ORDER OF THE STATE OF WISCONSIN NATURAL RESOURCES BOARD
REPEALING, RENUMBERING, AMENDING, REPEALING AND RECREATING, AND CREATING RULES

The statement of scope for this rule, 015-13, was approved by the Governor on May 17, 2013, published in Register No. 689, on June 26, 2013, and approved by the Natural Resources Board on June 26, 2013. The rule was approved by the Governor on November 18, 2015.

The Wisconsin Natural Resources Board proposes an order to repeal NR 809.05 (4), 809.30 (2), 809.31 (1) (b), 809.31 (1) (c), 809.563 (4) (d), 809.565 (3) (b) 2, 809.67 (1) (title), 809.67 (2), 809.960 (2) (intro), and 809 Subchapter VIII; to renumber NR 809.04 (93), 809.203 (3) Table C, 809.30 (3), 809.30 (4), 809.30 (5), 809.30 (6) (intro), (a) and (c), 809.31 (1) (b) 1, 809.31 (1) (d), 809.325 (4)(a), 809.565 (3) (b) 3, 809.67 (1), 809.833 (3) (c) 9, 809.960 (a), (b) (c), and NR 809.960 (3) ; to amend NR 809.03, 809.04 (5), 6), (7), and 8, 809.04 (15), 809.04 (19), 809.04 (22), 809.04 (37), 809.04 (52), 809.04 (71), 809.06, 809.07 (1), 809.11 (2), 809.11 (3) (a) and (d), 809.11 (4) (a), 809.113 (1) TABLE A, 809.113 (2) Table B, 809.113 (4) Table C, 809.115 (1) (d) , 809.115 (2) (f) 2., 809.115 (3) (intro), (a), and (b), 809.117 (1) (f), 809.203 (1), 809.203(3)(a), 809.203 (4) (intro), 809.205 (2) (a), 809.205 (3) and (4) (a), 809.205 (4) (b), 809.205 (5), 809.207 (2), 809.243 (1) and (2), and (5) , 809.245 (2) (a) and (b), 809.245 (5), 809.245 (7) (b), 809.245 (9) (c), 809.247 (1) (c) and (e), 809.247 (4), 809.25 (1) (g), 809.31 (1) (title) and 809.31 (1) (a), 809.31 (1) (e), 809.31 (1) (f) and (g), 809.31 (2) (a) and (b)(intro),809.31 (2)(c), (d), and (e), 809.31 (2) (f) 1. and 2, 809.31 (2) (h), 809.31 (3) (b) 2, 3 and 809.31 (3) (c), 809.31 (4), (5), (6), and (6)(note), 809.311 (3) (b) 1, 809.311 (6) and (7), 809.312 (1), 809.323 (1) (a) and (b), 809.323 (1) (d) Table G, 809.323 (2) (title), (2) (a), and (b), 809.325 (1) (b), 809.325 (2) (b) 1., 809.325 (2) (d) and (e), 809.325 (3) (b) , 809.325 (3) (b) and (c), 809.327 (1) (a), and (c), 809.327 (3) (a) 2, 809.327 (4) (a) 3, 809.327 (6), 809.328 (1) (b) (intro), 809.329 (2) (c), (d), and (e) (intro), 809.33 (4), 809.334 (1), 809.334 (2), 809.335 (2), 809.336 (4) (b), 809.35 (4), 809.50 (4) Table K, 809.52 (1) Table N, 809.53 (1) (d) (1), 809.541 (4) (c), 809542 (2) (c) 3, 809. 544 (1) (a), 809.546 (intro), 809.546 (1) (a) 1, 809.546 (2) (a) 1, 809.546 (2) (a) 2. a, b, and c, 809.546 (2) (c) 1, 809.546 (2) (d), 809.547 (3), 809.547 (4) (d) 2, 809.548 (4), 809.55 (1) (c), 809.55 (1) 3, 809.55 (6) (a) and (6) (a) 1, 809.561 (4), 809.562 (3), 809.563 (1), 809.563 (2), 809.563 (4) (a), and (b), 809.563 (4) (e) and Table U, 809.563 (5) (title) and (intro), and (6) (intro), 809.565 (4) (a), 809.569 (1) (b) Table V, 809.569 (1) (b) 3, 809.569 (2) (c) 2, 809.60 (3) Table X, 809.60 (4) (b), 809.61 (1) (a), 809.61 (1) (c) Table Y, 809.61 (2) (a), 809.62 (1) (a), 809.62 (1) (c) (intro) and (c) 2 and (2), 809.63 (1), 809.63 (1) (d) 3 and (1) (e), 809.63 (4) (title), 809.65 (1) (a) and (b), 809.66 (1) (intro), 809.68 (1) (a) 3 and 809.68 (2), 809.70 (1) Table AA, 809.70 (2), 809.71 (1), (2), and 809.74 (1) (a), 809.80(7)(c)1., 809.83 (1) (b), 809.833 (3) (c) 4 and 809.833 (3) (c) (4) b, 809.833 (7) (f) 1, 809.833 (7) (f) 2. d., 809.837 (1) and (3), 809 Subchapter V, Appendix A, 809.952 (2) (b), 809.953 (1) (b) 1. and 2, 809.960 (1) (a) and (b), 809 Subchapter VII, Appendix A, and 809 Subchapter VII, Appendix B; to repeal and recreate NR 809.203 (4) Table D, 809.30 (1), 809.31 (2) (f) (intro), 809.311 (1) Table F, 809.334 (2) Table I, 809.563 (2) Table R, 809.563 (3) Table S, 809.833 (3) (c) 7, 809.835 (3) (intro), (a) and (b), and 809.951 (1) (b) 1.; to create NR 809.04 (2g) and (2r), 809.04 (24m), 809.04 (37m), (42m), (46m), (47g), and (47r), 809.04 (59m), 809.04 (71m), 809.04 (72m) and (74m), 809.04 (93), 809.10, 809.205 (4) (a) 1., 2., and 3, 809.30 (6), 809.31 (1) (ag) and (ar), 809.31 (1) (d), 809.31 (1) (eg) and (er), 809.31 (2) (b) 1., 2. and 3., 809.31 (2) (f) 3, 809.31 (2m), 809.31 (9) and (10), 809.312 (1m), 809.313 and 809.314, 809.561 (3) (c), 809.563 (6) (h), 809.565 (2) (c) 2m, 809.63 (2) (am), 809.80 (9m), 809.82 (8) and (9), 809.833 (2) (d), 809.833 (7) (g), (h), and (i), 809.835 (2m), and 809.953 (1) (b) 6, relating to safe drinking water

Analysis Prepared by the Department of Natural Resources

1. Statutes interpreted:
ch. 280 and 281 Stats.

2. Statutory authority:
ch. 280 and 281 Stats.

3. Explanation of agency authority:
280.11 – The department shall, after a public hearing, prescribe, publish, and enforce minimum reasonable standards and rules and regulations for methods to be pursued in the obtaining of pure drinking water for human consumption and the establishing of all safeguards deemed necessary in protecting the public health against the hazards of polluted sources of impure water supplies intended for human consumption.
281.17(8) – The department may establish, administer, and maintain a safe drinking water program no less stringent than the requirements of the safe drinking water act, 42 USC 300f to 300j-26.

4. Related statutes or rules:
Chapter NR 809 – Safe Drinking Water, establishes minimum standards and procedures for the protection of the public health, safety and welfare in the obtaining of safe drinking water.

5. Plain language analysis:
The proposal was triggered by changes to the Total Coliform Rule (TCR) portion of the federal Safe Drinking Water Act on February 13, 2013. These changes are referred to as the Revised Total Coliform Rule (RTCR). The Department of Natural Resources (DNR) has primacy to administer the Safe Drinking Water Act (SDWA) in Wisconsin. To continue to maintain primacy, the Department must revise Chapter NR 809, Safe Drinking Water, to incorporate provisions that are as stringent as those promulgated by EPA.
The RTCR increases public health protection against waterborne pathogens in public drinking water systems. These changes include:

- Eliminating the maximum contaminant level (MCL) for total coliforms;
- Requiring annual site visits for systems to remain on reduced coliform monitoring;
- Establishing start-up procedures for non-community public water systems that cease operations seasonally and depressurize their distribution system;
- Requiring an abbreviated system assessment (Level 1 Assessment) following a confirmed total coliform positive;
- Prescribing a rigorous system assessment (Level 2 Assessment) following an *E. coli* MCL exceedance or two consecutive total coliform triggers.

6. Summary and comparison with existing and proposed federal regulations.

The basic requirements of the TCR to routinely collect coliform samples at all public water systems, and collect follow-up samples when results are positive remain the same with the RTCR. The RTCR also retains the requirement for systems to boil water when *E. coli* is present.
The changes proposed in the RTCR include the following:

- The non-acute maximum contaminant level for total coliform is eliminated;
- Treatment technique requirements are added for total coliform;
- No public notice for total coliform is required anymore;
- There is a new public notice requirement for failure to conduct required assessments and corrective actions;
- Annual inspections/assessments are required for systems to remain on reduced monitoring;
- State approved start-up procedures are required for "seasonal systems."

7. Comparison of similar rules in adjacent states:

ILLINOIS: Illinois will not allow reduced monitoring at community water systems. They will allow reduced monitoring at non-community systems, but they will increase the sanitary survey frequency at those systems from every 5 years to every 2 years. They will also perform Level 2 assessments in place of the less rigorous Level 1 assessments to avoid placing non-community systems on increased monthly monitoring following multiple Level 1 assessment triggers.

INDIANA: At this time, Indiana has not yet responded to inquiries about how they plan to implement the RTCR.

IOWA: Iowa will require seasonal system start-up procedures and issue treatment technique violations if they are not completed before system start-up. Iowa will require a clean coliform sample as part of this procedure. They will not allow reduced annual monitoring. They require monthly monitoring at schools and daycares. They will not change their current boil water advisory policies. Iowa is not planning on doing annual site visits as they are not allowing reduced monitoring. Level 2 assessments will be done by DNR inspectors and Level 1 assessments will be done by owners and operators.
MICHIGAN: Michigan will require seasonal system start-up procedures and issue treatment technique violations if they are not completed before system start-up. They are only allowing reduced monitoring frequencies at non-community groundwater systems serving up to 1,000 people. They will only issue a boil water order for *E. coli* or a system loss of pressure. Annual site visits will be required for all systems on reduced monitoring. They will conduct Level 2 assessments at community water systems and contract with local health departments to conduct Level 2 assessment at non-community water systems.
MINNESOTA: Minnesota will require seasonal system start-up procedures and issue treatment technique violations if they are not completed before system start-up. They are allowing reduced monitoring frequencies at all groundwater systems serving up to 1,000 people. They will only issue a boil water order for *E. coli*. Annual site visits will be required for all non-community systems on reduced monitoring, but not be required for community systems on reduced monitoring. They will conduct Level 2 assessments at community water systems and contract with counties to conduct Level 2 assessment at transient non-community water systems.
OHIO: Ohio will require a seasonal system start-up procedure with a requirement for a safe coliform sample before start-up. They will issue treatment technique violations for failure to complete this procedure. They will not allow reduced monitoring for any systems except some seasonal systems can remain on quarterly monitoring. The routine

sample frequency for seasonal systems is monthly. Boil water orders will only be required for *E. coli* violations and water line breaks. They will not perform annual site visits for systems to remain on reduced monitoring. They will perform all level 2 assessments themselves and not contract out with counties or other technical service providers.

8. Summary of factual data and analytical methodologies:

The bulk of the rule changes are based on federal rule changes to the Total Coliform Rule. Under the 1989 TCR, each total coliform-positive sample is assayed for either fecal coliforms or *E. coli*. Fecal coliform bacteria are a subgroup of total coliforms that traditionally have been associated with fecal contamination. Since the promulgation of the 1989 TCR, more information and understanding of the suitability of fecal coliform and *E. coli* as indicators have become available. Study has shown that the fecal coliform assay is imprecise and too often captures bacteria that do not originate in the human or mammal gut. The provisions of the RTCR reflect the improved understanding of the value of total coliforms and *E. coli* as indicators. EPA has chosen to now use total coliform as an indicator that public water systems are maintaining effective barriers to contamination instead of using it as an indicator that pathogens may be present. EPA will now require formal assessments and corrective actions to mitigate total coliform contamination. This revised rule also eliminates fecal coliform as an indicator of fecal contamination, and relies instead solely on *E. coli*.

9. Analysis and supporting documents used to determine effect on small business or in preparation of an economic impact analysis:

Small businesses generally fall into the category of non-community public water systems. An analysis was performed using available data from the DNR's Public Drinking Water Database. These data were used to predict monitoring costs, the possible number of Level 2 assessments, the number of systems that would have a start-up procedure requirement, and the estimated costs for boil water orders. The analysis concluded the following:

- Monitoring costs for small businesses are expected to stay the same. Sample analysis expenses are offered free of charge by the Wisconsin State Lab of Hygiene.
- Due to the elimination of boil water orders for non-acute coliform events, small businesses will see a modest decrease in costs in those situations.
- Most of the increases in costs of the proposed rule are incurred by the state due to the new requirement for formal assessments triggered by coliform events.
- The requirement for seasonal system start-up procedures may add a modest cost to small non-community systems if owners of these systems discover items they need to fix. There is also a cost associated with flushing plumbing with well water until it becomes clear each year.

10. Effect on small business:

Economic impacts of this rule will be moderate. Due to the elimination of boil water orders for non-acute coliform events, small businesses will see a modest decrease in costs in those situations. The requirement for seasonal system start-up procedures may add a modest cost to businesses if owners of these systems discover items they need to fix. There is also a cost associated with flushing plumbing with well water until it becomes clear each year.

11. A copy of any comments and opinion prepared by the Board of Veterans Affairs under s. 45.03 (2m), Stats., for rules proposed by the Department of Veterans Affairs: [if not applicable, so state]

Not applicable.

12. Agency Contact (include email and telephone number):

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Bureau of Drinking Water and Groundwater

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13. Place where comments are to be submitted and deadline for submission.
Steve Elmore
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Deadline for comments is July 22, 2015

SECTION 1. NR 809.03 is amended to read:

NR 809.03 Applicability. The provisions of this chapter shall apply to all new and existing public water systems ~~and~~, water suppliers, and laboratories certified to analyze drinking water.

SECTION 2. NR 809.04 (2g) and (2r) are created to read:

NR 809.04 (2g) "Circuit rider" means a roving technical expert employed by a state rural water association to provide training and assistance to rural and small water utilities within the state.

NR 809.04 (2r) "Clean compliance history" means a record of no *E. coli* MCL violations under s. NR 809.31; no monitoring violations under s. NR 809.312; and no coliform treatment technique trigger exceedances or treatment technique violations under s. NR 809.313.

SECTION 3. NR 809.04 (5), (6), (7), and (8) are amended to read:

NR 809.04 (5) "Community water system" or "CWS" means a public water system which serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents. Any public water system serving 7 or more homes, 10 or more mobile homes, 10 or more apartment units, or 10 or more condominium units ~~shall be considered~~ is a community water system unless information is available to indicate that 25 year-round residents will not be served.

NR 809.04 (6) "Compliance cycle" means the 9-year calendar year cycle during which public water systems ~~shall~~ monitor. Each compliance cycle consists of 3, 3 year compliance periods. The first compliance cycle begins January 1, 1993 and ends December 31, 2001; the second begins January 1, 2002 and ends December 31, 2010; the third begins January 1, 2011 and ends December 31, 2019.

NR 809.04 (7) "Compliance period" means a 3-year calendar year period within a compliance cycle. Each compliance cycle has 3, 3-year compliance periods. Within the first compliance cycle, the first compliance period

runs from January 1, 1993 to December 31, 1995; the second from January 1, 1996 to December 31, 1998; the third from January 1, 1999 to December 31, 2001.

NR 809.04 (8) "Comprehensive performance evaluation" or "CPE" means a thorough review and analysis of a treatment plant's performance-based capabilities and associated administrative, operation and maintenance practices. It is conducted to identify factors that may be adversely impacting a plant's capability to achieve compliance and emphasizes approaches that can be implemented without significant capital improvements. For purposes of compliance with this chapter, the comprehensive performance evaluation ~~shall consist~~ consists of at least the following components: Assessment of plant performance; evaluation of major unit processes; identification and prioritization of performance limiting factors; assessment of the applicability of comprehensive technical assistance; and preparation of a CPE report.

SECTION 4. NR 809.04 (15) is amended to read:

NR 809.04 (15) "CT" or "CTcalc" is the product of the residual disinfectant concentration (C) in mg/l determined before or at the first customer, and the corresponding disinfectant contact time (T) in minutes, i.e., "C" x "T". If a public water system applies disinfectants at more than one point prior to the first customer, it shall determine the CT of each disinfectant sequence before or at the first customer, to determine the total percent inactivation or "total inactivation ratio." The inactivation ratio for a single disinfectant sequence is:

$$\frac{CT_{calc}}{CT_{table}}$$

where "CT_{table}" is the CT value required for the target organism and the target level of inactivation as contained in ss. NR 810.47 to 810.61. The sum of the inactivation ratios, or total inactivation ratio for a series of disinfection sequences is:

$$\sum \frac{(CT_{calc})}{CT_{table}}$$

and is calculated by adding together the inactivation ratio for each disinfection sequence. In determining the total inactivation ratio, the water supplier ~~shall determine~~ determines the residual disinfectant concentration of each sequence and corresponding contact time before any subsequent disinfection application points. A total inactivation ratio equal to or greater than 1.0 is assumed to provide the target level of disinfection of the target organism.

SECTION 5. NR 809.04 (19)(b) is amended to read:

NR 809.04 (19) "Disinfectant contact time" ("T" in CT calculations) means the time in minutes that it takes for water to move from the point of disinfectant application or the previous point of disinfectant residual measurement to a point before or at the point where residual disinfectant concentration ("C") is measured. Where only one "C" is measured, "T" is the time in minutes that it takes for water to move from the point of disinfectant application to a point before or where residual disinfectant concentration ("C") is measured. Where more than one "C" is measured, "T" is:

(a) For the first measurement of "C", the time in minutes that it takes for water to move from the first or only point of disinfectant application to a point before or at the point where the first "C" is measured; and

(b) For subsequent measurements of "C", the time in minutes that it takes for water to move from the previous "C" measurement point to the "C" measurement point for which the particular "T" is being calculated. Disinfectant contact time in pipelines ~~shall be~~ is calculated based on "plug flow" by dividing the internal volume of the pipe by the maximum hourly flow rate through the pipe. Disinfectant contact time within mixing basins and storage reservoirs shall be determined by tracer studies or other department approved equivalent demonstration

SECTION 6. NR 809.04 (24m) is created to read:

NR 809.04 (24m) "Dual purpose sample" means a repeat coliform sample collected at the groundwater source to meet requirements for both triggered source water monitoring, and repeat coliform monitoring following a routine positive distribution sample. It is only allowed at groundwater systems serving a population of less than 1,000 people.

SECTION 7. NR 809.04 (37) is amended to read:

NR 809.04 (37) "GAC10" means granular activated carbon filter beds with an empty-bed contact time of 10 minutes based on average daily flow and a carbon reactivation frequency of every 180 days, except that the reactivation frequency of GAC10 used as a best available technology for compliance with MCLs at LRAA monitoring locations is every 120 days.

SECTION 8. NR 809.04 (37m), (42m), (46m), (47g), and (47r) are created to read:

NR 809.04 (37m) "GAC20" means granular activated carbon filter beds with an empty-bed contact time of 20 minutes based on average daily flow and a carbon reactivation frequency of every 240 days.

NR 809.04 (42m) "Human consumption" means drinking; bathing, including all personal hygiene needs in a home, business, or school setting; showering; hand washing; cooking; dishwashing; and maintaining oral hygiene.

NR 809.04 (46m) "Learns of the violation" for the purpose determining public notification timing requirements under Subchapter VII means any of the following:

(a) The date that a laboratory notifies a water supplier of results demonstrating exceedances of MCLs, MRDLs, or action levels.

(b) The day after a specified deadline in NR 809, for violation of deadlines that are not related to MCL, MRDL or action level exceedances.

(c) The date on which the violation, incident, or condition occurred, for any other type of violation, incident, or condition requiring public notification.

(d) The date specified in writing by the department to the water supplier.

NR 809.04 (47g) "Level 1 assessment" means an evaluation to identify the possible presence of sanitary defects, defects in distribution system coliform monitoring practices, and, when possible, the likely reason that the system triggered the assessment. It is triggered by total coliform detections under s. NR 809.31. It is conducted by the system operator or owner.

NR 809 (47r) "Level 2 assessment" means an evaluation to identify the possible presence of sanitary defects, defects in distribution system coliform monitoring practices, and, when possible, the likely reason that the system triggered the assessment. A Level 2 assessment provides a more detailed examination of the system, including the system's monitoring and operational practices, than does a Level 1 assessment through the use of more comprehensive investigation and review of available information, additional internal and external resources, and other relevant practices. It is conducted by an individual approved by the department, which may include the system operator.

SECTION 9. NR 809.04 (52) is amended to read:

NR 809.04 (52) "Maximum contaminant level goal" or "MCLG" means the maximum level of a contaminant in drinking water at which no known or anticipated adverse ~~affect~~effect on the health of persons would occur, and which allows an adequate margin of safety. Maximum contaminant level goals are non-enforceable health goals, unless the department determines that action is necessary to protect public health.

SECTION 10. NR 809.04 (59m) and (note) is created to read:

NR 809.04 (59m) "Performance evaluation sample" means a reference sample provided to a laboratory for the purpose of demonstrating that the laboratory can successfully analyze the sample within limits of performance specified by the department. The true value of the concentration of the reference material is unknown to the laboratory at the time of the analysis.

Note: Performance evaluation samples are also known as proficiency testing samples.

SECTION 11. NR 809.04 (71) is amended to read:

NR 809.04 (71) "Running annual average" means the sum of 1, 2, 3 or 4 calendar quarter sample results divided by 4. The first sample may be the average of the initial and confirmation sample results. If more than 4 calendar quarters of samples have been collected in more than 4 consecutive calendar quarters, the results from the 4 most recent quarters ~~shall be~~ are used. If multiple compliance samples are collected in a single calendar quarter, the sample which yielded the highest concentration ~~shall be~~ is used to calculate the running annual average. If a quarterly sample is not taken within a required consecutive quarter then the divisor ~~shall be~~ is the number of quarterly samples that have been analyzed within the required time period.

SECTION 12. NR 809.04 (71m),NR 809.04 (72m), and NR 809.04 (74m) are created to read:

NR 809.04 (71m) "Sanitary defect" means a defect that could provide a pathway of entry for microbial contamination into the distribution system or that is indicative of a failure or imminent failure in a barrier that is already in place.

NR 809.04 (72m) "Seasonal system" means a non-community water system that is not operated as a public water system on a year-round basis and that starts up and shuts down at the beginning and end of each operating season.

NR 809.04 (74m) "Serves or serving" means provides or providing the opportunity for human consumption.

SECTION 13. NR 809.04 (93) is renumbered NR 809.04 (89m).

SECTION 14. NR 809.04 (93) is created to read:

NR 809.04 (93) "Year-round resident" means a resident who resides in the same living unit for 6 months per year or more.

SECTION 15. NR 809.05 (4) is repealed.

SECTION 16. NR 809.06 is amended to read:

NR 809.06 General requirements. Water suppliers shall conduct the minimum monitoring required by this chapter. The department may increase any monitoring requirements in this chapter, if the department determines that any increase is necessary to protect public health, safety or welfare. The department may require additional monitoring and analysis when necessary to verify water quality, treatment effectiveness, or to ensure representative

sampling throughout an entire distribution system. The department may decrease any monitoring requirements in this chapter, if the department determines that such a decrease will not adversely affect protection of public health, safety or welfare.

SECTION 17. NR 809.07 (1) is amended to read:

NR 809.07 Maximum contaminant level goals for primary contaminants. (1) Maximum contaminant level goals (MCLGs) are zero for the following contaminants:

Giardia lamblia
Cryptosporidium
Legionella
~~*Total Coliforms*~~
~~*Fecal Coliforms*~~
Escherichia coli
Viruses
Lead
Arsenic
Chloroform
Bromodichloromethane
Bromoform
Bromate
Dichloroacetic acid
Combined radium-226 and radium-228
Beta particle and photon radioactivity
Gross alpha particle activity (excluding radon and uranium)
Uranium

SECTION 18. NR 809.10 is created to read:

NR 809.10 Use of bottled water. Public water systems may not use bottled water to achieve compliance with an MCL. Bottled water may be used temporarily to avoid unreasonable risk to health.

SECTION 19. NR 809.11 (2) is amended to read:

NR 809.11 (2) MCLS FOR INORGANICS. The following are the maximum contaminant levels for inorganic contaminants:

Contaminant	**~~MCLG~~ MCL in mg/L**
Antimony	0.006
Arsenic	0.010
Asbestos	7 Million fibers/Liter (longer than 10 um)
Barium	2
Beryllium	0.004
Cadmium	0.005
Chromium	0.1
Cyanide(as free Cyanide)	0.2
Fluoride	4.0
Mercury	0.002
Nickel	0.1

Nitrate	10 (as Nitrogen)
Nitrite	1 (as Nitrogen)
Total Nitrate Nitrite	10 (as Nitrogen)
Selenium	0.05
Thallium	0.002

SECTION 20. NR 809.11 (3) (a) and NR 809.11 (3) (d) are amended to read:

NR 809.11 (3) (a) The water will not be available to children under 6 months of age or any female who is or may become pregnant.

NR 809.11 (3) (d) A supply of bacteriologically safe drinking water, containing less than 10 mg/l nitrate as nitrogen, is provided for infants less than 6 months of age and any female who is or may become pregnant.

SECTION 21. NR 809.11 (4) (a) is amended to read:

NR 809.11 (4) (a) The best available technologies or BATs for achieving compliance with the maximum contaminant levels for the inorganic contaminants listed in sub. (2), except for fluoride, are as follows:

Contaminant	**BAT(s)**
Antimony	2,7
Arsenic[4]	1,2,5,6,7,9,12[5]
Asbestos	2,3,8
Barium	5,6,7,9
Beryllium	1,2,5,6,7
Cadmium	2,5,6,7
Chromium	2,5,6[2],7
Cyanide	5,7,10, 13
Mercury	2[1],4,6[1],7[1]
Nickel	5,6,7
Nitrate	5,7,9
Nitrite	5,7
Selenium	1,2[3],6,7,9
Thallium	1,5

[1]BAT only if influent Hg concentration

[2]BAT for Chromium III only.

[3]BAT for Selenium IV only.

[4]BATs for Arsenic V. Pre-oxidation may be required to convert Arsenic III to Arsenic V.

[5]To obtain high removals, iron to arsenic ratio must be at least 20:1.

Key to BATs in Table:

1 = Activated Alumina
2 = Coagulation/Filtration (not BAT for public water systems < 500 service connections)
3 = Direct and Diatomite Filtration
4 = Granular Activated Carbon
5 = Ion Exchange
6 = Lime Softening (not BAT for public water systems < 500 service connections)
7 = Reverse Osmosis
8 = Corrosion Control
9 = Electrodialysis
10 = Oxidation (Chlorine)
11 = Ultraviolet
12 = Oxidation/Filtration
13 = Alkaline Chlorination (pH ≥ 8.5)

SECTION 22. NR 809.113 (1) TABLE A is amended to read:

TABLE A
Approved Methodology for ~~Primary~~ Inorganic Contaminants

Contaminant	**Methodology[13]**	**EPA**	**ASTM[3]**	**SM[4](18th, 19th ~~ed~~ Ed.)**	**SM[4](20th ~~ed~~ Ed.)**	**SM[4] (21st, 22nd Ed)**	**SM Online[21]**	**Other**
1. Alkalinity	Titrimetric		D1067–92, 02 B D1067-06 B, 11B	2320 B	2320 B	2320 B	2320 B–97	
	Electrometric titration						I–1030–85[5]	
2. Antimony	Inductively Coupled Plasma (ICP)—Mass Spectrometry	200.8[2]						
	Hydride-Atomic Absorption		D3697–92, 02 D3697-07					
	Atomic Absorption; Platform	200.9[2]						
	Atomic Absorption; Furnace			3113 B		3113 B	3113 B–99 3113 B-04	
	Axially Viewed Inductively Coupled Plasma-	200.5, Revision 4.225						

	Atomic Emission Spectrometry (AVICP-AES)							
3. Arsenic[14]	ICP-Mass Spectrometry	200.8[2]						
	Atomic Absorption; Platform	200.9[2]						
	Atomic Absorption; Furnace		D2972–97, 03 C D2972-08 C	3113 B		3113 B	3113 B–99 3113 B-04, B-10	
	Hydride Atomic Absorption		D1972–97, 03 B D2972-08 B	3114 B		3114 B	3114 B–97 3114 B-09	
	Axially Viewed Inductively Coupled Plasma-Atomic Emission Spectrometry (AVICP-AES)	200.5, Revision 4.2[25]						
4. Asbestos	Transmission Electron Microscopy	100.1[9]						
	Transmission Electron Microscopy	100.2[10]						
5. Barium	Inductively Coupled Plasma	200.72		3120 B	3120 B	3120 B	3120 B–99	
	ICP-Mass Spectrometry	200.8[2]						
	Atomic Absorption; Direct Aspiration			3111D		3111 D	3111 D–99	
	Atomic Absorption; Furnace			3113 B		3113 B	3113 B–99 3113 B-04, B-10	

	Axially Viewed Inductively Coupled Plasma-Atomic Emission Spectrometry (AVICP-AES)	200.5, Revision 4.2[25]						
6. Beryllium	Inductively Coupled Plasma	200.7[2]		3120 B	3120 B	3120 B	3120 B–99	
	ICP-Mass Spectrometry	200.8[2]						
	Atomic Absorption; Platform	200.9[2]						
	Atomic Absorption; Furnace		D3645–97, 03 B D3645-08 B	3113 B		3113 B	3113 B–99 3113 B-04, B-10	
	Axially Viewed Inductively Coupled Plasma-Atomic Emission Spectrometry (AVICP-AES)	200.5, Revision 4.2[25]						
7. Cadmium	Inductively Coupled Plasma	200.7[2]						
	ICP-Mass Spectrometry	200.8[2]						
	Atomic Absorption; Platform	200.9[2]						
	Atomic Absorption; Furnace			3113 B		3113 B	3113 B–99 3113 B-04, B-10	
	Axially Viewed Inductively Coupled Plasma-Atomic Emission Spectrometry	200.5, Revision 4.2[25]						

	(AVICP-AES)							
8. Calcium	EDTA titrimetric		D511–93, 03 A D511-09 A	3500–Ca D	3500–Ca B	3500-Ca B	3500–Ca B–97	
	Atomic Absorption; Direct Aspiration		D511–93, 03 B D511-09 B	3111 B		3111 B	3111 B–99	
	Inductively Coupled Plasma	200.7[2]		3120 B	3120 B	3120 B	3120 B–99	
	Ion Chromatography		D6919–03 D6919-09					
	Axially Viewed Inductively Coupled Plasma-Atomic Emission Spectrometry (AVICP-AES)	200.5, Revision 4.2[25]						
9. Chromium	Inductively Coupled Plasma	200.7[2]		3120 B	3120 B	3120 B	3120 B–99	
	ICP-Mass Spectrometry	200.8[2]						
	Atomic Absorption; Platform	200.9[2]						
	Atomic Absorption; Furnace			3113 B		3113 B	3113 B–99 3113 B-04, B-10	
	Axially Viewed Inductively Coupled Plasma-Atomic Emission Spectrometry (AVICP-AES)	200.5, Revision 4.2[25]						
10. Copper	Atomic Absorption; Furnace		D1688–95, 02 C D1688-07 C	3113 B		3113 B	3113 B–99 3113 B-04, B-10	

	Atomic Absorption; Direct Aspiration		D1688–95, 02 A	3111 B		3111 B	3111 B–99	
	Inductively Coupled Plasma	200.7[2]		3120 B	3120 B	3120 B	3120 B–99	
	ICP-Mass spectrometry	200.8[2]						
	Atomic Absorption; Platform	200.9[2]						
	Axially Viewed Inductively Coupled Plasma-Atomic Emission Spectrometry (AVICP-AES)	200.5, Revision 4.2[25]						
11. Conductivity	Conductance		D1125–95 (Reapproved 1999) A	2510 B	2510 B	2510 B	2510 B–97	
12. Cyanide	Manual Distillation followed by		D2036–98 A D2036-06 A	4500–CN^-C	4500–CN^-C			
	Spectrophotometric, Amenable		D2036–98 B D2036-06 B	4500–CN^-G	4500–CN^-G	4500–CN^-G	4500–CN^-G–99	
	Spectro-photometric Manual		D2036–98 A D2036-06 A	4500–CN^-E	4500–CN^-E	4500–CN^-E	4500–CN^-E–99	I–3300–85[5]
	Spectro-photometric Semi-automated	335.4[6]						
	Selective Electrode			4500–CN^-F	4500–CN^-F	4500-CN^-F	4500–CN^-F–99	
	UV, Distillation, Spectrophotometric							Kelada–01[16]

	Micro Distillation, Flow Injection, Spectrophotometric							QuikChem 10–204–00–1–X[17]
	Ligand Exchange and Amperometry[20]		D6888–04					OIA–1677, DW[19]
	Gas Chromatography /Mass Spectrometry Headspace							MME355.01[26]
13. Fluoride	Ion Chromatography	300.0[6], 300.1[18]	D4327–97, 03	4110 B	4110 B		4110 B–00	
	Manual Distill.; Color. SPADNS			4500–F⁻B, D	4500–F⁻B, D	4500–F⁻B, D	4500–F⁻B, D–97	
	Manual Electrode		D1179–93, 99 B D1179-04, 10 B	4500–F⁻C	4500–F⁻C	4500–F⁻C	4500–F⁻C–97	
	Automated Electrode							380–75WE ~~11~~11
	Automated Alizarin			4500–F⁻E	4500–F⁻E	4500–F⁻E	4500–F⁻E–97	129–71W[11]
	Capillary Ion Electrophoresis							D6508, Rev. 2[22]
	Arsenite-Free Colorimetric SPADNS							Hach SPADNS 2 Method 10225[27]
14. Lead	Atomic Absorption; Furnace		D3559–96, 03 D D3559-08 D	3113 B		3113 B	3113 B–99 3113 B-04, B-10	
	ICP–Mass spectrometry	200.8[2]						
	Atomic Absorption; Platform	200.9[2]						

	Differential Pulse Anodic Stripping Voltametry							Method 1001[15]
	Axially Viewed Inductively Coupled Plasma-Atomic Emission Spectrometry (AVICP-AES)	200.5, Revision 4.2[25]						
15. Magnesium	Atomic Absorption		D511–93, 03 B D511-09 B	3111 B		3111 B	3111 B–99	
	ICP	200.7[2]		3120 B	3120 B	3120 B	3120 B–99	
	Complexation Titrimetric Methods		D511–93, 03 A D511-09 A	3500–Mg E	3500–Mg B	3500–Mg B	3500–Mg B–97	
	Ion Chromatography		D6919–03 D6919-09					
	Axially Viewed Inductively Coupled Plasma-Atomic Emission Spectrometry (AVICP-AES)	200.5, Revision 4.2[25]						
16. Mercury	Manual, Cold Vapor	245.1[2]	D3223–97, 02	3112 B		3112 B	3112 B–99 3112 B-09	
	Automated, Cold Vapor	245.2[1]						
	ICP–Mass Spectrometry	200.8[2]						
17. Nickel	Inductively Coupled Plasma	200.7[2]		3120 B	3120 B	3120 B	3120 B–99	
	ICP–Mass Spectrometry	200.8[2]						
	Atomic Absorption; Platform	200.9[2]						

	Atomic Absorption; Direct			3111 B		3111 B	3111 B–99	
	Atomic Absorption; Furnace			3113 B		3113 B	3113 B–99 3113 B-04	
	Axially Viewed Inductively Coupled Plasma-Atomic Emission Spectrometry (AVICP-AES)	200.5, Revision 4.2[25]						
18. Nitrate	Ion Chromatography	300.0[6]300.1[18]	D4327–97, 03 D4327-11	4110 B	4110 B	41410 B	4110 B–00	B–1011[8]
	Automated Cadmium Reduction	353.2[6]	D3867–90 A	4500–NO_3^-F	4500–NO_3^-F	4500–NO_3^-F	4500–NO_3^-F–00	
	Ion Selective Electrode			4500–NO_3^-D	4500–NO_3^-D	4500–NO_3^-D	4500–NO_3^-D–00	601[7]
	Manual Cadmium Reduction		D3867–90 B	4500–NO_3^-E	4500–NO_3^-E	4500–NO_3^-E	4500–NO_3^-E–00	
	Capillary Ion Electrophoresis							D6508, Rev. 2[22]
	Reduction/Colorimetric							Systea Easy (1-Reagent)[28]
19. Nitrite	Ion Chromatography	300.0[6]300.1[18]	D4327–97, 03	4110 B	4110 B	4110 B	4110 B–00	B–1011[8]
	Automated Cadmium Reduction	353.2[6]	D3867–90 A	4500–NO_3^-F	4500–NO_3^-F	4500–NO_3^-F	4500–NO_3^-F–00	
	Manual Cadmium Reduction		D3867–90 B	4500–NO_3^-E	4500–NO_3^-E	4500–NO_3^-E	4500–NO_3^-E–00	
	Spectrophotometric			4500–NO_2^-B	4500–NO_2^-B	4500–NO_2^-B	4500–NO_2^-B–00	

	Capillary Ion Electrophoresis							D6508, Rev. 2[22]
	Reduction/Colorimetric							Systea Easy (1-Reagent)[28]
20. Ortho-phosphate[12]	Colorimetric, Automated, Ascorbic Acid	365.1[6]		4500–P F	4500–P F	4500–P F	4500-P F-99	
	Colorimetric, ascorbic acid, single reagent		D515–88 A	4500–P E	4500–P E	4500–P E		
	Colorimetric Phosphomolybdate;							I–1601–85[5]
	Automated-segmented flow;							I–2601–90[5]
	Automated Discrete							I–2598–85[5]
	Ion Chromatography	300.0[6] 300.1[18]	D4327–97, 03	4110 B	4110 B		4110 B–00	
	Capillary Ion Electrophoresis							D6508, Rev. 2[22]
21. pH	Electrometric	150.1, 150.2[1]	D1293–95, 99 D1293-12	4500–H^+B	4500–H^+B	4500–H^+B	4500–H^+B–00	
22. Selenium	Hydride-Atomic Absorption		D3859–98, 03 A	3114 B		3114 B	3114 B–97 3114 B-09	
	ICP–Mass Spectrometry	200.8[2]						
	Atomic Absorption; Platform	200.9[2]						
	Atomic Absorption; Furnace		D3859–98, 03 B D3859-08 B	3113 B		3113 B	3113 B–99 3113 B-04	
	Axially Viewed Inductively Coupled Plasma-Atomic	200.5, Revision 4.2[25]						

	Emission Spectrometry (AVICP-AES)							
23. Silica	Colorimetric, Molybdate Blue							I–1700–85[5]
	Automated-segmented Flow							I–2700–85[5]
	Colorimetric		D859–94, 00 D859-05, 10					
	Molybdosilicate			4500–Si D	4500–SiO2 C	4500–SiO2 C	4500–SiO2 C–97	
	Heteropoly blue			4500–Si E	4500–SiO2 D	4500–SiO2 D	4500–SiO2 D–97	
	Automated for Molybdate-reactive Silica			4500–Si F	4500–SiO2 E	4500–SiO2 E	4500–SiO2 E–97	
	Inductively Coupled Plasma	200.7[2]		3120 B	3120 B	3120 B	3120 B–99	
	Axially Viewed Inductively Coupled Plasma-Atomic Emission Spectrometry (AVICP-AES)	200.5, Revision 4.2[25]						
24. Sodium	Inductively Coupled Plasma	200.7[2]						
	Atomic Absorption; Direct Aspiration			3111 B		3111 B	3111 B–99	
	Ion Chromatography		D6919–03 D6919-09					
	Axially Viewed Inductively Coupled Plasma-	200.5, Revision 4.2[25]						

	Atomic Emission Spectrometry (AVICP-AES)							
25. Temperature	Thermometric			2550	2550	2550	2550–00 2550-10	
26. Thallium	ICP–Mass Spectrometry	200.8[2]						
	Atomic Absorption; Platform	200.9[2]						
27. Turbidity	Nephelometric	180.1[23]		2130 B		2130 B	2130 B-01	
	Great Lakes Instrument							Instruments Method 2[24]
	Laser Nephelometry (on-line)							Mitchell M5271[29]
	LED Nephelometry (on-line)							Mitchell M5331[30]
	LED Nephelometry (on-line)							AMI Turbiwell[31]
	LED Nephelometry (portable)							Orion AQ4500[32]
	Hach FilterTrak							10133[33]

Copies of the documents may be obtained from the sources listed below. Information regarding obtaining these documents can be obtained from the Safe Drinking Water Hotline at 800–426–4791, or go to: *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html* .

[1]"Methods for Chemical Analysis of Water and Wastes," EPA/600/4–79/020, March 1983. Available at NTIS, PB84–128677.

[2]"Methods for the Determination of Metals in Environmental Samples—Supplement I," EPA/600/R–94/111, May 1994. Available at NTIS, PB95–125472.

[3] *Annual Book of ASTM Standards,* 1994, 1996, 1999, or 2003, Vols. 11.01 and 11.02, ASTM International; any year containing the cited version of the method may be used. The previous versions of D1688–95A, D1688–95C (copper), D3559–95D (lead), D1293–95 (pH), D1125–91A (conductivity) and D859–94 (silica) are also approved. These previous versions D1688–90A, C; D3559–90D, D1293–84, D1125–91A and D859–88, respectively are located in the *Annual Book of ASTM Standards,* 1994, Vol. 11.01. Copies may be obtained from ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428.

[4] *Standard Methods for the Examination of Water and Wastewater*, 18th edition (1992), 19th edition (1995), ~~or~~ 20th edition (1998), 21st edition (2005), or 22nd edition (2012). American Public Health Association, 1015 Fifteenth Street, NW., Washington, DC 20005. The cited methods published in any of these three editions may be used, except that the versions of 3111 B, 3111 D, 3113 B and 3114 B in the 20th edition may not be used.

[5]Method I–2601–90, Methods for Analysis by the U.S. Geological Survey National Water Quality Laboratory—Determination of Inorganic and Organic Constituents in Water and Fluvial Sediment, Open File Report 93–125, 1993; For Methods I–1030–85; I–1601–85; I–1700–85; I–2598–85; I–2700–85; and I–3300–85 See Techniques of Water Resources Investigation of the U.S. Geological Survey, Book 5, Chapter A–1, 3rd edition., 1989; Available from Information Services, U.S. Geological Survey, Federal Center, Box 25286, Denver, CO 80225–0425.

[6]"Methods for the Determination of Inorganic Substances in Environmental Samples," EPA/600/R–93/100, August 1993. Available at NTIS, PB94–120821.

[7]The procedure shall be done in accordance with the Technical Bulletin 601 " Standard Method of Test for Nitrate in Drinking Water," July 1994, PN 221890–001, Analytical Technology, Inc. Copies may be obtained from ATI Orion, 529 Main Street, Boston, MA 02129.

[8]Method B–1011, "Waters Test Method for Determination of Nitrite/Nitrate in Water Using Single Column Ion Chromatography," August 1987. Copies may be obtained from Waters Corporation, Technical Services Division, 34 Maple Street, Milford, MA 01757, Telephone: 508/482–2131, Fax: 508/482–3625.

[9]Method 100.1, "Analytical Method For Determination of Asbestos Fibers in Water," EPA/600/4–83/043, EPA, September 1983. Available at NTIS, PB83–260471.

[10]Method 100.2, "Determination of Asbestos Structure Over 10-μm In Length In Drinking Water," EPA/600/R–94/134, June 1994. Available at NTIS, PB94–201902.

[11]Industrial Method No. 129–71W, "Fluoride in Water and Wastewater," December 1972, and Method No. 380–75WE, "Fluoride in Water and Wastewater," February 1976, Technicon Industrial Systems. Copies may be obtained from Bran & Luebbe, 1025 Busch Parkway, Buffalo Grove, IL 60089.

[12]Unfiltered, no digestion or hydrolysis.

[13]Because MDLs reported in EPA Methods 200.7 and 200.9 were determined using a 2x preconcentration step during sample digestion, MDLs determined when samples are analyzed by direct analysis (*i.e.* , no sample digestion) will be higher. For direct analysis of cadmium and arsenic by Method 200.7, and arsenic by Method 3120 B, sample preconcentration using pneumatic nebulization may be required to achieve lower detection limits. Preconcentration may also be required for direct analysis of antimony, lead, and thallium by Method 200.9; antimony and lead by Method 3113 B; and lead by Method D3559–90D, unless multiple in-furnace depositions are made.

[14]If ultrasonic nebulization is used in the determination of arsenic by Methods 200.7, 200.8, or SM 3120 B, the arsenic must be in the pentavalent state to provide uniform signal response. For Methods 200.7 and 3120 B, both samples and standards must be diluted in the same mixed acid matrix concentration of nitric and hydrochloric acid with the addition of 100 μL of 30% hydrogen peroxide per 100 mL of solution. For direct analysis of arsenic with Method 200.8 using ultrasonic nebulization, samples and standards must contain 1 mg/L of sodium hypochlorite.

[15]The description for Method Number 1001 for lead is available from Palintest, LTD, 21 Kenton Lands Road, P.O. Box 18395, Erlanger, KY 41018. Or from the Hach Company, P.O. Box 389, Loveland, CO 80539.

[16]The description for the Kelada-01 Method, "Kelada Automated Test Methods for Total Cyanide, Acid Dissociable Cyanide, And Thiocyanate," Revision 1.2, August 2001, EPA # 821–B–01–009 for cyanide is available from the National Technical Information Service (NTIS), PB 2001–108275, 5285 Port Royal Road, Springfield, VA 22161. The toll free telephone number is 800–553–6847.

Note: A 450–W UV lamp may be used in this method instead of the 550–W lamp specified if it provides performance within the quality control (QC) acceptance criteria of the method in a given instrument. Similarly,

modified flow cell configurations and flow conditions may be used in the method, provided that the QC acceptance criteria are met.

[17]The description for the QuikChem Method 10–204–00–1–X, "Digestion and distillation of total cyanide in drinking and wastewaters using MICRO DIST and determination of cyanide by flow injection analysis," Revision 2.1, November 30, 2000, for cyanide is available from Lachat Instruments, 6645 W. Mill Rd., Milwaukee, WI 53218. Telephone: 414–358–4200.

[18]"Methods for the Determination of Organic and Inorganic Compounds in Drinking Water," Vol. 1, EPA 815–R–00–014, August 2000. Available at NTIS, PB2000–106981.

[19]Method OIA–1677, DW "Available Cyanide by Flow Injection, Ligand Exchange, and Amperometry," January 2004. EPA–821–R–04–001, Available from ALPKEM, A Division of OI Analytical, P.O. Box 9010, College Station, TX 77842–9010.

[20]Sulfide levels below those detected using lead acetate paper may produce positive method interferences. Test samples using a more sensitive sulfide method to determine if a sulfide interference is present, and treat samples accordingly.

[21]Standard Methods Online are available at *http://www.standardmethods.org* . The year in which each method was approved by the Standard Methods Committee is designated by the last two digits in the method number. The methods listed are the only online versions that may be used.

[22]Method D6508, Rev. 2, "Test Method for Determination of Dissolved Inorganic Anions in Aqueous Matrices Using Capillary Ion Electrophoresis and Chromate Electrolyte," available from Waters Corp, 34 Maple St, Milford, MA, 01757, Telephone: 508/482–2131, Fax: 508/482–3625.

[23] "Methods for the Determination of Inorganic Substances in Environmental Samples", EPA−600/R−93−100, August 1993, Available at NTIS, PB94−121811

[24] GLI Method 2, "Turbidity", November 2, 1992, Great Lakes Instruments, Inc., 8855 North 55th Street, Milwaukee, Wisconsin 53223.

[25] EPA Method 200.5 Revision 4.2. "Determination of Trace Elements in Drinking Water by Axially Viewed Inductively Coupled Plasma-Atomic Emission Spectrometry." 2003. EPA/600/R-06/115. Available at http:/www.epa.gov/nerlcwww/ordmeth.htm.

[26]Method ME355.01, Revision 1.0. "Determination of Cyanide in Drinking Water by GC/MS Headspace." May 26, 2009. Available at http://www.nemi.gov or from James Eaton , H & E Testing Laboratory, 221 State Stret, Augusta, ME 04333. (207) 287-2727

[27]Hach Company Method, "Hach Company SPADNS 2 (Arsenite –free) Fluoride Method 10255-Spectrophotometric Measurement of Fluoride in Water and Wastewater," January 2011. 5600 Lindbergh Drive, P.O. Box 389, Loveland , Colorado 80539. Available at http://www.hach.com.

[28]Systea Easy (1-Reagent). "Systea Easy (1-Reagent) Nitrate Method," February 4, 2009. Available at http://www.nemi.gov or from Systea Scientific, LLC., 900 JorieBlvd., Suite 35, Oak Brook, IL 60523.

[29]Mitchell Method M5271, Revision 1.1." Determination of Turbidity by Laser Nephelometry," March 5, 2009. Available at http://www.nemi.gov or from Leck Mitchell, PhD, PE, 656 Independence Valley Dr., Grand Junction, CO 81507.

[30]Mitchell Method M5331, Revision 1.1. "Determination of Turbidity by LED Nephelometry," March 5, 2009. Available at http://www.nemi.gov or from Leck Mitchell, PhD, PE, 656 Independence Valley Dr., Grand Junction, CO 81507.

[31]AMI Turbiwell. "Continuous Measurement of turbidity Using a SWAN AMI Turbiwell Turbidimeter," August 2009. Available at http://www.nemi.gov or from Markus Bernasconi, SWAN Analytische Instrumente AG, Studbachstrasse 13, CH-8340 Hinwil, Switzerland.

[32]Orion Method AQ4500, Revision 1.0. "Determination of Turbidity by LED Nephelometry," May 8, 2009. Available at http://www.nemi.gov or from Thermo Scientific, 166 Cummings Center, Beverly, MA 0`9`5, http://www.thermo.com.

[33]Hach FilterTrak Method 10133, "Determination of Turbidity by Laser Nephelomemtry," January 2000, Revision 2.0. Available from Hach Co., P.O. Box389, Loveland, CO 80539-0389.

SECTION 23. NR 809.113 (2) Table B is amended to read:

TABLE B

Sample Preservation, Containers and Maximum Holding Times for Inorganic Parameters

Parameter	Preservation[1]	Container[2]	Holding Time[3]
METALS			
Aluminum	HNO_3	P or G	6 months
Antimony	HNO_3	P or G	6 months
Arsenic	~~Conc.~~HNO_3 ~~to pH<2~~	P or G	6 months
Barium	HNO_3	P or G	6 months
Beryllium	HNO_3	P or G	6 months
Cadmium	HNO_3	P or G	6 months
Copper	HNO_3	P or G	6 months
Chromium	HNO_3	P or G	6 months
Iron	HNO_3	P or G	6 months
Lead	HNO_3	P or G	6 months
Manganese	HNO_3	P or G	6 months
Mercury	HNO_3	P or G	28 days
Nickel	HNO_3	P or G	6 months
Selenium	HNO_3	P or G	6 months
Silver	HNO_3	P or G	6 months
Thallium	HNO_3	P or G	6 months
Zinc	HNO_3	P or G	6 months
OTHER PARAMETERS			
Asbestos	Cool, 4°C	P or G	48 hours[4]
Bromate	Ethylenediamine	P or G	28 days
Chloride	None	P or G	28 days
Chlorite	50 mg/L EDA, Cool to 4°C	P or G	14 days
Color	Cool, 4°C	P or G	48 hours
Cyanide	Cool, 4°C+NaOH to pH>12	P or G	14 days
Fluoride	None	P or G	28 days
Foaming Agents	Cool, 4°C	P or G	48 hours
Nitrate (as N)			
Chlorinated	Cool, 4°C	P or G	14 days
Non-Chlorinated	Cool, 4°C	P or G	48 hours[5]
Nitrite (as N)	Cool, 4°C	P or G	48 hours

Nitrate + Nitrite[6]	Conc. H_2SO_4 to pH<2	P or G	~~14~~28 days
Odor	Cool, 4°C	G	48 hours
pH	None	P or G	Analyze Immediately
Solids (TDS)	Cool, 4°C	P or G	7 days
Sulfate	Cool, 4°C	P or G	28 days
Turbidity	Cool, 4°C	P or G	48 hours

~~[1] If HNO_3 cannot be used because of shipping restrictions, sample may be initially preserved by icing and immediately shipping it to the laboratory. Upon receipt in the laboratory, the sample must be acidified with conc HNO_3 to pH < 2. At time of analysis, sample container should be thoroughly rinsed with 1:1 HNO_3; washings should be added to sample.~~[1] For cyanide determinations samples must be adjusted with sodium hydroxide to pH 12 at the time of collection. When chilling is indicated the sample must be shipped and stored at 4 °C or less. Acidification of nitrate or metals samples may be done with a concentrated acid or a dilute (50% by volume) solution of the applicable concentrated acid. Acidification of samples for metals analysis is encouraged and allowed at the laboratory rather than at the time of sampling provided the shipping time and other instructions in Section 8.3 of EPA Methods 200.7 or 200.8 or 200.9 are followed.

[2] P = plastic, hard or soft. G = glass, hard or soft.
[3] In all cases, samples should be analyzed as soon after collection as possible.
[4] Instructions for containers, preservation procedures and holding times as specified in Method 100.2 must be adhered to for all compliance analyses including those conducted with Method 101.1.
[5] If the sample is chlorinated, the holding time for an unacidified sample kept at 4°C is extended to 14 days.
[6] Nitrate-nitrite refers to a measurement of total nitrate.

SECTION 24. NR 809.113 (4) Table C is amended to read:

TABLE C

Detection Limits for Inorganic Contaminants

Contaminant	MCL (mg/l)	Methodology	Detection limit (mg/l)
Antimony	0.006	Atomic Absorption; Furnace	0.003
		Atomic Absorption; Platform	0.0008[5]
		ICP-Mass Spectrometry	0.0004
		Hydride-Atomic Absorption	0.001
Arsenic	0.010	Atomic Absorption; Furnace	0.001
		Atomic Absorption; Platform—Stabilized Temperature	0.0005[6]
		Atomic Absorption; Gaseous Hydride	0.001
		ICP-Mass Spectrometry	0.0014[7]
Asbestos	7 MFL[1]	Transmission Electron Microscopy	0.01 MFL
Barium	2	Atomic Absorption; furnace technique	0.002
		Atomic Absorption; direct aspiration	0.1

		Inductively Coupled Plasma	0.002 (0.001)
Beryllium	0.004	Atomic Absorption; Furnace	0.0002
		Atomic Absorption; Platform	0.00002[5]
		Inductively Coupled Plasma[2]	0.0003
		ICP-Mass Spectrometry	0.0003
Cadmium	0.005	Atomic Absorption; furnace technique	0.0001
		Inductively Coupled Plasma	0.001
Chromium	0.1	Atomic Absorption; furnace technique	0.001
		Inductively Coupled Plasma	0.007 (0.001)
Cyanide	0.2	Distillation, Spectrophotometric[3]	0.02
		Distillation, Automated, Spectrophotometric[3]	0.005
		Distillation, Amenable, Spectrophotometric[4]	0.02
		Distillation, Selective Electrode[3, 4]	0.05
		UV, Distillation, Spectrophotometric[9]	0.0005
		Micro Distillation, Flow Injection, Spectrophotometric[3]	0.0006
		Ligand Exchange with Amperometry[4]	0.0005
Mercury	0.002	Manual Cold Vapor Technique	0.0002
		Automated Cold Vapor Technique	0.0002
Nickel	~~X1~~0.1	Atomic Absorption; Furnace	0.001
		Atomic Absorption; Platform	0.0006[5]
		Inductively Coupled Plasma[2]	0.005
		ICP-Mass Spectrometry	0.0005
Nitrate	10 (as N)	Manual Cadmium Reduction	0.01
		Automated Hydrazine Reduction	0.01
		Automated Cadmium Reduction	0.05
		Ion Selective Electrode	1
		Ion Chromatography	0.01
		Capillary Ion Electrophoresis	0.076
Nitrite	1 (as N)	Spectrophotometric	0.01
		Automated Cadmium Reduction	0.05
		Manual Cadmium Reduction	0.01
		Ion Chromatography	0.004
		Capillary Ion Electrophoresis	0.103
Selenium	0.05	Atomic Absorption; furnace	0.002
		Atomic Absorption; gaseous hydride	0.002

Thallium	0.002	Atomic Absorption; Furnace	0.001
		Atomic Absorption; Platform	0.0007[5]
		ICP-Mass Spectrometry	0.0003

[1]MFL = million fibers per liter >10 µm.

[2]Using a 2X preconcentration step as noted in Method 200.7. Lower MDLs may be achieved when using a 4X preconcentration.

[3]Screening method for total cyanides.

[4]Measures "free" cyanides when distillation, digestion, or ligand exchange is omitted.

[5]Lower MDLs are reported using stabilized temperature graphite furnace atomic absorption.

[6]The MDL reported for EPA method 200.9 (Atomic Absorption; Platform ~~Stablized~~ Stabilized Temperature) was determined using a 2x concentration step during sample digestion. The MDL determined for samples analyzed using direct analyses (*i.e.* , no sample digestion) will be higher. Using multiple depositions, EPA 200.9 is capable of obtaining MDL of 0.0001 mg/L.

[7]Using selective ion monitoring, EPA Method 200.8 (ICP-MS) is capable of obtaining a MDL of 0.0001 mg/L.

[8]Measures total cyanides when UV-digestor is used, and "free" cyanides when UV-digestor is bypassed.

SECTION 25. NR 809.115 (1) (d)is amended to read:

NR 809.115 (1) (d) Water suppliers for all new public water systems or for public water systems that use a new source of water that begin operation after January 22, 2004 shall demonstrate compliance with the MCLs specified in s. NR 809.11 (2) in accordance with the requirements in this section. The water supplier shall also comply with the initial and routine sampling frequencies specified by the department to ensure a water supplier can demonstrate that the public water supply is in compliance with the MCLs. Routine and increased monitoring frequencies shall be conducted in accordance with the requirements of this section.

SECTION 26. NR 809.115 (2) (f) 2. is amended to read:

NR 809.115 (2) (f) 2. A ~~pubic~~ public water system vulnerable to asbestos contamination due both to its source water supply and corrosion of asbestos-cement pipe shall be sampled once at a tap served by asbestos-cement pipe and under conditions where asbestos contamination is most likely to occur.

SECTION 27. NR 809.115 (3) (intro) and Title, (a), and (b) are amended to read:

NR 809.115 (3) MONITORING FREQUENCY FOR ~~MCLS~~ MCLs OTHER THAN ASBESTOS, NITRATE, AND NITRITE. The water supplier shall conduct monitoring for each community and non-transient, non-community water system to determine compliance with the MCLs specified in s. NR 809.11 (2) for antimony, arsenic, barium, beryllium, cadmium, chromium, cyanide, ~~flouride,~~ mercury, nickel, selenium and thallium at the ~~following~~ frequencies : specified in this subsection. The water supplier shall conduct monitoring for each community water system to determine compliance with the MCL in s. NR 809.11 (2) for fluoride at the frequencies specified in this subsection:

NR 809.115 (3) (a) *Initial monitoring.* New community public water systems or community public water systems with new sources shall demonstrate compliance with the MCLs listed under s. NR 809.11(2) for antimony, arsenic, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, selenium and thallium prior to initiating water service. New non-transient non-community public water systems or non-transient non-community public water systems with new sources shall take one sample for each contaminant listed in s. NR 809.11 (2) beginning with the year the public water system initiates service or the new water source is put into service. If a waiver from cyanide monitoring has been granted under par. (c) cyanide is not required to be sampled for in the initial monitoring.

NR 809.115 (3) (b) *Routine monitoring.* Groundwater sources shall be sampled at each sampling point during each compliance period as determined by the department. Water suppliers for public water systems having surface water sources or combined surface water and groundwater sources shall take one sample annually at each sampling point. If a waiver from cyanide monitoring has been granted under par. (c), cyanide is not required to be sampled for routine monitoring.

SECTION 28. NR 809.117 (1) (f) is amended to read:

NR 809.117 (1) (f) ~~Pubic~~ Public water systems remain out of compliance with the MCLs for nitrate, nitrite, or combined nitrate and nitrite until the results of 4 consecutive quarterly samples ~~are less than~~ do not exceed the MCL. The department may specify alternate means for returning to compliance with the MCLs for nitrate, nitrite, or combined nitrate and nitrite. Alternate compliance agreements shall be in writing.

SECTION 29. NR 809.203 (1) and (2) are amended to read:

NR 809.203 (1) DETECTION LIMITS. Detection as used in this section shall be defined as greater than or equal to the following concentrations for each contaminant:

Contaminant	**Detection Limit (mg/L)**
1. Alachlor	0.0002
2. Aldicarb	0.0005
3. Aldicarb sulfoxide	0.0005
4. Aldicarb sulfone	0.0008
5. Atrazine	0.0001
6. Benzo[a]pyrene	0.00002
7. Carbofuran	0.0009
8. Chlordane	0.0002
9. 2,4-D	0.0001
10. Dalapon	0.001
11. Dibromochloropropane	0.00002
12. Di(2-ethylhexyl)adipate	~~0.006~~0.0006
13. Di(2-ethylhexyl)phthalate	~~0.006~~0.0006
14. Dinoseb	0.0002
15. Diquat	0.0004
16. Endothall	0.009

17. Endrin	0.00001
18. Ethylene dibromide	0.00001
19. Glyphosate	0.006
20. Heptachlor	0.00004
21. Heptachlor epoxide	0.00002
22. Hexachlorobenzene	0.0001
23.Hexachlorocyclopentadiene	0.0001
24. Lindane	0.00002
25. Methoxychlor	0.0001
26. Oxamyl	0.002
27. Picloram	0.0001
28.Polychlorinated biphenyls (PCBs as decachlorobiphenyls)	0.0001
29. Pentachlorophenol	0.00004
30. Simazine	0.00007
31. Toxaphene	0.001
32. 2,3,7,8-TCDD (Dioxin)	0.000000005
33. 2,4,5-TP (Silvex)	0.0002

(2) ANALYTICAL METHODS. Analysis for the synthetic organic contaminants listed in s. NR 809.20 shall be conducted using the methods prescribed in Table ~~C~~ CM.

SECTION 30. NR 809.203 (2) Table C is renumbered Table CM and as renumbered is amended to read:

TABLE ~~C~~ CM
SDWA Approved Methodology for Synthetic Organic Contaminants

Contaminant	EPA Methods[1]	SM[9]	SM Online[10]	ASTM	Other
Regulated Parameters:					
Synthetic Organic Chemicals					
2,3,7,8-TCDD (dioxin)	1613	~~1613~~[1]			
2,4-D [2] (as acids, salts and esters)	515.2, 555, 515.1, 515.3, 515.4			D5317-93, 98 (Reapproved 2003)	
2,4,5-TP [2] (Silvex)	515.2, 555, 515.1, 515.3, 515.4	6640 B,	6640 B-01, B-06[11]	D5317-93, 98 (Reapproved 2003)	

Alachlor	507, 525.2, 525.3[2] 508.1, 505[8], 551.1				
Atrazine [3]	507, 525.2, 525.3 508.1, 505[8], 551.1, 536				Syngenta[4] AG-625
Benzo(a)pyrene	525.2, 525.3, 550, 550.1				
Carbofuran	531.1, 531.2	6610[5]. 6610 B	6610 B-04		
Chlordane	508, 525.2, 525.3, 508.1, 505				
Dalapon	552.1 515.1, 552.2, 515.3, 515.4, 552.3, 557	6640 B	6640 B-01, 06		
Di(2-ethylhexyl)adipate	506, 525.2, 525.3				
Di(2-ethylhexyl)phthalate	506, 525.2, 525.3				
Dibromochloropropane (DBCP)	504.1, 551.1, 524.3[9]				
Dinoseb	515.2, 555, 515.1, 515.3, 515.4	6640 B	6640 B-01, 06		
Diquat	549.2				
Endothall	548.1				
Endrin	508, 525.2, 525.3, 508.1, 505, 551.1				
Ethylene dibromide (EDB)	504.1, 551.1, 524.3[9]				
Glyphosate	547	6651[6] 6651 B	6651 B-01, B-06		
Heptachlor	508, 525.2, 525.3, 508.1, 505, 551.1				
Heptachlor Epoxide	508, 525.2, 525.3, 508.1, 505, 551.1				

Hexachlorobenzene	508, 525.2, 525.3, 508.1, 505, 551.1				
Hexachlorocyclopentadiene	508, 525.2, 525.3, 508.1, 505, 551.1				
Lindane	508, 525.2, 525.3, 508.1, 505, 551.1				
Methoxychlor	508, 525.2, 525.3, 508.1, 505, 551.1				
Oxamyl	531.1, 531.2	6610[5] 6610 B	6610 B-04		
PCBs (as decachlorobiphenyl)	508A[7]				
(as Aroclors)	508.1, 508, 525.2, 525.3, 505				
Pentachlorophenol	515.2, 525.2, 525.3, 555, 515.1, 515.3, 515.4			D5317-93, 98 (Reapproved 2003)	
Picloram [2]	515.2, 555, 515.1, 515.3, 515.4	6640 B	6640 B-01	D5317-93, 98 s(Reapproved 2003)	
Simazine	507, 525.2, 525.3, 523, 536, 508.1, 505[8], 551.1				
Toxaphene	508, 508.1, 525.2, 525.3, 505				
Unregulated Parameters:					
Aldicarb	531.1, 531.2	6610[5] 6610 B	6610 B-04		
Aldicarb sulfone	531.1, 531.2	6610[5] 6610 B	6610 B-04		
Aldicarb Sulfoxide	531.1 , 531.2	6610[5] 6610 B	6610 B-04		

Aldrin	505, 508, 525.2, 525.3, 508.1				
Butachlor	507, 525.2, 525.3				
Carbaryl	531.1, 531.2	6610[5] 6610 B	6610 B-04		
Dicamba	515.1, 555, 515.2, 515.3, 515.4	6640 B	6640 B-01, B-06		
Dieldrin	505, 508, 525.2, 525.3, 508.1				
3-Hydroxcarbofuran	531.1, 531.2	6610[5] 6610 B	6610 B-04		
Methomyl	531.1, 531.2	6610[5] 6610 B	6610 B-04		
Metolachlor	507, 525.2, 525.3, 508.1				
Metribuzin	507, 525.2, 525.3, 508.1				
Propachlor	507, 525.2, 525.3, 508.1				

[1] ~~Method 1613, "Tetra- through Octa- Chlorinated Dioxins and Furans by Isotope Dilution. HRGC/HRMS, EPA-821/B-94/005, October 1994, Method 1613 can be used to measure 2, 3, 7, 8-TCDD (dioxin). This method is available from National Technical Information Service, NTIS PB95-104774~~EPA methods are available at http://epa.gov/safewater/methods/analyticalmethods_ogwdw.html.

[2] Accurate determination of the chlorinated esters requires hydrolysis of the sample as described in EPA Methods 515.1, 515.2, 515.3, 515.4 and 555 and ASTM Method D 5317-93, 98 (Reapproved 2003).

[3] Substitution of the detector specified in Method 505, 507, 508, or 508.1 for the purpose of achieving lower detection limits is allowed as follows: Either an electron capture or nitrogen phosphorus detector may be used provided all regulatory requirements and quality control criteria are met.

[4] This method may not be used for the analysis of atrazine in any system where chlorine dioxide is used for drinking water treatment. In samples from all other systems, any result generated by Method AG-625 that is greater than one-half the maximum contaminant level (MCL) (in other words, greater than 0.0015 mg/L or 1.5 µg/L) must be confirmed using another approved method for this contaminant and should use additional volume of the original sample collected for compliance monitoring. In instances where a result from Method AG-625 triggers such confirmatory testing, the confirmatory result is to be used to determine compliance.

[5] Method 6610 shall be followed in accordance with the "Supplement to the 18th edition of Standard Methods for the Examination of Water and Wastewater", 1994, or with the 19th edition of Standard Methods for the Examination of Water and Wastewater, 1995, APHA; either publication may be used. This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552 (a) and 1 CFR Part 51. Copies may be obtained from the American Public Health Association, 1015 Fifteenth Street, N.W., Washington, D.C., 2005. Other required analytical test procedures germane to conducting these analyses are contained in Technical Notes on Drinking Water Methods, EPA/600/R-94-173, October 1994, NTIS PB95-104766.

[6] Method 6651 shall be followed in accordance with the "Standard Methods for the Examination of Water and Wastewater", 18th Edition, 1992, and 19th edition, 1995, American Public Health Association. This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552 (a) and 1 CFR Part 51. Copies may be obtained from the American Public Health Association, 1015 Fifteenth Street, N.W., Washington, D.C., 20005.

[7] Method 505 or 508 can be used as a screen for PCBs. Method 508A shall be used to quantitate PCBs as decachlorobiphenyl if detected in Method 505 or 508. PCBs are qualitatively identified as Aroclors and measured for compliance purposes as decachlorobiphenyl

[8] A nitrogen–phosphorus detector should be substituted for the electron capture detector in Method 505 (or a different approved method should be used) to determine alachlor, atrazine and ~~simizine~~ simazine, if lower detection limits are required.

[9] ~~- EPA Method 524.3, Version 1.0. "Measurement of Purgeable Organic Compounds in Water by Capillary Column Gas Chromatography/Mass Spectrometry," June 2009. EPA 815-B-09-009. http://epa.gov/safewater/methods/analyticalmethods_ogwdw.html.~~ *Standard Methods for the Examination of Water and Wastewater*, 18th edition (1992), 19th edition (1995), 20th edition (1998), 21st edition (2005), 22nd edition (*2012*). Available from American Public Health Association, 800 I Street, NW., Washington, DC, 20001-3710.

[10] Standard Methods online are available at http://www.standardmethods.org. The year in which each method was approved by the Standard Methods Committee is designated by the last two digits in the method number. The methods listed are the only online versions that may be used.

SECTION 31.NR 809.203(3)(a) is amended to read:

(3) PCB ANALYSIS. Analysis for PCBs shall be conducted as follows:

(a) Each water supplier that monitors for PCBs shall have each sample analyzed by a laboratory certified under ch. NR 149 using Method 505, 508, 508.1 or 525.2 as specified in Table ~~C~~ CM and must achieve the required detection limits in this subsection.

SECTION 32.NR 809.203 (4) (intro) is amended to read:

NR 809.203 (4) SAMPLE COLLECTION. Samples shall be collected using containers and preservatives, and meeting the holding times specified in Table D. When an approved method that is not included in Table D is used to analyze samples, samples shall be collected using containers and preservatives, and meeting the holding times specified in the approved method. In all cases, samples should be analyzed as soon after collection as possible.

SECTION 33. NR 809.203 (4) Table D is repealed and recreated to read:

Table D

Sample Preservation, Holding Times, and Sampling Containers for Organic Parameters

Method	Preservative[2]	Sample Holding Time	Extract Holding Time and Storage Conditions	Suggested Sample Size	Type of Container
502.2[2]	Sodium Thiosulfate or Ascorbic Acid, 4ºC, HCl pH<2	14 days	NA	40 – 120 mL	Glass with PTFE[1] Lined Septum
504.1	Sodium Thiosulfate, Cool, 4ºC	14 days	4ºC, 24 hours	40 mL	Glass with PTFE[1] Lined Septum
505	Sodium Thiosulfate, Cool, 4ºC	14 days (7 days for Heptachlor)	4ºC, 24 hours	40 mL	Glass with PTFE[1] Lined Septum
506	Sodium Thiosulfate, Cool, 4ºC, Dark	14 days	4ºC, Dark 14 days	1 L	Amber Glass with PTFE[1] Lined Septum
507	Sodium Thiosulfate, Cool, 4ºC, Dark	14 days (See method for exceptions.)	4ºC, Dark 14 days	I L	Amber Glass with PTFE[1] Lined Cap
508	Sodium Thiosulfate, Cool, 4ºC, Dark	7 days (See method for exceptions.)	4ºC, Dark 14 days	I L	Glass with PTFE[1] Lined Cap
508A	Cool, 4ºC	14 days	30 days	I L	Amber Glass with PTFE[1] Lined Cap
508.1	Sodium Sulfite, HCl pH<2, Cool, 4ºC	14 days (See method for exceptions.)	30 days	I L	Glass with PTFE Lined Cap
515.1	Sodium Thiosulfate, Cool, 4ºC, Dark	14 days	4ºC, Dark 28 days	I L	Amber Glass with PTFE[1] Lined Cap
515.2	Sodium Thiosulfate or Sodium Sulfite, HCl pH<2 Cool, 4ºC, Dark	14 Days	≤4ºC, Dark 14 Days	I L	Amber Glass with PTFE[1] Lined Cap
515.3	Sodium Thiosulfate, Cool, 4ºC, Dark	14 days	≤4ºC, Dark 14 Days	50 mL	Amber Glass with PTFE[1] Lined Cap
515.4	Sodium Sulfite, Dark, Cool ≤10ºC for First 48 hrs, ≤6ºC thereafter	14 days	≤0ºC 21 days	40 mL	Amber Glass with PTFE[1] Lined Cap
524.2[2]	Ascorbic Acid or Sodium	14 days	NA	40 – 120 mL	Glass with PTFE[1] Lined

	Thiosulfate, HCl pH<2, Cool 4ºC				Septum
524.3[2]	Maleic and Ascorbic Acids pH<2, ≤10ºC for first 48 hrs., ≤6 thereafter. If only analyzing TTHM: Sodium Thiosulfate pH<2, ≤10ºC for first 48 hrs., ≤6 thereafter	14 days	NA	40 – 120 mL	Amber Glass with PTFE[1] Lined Septum
525.2	Sodium Sulfite, Dark, Cool, 4ºC, HCl pH<2	14 days (See method for exceptions)	≤4ºC 30 days	1 L	Amber Glass with PTFE[1] Lined Cap
531.1, 6610	Sodium Thiosulfate, Monochloroacetic Acid pH<3, Cool, 4ºC	Cool 4ºC from collection until storage at laboratory; <-10ºC at the laboratory; 28 days	NA	60 mL	Glass with PTFE[1] Lined Septum
531.2	Sodium Thiosulfate, Potassium Dihydrogen Citrate Buffer pH<4, Dark ≤10ºC for first 48 hrs., ≤6ºC thereafter	28 days	NA	40 mL	Glass with PTFE[1] Lined Septum
547	Sodium Thiosulfate, Cool, 4ºC	14 days; 18 mos. Frozen	NA	60 mL	Glass with PTFE[1] Lined Septum
548.1	Sodium Thiosulfate, HCl pH 1.5 -2 if High Biological Activity, Cool, 4ºC, Dark	7 days	≤4ºC 14 days	≥ 250 mL	Amber Glass with PTFE[1] Lined Septum
549.2	Sodium Thiosulfate, H_2SO_4 pH<2, if Biologically Active, Cool 4ºC, Dark	7 days	21 days	≥ 250 mL	High Density Amber Plastic or Silanized Amber Glass
550	Sodium	7 days	4ºC, Dark	1 L	Amber Glass

	Thiosulfate, Cool, 4ºC, HCl pH<2		30 days		with PTFE[1] Lined Septum
550.1	Sodium Thiosulfate, Cool, 4ºC, HCl pH<2	7 days	4ºC, Dark 40 days	1 L	Amber Glass with PTFE[1] Lined Septum
551.1	Sodium Sulfite, Ammonium Chloride, pH 4.5-5.0 with Phosphate Buffer, Cool, 4ºC	14 days	14 days <-10ºC	≥ 40 mL	Glass with PTFE[1] Lined Septum
552.1	Ammonium Chloride, Cool, 4ºC, Dark	28 days	≤4ºC, Dark 48 hrs.	250 mL	Amber Glass with PTFE[1] Lined Cap
552.2	Ammonium Chloride, Cool, 4ºC, Dark	14 days	≤4ºC, Dark, 7 days ≤-10ºC, 14 days	50 mL	Amber Glass with PTFE[1] Lined Cap
555	Sodium Sulfite, HCl pH ≤2, Dark, Cool, 4ºC	14 days	NA	≥ 100 mL	Glass wit PTFE[1] Lined Cap
1613	Sodium Thiosulfate, Cool, 0 - 4ºC, Dark	1 year	40 days recommended	1 L	Amber Glass with PTFE[1] Lined Cap

[1] Polytetrafluoroethylene. Teflon is a brand name of a PTFE product.[2] Chlorinated samples need to be dechlorinated at the time of collection. Samplers should follow the dechlorinating procedures contained in the approved methods.

SECTION 34. NR 809.205 (2) (a), NR 809.205 (3), NR 809.205 (4)(intro) and (a) are amended to read:

NR 809.205 (2) (a) *Initial monitoring.* Water suppliers for new community public water systems or for community public water systems with new sources shall demonstrate compliance with the MCLs listed under s. NR 809.20 for synthetic organic contaminants prior to initiating water service. Water suppliers for each community and non-transient, non-community water system shall take 4 consecutive quarterly samples for each contaminant listed in s. NR 809.20 beginning with the year the public water system ~~initiate~~initiates water service, or a new source is put into service, and every compliance period after that unless they meet the requirements of par (b). ~~After demonstrating compliance with the MCLs and beginning with the initial compliance period, water suppliers for new groundwater systems or for groundwater systems with new sources may receive a complete waiver from the department for dioxin, PCBs, and benzo(a)pyrene sampling.~~

NR 809.205 (3) WAIVER REQUEST. Water suppliers for ~~each~~community and non-transient non-community ~~groundwater system~~ systems or groundwater systems with new sources may apply to the department for a waiver from the requirements of sub. (2)~~(b)~~ for the contaminants listed under s. NR 809.20. A water supplier shall reapply for a waiver for each compliance period.

NR 809.205 (4) WAIVER EVALUATION. The department may grant a waiver from the requirements of sub. (2) after evaluating the ~~following~~factors listed in this subsection:

(a) *Waiver evaluation when the department determines a contaminant has not been used.* ~~Knowledge~~ The department may grant a waiver as described in subds. 1. to 3. of this paragraph when the department determines a contaminant has not been used based on ~~of~~ a system's previous use information, including transport, storage or disposal of the contaminant within the watershed or zone of influence of the public water system, or the results of analysis of a system's water source. ~~If a determination by the department reveals no previous use of the contaminant within the zone of influence of the well, a waiver may be granted.~~

SECTION 35. NR 809.205 (4) (a) 1., 2., and 3. are created to read:

NR 809.205 (4) (a) 1. When a groundwater system can demonstrate that a synthetic organic contaminant has not been used, the department may grant waivers for the contaminant based on results of the analysis of a minimum of one sample at the water source, except as noted in subd. 2. of this paragraph.

NR 809.205 (4) (a) 2. The department may grant waivers to ground water systems for dioxin, PCBs, di(2-ethylhexyl)adipate, and di(2-ethylhexyl)phthalate without requiring analysis of the water source, if the system can demonstrate lack of use of the contaminant.

NR 809.205 (4) (a) 3. The department may grant waivers for benzo(a)pyrene to ground water, surface water, and GWUDI systems without requiring analysis of the water source, if the system can demonstrate a lack of use of coal tar to line or seal a system's tanks or pipes.

SECTION 36. NR 809.205 (4) (b), and NR 809.205 (5) are amended to read:

NR 809.205 (4) (b) *Waiver evaluation when a contaminant has been used or its use is unknown.* If previous use of the contaminant is unknown or it has been used previously, then all of the following factors shall be used to determine whether a waiver is granted:

NR 809.205 (5) WAIVER CONDITIONS AND ~~VULNERABILITY~~MONITORING ASSESSMENTS. As a condition of the waiver under sub (4), the water supplier for a groundwater system shall update the ~~vulnerability~~monitoring assessment considering the factors listed in sub. (4). Based on this ~~vulnerability~~monitoring assessment, the department shall reconfirm that the public water system is non-vulnerable. If the department does not make this reconfirmation within 3 years of the initial determination or each subsequent determination, then the waiver is invalidated and the public water system is required to sample during each compliance period as specified in sub. (2)(b).

SECTION 37. NR 809.207 (2) is amended to read:

NR 809.207 (2) DETECTION OF SYNTHETIC CONTAMINANTS NOT LISTED IN S. NR 809.20(1). Any detection of a ~~volatile~~synthetic organic contaminant not listed in s. NR 809.20(1) shall be reported to the department with the other monitoring reports required under this section. The laboratory shall indicate whether any detected synthetic organic contaminant not listed in s. NR 809.20(1) has been confirmed or tentatively identified, and when a numerical result is reported, whether the result is quantitative or an estimate.

SECTION 38. NR 809.243 (1), (2) and (5) are amended to read:

NR 809.243 (1) DETECTION LIMITS. For the purposes of this section, detection is defined as >0.0005 mg/l, except for vinyl chloride for which detection is defined as >~~0.00030~~0.0002 mg/L.

NR 809.243 (2) Table E.

TABLE E
SDWA Approved Methodology for Volatile Organic Contaminants

Contaminant	**EPA Methods** [1,2]
Regulated Parameters:	
Benzene	502.2, 524.2, 524.3
Carbon tetrachloride	502.2, 524.2, 551.1,524.3
Chlorobenzene	502.2, 524.2, 524.3
1,2-Dichlorobenzene	502.2, 524.2, 524.3
1,4-Dichlorobenzene	502.2, 524.2, 524.3
1,2-Dichloroethane	502.2, 524.2, 524.3
cis-Dichloroethylene	502.2, 524.2, 524.3
trans-Dichloroethylene	502.2, 524.2, 524.3
Dichloromethane	502.2, 524.2, 524.3
1,2-Dichloropropane	502.2, 524.2, 524.3
Ethylbenzene	502.2, 524.2, 524.3
Styrene	502.2, 524.2, 524.3
Tetrachloroethylene	502.2, 524.2, 551.1, 524.3
1,1,1-Trichloroethane	502.2, 524.2, 551.1, 524.3
Trichloroethylene	502.2, 524.2, 551.1, 524.3
Toluene	502.2, 524.2, 524.3
1,2,4-Trichlorobenzene	502.2, 524.2, 524.3
1,1-Dichloroethylene	502.2, 524.2, 524.3
1,1,2-Trichloroethane	502.2, 524.2, 551.1, 524.3
Vinyl chloride	502.2, 524.2, 524.3
Xylenes (total)	502.2, 524.2, 524.3

[1] Procedures for Methods 502.2 ~~, 504.1, 505, 506, 507, 508, 508.1, 515.2,~~ 524.2 ~~525.2, 531.1,~~and 551.1 ~~and 552.2~~ are in Methods for the Determination of Organic Compounds in Drinking Water Supplement III, EPA/600/R-95-131, August 1995. ~~Methods 508A and 515.1 are in "Methods for the Determination of Organic Compounds in Drinking Water", EPA-600/4-88/039, December 1988, Revised, July 1991. Methods 547, 550, and 550.1 are in "Methods for the Determination of Organic Compounds in Drinking Water, Supplement I", EPA-600/4-90/020, July 1990. Methods 548.1, 549.1and 555 are in "Methods for the Determination of Organic Compounds in Drinking Water, Supplement II", EPA-600/R-92-129, August 1992.~~ These documents are available from the National Technical Information Service (NTIS), U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161~~as publications NTIS PB91-231480, PB91-146027, and PB92-207703.~~ The toll free number is 1-800-553-6847. ~~EPA Methods 515.3 and 549.2 are available from U.S. Environmental Protection Agency, National Exposure Research Laboratory (NERL) Cincinnati, 26 West Martin Luther King Drive, Cincinnati, OH 45268. ASTM Method D 5317-~~

~~93 is available in the Annual Book of ASTM Standards, 1996, Vol. 11.02, American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428, or in any edition published after 1993.~~

[2] EPA Method 524.3, Version 1.0. "Measurement of Purgeable Organic Compounds in Water by Capillary Column Gas Chromatography/Mass Spectrometry," June 2009. EPA 815–B–09–009. Available at http://epa.gov/safewater/methods/analyticalmethods_ogwdw.html.

NR 809.243 (5) LABORATORY EVALUATION. Each certified laboratory shall determine the method detection limit (MDL) at which it is capable of detecting VOCs as defined in federal law under 40 CFR, Part 136, Appendix B. The maximum acceptable MDL is 0.0005 mg/L for all VOCs except vinyl chloride, which is 0.0002 mg/L. ~~These are the detection concentrations for purposes of this section.~~

SECTION 39.NR 809.245 (2) (a) and (b), NR 809.245 (5), NR 809.245 (7)(b), and NR 809.245 (9)(c) are amended to read:

NR 809.245 (2) (a) *Initial monitoring* 1. Water suppliers for new community public water systems or community public water systems with new sources shall demonstrate compliance with the MCLs listed under s. NR 809.24 for volatile organic contaminants prior to initiating water service.

NR 809.245 (2) (b) *Routine monitoring.* Each water supplier for a community or a non-transient non-community water system shall take annual samples for VOC contaminants ~~VOC contaminant~~specified in s. NR 809.24.

:

NR 809.245 (5) WAIVER CONDITIONS AND ~~VULNERABILITY~~MONITORING ASSESSMENTS. A water supplier for a groundwater system shall take one sample at each entry point during the time the waiver is effective. As a condition of the waiver under sub (4), water supplier for the groundwater system shall update the ~~vulnerability~~monitoring assessment considering the factors listed in sub. (4). Based on this ~~vulnerability~~monitoring assessment, the department shall reconfirm that the public water system is non-vulnerable. If the department does not make this reconfirmation within 3 years of the initial determination or each subsequent determination, then the waiver is invalidated and the public water system is required to sample during each compliance period as specified in sub. (2)(b).

NR 809.245 (7) (b) Water suppliers for public water systems which exceed a MCL listed in s. NR 809.24 shall be monitored quarterly. After a minimum of 4 quarterly samples that show ~~that~~ the public water system is back in compliance and the department determines the public water system is reliably and consistently below the MCL as specified in s. NR 809.247(1), the water supplier for the public water system shall be monitored at the frequency specified in sub. (6)(c).

NR 809.245 (9) (c) If the concentration in the composite sample is greater than ~~0.0003~~0.0002 mg/L for vinyl chloride or 0.0005mg/L for any other contaminant listed under s. NR 809.24, then a follow-up sample shall be taken and analyzed for each contaminant detected within 14 days from each entry point included in the composite.

SECTION 40. NR 809.247 (1) (c) and (e) are amended to read:

NR 809.247 (1) (c) If monitoring is conducted annually, or less frequently, the public water system is out of compliance if the level of a contaminant at any entry point is greater than the MCL. Compliance shall be based on

the concentration of this sample or the average value of this sample and the confirmation sample, if the department required a confirmation sample.

NR 809.247 (1) (e) ~~Any contaminant listed in s. NR 809.24 that is detected shall be quantified~~Any concentration reported at or above the method detection limit for any contaminant listed in s. NR 809.24 shall be used in determining the averages in pars. (b) and (c). Any ~~sample~~concentration reported below the ~~reported~~method detection limit shall be calculated at zero for the purposes of determining the averages in pars. (b) and (c).

SECTION 41. NR 809.247 (4) is amended to read:

NR 809.247 (4) USE OF ANALYTICAL RESULTS. The department may determine compliance or initiate enforcement action based upon analytical results and other information compiled by ~~their~~its sanctioned representatives and agencies.

SECTION 42. NR 809.25 (1) (g) is amended to read:

NR 809.25 (1) (g) Analysis under this section shall be conducted by a laboratory certified under ch. NR 149 using EPA methods 502.2, 524.2, 524.3, 551.1 for contaminants listed in par (e) and EPA methods listed in s. NR 809.203, Table ~~C~~CM for contaminants listed in par. (f).

SECTION 43. NR 809.30 (1) is repealed and recreated to read:

NR 809.30 (1) MCL FOR *ESCHERICHIA COLI (E. COLI)*

(a) 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.

(b) For purposes of public notification requirements in subch. VIII, this is a violation that may pose an acute risk to health.

SECTION 44.NR 809.30 (2) is repealed.

SECTION 45. NR 809.30 (3) is renumbered NR 809.30 (2) and as renumbered is amended to read:

NR 809.30 (2) DETERMINING COMPLIANCE. The water supplier for a public water system shall determine compliance with the MCL for ~~total coliforms~~*E. coli* in ~~subs~~sub. (1)~~and (2)~~ for each monitoring period in which the public water system is required to monitor for total coliforms.

SECTION 46. NR 809.30 (4) is renumbered NRA 809.30 (3) and as renumbered is amended to read:

NR 809.30 (3) CORRECTIVE ACTION. The water supplier shall initiate action to identify the cause of the positive bacteriological sample results and to eliminate potential health hazards which may exist in the public water system when monitoring pursuant to sub. (1) ~~or (2)~~shows the presence of any coliform organisms.

SECTION 47. NR 809.30 (5) is renumbered NR 809.30 (4).

SECTION 48. NR 809.30 (6) (intro.), (a) and (c) is renumbered NR 809.30 (5) (intro.), (a) and (c) and as renumbered is amended to read:

NR 809.30 (5) BEST AVAILABLE TREATMENT TECHNIQUES. Any of the following are best technology, treatment techniques, or other means available for achieving compliance with the maximum contaminant level for ~~total coliforms~~ *E. coli* ~~in subs~~in sub. (1)~~and (2)~~:

(a) Protection of wells from ~~coliform~~fecal contamination by appropriate placement and construction.

(c) Proper maintenance of the distribution system including appropriate pipe replacement and repair procedures, main flushing programs, proper operation and maintenance of storage tanks and reservoirs, cross connection control, and continual maintenance of positive water pressure in all parts of the distribution system.

SECTION 49. NR 809.30 (6) is created to read:

NR 809.30 (6) Affordability determination. The EPA identifies the technology, treatment techniques, or other means available identified in sub. (5) as affordable technology, treatment techniques, or other means available to systems serving 10,000 or fewer people for achieving compliance with the maximum contaminant level for *E. coli* in sub. (1).

SECTION 50. NR 809.31 (1) (title) and (1) (a) are amended to read:

NR 809.31 Distribution system microbiological contaminant monitoring requirements. **(1)** ROUTINE AND REDUCED MONITORING.

NR 809.31 (1) (a) *Monitoring site plans.* Water ~~Suppliers~~suppliers for all public water systems shall collect total coliform samples at sites which are representative of water throughout the distribution system according to a written sample siting plan. These plans are subject to department review and revision. Monitoring required by this section and s. NR 809.32 may take place at a customer's premise, dedicated sampling station, or other designated compliance sampling location. Routine and repeat sample sites and any sampling points necessary to meet the requirements of s. NR 809.325 shall be identified in the sampling plan.

SECTION 51. NR 809.31 (1) (ag) and (ar) are created to read:

NR 809.31 (1) (ag) *Action after total coliform positive sample*. Following any total coliform-positive sample taken under the provisions of this section, water suppliers shall comply with the repeat monitoring requirements and *E. coli* analytical requirements in subs. (2) and (5).

NR 809.31 (1) (ar) *Transition from total coliform rule to revised total coliform rule*.

1. Water suppliers of public water systems, including seasonal systems, shall continue to monitor according to the total coliform monitoring schedules that were in effect on March 31, 2016, unless any of the conditions for increased monitoring in sub. (3)(a) are triggered on or after April 1, 2016, or unless otherwise directed by the department.

2. Beginning April 1, 2016, the department shall perform a special monitoring evaluation during each sanitary survey to review the status of each public water system, including the distribution system, to determine whether the public water system is on an appropriate monitoring schedule. After the department has performed the special

monitoring evaluation during each sanitary survey, the department may modify the public water system's monitoring schedule, as necessary, or it may allow the public water system to stay on its existing monitoring schedule, consistent with the provisions of this section. The department may not allow public water systems to begin less frequent monitoring under the special monitoring evaluation unless the public water system has already met the applicable criteria for less frequent monitoring in this section. For seasonal systems on quarterly or annual monitoring, this evaluation shall include review of the approved sample siting plan, which shall designate the time period(s) for monitoring based on site-specific considerations (e.g., during periods of highest demand or highest vulnerability to contamination). The water supplier of the seasonal system shall collect compliance samples during these time periods.

SECTION 52. NR 809.31 (1) (b) 1. is renumbered NR 809. 31 (1) (b), and as renumbered is amended to read:

NR 809.31 (1) (b) *Monitoring frequency at community water sytems.* Water suppliers for community water systems shall take water samples for coliform determination at regular intervals, and in a number proportionate to the population served by the ~~public~~community water system. Water suppliers required to collect multiple samples each month shall sample at geographically representative locations and on dates evenly spaced during the month. ~~Except as specified in subd. 2., the~~The minimum sampling frequency shall be as set forth in the following table:

Population served:	**Minimum number of samples per month**
25 to 1,000 (Not serving a municipality)	1
25 to 1,000 (Serving a municipality)	2
1,001 to 2,500	2
2,501 to 3,300	3
3,301 to 4,100	4
4,101 to 4,900	5
4,901 to 5,800	6
5,801 to 6,700	7
6,701 to 7,600	8
7,601 to 8,500	9
8,501 to 12,900	10
12,901 to 17,200	15
17,201 to 21,500	20
21,501 to 25,000	25
25,001 to 33,000	30
33,001 to 41,000	40
41,001 to 50,000	50
50,001 to 59,000	60
59,001 to 70,000	70
70,001 to 83,000	80
83,001 to 96,000	90

96,001 to 130,000	100
130,001 to 220,000	120
220,001 to 320,000	150
320,001 to 450,000	180
450,001 to 600,000	210
600,001 to 780,000	240
780,001 to 970,000	270
970,001 to 1,230,000	300
1,230,001 to 1,520,000	330
1,520,001 to 1,850,000	360
1,850,001 to 2,270,000	390
2,270,001 to 3,020,000	420
3,020,001 to 3,960,000	450
3,960,001 or more	480

SECTION 53. NR 809.31 (1) (b) 2, and (c)are repealed.

SECTION 54. NR 809.31 (1) (d) is renumbered NR809.31 (1) (c) and as renumbered is amended to read:

NR 809.31 (1) (c) *Monitoring frequency for coliforms at non-community water systems.* The monitoring frequency for total coliforms for non-community water systems, notwithstanding~~par. (c)~~ pars. (dg) and (dr), is as follows:

1. A water supplier for a non-community water system using only groundwater and serving 1,000 persons per day or fewer shall monitor each calendar quarter that the ~~public~~ non-community water system provides water to the public~~., except that the department may reduce the monitoring frequency, in writing, if a sanitary survey shows that the public water system is free of sanitary defects. The monitoring frequency shall not be reduced to less than once per year~~.

2. A water supplier for a non-community water system using only groundwater and serving on average more than 1,000 persons per day for any month shall monitor at the same frequency as a like-sized community water system, as specified in par. (b) ~~1.~~, except that the department may reduce the monitoring frequency, in writing, for any month the average daily population served is 1,000 persons or fewer per day.

3. A water supplier for a non-community water system using surface water, or groundwater under the direct influence of surface water as defined in s. NR 809.04(~~38~~40), in total or in part, shall monitor at the same frequency as a like-sized municipal community water system, as specified in par. (b)~~1~~. ~~The~~GWUDI public water ~~systems~~systems shall begin monitoring at this frequency beginning 6 months after the department determines that the groundwater source is under the direct influence of surface water.

4. The water supplier for a transient non-community water system serving a school ~~or a non-transient non-community water system~~ shall sample for coliform bacteria in each calendar quarter during which the public water system provides water to the public, unless the department, on the basis of sub. (2m) ~~a sanitary survey conducted in the past 5 years, or other factors~~, determines that more frequent monitoring is appropriate. Transient non-community systems serving schools are not eligible for reduced monitoring under par. (dg) of this section.

SECTION 55. NR 809.31 (1) (de), (dg) and (dr) are created to read:

NR 809.31 (1) (de) *Annual site visits.* Beginning no later than calendar year 2017, transient non-community systems on annual monitoring, including seasonal systems, shall have an initial and recurring annual site visit by the department that is equivalent to a Level 2 assessment or an annual voluntary Level 2 assessment that meets the criteria in s. NR 809.313(2) to remain on annual monitoring. The periodic required sanitary survey may be used to meet the requirement for an annual site visit for the year in which the sanitary survey was completed. Transient non-community systems with little-to-no distribution system may, at the discretion of the department, be exempt from the annual site visit requirements in this section, and still remain on annual monitoring.

(dg) *Criteria for annual monitoring at transient non-community systems.* Beginning April 1, 2016, the department may reduce the monitoring frequency for a well-operated transient non-community ground water system serving 1,000 persons per day or fewer from quarterly routine monitoring to no less than annual monitoring, if the transient non-community system demonstrates that it meets the criteria for reduced monitoring in subds. 1. to 4., except for a transient non-community system that has been on increased monitoring under the provisions of sub. (2m). A transient non-community system on increased monitoring under sub. (2m) shall meet the provisions of sub. (2m)(b) to go to quarterly monitoring and shall meet the provisions of sub. (2m)(c) to go to annual monitoring.

1. The transient non-community system has a clean compliance history for a minimum of 12 months.

2. The most recent sanitary survey shows that the transient non-community system is free of sanitary defects or has corrected all identified sanitary defects, has a protected water source, and meets approved construction standards.

3. The department has conducted an annual site visit within the last 12 months and the water supplier has corrected all identified sanitary defects. A Level 2 assessment that meets the criteria in s. NR 809.313(2) may be substituted for the department annual site visit. 4. The public water system is not a school.

(dr) *Seasonal system requirements.*

1. Beginning April 1, 2016, all water suppliers of seasonal systems shall demonstrate completion of a department-approved start-up procedure, which may include a requirement for start-up sampling prior to serving water to the public.

2. Seasonal systems shall be monitored every month that they are in operation unless they meet the criteria in subpars. a. to c. to be eligible for monitoring less frequently than monthly beginning April 1, 2016, except as provided under par. (ar).

a. Seasonal systems that are monitored less frequently than monthly shall have an approved sample siting plan that designates the time period for monitoring based on site-specific considerations (e.g., during periods of highest demand or highest vulnerability to contamination). Water suppliers of seasonal systems shall collect compliance samples during this time period.

b. To be eligible for quarterly monitoring, seasonal systems shall meet the criteria in sub. (2m)(b).

c. To be eligible for annual monitoring, seasonal systems shall meet the criteria under sub. (2m)(c).

3. The department may exempt any seasonal system from some or all of the requirements for seasonal systems if the entire distribution system remains pressurized during the entire period that the seasonal system is not operating, except that seasonal systems that are monitored less frequently than monthly shall be monitored during the vulnerable period as designated by the department.

SECTION 56. NR 809.31 (1) (e) is amended to read:

NR 809.31 (1) (e) *Sample collection time intervals.* Water suppliers for public water systems shall collect samples at regular time intervals throughout the month, except that for public water systems which use only

groundwater and serve ~~1,000~~4,900 persons or fewer, may collect all required samples on a single day if the samples are taken from different sites.

SECTION 57. NR 809.31 (1) (eg) and (er) are created to read:

NR 809.31 (1) (eg) *Minimum required number of samples after MCL violation or treatment technique trigger.* Water suppliers shall take at least the minimum number of required samples even if the public water system has had an *E. coli* MCL violation or has exceeded the coliform treatment technique triggers in s. NR 809.313.

NR 809.31 (1) (er) *Sampling in excess of requirements.* Water suppliers may conduct more compliance monitoring than is required by this section to investigate potential problems in the distribution system and use monitoring as a tool to assist in uncovering problems. Water suppliers may take more than the minimum number of required routine samples and shall include the results in calculating whether the coliform treatment technique trigger in s. NR 809.313 has been exceeded only if the samples are taken in accordance with the existing sample siting plan and are representative of water throughout the distribution system.

SECTION 58. NR 809.31 (1) (f) and (g) are amended to read:

NR 809.31 (1) (f) *Special purpose samples*. Special purpose samples such as those taken to determine whether disinfection practices are sufficient following pipe placement, replacement or repair, may not be used to determine ~~compliance with the MCL for total coliforms in s. NR 809.30~~ whether the coliform treatment technique trigger has been exceeded. Repeat samples taken pursuant to sub. (2) are not considered special purpose samples, and shall be used to determine whether the coliform treatment technique trigger has been exceeded ~~compliance with the MCL for total coliforms in s. NR 809.30.~~

NR 809.31 (1) (g) *Analyses required after turbidity exceedances at selected systems.* A water supplier for a public water system that uses surface water or groundwater under the direct influence of surface water as defined in s. NR 809.04 (~~38~~40), and does not provide filtration in compliance with s. NR 810.29, shall collect at least one sample in the distribution system near the first service connection each day one or more turbidity measurements of the source water obtained as specified in s. NR 810.38 (1) (c), exceeds 1 NTU. This sample shall be analyzed for the presence of total coliforms. The water supplier shall collect this coliform 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. Results from this coliform monitoring shall be used to determine whether the coliform treatment technique trigger has been exceeded in s. NR 809.313. ~~included in determining compliance with the MCL for total coliforms in s. NR 809.30.~~

SECTION 59. NR 809.31 (2) (a) and (b)(intro.) are amended to read:

NR 809.31 (2) REPEAT MONITORING. (a) If a routine sample is total coliform-positive, the water supplier for a public water system shall collect a set of repeat samples within 24 hours of being notified of the positive result. ~~For a public water system which is required to collect more than one routine sample per month a~~The water supplier shall collect no fewer than 3 repeat samples for each total coliform-positive sample found. ~~For a public water system which is required to collect one routine sample per month or fewer a water supplier shall collect no fewer than 4 repeat samples for each total coliform-positive sample found.~~ The department may extend the 24-hour limit on a case-by-case basis if the water supplier has a logistical problem that is beyond its control in collecting the repeat samples within 24 hours. In the case of an extension, the department ~~will~~ shall specify how much time the water supplier has to collect repeat samples. The department may not waive the requirement for a water supplier to collect repeat samples in this par. or pars. (b) to (c).

NR 809.31 (2) (b) (intro.) ~~The~~ Unless the provisions of subds.1. and 2. are met, the water supplier shall 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 5 service connections upstream and at least one repeat sample at a tap within five service connections downstream of the original sampling site. ~~If a total sample at a tap within 5 service connections upstream and at least one repeat sample at a coliform-positive sample is at the end of the distribution system, or one service conecction away from the end of the distribution system, the department may waive the location requirement to collect at least one repeat sample upstream or downstream of the original sampling site.~~ 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 water supplier shall take all required repeat samples. However, the department 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. Except as provided in subd. 2., public water systems required to conduct triggered source water monitoring under s. NR 809.325 shall take ground water source samples in addition to repeat samples required under this par.

SECTION 60. NR 809.31 (2) (b) 1., 2. and 3. are created to read:

NR 809.31 (2) (b) 1. A water supplier may propose repeat monitoring locations to the department that the water supplier believes to be representative of a pathway for contamination of the distribution system. A water supplier may elect to specify either alternative fixed locations or criteria for selecting repeat sampling sites on a situational basis in a standard operating procedure (SOP) in its sample siting plan. The water supplier shall design its SOP to focus the repeat samples at locations that best verify and determine the extent of potential contamination of the distribution system area based on specific situations. The department may modify the SOP or require alternative monitoring locations as needed.

NR 809.31 (2) (b) 2. A water supplier of a ground water system serving 1,000 or fewer people may propose repeat sampling locations to the department that differentiate potential source water and distribution system contamination (e.g., by sampling at entry points to the distribution system). A water supplier of a ground water system with a single well required to conduct triggered source water monitoring may, with written department approval, take one of the repeat samples at the monitoring location required for triggered source water monitoring under s. NR 809.325 if the water supplier demonstrates to the department's satisfaction that the sample siting plan remains representative of water quality in the distribution system. If approved by the department, the water supplier may use that dual purpose sample result to meet the monitoring requirements in both s. NR 809.325 and this section.

a. If a dual purpose repeat sample taken at the monitoring location required for triggered source water monitoring is *E. coli*-positive, the public water system has violated the *E. coli* MCL and shall also comply with s. NR 809.325(2)(e). If a water supplier takes more than one repeat sample at the monitoring location required for triggered source water monitoring, the water supplier may reduce the number of additional source water samples required under s. NR 809.325(2)(e) by the number of repeat samples taken at that location that were not *E. coli*-positive.

b. If a water supplier takes more than one repeat sample at the monitoring location required for triggered source water monitoring under s. NR 809.325(2). and more than one repeat sample is *E. coli*-positive, the public water system has violated the *E. coli* MCL and shall comply with s. NR 809.327.

c. If all repeat samples taken at the monitoring location required for triggered source water monitoring are *E. coli*-negative and a repeat sample taken at a monitoring location other than the one required for triggered source water monitoring is *E. coli*-positive, the public water system has violated the *E. coli* MCL, but is not required to comply with s. NR 809.325(2)(e).

3. The department may review, revise, and approve, as appropriate, repeat sampling proposed by water suppliers under subds. 1. and 2.. The water supplier shall demonstrate that the sample siting plan remains representative of the

water quality in the distribution system. The department may determine that monitoring at the entry point to the distribution system, especially at ground water systems without disinfection is effective to differentiate between potential source water and distribution system problems.

SECTION 61. NR 809.31 (2) (c), (d), and (e) are amended to read:

NR 809.31 (2) (c) ~~For a groundwater system serving 1000 or fewer people, that takes 4 repeat samples under par (a), the water supplier~~ Water suppliers at ground water systems may use a repeat sample, taken at the source or all of the sources serving the location of each routine positive sample, to meet the requirements of both this paragraph and s. NR 809.325(2)(d). In cases where more than one source serves the location of the routine positive sample or samples, repeat samples shall be taken from each of the sources to satisfy the requirements of this paragraph and s. NR 809.325(2)(d).

NR 809 31 (2) (d) The water supplier shall collect all repeat samples on the same day, except that the department may allow a water supplier for a public water system with a single service connection to collect the required set of repeat samples over a 4~~3~~-day period or to collect a larger volume repeat sample in one or more sample containers of any size, as long as the total volume collected is at least ~~400 ml, or~~ 300~~ml~~ mL~~for public water systems where water suppliers are reqired to collect more than one routine sample per month~~.

NR 809.31 (2) (e) If one or more repeat samples in the set is total coliform-positive, the water supplier shall collect an additional set of repeat samples in the manner specified in pars. (a) to (d). The additional set of samples shall be collected within 24 hours after the water supplier is notified of the positive result, unless the department extends the limit as provided in par. (a). The water supplier shall repeat this process until either total coliforms are not detected in one complete set of repeat samples or the water supplier determines that the ~~MCL for total coliforms in s. NR 809.30~~ coliform treatment technique trigger specified in s. NR 809.313 has been exceeded and the water supplier notifies the department as specified in s. NR 809.80 (2). If a trigger identified in s. NR 809.313 is exceeded as a result of a routine sample being total coliform-positive, water suppliers are required to conduct only one round of repeat monitoring for each total coliform-positive routine sample.

SECTION 62. NR 809.31 (2) (f) (intro) is repealed and recreated to read:

NR 809.31 (2)(f) (intro.) Water suppliers collecting samples on a quarterly or annual frequency shall conduct additional routine monitoring the month following one or more total coliform-positive samples regardless of whether the positive samples resulted in a Level 1 treatment technique trigger. Water suppliers shall collect at least three routine samples during the next month, after consultation with the department, except that the department may waive this requirement if the conditions of subds. 1., 2. or 3. of this paragraph are met. Water suppliers may either collect samples at regular time intervals throughout the month or may collect all required routine samples on a single day if samples are taken from different sites. Water suppliers shall use the results of additional routine samples in coliform treatment technique trigger calculations under s. NR 809.313(1).

SECTION 63. NR 809.31 (2) (f) 1. and 2. are amended to read:

NR 809.31 (2) (f) 1. The department may waive the requirement to collect ~~5~~3 routine samples during the next month the public water system provides water to the public if the department performs a site visit before the end of the next month the public water system provides water to the public. Although a sanitary survey need not be performed, the site visit shall be sufficiently detailed to allow the department to determine whether additional monitoring or any corrective action is needed. The department may not approve an employee of the public water system to perform this site visit, even if the employee is an agent approved by the department to perform sanitary

surveys.

NR 809.31 (2) (f) 2. The department may waive the requirement to collect ~~5~~3 routine samples during the next month the public water system provides water to the public if the department has determined why the sample was total coliform positive and establishes that the water supplier has corrected the problem or will correct the problem before the end of the next month the public water system serves water to the public. In this case, the decision to waive the following month's additional monitoring requirement will be documented in writing, signed by a qualified department official, and made available to the public. The written documentation shall describe the specific cause of the total coliform positive sample and what action the water supplier has taken or will take to correct this problem. ~~The requirement to collect 5 routine samples during the next month the public water system provides water to the public shall not be waived solely on the grounds that all repeat samples are total coliform-negative. The water supplier shall still collect at least one routine sample before the end of the next month the public water system serves water to the public and use it to determine compliance with the MCL for total coliforms in s. NR 809.30, unless the department has determined that the water supplier corrected the contamination problem before the water supplier collected the set of repeat samples required in pars. (a) to (e) and all repeat samples were total coliform-negative.~~

SECTION 64. NR 809.31 (2) (f) 3. is created to read:

NR 809.31 (2) (f) 3. The requirement to collect 3 routine samples during the next month the public water system provides water to the public shall not be waived solely on the grounds that all repeat samples are total coliform-negative. The water supplier shall collect at least one routine sample before the end of the next month the public water system serves water to the public and use it to determine compliance with the treatment technique trigger for total coliforms in s. NR 809.31, unless the department has determined that the water supplier corrected the contamination problem before the water supplier collected the set of repeat samples required in pars. (a) to (e) and all repeat samples were total coliform negative.

SECTION 65. NR 809.31 (2) (h) is amended to read:

NR 809.31 (2) (h) Results of all routine and repeat samples not invalidated by the department shall be included in determining ~~compliance with the MCL for total coliforms in s. NR 809.30 and the minimum routine requirements of this section~~ whether any coliform treatment technique triggers specified in s. NR 809.313 have been exceeded. If any trigger has been exceeded, water suppliers shall complete assessments as required in s. NR 809.313.

SECTION 66. NR 809.31 (2m) is created to read:

NR 809.31 (2m) INCREASED MONITORING

(a) *Increased monitoring requirements for public water systems on quarterly or annual monitoring*. Except as specified in pars. (d) and (e), water suppliers at public water systems on quarterly or annual monitoring that experience any of the events identified in subds. 1. to 4. shall begin monthly monitoring the month following the event. A water supplier at a public water system on annual monitoring that experiences the event identified in subd. 5. shall begin quarterly monitoring the quarter following the event. The water supplier shall continue monthly or quarterly monitoring until the requirements in par. (b) for quarterly monitoring or par. (c) for annual monitoring are met. A public water system on monthly monitoring for reasons other than those identified in subds. 1. to 4. is not considered to be on increased monitoring for the purposes of pars. (b) and (c).

1. The public water system triggers a Level 2 assessment or two Level 1 assessments under the provisions of s. NR 809.313 in a rolling 12-month period.

2. The public water system has an *E. coli* MCL violation.

3. The public water system has a coliform treatment technique violation.

4. The public water system has two coliform monitoring violations in a rolling 12-month period, or is a non-community public water system and has one coliform monitoring violation and one Level 1 assessment under the provisions of s. NR 809.313 in a rolling 12-month period for a public water system on quarterly monitoring.

5. The public water system has one coliform monitoring violation for a public water system on annual monitoring.

For transient non-community public water systems, the department may elect to not count monitoring violations under sub. (9) if the missed sample is collected no later than the end of the monitoring period following the monitoring period in which the sample was missed. The water supplier shall collect the make-up sample in a different week than the routine sample for that monitoring period and shall collect the sample as soon as possible during the monitoring period, except that this is not allowed under par. (c). This authority does not affect the provisions of sub. (9) and s. NR 809.312(2).

(b) *Requirements for public water systems on increased monitoring to return to quarterly monitoring*. The department may reduce the monitoring frequency for a public water system on monthly monitoring triggered under par. (a) to quarterly monitoring if the public water system meets the criteria in subds. 1. and 2.

1. Within the last 12 months, the public water system shall have a completed sanitary survey or a site visit by the department or a voluntary Level 2 assessment by a party approved by the department, be free of sanitary defects, and have a protected water source.

2. The public water system shall have a clean compliance history for a minimum of 12 months. For transient non-community public water systems, the department may elect to not count monitoring violations, as allowed under sub. (9), if the missed sample is collected no later than the end of the monitoring period following the monitoring period in which the sample was missed. The water supplier shall collect the make-up sample in a different week than the routine sample for that monitoring period and should collect the sample as soon as possible during the monitoring period, except that this is not allowed under par. (c). This authority does not affect the provisions of sub. (9) and s. NR 809.312(2).

(c) *Requirements for systems on increased monitoring to qualify for annual monitoring*. The department may reduce the monitoring frequency for a transient non-community public water system on increased monitoring under par. (a) if the transient non-community public water system meets the criteria in par. (d) and the criteria in subds. 1. and 2.

1. The department shall conduct an annual site visit and the water supplier shall correct all identified sanitary defects. The water supplier may substitute a voluntary Level 2 assessment conducted by a party approved by the department in place of the department's annual site visit in any given year.

2. The water supplier shall have in place or adopt one or more additional enhancements to the water system barriers to contamination in subds. 2.a. to 2.e.

a. Cross connection control, as approved by the department.

b. Regular visits by a circuit rider approved by the department.

c. Continuous disinfection entering the distribution system and a residual in the distribution system in accordance with criteria specified by the department.

d. Demonstration of maintenance of at least a 4-log removal or inactivation of viruses as provided for under s. NR 809.327(4).

e. Other equivalent enhancements to public water system barriers to contamination as approved by the department.

(d) *Allowance for transient non-community water systems to monitor annually*. The department may allow water suppliers at transient non-community water systems to monitor annually for total coliform and *E. coli* following

conditions that would require increased monitoring under par. (a), provided the water supplier meets the requirements of subds. 1. or 2.

1. For water systems that began operation and conducted coliform monitoring prior to April 1, 2016, the water supplier shall have done all of the following:

a. Completed all required total coliform monitoring in the previous calendar year.

b. Received a sanitary survey within the previous 5 years.

c. Corrected all significant deficiencies or is following a department agreed upon schedule for correcting all significant deficiencies.

d. Received a level 2 assessment within 30 days of any level 1 assessment trigger identified after April 1, 2016, and
corrected all sanitary defects or is following a department agreed upon schedule for correcting all sanitary defects.

e. Completed all repeat sampling requirements associated with any total coliform positive identified after April 1, 2016.

f. Had no *E. coli* MCL exceedances in the previous 2 years.

2. For public water systems that began operation or began coliform monitoring on or after April 1, 2016, the water supplier shall meet all of the requirements of subd. 1 and shall have completed at least one year of coliform monitoring at a frequency of no less than quarterly.

(e) *Allowance for non-transient non-community water systems to monitor quarterly.* The department may allow a water supplier of a non-transient non-community water system to monitor quarterly for total coliform and *E. coli* following conditions that would require increased monitoring under par. (a), provided the water supplier meets the same requirements specified for transient non-community water systems in pars. (d)1.a. to f.

SECTION 67. NR 809.31 (3) (b) 2., 3., and (3) (c) are amended to read:

NR 809.31 (3) (b) 2. The department, on the basis of the results of repeat samples collected as required by ~~sub~~ pars. (2) (a) to (e), determines that the total coliform-positive sample resulted from a domestic or other non-distribution system plumbing problem. A sample may not be invalidated by the department on the basis of repeat sample results alone, unless all repeat samples collected at the same tap as the original total coliform-positive sample are also total coliform-positive, and all repeat samples collected ~~within 5 service connections of the original tap~~ at a location other than the original tap are total coliform-negative. The department will not invalidate a total coliform-positive sample on the basis of repeat samples if all the repeat samples are total coliform-negative, or if the public water system has only one service connection.

NR 809.31 (3) (b) 3. The department has substantial grounds to believe that a total coliform-positive result is due to a circumstance or condition which does not reflect water quality in the distribution system. In this case, the water supplier shall still collect all repeat samples required~~under sub. (2) (a) to (e), and shall use them to determine compliance with the MCL for total coliforms in s. NR 809.30.~~ , and shall use them to determine whether a coliform treatment technique trigger in s. NR 809.313 has been exceeded. To invalidate a total coliform-positive sample under this paragraph, the decision with the rationale for the decision shall be documented in writing, approved by a qualified department official and available to the public for inspection. The document shall state the specific cause of the total coliform-positive sample, and what action the water supplier has taken or will take, to correct this problem. The department may not invalidate a total coliform-positive sample solely on the grounds that all repeat samples are total coliform-negative.

NR 809.31 (3) (c) A laboratory shall invalidate a total coliform sample if the sample produces a turbid culture in the absence of gas production using an analytical method where gas formation is examined for, example, the Multiple Tube Fermentation Technique, produces a turbid culture in the absence of an acid reaction in the Presence-

Absence Coliform Test, or exhibits confluent growth or produces colonies too numerous to count with an analytical method using a membrane filter, for example, Membrane Filter Technique, except that a laboratory shall not invalidate a total coliform sample if total coliforms are detected. If a laboratory invalidates a sample because of such interference, the water supplier shall collect another sample from the same location as the original sample within 24 hours of being notified of the interference problem, and have it analyzed for the presence of total coliforms. The water supplier shall continue to re-sample every 24 hours and have the samples analyzed until a valid result is obtained. The department may waive the 24 hour time limit on a case-by-case basis. Alternatively, the department may implement criteria for waiving the 24-hour sampling time limit to use in lieu of case-by-case extensions.

SECTION 68. NR 809.31 (4), (5), (6), and (6)(note) are amended to read:

NR 809.31 (4) ~~FECAL COLIFORMS OR ESCHERICHIA COLI (E. COLI)~~*E. COLI* TESTING. (a) If any routine or repeat sample is total coliform-positive, the water supplier shall analyze that total coliform-positive culture medium to determine if ~~fecal coliforms are present, except that the water supplier may test for E. Coli in lieu of fecal coliforms~~*E.coli* are present. If ~~fecal coliforms or E. Coli~~*E. coli* are present, the water supplier shall notify the department by the end of the day when the water supplier is notified of the test result, unless the water supplier is notified of the result after normal department business hours, in which case the water supplier shall notify the department before the end of the next business day.

(b) The department may allow a water supplier for a public water system, on a case-by-case basis, to forgo~~fecal coliform or E. Coli~~ *E. coli* testing on a total coliform-positive sample if that water supplier assumes that the total coliform-positive sample is ~~fecal coliform positive or E. Coli~~*E. coli* positive. Accordingly, the water supplier shall notify the department as specified in par. (a) and the provisions of s. NR 809.30 (2) apply.

NR 809.31 (5) GROUNDWATER SYSTEM RAW WATER SAMPLING. In addition to sampling from the distribution system, each water supplier for a public water system providing disinfection shall obtain at least one sample every 3 months from each well prior to the point of~~any chemical addition~~ treatment. For public water systems which have more than one well in the same location and utilizing the same aquifer, the supplier of water may sample only one of the wells each time on an alternating basis. If a well has a high potential for contamination, the department may, in individual cases, require more frequent sampling.

NR 809.31 (6) SURFACE WATER SYSTEM RAW WATER SAMPLING. At surface water facilities, the microbiological quality of the source water shall be monitored sufficiently to maintain quality control of the treatment process. ~~Each plant~~ Water suppliers shall establish a schedule for each plant, subject to review and modification by the department.

Note: Generally, enumeration methods such as membrane filter, numeric enzyme substrate, or 5 tube fermentation tests and heterotrophic plate counts of the raw, settled and finished water on an established schedule will be necessary to meet this requirement.

SECTION 69. NR 809.31 (9) and (10) are created to read:

NR 809.31 (9) MONITORING VIOLATION. (a) Failure to take every required routine or additional routine sample in a compliance period is a monitoring violation.

(b) Failure to analyze for *E. coli* following a total coliform-positive routine sample is a monitoring violation.

NR 809.31 (10) REPORTING VIOLATION. (a) Failure to submit a monitoring report or completed assessment form after a water supplier properly conducts monitoring or assessment in a timely manner is a reporting violation.

(b) Failure to notify the department following an *E. coli*-positive sample as required by sub. (4) in a timely manner is a reporting violation.

(c) Failure to submit certification of completion of department-approved start-up procedure by a seasonal system is a reporting violation.

SECTION 70.NR 809.311 (1) Table F is repealed and recreated to read:

TABLE F
SDWA Approved Methodology for Microbiological Measurements

Organism	Methodology	Method	SM 20th Edition[1]	SM 21st Edition[2]	SM 22nd Edition[3]	SM Online[4]	Other
Total Coliform	Total Coliform Fermentation Technique		9221 B.1, B.2 [5]	9221 C 9221 B.1, B.2 [5]	9221 C	9221 B.1, B.2-99 [5]	
	Presence-Absence (P-A) Coliform Test		9221 D.1, D.2 [6]	9221 D.1, D.2 [6]		9221 D.1, D.2-99 [6]	
	Lactose Fermentation Methods	Standard Total Coliform Fermentation Technique			9221 B.1, B.2		
	Enzyme Substrate Methods	MI Agar					EPA Method 1604[7]
		Colilert®	9223 B [8]	9223 B [8]	9223 B	9223 B-97 [8]	
		Colisure®	9223 B [8, 9]	9223 B [8, 9]	9223 B	9223 B-97 [8, 9]	
		E*Colite® Test [10]					
		Readycult® Test [11]					
		modified Colitag® Test [12]					
Heterotrophic	Pour Plate Method			9215 B	9215 B		

bacteria							
E. coli	Enzyme Substrate Methods	MI Agar					EPA Method 1604[7]
		Colilert®	9223 B[8]	9223 B[8]	9223 B	9223 B-97[8,9]	
		Colisure®	9223 B[8,9]	9223 B[8,9]	9223 B	9223 B-97[8,9]	
		E*Colite® Test[10]					
		Colilert-18	9223 B	9223 B	9223 B	*9223 B-97*	
		Readycult®					Ready cult®[11]
		Colitag					Modified Colitag™[12]
	Escherichia coli Procedure (following Lactose Fermentation Methods)	EC-MUG medium	9221 F.1	9221 F.1	9221 F.1		

[1] *Standard Methods for the Examination of Water and Wastewater*, 20th edition (1998). Available from American Public Health Association, 800 I Street, NW., Washington, DC 20001-3710.

[2] *Standard Methods for the Examination of Water and Wastewater*, 21st edition (2005). Available from American Public Health Association, 800 I Street, NW., Washington, DC 20001-3710.

[3] *Standard Methods for the Examination of Water and Wastewater*, 22nd edition (2012). Available from American Public Health Association, 800 I Street NW., Washington, DC 20001-3710.

[4] Standard Methods Online are available at *http://www.standardmethods.org*. The year in which each method was approved by the Standard Methods Committee is designated by the last two digits in the method number. The methods listed are the only online versions that may be used.

[5] Lactose broth, as commercially available, may be used in lieu of lauryl tryptose broth, if the system conducts at least 25 parallel tests between lactose broth and lauryl tryptose broth using the water normally tested, and if the findings from this comparison demonstrate that the false-positive rate and false-negative rate for total coliforms, using lactose broth, is less than 10 percent.

[6] A multiple tube enumerative format, as described in *Standard Methods for the Examination of Water and Wastewater* 9221, is approved for this method for use in presence-absence determination under this regulation.

[7] EPA Method 1604, EPA 821-R-02-024—"EPA Method 1604: Total Coliforms and *Escherichia coli* in Water by Membrane Filtration Using a Simultaneous Detection Technique (MI Medium)," September 2002, *http://www.epa.gov/nerlcwww/1604sp02.pdf*.

[8] Multiple-tube and multi-well enumerative formats for this method are approved for use in presence-absence determination under this regulation.
[9] Colisure® results may be read after an incubation time of 24 hours.
[10] E*Colite®—"Charm E*Colite™ Presence/Absence Test for Detection and Identification of Coliform Bacteria and *Escherichia coli* in Drinking Water," January 9, 1998.
[11] Readycult®—"Readycult® Coliforms 100 Presence/Absence Test for Detection and Identification of Coliform Bacteria and *Escherichia coli* in Finished Waters," January 2007, Version 1.1. Available from EMD Millipore (division of Merck KGaA, Darmstadt, Germany), 290 Concord Road, Billerica, MA 01821.
[12] modified Colitag®, ATP D05-0035—"Modified Colitag™ Test Method for the Simultaneous Detection of *E. coli* and other Total Coliforms in Water," August 28, 2009. Available at *http://www.nemi.gov* or from CPI, International, 580 Skylane Boulevard, Santa Rosa, CA 95403.

SECTION 71. NR 809.311 (3) (b) 1, NR 809.311 (6), and NR 809.311 (7) are amended to read:

NR 809.311 (3) (b) 1. Total Coliform~~,~~ and ~~E.coli~~*E.coli,* ~~and fecal Coliform~~ samples are not required to ~~shall~~ be preserved by cooling to 10° C, however it is encouraged during transit. ~~sodium~~ Sodium thiosulfate shall be added to the sample container prior to adding water containing chlorine and the holding time shall be 30 hours.

NR 809.311 (6) REQUIRED ~~METHOD~~METHODS. Samples collected to determine compliance with s. NR 809.30(1) shall be analyzed by ~~the~~ enzyme substrate test methods.

NR 809.311 (7) OTHER ~~METHOD~~METHODS. The department may approve, on a case-by-case basis, other methods~~as prescribed in sub. (1), Table F~~ for use in determining compliance with s. NR 809.30(1) if they have been approved by EPA.

SECTION 72. NR 809.312 (1) is amended to read:

NR 809.312 Compliance reporting for microbiological contaminants. (1) MCL VIOLATION REPORTING. When a sample collected under s. NR 809.31(1), (2), (2m), ~~or~~ (4), or (5) exceeds ~~a~~ maximum contaminant level in s. NR 809.30(1) ~~or (2)~~, the water supplier shall report the violation to the department no later than the end of the next business day after it learns of the violation, and shall provide public notice of the violation in accordance with s. NR 809.951.

SECTION 73. NR 809.312 (1m) is created to read:

NR 809.312 (1m) TREATMENT TECHNIQUE VIOLATION REPORTING. The water supplier for a public water system that has violated the treatment technique for coliforms in s. NR 809.313 shall report the violation to the department by no later than the end of the next business day after it learns of the violation, and shall provide public notice of the violation in accordance with s. NR 809.952.
SECTION 74. NR 809.313 and NR 809.314 are created to read:

NR 809.313 Coliform treatment technique triggers and assessment requirements for protection against potential fecal contamination. (1) TREATMENT TECHNIQUE TRIGGERS. Water suppliers of public water systems shall conduct assessments in accordance with sub. (2) after public water systems exceed treatment technique triggers in pars. (a) or (b).

(a) *Level 1 treatment technique triggers*.

1. For public water systems taking 40 or more samples per month, the public water system exceeds 5.0% total coliform-positive samples for the month.

2. For public water systems taking fewer than 40 samples per month, the public water system has two or more total coliform-positive samples in the same month.

3. The water supplier fails to take every required repeat sample after any single total coliform-positive sample.

(b) *Level 2 treatment technique triggers*.

1. An *E. coli* MCL violation, as specified in s. NR 809.30.

2. A second Level 1 trigger as defined in par. (a) 1.within a rolling 12-month period, unless the department has determined a likely reason that the samples that caused the first Level 1 treatment technique trigger were total coliform-positive and has established that the water supplier has corrected the problem.

3. For public water systems with approved annual monitoring, a Level 1 trigger in two consecutive years.

(2) REQUIREMENTS FOR ASSESSMENTS. (a) *General requirements*. 1. Water suppliers shall ensure that Level 1 and 2 assessments are conducted in order to identify the possible presence of sanitary defects, and defects in distribution system coliform monitoring practices. Level 2 assessments shall be conducted by parties approved by the department.

2. When conducting assessments, water suppliers shall ensure that the assessor evaluates minimum elements that include review and identification of inadequacies in sample sites; sampling protocol; sample processing; atypical events that could affect distributed water quality or indicate that distributed water quality was impaired; changes in distribution system maintenance and operation that could affect distributed water quality, including water storage; source and treatment considerations that bear on distributed water quality, where appropriate, as for example, small ground water systems; and existing water quality monitoring data. The water supplier shall conduct the assessment consistent with any department directives that tailor specific assessment elements with respect to the size and type of the public water system and the size, type, and characteristics of the distribution system.

(b) *Level 1 assessments*. A water supplier shall conduct a Level 1 assessment consistent with department requirements if the public water system exceeds one of the treatment technique triggers in sub. (1)(a). The department may conduct a Level 2 assessment in response to a Level 1 treatment technique trigger at a non-community water system, which may include the collection of a large-volume sample.

1. The water supplier shall complete a Level 1 assessment as soon as practical after any trigger in sub. (1)(a). In the completed assessment form, the water supplier shall describe sanitary defects detected, corrective actions completed, and a proposed timetable for any corrective actions not already completed. The assessment form may also note that no sanitary defects were identified. The water supplier shall submit the completed Level 1 assessment form to the department within 30 days after the water supplier learns that the public water system has exceeded a trigger.

2. If the department reviews the completed Level 1 assessment and determines that the assessment is not sufficient, including any proposed timetable for any corrective actions not already completed, the department shall consult with the water supplier. If the department requires revisions after consultation, the water supplier shall submit a revised assessment form to the department on an agreed-upon schedule not to exceed 30 days from the date of the consultation.

3. Upon completion and submission of the assessment form by the water supplier, the department shall determine if the water supplier has identified a likely cause for the Level 1 trigger and, if so, establish that the water supplier has corrected the problem, or has included a schedule acceptable to the department for correcting the problem.

(c) *Level 2 assessments*. A water supplier shall ensure that a Level 2 assessment consistent with department requirements is conducted if the public water system exceeds one of the treatment technique triggers in sub. (1)(b) . The water supplier shall comply with any expedited actions or additional actions required by the department in the case of an *E. coli* MCL violation.

1. The water supplier shall ensure that a Level 2 assessment is completed by the department or by a party approved by the department as soon as practical after any trigger in sub. (1)(b). The water supplier shall submit a completed Level 2 assessment form to the department within 30 days after the water supplier learns that it has exceeded a trigger. The assessment form shall describe sanitary defects detected, corrective actions completed, and a proposed timetable for any corrective actions not already completed. The assessment form may also note that no sanitary defects were identified.

2. The water supplier may conduct Level 2 assessments if the water supplier has staff or management with the certification or qualifications specified by the department unless otherwise directed by the department.

3. If the department reviews the completed Level 2 assessment and determines that the assessment is not sufficient, including any proposed timetable for any corrective actions not already completed, the department shall consult with the water supplier. If the department requires revisions after consultation, the water supplier shall submit a revised assessment form to the department on an agreed-upon schedule not to exceed 30 days.

4. Upon completion and submission of the assessment form by the water supplier, the department shall determine if the water supplier has identified a likely cause for the Level 2 trigger and determine whether the water supplier has corrected the problem, or has included a schedule acceptable to the department for correcting the problem.

(3) CORRECTIVE ACTION. Water suppliers shall correct sanitary defects found through Level 1 or Level 2 assessments conducted under sub. (2). For corrections not completed by the time of submission of the assessment form, the water supplier shall complete the corrective action in compliance with a timetable approved by the department in consultation with the water supplier. The water supplier shall notify the department when each scheduled corrective action is completed.

(4) CONSULTATION. At any time during the assessment or corrective action phase, the water supplier or the department may request a consultation with the other party to determine the appropriate actions to be taken. The water supplier may consult with the department on all relevant information that may affect the ability to comply with a requirement of this subsection, including the method of accomplishment, an appropriate timeframe, and other relevant information.

NR 809.314 Treatment technique compliance with distribution system microbiological contaminants. A treatment technique violation occurs when sub. (1) or (2) occurs.

(1) A public water system exceeds a treatment technique trigger specified in s. NR 809.313 (1) and the water supplier fails to conduct the required assessment or corrective actions within the timeframe specified in s. NR 809.313 (2) and (3).

(2) The water supplier of a seasonal system fails to complete a department-approved start-up procedure prior to serving water to the public.

SECTION 75. NR 809.323 (1) (a) and (b), and (d) Table G are amended to read:

NR 809.323 Analytical requirements for groundwater source microbiological contaminants. (1) ANALYTICAL METHODS. (a) A water supplier for a groundwater system subject to the source water monitoring requirements of s. NR 809.325(2) shall collect a standard sample volume of at least 100 mL for ~~E. coli~~*E. coli* analysis regardless of the analytical method used.

NR 809.323 (1) (b) A water supplier for a groundwater system shall analyze all groundwater source samples, collected under s. NR 809.325(2), using one of the analytical methods listed in Table G for the presence of ~~E. coli~~*E. coli*. If the department requires a public water system to be tested for the presence of enterococci or ~~colipahage~~coliphage, the water supplier shall use one of the methods listed in ~~par. (c)~~ Table G.

Table G
Analytical Methods for Source Water Monitoring

Fecal indicator[1m]	Methodology	Method citation
~~E. coli~~*E. coli*	Colilert [2]	9223 B [1]
	Colisure [2]	9223 B [1]
	Membrane Filter Method EPA Method with MI Agar.	1604 [3]
	m-ColiBlue24 Test [4]	~~9221 F [1]~~
	E*Colite Test [5]	
	EC-MUG [6]	9221 F [1]
	NA-MUG [6]	9222 G [1]
Enterococci	Multiple-Tube Technique.	9230B [1]
	Membrane Filter Technique.	9230C [1]
	Membrane Filter ~~EPA Method~~ Technique	1600 [7] ~~1600 [7]~~
	Enterolert [8]	
Coliphage	Two-Step Enrichment Presence-Absence Procedure.	~~1600~~1601[9]
	Single Agar Layer EPA Method Procedure.	1602 [10]

Note: Copies of the documents listed in the footnotes may be obtained from the sources listed in the footnotes. Copies of the documents listed in the footnotes may be obtained from the sources listed in the footnotes. Copies may be inspected at EPA's Drinking Water Docket, EPA West, 1301 Constitution Avenue, NW., Room B102, Washington DC 20460, Telephone: 202-566-2426, or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741- 6030, or go to: http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.

[1]Methods are described in Standard Methods for the Examination of Water and Wastewater 20th edition (1998) and copies may be obtained from the American Public Health Association, 1015 Fifteenth Street, NW., Washington, DC 20005-2605.
[1m]The groundwater system is encouraged, but not required to hold samples below 10°C during transit.
[2]Medium is available through IDEXX Laboratories, Inc., One IDEXX Drive, Westbrook, Maine 04092.
[3]EPA Method 1604: Total Coliforms and Escherichia coli in Water by Membrane Filtration Using a Simultaneous Detection Technique (MI Medium); September 2002, EPA 821-R-02-024. Method is available at http://www.epa.gov/nerlcwww/1604sp02.pdf or from EPA's Water Resource Center (RC-4100T), 1200 Pennsylvania Avenue, NW., Washington, DC 20460.
[4] A description of the m-ColiBlue24 Test, ``Total Coliforms and E. coli Membrane Filtration Method with m-ColiBlue24® Broth,'' Method No. 10029 Revision 2, August 17, 1999, is available from Hach Company, 100 Dayton Ave., Ames, IA 50010 or from EPA's Water Resource Center (RC-4100T), 1200 Pennsylvania Avenue, NW., Washington, DC 20460.
[5]A description of the E*Colite Test, ``Charm E*Colite Presence/Absence Test for Detection and Identification of Coliform Bacteria and Escherichia coli in Drinking Water, January 9, 1998, is available from Charm Sciences, Inc., 659 Andover St., Lawrence, MA 01843-1032 or from EPA's Water Resource Center (RC-4100T), 1200 Pennsylvania Avenue, NW., Washington, DC 20460.
[6] EC-MUG (Method 9221F) or NA-MUG (Method 9222G) can be used for E. coli testing step as described in Sec. 141.21(f)(6)(i) or (ii) after use of Standard Methods 9221 B, 9221 D, 9222 B, or 9222 C.
[7] EPA Method 1600: Enterococci in Water by Membrane Filtration Using membrane-Enterococcus Indoxyl-[beta]-D-Glucoside Agar (mEI) EPA 821-R- 02-022 (September 2002) is an approved variation of Standard Method 9230C. The method is available at http://www.epa.gov/nerlcwww/1600sp02.pdf or from EPA's Water Resource Center (RC-4100T), 1200 Pennsylvania Avenue, NW., Washington, DC 20460.
[8] Medium is available through IDEXX Laboratories, Inc., One IDEXX Drive, Westbrook, Maine 04092. Preparation and use of the medium is set forth in the article ``Evaluation of Enterolert for Enumeration of Enterococci in Recreational Waters,'' by Budnick, G.E., Howard, R.T., and Mayo, D.R., 1996, Applied and Environmental Microbiology, 62:3881-3884.
[9] EPA Method 1601: Male-specific (F+) and Somatic Coliphage in Water by Two-step Enrichment Procedure; April 2001, EPA 821-R-01-030. Method is available at http://www.epa.gov/nerlcwww/1601ap01.pdf or from EPA's Water Resource Center (RC-4100T), 1200 Pennsylvania Avenue, NW., Washington, DC 20460.
[10] EPA Method 1602: Male-specific (F+) and Somatic Coliphage in Water by Single Agar Layer (SAL) Procedure; April 2001, EPA 821-R-01-029. Method is available at http://www.epa.gov/nerlcwww/1602ap01.pdf or from EPA's Water Resource Center (RC-4100T), 1200 Pennsylvania Avenue, NW., Washington, DC 20460.

SECTION 76. NR 809.323 (2) (title), (a) and (b) are amended to read:

NR 809.233 (2) INVALIDATION OF AN ~~E. COLI~~*E. COLI*-POSITIVE GROUNDWATER SOURCE SAMPLE.

NR 809.323 (2) (a) The department may invalidate an ~~E. coli~~*E. coli*-positive groundwater source sample collected under s. NR 809.325(2) under the conditions specified in subd. 1. or 2.

1. The water supplier provides the department with written notice from the laboratory that improper sample analysis occurred.

2. The department determines and documents in writing that there is substantial evidence that an ~~E. coli~~*E. coli*-positive groundwater source sample is not related to source water quality.

NR 809.323 (2) (b) If the department invalidates an ~~E. coli~~*E. coli*-positive groundwater source sample, the water supplier shall collect another source water sample under s. NR 809.325(2) no later than 24 hours after being notified

by the department that the sample has been invalidated. The water supplier shall have the sample analyzed for ~~E. coli~~*E. coli* using the analytical methods in s. NR 809.323(1) (b) Table G.

SECTION 77. NR 809.325 (1) (b), NR 809.325 (2)(b)1, (2)(d), (2)(e), and NR 809.325 (3)(b) are amended to read:

NR 809.325 (1) (b) If the ~~pubic~~ public water system's configuration does not allow for sampling at the well itself, the water supplier may collect a sample at a department-approved location to meet the requirements of par. (a), if the sample is representative of the source water quality of that well.

NR 809.325 (2) (b) 1. No later than 24 hours after notification of a total coliform-positive distribution system sample, a water supplier for a groundwater system shall collect at least one groundwater source sample, for each total coliform-positive sample, from each groundwater source in use at the time the total coliform-positive sample was collected, except as provided in par. (c).

NR 809.325 (2) (d) A water supplier for a groundwater system serving 1,000 people or fewer ~~that is required to collect four repeat samples~~ may use a repeat sample collected from a groundwater source to meet both the requirements of s. NR 809.31(2) and to satisfy the monitoring requirements of par. (b) for that groundwater source. If the repeat samples collected from the groundwater source are ~~E. coli~~*E. coli* positive, the water supplier shall comply with the requirements of par. (e) unless the department requires immediate corrective action under s. NR 809.327(2) (b).

NR 809.325 (2) (e) If the department does not require corrective action under s. NR 809.327(2) (b) for an ~~E. coli~~*E. coli*-positive source water sample collected under par. (b), the water supplier shall collect five additional source water samples from the same source no later than 24 hours after being notified of the ~~E. coli~~*E. coli* positive sample. If any of the 5 samples collected under this paragraph is ~~E. coli~~*E. coli*-positive, the water supplier shall conduct a corrective action as outlined in s. NR 809.327(2).

NR 809.325 (3) (b) A water supplier for a wholesale groundwater system that receives notice from a water supplier for a consecutive system served by the wholesale system that a sample collected under s. NR 809.31(2) was total coliform-positive shall, no later than 24 hours after being notified, collect samples from its groundwater sources under sub. (2)(b) and analyze them for ~~E. coli~~*E. coli* under s. NR 809.323(1)(b) Table G. The department may extend the 24-hour time limit on a case-by-case basis if the public water system cannot collect the groundwater source water sample within the 24-hour time limit due to circumstances beyond the water supplier's control. In the case of an extension, the department shall specify, in writing, how much time the water supplier has to collect the sample.

NR 809.35 (3) (c) If the sample collected under par. (b) is ~~E. coli~~*E. coli*-positive, the water supplier for the wholesale groundwater system shall notify all water suppliers for the consecutive systems served by that groundwater source no later than 24 hours after being notified of the groundwater source sample monitoring result and shall meet the requirements of sub. (2)~~d~~(e) unless the department requires immediate corrective action under s. NR 809.327(2)(b).

SECTION 78. NR 809.325 (4)(a) is renumbered NR 809.325 (4) and as renumbered is amended to read:

NR 809.325 (4) EXCEPTION TO THE TRIGGERED SOURCE WATER MONITORING REQUIREMENTS. A water supplier for a groundwater system is not required to comply with the triggered source water monitoring requirements

of sub. (2) if the department determines, and documents in writing, that the total coliform-positive sample collected under s. NR ~~809.31(2)~~ 809.31 (1) was caused by a distribution system deficiency.

SECTION 79. NR 809.327 (1) (a) and (c)(intro.), NR 809.327 (3) (a) 2, NR 809.327 (4) (a) 3, and NR 809.327 (6) are amended to read:

NR 809.327 (1) (a) No later than 30 days after receiving written notice from the department ~~water suppliers for groundwater systems with significant deficiencies or~~ of significant deficiencies, or notified by a laboratory of source water fecal contamination, water suppliers for groundwater systems shall consult with the department regarding appropriate corrective action, unless the department directs the water supplier to implement a specific corrective action.

NR 809.327 (1) (c) No later than 120 days after receiving written notification from the department of a significant deficiency, or notified by a laboratory of confirmed source water fecal contamination, the water supplier for a groundwater system shall have one of the following:

NR 809.327 (3) (a) 2. The notification from the water supplier to the department shall ~~includes~~include a submittal for review that includes the engineering and operational information that the department will need to evaluate the adequacy of the treatment.

NR 809.327 (4) (a) 3. Water suppliers for non-community systems serving 3,300 or fewer people, unless otherwise required by the department under ~~ch. NR 812~~s. NR 812.37, shall monitor the residual disinfectant concentration using analytical methods and requirements specified in s. NR 809.563 at a location approved by the department and record the residual disinfection concentration once each day that water from the groundwater source is served to the public.

NR 809.327 (6) FAILURE TO MEET MONITORING REQUIREMENTS. If a water supplier fails to meet any of the monitoring requirements of sub. (4), the public water system is in violation and the water supplier shall complete public notification requirements under s. NR ~~809.952~~ 809.953.

SECTION 80. NR 809.328 (1) (b) (intro) is amended to read:

NR 809.328 (1) (b) Unless the department invalidates an ~~E. coli~~*E. coli*-positive groundwater source sample collected under s. NR 809.325, a public water system is in violation of the treatment technique requirement under s. NR 809.327 if within 120 days or earlier if directed by the department, the conditions of subd. 1. or 2 are not met.

SECTION 81. NR 809.329 (2) (c), (d), and (e) (intro) are amended to read:

NR 809.329 (2) (c) Records of decisions under s. NR 809.325(4) and records of invalidation of an ~~E. coli~~*E. coli*-positive groundwater source sample under s. NR 809.323(2). Documentation shall be kept for a period of not less than five years.

NR 809.329 (2) (d) For consecutive systems, documentation of notification to its wholesale systems of total-coliform positive samples that are not invalidated under s. NR ~~809.325(3)~~809.31 (3). Documentation shall be kept for a period of not less than five years.

NR 809.329 (2) (e) For public water systems, including wholesale systems, which are required to perform compliance monitoring under s. NR ~~809.327(3)~~809.327 (4) all of the following apply:

SECTION 82.NR 809.33 (4) is amended to read:

NR 809.33 (4) SURFACE WATER TREATMENT TECHNIQUE VIOLATIONS. Surface water and GWUDI public water systems are in violation of the treatment technique requirements for ~~turbididty~~turbidity if any of the requirements of s. NR 810.29(1) to (4) are not met.

SECTION 83. NR 809.334 (1) is amended to read:

NR 809.334 Analytical methods for surface water source water monitoring. (1) CRYPTOSPORIDIUM. Water suppliers shall analyze for *Cryptosporidium* using *Method 1623: Cryptosporidium and Giardia in Water by Filtration/IMS/FA*, 2005, United States Environmental Protection Agency, EPA–815-R–05–002 or *Method 1622: Cryptosporidium in Water by Filtration/IMS/FA*, 2005, United States Environmental Protection Agency, EPA–815–R–05–001~~, which are incorporated by reference. The Director of the Federal Register approved incorporation by reference of these documents in accordance with 5 U.S.C. 552(a) and 1 CFR part 51~~. The water supplier may obtain a copy of these methods online from *http://www.epa.gov/safewater/disinfection/lt2* ~~or from the United States Environmental Protection Agency, Office of Groundwater and Drinking Water, 1201 Constitution Ave., NW, Washington, DC 20460, Telephone: 800 426 4791. The water supplier may inspect a copy at the Water Docket in the EPA Docket Center, 1301 Constitution Ave., NW, Washington, DC, Telephone: 202 566 2426 or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202 741 6030, or go to: http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html~~. *Water suppliers may also use EPA Method 1623.1: Cryptosporidium and Giardia in Water by Filtration/IMS/FA*, 2012. EPA-816-R-12-001. (Available at *http://water.epa.gov/drink*.)

SECTION 84.NR 809.334 (2) is amended to read:

NR 809.334 (2) ~~E. COLI~~*E. COLI*. Water suppliers shall use methods for enumeration of ~~E. coli~~*E. coli* in source water listed in Table I.

SECTION 85. NR 809.334 (2) Table I is repealed and recreated to read:

Table I
***E. coli* Analytical Methods**

Organism	Methodology	Method	SM 20th Edition[1]	SM 21st Edition[2]	SM 22nd Edition[3]	SM Online[4]	Other
E. coli	Enzyme Substrate Methods	Colilert®	9223 B[5]	9223 B[5]	9223 B	9223 B-97[5,6]	
		Colilert-18	9223 B	9223 B	9223 B	*9223 B-97*	

		ONPG-MUG Test	9223 B	9223 B	*9223 B*	9223 B-97	
	Escherichia coli Procedure (following Lactose Fermentation Methods)	EC-MUG medium	9221 F, 9221 F.1	9221 F.1	9221 F.1		
		NA-MUG[7]	9222 G				
Enterococci		Multiple-Tube Technique	9230B			*9230 B-04*	
		Membrane Filter Technique	9230C				EPA Method 1600[8]
		Enterolert[9]					
Coliphage		Two-Step Enrichment Presence-Absence Procedure					Fast Phage [10]
							EPA Method 1601.[11]
		Single Agar Layer Procedure					EPA Method 1602.[12]

[1] *Standard Methods for the Examination of Water and Wastewater*, 20th edition (1998). Available from American Public Health Association, 800 I Street, NW., Washington, DC 20001-3710.

[2] *Standard Methods for the Examination of Water and Wastewater*, 21st edition (2005). Available from American Public Health Association, 800 I Street, NW., Washington, DC 20001-3710.

[3] *Standard Methods for the Examination of Water and Wastewater*, 22nd edition (2012). Available from American Public Health Association, 800 I Street NW., Washington, DC 20001-3710.

[4] Standard Methods Online are available at *http://www.standardmethods.org*. The year in which each method was approved by the Standard Methods Committee is designated by the last two digits in the method number. The methods listed are the only online versions that may be used.

[5] Multiple-tube and multi-well enumerative formats for this method are approved for use in presence-absence determination under this regulation.

[6] Colisure® results may be read after an incubation time of 24 hours.

[7] EC-MUG (Method 9221F) or NA-MUG (Method 9222G) can be used for *E. coli* testing step as described in §141.21(f)(6)(i) or (ii) after use of Standard Methods 9221 B, 9221 D, 9222 B, or 9222 C.

[8] EPA Method 1600: Enterococci in Water by Membrane Filtration Using membrane-Enterococcus Indoxyl-β-D-Glucoside Agar (mEI) EPA 821-R-02-022 (September 2002) is an approved variation of Standard Method 9230C. The method is available at *http://www.epa.gov/nerlcwww/1600sp02.pdf* or from EPA's Water Resource Center (RC-4100T), 1200 Pennsylvania Avenue, NW., Washington, DC 20460. The holding time and temperature for ground water samples are specified in footnote 1 above, rather than as specified in Section 8 of EPA Method 1600.

[9] Medium is available through IDEXX Laboratories, Inc., One IDEXX Drive, Westbrook, Maine 04092. Preparation and use of the medium is set forth in the article "Evaluation of Enterolert for Enumeration of Enterococci

in Recreational Waters," by Budnick, G.E., Howard, R.T., and Mayo, D.R., 1996, Applied and Environmental Microbiology, 62:3881-3884.

[10] Charm Sciences Inc. "Fast Phage Test Procedure. Presence/Absence for Coliphage in Ground Water with Same Day Positive Prediction". Version 009. November 2012. 659 Andover Street, Lawrence, MA 01843. Available at *www.charmsciences.com*.

[11]EPA Method 1601: Male-specific (F+) and Somatic Coliphage in Water by Two-step Enrichment Procedure; April 2001, EPA 821-R-01-030. Method is available at *http://www.epa.gov/nerlcwww/1601ap01.pdf* or from EPA's Water Resource Center (RC-4100T), 1200 Pennsylvania Avenue, NW., Washington, DC 20460.

[12]EPA Method 1602: Male-specific (F+) and Somatic Coliphage in Water by Single Agar Layer (SAL) Procedure; April 2001, EPA 821-R-01-029. Method is available at *http://www.epa.gov/nerlcwww/1602ap01.pdf* or from EPA's Water Resource Center (RC-4100T), 1200 Pennsylvania Avenue, NW., Washington, DC 20460.

SECTION 86. NR 809.335 (2) is amended to read:

NR 809.335 (2) ~~E. COLI~~*E. COLI*. Any laboratory certified by the EPA, ~~the National Environmental Laboratory Accreditation Conference~~ The NELAC Institute (TNI), or the department of agriculture, trade and consumer protection for total coliform or ~~fecal coliform~~ *E. coli.* analysis under s. NR 809.323(1)(c), Table F is approved for *E. coli* analysis under this section when the laboratory uses the same technique for *E. coli* that the laboratory uses for s. NR 809.334(2), Table I.

SECTION 87. NR 809.336 (4) (b) is amended to read:

NR 809.336 (4) (b) Water suppliers shall report the following data elements for each ~~E. coli~~*E. coli* analysis:

Data element.
1. PWS ID.
2. Facility ID.
3. Sample collection date.
4. Analytical method number.
5. Method type.
6. Source type (flowing stream, lake/reservoir, GWUDI).
7. ~~E. coli~~*E. coli* /100 mL.
8. Turbidity.

SECTION 88. NR 809.35 (4) is amended to read:

NR 809.35 (4) SURVEY DETAILS. A sanitary survey, as conducted by the department under this section, includes but is not limited to, an onsite review of the water sources facilities, equipment, operation, maintenance, and monitoring compliance of a public water system to evaluate the adequacy of the public water system, its sources and operations and the distribution of safe drinking water. In addition, the department shall identify sources of potential contamination by using results of source water ~~vulnerability~~monitoring assessments or other relevant information.

SECTION 89. NR 809.50 (4) Table K is amended to read:

Table K
List of Small Water Systems Compliance Technologies for Radionuclides and Limitations To Use

Unit technologies	Limitations (see footnotes)	Operator skill level required[1]	Raw water quality range and consideration[1]
1. Ion exchange (IE).	(a)	Intermediate	All groundwaters.
2. Point of use (POU [2]) IE	(b)	Basic	All groundwaters
3. Reverse osmosis (RO)	(c)	Advanced	Surface waters usually require pre-filtration
4. POU [2] RO	(b)	Basic	Surface waters usually require pre-filtration.
5. Lime softening	(d)	Advanced	All waters.
6. Green sand filtration	(e)	Basic	
7. Co-precipitation with ~~Barium~~ barium sulfate	(f)	Intermediate to Advanced	Groundwaters with suitable water quality
8.Electrodialysis/electrodialysis reversal		Basic to Intermediate	All groundwaters.
9.Pre-formedhydrous ~~Manganese~~manganese oxide filtration.	(g)	Intermediate	All groundwaters
10. Activated alumina	(a), (h)	Advanced	All groundwaters; competing anion concentrations may affect regeneration frequency.
11.Enhanced coagulation/filtration	(i)	Advanced	Can treat a wide range of water qualities.

1 National Research Council (NRC). Safe Water from Every Tap: Improving Water Service to Small Communities. National Academy Press, Washington, D.C. 1997.
2 POU devices are typically installed at the kitchen tap. See the April 21, 2000 NODA for more details.
Limitations Footnotes: Technologies for Radionuclides:
a The regeneration solution contains high concentrations of the contaminant ions. Disposal options should be carefully considered before choosing this technology.
b When POU devices are used for compliance, programs for long-term operation, maintenance, and monitoring shall be provided by water utility to ensure proper performance.
c Reject water disposal options should be carefully considered before choosing this technology. See other RO limitations described in the SWTR Compliance Technologies Table.
d The combination of variable source water quality and the complexity of the water chemistry involved may make this technology too complex for small surface water systems.
e Removal efficiencies can vary depending on water quality.
f This technology may be very limited in application to small water systems. Since the process requires static mixing, detention basins, and filtration, it is most applicable to small water systems with sufficiently high sulfate levels that already have a suitable filtration treatment train in place.
g This technology is most applicable to small water systems that already have filtration in place.
h Handling of chemicals required during regeneration and pH adjustment may be too difficult for small water systems without an adequately trained operator.
i Assumes modification to a coagulation/filtration process already in place.

SECTION 90. NR 809.52 (1) Table N is amended to read:

TABLE N
SDWA Approved Methodology for Radiological Measurements
Reference (method or page number)

Parameter	Method	EPA[1]	EPA[2]	EPA[3]	EPA[4]	SM[5]	ASTM[6]	USGS[7]	DOE[8]	Others
						SM Online				
Naturally Occurring:								R-1120-76	---	
Gross alpha[11] & beta	Evaporation	~~900~~900.0	p1	00-01	p1	302, 7110 B		R-1120-76	---	
						7110 B-00				
Gross alpha[11]	co-precipitation	---		00-02		7110 C	---	---	---	
						7110 C-00				
Radium 226	Radon emanation, Radiochemical	903.1 903.0	P 16 p13	Ra-04 Ra-03	p19	7500-Ra C 304,305, 7500-Ra B	D 3454-91 D 2460-90	R-1141-76 R-1140-76	Ra-05	N.Y.[9]
						7550-Ra C-01. 7500-Ra B-01	D3454-05 D2460-07			
Radium 228	Radiochemical	904.0	P 24	Ra-05	p19	304,7500 Ra D	---	R-1142-76	---	N.Y.[9] N.J.[10]
						7500-Ra D-01				
Uranium[12]	Radiochemical	908.0				7500-UB	D2907-91	R-1180-76	U-04 U-2	
						7500-UB-00				
	Fluorometric	908.1				7500-UC (17th Ed)	D2907-97	R-1180-76 R-1181-76 R-1182-76	U-04	

	Alpha spectrometry	---		00-07	p33	7500-UC (18th or 19th Ed) 7500-UC-00	D3972-90 D3972-09	---	---	
	Laser Phosphorimetry	---				-	~~D5174-91~~D5174-97, 02			
	ICP-MS	~~200.8 13~~200.8[13]				3125	D5673-03 D5673-05, 10			
Man-Made:										
Radioactive						~~303,7500~~	---			
Strontium - 89,90	Radiochemical	905.0	p 29	Sr-04	p65	303, 7500-Sr B 7500-Sr B-01	---	R1160-76	Sr-01 Sr-02	
Tritium	Liquid Scintillation	906.0	p 34	H-02	p 87	306, ~~7500-3H B~~7500-^{3}H B 7500-3H B-00		D 4107–91 D4107-08	R 1171-76	---
Radioactive Cesium -	Radiochemical, Gamma ray spectrophotometry	901.0 901.1	p 4		p 92	7500-Cs B 7120 (19th Ed.)	D 2459-72 D 3649-91 D3649-06	--- R-1110-76	4.5.2.3	
Radioactive Iodine	Radiochemical, Gamma ray spectrophotometry	902.0 901.1	P 6 p 9		p 92	7500-I B 7500-I C 7500-I D 7120 (19th Ed)	D 3649-91 D 4785-88 D3649-06 D4785-08	---	4.5.2.3	

						7500-I C-00, 7500_I D-00				
Gamma Emitters	Gamma ray spectrometry	901.1 902.0 901.0			p 92	7120 (19th Ed.) 7500-Cs B 7500-I B 7120-97	D 3649-91 D 4785-88 D3649-06 D4785-08	---	4.5.2.3	

[1]"Prescribed Procedures for Measurement of Radioactivity in Drinking Water", EPA-600/4-80/032. August, 1980. Available from the EMSL, Office of Research and Development, U.S. EPA, 26 W. Martin Luther King Drive, Cincinnati, Ohio, 45268.

[2]"Interim Radiochemical Methodology for Drinking Water", EPA 600/4-75/008 (revised), March 1976, Available at NTIS, ibid PB 253258.

[3]"Radiochemistry Procedures Manual", EPA 520/5-84/006, December 1987, Available at NTIS, ibid, PB 84-215581.

[4]"Radiochemical Analytical Procedures for Analysis of Environmental Samples", March 1979, Available at NTIS, ibid, EMSL LV 053917

[5]" ~~Standard Methods for the Examination of Water and Wastewater", 13th Edition, 17th, 18th, 19th Editions, 1971, 1989, 1992, 1995, Available at APHA, 1015 Fifteenth Street, N.W. Washington, D.C. 20005. All methods are in the 17th, 18th and 19th editions except 7500-U C Flurometric Uranium was discontinued after the 17th Edition. 7120 Gamma Emitters is only in the 19th Edition and 302, 303, 304, 305 and 306 are only in the 13th Edition.~~ Standard Methods for the Examination of Water and Wastewater," 13th, 17th, 18th, 19th, 20th, 21st, or 22nd, edition, 1971, 1989, 1992, 1995, 1998, 2005, 2012, available at American Public Health Association, 800 I Street NW., Washington, DC. 20001-3710. Methods 302, 303, 304, 305 and 306 are only in the 13th edition. Methods 7110B, 7500-Ra B, 7500-Ra C, 7500-Ra D, 7500-U B, 7500-Cs B, 7500-I B, 7500-I C, 7500-I D, 7500-Sr B, and 7500-^{3}H B are in the 17th, 18th, 19th 20th, 21st, and 22nd editions. Method 7110 C and 7500-U C Alpha spectrometry is in the 18th, 19th, 20th, 21st, and 22nd editions. Method 7500-U C Fluorometric Uranium is only in the 17th edition, Method 7120 is only in the 19th and 20th editions. Method 3125 is only in the 20th edition. Standard Methods online are available at *http://www.standardmethods.org.* The year in which each method was approved by the Standard Methods Committee is designated by the last two digits in the method number. The methods listed are the only online versions that may be used.

[6]Annual Book of ASTM Standards, Vol. 11.02, 1994. Available at American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428.

[7]"Methods for Determination of Radioactive Substances in Water and Fluvial Sediments", Chapter A5 in Book 5 of Techniques of Water Resources Investigations of the United States Geological Survey, 1997. Available at U.S. Geological Survey (USGS) Information Services, Box 25286 Federal Center, Denver, CO 80225-0425.

[8]"EML Procedures Manual", 27th Edition, Volume 1, 1990. Available at the Environmental Measurements Laboratory, U.S. Department of Energy (DOE), 376 Hudson Street, New York, NY 10014-3621.

[9]"Determination of Ra-226 and Ra-228 (Ra-02)", January 1980, Revised June 1982. Available at Radiological Sciences Institute Center for Laboratories and Research, New York State Department of Health, Empire State Plaza, Albany, NY 12201.
[10]"Determination of Radium 228 in Drinking Water", August 1980. Available at State of New Jersey, Department of Environmental Protection, Division of Environmental Quality, Bureau of Radiation and Inorganic Analytical Services, 9 Ewing Street, Trenton, N.J. 08625.
[11]Natural uranium and thorium-230 or approved as gross alpha calibration standards for gross alpha with co-precipitation and evaporation methods, americium-241 is approved with co-precipitation methods.
[12]If uranium (U) is determined by mass a 0.67 pCi/g of uranium conversion factor shall be used. This conservative factor is based on the 1:1 activity ratio of U-234 to U-238 that is characteristic of naturally occurring uranium.

SECTION 91. NR 809.53 (1) (d) (1) is amended to read:

NR 809.53 (1) (d) 1. If the average of the initial monitoring results for each contaminant, i.e., gross alpha particle activity, uranium, radium-226 or radium-228, is below the detection limit specified in s. NR ~~809.50 (3)~~809.52 (2), Table ~~J~~O., the water supplier for a community water system shall collect and analyze for that contaminant using at least one sample at that sampling point every 9 years.

SECTION 92. NR 809.541 (4) (c) is amended to read:

NR 809.541 (4) (c) Be currently certified by EPA or the department under ch. NR 149 to perform analyses to the specifications described in ~~par. (a)(1)~~ pars. (a) and (b).

SECTION 93.NR 809.542 (2) (c) 3. is amended to read:

NR 809.542 (2) (c) 3. Any water suppliers for a public water system deemed to have optimized corrosion control pursuant to this paragraph shall notify the department in writing pursuant to s. NR 809.55(1)(c)3 of any upcoming long-term change in treatment or addition of a new source as described in that section. The department shall review and approve the addition of a new source or long-term change in water treatment before it is implemented by the water supplier. The department may require any water supplier to conduct additional monitoring or to take other action the department deems appropriate to ensure that the water supplier maintains minimal levels of corrosion in the distribution system.

SECTION 94. NR 809. 544 (1) (a) is amended to read:

NR 809. 544 (1) (a) Step 1: A water supplier for a public water system exceeding the lead or copper action level shall complete lead and copper source water monitoring under s. NR 809.549(2) and make a treatment recommendation to the ~~Department~~department under s. NR 809.544(2)(a) no later than 180 days after the end of the monitoring period during which the lead or copper action level was exceeded.

SECTION 95. NR 809.546 (intro) is amended to read:

NR 809.546 Public education and supplemental monitoring requirements. All water suppliers shall deliver a consumer notice of lead tap water monitoring results to persons served by the public water system at sites that are tested, as specified in sub. (4). ~~A~~If a public water system that exceeds the lead action level based on tap

water samples collected in accordance with s. NR 809.547, the water supplier shall deliver the public education materials contained in sub. (1) in accordance with the requirements in sub. (2). Water ~~supplier~~ suppliers for public water systems that exceed the lead action level shall sample the tap water of any customer who requests it in accordance with sub. (3).

SECTION 96.NR 809.546 (1) (a) 1. is amended to read:

NR 809.546 (1) (a) 1. IMPORTANT INFORMATION ABOUT LEAD IN YOUR DRINKING WATER. [INSERT NAME OF ~~WATER~~ PUBLIC WATER SYSTEM] found elevated levels of lead in drinking water in some homes or buildings. Lead can cause serious health problems, especially for pregnant women and young children. Please read this information closely to see what you can do to reduce lead in your drinking water.

SECTION 97. NR 809.546 (2) (a) 1. is amended to read:

NR 809.546 (2) (a) 1. Deliver printed materials meeting the content requirements of ~~par. (a)~~ sub (1) to all bill-paying customers.

SECTION 98.NR 809.546 (2) (a) 2. a, b, and c are amended to read:

NR 809.546 (2) (a) 2. a. Delivering education materials that meet the content requirements of sub. (1) to local public health agencies even if they are not located within the public water system's service area, along with an informational notice that encourages distribution to all the organization's potentially affected customers or community water system's users. The water supplier shall contact the local public health agencies directly by phone or in person. The local public health agencies may provide a specific list of additional community based organizations serving target populations, which may include organizations outside the service area of the public water system. If such lists are provided, water suppliers shall deliver education materials that meet the content requirements of sub. (1)~~, along with an informational notice that encourages distribution to all the organization's potentially affected customers or community water system's users~~ to all organizations on the provided lists.

NR 809.546 (2) (a) 2.b. Delivering materials that meet the content requirements of sub. (1) to organizations that are located within the public water system's service area such as public and private schools or school boards, Women, Infants and Children (WIC) and Head Start programs, public and private hospitals and medical clinics, pediatricians, family planning clinics, and local welfare agencies along with an informational notice that encourages distribution to all the organization's potentially affected customers or community water system's users.

NR 809.546 (2) (a) 2.c. Making a good faith effort to locate licensed childcare centers, public and private preschools, obstetricians-gynecologists and midwives within the service area and deliver materials that meet the content requirements of ~~par. (a)~~ sub. (1) to them, along with an informational notice that encourages distribution to all potentially affected customers or users. The good faith effort to contact at-risk customers may include requesting a specific contact list of these organizations from the local public health agencies, even if the agencies are not located within the public water system's service area.

SECTION 99. NR 809.546 (2) (c) 1. is amended to read:

NR 809.546 (2) (c) 1. A water supplier for a community water system shall repeat the tasks contained in par. (b)1., 2. and ~~4~~6. every 12 months.

SECTION 100. NR 809.546 (2) (d) is amended to read:

NR 809.546 (2) (d) *Non-transient non-community water system public education tasks.* No later than 60 days after the end of the monitoring period in which the exceedance occurred, unless it already is repeating public education tasks pursuant to par. (e), the water supplier for a non-transient ~~noncommunity~~non-community water system shall deliver the public education materials specified in sub. (1), by posting informational posters regarding lead in drinking water in a public place or common area in each of the buildings served by the public water system; and distributing informational pamphlets or brochures, or both, regarding lead in drinking water to each person served by the non-transient non-community water system. The department may allow the water supplier to utilize electronic transmission in lieu of, or combined with, printed materials as long as the same coverage is achieved. For public water systems that are required to be monitored annually or less frequently, the end of the monitoring period is September 30 of the calendar year in which the sampling occurs, or, if the department has established an alternate monitoring period, the last day of that period.

SECTION 101. NR 809.547 (3) and NR 809.547(4) (d) 2 are amended to read:

NR 809.547 (3) NUMBER OF SAMPLES. Water ~~supplier~~suppliers shall collect at least one sample during each monitoring period specified in sub. (4) from the number of sites listed in the following column titled "standard monitoring." A water supplier conducting reduced monitoring under sub. (4) (d) may collect one sample from the number of sites specified in the second following column during each monitoring period specified in sub. (4) (d). The department may specify sampling locations when a water supplier is conducting reduced monitoring. Such reduced monitoring sites shall be representative of the sites required for standard monitoring. A water supplier for a public water system that has fewer than five drinking water taps that can be used for human consumption meeting the sample site criteria of sub. (1) of this section to reach the required number of sample sites listed in this subsection, shall collect at least one sample from each tap and then shall collect additional samples from those taps on different days during the monitoring period to meet the required number of sites. Alternatively the department may allow water suppliers of these public water systems to collect a number of samples less than the number of sites specified in this subsection, provided that 100 percent of all taps that can be used for human consumption are sampled. The department may approve this reduction of the minimum number of samples in writing based on a request from the water supplier or onsite verification by the department.

Public Water System Size (# People Served)	**# of sites (Standard Monitoring)**	**# of sites (Reduced Monitoring)**
>100,000	100	50
10,001-100,000	60	30
3,301 to 10,000	40	20
501 to 3,300	20	10
101 to 500	10	5
≤100	5	5

NR 809.547 (4) (d) 2. The water supplier for a public water system that meets the lead action level and maintains the range of values for the water quality control parameters reflecting optimal corrosion control treatment specified by the department under s. NR 809.543(6) and (7) during each of two consecutive six-month monitoring periods may reduce the frequency of monitoring to once per year and reduce the number of lead and copper samples

in accordance with sub. (3) of this section if they receive written approval from the department. This sampling shall begin during the calendar year immediately following the end of the second consecutive six-month monitoring period. The department shall review monitoring, treatment, and other relevant information submitted by the water supplier in accordance with s. NR 809.55, and shall notify the water supplier in writing when it determines the public water system is eligible to commence reduced monitoring pursuant to this paragraph. The department shall review, and where appropriate, revise its determination when the water supplier submits new monitoring or treatment data, or when other data relevant to the number and frequency of tap sampling becomes available.

SECTION 102. NR 809.548 (4) is amended to read:

NR 809.548 (4) MONITORING AFTER THE DEPARTMENT SPECIFIES WATER QUALITY PARAMETER VALUES FOR OPTIMAL CORROSION CONTROL. After the department specifies the values for applicable water quality control parameters reflecting optimal corrosion control treatment under s. NR 809.543 (6) and (7), water suppliers for all large systems shall measure the applicable water quality parameters in accordance with sub. (3) and determine compliance with the requirements of s. NR 809.543 (8) every six months with the first six-month period to begin on either January 1 or July 1, whichever comes first, after the department specifies the optimal values under s. NR 809.543 (6). Water suppliers for any small or medium-size systems shall conduct such monitoring during each six-month period specified in this paragraph in which the public water system exceeds the lead or copper action level. For any such small and medium-size system that is subject to a reduced monitoring frequency pursuant to s. NR 809.547 (4)(d) at the time of the action level exceedance, the start of the applicable six-month monitoring period under this paragraph shall coincide with the start of the applicable monitoring period under s. NR 809.547 (4) (d). Compliance with department designated optimal water quality parameter values shall be determined as specified under s. NR 809.543 (8).

SECTION 103. NR 809.55 (1) (c) is amended to read:

NR 809.55 (1) (c) Except as provided in subd. 8., a water supplier shall report the following information for all tap water samples specified in s. NR 809.547 and for all water quality parameter samples specified in s. NR 809.548 within the first 10 days following the end of each applicable monitoring period specified in ss. NR 809.547, 809.548 and 809.549, which is 6 months, annually, ~~or~~ every 3 years, or every 9 years:

SECTION 104. NR 809.55 (1) (c) 3. is amended to read:

NR 809.55 (1) (c) 3. At a time specified by the department, or if no specific time is designated by the department, then as early ~~is~~ as possible prior to the addition of a new source or any long-term change in water treatment, a water supplier for a public water system deemed to have optimized corrosion control under s. NR 809.542(2)(c), a public water system subject to reduced monitoring pursuant to s. NR 809.547(4)(d), or a public water system subject to a monitoring waiver pursuant to s. NR 809.547(7) shall submit written documentation to the department describing the change or addition. The department must review and approve the addition of a new source or long-term change in treatment to the public water system before it is implemented by the water supplier. Examples of long-term treatment changes include the addition of a new treatment process or modification of an existing treatment process. Examples of modifications include switching secondary disinfectants, switching coagulants, for example, alum to ferric chloride, and switching corrosion inhibitor products, for example, orthophosphate to blended phosphate. Long-term changes may include dose changes to existing chemicals if the water supplier is planning long-term changes to the public water system finished water pH or residual inhibitor concentration. Long-term treatment changes may not include chemical dose fluctuations associated with daily raw water quality changes.

SECTION 105. NR 809.55 (6) (a) and (6) (a) 1. are amended to read:

NR 809.55 (6) (a) The water supplier for any public water system that is subject to the public education requirements in s. NR 809.546 shall, within ten days after the end of each period in which the public water system is required to perform public education in accordance with s. NR 809.546~~(3)~~(2), send written documentation to the department that contains all of the following:

1. A demonstration that the water supplier has delivered the public education materials that meet the content requirements in s. NR 809.546 (1) and the delivery requirements in s. NR 809.546 ~~(3)~~(2).

SECTION 106. NR 809.561 (3) (c) is created to read:

NR 809.561 (3) (c) Free chlorine or total chlorine may be measured for demonstrating compliance with the chlorine MRDL. Combined chlorine or total chlorine may be used for demonstrating compliance with the chloramine MRDL.

SECTION 107. NR 809.561 (4) is amended to read:

NR 809.561 (4) BEST AVAILABLE TREATMENT. The department, pursuant to section 1412 of the Safe Drinking Water Act and related regulations applicable to public water systems, identifies the following as the best available treatment technology, treatment techniques or other means available for achieving compliance with the maximum contaminant levels for disinfection byproducts identified in sub. (1):

Disinfectant byproduct	**Best available treatment**
TTHM and HAA5	Enhanced coagulation or enhanced softening or GAC10, with chlorine as the primary and residual disinfectant. Enhanced coagulation or enhanced softening, plus GAC10; or nanofiltration with a molecular weight cutoff ≤ 1000 Daltons; or GAC20.
TTHM and HAA5 in Consecutive Systems	~~Enhanced coagulation or enhanced softening or GAC10, with chlorine as the primary and residual disinfectant.~~Systems serving ≥ 10,000: Improved distribution system and storage tank management to reduce residence time, plus the use of chloramines for disinfectant residual maintenance. Systems serving < 10,000: Improved distribution system and storage tank management to reduce residence time.
Bromate	Control of ozone treatment process to reduce production of bromate.
Chlorite	Control of treatment processes to reduce disinfectant demand and control of disinfection treatment processes to reduce disinfectant levels.

SECTION 108. NR 809.562 (3) is amended to read:

NR 809.562 (3) OPERATOR CERTIFICATION. Each CWS and NTNCWS regulated under s. NR 809.561 shall be operated by qualified personnel who meet the requirements specified in ch. NR 114, subch. I and III and are included in a department register of qualified operators.

SECTION 109. NR 809.563 (1) is amended to read:

NR 809.563 Analytical requirements for disinfection byproducts and disinfection residuals Stage 1 DBP and Stage 2 DBP. (1) GENERAL. Water suppliers shall use only the analytical methods specified in this section, or

otherwise approved by ~~the department or~~ EPA for monitoring under this subchapter, to demonstrate compliance with the requirements of this subchapter.

SECTION 110. NR 809.563 (2) is amended to read:

NR 809.563 (2) APPROVED ANALYTICAL METHODS FOR DISINFECTANT RESIDUALS. Water suppliers shall measure residual disinfectant concentrations for total chlorine, free chlorine, combined chlorine ~~(chloramines)~~ chloramines, and chlorine dioxide by the methods listed in Table R. Water suppliers may also measure residual disinfectant concentrations for chlorine, chloramines and chlorine dioxide by using N,N-diethly-p-phenylenediamine (DPD) colorimetric using a colorimeter as prescribed in the approved methods.

SECTION 111. NR 809.563 (2) Table R is repealed and recreated to read:

Table R
Approved Methodology for Disinfectant Residuals

Methodology	SM (19th , 20th, 21st, and 22nd ed)[2]	SM Online[3]	ASTM[4] method	EPA method	Residual measured[1]			
					Free Cl_2	Combined Cl_2	Total Cl_2	ClO_2
Amperometric Titration	4500-Cl D	4500-Cl D-00	D 1253-86 (96), 03, D1253-08		X	X	X	
Low Level Amperometric Titration	4500-Cl E	4500-Cl E-00					X	
DPD Ferrous Titrimetric	4500-Cl F	4500-Cl F-00			X	X	X	
DPD Colorimetric	4500-Cl G	4500-Cl G-00			X	X	X	
Syringaldazine (FACTS)	4500-Cl H	4500-Cl H-00			X			
Iodometric Electrode	4500-Cl I	4500-Cl I-00					X	
DPD	4500-ClO2 D							X
Amperometric Method II	4500-ClO2 E	4500-ClO2 E-00						X
Lissamine Green Spectrophotometric				327.0 Rev 1.1				X

[1] X indicates method is approved for measuring specified disinfectant residual. Free chlorine or total chlorine may be measured for demonstrating compliance with the chlorine MRDL and combined chlorine, or total chlorine may be measured for demonstrating compliance with the chloramine MRDL.

[2] *Standard Methods for the Examination of Water and Wastewater*, 19th edition (1995), 20th edition (1998), 21st edition (2005),22nd edition (*2012).* Available from American Public Health Association, 800 I Street, NW., Washington, DC, 20001-3710.

[3] The Standard Methods Online version that is approved is indicated by the last two digits in the method number which is the year of approval by the Standard Method Committee. Standard Methods Online are available at*http://www.standardmethods.org.*

[4] Available from ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2859, or http://astm.org.

SECTION 112. NR 809.563 (3) Table S is repealed and recreated to read:

Table S
Approved Methods for Disinfectant Byproduct Compliance Monitoring

Contaminant and methodology[1]	EPA method[10]	Standard Methods[2]	SM online[9]	ASTM method[3]
TTHM				
P&T/GC/ELCD & PID	502.2[4]			
P&T/GC/MS	524.2			
LLE/GC/ECD	551.1			
HAA5				
LLE (diazomethane) GC/ELCD		6251 B[5] 6610 (20th Edition)	6251 B-94	
SPE (acidic methanol) GC/ECD	552.1[5]			
LLE (acidic methanol) GC/ECD	552.2, 552.3			
Ion chromatography electrospray ionization tandem mass spectrometry (IC-ESI-MS/MS)	557			
Bromate				
Ion chromatography	300.1			D 6581-00 D6581-08 A D6581-08 B
Ion chromatography and post-column reaction	317.0 Rev 2.0[6], 326.0[6]			
IC/ICP-MS	321.8[6, 7]			
Chlorite				
Amperometric titration		4500-ClO_2 E[8]	4500-ClO_2 E-00[8]	
Spectrophotometry	327.0 Rev 1.1[8]			
Ion chromatography	300.0, 300.1, 317.0 Rev 2.0, 326.0			D 6581-00 D 6581-08 A D 6581-08 B

[1] P&T = purge and trap; GC = gas chromatography; ELCD = electrolytic conductivity detector; PID = photoionization detector; MS = mass spectrometer; LLE = liquid/liquid extraction; ECD = electron capture detector; SPE = solid phase extraction; IC = ion chromatography; ICP-MS= inductively coupled plasma/mass spectrometer.

[2] *Standard Methods for the Examination of Water and Wastewater,* 19th edition (1995), 20th edition (1998), 21st edition (2005), 22nd edition (*2012)*. Available from American Public Health Association, 800 I Street, NW., Washington, DC, 20001-3710.

[3] Available from ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2859, or http://astm.org.,

[4] If TTHMs are the only analytes being measured in the sample, then a PID is not required.

[5] The samples must be extracted within 14 days of sample collection.

[6] Ion chromatography and post column reaction or IC/ICP-MS must be used for monitoring of bromate for purposes of demonstrating eligibility of reduced monitoring.

[7] Samples must be preserved at the time of sampling with 50 mg ethylenediamine (EDA)/L of sample and must be analyzed within 28 days.

[8] Amperometric titration or spectrophotometry may be used for routine daily monitoring of chlorite at the entrance to the distribution system, as prescribed in NR 809.565(3)(a)1. Ion chromatography must be used for routine monthly monitoring of chlorite and additional monitoring of chlorite in the distribution system, as prescribed in NR 809.565(30(a)2. and. NR 809.565(30(a)3.

[9] The Standard Methods Online version that is approved is indicated by the last two digits in the method number which is the year of approval by the Standard Method Committee. Standard Methods Online are available at http://www.standardmethods.org.

[10] EPA methods are available at http://epa.gov/safewater/methods/analyticalmethods_ogwdw.html.

SECTION 113. NR 809.563 (4) (a) and (b) are amended to read:

NR 809.563 (4) (a) To receive certification to conduct analyses for the contaminants in this subchapter, a laboratory shall ~~carry out annual analyses of~~ analyze performance evaluation samples approved by the department or EPA at least once during each consecutive 12-month period by each method for which a laboratory desires certification.

NR 809.563 (4) (b) When analyzing performance evaluation samples, the laboratory shall achieve quantitative ~~results within the acceptance limit on a minimum of 80% of the analytes included in each PE sample~~ results on the PE sample analyses that are within the acceptance limits in Table T.

SECTION 114. NR 809.563 (4) (d) is repealed.

SECTION 115. NR 809.563 (4) (e) and Table U are amended to read:

NR 809.563 (e) ~~Beginning on April 1, 2007, laboratories must~~ Laboratories shall report quantitative data for concentrations as low as the ones listed in Table U for all DBP samples analyzed for compliance.

Table U

Minimum Reporting Levels for DBP Samples

DBP	**Minimum reporting level (mg/L)[1]**	**Comments**

TTHM[2]		
Chloroform	0.0010	
Bromodichloromethane	0.0010	
Dibromochloromethane	0.0010	
Bromoform	0.0010	
HAA5[2]		
Monochloroacetic Acid	0.0020	
Dichloroacetic Acid	0.0010	
Trichloroacetic Acid	0.0010	
Monobromoacetic Acid	0.0010	
Dibromoacetic Acid	0.0010	
Chlorite	0.020	Applicable to monitoring as prescribed in s. NR ~~809.565(5)(a)~~ 809.565(3)(a)2. and 3.
Bromate	0.0050 or 0.0010	Laboratories that use EPA Methods 317.0 Revision 2.0, 326.0 or 321.8 must meet a 0.0010 mg/L detection limit for bromate.

[1]The calibration curve must encompass the regulatory minimum reporting level (MRL) concentration. Data may be reported for concentrations lower than the regulatory MRL as long as the precision and accuracy criteria are met by analyzing an MRL check standard at the lowest reporting limit chosen by the laboratory. The laboratory must verify the accuracy of the calibration curve at the MRL concentration by analyzing an MRL check standard with a concentration less than or equal to 110% of the MRL with each batch of samples. The measured concentration for the MRL check standard must be ±50% of the expected value, if any field sample in the batch has a concentration less than 5 times the regulatory MRL. Method requirements to analyze higher concentration check standards and meet tighter acceptance criteria for them must be met in addition to the MRL check standard requirement.

[2]When adding the individual trihalomethane or haloacetic acid concentrations to calculate the TTHM or HAA5 concentrations, respectively, a zero is used for any analytical result that is less than the MRL concentration for that DBP, unless otherwise specified by the department.

SECTION 116. NR 809.563 (5)(title) and (intro.) and (6) (intro.) are amended to read:

NR 809.563 (5) APPROVAL OF PERSONS MEASURING DISINFECTANT RESIDUAL CONCENTRATIONS AND CHLORITE. A person approved by the department or EPA shall measure residual disinfectant ~~concentration~~ concentrations and daily chlorite samples at the entrance to the distribution system.

NR 809.563 (6) ANALYTICAL METHODS FOR ADDITIONAL REQUIRED PARAMETERS. Water suppliers for public water systems required to analyze for additional parameters not included in ~~subs. (3) and (6)~~ sub. (3) shall have these parameters analyzed by a person approved by the department or EPA using the following methods:

SECTION 117. NR 809.563 (6) (h) is created to read:

NR 809.563 (6) (h) *Magnesium.* All methods allowed in s. NR 809.113(1) Table A.

SECTION 118. NR 809.565 (2) (c) 2m. is created to read:

NR 809.565 (2) (c) 2m. To qualify for reduced monitoring for TTHM and HAA5 under this paragraph, water suppliers for surface water systems or groundwater systems under the direct influence of surface water not monitoring under the provisions of sub. (5) shall take monthly TOC samples every 30 days at a location prior to any treatment, beginning April 1, 2008, or earlier, if specified by the department. In addition to meeting other criteria for reduced monitoring in this paragraph, the source water TOC running annual average shall be ≤4.0 mg/L, based on the most recent four quarters of monitoring, on a continuing basis at each treatment plant to reduce or remain on reduced monitoring for TTHM and HAA5. Once qualified for reduced monitoring for TTHM and HAA5 under this paragraph, a system may reduce source water TOC monitoring to quarterly TOC samples taken every 90 days at a location prior to any treatment.

SECTION 119. NR 809.565 (3) (b) 2. is repealed.

SECTION 120. NR 809.565 (3) (b) 3. is renumbered NR 809.563 (3)(b) 2. and as renumbered is amended to read:

NR 809.563 (3) (b) 2. Reduced monitoring ~~on or after April 1, 2009~~. Water suppliers for public water systems ~~required to analyze for bromate~~ may reduce monitoring for bromate from monthly to once per quarter, if the water supplier demonstrates that the public water system's running annual average concentration for bromate is ≤0.0025 mg/L based on monthly bromate measurements under par. (b) for the most recent four quarters. Samples shall be analyzed using Method 317.0 Revision 2.0, 326.0 or 321.8. ~~If a public water system has qualified for reduced bromate monitoring under subd.2, that public water system may remain on reduced monitoring as long as the running annual average of quarterly bromate samples ≤0.0025 mg/L based on samples analyzed using Methods 317.0 Revision 2.0, 326.0, or 321.8 using a detection limit of 0.0010 mg/L for bromate.~~ If the running annual average bromate concentration is >0.0025 mg/L, the system must resume routine monitoring required by par. (b).

SECTION 121. NR 809.565 (4) (a) is amended to read:

NR 809.565 (4) (a) *Chlorine and chloramines.* Water suppliers for public water systems shall perform routine monitoring by measuring the residual disinfectant level at the same points in the distribution system and at the same time as total coliforms are sampled, as specified in s. NR 809.31. The department may allow suppliers for surface water systems to take disinfectant residual samples at points other than the total coliform sampling points if the department determines that such points are more representative of disinfected water quality within the distribution system. Water suppliers for surface water systems may use the results of residual disinfectant concentration sampling conducted under s. NR 810.38 (1) (h) for unfiltered systems or s. NR 810.38 (2) (d) for public water systems that filter, in lieu of taking separate samples. Monitoring may not be reduced.

SECTION 122. NR 809.569 (1) (b) Table V is amended to read:

Table V
Step 1 Required Removal of TOC by Enhanced Coagulation and Enhanced Softening for Surface Water Systems Using Conventional Treatment

Source water TOC, mg/l	~~Source~~Removal of TOC (in percentages) for source water alkalinity concentration ranges(in mg/L) as $CaCO_3$ ~~(in percentages)~~		
	0 - 60 ~~%~~mg/L	> 60 - 120 ~~%~~mg/L	> 120~~%~~ mg/L
>2.0-4.0	35.0%	25.0%	15.0%
>4.0-8.0	45.0%	35.0%	25.0%
>8.0	50.0%	40.0%	30.0%

SECTION 123. NR809.569 (1) (b) 3, and NR809.569 (2)(c)2. are amended to read:

NR809.569 (1) (b)3. Public water systems practicing softening shall meet the TOC removal requirements in the column marked >120~~%~~ for source water alkalinity in mg/L as $CaCO_3$.

NR 809.569 (2) (c) 2. Softening that results in removing at least 10 mg/L of magnesium hardness (as $CaCO_3$), measured monthly according to s. NR 809.113 Table A and calculated quarterly as an annual running average.

SECTION 124. NR 809.60 (3) Table X is amended to read:

Table X	
Public Water System Population	**Monitoring Compliance Dates:**[1]
Public water systems that are not part of a combined distribution system and public water systems that serve the largest population in the combined distribution system	
(1) PWS serving ≥ 100,000	April 1, 2012.
(2) PWS serving 50,000–99,999	October 1, 2012.
(3) PWS serving 10,000–49,999	October 1, 2013.
(4) PWS serving < 10,000	October 1, 2013 if no *Cryptosporidium* monitoring is required under s. NR 809.331 (1)(d), or October 1, 2014 if *Cryptosporidium* monitoring is required under s. NR 809.331 (1)(d) or (f)
Public water systems that are part of a combined distribution system	
(5) Consecutive system or wholesale system	Water suppliers shall sample using the earliest compliance date of all the public water systems in the combined distribution system determined by the public water system with the largest population using the dates indicated in (1) to (4) of this table.

[1]The department may grant up to an additional 24 months for compliance with MCLs and operational evaluation levels if the public water system requires capital improvements to comply with an MCL.

SECTION 125. NR 809.60 (4) (b) is amended to read:

NR 809.60 (4) (b) Water suppliers for public water systems required to~~to~~ be monitored at a frequency less than quarterly shall begin monitoring in the calendar month recommended in the initial distribution system evaluation (IDSE) report they prepared for the EPA under Subpart U of 40 CFR part 141 ~~of the U.S. Code or for the department under subchapter VII~~or in the calendar month identified in the monitoring plan developed under s. NR 809.62 which shall be no later than 12 months after the compliance date in the table in par. (3).

SECTION 126. NR 809.61 (1) (a) is amended to read:

NR 809.61 Routine monitoring for Stage 2 DBP. (1) MONITORING. (a) A water supplier that submitted an IDSE report to EPA under Subpart U of 40 CFR part 141 ~~of the U.S. Code or the department under subchapter VII~~ shall begin monitoring at the locations and months recommended in the IDSE report submitted to EPA under Subpart U of 40 CFR part 141.605 ~~or the department under subchapter VII~~ following the schedule in s. NR 809.60(3), unless the department requires other locations or additional locations after its review.

SECTION 127. NR 809.61 (1) (c) Table Y is amended to read:

TABLE Y

Stage 2 DBP -- Disinfection byproducts monitoring frequency ~~and~~, locations and sample type.

Source water type	Population size category	Monitoring ~~Frequency~~ frequency	Distribution system monitoring location total per monitoring period	Sample type
Surface water and GWUDI:				
	<500	Annual	2	Individual; option of one dual sample at one location if highest DBP concentrations are at the same location and month
	500–3,300	quarterly	2	Individual
	3,301–9,999	quarterly	2	Dual
	10,000–49,999	quarterly	4	Dual
	50,000–249,999	quarterly	8	Dual

	250,000–999,999	quarterly	12	Dual
	1,000,000–4,999,999	quarterly	16	Dual
	≥ 5,000,000	quarterly	20	Dual
Groundwater:				
	<500	Annual	2	Individual; option of one dual sample at one location if highest DBP concentrations are at the same location and month
	500–9,999	Annual	2	Dual
	10,000–99,999	quarterly	4	Dual
	100,000–499,999	quarterly	6	Dual
	≥ 500,000	quarterly	8	Dual

SECTION 128. NR 809.61 (2) (a) is amended to read:

NR 809.61 (2) ANALYTICAL METHODS AND LABORATORIES. (a) Samples shall be analyzed using an approved method listed in s. NR 809.563~~(2)~~ (3) Table ~~R~~S for TTHM and HAA5.

SECTION 129. NR 809.62 (1) (a) is amended to read:

NR 809.62 (1) (a) Monitoring plans under this section shall be completed no later than the date the public water system is required to begin initial compliance monitoring under s. NR~~809.61~~ 809.60(3).

SECTION 130. NR 809.62 (1) (c) (intro), and (c) 2., and (2) are amended to read:

NR 809.62 (1) (c) If a public water system was not required to submit an IDSE report to the EPA under Subpart U of 40 CFR 141.601 or 141.602 ~~or the department under subchapter VII~~ and does not have sufficient monitoring locations to identify the required number of locations indicated in Subpart U of 40 CFR 141.605(b) or under s. NR 809.976; the water supplier shall do all of the following:

NR 809.62 (1) (c) 2. Provide the rationale for identifying the locations as having high levels of TTHM or HAA5. Water suppliers should compare the number of monitoring locations required under s. NR809.565 with the number of monitoring locations under s. NR 809.61 Table Y. If the public water system was required to have more monitoring locations under s. NR 809.565 than under s. NR 809.62 compliance monitoring, the water supplier shall identify which locations will be used by alternating selection of locations representing high TTHM levels and high HAA5 levels until the required number of compliance monitoring locations under s. NR 809.61 Table ~~T~~Y have been identified.

NR 809.62 (2) SUBMITTAL OF MONITORING PLANS**.** If a public water system serves > 3,300 people, the water supplier shall submit a copy of a monitoring plan to the department prior to the date the water supplier for the public water system is required to conduct initial monitoring under s. NR~~809.61~~809.60 (3), unless the IDSE report submitted under Subpart U of 40 CFR part 141 of the Federal Regulation~~or subchapter VIII~~ contains all the information required by this~~paragraph~~ subsection.

SECTION 131. NR 809.63 (1) is amended to read:

NR 809.63 Requirements for reduced and increased monitoring for Stage 2 DBP. (1) REDUCED MONITORING. The department may reduce the monitoring frequency when the LRAA is less than or equal to 0.040 mg/L for TTHM and less than or equal to 0.030 mg/L for HAA5 at all compliance monitoring locations. Systems may only use data collected in compliance with s. NR 809.565 and under this section to qualify for reduced monitoring. In addition, the source water annual average TOC level, before any treatment, must be ≤4.0 mg/L at each treatment plant treating surface water or GWUDI, based on monitoring conducted under NR 809.565 (2) (c) 2m. The reduced sampling frequency and number of sample sites are given in Table Z:

Table Z
Reduced Stage 2 Monitoring Frequency and Number of Sites

Source Water Type	Population Size Category	Monitoring Frequency	Distribution System Monitoring Location Total per Monitoring Period
Surface Water or GWUDI	less than 500	Annual	Monitoring may not be reduced.
	500 to 3,300	Annual	1 TTHM and 1 HAA5 at the respective locations and quarters with the highest individual DBP; 1 dual sample set per year if the highest TTHM and HAA5 measurements occurred at the same location and quarter.
	3,301 to 9,999	Annual	2 dual sample sets: one at the location and during the quarter with the highest TTHM single measurement, one at the location and during the quarter with the highest HAA5 single measurement.
	10,000 to 49,999	quarterly	2 dual sample sets at the locations with the highest TTHM and highest HAA5 LRAAs
	50,000 to 249,999	quarterly	4 dual sample sets at the locations with the two highest TTHM and two highest HAA5 LRAAs
	250,000 to 999,999	quarterly	6 dual sample sets at the locations with the three highest TTHM and three highest HAA5 LRAAs
	1,000,000 to 4,999,999	quarterly	8 dual sample sets at the locations with the four highest TTHM and four highest HAA5 LRAAs
	5,000,000 or more	quarterly	10 dual sample sets at the locations with the five highest TTHM and five highest HAA5 LRAAs
Ground-water	less than 500	every third year (triennial)	1 TTHM and 1 HAA5 at the respective locations and quarters with the highest individual DBP; 1 dual sample set per year if the highest TTHM and HAA5 measurements occurred at the same location and quarter.
	500 to 9,999	Annual	1 TTHM and 1 HAA5 at the respective locations and quarters with the

			highest individual DBP; 1 dual sample set per year if the highest TTHM and HAA5 measurements occurred at the same location and quarter.
	10,000 to 99,999	Annual	2 dual sample sets: one at the location and during the quarter with the highest TTHM single measurement, one at the location and during the quarter with the highest HAA5 single measurement
	100,000 to 499,999	quarterly	2 dual sample sets at the locations with the highest TTHM and highest HAA5 LRAAs
	500,000 or more	quarterly	4 dual sample sets at the locations with the two highest TTHM and two highest HAA5 LRAAs

SECTION 132. NR 809.63 (1) (d) 3. and (1) (e) are amended to read:

NR 809.63 (1) (d) 3. In addition to subd. 1. and 2., for a surface water or GWUDI system, the source water annual average TOC level, before any treatment, shall be ≤4.0 mg/L , based on monitoring conducted under s. NR 809.565(2) (c) 2m.

NR 809.63 (1) (e) If the LRAA based on quarterly monitoring at any monitoring location exceeds either 0.040 mg/L for TTHM or 0.030 mg/L for HAA5 or if the annual (or less frequent) sample at any location exceeds either 0.060 mg/L for TTHM or 0.045 mg/L for HAA5, or if the source water annual average TOC level, before any treatment, is >4.0 mg/L at any treatment plant treating surface water or groundwater under the direct influence of surface water, the water supplier shall resume routine monitoring under s. NR ~~809.62~~ 809.61or begin increased monitoring under sub. (2).

SECTION 133. NR 809.63 (2) (am), and NR 809.63 (4) (title) are created to read:

NR 809.63 (1) (d) (am) Water suppliers shall conduct increased monitoring under this paragraph at the monitoring locations in the monitoring plan developed under s. NR 809.62 beginning on the date identified in s. NR 809.60(3) for compliance with this subchapter. The public water system shall remain on increased monitoring until it qualifies to return to routine monitoring under s. NR 809.61.

NR 809.63 (4) RETURN TO ~~REDUCED~~ ROUTINE MONITORING.

SECTION 134. NR 809.65 (1) (a) and (b) are amended to read:

NR 809.65 (1) (a) The ~~average~~ sum of the two previous quarters' TTHM results plus twice the current quarter's TTHM result, divided by 4, exceeds 0.080 mg/L at any monitoring location.
(b) The ~~average~~ sum of the two previous quarters' HAA5 results plus twice the current quarter's HAA5 result, divided by 4, exceeds 0.060 mg/L at any monitoring location.

SECTION 135. NR 809.66 (1) (intro.) is amended to read:

NR 809.66 Requirements for remaining on reduced TTHM and HAA5 monitoring based on Stage 1 DBP results. (1) REMAINING ON REDUCED MONITORING. (intro.) A public water system may remain on reduced

monitoring after the dates identified in s. NR 809.60(3) for compliance with this subchapter only if the public water system qualified for a 40/30 certification by EPA under Subpart U of 40 CFR 141.603 ~~of the Federal Regulations~~ ,or received a very small system waiver under Subpart U of 40 CFR 141.604 ~~of the Federal Regulations~~, and if the public water system meets the reduced monitoring criteria in NR 809.63(1) and all of the following criteria:

SECTION 136. NR 809.67 (1) (title) is repealed.

SECTION 137. NR 809.67 (1) is renumbered NR 867.67 (intro.).

SECTION 138. NR 809.67 (2) is repealed.

SECTION 139. NR 809.68 (1) (a) 3. and NR 809.68 (2) are amended to read:

NR 809.68 (1) (a) 3. Arithmetic average of quarterly results for the four quarters immediately previous for each monitoring location (LRAA), beginning at the end of the fourth calendar quarter that follows the compliance date and at the end of each subsequent quarter. If the LRAA calculated based on fewer than four quarters of data would cause the MCL to be exceeded regardless of the monitoring results of subsequent quarters, the water supplier shall report this information to the department as part of the first report due following the compliance date or anytime thereafter that this determination is made. If the public water system is required to conduct monitoring at a frequency that is less than quarterly, the water supplier shall make compliance calculations beginning with the first compliance sample taken after the compliance date, unless the public water system is required to conduct increased monitoring under s. NR ~~809.62~~809.63 (2).

NR 809.68(2) RECORDKEEPING. The water supplier shall retain any s. NR 809.62 monitoring plans and monitoring results collected under s. NR 809.61 as required by s. NR ~~809.9705~~809.82.

SECTION 140. NR 809.70 (1) Table AA is amended to read:

Table AA

Parameters	Standard (Milligrams per liter)
Aluminum	0.05 to 0.2
Chloride	250
Color	15 units
Copper	1.0
Corrosivity	Noncorrosive
Fluoride[1]	2.0
Foaming agents	0.5
Hydrogen Sulfide	~~Not~~ Not detectable
Iron	0.3
Manganese	0.05
Odor	3 (Threshold No.)
Silver	0.1
Sulfate	250
Total ~~Residue~~ Dissolved Solids (TDS)	500
Zinc	5

[1] The primary maximum contaminant level for fluoride is contained in s. NR 809.11.

SECTION 141. NR 809.70 (2), NR 809.71 (1) and (2), and NR 809.74 (1) (a) are amended to read:

NR 809.70 (2) APPLICABILITY OF SECONDARY STANDARDS. The secondary standards contained in this section apply to all public water systems. ~~Compliance with these standards shall be calculated in accordance with s. NR 809.61.~~

NR 809.71 (1) **Sampling and analytical requirements for secondary standards. (1)** COMPLAINTS ON AESTHETIC WATER QUALITY. If the department receives complaints regarding the aesthetic quality of the water, the water supplier may be required to implement a monitoring program to determine compliance with s. NR ~~809.60~~809.70.

NR 809.71 (2) DEPARTMENT REQUIRED REMEDIAL ACTION. If it is determined by the department that physical or chemical substances or both in excess of those standards contained in s. NR ~~809.60~~809.70 are objectionable to an appreciable number of persons and are detrimental to the public welfare, the department may, on its own motion, require remedial action by the water supplier to insure that the public receives the highest quality water practicably obtainable.

NR 809.74 Additional requirements for public water systems which chlorinate or fluoridate water. (1) PUBLIC WATER SYSTEMS WHICH ADD FLUORIDE. (a) The water supplier for a community water system artificially fluoridating the water shall establish a monitoring program in order to maintain the fluoride concentration within the range of ~~1.0 to 1.5~~0.6 to 0.8 milligrams per liter recommended by the dental health section of the department of health services for optimum dental benefits.

SECTION 142. NR 809.80(7)(c)1. is amended to read:

(c) 1. If during any 4 hour monitoring period the turbidity exceeds ~~1.0~~ 0.3 NTU or at any time during the month, turbidity measurements indicate the 95th percentile turbidity level of 0.5 NTU will be exceeded for that month, the water supplier shall inform the department as soon as possible, but no later than the end of the next business day.

SECTION 143. NR 809.80 (9m) is created to read:

NR 809.80 (9m) SEASONAL SYSTEM START-UP PROCEDURE REPORTING. Before serving water to the public, the water supplier for a seasonal public water system must certify to the department that it has complied with the department-approved start-up procedure.

SECTION 144. NR 809.82 (8) and (9) are created to read:

NR 809.82 (8) ASSESSMENT FORMS. The water supplier shall maintain any assessment form, regardless of who conducts the assessment, and documentation of corrective actions completed as a result of those assessments, or other available summary documentation of the sanitary defects and corrective actions taken under s. NR 809.313. The water supplier shall maintain the records for department review for a period not less than 5 years after completion of the assessment or corrective action.

NR 809.82 (9) REPEAT SAMPLE EXTENSIONS. The water supplier shall maintain a record of any repeat sample taken that meets department criteria for an extension of the 24-hour period for collecting repeat samples as provided under s. NR 809.31(2).

SECTION 145. NR 809.83 (1) (b) is amended to read:

NR 809.83 (1) (b) Detected under this paragraph refers to all contaminants identified at or above the detection limits specified in subch. I and ~~means any quantity~~ reported by a safe drinking water certified laboratory.

SECTION 146. NR 809.833 (2) (d) is created to read:

NR 809.833 (2) (d) A report that contains information regarding a Level 1 or Level 2 Assessment required in s. NR 809.313 shall include the following definitions:

1. "Level 1 Assessment: 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."
2. "Level 2 Assessment: A Level 2 assessment is a very detailed study of the water system to identify potential problems and determine, if possible, why an *E. coli* MCL violation has occurred or why total coliform bacteria have been found in our water system, or both, on multiple occasions."

SECTION 147. NR 809.833 (3) (c) 4.(intro.) and 4. b. are amended to read:

NR 809.833 (3) (c) 4. For contaminants subject to an MCL, except turbidity and ~~total coliforms~~ *E. coli*, the highest contaminant level used to determine compliance with requirements of this chapter and the range of detected levels as follows:

NR 809.833 (3) (c) 4 b. When compliance with the MCL is determined by calculating a running annual average of all samples taken at a sampling point: the highest average of any of the sampling points and the range of all sampling points expressed in the same units as the MCL. When the MCL for TTHM or HAA5 in s. NR 809.561(2) is exceeded at a locational running annual average monitoring location, systems must include the highest locational running annual average for TTHM and HAA5 and the range of individual sample results for all monitoring locations expressed in the units as the MCL. If more than one location exceeds the TTHM or HAA5 MCL, the system must include the locational running annual averages for all locations that exceed the MCL.

SECTION 148. NR 809.833 (3) (c) 7. (intro), a. and b. are repealed and recreated to read:

NR 809.833 (3) (c) 7. For *E. coli* analytical results under s. NR 809.31, the total number of positive samples.

SECTION 149. NR 809.833(3)(c)8 is repealed

SECTION 150. NR 809.833 (3) (c) 9. is renumbered NR 809.833 (3) (c) 8.

SECTION 151. NR 809.833 (7) (d)(f) 1. is amended to read:

NR 809.833 (7) (f) *Public water systems with significant deficiencies or E. coli positives under s. NR 809.325.*

1. A water supplier for any groundwater system that receives notice from the department of a significant deficiency or notice from a laboratory of a fecal indicator-positive groundwater source sample required under s. NR 809.325(2), that is not invalidated by the department under s. NR 809.323(2), must inform ~~their~~its customers of any significant

deficiency that is uncorrected at the time of the next report or of any fecal indicator-positive groundwater source sample in the next report.

SECTION 152. NR 809.833 (7) (f) 2. d. is amended to read:

NR 809.833 (7) (f) 2.d. If the public water system receives notice of a fecal indicator-positive groundwater source sample that is not invalidated by the ~~State~~ department under s. NR 809.323(2), the potential health effects using the health effects language of Appendix A of subchapter V.

SECTION 153. NR 809.833 (7) (g), (h) and (i) are created to read:

NR 809.833 (7) (g) *Water suppliers required to conduct Level 1 or Level 2 assessments not resulting from an E. coli MCL violation*. Any water supplier required to comply with the Level 1 assessment requirement or a Level 2 assessment requirement that is not resulting from an *E. coli* MCL violation must include in the report the text found in subds. 1. to 3. as appropriate, filling in the blanks accordingly. Any water supplier that has failed to complete all the required assessments or correct all identified sanitary defects is in violation of the treatment technique requirement and must also include one or both of the statements in subds. 4. and 5. of this paragraph, as appropriate.

1. 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 drinking water distribution system. [NAME OF WATER SUPPLIER] found coliforms indicating the need to look for potential problems in water treatment or distribution. When this occurs, [NAME OF WATER SUPPLIER] is required to conduct assessments to identify problems and to correct any problems that were found during these assessments.

2. During the past year we were required to conduct [INSERT NUMBER OF LEVEL 1 ASSESSMENTS] Level 1 assessments. [INSERT NUMBER OF LEVEL 1 ASSESSMENTS] Level 1 assessments were completed. In addition, we were required to take [INSERT NUMBER OF CORRECTIVE ACTIONS] corrective actions and we completed [INSERT NUMBER OF CORRECTIVE ACTIONS] of these actions.

3. During the past year [INSERT NUMBER OF LEVEL 2 ASSESSMENTS] Level 2 assessments were required to be completed for our water system. [INSERT NUMBER OF LEVEL 2 ASSESSMENTS] Level 2 assessments were completed. In addition, we were required to take [INSERT NUMBER OF CORRECTIVE ACTIONS] corrective actions and we completed [INSERT NUMBER OF CORRECTIVE ACTIONS] of these actions.

4. During the past year we failed to conduct all of the required assessments.

5. During the past year we failed to correct all identified defects that were found during the assessments.

(h) *Water suppliers required to conduct Level 2 assessments resulting from an E. coli MCL violation*. Any water supplier required to conduct a Level 2 assessment resulting from an *E. coli* MCL violation must include in the report the text found in subds. 1. and 2., filling in the blanks accordingly, if appropriate. Any system that has failed to complete the required assessment or correct all identified sanitary defects is in violation of the treatment technique requirement and must also include the statements in subds. 3. and 4., as appropriate.

1. *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, the elderly, and people with severely compromised immune systems. We found *E. coli* bacteria, indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct assessments to identify problems and to correct any problems that were found during these assessments.

2. We were required to complete a Level 2 assessment because we found *E. coli* in our water system. In addition, we were required to take [INSERT NUMBER OF CORRECTIVE ACTIONS] corrective actions and we completed [INSERT NUMBER OF CORRECTIVE ACTIONS] of these actions.

3. We failed to conduct the required assessment.

4. We failed to correct all sanitary defects that were identified during the assessment that we conducted.

(i) *Water suppliers detecting E. coli and violating the E.coli MCL.* If a water supplier detects *E. coli* and has violated the *E. coli MCL,* in addition to completing the table as required in par. (3)(c) of this section, the water supplier must include one or more of the statements in subds.1. to 4. to describe any noncompliance, as applicable:

1. We had an *E. coli*-positive repeat sample following a total coliform-positive routine sample.
2. We had a total coliform-positive repeat sample following an *E. coli*-positive routine sample.
3. We failed to take all required repeat samples following an *E. coli*-positive routine sample.
4. We failed to test for *E. coli* when any repeat sample tests positive for total coliform.

SECTION 154. NR 809.835 (2m) is created to read:

NR 809.835 (2m) ADDITIONAL NITRATE INFORMATION. A system which detects nitrate at levels above 5 mg/L, but below the MCL:

(a) Shall include a short informational statement about the effects of nitrate on children using language such as: "Nitrate in drinking water at levels above 10 ppm is a health risk for infants of less than six months of age. High nitrate levels in drinking water can cause blue baby syndrome. Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. If you are caring for an infant you should ask advice from your health care provider. Females who are or may become pregnant should not consume water with nitrate concentrations that exceed 10 ppm. There is some evidence of an association between exposure to high nitrate levels in drinking water during the first weeks of pregnancy and certain birth defects."

(b) May write its own educational material, but only in consultation with the department.

SECTION 155. NR 809.835 (3) (intro.),(a) and (b) are repealed and recreated to read:

NR 809.835 (3) ADDITIONAL LEAD INFORMATION. Every report shall include the following lead-specific information:

NR 809.835 (3) (a) A short informational statement about lead in drinking water and its effects on children. The statement must include the following information: "If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. [NAME OF UTILITY] is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at *http://www.epa.gov/safewater/lead."*

NR 809.835 (3) (b) A system may write its own educational statement, but only in consultation with the department.

SECTION 156. NR 809.837 (1) and (3) are amended to read:

NR 809.837 Consumer confidence report delivery and recordkeeping. (1) GENERAL DELIVERY REQUIREMENTS. Except as provided in sub. (7), water suppliers for each community water system shall mail or otherwise directly deliver one copy of the report to each customer. Electronic delivery of the report is allowed if the water supplier of a community water system uses paper or electronic communication containing uniform resource locator (URL) information providing a direct link to the report and if the communication prominently displays the URL and a notice explaining the nature of the link. The electronic link shall take the customer to the entire report without directing the customer to another internet page.

NR 809.837 (3) DELIVERY TO THE DEPARTMENT. No later than the date the public water system is required to distribute the report to its customers, the water supplier for each community water system shall also mail a copy of the report to the department, ~~followed within 3 months by~~ along with a certification that the report has been distributed to customers, and that the information is correct and consistent with the compliance monitoring data previously submitted to the department.

SECTION 157. NR 809 Subchapter V, Appendix A is amended to read:

Appendix A to Subchapter V
Consumer Confidence Report Information

Contaminant (units)	**Traditional MCL in mg/L**	**To convert for CCR; multiply by**	MCL in CCR units	**MCLG**	**Major sources in drinking water**	**Health effects language**
Microbiological contaminants:						
Total Coliform Bacteria	~~MCL: (public water systems that collect ≥40 samples/ month) 5% of monthly samples are positive; (systems that collect <40 samples/month) 1 positive monthly sample.~~TT	N/A	~~MCL: (public water systems that collect ≥40 samples/ month) 5% of monthly samples are positive; (public water systems that collect <40 samples/month) 1 positive monthly sample~~.TT	~~0~~NA	Naturally present in the environment.	~~Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, bacteria may be present. Coliforms were found in more samples than allowed and this was a warning of potential problems.~~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 drinking water 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 were found during these assessments.
~~Fecal coliform and E. coli~~*E. coli*	~~0~~Routine and repeat samples are total coliform-positive and either is *E. coli*-positive or system fails to take repeat samples following *E.*	~~N/A~~	~~0~~Routine and repeat samples are total coliform-positive and either is *E. coli*-positive or system fails to take repeat	0	Human and animal fecal waste.	~~Fecal coliforms and E. coli~~*E. coli* are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. ~~Microbes~~ Human pathogens in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a

	coli-positive routine sample or system fails to analyze total coliform-positive repeat sample for *E. coli.*		samples following *E. coli*-positive routine sample or system fails to analyze total coliform-positive repeat sample for *E. coli*			special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.
Total organic carbon (ppm)	TT	N/A	TT	N/A	Naturally present in the environment.	Total organic carbon has no health effects. However, total organic carbon provides a medium for the formation of disinfection byproducts. Their byproducts include trihalomethanes and haloacetic acids. Drinking water containing these byproducts in excess of the MCL may lead to adverse health effects, liver or kidney problems, or nervous system effects, and may lead to an increased risk of getting cancer.
Turbidity (NTU)	TT	N/A	TT	N/A	Soil runoff.	Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea and associated headaches.
Fecal Indicators: enterococci or coliphage	TT		TT	N/A	Human and animal fecal waste	Fecal indicators are microbes whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term health effects, such as

						diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems
Radioactive contaminants:						
Beta/photon emitters (mrem/yr)	4 mrem/yr	N/A	4	N/A	Decay of natural and man-made deposits.	Certain minerals are radioactive and may emit forms of radiation known as photons and beta radiation. Some people who drink water containing beta and photon emitters in excess of the MCL over many years may have an increased risk of getting cancer.
Alpha emitters (pCi/l)	15 pCi/l	N/A	15	N/A	Erosion of natural deposits.	Certain minerals are radioactive and may emit a form of radiation known as alpha radiation. Some people who drink water containing alpha emitters in excess of the MCL over many years may have an increased risk of getting cancer.
Combined radium (pCi/l)	5 pCi/l	N/A	5	N/A	Erosion of natural deposits.	Some people who drink water containing radium 226 or 228 in excess of the MCL over many years may have an increased risk of getting cancer.
Uranium (ug/1)	30 ug/1	N/A	30	0	Erosion of natural deposits.	Some people who drink water containing uranium in excess of the MCL over many years may have an increased risk of getting cancer or kidney toxicity.
Inorganic contaminants:						
Antimony (ppb)	.006	1000	6	6	Discharge from petroleum refineries, fire retardants, ceramics,	Some people who drink water containing antimony well in excess of the MCL over many years could experience increases in

					electronics, solder.	blood cholesterol and decreases in blood sugar.
Arsenic (ppb)	0.010[1]	1000	10[1]	0[1]	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes.	Some people who drink water containing arsenic in excess of the MCL over many years could experience skin damage or problems with their circulatory system, and may have an increased risk of getting cancer.
Asbestos (MFL)	7 MFL	N/A	7	7	Decay of asbestos cement water; Erosion of natural deposits.	Some people who drink water containing asbestos in excess of the MCL over many years may have an increased risk of developing benign intestinal polyps.
Barium (ppm)	2	N/A	2	2	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits.	Some people who drink water containing barium in excess of the MCL over many years could experience an increase in their blood pressure.
Beryllium (ppb)	.004	1000	4	4	Discharge from metal refineries and coal-burning factories; Discharge from electrical, aerospace, and defense industries.	Some people who drink water containing beryllium well in excess of the MCL over many years could develop intestinal lesions.
Bromate (ppb)	.010	1000	10	0	By-product of drinking water disinfection.	Some people who drink water containing bromate in excess of the MCL over many years may have an increased risk of getting cancer.
Cadmium (ppb)	.005	1000	5	5	Corrosion of galvanized pipes; Erosion of natural deposits; Discharge from metal refineries; Runoff from waste batteries and paints.	Some people who drink water containing cadmium in excess of the MCL over many years could experience kidney damage.
Chloramines (ppm)	MRDL = 4	N/A	MRDL = 4	MRDLG = 4	Water additive used to control microbes.	Some people who use water containing chloramines well in excess of the MRDL could experience irritating

						effects to their eyes and nose. Some people who drink water containing chloramines well in excess of the MRDL could experience stomach discomfort or anemia.
Chlorine (ppm)	MRDL = 4	N/A	MRDL = 4	MRDLG = 4	Water additive used to control microbes.	Some people who use water containing chlorine well in excess of the MRDL could experience irritating effects to their eyes and nose. Some people who drink water containing chlorine well in excess of the MRDL could experience stomach discomfort or anemia.
Chlorine dioxide (ppb)	MRDL = .8	1000	MRDL = 800	MRDLG = 800	Water additive used to control microbes.	Some infants and young children who drink water containing chlorine dioxide in excess of the MRDL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorine dioxide in excess of the MRDL. Some people may experience anemia.
Chlorite (ppm)	1	N/A	1	0.8	By-product of drinking water disinfection.	Some infants and young children who drink water containing chlorite in excess of the MCL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorite in excess of the MCL. Some people may experience anemia.
Chromium (ppb)	.1	1000	100	100	Discharge from steel and pulp mills; Erosion of natural deposits.	Some people who drink water containing chromium well in excess of the MCL over many years could experience allergic dermatitis.
Copper (ppm)	AL = 1.3	N/A	AL = 1.3	1.3	Corrosion of household plumbing systems; Erosion	Copper is an essential nutrient, but some people who drink water containing copper in excess of the

					of natural deposits.	action level over a relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson's Disease should consult their personal doctor.
Cyanide (ppb)	.2	1000	200	200	Discharge from steel/metal factories; Discharge from plastic and fertilizer factories.	Some people who drink water containing cyanide well in excess of the MCL over many years could experience nerve damage or problems with their thyroid.
Fluoride (ppm)	4	N/A	4	4	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories.	Some people who drink water containing fluoride in excess of the MCL over many years could get bone disease, including pain and tenderness of bones. Fluoride in drinking water at half the MCL or more may cause mottling of children's teeth, usually in children less than 9 years old. Mottling, also known as dental fluorosis, may include brown staining and/or pitting of the teeth, and occurs only in developing teeth before they erupt from the gums.
Lead (ppb)	AL = .015	1000	AL = 15	0	Corrosion of household plumbing system; Erosion of natural deposits.	Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attentions span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure.
Mercury [inorganic] (ppb)	.002	1000	2	2	Erosion of natural deposits; Discharge from	Some people who drink water containing inorganic mercury well in excess of

					refineries and factories; Runoff from landfills; Runoff from cropland.	the MCL over many years could experience kidney damage.
Nitrate (ppm)	10	N/A	10	10	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits.	Infants below the age of 6 months who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome. Females who are or may become pregnant should not consume water with nitrate concentrations that exceed the MCL. There is some evidence of an association between exposure to high nitrate levels in drinking water during the first weeks of pregnancy and certain birth defects.
Nitrite (ppm)	1	N/A	1	1	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits.	Infants below the age of 6 months who drink water containing nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome.
Selenium (ppb)	.05	1000	50	50	Discharge from petroleum and metal refineries; Erosion of natural deposits; Discharge from mines.	Selenium is an essential nutrient. However, some people who drink water containing selenium in excess of the MCL over many years could experience hair or fingernail loss, numbness in fingers or toes, or problems with their circulation.
Thallium (ppb)	.002	1000	2	0.5	Leaching from ore-processing sites; Discharge from electronic, glass, and drug factories.	Some people who drink water containing thallium in excess of the MCL over many years could experience hair loss, changes in their blood, or problems with their kidneys, intestines, or liver.
Synthetic organic contaminants including pesticides and herbicides:						
2,4-D (ppb)	.07	1000	70	70	Runoff from	Some people who drink

					herbicide used on row crops.	water containing the weed killer 2,4-D well in excess of the MCL over many years could experience problems with their kidneys, liver, or adrenal glands.
2,4,5-TP [Silvex] (ppb)	.05	1000	50	50	Residue of banned herbicide.	Some people who drink water containing silvex in excess of the MCL over many years could experience liver problems.
Acrylamide	TT	N/A	TT	0	Added to water during sewage/wastewater treatment.	Some people who drink water containing high levels of acrylamide over a long period of time could have problems with their nervous system or blood, and may have an increased risk of getting cancer.
Alachlor (ppb)	.002	1000	2	0	Runoff from herbicide used on row crops.	Some people who drink water containing alachlor in excess of the MCL over many years could have problems with their eyes, liver, kidneys, or spleen, or experience anemia, and may have an increased risk of getting cancer.
Atrazine (ppb)	.003	1000	3	3	Runoff from herbicide used on row crops.	Some people who drink water containing atrazine well in excess of the MCL over many years could experience problems with their cardiovascular system or reproductive difficulties.
Benzo(a)-pyrene [PAH] (nanograms/l)	.0002	1,000,000	200	0	Leaching from lining of water storage tanks and distribution lines.	Some people who drink water containing benzo(a)pyrene in excess of the MCL over many years may experience reproductive difficulties and may have an increased risk of getting cancer.
Carbofuran (ppb)	.04	1000	40	40	Leaching of soil fumigant used on rice and alfalfa.	Some people who drink water containing carbofuran in excess of the MCL over many years could experience problems with their blood, or nervous or reproductive systems.
Chlordane	.002	1000	2	0	Residue of	Some people who drink

(ppb)					banned termiticide.	water containing chlordane in excess of the MCL over many years could experience problems with their liver or nervous system, and may have an increased risk of getting cancer.
Dalapon (ppb)	.2	1000	200	200	Runoff from herbicide used on rights of way.	Some people who drink water containing dalapon well in excess of the MCL over many years could experience minor kidney changes.
Di(2-ethylhexyl) adipate (ppb)	.4	1000	400	400	Discharge from chemical factories.	Some people who drink water containing di (2-ethylhexyl) adipate well in excess of the MCL over many years could experience toxic effects such as weight loss, liver enlargement or possible reproductive difficulties.
Di(2-ethylhexyl) phthalate (ppb)	.006	1000	6	0	Discharge from rubber and chemical factories.	Some people who drink water containing di (2-ethylhexyl) phthalate well in excess of the MCL over many years may have problems with their liver, or experience reproductive difficulties, and may have an increased risk of getting cancer.
Dibromo-chloropropane (ppt)	.0002	1,000,000	200	0	Runoff/leaching from soil fumigant used on soybeans, cotton, pineapples, and orchards.	Some people who drink water containing DBCP in excess of the MCL over many years could experience reproductive problems and may have an increased risk of getting cancer.
Dinoseb (ppb)	.007	1000	7	7	Runoff from herbicide used on soybeans and vegetables.	Some people who drink water containing dinoseb well in excess of the MCL over many years could experience reproductive difficulties.
Diquat (ppb)	.02	1000	20	20	Runoff from herbicide use.	Some people who drink water containing diquat in excess of the MCL over many years could get cataracts.
Dioxin	.00000003	1,000,000,0	30	0	Emissions from	Some people who drink

[2,3,7,8-TCDD] (ppq)		00			waste incineration and other combustion; Discharge from chemical factories.	water containing dioxin in excess of the MCL over many years could experience reproductive difficulties and may have an increased risk of getting cancer.
Endothall (ppb)	.1	1000	100	100	Runoff from herbicide use.	Some people who drink water containing endothall in excess of the MCL over many years could experience problems with their stomach or intestines.
Endrin (ppb)	.002	1000	2	2	Residue of banned insecticide.	Some people who drink water containing endrin in excess of the MCL over many years could experience liver problems.
Epichloro-hydrin	TT	N/A	TT	0	Discharge from industrial chemical factories; An impurity of some water treatment chemicals.	Some people who drink water containing high levels of epichlorohydrin over a long period of time could experience stomach problems, and may have an increased risk of getting cancer.
Ethylene dibromide (ppt)	.00005	1,000,000	50	0	Discharge from petroleum refineries.	Some people who drink water containing ethylene dibromide in excess of the MCL over many years could experience problems with their liver, stomach, reproductive systems, or kidneys, and may have an increased risk of getting cancer.
Glyphosate (ppb)	.7	1000	700	700	Runoff from herbicide use.	Some people who drink water containing glyphosate in excess of the MCL over many years could experience problems with their kidneys or reproductive difficulties.
Heptachlor (ppt)	.0004	1,000,000	400	0	Residue of banned pesticide.	Some people who drink water containing heptachlor in excess of the MCL over many years could experience liver damage and may have an increased risk of getting cancer.
Heptachlor-epoxide (ppt)	.0002	1,000,000	200	0	Breakdown of heptachlor.	Some people who drink water containing heptachlor

						epoxide in excess of the MCL over many years could experience liver damage, and may have an increased risk of getting cancer.
~~Hexachloro-benzene~~ Hexachlorobenzene (ppb)	.001	1000	1	0	Discharge from metal refineries and agricultural chemical factories.	Some people who drink water containing hexachlorobenzene in excess of the MCL over many years could experience problems with their liver or kidneys, or adverse reproductive effects, and may have an increased risk of getting cancer.
~~Hexachloro-cyclopenta-diene~~ Hexachlorocyclopentadiene (ppb)	.05	1000	50	50	Discharge from chemical factories.	Some people who drink water containing hexachlorocyclopentadiene well in excess of the MCL over many years could experience problems with their kidneys or stomach.
Lindane (ppt)	.0002	1,000,000	200	200	Runoff/leaching from insecticide used on cattle, lumber and gardens.	Some people who drink water containing lindane in excess of the MCL over many years could experience problems with their kidneys or liver.
Methoxychlor (ppb)	.04	1000	40	40	Runoff/leaching from insecticide used on fruits, vegetables, alfalfa and livestock.	Some people who drink water containing methoxychlor in excess of the MCL over many years could experience reproductive difficulties.
Oxamyl [Vydate] (ppb)	.2	1000	200	200	Runoff/leaching from insecticide used on apples, potatoes and tomatoes.	Some people who drink water containing oxamyl in excess of the MCL over many years could experience slight nervous system effects.
PCBs [~~Poly-chlorinated-biphenyls~~Polychlorinated biphenyls] (ppt)	.0005	1,000,000	500	0	Runoff from landfills; Discharge of waste chemicals.	Some people who drink water containing PCBs in excess of the MCL over many years could experience changes in their skin, problems with their thymus gland, immune deficiencies, or reproductive or nervous system difficulties, and may have an increased risk of getting cancer.
~~Pentachloro-~~	.001	1000	1	0	Discharge from	Some people who drink

~~phenol~~ Pentachlorophenol (ppb)					wood preserving factories.	water containing pentachlorophenol in excess of the MCL over many years could experience problems with their liver or kidneys, and may have an increased risk of getting cancer.
Picloram (ppb)	.5	1000	500	500	Herbicide runoff.	Some people who drink water containing picloram in excess of the MCL over many years could experience problems with their liver.
Simazine (ppb)	.004	1000	4	4	Herbicide runoff.	Some people who drink water containing simazine in excess of the MCL over many years could experience problems with their blood.
Toxaphene (ppb)	.003	1000	3	0	Runoff/leaching from insecticide used on cotton and cattle.	Some people who drink water containing toxaphene in excess of the MCL over many years could have problems with their kidneys, liver, or thyroid, and may have an increased risk of getting cancer.
Volatile organic contaminants:						
Benzene (ppb)	.005	1000	5	0	Discharge from factories; Leaching from gas storage tanks and landfills.	Some people who drink water containing benzene in excess of the MCL over many years could experience anemia or a decrease in blood platelets, and may have an increased risk of getting cancer.
Carbon tetrachloride (ppb)	.005	1000	5	0	Discharge from chemical plants and other industrial activities.	Some people who drink water containing carbon tetrachloride in excess of the MCL over many years could experience problems with their liver and may have an increased risk of getting cancer.
~~Chloro-benzene~~Chlorobenzene (ppb)	.1	1000	100	100	Discharge from chemical and agricultural chemical factories.	Some people who drink water containing chlorobenzene in excess of the MCL over many years could experience problems with their liver or kidneys.
~~o-Dichloro-benzene~~ 0-Dichlorobenze	.6	1000	600	600	Discharge from industrial chemical	Some people who drink water containing o-dichlorobenzene well in

ne (ppb)					factories.	excess of the MCL over many years could experience problems with their liver, kidneys, or circulatory systems.
~~p-Dichloro-benzene~~ p-Dichlorobenzene (ppb)	.075	1000	75	75	Discharge from industrial chemical factories.	Some people who drink water containing p-dichlorobenzene in excess of the MCL over many years could experience anemia, damage to their liver, kidneys, or spleen, or changes in their blood.
~~1,2-Dichloro-ethane~~ 1,2-Dichlorobenzene (ppb)	.005	1000	5	0	Discharge from industrial chemical factories.	Some people who drink water containing 1,2-dichloroethane in excess of the MCL over many years may have an increased risk of getting cancer.
~~1,1-Dichloro-ethylene~~ 1,1,-Dichlorobenzene (ppb)	.007	1000	7	7	Discharge from industrial chemical factories.	Some people who drink water containing 1,1-dichloroethylene in excess of the MCL over many years could experience problems with their liver.
~~cis-1,2-dichloro-ethylene~~ cis-1,2-Dichloroethylene (ppb)	.07	1000	70	70	Discharge from industrial chemical factories.	Some people who drink water containing cis-1,2-dichloroethylene in excess of the MCL over many years could experience problems with their liver.
~~Trans-1,2-Dichloro-ethylene~~ trans-1,2-Dichloroethylene (ppb)	.1	1000	100	100	Discharge from industrial chemical factories.	Some people who drink water containing trans-1,2-dichloroethylene well in excess of the MCL over many years could experience problems with their liver.
~~Dichloro-methane~~ Dichloromethane (ppb)	.005	1000	5	0	Discharge from pharmaceutical and chemical factories.	Some people who drink water containing dichlorormethane in excess of the MCL over many years could have liver problems and may have an increased risk of getting cancer.
~~1,2-dichloro-propane~~ 1,2-Dichloropropane (ppb)	.005	1000	5	0	Discharge from industrial chemical factories.	Some people who drink water containing 1,2-dichloropropane in excess of the MCL over many years may have an increased risk of getting cancer.
Ethylbenzene	.7	1000	700	700	Discharge from	Some people who drink

(ppb)					petroleum refineries.	water containing ethylbenzene well in excess of the MCL over many years could experience problems with their liver or kidneys.
Haloacetic Acids (pbb)	.060	1000	60	N/A	By-product of drinking water disinfection.	Some people who drink water containing haloacetic acids in excess of the MCL over many years may have an increased risk of getting cancer.
Styrene (ppb)	.1	1000	100	100	Discharge from rubber and plastic factories; Leaching from landfills.	Some people who drink water containing styrene well in excess of the MCL over many years could have problems with their liver, kidneys, or circulatory system.
~~Tetrachloro-ethylene~~ Tetrachloroethylene (ppb)	.005	1000	5	0	Discharge from factories and dry cleaners.	Some people who drink water containing tetrachloroethylene in excess of the MCL over many years could have problems with their liver, and may have an increased risk of getting cancer.
~~1,2,4-Trichloro-benzene~~ 1,2,4-Trichlorobenzene (ppb)	.07	1000	70	70	Discharge from textile-finishing factories.	Some people who drink water containing 1,2,4-trichlorobenzene well in excess of the MCL over many years could experience changes in their adrenal glands.
~~1,1,1-Trichloro-ethane~~ 1,1,1-Trichloroethane (ppb)	.2	1000	200	200	Discharge from metal degreasing sites and other factories.	Some people who drink water containing 1,1,1-trichloroethane in excess of the MCL over many years could experience problems with their liver, nervous system, or circulatory system.
~~1,1,2-Trichloro-ethane~~ 1,1,2-Trichloroethane (ppb)	.005	1000	5	3	Discharge from industrial chemical factories.	Some people who drink water containing 1,1,2-trichloroethane well in excess of the MCL over many years could have problems with their liver, kidneys, or immune systems.
~~Trichloro-ethylene~~Trichloroethylene	.005	1000	5	0	Discharge from metal degreasing sites and other	Some people who drink water containing trichoroethylene in excess of

(ppb)					factories.	the MCL over many years could experience problems with their liver and may have an increased risk of getting cancer.
TTHMs [Total ~~trihalo-methanes~~trihalomethanes] (ppb)	0.10/0.80	1000	100/80	N/A	By-product of drinking water disinfection.	Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer.
Toluene (ppm)	1	N/A	1	1	Discharge from petroleum factories.	Some people who drink water containing toluene well in excess of the MCL over many years could have problems with their nervous system, kidneys, or liver.
Vinyl Chloride (ppb)	~~.002~~.0002	1000	~~2~~.2	0	Leaching from PVC piping; Discharge from plastics factories.	Some people who drink water containing vinyl chloride in excess of the MCL over many years may have an increased risk of getting cancer.
Xylenes (ppm)	10	N/A	10	10	Discharge from petroleum factories; Discharge from chemical factories.	Some people who drink water containing xylenes in excess of the MCL over many years could experience damages to their nervous system.

Key:
AL = Action Level
MCL = Maximum Contaminant Level
MCLG = Maximum Contaminant Level Goal
MFL = million fibers per liter
MRDL = Maximum Residual Disinfectant Level
MRDLG = Maximum Residual Disinfectant Level Goal
mrem/year = millirems per year (a measure of radiation absorbed by the body)
N/A = Not Applicable
NTU = Nephelometric Turbidity Units (a measure of water clarity)
pCi/l = picocuries per liter (a measure of radioactivity)
ppm = parts per million, or milligrams per liter (mg/l)
ppb = parts per billion, or micrograms per liter (g/l)
ppt = parts per trillion, or nanograms per liter
ppq = parts per quadrillion, or picograms per liter
TT = Treatment Technique

SECTION 158. NR 809.951 (1) (b) 1. is repealed and recreated to read:

NR 809.951 (1) (b) 1. Violation of the MCL for *E. coli*, as specified in s. NR 809.30.

SECTION 159. NR 809.952 (2) (b) is amended to read:

NR 809.952 (2) (b) ~~The~~ For MCL or treatment technique violations, the water supplier shall repeat the notice every 3 months as long as the violation or situation persists. For violations other than MCL or treatment technique violations ~~–~~ the water supplier shall repeat the notice every 3 months as long as the violation or situation persists, unless the department determines that appropriate circumstances warrant a different notice frequency, but ~~In~~ in no circumstance may the repeat notice be given less frequently than once per year. The department may not allow across-the-board reductions in the repeat notice frequency for other ongoing violations requiring a Tier 2 repeat notice. Department determinations allowing repeat notices to be given less frequently than once every 3 months shall be in writing.

SECTION 160. NRA 809.953 (1) (b) 1. and 2. are amended to read:

NR 809.953 (1) (b) 1. Monitoring violations under ~~ch. NR 809~~ this chapter, except if a Tier 1 notice is required under s. NR 809.951 (1) or if the department determines that a Tier 2 notice is required.

NR 809.953 (1) (b) 2. Failure to comply with a testing procedure established in ~~ch. NR 809~~ this chapter, except if a Tier 1 notice is required under s. NR 809.951 (1) or if the department determines that a Tier 2 notice is required.

SECTION 161. NR 809.953 (1) (b) 6. is created to read:

NR 809.953 (1) (b) 6. Reporting and recordkeeping violations under this chapter.

SECTION 162. NR 809.960 (1) (a) and (b) are amended to read:

NR 809.960 (1) (a) *Community water systems.* In addition to public notification requirements under this subchapter, a water supplier for a community groundwater system that receives notice from the department of a significant deficiency or notification of a fecal indicator-positive groundwater source sample that is not invalidated by the department shall inform the public served by the public water system of ~~the of~~ any uncorrected significant deficiency or fecal indicator-positive source sample. Water suppliers shall provide the special public notice in the Consumer Confidence Report (CCR) required under ss. NR 809.833(7)(f) ~~as soon as practical after the public water system learns of the violation~~ for the calendar year in which the uncorrected significant deficiency or source water fecal positive sample was detected. The water supplier shall continue to inform the public annually in ~~their~~ the CCR, from the date of notification from the department, until the significant deficiency is corrected or the fecal contamination in the groundwater source is determined by the department to be corrected.

NR 809.960 (1) (b) *Non-community systems.* In addition to public notification requirements under this subchapter, a water ~~suppliers~~ supplier for a non-community groundwater system that receives notice from the department of a significant deficiency shall inform the public served by the public water system in a manner approved by the department of any significant deficiency that has not been corrected within

12 months of being notified by the department, or earlier if directed by the department. The water supplier must continue to inform the public annually until the significant deficiency is corrected. This information shall include:

SECTION 163. NR 809.960 (2) (intro.) is repealed.

SECTION 164. NR 809.960(2) (a), (b) and (c) are renumbered NR 809.960 (1) (b) 1., 2., and 3..

SECTION 165. NR 809 Subchapter VII, Appendix A is amended to read:

Appendix A to Subchapter VII
NPDWR Violations and Other Situations Requiring Public Notice[1]

Contaminant	MCL/MRDL/TT violations[2]		Monitoring & testing procedure violations	
	Tier of public notice required	Citation (Wis. Adm. Code)	Tier of public notice required	Citation (Wis. Adm. Code)
I. Violations of National Primary Drinking Water Regulations:[3]				
A. Microbiological Contaminants				
1. Total coliform: Monitoring or TT violations resulting from failure to perform assessments or corrective actions	2	NR 809.30(1)314	3	NR 809.31(1) (4)(9)
1m. Total coliform: Seasonal system failure to follow department-approved start-up plan prior to serving water to the public	2	NR 809.314(2)	3	Xx
2. Fecal coliform/E. coli*E. Coli* MCL	1	NR 809.30(2)	1[4], 3	NR 809.31(49) NR 809.31(10)
2m. *E. coli*: TT violations resulting from failure to perform Level 2 assessments or corrective action	2	NR 809.30	3	Xx
3. Turbity Turbidity MCL	2	NR 810.29 (1)	3	NR 810.38(1)b) NR 810.38(2)(a), NR 810.38(2)(b), NR 810.29
4. Turbidity MCL (average 2 days' samples >5 NTU)	[5]2[5], 1	NR 810.29(2)	3	NR 810.38(1)b) NR 810.38(2)(a), NR 810.38(2)(b), NR810.29
5 Turbidity (for TT violations resulting from a single exceedance of maximum allowable turbidity level)	[6]2[6], 1	NR 810.29 (1), NR 810.29 (2), NR 810.29 (3), NR 810.29 (4), NR 810.29 (6) NR 810.30 (1), NR 810.30	3	NR 810.38(1)b) NR 810.38(2)(a), NR 810.38(2)(b), NR 810.29

		(4)(a), NR 810.30 (4)(b)		
6. Surface Water Treatment Rule violations, other than violations resulting from single exceedance of max. allowable turbidity level (TT)	2	NR 810.27 – 810.33	3	NR 810.38
7. Interim Enhanced Surface Water Treatment Rule violations, other than violations resulting from single exceedance of max. turbidity level (TT)	2	NR 810 subch. 2	3	NR 810.29, NR 810.38
8. Filter Backwash Rule (FBWR)	2	NR 809.333(3) NR 811.60 NR 811.62	3	NR 810.29
9. Long Term 2 Enhanced Surface Water Treatment Rule violations	2	NR 810.34- NR 810.45	~~15~~2[15],3	NR 809.331- NR 809.335 NR 810.32(1) and (2)
10. ~~Groundwater Rule~~Source water sample positive for Groundwater Rule (GWR) fecal indicators: *E. coli*, enterococci, or coliphage	~~2~~1	NR~~809.329~~809. 325(6)	3	NR809.325(5) NR 809.327(6)
B. Inorganic Chemicals (IOCs)				
1. Antimony	2	NR 809.11(2)	3	NR 809.115(1) to (3) and (6)(a)and (c)
2. Arsenic	2	NR 809.11(2)	3	NR 809.115(1) to (3) and (6)(a)and (c)
3. Asbestos (fibers >10 ~~im~~µm)	2	NR 809.11(2)	3	NR 809.115(1) to (3) and (6)(a)and (c)
4. Barium	2	NR 809.11(2)	3	NR 809.115(1) to (3) and (6)(a)and (c)
5. Beryllium	2	NR 809.11(2)	3	NR 809.115(1) to (3) and (6)(a)and (c)
6. Cadmium	2	NR 809.11(2)	3	NR 809.115(1) to (3) and (6)(a)and (c)
7. Chromium (total)	2	NR 809.11(2)	3	NR 809.115(1) to (3) and (6)(a)and (c)
8. Cyanide	2	NR 809.11(2)	3	NR 809.115(1) to (3) and (6)(a)and (c)
9. Fluoride	2	NR 809.11(2)	3	NR 809.115(1) to (3) and (6)(a)and (c)
10. Mercury (inorganic)	2	NR 809.11(2)	3	NR 809.115(1) to (3) and (6)(a)and (c)
11. Nitrate	1	NR 809.11(2)	~~8~~1[8], 3	NR 809.115(4),(5) and (6)(b)
12. Nitrite	1	NR 809.11(2)	~~8~~1[8], 3	NR 809.115(4),(5) and (6)(b)
13. Total Nitrate and Nitrite	1	NR 809.11(2)	3	NR 809.115(4) and (5)
14. Selenium	2	NR 809.11(2)	3	NR 809.115(1) to (3) and (6)(a)and (c)
15. Thallium	2	NR 809.11(2)	3	NR 809.115(1) to (3) and

			(6)(a)and (c)

Appendix A to Subchapter VII - Continued
NPDWR Violations and Other Situations Requiring Public Notice[1]

Contaminant	MCL/MRDL/TT violations[2]		Monitoring & testing procedure violations	
C. Lead and Copper Rule (Action Level for lead is 0.015 mg/L, copper is 1.3 mg/L) ~~1. Lead and Copper Rule (TT)~~	**Tier of public notice required**	**Citation (Wis. Adm. Code)**	**Tier of public notice required**	**Citation (Wis. Adm. Code)**
1. Lead and Copper Rule (TT)	**2**	**NR 809.541 – NR 809.55**	**3**	**NR 809.541 – NR 809.55**
D. Synthetic Organic Chemicals (SOCs)	~~2~~	~~NR 809.541 – NR 809.55~~	~~3~~	~~NR 809.541 – NR 809.55~~
1. 2,4-D	2	NR 809.20(1)	3	NR 809.205
2. 2,4,5-TP (Silvex)	2	NR 809.20(1)	3	NR 809.205
3. Alachlor	2	NR 809.20(1)	3	NR 809.205
4. Atrazine	2	NR 809.20(1)	3	NR 809.205
5. Benzo(a)pyrene (PAHs)	2	NR 809.20(1)	3	NR 809.205
6. Carbofuran	2	NR 809.20(1)	3	NR 809.205
7. Chlordane	2	NR 809.20(1)	3	NR 809.205
8. Dalapon	2	NR 809.20(1)	3	NR 809.205
9. Di (2-ethylhexyl) adipate	2	NR 809.20(1)	3	NR 809.205
10. Di (2-ethylhexyl) phthalate	2	NR 809.20(1)	3	NR 809.205
11. Dibromochloropropane	2	NR 809.20(1)	3	NR809.205
12. Dinoseb	2	NR 809.20(1)	3	NR 809.205
13. Dioxin (2, 3, 7, 8-TCDD)	2	NR 809.20(1)	3	NR809.205
14. Diquat	2	NR 809.20(1)	3	NR 809.205
15. Endothall	2	NR 809.20(1)	3	NR 809.205
16. Endrin	2	NR 809.20(1)	3	NR 809.205
17. Ethylene dibromide	2	NR 809.20(1)	3	NR 809.205
18. Glyphosate	2	NR 809.20(1)	3	NR 809.205
19. Heptachlor	2	NR 809.20(1)	3	NR 809.205
20. Heptachlor epoxide	2	NR 809.20(1)	3	NR 809.205
21. Hexachlorobenzene	2	NR 809.20(1)	3	NR 809.205
22. Hexachlorocyclopentadiene	2	NR 809.20(1)	3	NR 809.205
23. Lindane	2	NR 809.20(1)	3	NR 809.205
24. Methoxychlor	2	NR 809.20(1)	3	NR 809.205
25. Oxamyl (Vydate)	2	NR 809.20(1)	3	NR 809.205
26. Pentachlorophenol	2	NR 809.20(1)	3	NR 809.205
27. Picloram	2	NR 809.20(1)	3	NR 809.205
28. Polychlorinated biphenyls	2	NR 809.20(1)	3	NR 809.205
29. Simazine	2	NR 809.20(1)	3	NR 809.205
30. Toxaphene	2	NR 809.20(1)	3	NR 809.205
E. Volatile Organic Chemicals (VOCs)	2	NR 809.24(1)	3	NR 809.245
1. Benzene	2	NR 809.24(1)	3	NR 809.245
2. Carbon tetrachloride	2	NR 809.24(1)	3	NR 809.245
3. Chlorobenzene (monochlorobenzene)	2	NR 809.24(1)	3	NR 809.245
4. o-Dichlorobenzene	2	NR 809.24(1)	3	NR 809.245

5. p-Dichlorobenzene	2	NR 809.24(1)	3	NR 809.245
6. 1,2-Dichloroethane	2	NR 809.24(1)	3	NR 809.245
7. 1,1-Dichloroethylene	2	NR 809.24(1)	3	NR 809.245
8. cis-1,2-Dichloroethylene	2	NR 809.24(1)	3	NR 809.245
9. trans-1,2-Dichloroethylene	2	NR 809.24(1)	3	NR 809.245
10. Dichloromethane	2	NR 809.24(1)	3	NR 809.245
11. 1,2-Dichloropropane	2	NR 809.24(1)	3	NR 809.245
12. Ethylbenzene	2	NR 809.24(1)	3	NR 809.245
13. Styrene	2	NR 809.24(1)	3	NR 809.245
14. Tetrachloroethylene	2	NR 809.24(1)	3	NR 809.245
15. Toluene	2	NR 809.24(1)	3	NR 809.245
16. 1,2,4-Trichlorobenzene	2	NR 809.24(1)	3	NR 809.245
17. 1,1,1-Trichloroethane	2	NR 809.24(1)	3	NR 809.245
18. 1,1,2-Trichloroethane	2	NR 809.24(1)	3	NR 809.245
19. Trichloroethylene	2	NR 809.24(1)	3	NR 809.245
20. Vinyl chloride	2	NR 809.24(1)	3	NR 809.245
21. Xylenes (total)	2	NR 809.24(1)	3	NR 809.245
F. Radioactive Contaminants				
1. Beta/photon emitters	2	NR 809.51	3	NR 809.52(1), NR 809.53(2)
2. Alpha emitters	2	NR 809.50(2)	3	NR 809.52(1), NR 809.53(1)
3. Combined radium (226 & 228)	2	NR 809.50(1)	3	NR 809.52(1), NR 809.53(1)
G. Disinfection Byproducts (DBPs), Byproduct Precursors, Disinfectant Residuals. Where disinfection is used in the treatment of drinking water, disinfectants combine with organic and inorganic matter present in water to form chemicals called disinfection byproducts. EPA sets standards for controlling the levels of disinfectants and disinfection byproducts in drinking water, including trihalomethanes and haloacetic acids. [9]				
1. Total trihalomethanes	2	NR 809.561(1)	3	NR 809.565(1)-(2)
2. Haloacetic Acids	2	NR 809.561(1)	3	NR 809.565(1)-(2)
3. Bromate	2	NR 809.561(2)	3	NR 809.565(1), (3)
4. Chlorite	2	NR 809.561(2)	3	NR 809.565(1), (3)
5. Chlorine (MRDL)	2	NR 809.561(2) NR 809.566(3)(a)	~~2,~~ 3	NR 809.565(1), (4) NR 809.566(3)(a)
6. Chloramine (MRDL)	~~1~~[10]2	NR 809.561(2) NR 809.566(3)(a)	~~1~~3	NR 809.565(1), (4) NR 809.566(3)(a)
7. Chlorine dioxide (MRDL), where any 2 consecutive daily samples at entrance to distribution system only are above MRDL	2[11]	NR 809.566(1), (3)(b)	2,3[11]	NR 809.565(1), (4)

8. Chlorine dioxide (MRDL), where samples in distribution system the next day are also above MRDL	~~2~~[11] 1[10]	NR 809.566(1), (3)(b)	~~3~~1	NR 809.565(1), (4)
9. Control of disinfection byproducts precursors – TOC (TT)	2	NR 809.569	3	NR 809.565(1),(5)
10. Bench marking and disinfection profiling	N/A	N/A	3	NR 810.32
11. Development of monitoring plan	N/A	N/A	3	NR 809.565(6)
H. Other Treatment Techniques				
1. Acrylamide (TT)	2	NR 809.25(4)	N/A	N/A
2. Epichlorohydrin (TT)	2	NR 809.25(4)	N/A	N/A
II. Unregulated Contaminant Monitoring:[12]				
A. Unregulated contaminants	N/A	N/A	3	NR 809.25; 40 CFR Part 141, Section 141.40
B. Nickel	N/A	N/A	3	NR 809.12(4)(c), NR 809.12(4) Table A
III. Public Notification for Conditional Waivers and Variances				
A. Operation under a conditional waiver or variance	3	NR 809.90, NR 809.91	N/A	N/A
B. Violation of a conditional waiver or variance	2	NR 809 Subchapter VI	N/A	N/A
IV. Other Situations Requiring Public Notification:				
A. Fluoride secondary maximum contaminant level exceedance	3	NR 809.70	N/A	N/A
B. Exceedance of nitrate MCL for non-community systems, as allowed by the department	1	NR 809.11(3)	N/A	N/A
C. Availability of unregulated contaminant monitoring data	3	NR 809.956	N/A	N/A
D. Waterborne disease outbreak	1	NR 809.04(90) NR 809.80(6)(e), NR 809.951(1)(b)7.	N/A	N/A
E. Other waterborne emergency[13]	1	NR 809.951(1)(b)8.	N/A	N/A
F. Other situations as determined by the department	~~14~~1, 2, 3[14]	N/A	N/A	N/A
G. ~~Source Water Sample Positive for GWR Fecal indicators: E. coli, enterococci, or coliphage~~Groundwater Rule TT violations for failure to complete corrective actions according to a state approved schedule	~~1~~2	NR ~~809.325(2), (3)~~ 809.328(2)	N/A	N/A

Appendix A Footnotes

[1] Violations and other situations not listed in this table, for example, reporting violations and failure to prepare Consumer Confidence Reports, do not require notice, unless otherwise determined by the department. ~~Departments~~ The department may~~, at their option,~~ also require a more stringent public notice

tier, for example, Tier 1 instead of Tier 2 or Tier 2 instead of Tier 3, for specific violations and situations listed in this Appendix, as authorized under s. NR 809.951(1) and ~~(2)~~s. NR 809.952 (1).

[2] MCL--Maximum contaminant level, MRDL—Maximum residual disinfectant level, TT—Treatment technique.

[3] The term Violations of National Primary Drinking Water Regulations is used here to include violations of MCL, MRDL, TT, monitoring and testing procedure requirements.

[4] Failure to test for ~~fecal coliform or E. coli~~*E. coli* is a Tier 1 violation if testing is not done after any repeat sample tests positive for coliform. All other total coliform monitoring and testing procedure violations are Tier 3.

[5] Water supplier for public water systems that violate the turbidity MCL of 5 NTU based on an average of measurements over 2 consecutive days shall consult with the department within 24 hours after learning of the violation. Based on this consultation, the department may subsequently decide to elevate the violation to Tier 1. If a water supplier is unable to make contact with the department in the 24-hour period, the violation is automatically elevated to Tier 1.

[6] Water supplier for public water systems with a treatment technique violation involving a single exceedance of a maximum turbidity limit under the Surface Water Treatment Rule or the Interim Enhanced Surface Water Treatment Rule are required to consult with the department within 24 hours after learning of the violation. Based on this consultation, the department may subsequently decide to elevate the violation to Tier 1. If a water supplier is unable to make contact with the department in the 24-hour period, the violation is automatically elevated to Tier 1.

[7] Most of the requirements of the Interim Enhanced Surface Water Treatment Rule (63 FR 69477) become effective January 1, 2002 for public water systems using surface water or groundwater under the direct influence of surface water serving at least 10,000 persons. However, s. NR 809.77 has some requirements that become effective as early as April 16, 1999. The Surface Water Treatment Rule remains in effect for public water systems serving at least 10,000 persons even after 2002; the Interim Enhanced Surface Water Treatment Rule adds additional requirements and does not in many cases supersede the Surface Water Treatment Rule.

[8] Failure to take a confirmation sample within 24 hours for nitrate or nitrite after an initial sample exceeds the MCL is a Tier 1 violation. Other monitoring violations for nitrate are Tier 3.

[9] Public water systems using surface water or groundwater under the direct influence of surface water community and non-transient non-community systems serving greater than or equal to 10,000 must comply with the new disinfection byproducts MCLs, disinfectant MRDLs, and related monitoring requirements beginning January 1, 2002. All other community and non-transient non-community systems must meet the MCLs and MRDLs beginning January 1, 2004. Public water systems using surface water or groundwater under the direct influence of surface water transient non-community systems serving 10,000 or more persons and using chlorine dioxide as a disinfectant or oxidant must comply with the chlorine dioxide MRDL beginning January 1, 2002. Public water systems using surface water or groundwater under the direct influence of surface water transient non-community systems serving fewer than 10,000 persons and using only groundwater not under the direct influence of surface water and using chlorine dioxide as a disinfectant or oxidant must comply with the chlorine dioxide MRDL beginning January 1, 2004.

[10] If any daily sample taken at the entrance to the distribution system exceeds the MRDL for chlorine dioxide and one or more samples taken in the distribution system the next day exceed the MRDL, Tier 1 notification is required. Failure to take the required samples in the distribution system after the MRDL is exceeded at the entry point also triggers Tier 1 notification.

[11] Failure to monitor for chlorine dioxide at the entrance to the distribution system the day after exceeding the MRDL at the entrance to the distribution system is a Tier 2 violation.

[12] Some public water systems must monitor for certain unregulated contaminants listed in s. NR 809.25.

[13] Other waterborne emergencies require a Tier 1 public notice under §141.202(a) or s. NR 809.951(1)(b)8. for situations that do not meet the definition of a waterborne disease outbreak given in 40

CFR 141.2 or s. NR 809.04(90) but that still have the potential to have serious adverse effects on health as a result of short-term exposure. These could include outbreaks not related to treatment deficiencies, as well as situations that have the potential to cause outbreaks, such as failure or significant interruption in water treatment processes, natural disasters that disrupt the water supply, chemical spills, or unexpected loading of possible pathogens into the source water.

[14] The department may place other situations in any tier they believe appropriate, based on threat to public safety.

[15] Failure to collect three or more samples for *Cryptosporidium* analysis is a Tier 2 violation requiring special notice as specified in §141.211. All other monitoring and testing procedure violations are Tier 3.

SECTION 166. NR 809 Subchapter VII, Appendix B is amended to read:

Appendix B to Subchapter VII
Standard Health Effects Language for Public Notification

Contaminant	**MCLG[1] mg/L**	**MCL[2] mg/L**	**Standard health effects language for public notification**
National Primary Drinking Water Regulations:			
A. ~~Microbiologocial~~ Microbiological Contaminants:			
~~1a. Total coliform~~	~~Zero~~	~~See footnote[3]~~	~~Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, bacteria may be present. Coliforms were found in more samples than allowed and this was a warning of potential problems.~~
1~~b~~a. ~~Fecal coliform/E. coli~~*E. coli*	Zero	~~Zero~~ In compliance unless one of the following conditions occurs: (1) The system has an *E. coli*-positive repeat sample following a total coliform-positive routine sample.	~~Fecal coliforms and E. coli~~*E. coli* are bacteria whose presence indicate that the water may be contaminated with human or animal wastes. ~~Microbes~~ Human pathogens in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.

		(2) The system has a total coliform-positive repeat sample following an *E. coli*-positive routine sample. (3) The system fails to take all required repeat samples following an *E. coli*-positive routine sample. (4) The system fails to test for *E. coli* when any repeat sample tests positive for total coliform.	
1 b. Coliform Assessment or Corrective Action Violations, or both	N/A	TT	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 drinking water 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 assessments to identify problems and to

			correct any problems that are found. [THE SYSTEM MUST USE THE FOLLOWING APPLICABLE SENTENCES.] We failed to conduct the required assessment. We failed to correct all identified sanitary defects that were found during the assessments.
1 c. *E.coli* Assessment or Corrective Action Violations, or both	N/A	TT	*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, the elderly, and people with severely compromised immune systems. We violated the standard for *E. coli*, indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct a detailed assessment to identify problems and to correct any problems that are found. [THE SYSTEM MUST USE THE FOLLOWING APPLICABLE SENTENCES.] We failed to conduct the required assessment. We failed to correct all identified sanitary defects that were found during the assessment that we conducted.
1 d. Seasonal System TT Violations	N/A	TT	When this violation includes the failure to monitor for total coliforms or *E. coli* prior to serving water to the public, the mandatory language found at s. NR 809.954 (4)(b) must be used. When this violation includes failure to complete other actions, the appropriate elements found in s. NR 809.954 (1) to describe the violation must be used.
1 e. Fecal indicators (GWR): ~~E. coli~~*E. coli* ii. Enterococci, iii. ~~coliphage~~Coliphage	 Zero None None	 TT TT TT	Fecal indicators are microbes whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term health effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with

			severely compromised immune systems.
1 f. Groundwater Rule (GWR) TT violations.	None	TT	Inadequately treated or inadequately protected water may contain disease-causing organisms. These organisms can cause symptoms such as diarrhea, nausea, cramps, and associated headaches.
2a. Turbidity (MCL)[4]	None	1 NTU[5]/5 NTU	Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea and associated headaches.
2b. Turbidity (SWTR TT)[6]	None	TT[7]	Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea and associated headaches.
2c. Turbidity (IESWTR TT)[8]	None	TT	Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea and associated headaches.
B. Surface Water Treatment Rule and Interim Enhanced Surface Water Treatment Rule violations:			
3. Giardia lamblia	Zero	TT[9]	Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.
4. Viruses			
5. Heterotrophic plate count bacteria[10]			
6. Legionella			

7. Cryptosporidium			

Appendix B to Subchapter VII - Continued
Standard Health Effects Language for Public Notification

Contaminant	MCGL[1] mg/L	MCL[2] mg/L	Standard health effects language for public notification
C. Inorganic Chemicals:			
8. Antimony	0.006	0.006	Some people who drink water containing antimony well in excess of the MCL over many years could experience increases in blood cholesterol and decreases in blood sugar.
9. Arsenic	0	0.010	Some people who drink water containing arsenic in excess of the MCL over many years could experience skin damage or problems with their circulatory system, and may have an increased risk of getting cancer.
10. Asbestos (10 ~~im~~μm)	7 MFL[11]	7 MFL[11]	Some people who drink water containing asbestos in excess of the MCL over many years may have an increased risk of developing benign intestinal polyps.
11. Barium	2	2	Some people who drink water containing barium in excess of the MCL over many years could experience an increase in their blood pressure.
12. Beryllium	0.004	0.004	Some people who drink water containing beryllium well in excess of the MCL over many years could develop intestinal lesions.
13. Cadmium	0.005	0.005	Some people who drink water containing cadmium in excess of the MCL over many years could experience kidney damage.
14. Chromium (total)	0.1	0.1	Some people who use water containing chromium well in excess of the MCL over many years could experience allergic dermatitis.
15. Cyanide	0.2	0.2	Some people who drink water containing cyanide well in excess of the MCL over many years could experience nerve damage or problems with their thyroid.
16. Fluoride	4.0	4.0	Some people who drink water containing fluoride in excess of the MCL over many years could get bone disease, including pain and tenderness of the bones. Fluoride in drinking water at half the MCL or more may

			cause mottling of children's teeth, usually in children less than 9 years old. Mottling, also known as dental fluorosis, may include brown staining and/or pitting of the teeth, and occurs only in developing teeth before they erupt from the gums.
17. Mercury (inorganic)	0.002	0.002	Some people who drink water containing inorganic mercury well in excess of the MCL over many years could experience kidney damage.
18. Nitrate	10	10	Infants below the age of 6 months who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome. Females who are or may become pregnant should not consume water with nitrate concentrations that exceed the MCL. There is some evidence of an association between exposure to high nitrate levels in drinking water during the first weeks of pregnancy and certain birth defects.
19. Nitrite	1	1	Infants below the age of 6 months who drink water containing nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome.
20. Total Nitrate and Nitrite	10	10	Infants below the age of 6 months who drink water containing nitrate and nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome.
21. Selenium	0.05	0.05	Selenium is an essential nutrient. However, some people who drink water containing selenium in excess of the MCL over many years could experience hair or fingernail losses, numbness in fingers or toes, or problems with their circulation.
22. Thallium	0.0005	0.002	Some people who drink water containing thallium in excess of the MCL over many years could experience hair loss, changes in their blood, or problems with their kidneys, intestines, or liver.
D. Lead and Copper Rule:			
23. Lead	Zero	TT[12]	Infants and children who drink water

			containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure.
24. Copper	1.3	TT[13]	Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson's Disease should consult their personal doctor.
E. Synthetic Organic Chemicals:			
25. 2,4-D	0.07	0.07	Some people who drink water containing the weed killer 2,4-D well in excess of the MCL over many years could experience problems with their kidneys, liver, or adrenal glands.
26. 2,4,5-TP (Silvex)	0.05	0.05	Some people who drink water containing silvex in excess of the MCL over many years could experience liver problems.
27. Alachlor	Zero	0.002	Some people who drink water containing alachlor in excess of the MCL over many years could have problems with their eyes, liver, kidneys, or spleen, or experience anemia, and may have an increased risk of getting cancer.
28. Atrazine	0.003	0.003	Some people who drink water containing atrazine well in excess of the MCL over many years could experience problems with their cardiovascular system or reproductive difficulties.
29. Benzo(a)pyrene (PAHs)	Zero	0.0002	Some people who drink water containing benzo(a)pyrene in excess of the MCL over many years may experience reproductive difficulties and may have an increased risk of getting cancer.
30. Carbofuran	0.04	0.04	Some people who drink water containing carbofuran in excess of the MCL over many

			years could experience problems with their blood, or nervous or reproductive systems.
31. Chlordane	Zero	0.002	Some people who drink water containing chlordane in excess of the MCL over many years could experience problems with their liver or nervous system, and may have an increased risk of getting cancer.
32. Dalapon	0.2	0.2	Some people who drink water containing dalapon well in excess of the MCL over many years could experience minor kidney changes.
33. Di (2-ethylhexyl) adipate	0.4	0.4	Some people who drink water containing di (2-ethylhexyl) adipate well in excess of the MCL over many years could experience toxic effects such as weight loss, liver enlargement or possible reproductive difficulties.
34. Di (2-ethylhexyl) phthalate	Zero	0.006	Some people who drink water containing di (2-ethylhexyl) phthalate well in excess of the MCL over many years may have problems with their liver, or experience reproductive difficulties, and may have an increased risk of getting cancer.
35. Dibromochloropropane	Zero	0.0002	Some people who drink water containing DBCP in excess of the MCL over many years could experience reproductive difficulties and may have an increased risk of getting cancer.
36. Dinoseb	0.007	0.007	Some people who drink water containing dinoseb well in excess of the MCL over many years could experience reproductive difficulties.
37. Dioxin (2,3,7,8-TCDD)	Zero	$3x10^{-8}$	Some people who drink water containing dioxin in excess of the MCL over many years could experience reproductive difficulties and many have an increased risk of getting cancer.
38. Diquat	0.02	0.02	Some people who drink water containing diquat in excess of the MCL over many years could get cataracts.
39. Endothall	0.1	0.1	Some people who drink water containing endothall in excess of the MCL over many years could experience problems with their stomach or intestine.
40. Endrin	0.002	0.002	Some people who drink water containing

			endrin in excess of the MCL over many years could experience liver problems.
41. Ethylene dibromide	Zero	0.00005	Some people who drink water containing ethylene dibromide in excess of the MCL over many years could experience problems with their liver, stomach, reproductive system, or kidneys, and may have an increased risk of getting cancer.
42. Glyphosate	0.7	0.7	Some people who drink water containing glyphosate in excess of the MCL over many years could experience problems with their kidneys or reproductive difficulties.
43. Heptachlor	Zero	0.0004	Some people who drink water containing heptachlor in excess of the MCL over many years could experience liver damage and may have an increased risk of getting cancer.
44. Heptachlor epoxide	Zero	0.0002	Some people who drink water containing heptachlor epoxide in excess of the MCL over many years could experience liver damage, and may have an increased risk of getting cancer.
45. Hexachlorobenzene	Zero	0.001	Some people who drink water containing hexachlorobenzene in excess of the MCL over many years could experience problems with their liver or kidneys, or adverse reproductive effects, and may have an increased risk of getting cancer.
46. ~~Hexachlorocyclo-pentadiene~~ Hexachlorocyclopentadiene	0.05	0.05	Some people who drink water containing hexachlorocyclopentadiene well in excess of the MCL over many years could experience problems with their kidneys or stomach.
47. Lindane	0.0002	0.0002	Some people who drink water containing lindane in excess of the MCL over many years could experience problems with their kidneys or liver.
48. Methoxychlor	0.04	0.04	Some people who drink water containing methoxychlor in excess of the MCL over many years could experience reproductive difficulties.
49. Oxamyl (Vydate)	0.2	0.2	Some people who drink water containing oxamyl in excess of the MCL over many years could experience slight nervous system

			effects.
50. Pentachlorophenol	Zero	0.001	Some people who drink water containing pentachlorophenol in excess of the MCL over many years could experience problems with their liver or kidneys, and may have an increased risk of getting cancer.
51. Picloram	0.5	0.5	Some people who drink water containing picloram in excess of the MCL over many years could experience problems with their liver.
52. Polychlorinated biphenyls	Zero	0.0005	Some people who drink water containing PCBs in excess of the MCL over many years could experience changes in their skin, problems with their thymus gland, immune deficiencies, or reproductive or nervous system difficulties, and may have an increased risk of getting cancer.
53. Simazine	0.004	0.004	Some people who drink water containing simazine in excess of the MCL over many years could experience problems with their blood.
54. Toxaphene	Zero	0.003	Some people who drink water containing toxaphene in excess of the MCL over many years could have problems with their kidneys, liver, or thyroid, and may have an increased risk of getting cancer.
F. Volatile Organic Chemicals:			
55. Benzene	Zero	0.005	Some people who drink water containing benzene in excess of the MCL over many years could experience anemia or a decrease in blood platelets, and may have an increased risk of getting cancer.
56. Carbon tetrachloride	Zero	0.005	Some people who drink water containing carbon tetrachloride in excess of the MCL over many years could experience problems with their liver and may have an increased risk of getting cancer.
57. Chlorobenzene (monochlorobenzene)	0.1	0.1	Some people who drink water containing chlorobenzene in excess of the MCL over many years could experience problems with their liver or kidneys.

58. *o*-Dichlorobenzene	0.6	0.6	Some people who drink water containing o-dichlorobenzene well in excess of the MCL over many years could experience problems with their liver, kidneys, or circulatory systems.
59. *p*-Dichlorobenzene	0.075	0.075	Some people who drink water containing p-dichlorobenzene in excess of the MCL over many years could experience anemia, damage to their liver, kidneys, or spleen, or changes in their blood.
60. 1,2-Dichloroethane	Zero	0.005	Some people who drink water containing 1,2-dichloroethane in excess of the MCL over many years may have an increased risk of getting cancer.
61. 1,1-Dichloroethylene	0.007	0.007	Some people who drink water containing 1,1-dichloroethylene in excess of the MCL over many years could experience problems with their liver.
62. *cis*-1,2-Dichloroethylene	0.07	0.07	Some people who drink water containing cis-1,2-dichloroethylene in excess of the MCL over many years could experience problems with their liver.
63. *trans*-1,2-Dichloroethylene	0.1	0.1	Some people who drink water containing trans-1,2-dichloroethylene well in excess of the MCL over many years could experience problems with their liver.
64. Dichloromethane	Zero	0.005	Some people who drink water containing dichloromethane in excess of the MCL over many years could have liver problems and may have an increased risk of getting cancer.
65. 1,2-Dichloropropane	Zero	0.005	Some people who drink water containing 1,2-dichloropropane in excess of the MCL over many years may have an increased risk of getting cancer.
66. Ethylbenzene	0.7	0.7	Some people who drink water containing ethylbenzene well in excess of the MCL over many years could experience problems with their liver or kidneys.
67. Styrene	0.1	0.1	Some people who drink water containing styrene well in excess of the MCL over many years could have problems with their liver, kidneys, or circulatory system.

68. Tetrachloroethylene	Zero	0.005	Some people who drink water containing tetrachloroethylene in excess of the MCL over many years could have problems with their liver, and may have an increased risk of getting cancer.
69. Toluene	1	1	Some people who drink water containing toluene well in excess of the MCL over many years could have problems with their nervous system, kidneys, or liver.
70. 1,2,4-Trichlorobenzene	0.07	0.07	Some people who drink water containing 1,2,4-trichlorobenzene well in excess of the MCL over many years could experience changes in their adrenal glands.
71. 1,1,1-Trichloroethane	0.2	0.2	Some people who drink water containing 1,1,1-trichloroethane in excess of the MCL over many years could experience problems with their liver, nervous system, or circulatory system.
72. 1,1,2-Trichloroethane	0.003	0.005	Some people who drink water containing 1,1,2-trichloroethane well in excess of the MCL over many years could have problems with their liver, kidneys, or immune systems.
73. Trichloroethylene	Zero	0.005	Some people who drink water containing trichloroethylene in excess of the MCL over many years could experience problems with their liver and may have an increased risk of getting cancer.
74. Vinyl chloride	Zero	0.002	Some people who drink water containing vinyl chloride in excess of the MCL over many years may have an increased risk of getting cancer.
75. Xylenes (total)	10	10	Some people who drink water containing xylenes in excess of the MCL over many years could experience damage to their nervous system.
G. Radioactive Contaminants:			
76. Beta/photon emitters	Zero	4 mrem/yr[14]	Certain minerals are radioactive and may emit forms of radiation known as photons and beta radiation. Some people who drink water containing beta and photon emitters in excess of the MCL over many years may have an increased risk of getting cancer.

77. Alpha emitters	Zero	15 pCi/L[15]	Certain minerals are radioactive and may emit a form of radiation known as alpha radiation. Some people who drink water containing alpha emitters in excess of the MCL over many years may have an increased risk getting cancer.
78. Combined radium (226 & 228)	Zero	5 pCi/L	Some people who drink water containing radium 226 and 228 in excess of the MCL over many years may have an increased risk of getting cancer.
H. Disinfection Byproducts, Byproduct Precursors, and Disinfectant Residuals: Where disinfection is used in the treatment of drinking water, disinfectants combine with organic and inorganic matter present in water to form chemicals called disinfection byproducts. EPA sets standards for controlling the levels of disinfectants and DBPs in drinking water, including trihalomethanes and haloacetic acids:[16]			
79. Total trihalomethanes	N/A	0.80[17]	Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous system, and may have an increased risk of getting cancer.
80. Haloacetic Acids	N/A	0.060[18]	Some people who drink water containing haloacetic acids in excess of the MCL over many years may have increased risk of getting cancer.
81. Bromate	Zero	0.010	Some people who drink water containing bromate in excess of the MCL over many years may have an increased risk of getting cancer.
82. Chlorite	0.08	1.0	Some infants and young children who drink water containing chlorite in excess of the MCL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorite in excess of the MCL.

			Some people may experience anemia.
83. Chlorine	4 (MRDLG)[19][1]	4.0 (MRDL)[20]	Some people who use water containing chlorine well in excess of the MRDL could experience irritating effects to their eyes and nose. Some people who drink water containing chlorine well in excess of the MRDL could experience stomach discomfort.
84. Chloramines	4 (MRDLG)	4.0 (MRDL)	Some people who use water containing chloramines well in excess of the MRDL could experience irritating effects to their eyes and nose. Some people who drink water containing chloramines well in excess of the MRDL could experience stomach discomfort or anemia.
85a. Chlorine dioxide, where any 2 consecutive daily samples taken at the entrance to the distribution system are above the MRDL.	0.8 (MRDLG)	0.8 (MRDL)	Some infants and young children who drink water containing chlorine dioxide in excess of the MRDL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorine dioxide in excess of the MRDL. Some people may experience anemia.
85b. Chlorine dioxide, where one or more distribution system samples are above the MRDL.	0.8 (MRDLG)	0.8 (MRDL)	Some infants and young children who drink water containing chlorine dioxide in excess of the MRDL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorine dioxide in excess of the MRDL. Some people may experience anemia. *Add for public notification only:* The chlorine dioxide violations reported today include exceedances of the EPA standard within the distribution system which delivers water to consumers. Violations of the chlorine dioxide standard within the distribution system may harm human health based on short-term exposures. Certain groups, including fetuses, infants, and young children, may be especially susceptible to nervous system effects from excessive chlorine dioxide exposure.
86. Control of DBP precursors (TOC)	None	TT	Total organic carbon (TOC) has no health effects. However, total organic carbon provides a medium for the formation of disinfection byproducts. These byproducts include trihalomethanes and haloacetic acids. Drinking water containing these byproducts in excess of the MCL may lead to adverse health

			effects, liver or kidney problems, or nervous system effects, and may lead to an increased risk of getting cancer.
I. Other Treatment Techniques:			
87. Acrylamide	Zero	TT	Some people who drink water containing high levels of acrylamide over a long period of time could have problems with their nervous system or blood, and may have an increased risk of getting cancer.
88. Epichlorohydrin	Zero	TT	Some people who drink water containing high levels of epichlorohydrin over a long period of time could experience stomach problems, and may have an increased risk of getting cancer.

Appendix B Footnotes:

[1] MCLG--Maximum contaminant level goal.

[2] MCL--Maximum contaminant level.

[3] For public water systems analyzing at least 40 samples per month, no more than 5.0 percent of the monthly samples may be positive for total coliforms. For public water systems analyzing fewer than 40 samples per month, no more than one sample per month may be positive for total coliforms.

[4] There are various regulations that set turbidity standards for different types of public water systems, including 40 CFR 141.13, the 1989 Surface Water Treatment Rule, and the 1998 Interim Enhanced Surface Water Treatment Rule. The MCL for the monthly turbidity average is 1 NTU; the MCL for the 2-day average is 5 NTU for public water systems that are required to filter but have not yet installed filtration (40 CFR 141.13).

[5] NTU--Nephelometric turbidity unit.

[6] There are various regulations that set turbidity standards for different types of public water systems, including 40 CFR 141.13, the 1989 Surface Water Treatment Rule, and the 1998 Interim Enhanced Surface Water Treatment Rule. Systems subject to the Surface Water Treatment Rule (both filtered and unfiltered) may not exceed 5 NTU. In addition, in filtered systems, 95 percent of samples each month shall not exceed 0.5 NTU in public water systems using conventional or direct filtration and shall not exceed 1 NTU in public water systems using slow sand or diatomaceous earth filtration or other filtration technologies approved by the department.

[7] TT--Treatment technique.

[8] There are various regulations that set turbidity standards for different types of public water systems, including 40 CFR 141.13, the 1989 Surface Water Treatment Rule, and the 1998 Interim Enhanced Surface Water Treatment Rule. For public water systems subject to the interim enhanced surface water treatment rule (public water systems serving at least 10,000 people, using surface water or groundwater under the direct influence of surface water), that use conventional filtration or direct filtration, after January 1, 2002, the turbidity level of a public water system's combined filter effluent may not exceed 0.3 NTU in at least 95 percent of monthly measurements, and the turbidity level of a public water system's combined filter effluent shall not exceed 1 NTU at any time. Public water systems subject to the interim enhanced surface water treatment rule using technologies other than conventional, direct, slow sand, or diatomaceous earth filtration shall meet turbidity limits set by the department.

[9] Surface water treatment rule and interim enhanced surface water treatment rule treatment technique violations that involve turbidity exceedances may use the health effects language for turbidity instead.

[10] The bacteria detected by heterotrophic plate count are not necessarily harmful. HPC is simply an alternative method of determining disinfectant residual levels. The number of bacteria is an indicator of whether there is enough disinfectant in the distribution system.

[11] Million fibers per liter.

[12] Action Level = 0.015 mg/L.

[13] Action Level = 1.3 mg/L.

[14] Millirems per year.

[15] Picocuries per liter.

[16] Surface water systems and groundwater systems under the direct influence of surface water are regulated under Subpart H of 40 CFR part 141. Community and non-transient non-community systems using groundwater under the direct influence of surface water serving 10,000 or more shall comply with DBP MCLs and disinfectant maximum residual disinfectant levels beginning January 1, 2002. All other community and non-transient non-community systems shall meet the MCLs and MRDLs beginning January 1, 2004. Transient non-community systems using groundwater under the direct influence of surface water serving 10,000 or more persons and using chlorine dioxide as a disinfectant or oxidant shall comply with the chlorine dioxide MRDL beginning January 1, 2002. Transient non-community systems using groundwater under the direct influence of surface water serving fewer than 10,000 persons and public water systems using only groundwater not under the direct influence of surface water and using chlorine dioxide as a disinfectant or oxidant shall comply with the chlorine dioxide MRDL beginning January 1, 2004.

[17] The MCL for total trihalomethanes is the sum of the concentrations of the individual trihalomethanes.

[18]The MCL for haloacetic acids is the sum of the concentrations of the individual haloacetic acids.

[19] MRDLG--Maximum residual disinfectant level goal.

[20]MRDL--Maximum residual disinfectant level.

SECTION 167. NR 809 Subchapter VIII is repealed.

SECTION 168. EFFECTIVE DATE

This rule shall take effect on the first day of the month following publication in the Wisconsin administrative register as provided in s. 227.22 (2) (intro.), Stats.

SECTION 169. BOARD ADOPTION.

The forgoing rule was approved and adopted by the State of Wisconsin Natural Resources Board.