the following occurs:

- (1) The public water system has an *E. coli*-positive repeat sample following a total coliform-positive routine sample.
- (2) The public water system has a total coliform-positive repeat sample following an *E. coli*-positive routine sample.
- (3) The public water system fails to take all required repeat samples following an *E. coli*-positive routine sample.

- (4) The public water system fails to test for *E. coli* when any repeat sample tests positive for total coliform.

The following table summarizes the events that will cause a system to exceed the *E. coli* MCL.

E. Coli MCL determination

Routine		Repeat		MCL	Assessment Level
TC	EC	TC	EC		
+	+	+	-	Yes	2
+	-	+	+	Yes	2
+	-	No samples		No	1
+	+	No samples		Yes	2
+	-	+	No test	Yes	2

Returning to Compliance

If an MCL is exceeded systems must do all of the following to return to compliance:

- (1) Issue a tier 1 boil water advisory
- (2) Have a completed Level 2 Assessment within 30 days
- (3) Correct any sanitary defects discovered during the RTCR Assessment.
- (4) Disinfect the system
- (5) Have two sets of two total coliform negative investigative samples

If only a total coliform assessment trigger is exceeded, systems must do the following to return to compliance:

- (1) Complete a Level 1 Assessment within 30 days (Community water systems), or a have a completed Level 2 assessment within 30 days (Non-community systems).
- (2) Correct any sanitary defects discovered during the RTCR Assessment.

(3) Have two sets of two total coliform negative investigative samples

Note: Disinfection is recommended but not required

Unless a system is on monthly monitoring, they must collect a set of 3 “**Additional Routine**” samples in the month following the positive routine samples.

Triggered Source Samples

Groundwater systems must collect a triggered source water sample for every positive routine sample from every well in operation according to their monitoring site plan. Triggered samples can serve as “dual purpose” samples for ground water systems with a single well serving $\leq 1,000$ people.

Triggered source water samples that are positive for *E. coli* cause a requirement for five repeat source water samples. If any of the five repeat well samples are positive for *E. coli* a formal groundwater rule corrective action must be completed. If there is a history of *E. coli* contamination in the system inspectors should require a formal Groundwater Rule corrective action after the initial positive triggered sample and tell the system to not take the five repeat well samples. All triggered samples must be taken before any batch chlorination attempts. Formal Groundwater Rule corrective action options can be found in 809.327(2). (See figure 3 below).

Figure 1. - Coliform Positive Flow Chart – Non-Community Systems ≤ 1,000

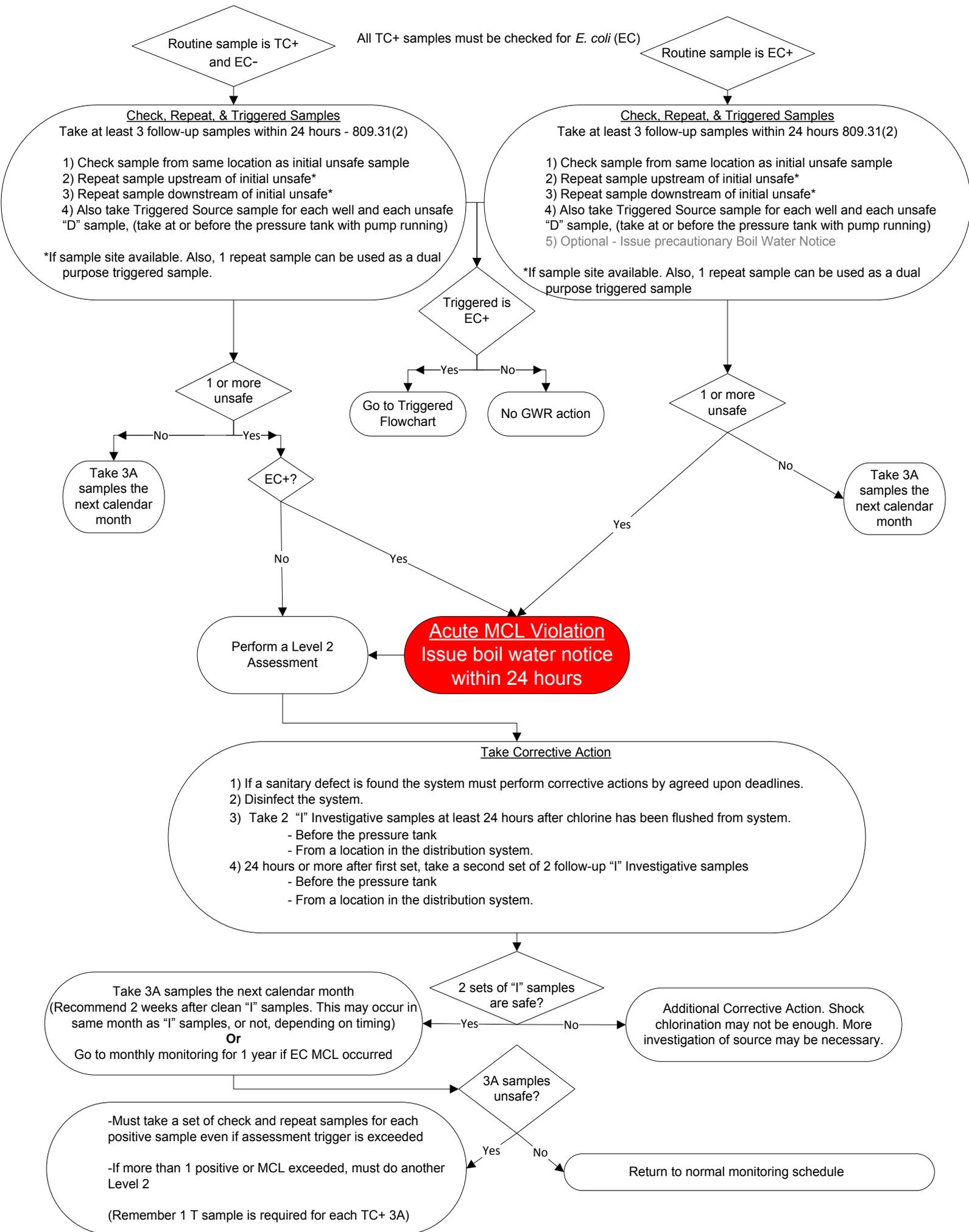


Figure 2. Coliform Positive Flow Chart – Systems on Monthly Monitoring

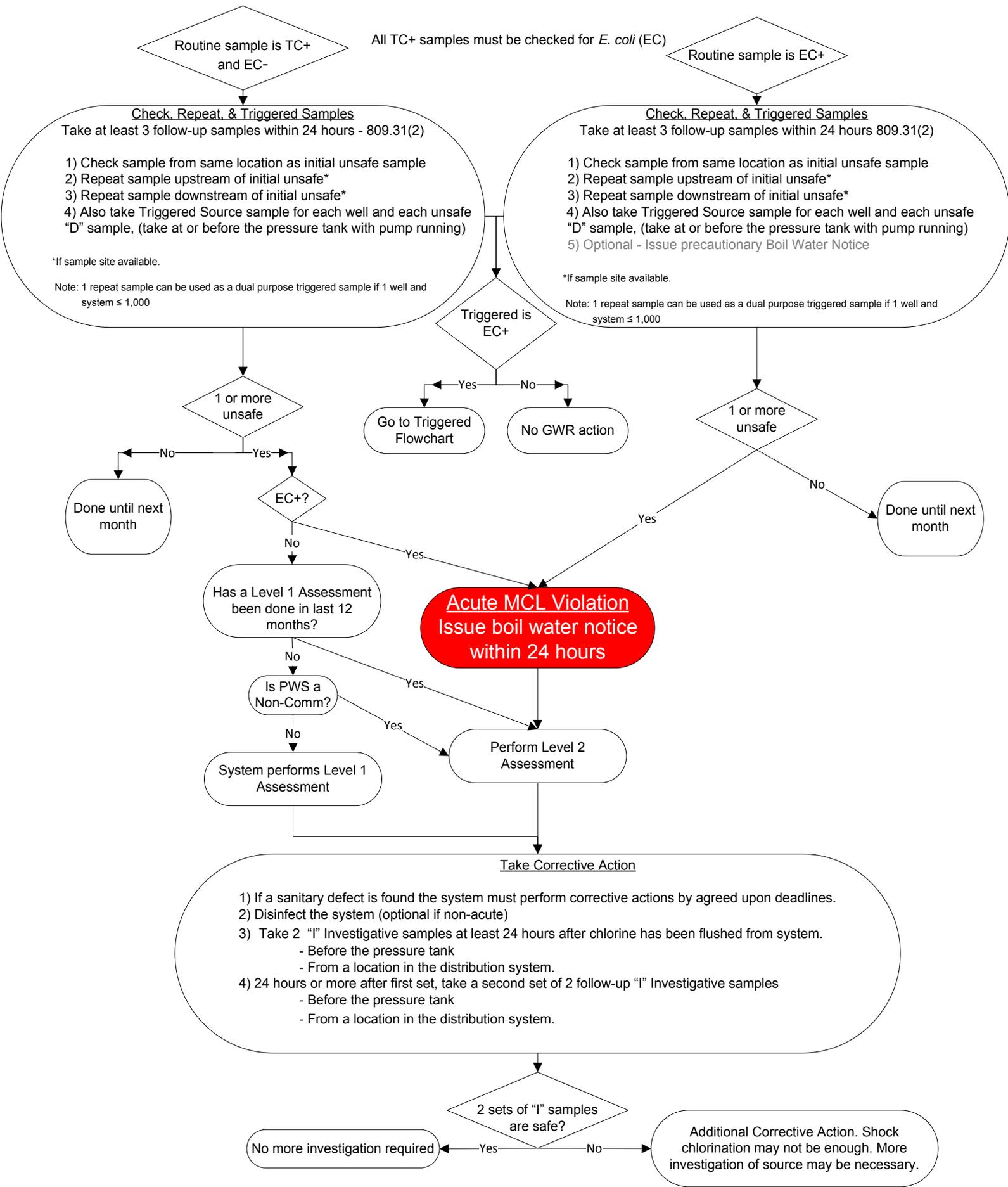
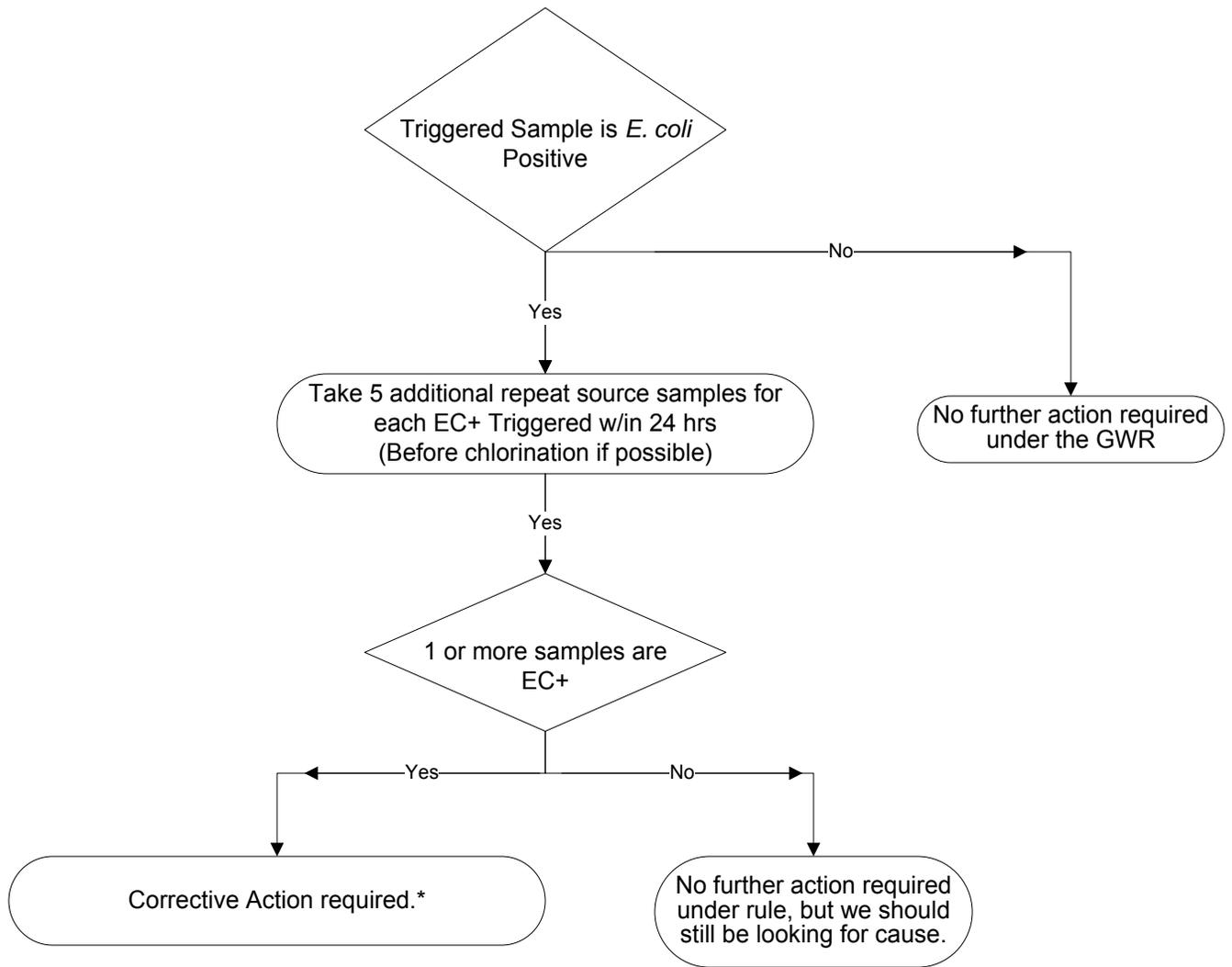


Figure 3. Groundwater Rule “Triggered” Source Water Monitoring



*Corrective Actions Include:

- 1) Correct all significant deficiencies
- 2) Provide an alternate source of water
- 3) Eliminate the source of contamination
- 4) Provide treatment that reliably achieves at least 4-log treatment of viruses, before or at the first customer