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WISCONSIN STATE LEGISLATURE ...
PUBLIC HEARING - COMMITTEE RECORDS

2009-10
(session year)

Joint
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* Contents organized for archiving by: Stefanie Rose (LRB) (June 2012)

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 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 groundwater under the direct influence of surface water as defined in s. NR 809.04(38), 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 public water system 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.

(e) Water suppliers for public water systems shall collect samples at regular time intervals throughout the month, except that for public water systems which use groundwater and serve 1,000 persons or fewer, may collect all required samples on a single day if the samples are taken from different sites.

(f) 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. Repeat samples taken pursuant to sub. (2) are not considered special purpose samples, and shall be used to determine compliance with the MCL for total coliforms in s. NR 809.30.

(g) A water supplier for a public water system that uses groundwater under the direct influence of surface water as defined in s. NR 809.04 (38), 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 included in determining compliance with the MCL for total coliforms in s. NR 809.30.

(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 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 specify how much time the water supplier has to collect repeat samples.

(b) 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 tap within 5 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.

(c) For a groundwater system serving 1000 or fewer people, that takes 4 repeat samples under par (a), the water supplier 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).

(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 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 for public water systems where water suppliers are reqired to collect more than one routine sample per month.

(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 has been exceeded and the water supplier notifies the department as specified in s. NR 809.80 (2).

(f) If a water supplier collecting fewer than 5 routine samples per month has one or more total coliform-positive samples and the department does not invalidate the samples under sub. (3), the water supplier shall collect at least 5 routine samples during the next month the public water system provides water to the public, except that the department may waive this requirement if the conditions of subd. 1. or 2. are met. The requirement for a water supplier to collect repeat samples in pars. (a) to (e) is not waivable.

1. The department may waive the requirement to collect 5 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.

2. The department may waive the requirement to collect 5 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.

(g) After a water supplier collects a routine sample and before learning the results of the analysis of that sample, if the water supplier collects another routine sample from within 5 adjacent service connections of the initial sample, and the initial sample after analysis is found to contain total coliforms, then the water supplier may count the subsequent sample as a repeat sample instead of as a routine sample.

(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.

(3) INVALIDATION OF TOTAL COLIFORM SAMPLES. (a) A total coliform-positive sample invalidated under this subsection does not count towards meeting the minimum monitoring requirements of this section.

(b) The department may invalidate a total coliform-positive sample only if the conditions of subd. 1., 2. or 3. are met.

1. A certified laboratory establishes that improper sample analysis caused the total coliform-positive result.

2. The department, on the basis of the results of repeat samples collected as required by sub. (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 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.

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. 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.

(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.

(4) FECAL COLIFORMS OR ESCHERICHIA 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. If fecal coliforms or E. Coli are present, the water supplier shall notify the department by the end of the day when the water supplier 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 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-positive. Accordingly, the water supplier shall notify the department as specified in par. (a) and the provisions of s. NR 809.30 (2) apply.

(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. 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.

(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 shall establish a schedule subject to review and modification by the department.

Note: Generally, enumeration methods such as membrane filter 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.

(7) HETEROTROPHIC PLATE COUNTS. At all waterworks which have a potential for high total bacteria levels because of the water quality, the method of treatment, chemical addition or other cause, the department may require heterotrophic plate counts pursuant to an established schedule. Analyses shall be conducted in accordance with the analytical requirements in s. NR 809.311(1), Table F.

NR 809.311 Analytical requirements for microbiological contaminants

(1) ANALYTICAL METHODS. Analyses conducted to determine compliance with s. NR 809.31 shall be made in accordance with methods listed in Table F.

TABLE F
SDWA Approved Methodology for Microbiological Measurements

	Methodology	Method [1]
Total Coliform Bacteria[8]	Multiple tube fermentation[3,4,5]	9221 A,B,C
	Membrane	9222 A,B,C
	Minimal Media ONPG-MUG Test[7]	9223
	Chromogenic/Fluorogenic[10]	see footnote 10
	Presence - Absence (P-A) Coliform Test[5,6]	9221D
Fecal Coliform,	Fecal Coliform Multiple Tube(MPN)[9] Tests	9221E
	Fecal Coliform Membrane Filter (MF) Procedure	9222D
Escherichia coli	EC Medium + MUG[7]	908C (pp. 879)
	Nutrient Agar + MUG[7]	908B (pp. 874)
	Minimal Medium + MUG (MMO-MUG)[5,7]	908C or 908D (pp. 878-882)
Heterotrophic Plate Count[2]	Pour Plate Method	9215B

[1] Standard Methods for the Examination of Water and Wastewater, 18th edition (1992), 19th edition (1995), or 20th edition (1998). American Public Health Association, 1015 Fifteenth Street, NW., Washington, DC 20005. The cited methods published in any of these three editions may be used. In addition, the following online versions may also be used: 9221 A, B, D–99, 9222 A, B, C–97, and 9223 B–97. 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.

[2]The time from sample collection to initiation of analysis may not exceed 8 hours. Sample must be iced.

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

[4]If inverted tubes are used to detect gas production, the media should cover these tubes at least one-half to two-thirds after the sample is added.

[5]No requirement exists to run the completed phase on 10 percent of all total coliform-positive confirmed tubes.

[6]Six-times formulation strength may be used if the medium is filter-sterilized rather than autoclaved.

[7]The ONPG-MUG Test is also known as the Autoanalysis Colilert System.

[8]The time from sample collection to initiation of analysis should not exceed 30 hours. If the laboratory analyzes the sample between 30 and 48 hours after collection the results report must indicate that the results are possibly invalid.

[9]A-1 broth may be held up to three months in a tightly closed screwcap tube at 4°C.

[10]This is also known as the Colisure Test. The Colisure Test must be incubated for 28 hours before examining the results. If an examination of the results at 28 hours is not convenient, the results may be examined at any time between 24 and 48 hours. A description of the Colisure Test may be obtained from IDEXX Laboratories, Inc., One IDEXX Drive, Westbrook, Maine 04092.

(2) SAMPLE VOLUME. The standard sample volume required for total coliform analysis, regardless of analytical method used, is 100 ml.

(3) SAMPLE COLLECTION PRESERVATION AND HOLDING TIME. (a) Sample collection for microbiological contaminants under s. NR 809.30 shall be conducted using the sample preservation, containers and maximum holding time procedures specified in par. (b).

(b) Sample preservation requirements and holding times for microbiological samples are specified in subd. 1 and 2. In all cases, samples shall be analyzed as soon after collection as possible.

1. Coliform, E.coli, and fecal Coliform shall be preserved by cooling to 10° C, sodium thiosulfate shall be added to the sample container prior to adding water containing chlorine and the holding time shall be 30 hours.

2. Heterotrophs may be either held at room temperature with a holding time of 6 hours or preserved by cooling to 4° C with a holding time of 24 hours.

(4) LABORATORY CERTIFICATIION. Analyses under this section shall only be conducted by laboratories that have received certification under ch. ATCP 77 or approval by EPA.

(5) PRESENCE OR ABSENCE. Water suppliers need only determine the presence or absence of total coliforms; a determination of total coliform density is not required.

Note: The coliform density may, however, be helpful in selecting a remedial option.

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

(7) OTHER METHOD. 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).

(8) SAMPLE INTEGRITY. If chlorine odor is present in a drinking water sample the laboratory shall test the sample for the presence of chlorine. If chlorine is detected in the sample, the laboratory shall reject the sample for analysis, based on the improper preservation. The water supplier shall submit a new sample for analysis to replace the rejected sample.

NR 809.312 Compliance reporting for microbiological contaminants. (1) MCL VIOLATION REPORTING. When a sample collected under s. NR 809.31(1), (2) or (4) 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.

(2) MONITORING VIOLATION REPORTING. A water supplier who has failed to comply with a coliform monitoring requirement shall report the monitoring violation to the department within 10 days after discovering the violation, and shall notify the public as specified in s. NR 809.952.

NR 809.32 Groundwater microbiological source water monitoring - General requirements.

(1)APPLICABILITY OF GROUNDWATER SOURCE MICROBIOLOGICAL CONTAMINANTS. (a) This section applies to all public water systems using groundwater, except for public water systems that combine all of their groundwater with surface water or with groundwater under the direct influence of surface water prior to surface water treatment.

(b) This section applies to any public water system meeting the applicability statement in sub. (1), including consecutive systems that receive finished groundwater from another public water system.

(2) COMPLIANCE DATE. Unless otherwise noted, all groundwater systems shall comply with the requirements of this section beginning December 1, 2009.

(3) REQUIREMENTS. All public water systems using groundwater as a source shall comply with the following requirements:

(a) Provide all information required by the department for sanitary surveys conducted under s. NR 809.35.

(b) Groundwater systems that do not treat all of their groundwater to at least 4-log treatment of viruses, using inactivation, removal, or a department-approved combination of 4-log virus inactivation and removal before or at the first customer, shall meet all the microbiological source water monitoring requirements under s. NR 809.325.

(c) Groundwater systems that have fecally contaminated source waters, as determined by source water monitoring conducted under NR 809.325, or have significant deficiencies that are identified by the department or that are identified by EPA, under Subpart S of 40 CFR part 141 of the U.S. Code, shall meet the treatment technique requirements in s. NR 809.327. Groundwater systems with fecally contaminated source water or with significant deficiencies are subject to the treatment technique requirements of s. NR 809.327 and shall implement one or more of the following corrective action options:

1. Correct all significant deficiencies.

2. Provide an alternate source of water.

3. Eliminate the source of contamination.
4. Provide treatment that reliably achieves at least 4-log treatment of viruses, before or at the first customer.

(d) Groundwater systems that provide at least 4-log treatment of viruses before or at the first customer shall conduct compliance monitoring to demonstrate treatment effectiveness, as required under s. NR 809.327(3).

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 analysis regardless of the analytical method used.

(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. If the department requires a public water system to be tested for the presence of enterococci or colipahage, the water supplier shall use one of the methods listed in par. (c) Table G.

(c) Sample volumes of at least 100 mL shall be used for all analyses using the methods in Table G. Analyses shall be conducted in accordance with the documents listed in the footnotes to Table G.

(d) The sample holding time shall not exceed 30 hours. In all cases, samples should be analyzed as soon after collection as possible.

Table G
Analytical Methods for Source Water Monitoring

Fecal indicator	Methodology	Method Citation
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] E*Colite Test [5] EC-MUG [6]	9221 F[1]
	NA-MUG [6]	9222 G[1]
Enterococci	Multiple-Tube Technique.	9230 B[1]
	Membrane Filter Technique.	9230 C[1]
	Membrane Filter EPA Method	

	Technique. Enterolert [8]	1600[7]
Coliphage	Two-Step Enrichment EPA Method Presence-Absence Procedure.	1600[9]
	Single Agar Layer Procedure.	1602[10]

Copies of the documents listed in the footnotes may be obtained from the sources listed in the footnotes.

[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.

[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.

(2) INVALIDATION OF AN E. COLI-POSITIVE GROUNDWATER SOURCE SAMPLE. (a) The department may invalidate an 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-positive groundwater source sample is not related to source water quality.

(b) If the department invalidates an 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 using the analytical methods in s. NR 809.323(1) (b) Table G.

(c)The department may extend the 24-hour time limit on a case-by-case basis if the water supplier cannot collect the 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 809.325 Groundwater source microbiological monitoring requirements. (1) SAMPLING LOCATION. (a) Any groundwater source sample required under sub. (2) shall be collected at a location prior to any treatment of the groundwater source unless the department approves a sampling location after treatment.

(b) If the pubic 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.

(c) Source water samples taken in response to positive total coliform samples collected under s. NR 809.31 shall be referred to as triggered source water samples.

(2) TRIGGERED SOURCE WATER MONITORING. (a) Water suppliers for groundwater systems shall conduct triggered source water monitoring if all of the following conditions exist:

1. The public water system does not provide at least 4-log treatment of viruses before or at the first customer for each groundwater source.

2. The public water system is notified that a sample collected under s. NR 809.31(1) is total coliform-positive and the sample is not invalidated under s. NR 809.31(3).

(b) The following sampling requirements apply:

1. No later than 24 hours after notification of a total coliform-positive distribution system sample, a water supplier for 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).

2. The department may extend the 24-hour time limit on a case-by-case basis if the water supplier 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.

3. If approved by the department, water suppliers for groundwater systems with more than one groundwater source may meet the requirements of this paragraph by sampling a representative groundwater source or sources if they have an approved triggered source water monitoring plan.

(c) A triggered source water monitoring plan shall evaluate each sample site in the sample siting plan for the public water system under s. NR 809.31(1) (a) and identify the sources that are representative of each monitoring site. If directed by the department, a water supplier for a public water system shall submit for department approval a triggered source water monitoring plan that identifies one or more groundwater sources that are representative of each monitoring site in the sample siting plan for the public water system and that the water supplier intends to use for representative sampling under par. (b).

(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 positive, the water supplier shall comply with the requirements of par. (c) unless the department requires immediate corrective action under s. NR 809.327(2) (b).

(e) If the department does not require corrective action under s. NR 809.327(2) (b) for an 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 positive sample. If any of the 5 samples collected under this paragraph is E. coli-positive, the water supplier shall conduct a corrective action as outlined in s. NR 809.327(2).

(3) CONSECUTIVE AND WHOLESALE SYSTEMS. (a) In addition to the other requirements of this section, a water supplier for a consecutive groundwater system that has a total coliform-positive sample collected under s. NR 809.31(2) shall notify any wholesale system from which it receives water no later than 24 hours after being notified of the total coliform-positive sample.

(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 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.

(c) If the sample collected under par. (b) is 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) unless the department requires immediate corrective action under s. NR 809.327(2)(b).

(4) EXCEPTION TO THE TRIGGERED SOURCE WATER MONITORING REQUIREMENTS.

(a) 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) was caused by a distribution system deficiency.

(5) FAILURE TO MEET MONITORING REQUIREMENTS. If a water supplier fails to meet any of the monitoring requirements of subs. (1) to (3), the public water system is in violation and is required to complete public notification requirements under s. NR 809.95.

(6) PUBLIC NOTIFICATION. A water supplier for a groundwater system with a groundwater source sample collected under subs. (2) or (3) that is fecal indicator-positive and that is not invalidated under s. NR 809.323, including consecutive systems served by the groundwater source, shall conduct public notification under s. NR 809.951(1)(b)9.

NR 809.327 Compliance requirements for groundwater source microbiological monitoring.

(1) COMPLIANCE REQUIREMENTS. Treatment technique submittal requirements for water suppliers for public water systems with significant deficiencies or confirmed source water fecal contamination are as follows:

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

(b) If the department specifies interim measures for protection of the public health, pending department approval of the corrective action plan and schedule or pending completion of the corrective action plan, the water supplier shall comply with these interim measures in addition to the other requirements of this section.

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

1. A completed corrective action in accordance with the applicable department plan review processes contained in ch. NR 811 for community systems or ch. NR 812 for noncommunity systems.

2. A written and approved department corrective action plan and schedule.

(2) CORRECTIVE ACTION ALTERNATIVES. A water supplier for a groundwater systems receiving written notice from the department of significant deficiencies under s. NR 809.35 or confirmed source water fecal contamination under s. NR 809.325 shall implement one or more of the following corrective action alternatives:

(a) Correct all significant deficiencies.

(b) Provide an alternate source of water.

(c) Eliminate the source of contamination.

(d) Provide treatment that reliably achieves at least 4-log treatment of viruses before or at the first customer for the groundwater source.

(3) NOTIFICATION AND SUBMITTAL REQUIREMENTS FOR SYSTEMS PROVIDING 4 LOG TREATMENT OF VIRUSES.

(a) A public water system that has an existing or new groundwater source and serves customers on or after November 30, 2009 and provides department-approved treatment that achieves 4 log inactivation or removal of viruses before the first customer, is not required to meet the triggered source water monitoring requirements of s. NR 809.325(2) if all of the following conditions are met:

1. The water supplier notifies the department in writing that the public water system provides at least 4-log treatment of viruses.

2. The notification from the water supplier to the department shall includes a submittal for review that includes the engineering and operational information that the department will need to evaluate the adequacy of the treatment.

3. The water supplier provides any other information that the department requests to aid in its evaluation of the sufficiency of the public water system's treatment process for viruses.

(b) A water supplier for a public water system that provides at least 4-log treatment of viruses before or at the first customer and places a new groundwater source into service after November 30, 2009, is not required to meet the triggered source water monitoring requirements of s. NR 809.325 if the water supplier complies with all of the following requirements:

1. The water supplier notifies the department in writing that it provides at least 4-log treatment of viruses before or at the first customer for the groundwater source.

2. The notification the water supplier provides to the department shall include an engineering, operational, or other information that the department requests to evaluate the submission.

3. The water supplier conducts compliance monitoring as required under sub. (4) within 30 days of placing the source in service.

(c) If a water supplier for a public water system subsequently discontinues 4-log treatment of viruses before or at the first customer for a groundwater source, the water supplier shall conduct triggered source water monitoring in accordance with the requirements of s. NR 809.325(2).

(4) TREATMENT COMPLIANCE MONITORING. A groundwater system that provides 4 log treatment of viruses shall monitor the effectiveness and reliability of treatment for that groundwater source before or at the first customer as follows:

(a) *Chemical disinfection.*

1. All water suppliers for community water systems shall continuously monitor the residual disinfectant concentration using analytical methods and requirements specified in s. NR 809.563 at a location approved by the department and shall record the lowest residual disinfectant concentration each day that water from the groundwater source is served to the public, unless the department allows less frequent monitoring as outlined in subd 2.

a. The groundwater system shall maintain the department determined residual disinfectant concentration every day the public water system serves water from the groundwater source to the public.

b. If there is a failure in the continuous monitoring equipment, the water supplier shall conduct grab sampling every four hours until the continuous monitoring equipment is returned to service.

c. The water supplier for the public water system shall resume continuous residual disinfectant monitoring, as soon as possible, but no later than 14 days after the failure.

2. The water supplier for a community water systems serving 3,300 or fewer people shall be allowed to monitor the residual disinfectant concentration less than continuously, if the water supplier receives approval under s. NR 811.48(3)(b) to monitor less than continuously. The monitoring shall be done using analytical methods and requirements specified in s. NR 809.563 at a location approved by the department and the residual disinfection concentration shall be recorded from that water every day the groundwater source is served to the public.

a. The groundwater system shall maintain the department determined residual disinfectant concentration every day the groundwater system serves water from the groundwater source to the public. The water supplier for a groundwater system shall take a daily grab sample during the hour of peak flow or at another time specified by the department.

b. If any daily grab sample measurement falls below the department determined residual disinfectant concentration, the water supplier shall take follow-up samples at the frequency determined by the department under s. NR 811.43(3)(b) but no less than four hours until the residual disinfectant concentration is restored to the department determined level.

3. Water suppliers for non-community systems serving 3,300 or fewer people, unless otherwise required by the department under ch. NR 812, 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.

a. The water supplier for a groundwater system shall maintain the department determined residual disinfectant concentration every day the groundwater system serves water from the groundwater source to the public. The water supplier for a groundwater system shall take a daily grab sample during the hour of peak flow or at another time specified by the department.

b. If any daily grab sample measurement falls below the department determined residual disinfectant concentration, the water supplier shall take follow-up samples every four hours until the residual disinfectant concentration is restored to the department determined level.

c. Alternatively, water suppliers for non-community groundwater systems that serve 3,300 or fewer people may monitor continuously in order to meet the requirements of subd. 1.

(b) *Membrane filtration.* A water supplier for a groundwater system that uses membrane filtration to meet the requirements of s. NR 809.327(2) shall monitor the membrane filtration process in accordance with all department specified monitoring requirements and shall operate the membrane filtration in accordance with all department specified compliance requirements. To be in compliance with the requirement to achieve at least 4-log treatment of viruses when a public water system uses membrane filtration exclusively, the public water system shall meet all of the following:

1. The membrane shall have an absolute molecular weight cut-off (MWCO), or an alternate parameter that describes the exclusion characteristics of the membrane, that can reliably achieve at least 4-log removal of viruses.

2. The membrane process shall be operated in accordance with department-specified compliance requirements.

3. The integrity of the membrane is intact.

4. The public water system shall be provided with at least 2 log of additional treatment of viruses using a chemical disinfectant.

(c) *Alternative treatment.* A water supplier for a groundwater system that uses a department-approved alternative treatment to meet the requirements of sub. (2)(d) for providing at least 4-log treatment of viruses before or at the first customer shall do all of the following:

1. Monitor the alternative treatment in accordance with all department specified monitoring requirements.

2. Operate the alternative treatment in accordance with all compliance requirements that the department determines to be necessary to achieve at least 4-log treatment of viruses.

(5) DISCONTINUING TREATMENT. A water supplier for a groundwater system may discontinue 4-log treatment of viruses before or at the first customer for a groundwater source if the department determines and documents in writing that 4-log treatment of viruses is no longer necessary for that water source. A public water system where 4-log treatment of viruses is discontinued is subject to the source water monitoring requirements of s. NR 809.325.

(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.

NR 809.328 Treatment technique compliance for groundwater source microbiological contaminants (1) TREATMENT TECHNIQUE VIOLATIONS FOR GROUNDWATER SYSTEMS. (a) A groundwater system with a significant deficiency is in violation of the treatment technique requirement if, within 120 days of the water supplier receiving written notice from the department of the significant deficiency or earlier if directed by the department, subd. 1. or 2. are not met.

1. The water supplier has not completed a corrective action in accordance with any applicable department plan approval processes under chs. NR 811 and NR 812, including any department specified interim actions.

2. The public water system is not in compliance with a department-approved corrective action plan and schedule.

(b) Unless the department invalidates an 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.

1. The water supplier does not complete corrective action in accordance with any applicable department plan review processes under chs. NR 811 and NR 812, including department specified interim measures.

2. The public water system is not in compliance with a department-approved corrective action plan and schedule.

(c) A water supplier for a groundwater system subject to the requirements of s. NR 809.327(4) that fails to maintain at least 4-log treatment of viruses before or at the first customer for a groundwater source is in violation of the treatment technique requirement if the failure is not corrected within 4 hours of determining the public water system is not maintaining at least 4-log treatment of viruses before or at the first customer.

(2) PUBLIC NOTIFICATION FOR TREATMENT TECHNIQUE VIOLATIONS. Water suppliers for groundwater systems shall give public notification under s. NR 809.952 for the treatment technique violations specified under this section.

NR 809.329 Reporting and recordkeeping requirements for groundwater systems. (1) REPORTING. In addition to the requirements of ss. NR 809.31 and 809.80, a water supplier for a groundwater system regulated under s. NR 809.32 shall provide the following information to the department:

(a) A water supplier for a groundwater system conducting compliance monitoring under s. NR 809.327(3) shall notify the department any time the public water system fails to meet any department-specified requirements including, but not limited to, minimum residual disinfectant concentration, membrane operating criteria or membrane integrity, and alternative treatment operating criteria, if the operation is not restored in accordance with the criteria or requirements within four hours. The water supplier shall notify the department as soon as possible, but in no case later than the end of the next business day after the failure.

(b) After completing any corrective action under s. NR 809.327(2), a water supplier shall notify the department within 30 days of completion of the corrective action.

(2) RECORDKEEPING. In addition to the requirements of s. NR 809.80, a water supplier for a public water system regulated under s. NR 809.32 shall maintain the following information in its records:

(a) Documentation of corrective actions. Documentation shall be kept for a period of not less than ten years.

(b) Documentation of notice to the public as required under s. NR 809.80. Documentation shall be kept for a period of not less than three years.

(c) Records of decisions under s. NR 809.325(4) and records of invalidation of an 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.

(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). Documentation shall be kept for a period of not less than five years.

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

1. Records of the department specified minimum disinfectant residual. Documentation shall be kept for a period of not less than ten years.

2. Records of the lowest daily residual disinfectant concentration and records of the date and duration of any failure to maintain the department prescribed minimum residual disinfectant concentration for a period of more than four hours. Documentation shall be kept for a period of not less than five years.

3. Records of department-specified compliance requirements for membrane filtration and of parameters specified by the department for department-approved alternative treatment and records of the date and duration of any failure to meet the membrane operating, membrane integrity, or alternative treatment operating requirements for more than 4 hours. Documentation shall be kept for a period of not less than five years.

NR 809.33 Surface water microbiological organisms and indicators. (1) GENERAL REQUIREMENTS. The requirements in this section establish or extend treatment techniques in lieu of maximum contaminant levels for

Cryptosporidium. These requirements are in addition to requirements for filtration and disinfection in subch. II of ch. NR 810.

(2) APPLICABILITY. These requirements apply to all surface water and GWUDI public water systems.

(a) Wholesale systems that supply water from a surface water or GWUDI source shall comply with the requirements of this section based on the population of the largest public water system in the combined distribution system.

(b) The requirements of this section for filtered public water systems apply to all public water systems required by s. NR 810.29 to provide filtration treatment, whether or not the public water system is currently operating a filtration system.

(c) The requirements of this section for unfiltered public water systems apply only to unfiltered public water systems that met and continue to meet the filtration avoidance criteria in s. NR 810.30 as applicable.

(3) REQUIREMENTS. Public water systems subject to this section shall comply with the following requirements:

(a) The following monitoring is required under this section:

1. Water suppliers shall have conducted and submitted to EPA an initial round of source water monitoring for treatment plants existing as of January 5, 2006 under 40 CFR part 141 National Primary Drinking Water Regulations Subpart W that determined the level of treatment for *Cryptosporidium* needed under s. NR 810.34.

2. Water suppliers shall conduct source water monitoring as part of the treatment approval process for plants constructed after January 5, 2006 under s. NR 811.21(1)(f). This monitoring shall include *Cryptosporidium, E. coli,* and turbidity to determine what level of *Cryptosporidium* treatment shall be provided using the requirements of the bin classifications under s. NR 810.34.

3. A second round of source water monitoring for each plant that treats a surface water or GWUDI source shall be conducted by the water supplier and submitted to the department as required in s. NR 809.331(2). This monitoring may include sampling for *Cryptosporidium, E. coli,* and turbidity as described in ss. NR 809.331 to 809.336, to determine what level, if any, of additional *Cryptosporidium* treatment the public water system shall provide.

(b) Water suppliers that plan to make a significant change to the disinfection practice at a public water system shall develop disinfection profiles and calculate disinfection benchmarks, as described in s. NR 810.32.

(c) Water suppliers for filtered public water systems shall determine their *Cryptosporidium* treatment bin classification as described in s. NR 810.34 and provide additional treatment for *Cryptosporidium,* if required, as described in s. NR 810.35. All unfiltered public water systems shall provide treatment for *Cryptosporidium* as described in s. NR 810.36. Filtered and unfiltered public water systems shall implement *Cryptosporidium* treatment according to the schedule in s. NR 810.37.

(d) Water suppliers for public water systems with an uncovered finished water storage facilities shall comply with the requirements to cover the facility or treat the discharge from the facility as described in s. NR 810.28.

(e) Water suppliers for public water systems required to provide additional treatment for *Cryptosporidium* shall implement microbial toolbox options that are designed and operated as described in ss. NR 810.41 to 810.46.

(f) Water supplier shall comply with the applicable recordkeeping and reporting requirements described in ss. NR 809.39 to 809.40.

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

NR 809.331 Surface water source monitoring. (1) INITIAL ROUND OF SOURCE WATER MONITORING. Water suppliers shall have conducted the following monitoring according to the schedule in sub. (3) Table H, at treatment plants existing as of January 5, 2006 unless the public water system meets the monitoring exemption criteria in sub. (4). The initial source water monitoring requirements were conducted under 40 CFR part 141 National Primary Drinking Water Regulations Subpart W with EPA wholly responsible for implementation. For public water systems with treatment plants constructed after January 5, 2006 the department may require the following initial monitoring as part of the approval process under s. NR 811.21(1)(f).

(a) Water suppliers for filtered public water systems serving at least 10,000 people shall sample their source water for *Cryptosporidium, E. coli,* and turbidity at least monthly for 24 months.

(b) Water suppliers for unfiltered public water systems serving at least 10,000 people shall sample their source water for *Cryptosporidium* at least monthly for 24 months.

(c) Water suppliers for filtered public water systems serving fewer than 10,000 people shall sample their source water for *E. coli* at least once every two weeks for 12 months. A filtered public water system serving fewer than 10,000 people may avoid *E. coli* monitoring if the water supplier notifies the department that *Cryptosporidium* will be monitored for as described in sub. (3). The water supplier shall notify the department no later than 3 months prior to the date the public water system is required to start *E. coli* monitoring under sub. (3).

(d) Water suppliers for filtered public water systems serving fewer than 10,000 people shall sample their source water for *Cryptosporidium* at least twice per month for 12 months or at least monthly for 24 months if based on monitoring conducted under par. (c), and if they meet one of the following:

1. For public water systems using lake or reservoir sources, the annual mean *E. coli* concentration is greater than 10 *E. coli* /100 mL.

2. For public water systems using flowing stream sources, the annual mean *E. coli* concentration is greater than 50 *E. coli* /100 mL.

3. The public water system was not monitored for *E. coli* as described in par. (c).

4. Public water systems using groundwater under the direct influence of surface water (GWUDI) shall comply with the requirements of this paragraph based on the *E. coli* level that applies to the nearest surface water body. If no surface water body is nearby, the public water system shall comply based on the requirements that apply to public water systems using lake or reservoir sources.

(e) For filtered public water systems serving fewer than 10,000 people, the department may approve monitoring for an indicator other than *E. coli* under par. (c). The department also may approve an alternative to the *E. coli* concentration in par. (d) 1. to 3. to trigger *Cryptosporidium* monitoring. This approval by the department shall be provided to the public water system in writing and shall include the basis for the department's determination that the alternative indicator or trigger level will provide a more accurate identification of whether a public water system will exceed the Bin 1 *Cryptosporidium* level in s. NR 810.34.

(f) Water suppliers for unfiltered public water systems serving fewer than 10,000 people shall sample their source water for *Cryptosporidium* at least twice per month for 12 months or at least monthly for 24 months.

(g) Water suppliers may sample more frequently than required under this section if the sampling frequency is evenly spaced throughout the monitoring period.

(2) SECOND ROUND OF SOURCE WATER MONITORING. Water supplier shall conduct a second round of source water monitoring that meets the requirements for monitoring parameters, frequency, and duration described in sub. (1), unless they meet the monitoring exemption criteria in sub. (4). Water suppliers shall conduct this monitoring on the schedule in sub. (3).

(3) MONITORING SCHEDULE. According to EPA requirements, water supplier shall begin the monitoring required in subs. (1) and (2) no later than the month beginning with the date listed in this table:

Table H

Source Water Monitoring Starting Dates

Public water systems that serve . . .	**The initial round of source water monitoring shall begin no later than the month beginning :**	**The second round of source water monitoring shall begin no later than the month beginning :**
(1) At least 100,000 people	October 1, 2006	April 1, 2015.
(2) From 50,000 to 99,999 people	April 1, 2007	October 1, 2015.
(3) From 10,000 to 49,999	April 1, 2008	October 1, 2016.

people		
(4) Fewer than 10,000 and monitor for *E. coli* [1]	October 1, 2008	October 1, 2017.
(5) Fewer than 10,000 and monitor for *Cryptosporidium* [2]	April 1, 2010	April 1, 2019.

[1]Applies only to filtered public water systems.

[2]Applies to filtered public water systems that meet the conditions of sub. (1)(e) and unfiltered public water systems.

(4) MONITORING AVOIDANCE. (a) Water suppliers for filtered public water systems are not required to conduct source water monitoring under this section if the public water system will provide a total of at least 5.5-log of treatment for *Cryptosporidium*, equivalent to meeting the treatment requirements of Bin 4 in s. NR 810.35.

(b) Water supplier for unfiltered public water systems are not required to conduct source water monitoring under this section if the public water system will provide a total of at least 3-log *Cryptosporidium* inactivation, equivalent to meeting the treatment requirements for unfiltered public water systems with a mean *Cryptosporidium* concentration of greater than 0.01 oocysts/L in s. NR 810.36.

(c) If a water supplier chooses to provide the level of treatment in par. (a) or (b), as applicable, rather than start source water monitoring, the water supplier shall notify the department in writing no later than the date the public water system is otherwise required to submit a sampling schedule for monitoring under s. NR 809.332. Alternatively, a water supplier may choose to stop sampling at any point after the public water system has initiated monitoring if the water supplier notifies the department in writing that the public water system will provide this level of treatment. Water supplier shall install and operate technologies to provide this level of treatment by the applicable treatment compliance date in s. NR 810.37.

(5) PLANTS OPERATING ONLY PART OF THE YEAR. Water suppliers for public water systems with surface water treatment plants that operate for only part of the year shall conduct source water monitoring in accordance with this section, but with the following modifications:

(a) Water supplier shall sample their source water only during the months that the plant operates unless the department specifies another monitoring period based on plant operating practices.

(b) Water supplier for public water systems with plants that operate less than six months per year and that monitor for *Cryptosporidium* shall collect at least six *Cryptosporidium* samples per year during each of two years of monitoring. Samples shall be evenly spaced throughout the period the plant operates.

(6) NEW SOURCES. (a) A water supplier for a public water system that begins using a new source of surface water or GWUDI after the public water system is required to begin monitoring under sub. (3) shall monitor the new source on a schedule the department approves. Source water monitoring shall meet the requirements of this section. The public water system shall also meet the bin classification and *Cryptosporidium* treatment requirements of ss. NR 810.34 and 810.35 or s. NR 810.36, as applicable, for the new source on a schedule the department approves.

(b) The requirements of this section apply to public water systems with surface water treatment plants that begin operation after the monitoring start date applicable to the public water system's size under sub. (3).

(c) The water supplier shall begin a second round of source water monitoring no later than 6 years following initial bin classification under s. NR 810.34 or determination of the mean *Cryptosporidium* level under s. NR 810.36, as applicable.

(7) MONITORING VIOLATION. Failure to collect any source water sample required under this section in accordance with the sampling schedule, sampling location, analytical method, approved laboratory, and reporting requirements of s. NR 809. 332 to s. NR 809.336 is a monitoring violation.

(8) GRANDFATHERING MONITORING DATA. The water supplier may use monitoring data collected prior to the applicable monitoring start date in sub. (3) to meet the initial source water monitoring requirements in sub. (1). This data, referred to as grandfathered data, may substitute for an equivalent number of months of data at the end of the monitoring period. All data submitted under this section shall meet the requirements in s. NR 809.337.

NR 809.332 Sampling schedules for surface water source water monitoring. (1) SAMPLING SCHEDULES. Water suppliers for public water systems required to conduct source water monitoring under s. NR 809.331 shall submit a sampling schedule that specifies the calendar dates when the water supplier will collect each required sample.

(a) Water suppliers shall submit sampling schedules no later than 3 months prior to the applicable date listed in s. NR 809.331(3), Table H, for each round of required monitoring.

(b) Water suppliers for public water systems serving at least 10,000 people shall submit their sampling schedule for the initial round of source water monitoring under s. NR 809.331(1) to EPA electronically at https://intranet.epa.gov/lt2/. If a water supplier is unable to submit the sampling schedule electronically, the water supplier may use an alternative approach for submitting the sampling schedule subject to EPA approval.

(c) Water suppliers for public water systems serving fewer than 10,000 people shall submit their sampling schedules for the initial round of source water monitoring under s. NR 809.331 (1) to the EPA or the department.

(d) Water suppliers shall submit sampling schedules for the second round of source water monitoring under s. NR 809.331 (2) to the department.

(e) If EPA or the department does not respond to a water supplier regarding its sampling schedule, the water supplier shall sample at the reported schedule.

(2) SAMPLE COLLECTION. Water suppliers shall collect samples no later than two days before or two days later than the dates indicated in their sampling schedule. Thus samples shall be collected within a five-day period around the scheduled date, unless one of the conditions of par. (2) (a) or (b) applies.

(a) If an extreme condition or situation exists that may pose danger to the sample collector, or that cannot be avoided and causes the water supplier to be unable to sample in the scheduled five-day period, the water supplier shall sample as close to the scheduled date as feasible unless the department approves an alternative sampling date. The water supplier shall submit an explanation for the delayed sampling date to the department concurrent with the shipment of the sample to the laboratory.

(b) If a water supplier is unable to report a valid analytical result for a scheduled sampling date due to equipment failure, loss of or damage to the sample, failure to comply with the analytical method requirements, including the quality control requirements in s. NR 809.334, or the failure of an approved laboratory to analyze the sample, then the water supplier shall collect a replacement sample. The water supplier shall collect the replacement sample no later than 21 days after receiving information that an analytical result cannot be reported for the scheduled date unless the water supplier demonstrates that collecting a replacement sample within this time frame is not feasible or the department approves an alternative resampling date. The water supplier shall submit an explanation for the delayed sampling date to the department concurrent with the shipment of the sample to the laboratory.

(3) REVISING SAMPLING SCHEDULES. Water supplier for public water systems that fail to meet the criteria of sub. (2) for any source water sample required under s. NR 809.331 shall revise their sampling schedules to add dates for collecting all missed samples. The water supplier shall submit the revised schedule to the department for approval before the water supplier begins collecting the missed samples.

809.333 Sampling locations for surface water source water monitoring. (1) GENERAL REQUIREMENTS. Water suppliers for public water systems required to conduct source water monitoring under s. NR 809.331 shall collect samples for each plant that treats a surface water or GWUDI source. Where multiple plants draw water from the same influent, such as the same pipe or intake, the department may approve one set of monitoring results to be used to satisfy the requirements of s. NR 809.331 for all plants.

(2) SAMPLE COLLECTION LOCATION. The water supplier shall collect source water samples prior to chemical treatment, such as coagulants, oxidants and disinfectants, unless the public water system meets the condition of this subsection. The department may approve a water supplier to collect a source water sample after chemical treatment if the department determines that collecting a sample prior to chemical treatment is not feasible for the public water system and that the chemical treatment is unlikely to have a significant adverse effect on the analysis of the sample.

(3) RECYCLED FILTER BACKWASH. Water suppliers for public water systems that recycle filter backwash water shall collect source water samples prior to the point of filter backwash water. All public water systems that recycle filter backwash water shall comply with all of the requirements under ss. NR 810.295, 811.860 and 809.862.

(4) BANK FILTRATION. (a) Water suppliers for public water systems that receive *Cryptosporidium* treatment credit for bank filtration under ss. NR 810.29(5) or 810. 37 (2), as applicable, shall collect source water samples in the surface water prior to bank filtration.

(b) Water suppliers for public water systems that use bank filtration as pretreatment to a filtration plant shall collect source water samples from the collector well after bank filtration. Use of bank filtration during monitoring shall be consistent with routine operational practice. When samples are collected after a bank filtration process, public water systems may not receive treatment credit for the bank filtration under s. NR 810.43 (3).

(5) MULTIPLE SOURCES. Water suppliers for public water systems with plants that use multiple water sources, including multiple surface water sources and blended surface water and groundwater sources, shall collect samples as specified in par. (a) or (b). The use of multiple sources during monitoring shall be consistent with routine operational practice.

(a) If a sampling tap where the sources are combined prior to treatment is available, the water supplier shall collect samples from that tap.

(b) If a sampling tap where the sources are combined prior to treatment is not available, the water supplier shall collect samples at each source near the intake on the same day and shall follow either subd. 1. or 2. for sample analysis.

1. Water suppliers may composite samples from each source into one sample prior to analysis. The volume of sample from each source shall be weighted according to the proportion of the source in the total plant flow at the time the sample is collected.

2. Water suppliers may analyze samples from each source separately and calculate a weighted average of the analysis results for each sampling date. The weighted average shall be calculated by multiplying the analysis result for each source by the fraction the source contributed to total plant flow at the time the sample was collected and then summing these values.

(6) ADDITIONAL REQUIREMENTS. Water suppliers shall submit a description of their sampling locations to the department at the same time as the sampling schedule required under s. NR 809.332. This description shall address the position of the sampling location in relation to the public water system's water sources and treatment processes, including pretreatment, points of chemical treatment, and filter backwash recycle. If the department does not respond to a water supplier regarding sampling locations, the water supplier shall sample at the reported locations.

NR 809.334 Analytical methods for surface water source water monititoring. (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*

(a) Water suppliers shall analyze at least a 10 L sample or a packed pellet volume of at least 2 mL as generated by the methods listed in this subsection. Water suppliers unable to process a 10 L sample shall analyze as much sample volume as can be filtered by two filters approved by EPA for the methods listed in this subsection, up to a packed pellet volume of at least 2 mL.

(b) Matrix spike (MS) samples, as required by the methods in this subsection, shall be spiked and filtered by a laboratory approved for *Cryptosporidium* analysis under s. NR 809.335. If the volume of the MS sample is greater than 10 L, the water supplier may filter all but 10 L of the MS sample in the field, and ship the filtered sample and the remaining 10 L of source water to the laboratory. In this case, the laboratory shall spike the remaining 10 L of water and filter it through the filter used to collect the balance of the sample in the field.

(c) Flow cytometer-counted spiking suspensions shall be used for MS samples and ongoing precision and recovery (OPR) samples.

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

Table I
E. coli Analytical Methods

Parameter and units	Method[1]	EPA	Standard methods 18th, 19th, 20th ed.	Standard methods online	AOAC, ASTM, USGS	Other
E. coli, number per 100 mL	MPN[2,3,6] multiple tube/multiple well		9223 B[5]	9223 B–97[13]	991.15[4]	Colilert®[5,8] Colilert-18®[5,7,8]

[1] The method shall be specified when results are reported.
[2] Tests shall be conducted to provide organism enumeration (density). Select the appropriate configuration of tubes/filtrations and dilutions/volumes to account for the quality, character, consistency, and anticipated organism density of the water sample.
[3] To assess the comparability of results obtained with individual methods, it is suggested that side-by-side tests be conducted across seasons of the year with the water samples routinely tested in accordance with the most current Standard Methods for the Examination of Water and Wastewater or EPA alternate test procedure (ATP) guidelines.
[4] AOAC. 1995. Official Methods of Analysis of AOAC International, 16th Edition, Volume I, Chapter 17. Association of Official Analytical Chemists International. 481 North Frederick Avenue, Suite 500, Gaithersburg, MD 20877–2417.
[5] These tests are collectively known as defined enzyme substrate tests, where, for example, a substrate is used to detect the enzyme β-glucuronidase produced by E. coli .
[6] Samples shall be enumerated by the multiple-tube or multiple-well procedure. Using multiple-tube procedures, employ an appropriate tube and dilution configuration of the sample as needed and report the Most Probable Number (MPN). Samples tested with Colilert®may be enumerated with the multiple-well procedures, Quanti-Tray®Quanti-Tray®2000, and the MPN calculated from the table provided by the manufacturer.
[7] Colilert-18®is an optimized formulation of the Colilert®for the determination of total coliforms and E. coli that provides results within 18 h of incubation at 35 °C rather than the 24 h required for the Colilert®test and is recommended for marine water samples.
[8] Descriptions of the Colilert®, Colilert-18®, Quanti-Tray®, and Quanti-Tray®/2000 may be obtained from IDEXX Laboratories, Inc., 1 IDEXX Drive, Westbrook, ME 04092.

(a) The time from sample collection to initiation of analysis may not exceed 30 hours unless the condition of par. (b) are met. In all cases, samples should be analyzed as soon after collection as possible.

(b) The department may approve on a case-by-case basis the holding of an *E. coli* sample for up to 48 hours between sample collection and initiation of analysis if the department determines that analyzing an *E. coli* sample within 30 hours is not feasible. *E. coli* samples held between 30 to 48 hours shall be analyzed by the Colilert reagent version of Standard Method 9223B as listed in sub. (2), Table I.

(c) Water suppliers shall maintain samples between 0 °C and 10 °C during storage and transit to the laboratory.

(3) TURBIDITY. Water suppliers shall use methods for turbidity measurement under s. NR 809.113(1) Table A.

NR 809.335 Approved laboratories for surface water source monitoring. (1) CRYPTOSPORIDIUM. Water suppliers shall have *Cryptosporidium* samples analyzed by a laboratory that is approved under EPA's Laboratory Quality Assurance Evaluation Program for Analysis of *Cryptosporidium* in Water or a laboratory that has been certified for *Cryptosporidium* analysis by an equivalent department laboratory certification program.

(2) E. COLI. Any laboratory certified by the EPA, the National Environmental Laboratory Accreditation Conference or the department of agriculture, trade and consumer protection for total coliform or fecal coliform 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.

(3) TURBIDITY. Measurements of turbidity shall be made by a party approved by the department.

NR 809.336 Reporting source water monitoring results. **(1)** Water suppliers shall report results from the source water monitoring required under s. NR 809.331(1) and (2) no later than 10 days after the end of the first month following the month when the sample is collected.

(a) All water suppliers for public water systems serving at least 10,000 people shall report the results from the initial source water monitoring required under s. NR 809.331(1) to EPA electronically at https://intranet.epa.gov/lt2/.

(b) If a water supplier is unable to report monitoring results electronically, the water supplier may use an alternative approach for reporting monitoring results that EPA approves.

(2) Water suppliers for public water systems serving fewer than 10,000 people shall report results from the initial source water monitoring required under s. NR 809.331(1) to the department.

(3) All water suppliers shall report results from the second round of source water monitoring required under s. NR 809.331(2) to the department.

(4) Water suppliers shall report the applicable information in par. (a) and (b) for the source water monitoring required under s. NR 809.331(1) and (2) .

(a) Water suppliers shall report the following data elements for each Cryptosporidium analysis:

Data element.
1. PWS ID.
2. Facility ID.
3. Sample collection date.
4. Sample type (field or matrix spike).
5. Sample volume filtered (L), to nearest 1/4 L.
6. Was 100% of filtered volume examined.
7. Number of oocysts counted.

1. For matrix spike samples, water suppliers shall also report the sample volume spiked and estimated number of oocysts spiked. These data are not required for field samples.

2. For samples in which less than 10 L is filtered or less than 100% of the sample volume is examined, water suppliers shall also report the number of filters used and the packed pellet volume.

3. For samples in which less than 100% of sample volume is examined, water suppliers shall also report the volume of resuspended concentrate and volume of this resuspension processed through immunomagnetic separation.

(b) Water suppliers shall report the following data elements for each 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 /100 mL.
8. Turbidity.

(c) Water suppliers for public water systems serving fewer than 10,000 people that are not required to monitor for turbidity under s. NR 809.331(1) and (2) are not required to report turbidity with their E. coli results.

NR 809.35 Sanitary survey requirements for all public water systems.

(1) SANITARY SURVEYS. (a) Community water systems shall undergo a sanitary survey every 3 years, unless the public water system meets the requirements of sub. (2) for outstanding performance of a public water system, then a sanitary survey may be conducted every 5 years.

(b) Non-community water systems shall undergo a sanitary survey every 5 years.

(c) The department will review the results of each sanitary survey to determine whether the existing monitoring frequency is adequate and what additional measures, if any, the water supplier needs to undertake to improve drinking water quality.

(d) Sanitary surveys shall be performed by the department or an agent approved by the department. If the department requests a water supplier to have a sanitary survey performed, the water supplier is responsible for ensuring the survey is completed.

(2) OUTSTANDING PERFORMANCE. (a) At the discretion of the department, community water systems may be designated as demonstrating outstanding performance and eligible for a reduced frequency of sanitary surveys. For community water systems determined by the department to have outstanding performance based on prior sanitary surveys, subsequent sanitary surveys may be conducted no less than every five years. The following criteria shall be used to determine outstanding performance:

1. No violations of MCLs since the last sanitary survey.
2. No violations of monitoring and reporting requirements since the last sanitary survey.
3. No violations of primary drinking water regulations during the past five years or similar time period.
4. No significant deficiencies shall have been identified in the current sanitary survey or the previous sanitary survey.
5. Existence of emergency preparedness measures and backup facilities.
6. Expert operation and management of the public water system, for example, skilled, certified personnel in adequate numbers, existence of quality O&M manuals that are used by the staff; adequate budget and revenues.
7. Effective cross-connection program developed and implemented.
8. Stable water source with no significant interruptions in supply.

(3) INFORMATION AVAILABILITY. A water supplier shall provide the department any existing information that will enable the department to conduct a sanitary survey.

(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 assessments or other relevant information.

(5) COMPONENTS OF A SURVEY. The sanitary survey shall include an evaluation of all or the applicable components listed in (a) to (h):

(a) Source.
(b) Treatment.
(c) Distribution system.
(d) Finished water storage.
(e) Pumps, pump facilities, and controls.
(f) Monitoring, reporting, and data verification.

(g) Public water system management and operation.
(h) Operator compliance with department requirements.

NR 809.50 Maximum contaminant levels, compliance dates and BATs for radionuclides. The following are the maximum contaminant levels, compliance dates and best available technologies for radium-226, radium-228 and gross alpha particle radioactivity:

(1) MAXIMUM CONTAMINANT LEVELS FOR RADIONUCLIDES. The following are the maximum contaminant levels for radium-226, radium-228 and gross alpha particle radioactivity:

(a) *MCL for combined radium-226 and radium-228.* The maximum contaminant level for combined radium-226 and radium-228 is 5 pCi/l. The combined radium-226 and radium-228 value is determined by the addition of the results of the analysis for radium-226 and the analysis for radium-228.

(b) *MCL for gross alpha particle activity, excluding radon and uranium.* The maximum contaminant level for gross alpha particle activity, including radium-226 but excluding radon and uranium, is 15 pCi/l.

(c) *MCL for uranium.* The maximum contaminant level for uranium is 30 ug/l.

(2) COMPLIANCE DATES FOR COMBINED RADIUM-226 AND RADIUM-228, GROSS ALPHA PARTICLE ACTIVITY, GROSS BETA PARTICLE AND PHOTON RADIOACTIVITY AND URANIUM. Community water systems shall comply with the MCLs listed in sub. (1) and with s. NR 809.51 (1) beginning December 8, 2003 and compliance shall be determined in accordance with the requirements of ss. NR 809.50 and 809.51. Compliance with reporting requirements for the radionuclides under appendix A to subch. VII is required on and after December 8, 2003.

(3) BEST AVAILABLE TECHNOLOGIES (BATS) FOR RADIONUCLIDES. (a) The department identifies, as indicated in the following table, the best available technology for achieving compliance with the maximum contaminant levels for combined radium-226 and radium-228, uranium, gross alpha particle activity and beta particle and photo radioactivity. A community water system that shall treat to reduce radionuclide levels below the MCLs specified in sub. (1) or s. NR 809.51 shall achieve compliance using one of the methods listed in Table J, Table K or Table L.

Table J
BAT for Combined Radium-226 and Radium-228, Uranium, Gross Alpha Particle Activity, and Beta Particle and Photon Radioactivity

Contaminant	BAT
1. Combined radium-226 and radium-228	Ion exchange, reverse osmosis, lime softening
2. Uranium	Ion exchange, reverse osmosis, lime softening, coagulation/ filtration
3. Gross alpha particle activity (excluding Radon and Uranium).	Reverse osmosis.
4. Beta particle and photon Ion exchange	Reverse osmosis. radioactivity

(4) SMALL WATER SYSTEMS COMPLIANCE TECHNOLOGIES FOR RADIONUCLIDES. (a) The department identifies, as indicated in the following table, the best available technology for achieving compliance with the maximum contaminant levels for combined radium-226 and radium-228, uranium, gross alpha particle activity and beta particle and photo radioactivity for small systems serving a population of 10,000 or less:

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 sulfate	(f)	Intermediate to Advanced	Groundwaters with suitable water quality
8.Electrodialysis/electrodialysis reversal		Basic to Intermediate	All groundwaters.
9.Pre-formedhydrous 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.

Table L

Compliance Technologies by Public Water System Size Category for Radionuclide NPDWR's

Contaminant	**Compliance technologies [1] for public water system size categories (population served)**		
	25–500	501–3,300	3,300–10,000
1. Combined radium-226 and radium-228	1, 2, 3, 4, 5, 6, 7, 8, 9	1, 2, 3, 4, 5, 6, 7, 8, 9	1, 2, 3, 4, 5, 6, 7, 8, 9
2. Gross alpha particle activity	3, 4	3, 4	3, 4
3. Beta particle activity and photon activity	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4
4. Uranium	1, 2, 4, 10, 11	1, 2, 3, 4, 5, 10, 11	1, 2, 3, 4, 5, 10, 11

[1] Numbers correspond to those technologies found listed in the Table K of s. NR 809.50(4).

(b) Point of Use (POU) treatment may only be allowed if the department determines that treatment prior to entry is not feasible.

(5) ALTERNATIVE TREATMENT. The department may approve the use of alternative treatment not listed in subs. (3) and (4), if a water supplier demonstrates to the department, using pilot studies or other means, that the alternative treatment is sufficient to achieve compliance with the MCLs in sub. (1).

NR 809.51 Beta particle and photon radioactivity from man-made radionuclides maximum contaminant levels. (1) ALLOWABLE DOSE. The average annual concentration of beta particle and photon radioactivity from man-made radionuclides in drinking water shall not produce an annual dose equivalent to the total body or any internal organ greater than 4 millirem/year.

(2) MCL CALCULATION. Except for the radionuclides listed in Table M, the concentration of man–made radionuclides causing 4 mrem total body or organ dose equivalents shall be calculated on the basis of a 2 liter per day drinking water intake using the 168 hour data listed in "Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air or Water for Occupational Exposure", NBS Handbook 69 as amended August, 1963, U.S. Department of Commerce. Copies of this document are available for inspection at the office of the department of natural resources, the secretary of state's office and the office of the revisor of statutes, and may be obtained for personal use from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. If 2 or more radionuclides are present, the sum of their annual dose equivalent to the total body or to any organ may not exceed 4 millirem/year.

Table M
Average annual concentrations assumed to produce a total body or organ dose of 4 mrem/yr.

Radionuclide	Critical Organ	pCi per liter
Tritium	Total body	20,000
Strontium-90	Bone marrow	8

Note: Sections ss. NR 809.50 to 809.52 are identical to the radioactivity standards of the department of health services in ch. DHS 157, Wis. Adm. Code, and to the National Interim Primary Drinking Water Regulations, 40 CFR 141. These sections are adopted pursuant to s. 254.34, Stats.

NR 809.52 Analytical methods for radionuclides. (1) ANALYTICAL METHODS. Analyses conducted to determine compliance with ss. NR 809.50 and 809.51 shall be made in accordance with approved methods listed in Table N.

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
Naturally Occurring:								R-1120-76	---	
Gross alpha[11] & beta	Evaporation	900	p1	00-01	p1	302, 7110 B		R-1120-76	---	
Gross alpha[11]	co-precipitation	---		00-02		7110 C	---	---	---	
Radium 226	Radon	903.1	P 16	Ra-04	p19	7500-Ra	D 3454-	R-1141-	Ra-05	N.Y.[9]

	emanation, Radiochemical	903.0	p13	Ra-03		C 304,305, 7500-Ra B	91 D 2460-90	76 R-1140-76		
Radium 228	Radiochemical	904.0	P 24	Ra-05	p19	304,750 0 Ra D	---	R-1142-76	---	N.Y.[9] N.J.[10]
Uranium[12]	Radiochemical	908.0				7500-UB 7500-UB-00	D2907-91	R-1180-76	U-04 U-2	
	Fluorometric	908.1				7500-UC (17th Ed)	D2907-97	R-1180-76 R-1181-76 R-1182-76	U-04	
	Alpha spectrom etry	---		00-07	p33	7500-UC (18th or 19th Ed)	D3972-90	---	---	
	Laser Phosphorimetr y	---				-	D5174-91			
	ICP-MS	200.8 13				3125	D5673-03			
Man-Made:										
Radioactive						303,750 0-	---			
Strontium - 89,90	Radiochemical	905.0	p 29	Sr-04	p65	Sr B	---	R1160-76	Sr-01 Sr-02	
Tritium	Liquid Scintillation	906.0	p 34	H-02	p 87	306, 7500-3H B		D 4107–91	R 1171-76	---
Radioactive Cesium -	Radiochemical , Gamma ray spectrophotom etry	901.0 901.1	p 4		p 92	7500-Cs B 7120 (19th Ed.)	D 2459-72 D 3649-91	--- R-1110-76	4.5.2.3	
Radioactive Iodine	Radiochemical , Gamma ray spectrophotom etry	902.0 901.1	P 6 p 9		p 92	7500-I B 7500-I C 7500-I D 7120 (19th	D 3649-91 D 4785-88	---	4.5.2.3	

						Ed)				
Gamma Emitters	Gamma ray spectrometry	901.1 902.0 901.0			p 92	7120 (19th Ed.) 7500-Cs B 7500-I B	D 3649-91 D 4785-88	---	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.
[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.

(2) DETECTION LIMITS. To determine compliance with s. NR 809.50 (1), the detection limit may not exceed the concentrations in Table O.

Table O

Detection Limits for Gross Alpha Particle Activity, Radium 226, Radium 228, and Uranium

Contaminant	Detection Limit
Gross alpha particle activity	3 pCi/l
Radium 226	1 pCi/l
Radium 228	1 pCi/l

Uranium	Reserve

(3) RESULTS ROUNDING. To judge compliance with the maximum contaminant levels listed in s. NR 809.50, averages of data shall be used and shall be rounded to the same number of significant figures as the maximum contaminant level for the substance in question.

(4) SENSITIVITY LIMITS. For the purpose of monitoring radionuclide concentrations in drinking water, the required sensitivity of the radioanalysis is defined in terms of a detection limit. The detection limit shall be that concentration which can be counted with a precision of plus or minus 100% at the 95% confidence level, 1.96 σ where σ is the standard deviation of the net counting rate of the sample.

(5) DETECTION LIMITS FOR MAN-MADE BETA PARTICLE AND PHOTON EMITTERS. To determine compliance with s. NR 809.51, the detection limits may not exceed the concentrations listed in Table P.

Table P
Detection Limits for Man-made Beta Particle and Photon Emitters

Radionuclide	Detection Limit
Tritium	1,000 pCi/l
Strontium-89	10 pCi/l
Strontium-90	2 pCi/l
Iodine-131	1 pCi/l
Cesium-134	10 pCi/l
Gross beta	4 pCi/l
Other radionuclides	1/10 of the applicable limit

Note: Sections NR 809.50 to 809.52 are identical to the radioactivity standards of the department of health services in ch. DHS 157, Wis. Adm. Code, and to the National Interim Primary Drinking Water Regulations, 40 CFR 141. These sections are adopted pursuant to s. 254.34, Stats.

(6) SAMPLE COLLECTION METHODS. Sample collection for radionuclide contaminants under s. NR 809.50 shall be conducted using the sample preservation, containers and maximum holding time procedures specified in Table Q. If a composite sample is prepared, a holding time cannot exceed 12 months. In all cases, samples should be analyzed as soon after collection as possible.

Table Q
Radionuclide sample preservation, containers and maximum holding time

Parameter	Preservative[1]	Container[2]	HoldingTime
Gross Alpha	Conc. HCl or HNO_3 to pH <2	P or G	6 mo
Gross beta	Conc. HCl or HNO_3 to pH <2	P or G	6 mo
Strontium-89	Conc. HCl or HNO_3 to pH <2	P or G	6 mo
Strontium-90	Conc. HCl or HNO_3 to pH <2	P or G	6 mo
Radium-226	Conc. HCl or HNO_3 to pH <2	P or G	6 mo
Radium-228	Conc. HCl or HNO_3 to pH <2	P or G	6 mo
Cesium-134	Conc. HCl to pH <2	P or G	6 mo
Iodine-131	None	P or G	8 days
Tritium	None	G	6 mo
Uranium	Conc. HCl or HNO3 to pH <2	P or G	6 mo
Photon emitters	Conc. HCl or HNO3 to pH <2	P or G	6 mo

[1]It is recommended that the preservative be added to the sample at the time of collection unless suspended solids activity is to be measured. If the sample has to be shipped to a laboratory or storage area unpreserved, acidification of the sample (in its original container) may be delayed for a period not to exceed 5 days. A minimum of 16 hours shall elapse between acidification and analysis.
[2]P = Plastic, hard or soft; G = Glass, hard or soft.

NR 809.53 Radionuclide monitoring frequency and compliance requirements for community water systems. (1) MONITORING REQUIREMENTS FOR GROSS ALPHA PARTICLE ACTIVITY, RADIUM-226, RADIUM-228 AND URANIUM. (a) *Detection limits.* For the purposes of monitoring for gross alpha particle activity, radium-226, radium-228, uranium and beta particle and photon radioactivity in drinking water, "detection limit" is defined in s. NR 809.52 (4).

(b) *Applicability and sampling location.* Community water system applicability and sampling location requirements shall be as follows:

1. Applicability and sampling location for existing community water systems or sources. All water suppliers for existing community water systems shall sample at every entry point to the distribution system that is representative of all sources being used, under normal operating conditions. The water supplier shall take each sample at the same location unless conditions make another location more representative of each source or the department has designated a distribution system location, in accordance with par. (c) 2.c.

2. Applicability and sampling location for new community water systems or sources. Water suppliers for all new community water systems or community water systems that use a new source of water shall begin to conduct initial monitoring for the new source within the first quarter after initiating use of the source. Water suppliers shall conduct more frequent monitoring when ordered by the department in the event of possible contamination or when changes in the distribution system or treatment processes occur which may increase the concentration of radionuclides in finished water.

(c) *Initial monitoring.* Water suppliers for community water systems shall conduct initial monitoring for gross alpha particle activity, radium-226, radium-228 and uranium as follows:

1. Except as provided in subd. 2., water suppliers shall collect 4 consecutive quarterly samples at all sampling points before December 31, 2007.

2. As an alternative to the requirement of subd. 1., water suppliers may use historical monitoring data collected at a sampling point to satisfy the initial monitoring requirements for that sampling point for the following situations:

a. To satisfy initial monitoring requirements, a water supplier for a community water system having only one entry point to the distribution system may use the monitoring data from the last compliance monitoring period that began between June 1, 2000 and December 8, 2003.

b. To satisfy initial monitoring requirements, a water supplier for a community water system with multiple entry points and having appropriate historical monitoring data for each entry point to the distribution system may use the monitoring data from the last compliance monitoring period that began between June 1, 2000 and December 8, 2003.

c. To satisfy initial monitoring requirements, a water supplier for a community water system with appropriate historical data for a representative point in the distribution system may use the monitoring data from the last compliance monitoring period that began between June 1, 2000 and December 8, 2003, provided that the department finds that the historical data satisfactorily demonstrate that each entry point to the distribution system is expected to be in compliance based upon the historical data and reasonable assumptions about the variability of contaminant levels between entry points. The department shall make a written finding indicating how the data conforms to these requirements.

3. For gross alpha particle activity, uranium, radium-226 and radium-228 monitoring, the department may waive the final 2 quarters of initial monitoring for a sampling point if the results of the samples from the previous 2 quarters are below the detection limit.

4. If the average of the initial monitoring results for a sampling point is above the MCL, the water supplier for a community water system shall collect and analyze quarterly samples at that sampling point until the water supplier

has results from 4 consecutive quarters that are at or below the MCL, unless the water supplier enters into another schedule as part of a formal compliance agreement with the department.

(d) *Reduced monitoring.* Upon completion of initial monitoring the department may allow monitoring once every 3 years, once every 6 years, or once every 9 years, for each sampling point based on the following criteria:

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), Table J., 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.

2. For gross alpha particle activity and uranium, if the average of the initial monitoring results for each contaminant is at or above the detection limit but at or below one-half the MCL, 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 6 years. For combined radium-226 and radium-228, the analytical results shall be combined. If the average of the combined initial monitoring results for radium-226 and radium-228 is at or above the detection limit but at or below one-half the MCL, 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 6 years.

3. For gross alpha particle activity and uranium, if the average of the initial monitoring results for each contaminant is above one-half the MCL but at or below the MCL, the water supplier for a community water system shall collect and analyze at least one sample at that sampling point every 3 years. For combined radium-226 and radium-228, the analytical results shall be combined. If the average of the combined initial monitoring results for radium-226 and radium-228 is above one-half the MCL, but at or below the MCL, the water supplier for a community water system shall collect and analyze at least one sample at that sampling point every 3 years.

4. Results of samples collected during a reduced monitoring period shall be used to determine the monitoring frequency for subsequent monitoring periods.

5. If a community water system has a monitoring result that exceeds the MCL while on reduced monitoring, the water supplier for a community water system shall collect and analyze quarterly samples at that sampling point until the community water system has results from 4 consecutive quarters that are below the MCL, unless the water supplier for a community water system enters into another schedule as part of a formal compliance agreement with the department.

(e) *Compositing.* To fulfill quarterly monitoring requirements for gross alpha particle activity, radium-226, radium-228 or uranium, a water supplier for a community water system may composite up to 4 consecutive quarterly samples from a single entry point if analysis is done within a year of the first sample. The department will treat analytical results from the composited results as the average analytical result to determine compliance with the MCLs and the future monitoring frequency. If the analytical result from the composited sample is greater than one-half the MCL, the department may direct the water supplier to take additional quarterly samples before allowing the water supplier to sample under a reduced monitoring schedule.

(f) *Gross alpha particle activity measurement substitutions.* A gross alpha particle activity measurement may be substituted for the required radium-226 measurement provided that the measured gross alpha particle activity does not exceed 5 pCi/l. A gross alpha particle activity measurement may be substituted for the required uranium measurement provided that the measured gross alpha particle activity does not exceed 15 pCi/l. The gross alpha measurement shall have a confidence interval of 95% confidence level, 1.65 σ where σ is the standard deviation of the net counting rate of the sample for radium-226 and uranium. When a water supplier for a community water system uses a gross alpha particle activity measurement in lieu of a measurement for radium-226 or uranium, or both, the gross alpha particle activity analytical result shall be used to determine the future monitoring frequency for radium-226 or uranium, or both. If the gross alpha particle activity result is less than detection, one-half the detection limit shall be used to determine compliance and the future monitoring frequency.

(2) MONITORING REQUIREMENTS FOR BETA PARTICLE AND PHOTON RADIOACTIVITY. To determine compliance with the maximum contaminant levels in s. NR 809.51 for beta particle and photon radioactivity, a water supplier for a community water system shall monitor at a frequency as follows:

(a) Community water systems designated by the department as vulnerable, shall be sampled for beta particle and photon radioactivity. Water suppliers for community water systems shall collect quarterly samples for beta emitters

and annual samples for tritium and strontium-90 at each entry point to the distribution system, no later than one quarter after being notified by the department. Community water systems already designated by the department shall continue to be sampled until the department reviews and either reaffirms or removes the designation.

1. If the gross beta particle activity minus the naturally occurring potassium-40 beta particle activity at an entry point has a running annual average, computed quarterly, less than or equal to 50 pCi/l, the department may reduce the frequency of monitoring at that entry point to once every 3 years. Water suppliers for community water systems shall collect all samples required in this subsection during the reduced monitoring period.

2. For community water systems in the vicinity of a nuclear facility, the department may allow the water supplier for the community water system to utilize environmental surveillance data collected by the nuclear facility in lieu of monitoring at the community water system's entry points, if the department determines that the data is applicable to a particular community water system. If there is a release from a nuclear facility, water suppliers for community water systems which are using surveillance data shall begin monitoring at the community water system's entry points in accordance with this subsection.

3. At the discretion of the department, water suppliers for the community water systems utilizing only groundwater may be required to monitor for manmade radioactivity.

(b) Water suppliers for community water systems designated by the department as utilizing waters contaminated by effluents from nuclear facilities shall sample for beta particle and photon radioactivity. Water suppliers shall collect quarterly samples for beta emitters and iodine-131 and annual samples for tritium and strontium-90 at each entry point to the distribution system, beginning no later than one quarter after being notified by the department. Water suppliers for community water systems already designated by the department as community water systems using water contaminated by effluents from nuclear facilities shall continue to sample until the department reviews and either reaffirms or removes the designation.

1. Quarterly monitoring for gross beta particle activity shall be based on the analysis of monthly samples or the analysis of a composite of 3 monthly samples.

Note: Quarterly monitoring for gross beta particle activity based on the analysis of monthly samples is recommended.

2. For iodine-131, a composite of 5 consecutive daily samples shall be analyzed once each quarter. As ordered by the department, more frequent monitoring shall be conducted when iodine-131 is identified in the finished water.

3. Annual monitoring for strontium-90 and tritium shall be conducted by means of the analysis of a composite of 4 consecutive quarterly samples or analysis of 4 quarterly samples.

Note: Annual monitoring for strontium-90 and tritium by means of the analysis of a composite of 4 consecutive quarterly samples is recommended.

4. If the gross beta particle activity minus the naturally occurring potassium-40 beta particle activity at a sampling point has a running annual average, computed quarterly, less than or equal to 15 pCi/l, the department may reduce the frequency of monitoring at that sampling point to once every 3 years. Water suppliers for community water systems shall collect all samples required in this paragraph during the reduced monitoring period.

5. For community water systems in the vicinity of a nuclear facility, the department may allow the water supplier for community water system to utilize environmental surveillance data collected by the nuclear facility in lieu of monitoring at the community water system's entry points, if the department determines that the data is applicable to a particular community water system. If there is a release from a nuclear facility, water suppliers for community water systems which are using surveillance data shall begin monitoring at the community water system's entry points in accordance with this paragraph.

(c) Water suppliers for community water systems designated by the department to monitor for beta particle and photon radioactivity may not apply to the department for a waiver from the monitoring frequencies specified in either par. (a) or (b).

(d) Water suppliers for community water systems may analyze for naturally occurring potassium-40 beta particle activity from the same or equivalent sample used for the gross beta particle activity analysis. Water suppliers for community water systems may subtract the potassium-40 beta particle activity value from the total gross beta particle activity value to determine if 50 pCi/l is exceeded. The potassium-40 beta particle activity shall be calculated by multiplying elemental potassium concentrations, in mg/l, by a factor of 0.82.

(e) If the gross beta particle activity minus the naturally occurring potassium-40 beta particle activity exceeds 50 pCi/l, an analysis of the sample shall be performed to identify the major radioactive constituents present in the sample and the appropriate doses shall be calculated and summed to determine compliance with s. NR 809.51 (1) using the formula in s. NR 809.51 (2). Doses shall also be calculated and combined for measured levels of tritium and strontium to determine compliance.

(f) Water suppliers for community water systems shall monitor monthly at the sampling points that exceed the maximum contaminant level in s. NR 809.51 beginning the month after the exceedance occurs. Water suppliers shall continue monthly monitoring until the water supplier has established, by a rolling average of 3 monthly samples, that the MCL is being met. Water suppliers for community water systems that establish that the MCL is being met shall return to quarterly monitoring until the requirements in par. (a) 1. or (b) 4 are met.

(3) GENERAL MONITORING AND COMPLIANCE REQUIREMENTS FOR RADIONUCLIDES. (a) The department may require more frequent monitoring than specified in subs. (1) and (2), or may require confirmation samples at its discretion. The results of the initial and confirmation samples shall be averaged for use in compliance determinations.

(b) Water suppliers for each public water system shall monitor at the time designated by the department during each compliance period.

(c) Compliance with ss. NR 809.50 (1) and 809.51 (1) shall be determined based on the analytical results obtained at each sampling point. If one sampling point is in violation of an MCL, the community water system is in violation of the MCL. In addition:

1. For community water systems monitored more than once per year, compliance with the MCL is determined by using a running annual average calculated for each sampling point. If the average of any sampling point is greater than the MCL, the community water system is out of compliance with the MCL.

2. For community water systems monitored more than once per year, if any sample result will cause the running annual average to exceed the MCL at any sample point, the community water system is out of compliance with the MCL immediately.

3. For community water systems on reduced monitoring where monitoring results exceed an MCL, and a community water system is placed on quarterly monitoring as required by sub. (1)(d)5., compliance with the MCL is determined based on a running annual average at each sample point, as required by sub. (3)(c)1. if sample results exceed the MCL.

4. Water suppliers for community water systems shall include all samples taken and analyzed under this section in determining compliance, even if that number is greater than the minimum required.

5. If a water supplier for a community water system does not collect all required samples when compliance is based on a running annual average of quarterly samples, compliance shall be based on the running average of the samples collected.

6. If a sample result is less than the detection limit, zero will be used to calculate the annual average, unless a gross alpha particle activity is being used in lieu of radium-226 or uranium, or both. If the gross alpha particle activity result is less than detection, 1/2 the detection limit shall be used to calculate the annual average.

(d) The department may delete results of obvious sampling or analytic errors.

Subchapter II — Control of Lead and Copper

NR 809.54 General requirements for the control of lead and copper. (1) APPLICABILITY. (a) The requirements of this subchapter constitute the primary drinking water regulations for lead and copper. Unless otherwise indicated, each of the provisions of this subchapter applies to community water systems and non-transient, non-community water systems.

(2) SCOPE. These regulations establish a treatment technique that includes requirements for corrosion control treatment, source water treatment, lead service line replacement and public education. These requirements are triggered, in some cases, by lead and copper action levels measured in samples collected at consumers' taps.

(3) LEAD AND COPPER ACTION LEVELS. (a) The lead action level is exceeded if the concentration of lead in more than 10% of tap water samples collected during any monitoring period conducted in accordance with s. NR 809.547 is greater than 0.015 mg/L, which means if the "90th percentile" lead level is greater than 0.015 mg/L.

(b) The copper action level is exceeded if the concentration of copper in more than 10% of tap water samples collected during any monitoring period conducted in accordance with s. NR 809.547 is greater than 1.3 mg/L, which means if the "90th percentile" copper level is greater than 1.3 mg/L.

(c) The 90th percentile lead and copper levels shall be computed as follows:

1. The results of all lead or copper samples taken during a monitoring period shall be placed in ascending order from the sample with the lowest concentration to the sample with the highest concentration. Each sampling result shall be assigned a number, ascending by single integers beginning with the number 1 for the sample with the lowest contaminant level. The number assigned to the sample with the highest contaminant level shall be equal to the total number of samples taken.

2. The number of samples taken during the monitoring period shall be multiplied by 0.9.

3 The contaminant concentration in the numbered sample yielded by the calculation in subd. 2. is the 90th percentile contaminant level.

4 For water public water systems serving fewer than 100 people that are sampled at a rate of 5 samples per monitoring period, the 90th percentile is computed by taking the average of the highest and second highest concentrations.

5. For a public water system that has been allowed by the department to be sampled at a rate of fewer than five samples in accordance with federal rule 40 CFR part 141.86(c), the sample result with the highest concentration is considered the 90th percentile value.

(4) CORROSION CONTROL TREATMENT REQUIREMENTS. (a) All water suppliers shall install and operate optimal corrosion control treatment as defined in s. NR 809.04.

(b) Any public water system that complies with the applicable corrosion control treatment requirements specified by the department under ss. NR 809.542 and 809.543 shall be deemed in compliance with the treatment requirement contained in par. (a).

(5) SOURCE WATER TREATMENT REQUIREMENTS. Any water supplier for a public water system exceeding the lead or copper action level shall implement all applicable source water treatment requirements specified by the department under s. NR 809.544.

(6) LEAD SERVICE LINE REPLACEMENT REQUIREMENTS. Any water supplier for a public water system exceeding the lead action level after implementation of applicable corrosion control and source water treatment requirements shall complete the lead service line replacement requirements contained in s. NR 809.545.

(7) PUBLIC EDUCATION REQUIREMENTS. Any water supplier for a public water system exceeding the lead action level shall implement the public education requirements contained in s. NR 809.546. Any water supplier for a public water system exceeding the copper action level shall annually provide public education on the health effects of copper using language in Appendix B to subch. VII, and information on reducing exposure to copper in drinking water similar to s. NR 809.546.

NR 809.541 Monitoring and analytical requirements for lead and copper. (1) GENERAL. Tap water monitoring for lead and copper, monitoring for water quality parameters, and source water monitoring for lead and copper shall be completed in compliance with ss. NR 809.548 and 809.549. The analyses shall be conducted using methods as prescribed in s. NR 809.113 (1), Table A. Holding times and preservation for Lead and Copper shall be done in accordance with s. NR 809.113, Table B. In all cases, samples should be analyzed as soon after collection as possible.

(2) USE OF PREVIOUSLY COLLECTED DATA. The department may allow the use of previously collected monitoring data for the purposes of monitoring if the data were collected and analyzed in accordance with the requirements of this subchapter.

(3) LABORATORY CERTIFICATION. Analyses for alkalinity, calcium, conductivity, orthophosphate, pH, silica, and temperature may be performed by any person acceptable to the department. Analyses under this section for lead and copper shall only be conducted by laboratories that have been certified by EPA or the department. To obtain

certification to conduct analyses for lead and copper, laboratories shall meet all of the requirements in sub. (4)(a) to (c).

(4) LABORATORY EVALUATION SAMPLES. For certification under sub. (3) laboratories shall analyze performance evaluation samples, which include lead and copper, provided by or acceptable to EPA or the department at least once a year by each method for which the laboratory desires certification; and the following:

(a). Achieve quantitative acceptance limits as follows:

1. For lead: ±30 percent of the actual amount in the Performance Evaluation sample when the actual amount is greater than or equal to 0.005 mg/L. The Practical Quantitation Level, or PQL for lead is 0.005 mg/L.

2. For copper: ±10 percent of the actual amount in the Performance Evaluation sample when the actual amount is greater than or equal to 0.050 mg/L. The Practical Quantitation Level, or PQL for copper is 0.050 mg/L.

(b) Achieve the method detection limit for lead of 0.001 mg/L according to the procedures in appendix B of part 136 of the Code of Federal Regulations. This need only be accomplished if the laboratory will be processing source water composite samples under s. NR 809.549(1)(a)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).

(5) DATA REPORTING REQUIREMENTS. Laboratories shall report data as follows:

(a) All lead and copper levels measured between the PQL and MDL shall be either reported as measured or they can be reported as one-half the PQL specified for lead and copper in par. (a). All levels below the lead and copper MDLs shall be reported as zero.

(b) All copper levels measured between the PQL and the MDL shall be either reported as measured or they can be reported as one-half the PQL at 0.025 mg/L. All levels below the copper MDL shall be reported as zero.

(6) TREATMENT REPORTING REQUIREMENTS. Water suppliers shall report to the department any information required by the treatment provisions of this subchapter and s. NR 809.55.

(7) RECORDKEEPING REQUIREMENTS. Water suppliers shall maintain records in accordance with s. NR 809.82.

(8) VIOLATION OF NATIONAL PRIMARY DRINKING WATER REGULATIONS. Failure to comply with the applicable requirements of ss. NR 809.113, 809.541 to 809.549, 809.80, and 809.82, including requirements established by the department pursuant to these provisions, shall constitute a violation of the primary drinking water regulations for lead or copper, or both.

(9) PREMISE OWNER NOTIFICATION OF LEAD AND COPPER RESULTS. Water suppliers shall provide owners or occupants of all premises used in the lead and copper monitoring program the analytical results of all samples collected at that site. If sample results at a sample location exceed 15 *ug*/L for lead and 1300 *ug*/L for copper, water supplier shall inform premise owners or occupants of health effects and measures necessary to lower lead or copper levels.

NR 809.542 Applicability of corrosion control treatment steps for small, medium and large-size water systems. (1) CORROSION CONTROL TREATMENT REQUIREMENTS. Water suppliers shall complete the applicable corrosion control treatment requirements described in s. NR 809.543 by the deadlines established.

(a) The water supplier for a large system shall complete the corrosion control treatment steps specified in sub. (4), unless the public water system is deemed to have optimized corrosion control under sub. (2) (b) or (c).

(b) The water supplier for a small system and a medium-size system shall complete the corrosion control treatment steps specified in sub. (5), unless the public water system is deemed to have optimized corrosion control under sub. (2) (a), (b) or (c).

(2) DETERMINATION OF OPTIMUM CORROSION CONTROL. A public water system is deemed to have optimized corrosion control and is not required to complete the applicable corrosion control treatment steps identified in this section if the public water system satisfies one of the criteria specified in pars. (a) to (c). Any public water system deemed to have optimized corrosion control under this subsection, and which has treatment in place, shall continue to operate and maintain optimal corrosion control treatment and meet any requirements that the department determines appropriate to ensure optimal corrosion control treatment is maintained.

(a) A small or medium-size water system is deemed to have optimized corrosion control if the public water system meets the lead and copper action levels during each of 2 consecutive 6-month monitoring periods conducted in accordance with s. NR 809.547.

(b) Any public water system may be deemed by the department to have optimized corrosion control treatment if the water supplier demonstrates to the satisfaction of the department that they have conducted activities equivalent to the corrosion control steps applicable to the public water systems under this section. If the department makes this determination, it shall provide the water supplier with written notice explaining the basis for its decision and shall specify the water quality control parameters representing optimal corrosion control in accordance with s. NR 809.543 (6). Public water systems deemed to have optimized corrosion control under this paragraph shall operate in compliance with the department-designated optimal water quality control parameters in accordance with s. NR 809.543 (8) and continue to conduct lead and copper tap and water quality parameter sampling in accordance with ss. NR 809.547 (4) (c) and 809.548 (4), respectively. A water supplier shall provide the department with all of the following information in order to support a determination under this subsection:

1. The results of all test samples collected for each of the water quality parameters in s. NR 809.543 (3) (c).

2. A report explaining the test methods used by the water supplier to evaluate the corrosion control treatments listed in s. NR 809.543 (3) (a), the results of all tests conducted, and the basis for the water supplier's selection of optimal corrosion control treatment.

3. A report explaining how corrosion control has been installed and how it is being maintained to insure minimal lead and copper concentrations at consumers' taps.

4. The results of tap water samples collected in accordance with s. NR 809.547 at least once every 6 months for one year after corrosion control has been installed.

(c) Any public water system is deemed to have optimized corrosion control if the water supplier submits results of tap water monitoring conducted in accordance with s. NR 809.547 and source water monitoring conducted in accordance with s. NR 809.549 that demonstrates for 2 consecutive 6-month monitoring periods that the difference between the 90th percentile tap water lead level computed under s. NR 809.541 (3) (c), and the highest source water lead concentration, is less than the practical quantitation level for lead specified in 40 CFR 141.89(a)(1)(ii).

1. The department may deem that public water systems whose highest source water lead level is below method detection limit have optimized corrosion control under this subsection if the 90th percentile tap water lead level is less than or equal to the practical quantitation level for 2 consecutive 6-month monitoring periods.

2. Any public water system deemed to have optimized corrosion control in accordance with this subsection shall continue monitoring for lead and copper at the tap no less frequently than once every 3 calendar years using the reduced number of sites specified in s. NR 809.547 (3) and collecting the samples at times and locations specified in s. NR 809.547 (4) (d) 4. Any water supplier for a public water system that has not conducted a round of monitoring pursuant to s. NR 809.547 (4) (d) since September 30, 1997, shall complete a round of monitoring pursuant to this subsection as specified by the department.

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 water supplier maintains minimal levels of corrosion in the distribution system.

4. As of December 1, 2002, a public water system is not deemed to have optimized corrosion control under this subsection, and the water supplier shall implement corrosion control treatment pursuant to subd. 5. unless the public water system meets the copper action level.

5. Any public water system triggered into corrosion control because it is no longer deemed to have optimized corrosion control under this subsection shall implement corrosion control treatment in accordance with the deadlines in sub. (5). Any large system shall adhere to the schedule specified in that paragraph for medium-size systems, with the time periods for completing each step being triggered by the date the public water system is no longer deemed to have optimized corrosion control under this subsection.

(3) CRITERIA FOR COMPLETING CORROSION CONTROL TREATMENT STUDIES FOR SMALL AND MEDIUM-SIZE SYSTEMS. Any water supplier for a small or medium-size water system that is required to complete the corrosion control steps due to the exceedance of the lead or copper action level may cease completing the treatment steps whenever the public water system meets both action levels during each of 2 consecutive monitoring periods

conducted pursuant to s. NR 809.547 and the results are submitted to the department. If any such public water system thereafter exceeds the lead or copper action level during any monitoring period, the water supplier shall recommence completion of the applicable treatment steps, beginning with the first treatment step which was not previously completed in its entirety. The department may require a water supplier to repeat treatment steps previously completed by the water supplier if the department determines that this is necessary to properly implement the treatment requirements. The department shall notify the water supplier in writing of such a determination and explain the basis for its decision. The water supplier for a small or medium-size water system shall implement corrosion control treatment steps in accordance with sub. (5), including a public water system deemed to have optimized corrosion control under sub. (2) (a), whenever it exceeds the lead or copper action level.

(4) TREATMENT STEPS AND DEADLINES FOR LARGE SYSTEMS. Except as provided in sub. (2) (b) and (c), water suppliers for large systems shall complete the following corrosion control treatment steps by the indicated dates:

(a) Step 1: The water supplier shall conduct initial monitoring during 2 consecutive 6-month monitoring periods by January 1, 1993.

(b) Step 2: The water supplier shall complete corrosion control studies and submit option for optimal corrosion control treatment to the department by July 1, 1994.

(c) Step 3: The department shall approve optimal corrosion control treatment by January 1, 1995.

(d) Step 4: The water supplier shall install optimal corrosion control treatment by January 1, 1997.

(e) Step 5: The water supplier shall complete follow-up sampling by January 1, 1998.

(f) Step 6: The department shall review installation of treatment and approve optimal water quality control parameters by July 1, 1998.

(g) Step 7: The water supplier shall operate in compliance with the department-approved optimal water quality control parameters and continue to conduct tap sampling.

(5) TREATMENT STEPS AND DEADLINES FOR SMALL AND MEDIUM-SIZE SYSTEMS. Except as provided in sub. (2), water suppliers for small and medium-size systems shall complete the following corrosion control treatment steps by the indicated time periods:

(a) Step 1: The water supplier shall conduct initial tap sampling until the public water system either exceeds the lead or copper action level or becomes eligible for reduced monitoring under s. NR 809.547 (4) (d). A water supplier exceeding the lead or copper action level shall recommend optimal corrosion control treatment, under s. NR 809.543(1), within six months after the end of the monitoring period during which the public water system exceeds one of the action levels.

(b) Step 2: Within 12 months after the end of the monitoring period during which a public water system exceeds the lead or copper action level, the department may require the water supplier to perform corrosion control studies, under s. NR 809.54(2). If the department does not require the water supplier to perform such studies, the department shall specify optimal corrosion control treatment, under s. NR 809.543(4) within the following timeframes:

1 For medium-size systems, within 18 months after the end of the monitoring period during which such public water system exceeds the lead or copper action level.

2. For small systems, within 24 months after the end of the monitoring period during which such public water system exceeds the lead or copper action level.

(c) Step 3: If the department requires a water supplier to perform corrosion control studies under step 2, the water supplier shall complete the studies within 18 months after the department requires the studies be conducted.

(d) Step 4: If the water supplier has performed corrosion control studies under step 2, the department shall review and determine adequacy of public water system's optimal corrosion control treatment within 6 months after completion of step 3.

(e) Step 5: The water supplier shall install optimal corrosion control treatment within 24 months after the department approves the treatment.

(f) Step 6: The water supplier shall complete follow-up sampling within 36 months after the department approves optimal corrosion control treatment.

(g) Step 7: The department shall review the installation of treatment and approve optimal water quality control parameters within 6 months after completion of step 6.

(h) Step 8: The water supplier shall operate in compliance with the department-approved optimal water quality control parameters and continue to conduct tap sampling.

NR 809.543 Description of corrosion control treatment requirements. Each water supplier shall complete the following corrosion control treatment requirements which are applicable to their public water system under s. NR 809.542.

(1) WATER SUPPLIER RECOMMENDATION REGARDING CORROSION CONTROL TREATMENT. Based upon the results of lead and copper tap monitoring and water quality parameter monitoring, water supplier for a small and medium-size water systems exceeding the lead or copper action level shall recommend installation of one or more of the corrosion control treatments listed in sub. (3) (a) which the water supplier believes constitutes optimal corrosion control for that public water system. The department may require the water supplier to conduct additional water quality parameter monitoring in accordance with s. NR 809.548 (2) to assist the department in reviewing the water supplier's recommendation. In no case may the time period for installation of optimal corrosion control treatment on a small or medium-size system exceed the schedule as listed in s. NR 809.542 (5) (a) to (h).

(2) DEPARTMENT DECISION TO REQUIRE STUDIES OF CORROSION CONTROL TREATMENT BY SMALL AND MEDIUM-SIZE SYSTEMS. The department may require the water supplier of any small or medium-size system that exceeds the lead or copper action level to perform corrosion control studies under sub. (3) to identify optimal corrosion control treatment for the public water system.

(3) PERFORMANCE OF CORROSION CONTROL STUDIES. (a) Any water supplier performing corrosion control studies shall evaluate the effectiveness of each of the following treatments, and, if appropriate, combinations of the following treatments to identify the optimal corrosion control treatment for that public water system:

1. Alkalinity and pH adjustment.
2. Calcium hardness adjustment.
3. The addition of a phosphate or silicate based corrosion inhibitor at a concentration sufficient to maintain an effective residual concentration in all test tap samples.

(b) The water supplier shall evaluate each of the corrosion control treatments listed in par. (a) using either pipe rig or loop tests, metal coupon tests, partial-system tests, or analyses based on documented analogous treatments with other public water systems of similar size, water chemistry and distribution system configuration.

(c) The water supplier shall measure all of the following water quality parameters in any tests conducted before and after evaluating the corrosion control treatments listed in par. (a):

1. Lead.
2. Copper.
3. pH.
4. Alkalinity.
5. Calcium.
6. Conductivity.
7. Orthophosphate (when an inhibitor containing a phosphate compound is used).
8. Silicate when an inhibitor containing a silicate compound is used.
9. Water temperature.

(d) The water supplier shall identify all chemical or physical constraints that limit or prohibit the use of a particular corrosion control treatment and document such constraints with at least one of the following:

1. Data and documentation showing that a particular corrosion control treatment has adversely affected other water treatment processes when used by another public water system with comparable water quality characteristics.
2. Data and documentation demonstrating that the water supplier has previously attempted to evaluate a particular corrosion control treatment and has found that the treatment is ineffective or adversely affects other water quality treatment processes, or both.

(e) The water supplier shall evaluate the effect of the chemicals used for corrosion control treatment on other water quality treatment processes.

(f) On the basis of an analysis of the data generated during each evaluation, the water supplier shall recommend to the department in writing the treatment option that the corrosion control studies indicate constitutes optimal corrosion control treatment for that public water system. The water supplier shall provide a rationale for its recommendation along with all supporting documentation specified in pars. (a) to (e).

(4) DEPARTMENT EVALUATION OF OPTIMAL CORROSION CONTROL TREATMENT. (a) Based upon consideration of available information including, where applicable, studies performed under sub. (3) and a water supplier's recommended treatment alternative, the department shall either approve the corrosion control treatment option recommended by the water supplier, or designate alternative corrosion control treatments from among those listed in sub. (3) (a). When approving optimal treatment, the department shall consider the effects that additional corrosion control treatment will have on water quality parameters and on other water quality treatment processes.

(b) The department shall notify the water supplier of its decision on optimal corrosion control treatment in writing and explain the basis for this determination. If the department requests additional information to aid its review, the water supplier shall provide the information.

(5) INSTALLATION OF OPTIMAL CORROSION CONTROL. Each water supplier shall properly install and operate throughout the public water system's distribution system the optimal corrosion control treatment approved by the department under sub. (4).

(6) DEPARTMENT REVIEW OF TREATMENT. The department shall evaluate the results of all lead and copper tap samples and water quality parameter samples submitted by the water supplier and determine whether the water supplier has properly installed and operated the optimal corrosion control treatment approved by the department in sub. (4). Upon reviewing the results of tap water and water quality parameter monitoring by the water supplier, both before and after the water supplier installs optimal corrosion control treatment, the department shall establish ranges for water quality parameters.

(7) APPROVAL OF OPTIMAL WATER QUALITY CONTROL PARAMETERS. The department shall review the water supplier's recommendations and select the values for the applicable water quality control parameters listed in sub. (3) which reflect optimal corrosion control treatment for the public water system. The department may specify values for additional water quality control parameters to reflect optimal corrosion control for the public water system. The department shall notify the water supplier in writing of these determinations and explain the basis for its decision. At a minimum, the department shall establish all of the following:

(a) A minimum value or a range of values for pH measured at each entry point to the distribution system.

(b) A minimum pH value, measured in all tap samples. The value shall be equal to or greater than 7.0, unless the water supplier provides information to indicate that meeting a pH level of 7.0 is not technologically feasible or is not necessary for the public water system to optimize corrosion control.

(c) If a corrosion inhibitor is used, a minimum concentration or a range of concentrations for the inhibitor, measured at each entry point to the distribution system and in all tap samples, that the department determines is necessary to protect the interior walls of the pipes of the distribution system from corrosion.

(d) If alkalinity is adjusted as part of optimal corrosion control treatment, a minimum concentration or a range of concentrations for alkalinity, measured at each entry point to the distribution system and in all tap samples.

(e) If calcium carbonate stabilization is used as part of corrosion control, a minimum concentration or a range of concentrations for calcium, measured in all tap samples.

(8) CONTINUED OPERATION AND MONITORING. All water suppliers optimizing corrosion control shall continue to operate and maintain optimal corrosion control treatment, including maintaining water quality parameters at or above minimum values or within ranges designated by the department under sub. (7), in accordance with this subsection for all samples collected under s. NR 809.548 (4) to (6). Compliance with the requirements of this subsection shall be determined every 6 months, as specified under s. NR 809.548 (4). A public water system is out of compliance with the requirements of this subsection for a 6-month period if it has excursions for any department-specified parameter on more than 9 days during the period. An excursion occurs whenever the daily value for one or more of the water quality parameters measured at a sampling location is below the minimum value or outside the range designated by the department. The department may delete results of obvious sampling errors from this calculation. Daily values are calculated as follows:

(a) On days when more than one measurement for the water quality parameter is collected at the sampling location, the daily value shall be the average of all results collected during the day regardless of whether they are collected through continuous monitoring, grab sampling or a combination of both. If EPA has approved an alternative formula under 40 CFR 142.16 in the department's application for a program revision submitted pursuant to 40 CFR 142.12, the department's formula shall be used to aggregate multiple measurements taken at a sampling point for the water quality parameter in lieu of the formula in this paragraph.

(b) On days when only one measurement for the water quality parameter is collected at the sampling location, the daily value shall be the result of that measurement.

(c) On days when no measurement is collected for the water quality parameter at the sampling location, the daily value shall be the daily value calculated on the most recent day on which the water quality parameter was measured at the sample site.

(9) MODIFICATION OF DEPARTMENT TREATMENT DECISIONS. Upon its own initiative or in response to a request by a water supplier or other interested party, the department may modify its determination of the optimal corrosion control treatment under sub. (4) or optimal water quality control parameters under sub. (6). A request for modification by a water supplier or other interested party shall be in writing, explain why the modification is appropriate, and provide supporting documentation. The department may modify its determination if it concludes that a change is necessary to ensure that the water supplier continues to optimize corrosion control treatment. A revised determination shall be made in writing, set forth the new treatment requirements, explain the basis for the department's decision, and provide an implementation schedule for completing the treatment modifications.

(10) TREATMENT DECISIONS BY EPA IN LIEU OF THE DEPARTMENT. The EPA regional administrator may review treatment determinations made by the department under sub. (4), (6) or (8) and issue federal treatment determinations consistent with the requirements of those subsections if the regional administrator finds any of the following:

(a) The department has failed to issue a treatment determination by the applicable deadlines contained in s. NR 809.542.

(b) The department has abused its discretion in a substantial number of cases or in cases affecting a substantial population.

(c) The technical aspects of the department's determination would be indefensible in an expected federal enforcement action taken against a water supplier.

NR 809.544 Source water treatment requirements for corrosion control. (1) DEADLINES FOR COMPLETING SOURCE WATER TREATMENT STEPS. Water suppliers shall complete the applicable source water monitoring and treatment requirements by the following deadlines:

(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 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.

(b) Step 2: The department shall make a determination regarding proposed source water treatment within 6 months after receipt of proposed treatment alternatives under step 1.

(c) Step 3: If the department approves installation of source water treatment, the water supplier shall install the treatment within 24 months after completion of step 2.

(d) Step 4: The water supplier shall complete follow-up tap water monitoring and source water monitoring within 36 months after completion of step 2.

(e) Step 5: The department shall review the installation and operation of source water treatment and specify maximum permissible source water levels within 6 months after completion of step 4.

(f) Step 6: The water supplier shall operate in compliance with the department-specified maximum permissible lead and copper source water levels and continue source water monitoring.

(2) DESCRIPTION OF SOURCE WATER TREATMENT REQUIREMENTS. (a) *Water supplier treatment recommendation.* Any water supplier for a public water system that exceeds the lead or copper action level shall recommend in writing to the department the installation and operation of one of the source water treatments listed in par. (b). A water

supplier may recommend that no treatment be installed based upon a demonstration that source water treatment is not necessary to minimize lead and copper levels at users' taps.

(b) *Department determination regarding source water treatment.* The water supplier shall complete an evaluation of the results of all source water samples collected by the water supplier to determine whether source water treatment is necessary to minimize lead or copper levels and the evaluation shall be submitted to the department. If the department determines that treatment is needed, the department shall either approve installation and operation of the source water treatment recommended by the water supplier, if any, or require the installation and operation of another source water treatment from among the following: ion exchange, reverse osmosis, lime softening or coagulation-filtration. If the department requests additional information to aid in its review, the water supplier shall provide the information by the date specified by the department in its request. The department shall notify the water supplier in writing of its determination and set forth the basis for its decision.

(c) *Installation of source water treatment.* Each water supplier shall properly install and operate the source water treatment approved by the department under par. (b).

(d) *Department review of source water treatment and specification of maximum permissible source water levels.* The department shall review the source water samples taken by the water supplier both before and after the water supplier installs source water treatment, and determine whether the water supplier has properly installed and operated the source water treatment approved by the department. Based upon its review, the department shall establish the maximum permissible lead and copper concentrations for finished water entering the distribution system. Levels shall reflect the contaminant removal capability of the treatment properly operated and maintained. The department shall notify the water supplier in writing and explain the basis for its decision.

(e) *Continued operation and maintenance.* Each water supplier shall maintain lead and copper levels below the maximum permissible concentrations established by the department at each sampling point monitored in accordance with s. NR 809.549. The public water system is out of compliance with this paragraph if the level of lead or copper at any sampling point is greater than the maximum permissible concentration approved by the department.

(f) *Modification of department treatment decisions.* Upon its own initiative or in response to a request by a water supplier or other interested party, the department may modify its determination of the source water treatment under par. (b), or maximum permissible lead and copper concentrations for finished water entering the distribution system under par. (d). A request for modification by a water supplier or other interested party shall be in writing, explain why the modification is appropriate, and provide supporting documentation. The department may modify its determination where it concludes that such change is necessary to ensure that the water supplier continues to minimize lead and copper concentrations in source water. A revised determination shall be made in writing, set forth the new treatment requirements, explain the basis for the department's decision, and provide an implementation schedule for completing the treatment modifications.

(g) *Treatment decisions by EPA in lieu of the department.* The EPA regional administrator may review treatment determinations made by the department under par. (b), (d) or (f) and issue federal treatment determinations consistent with the requirements of those paragraphs if the administrator finds any of the following:

1. The department has failed to issue a treatment determination by the applicable deadlines contained in sub. (1).

2. The department has abused its discretion in a substantial number of cases or in cases affecting a substantial population.

3. The technical aspects of the department's determination would be indefensible in an expected federal enforcement action taken against a water supplier.

NR 809.545 Lead service line replacement requirements. (1) GENERAL. Water suppliers for public water systems that fail to meet the lead action level in tap samples taken pursuant to s. NR 809.547 (4) (b), after installing corrosion control or source water treatment, or both, whichever sampling occurs later, shall replace lead service lines in accordance with the requirements of this section. If a public water system is in violation of s. NR 809.542 or 809.544 for failure to install source water or corrosion control treatment, the department may require the water supplier to commence lead service line replacement under this section after the date by which the water supplier was required to conduct monitoring under s. NR 809.547 (4) (b) has passed.

(2) RATE AND SCHEDULE FOR SERVICE LINE REPLACEMENT. (a) A water supplier shall replace annually at least 7% of the initial number of lead service lines in its distribution system. The initial number of lead service lines is the

number of lead lines in place at the time the replacement program begins. The water supplier shall identify the initial number of lead service lines in its distribution system, including an identification of the portions owned by the public water system, based on a materials evaluation, including the evaluation required under s. NR 809.547 (1) and relevant legal authorities, such as contracts and local ordinances regarding the portion owned by the public water system. The first year of lead service line replacement shall begin on the first day following the end of the monitoring period in which the action level was exceeded under sub. (1). If monitoring is required annually or less frequently, the end of the monitoring period is September 30 of the calendar year in which the sampling occurs unless the department has established an alternate monitoring period.

(b) Any water supplier resuming a lead service line replacement program, after the cessation of its lead service line replacement program, as allowed by sub. (6), shall update the public water system's inventory of lead service lines to include those sites that were previously determined not to require replacement through the sampling provision under sub. (3). The water supplier shall then divide the updated number of remaining lead service lines by the number of remaining years in the program to determine the number of lines that must be replaced per year. Seven percent lead service line replacement is based on a 15-year replacement program, so, for example, water suppliers resuming lead service line replacement after previously conducting two years of replacement would divide the updated inventory by 13. For those water suppliers for public water systems that have completed a 15-year lead service line replacement program, the department will determine a schedule for replacing or retesting lines that were previously tested out under the replacement program when the public water system exceeds the action level again after completing a 15-year replacement program.

(3) INDIVIDUAL SERVICE LINE CONSIDERATIONS. A water supplier is not required to replace an individual lead service line if the lead concentration in all service line samples from that line, taken pursuant to s. NR 809.547 (2) (c), is less than or equal to 0.015 mg/L.

(4) EXTENT OF SERVICE LINE REPLACEMENT. A water supplier shall replace the entire service line, up to the building inlet, unless the water supplier demonstrates to the satisfaction of the department under sub. (5), that the public water system controls less than the entire service line. In such cases, the water supplier shall replace the portion of the line which the department determines is under the water supplier's control. The water supplier shall notify the user served by the line that the water supplier will replace the portion of the service line under the public water system's control and the water supplier shall offer to replace the building owner's portion of the line, but is not required to bear the cost of replacing the building owner's portion of the line. A water supplier is not required to bear the cost of replacing the privately-owned portion of the line, nor is the water supplier required to replace the privately-owned portion where the building owner chooses not to pay the cost of replacing the privately-owned portion of the line, or where replacing the privately-owned system would be precluded by department, local or common law. An water supplier that does not replace the entire length of the service line shall also complete all of the following tasks:

(a) At least 45 days prior to commencing with the partial replacement of a lead service line, the water supplier shall provide notice to the residents of all buildings served by the line explaining that they may experience a temporary increase of lead levels in their drinking water, and shall provide guidance on measures consumers can take to minimize their exposure to lead. The department may allow the water supplier to provide notice under this paragraph less than 45 days prior to commencing partial lead service line replacement if the replacement is in conjunction with emergency repairs. In addition, the water supplier shall inform the residents served by the line that the water supplier will, at the public water system's expense, collect a sample from each partially-replaced lead service line that is representative of the water in the service line for analysis of lead content, as prescribed under s. NR 809.547 (2) (c), no later than 72 hours after the completion of the partial replacement of the service line. The water supplier shall collect the sample and report the results of the analysis to the building owner and each resident served by the line no later than 3 business days after receiving the results. Mailed notices post-marked no later than 3 business days after receiving the results shall be considered timely.

(b) The water supplier shall provide the information required by par. (a) to the residents of individual dwellings by mail or by other methods approved by the department. In instances where multi-family dwellings are served by the line, the water supplier may post the information at a conspicuous location likely to give notice to all residents of the multi-family dwellings.

(5) ACCELERATED SCHEDULE FOR SERVICE LINE REPLACEMENT. The department shall require a water supplier to replace lead service lines on a shorter schedule than that required by this section, taking into account the number of lead service lines in the public water system, if a shorter replacement schedule is feasible. The department shall make this determination in writing and notify the water supplier of its finding no later than 6 months after the water supplier is required to begin service line replacement based on monitoring under sub. (1).

(6) CEASING AND RECOMMENCING SERVICE LINE REPLACEMENT. Any water supplier may cease replacing lead service lines when lead service line samples collected pursuant to s. NR 809.547 (2) (b) meet the lead action level during each of 2 consecutive monitoring periods and the water supplier submits the results to the department. If the lead service line samples in any such public water system thereafter exceed the lead action level, the water supplier shall recommence replacing lead service lines, pursuant to sub. (2).

(7) COMPLIANCE REPORTING. To demonstrate compliance with subs. (1) to (4), a water supplier shall report to the department the information specified in s. NR 809.55 (5).

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. (5). 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 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).

(1) CONTENT OF WRITTEN PUBLIC EDUCATION MATERIALS FOR LEAD AND COPPER CONTROL. (a) *Content for community water systems and non-transient noncommunity water systems.* Water suppliers shall include the following elements in printed materials, for example, brochures and pamphlets, in the same order as listed below. In addition, the language in subds. 1, 2, and 6 shall be included in the materials, exactly as written, except for the text in brackets in those subdivisions for which the water supplier shall include public water system-specific information. Any additional information presented by a water supplier shall be consistent with the information below and be in plain language that can be understood by the general public. Water suppliers shall submit all written public education materials to the department prior to delivery. The department may require the water supplier to modify the language before the department approves of the content of written public materials prior to delivery.

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.

2. Health effects of lead. Lead can cause serious health problems if too much enters your body from drinking water or other sources. It can cause damage to the brain and kidneys, and can interfere with the production of red blood cells that carry oxygen to all parts of your body. The greatest risk of lead exposure is to infants, young children, and pregnant women. Scientists have linked the effects of lead on the brain with lowered IQ in children. Adults with kidney problems and high blood pressure can be affected, more than healthy adults at lower levels of lead. Lead is stored in the bones, and it can be released later in life. During pregnancy, the child receives lead from the mother's bones while in utero, which may affect the child's brain development.

3. Sources of Lead.

a. Explain what lead is.

b. Explain possible sources of lead in drinking water and how lead enters drinking water. Include information on home and building plumbing materials and service lines that may contain lead.

c. Discuss other important sources of lead exposure in addition to drinking water, for example, paint.

4. Reducing lead exposure. Discuss the steps the consumer can take to reduce their exposure to lead in drinking water.

a. Encourage running the water to flush out the lead.

b. Explain concerns with using hot water from the tap and specifically caution against the use of hot water for preparing baby formula.

c. Explain that boiling water does not reduce lead levels.

d. Discuss other options consumers can take to reduce exposure to lead in drinking water, such as alternative sources or treatment of water.

e. Suggest that parents have their child's blood tested for lead.

5. Reasons for elevated lead levels and water supplier response. Explain why there are elevated levels of lead in the public water system's drinking water, if known, and what the water supplier is doing to reduce the lead levels in homes and buildings in this area.

6. For more information, call us at [INSERT YOUR NUMBER] [(IF APPLICABLE), or visit our Web site at [INSERT YOUR WEB SITE HERE]]. For more information on reducing lead exposure around your home or building and the health effects of lead, visit EPA's Web site at http://www.epa.gov/lead or contact your health care provider.

(b) *Additional content for community water systems.* In addition to including the elements specified in par. (a), water suppliers for community water systems shall:

1. Tell consumers how to get their water tested.

2. Discuss lead in plumbing components and the difference between low lead and lead free.

(2) DELIVERY OF PUBLIC EDUCATION MATERIALS. (a) *Multilingual public education materials.* For public water systems serving a large proportion of non-English speaking consumers, as determined by the department, the public education materials shall contain information in the appropriate language or languages regarding the importance of the notice or shall contain a telephone number or address where persons served may contact the water supplier to obtain a translated copy of the public education materials or to request assistance in the appropriate language.

(b) *Community water system public education tasks.* A water supplier for a community water system that exceeds the lead action level on the basis of tap water samples collected in accordance with s. NR 809.547 and that is not already conducting public education tasks under this section, shall conduct all of the following public education tasks no later than 60 days after the end of the monitoring period in which the exceedance occurred:

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

2. Contact customers who are most at risk by:

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.

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

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) 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.

3. Provide information with the water bills. No less often than quarterly, water suppliers shall provide information on or in each water bill as long as the public water system exceeds the action level for lead. The message on the water bill shall include the following statement exactly as written except for the text in brackets for which the water supplier shall include public water system-specific information: [INSERT NAME OF PUBLIC WATER SYSTEM] found high levels of lead in drinking water in some homes. Lead can cause serious health problems. For more information please call [INSERT NAME OF PUBLIC WATER SYSTEM] [or visit (INSERT YOUR WEB SITE HERE)]. The message or delivery mechanism may be modified in consultation with the department to allow a

separate mailing of public education materials to customers if the water supplier cannot place the information on water bills.

4. Post material meeting the content requirements of par. (1) on the public water system's Web site if the public water system serves a population greater than 100,000.

5. Submit a press release to newspaper, television and radio stations.

6. Conduct additional education activities. In addition to subd. 2.b., water suppliers shall implement at least three activities from one or more categories listed in this subdivision. The educational content and selection of these activities shall be determined in consultation with the department.

a. Public service announcements.

b. Paid advertisements.

c. Public area information displays.

d. E-mails to customers.

e. Public meetings.

f. Household deliveries.

g. Targeted individual customer contact.

h. Direct material distribution to all multi-family homes and institutions.

i. Other methods approved by the department.

7. For public water systems that are required to conduct monitoring 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.

(c) *Requirements for continuing community water system exceedences.* As long as a community water system exceeds the action level, the water supplier shall repeat the activities pursuant to par. (2)(b) as described in this paragraph.

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

2. A water supplier for a community water system shall repeat the tasks contained in par. (b)3. with each billing cycle.

3. A water supplier for a community water system serving a population greater than 100,000 shall post and retain material on a publicly accessible Web site pursuant to par. (b)4.

4. A water supplier for a community water system shall repeat the task in par. (b)5., twice every 12 months on a schedule agreed upon with the department. The department may allow activities in par. (b) to extend beyond the 60-day requirement if needed for implementation purposes on a case-by-case basis. However, this extension must be approved in writing by the department in advance of the 60-day deadline.

(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 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 achived. 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.

(e) *Requirements for continuing non-transient non-community water system exceedences.* A water supplier for a non-transient non-community water system shall repeat the tasks contained in par. (d) at least once during each calendar year in which the public water system exceeds the lead action level. The department may, on a case-by-case basis, allow activities in par. (d) to extend beyond the 60-day requirement if needed for implementation purposes. However, this extension is required to be approved in writing by the department in advance of the 60-day deadline.

(f) *Requirements for discontinuing public education materials.* A water supplier may discontinue delivery of public education materials if the public water system has met the lead action level during the most recent six-month monitoring period conducted pursuant to s. NR 809.547. The water supplier shall recommence public education in

accordance with this section if the public water system subsequently exceeds the lead action level during any monitoring period.

(g) *Community water system text waiver.* A water supplier for a community water system may apply to the department in writing unless the department has waived the requirement for prior approval, to use only the text specified in sub. (1)(a) in lieu of the text in subs. (1)(a) and (b) and to perform the tasks listed in pars. (d) and (e) in lieu of the tasks in pars. (b) and (c) if all of the following are met:

1. The public water system is a facility, such as a prison or a hospital, where the population served is not capable of or is prevented from making improvements to plumbing or installing point of use treatment devices.

2. The public water system provides water as part of the cost of services provided and does not separately charge for water consumption.

(h) *Reduction in public education requirements for public water systems serving 3300 or fewer people.* A water supplier for a community water system serving 3,300 or fewer people may limit certain aspects of the public education programs as follows:

1. With respect to the requirements of par. (b)6., a water supplier for a public water system serving 3,300 or fewer shall implement at least one of the activities listed in that paragraph.

2. With respect to the requirements of par. (b)2., a water supplier for a public water system serving 3,300 or fewer people may limit the distribution of the public education materials required under that paragraph to facilities and organizations served by the public water system that are most likely to be visited regularly by pregnant women and children.

3. With respect to the requirements of par. (b)5., the department may waive this requirement for public water systems serving 3,300 or fewer persons as long as the water supplier distributes notices to every household served by the public water system.

(3) SUPPLEMENTAL MONITORING FOR LEAD. A water supplier for a public water system that fails to meet the lead action level on the basis of tap samples collected in accordance with s. NR 809.547 shall offer to sample the tap water of any customer who requests it. The water supplier is not required to pay for collecting or analyzing the sample, nor is the water supplier required to collect and analyze the sample.

(4) NOTIFICATION OF TAP SAMPLE RESULTS. (a) *Reporting requirement.* All water suppliers for public water systems shall provide a notice of the individual tap results from lead tap water monitoring carried out under the requirements of s. NR 809.547 to the persons served by the public water system at the specific sampling site from which the sample was taken, for example, the occupants of the residence where the tap was tested.

(b) *Timing of notification.* A water supplier shall provide the consumer notice as soon as practical, but no later than 30 days after the water supplier learns of the tap monitoring results.

(c) *Content.* The consumer notice shall include the results of lead tap water monitoring for the tap that was tested, an explanation of the health effects of lead, steps consumers can take to reduce exposure to lead in drinking water and contact information for the water utility. The notice shall also provide the maximum contaminant level goal and the action level for lead and the definitions for these two terms from s. NR 809.833(2).

(d) *Delivery.* The consumer notice shall be provided to persons served at the tap that was tested, either by mail or by another method approved by the department. For example, upon approval by the department, a non-transient noncommunity water system could post the results on a bulletin board in the facility to allow users to review the information. The water supplier shall provide the notice to customers at sample taps tested, including consumers who do not receive water bills.

NR 809.547 Monitoring requirements for lead and copper in tap water. (1) SAMPLE SITE LOCATION. (a) By the applicable date for commencement of monitoring under sub. (4) (a), each water supplier shall complete a materials evaluation of the distribution system of this public water system in order to identify a pool of targeted sampling sites that meet the requirements as specified in pars. (c) to (f), and which is sufficiently large to ensure that the water supplier can collect the number of lead and copper tap samples required in sub. (3). All sites from which first draw samples are collected shall be selected from this pool of targeted sampling sites. Sampling sites may not include faucets that have point-of-use or point-of-entry treatment devices designed to remove inorganic contaminants.

(b) A water supplier shall use the information on lead, copper and galvanized steel that they are required to collect under s. NR 809.119 when conducting a materials evaluation. When an evaluation of the information collected pursuant to s. NR 809.119(4) is insufficient to locate the requisite number of lead and copper sampling sites that meet the targeting criteria in this subsection, the water supplier shall review the following sources of information in order to identify a sufficient number of sampling sites. In addition, the water supplier shall seek to collect such information where possible in the course of its normal operations, including, checking service line materials when reading water meters or performing maintenance activities:

1. All plumbing codes, permits and records in the files of the building department which indicate the plumbing materials that are installed within publicly and privately owned structures connected to the distribution system.

2. All inspections and records of the distribution system that indicate the material composition of the service connections that connect a structure to the distribution system.

3. All existing water quality information, which includes the results of all prior analyses of the public water system or individual structures connected to the public water system, indicating locations that may be particularly susceptible to high lead or copper concentrations.

(c) The "tier 1 sampling sites" selected for a community water system's sampling pool shall consist of single family structures that meet at least one of the following requirements:

1. Contain copper pipes with lead solder installed after 1982 or contain lead pipes.

2. Are served by a lead service line.

(d) When multiple-family residences comprise at least 20% of the structures served by a public water system, the water supplier may include the types of structures described in par. (c) in its sampling pool.

(e) Any water supplier for a community water system with insufficient tier 1 sampling sites shall complete the sampling pool with "tier 2 sampling sites," consisting of buildings, including multiple-family residences that meet at least one of the following requirements:

1. Contain copper pipes with lead solder installed after 1982 or contain lead pipes.

2. Are served by a lead service line.

(f) Any water supplier for a community water system with insufficient tier 1 and tier 2 sampling sites shall complete the sampling pool with "tier 3 sampling sites", consisting of single family structures that contain copper pipes with lead solder installed before 1983. A water supplier for a community water system with insufficient tier 1, tier 2 and tier 3 sampling sites shall complete its sampling pool with representative sites throughout the distribution system. For the purpose of this paragraph, a representative site is a site at which the plumbing materials used at that site would be commonly found at other sites served by the public water system.

(g) The "tier one sampling sites" selected for a non-transient non-community water system shall consist of buildings that meet at least one of the following requirements:

1. Contain copper pipes with lead solder installed after 1982 or contain lead pipes.

2. Are served by a lead service line.

(h) A water supplier for a non-transient, non-community water system with insufficient tier 1 sites that meet the targeting criteria in par. (g) shall complete their sampling pool with sampling sites that contain copper pipes with lead solder installed before 1983. If additional sites are needed to complete the sampling pool, the water supplier shall use representative sites throughout the distribution system. For the purpose of this paragraph, a representative site is a site at which the plumbing materials used at that site would be commonly found at other sites served by the public water system.

(i) Any water supplier whose distribution system contains lead service lines shall draw 50% of the samples collected during each monitoring period from sites that contain lead pipes, or copper pipes with lead solder, and 50% of those samples from sites served by a lead service line. A water supplier who cannot identify a sufficient number of sampling sites served by a lead service line shall collect first draw samples from all of the sites identified as being served by such lines.

(2) SAMPLE COLLECTION METHODS. (a) All tap samples for lead and copper collected in accordance with this subchapter, with the exception of lead service line samples collected under s. NR 809.545 (3) and samples collected under par. (e), shall be first draw samples.

(b) Each first-draw tap sample for lead and copper shall be one liter in volume and have stood motionless in the plumbing system of each sampling site for at least 6 hours. First-draw samples from residential housing shall be collected from the cold water kitchen tap or bathroom sink tap. First-draw samples from a nonresidential building shall be collected at an interior tap from which water is typically drawn for consumption. Non-first-draw samples collected in lieu of first-draw samples pursuant to par. (e) shall be one liter in volume and shall be collected at an interior tap from which water is typically drawn for consumption. First-draw samples may be collected by the water supplier or the water supplier may allow residents to collect first-draw samples after instructing the residents of the sampling procedures specified in this paragraph. To avoid problems of residents handling nitric acid, acidification of first-draw samples may be done up to 14 days after the sample is collected. After acidification to resolubilize the metals, the sample shall stand in the original container for the time specified in the approved EPA method before the sample can be analyzed. If a water supplier allows residents to perform sampling, the water supplier may not challenge, based on alleged errors in sample collection, the accuracy of sampling results.

(c) Each service line sample shall be one liter in volume and have stood motionless in the lead service line for at least 6 hours. Lead service line samples shall be collected in one of the following 3 ways:

1. At the tap after flushing the volume of water between the tap and the lead service line. The volume of water shall be calculated based on the interior diameter and length of the pipe between the tap and the lead service line.

2. Tapping directly into the lead service line.

3. If the sampling site is a building constructed as a single-family residence, allowing the water to run until there is a significant change in temperature which would be indicative of water that has been standing in the lead service line.

(d) A water supplier shall collect each first-draw tap sample from the same sampling site from which they collected a previous sample. If for any reason the water supplier cannot gain entry to a sampling site in order to collect a follow-up tap sample, the water supplier may collect the follow-up tap sample from another sampling site in their sampling pool as long as the new site meets the same targeting criteria, and is within reasonable proximity of the original site.

(e) The water supplier for a non-transient non-community water system or a community water system that meets the criteria of s. NR 809.546(2)(g) that does not have enough taps that can supply first-draw samples, may apply to the department in writing to substitute non-first-draw samples. Water suppliers for these public water systems shall collect as many first-draw samples from appropriate taps as possible and identify sampling times and locations that would likely result in the longest standing time for the remaining sites. The department may waive the requirement for prior departmental approval of non-first-draw sample sites selected by the water supplier, either through department rule or written notification to the water supplier.

(3) NUMBER OF SAMPLES. Water supplier 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. 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

(4) TIMING OF MONITORING. (a) *Initial tap sampling.* The first 6-month monitoring period for small, medium and large-size systems shall begin on the following dates:

Public Water System Size (# People Served)	**First six-month Monitoring Period Begins On**
>50,000	January 1, 1992
3,301 to 50,000	July 1, 1992
≤3,300	July 1, 1993

1. The water suppliers of all large systems shall monitor during 2 consecutive 6-month periods.

2. The water suppliers of all small and medium-size systems shall monitor during each 6-month monitoring period until one of the following occurs:

a. The public water system exceeds the lead or copper action level and is therefore required to implement the corrosion control treatment requirements under s. NR 809.542, in which case the water supplier shall continue monitoring in accordance with par. (b).

b. The public water system meets the lead or copper action levels during 2 consecutive 6-month monitoring periods, in which case the water supplier may reduce monitoring in accordance with par. (d).

(b) *Monitoring after installation of corrosion control and source water treatment.* 1. Any large system with optimal corrosion control treatment installed pursuant to s. NR 809.542 (4) (d) shall be monitored during 2 consecutive 6-month periods by the date specified in s. NR 809.542 (4) (e).

2. Any small or medium-size system with optimal corrosion control treatment installed pursuant to s. NR 809.542 (5) (e) shall be monitored during 2 consecutive 6-month monitoring periods by the date specified in s. NR 809.542 (5) (f).

3. Any water supplier that installs source water treatment pursuant to s. NR 809.544 (1) (c) shall monitor during 2 consecutive 6-month monitoring periods by the date specified in s. NR 809.544 (1) (d).

(c) *Monitoring after the department specifies water quality parameter values for optimal corrosion control.* After the department approves the values for water quality control parameters under s. NR 809.543 (6), the water supplier shall monitor during each subsequent 6-month monitoring period, with the first monitoring period to begin on the date the department specifies the optimal values under s. NR 809.543 (6).

(d) *Reduced monitoring.* 1. The water supplier for a small or medium-size water system that meets the lead and copper action levels during each of 2 consecutive 6-month monitoring periods may reduce the number of samples in accordance with sub. (3), and reduce the frequency of sampling to once per year. The water supplier for a small or medium water system collecting fewer than five samples as specified in sub. (3) of this section, that meets the lead and copper action levels during each of two consecutive six-month monitoring periods may reduce the frequency of sampling to once per year. In no case may the water supplier reduce the number of samples required below the minimum of one sample per available tap. The water supplier shall begin this sampling during the calendar year immediately following the end of the second consecutive six-month monitoring period.

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) 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.

3. The water supplier for a small or medium-size water system that meets the lead and copper action levels during three consecutive years of monitoring may reduce the frequency of monitoring for lead and copper from annually to once every three years. 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) during three consecutive years of monitoring may reduce the frequency of monitoring from annually to once every three years if they receives written approval from the department. Samples collected once every three years shall be collected no later than every third calendar year. 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 reduce the frequency of monitoring to once every three years. 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.

4. A water supplier that reduces the number and frequency of sampling shall collect these samples from representative sites included in the pool of targeted sampling sites identified in sub. (1). A water supplier sampling annually or less frequently shall conduct the lead and copper tap sampling during the months of June, July, August or September unless the department has approved a different sampling month.

a. The department, at its discretion, may approve a different period for conducting the lead and copper tap sampling for water suppliers collecting a reduced number of samples. Such a period shall be no longer than four consecutive months and must represent a time of normal operation where the highest levels of lead are most likely to occur. For a non-transient noncommunity water system that does not operate during the months of June through September, and for which the period of normal operation where the highest levels of lead are most likely to occur is not known, the department shall designate a period that represents a time of normal operation for the public water system. This sampling shall begin during the period approved or designated by the department in the calendar year immediately following the end of the second consecutive six-month monitoring period for water suppliers initiating annual monitoring and during the three-year period following the end of the third consecutive calendar year of annual monitoring for public water systems initiating triennial monitoring.

b. Water suppliers monitoring annually, that have been collecting samples during the months of June through September and that receive department approval to alter their sample collection period under this subd. 4. a. shall collect their next round of samples during a time period that ends no later than 21 months after the previous round of sampling. Water suppliers monitoring triennially that have been collecting samples during the months of June through September, and receive department approval to alter the sampling collection period as under this subd. 4. a. shall collect their next round of samples during a time period that ends no later than 45 months after the previous round of sampling. Subsequent rounds of sampling shall be collected annually or triennially, as required by this section. Water suppliers for small water systems with waivers, granted pursuant to sub. (7), that have been collecting samples during the months of June through September and receive department approval to alter their sample collection period under this subd. 4. a. shall collect their next round of samples before the end of the 9-year period.

5. Any water supplier that demonstrates for 2 consecutive 6-month monitoring periods that the tap water lead level computed under s. NR 809.541 (3) (c) is less than or equal to 0.005 mg/L and the tap water copper level computed under s. NR 809.541 (3) (c) is less than or equal to 0.65 mg/L may reduce the number of samples in accordance with sub. (3) and reduce the frequency of sampling to once every 3 calendar years.

6. a. Water suppliers for public water systems that are on reduced monitoring shall increase monitoring by the following: Water suppliers for a small or medium-sized water system subject to reduced monitoring that exceeds the lead or copper action level shall resume sampling in accordance with par. (c) and collect the number of samples specified for standard monitoring under sub. (3). A water supplier shall also conduct water quality parameter

monitoring in accordance with s. NR 809.548 (2), (3) or (4) during the monitoring period in which the action level was exceeded. A water supplier for any public water system subject to reduced monitoring frequency that fails to operate within the range of values for the water quality control parameters specified by the department under s. NR 809.543 (6) shall resume tap water sampling in accordance with par. (c) and collect the number of samples specified for standard monitoring under sub. (3).

b. A water supplier for any public water system subject to the reduced monitoring frequency that fails to meet the lead action level during any four-month monitoring period or that fails to operate at or above the minimum value or within the range of values for the water quality parameters specified by the department under s. NR 809.543 (6) for more than 9 days in any 6-month period specified in s. NR 809.548 (4) shall conduct tap water sampling for lead and copper at the frequency specified in par. (c), collect the number of samples specified for standard monitoring under sub. (3), and shall resume monitoring for water quality parameters within the distribution system in accordance with s. NR 809.548 (4). This standard tap water sampling shall begin no later than the six-month period beginning January 1 of the calendar year following the lead action level exceedance or water quality parameter excursion.

7. A water supplier for a public water system under subd. 6.b. may resume reduced monitoring for lead and copper at the tap and for water quality parameters within the distribution system under the following conditions:

a. The water supplier may resume annual monitoring for lead and copper at the tap at the reduced number of sites specified in sub. (3) after they have completed two subsequent six-month rounds of monitoring that meet the criteria of par. (d)2 and the public water system has received written approval from the department that it is appropriate to resume reduced monitoring on an annual frequency. This sampling shall begin during the calendar year immediately following the end of the second consecutive six-month monitoring period.

b. The water supplier may resume triennial monitoring for lead and copper at the tap at the reduced number of sites after they demonstrate through subsequent rounds of monitoring that the public water system meets the criteria of either par. (d)3 or 5 and the water supplier has received written approval from the department that it is appropriate to resume triennial monitoring.

c. The water supplier may reduce the number of water quality parameter tap water samples required in accordance with s. NR 809.548(5)(a) and the frequency with which they collect such samples in accordance with s. NR 809.548(5)(b). The water supplier may not resume triennial monitoring for water quality parameters at the tap until they demonstrate, in accordance with the requirements of s. NR 809.548(5)(b) that the public water system has re-qualified for triennial monitoring.

8. A water supplier for a public water system subject to a reduced monitoring frequency under par. (d) shall notify the department in writing in accordance with 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 must review and approve the addition of a new source or long-term change in water treatment before it is implemented by the water supplier. After approved modifications are completed the water supplier may resume reduced monitoring for lead and copper under the following conditions:

a. The water supplier may resume annual monitoring for lead and copper at the tap at the reduced number of sites specified in sub. (3) after they have completed 2 subsequent 6-month rounds of monitoring that meet the criteria in subd. 2. and the water supplier has received written approval from the department that it is appropriate to resume reduced monitoring on an annual frequency.

b. The water supplier may resume triennial monitoring for lead and copper at the tap at the reduced number of sites after they demonstrate through subsequent rounds of monitoring that the public water system meets the criteria of either subd. 3. or 5. and the water supplier has received written approval from the department that it is appropriate to resume triennial monitoring.

c. The water supplier for a public water system may reduce the number of water quality parameter tap water samples required in accordance with s. NR 809.548 (5) (a) and the frequency with which they collect such samples in accordance with s. NR 809.548 (5) (b). The water supplier may not resume triennial monitoring for water quality parameters at the tap until the public water system demonstrates, in accordance with the requirements of s. NR 809.548 (5) (b), that the public water system has re-qualified for triennial monitoring.

9. The water supplier for a public water system subject to a reduced monitoring frequency under this paragraph that either adds a new source of water or changes any water treatment shall inform the department in writing in

accordance with s. NR 809.55 (1) (e). The department may require the water supplier to resume sampling in accordance with sub. (2) (c) and collect the number of samples specified for standard monitoring under sub. (3) or take other appropriate steps such as increased water quality parameter monitoring or re-evaluation of its corrosion control treatment given the potentially different water quality considerations.

(5) ADDITIONAL MONITORING BY WATER SUPPLIERS. The results of any monitoring conducted in addition to the minimum requirements of this section shall be considered by the water supplier and the department in making any determinations, i.e., calculating the 90th percentile lead or copper level, under this subchapter.

(6) INVALIDATION OF LEAD OR COPPER TAP WATER SAMPLES. A sample invalidated under this subsection does not count toward determining lead or copper 90th percentile levels under s. NR 809.541 (3) (c) or toward meeting the minimum monitoring requirements of sub. (3).

(a) The department may invalidate a lead or copper tap water sample if at least one of the following conditions is met:

1. The laboratory establishes that improper sample analysis caused erroneous results.

2. The department determines that the sample was taken from a site that did not meet the site selection criteria of this section.

3. The sample container was damaged in transit.

4. There is substantial reason to believe that the sample was subject to tampering.

(b) The water supplier shall report the results of all samples to the department and all supporting documentation for samples the water supplier believes should be invalidated.

(c) To invalidate a sample under par. (a), the decision and the rationale for the decision shall be documented in writing. The department may not invalidate a sample solely on the grounds that a follow-up sample result is higher or lower than that of the original sample.

(d) The water supplier shall collect replacement samples for any samples invalidated under this subsection if, after the invalidation of one or more samples, the public water system has too few samples to meet the minimum requirements of sub. (3). Any replacement samples shall be taken as soon as possible, but no later than 20 days after the date the department invalidates the sample or by the end of the applicable monitoring period, whichever occurs later. Replacement samples taken after the end of the applicable monitoring period may not also be used to meet the monitoring requirements of a subsequent monitoring period. The replacement samples shall be taken at the same locations as the invalidated samples or, if that is not possible, at locations other than those already used for sampling during the monitoring period.

(7) MONITORING WAIVERS FOR SMALL WATER SYSTEMS. The water supplier of any small water system that meets the criteria of this subsection may apply to the department to reduce the frequency of monitoring for lead and copper under this section to once every 9 years, also known as a "full waiver," if the public water system meets all of the materials criteria specified in par. (a) and all of the monitoring criteria specified in par. (b). If department rules permit, the water supplier for any small water system that meets the criteria in pars. (a) and (b) only for lead, or only for copper, may apply to the department for a waiver to reduce the frequency of tap water monitoring to once every 9 years for that contaminant only, also known as a "partial waiver."

(a) *Materials criteria.* The water supplier shall demonstrate that the distribution system of their public water supply system and service lines and all drinking water supply plumbing, including plumbing conveying drinking water within all residences and buildings connected to the public water system, are free of lead-containing materials or copper-containing materials, as those terms are defined in this paragraph, as follows:

1. 'Lead waiver.' To qualify for a full waiver, or a waiver of the tap water monitoring requirements for lead, known as a "lead waiver," the water supplier shall provide certification and supporting documentation to the department that the public water system is free of all lead-containing materials, and complies with all of the following:

a. The public water system contains no plastic pipes which contain lead plasticizers, or plastic service lines which contain lead plasticizers.

b. The public water system is free of lead service lines, lead pipes, lead soldered pipe joints, and leaded brass or bronze alloy fittings and fixtures, unless the fittings and fixtures meet the specifications of any standard established pursuant to 42 USC 300g-6(e).

Note: 42 USC 300g-6(e) is section 1417 (e) of the federal Safe Drinking Water Act.

2. 'Copper waiver.' To qualify for a full waiver, or a waiver of the tap water monitoring requirements for copper, hereafter known as a "copper waiver," the water supplier shall provide certification and supporting documentation to the department that the public water system contains no copper pipes or copper service lines.

(b) *Monitoring criteria for waiver issuance.* The water supplier for the public water system shall have completed at least one 6-month round of standard tap water monitoring for lead and copper at sites approved by the department and from the number of sites required by sub. (3) and demonstrate that the 90th percentile levels for any and all rounds of monitoring conducted since the public water system became free of all lead-containing and copper-containing materials, as appropriate, meet the following criteria:

1. 'Lead waiver.' To qualify for a lead waiver, the water supplier shall demonstrate that the 90th percentile lead level does not exceed 0.005 mg/L.

2. 'Copper waiver.' To qualify for a copper waiver, the water supplier shall demonstrate that the 90th percentile copper level does not exceed 0.65 mg/L.

(c) *Department approval of waiver application.* The department shall notify the water supplier of its waiver determination, in writing, setting forth the basis of its decision and any condition of the waiver. As a condition of the waiver, the department may require the water supplier to perform specific activities, such as limited monitoring, periodic outreach to customers to remind them to avoid installation of materials that might void the waiver, to avoid the risk of lead or copper concentration of concern in tap water. The water supplier for the small water system shall continue monitoring for lead and copper at the tap as required by sub. (4) (a) to (d), as appropriate, until water supplier receives written notification from the department that the waiver has been approved.

(d) *Monitoring frequency for public water systems with waivers.* 1. A water supplier with a full waiver shall conduct tap water monitoring for lead and copper in accordance with sub. (4) (d) 4. at the reduced number of sampling sites identified in sub. (3) at least once every 9 years and provide the materials certification specified in par. (a) for both lead and copper to the department along with the monitoring results.

2. A water supplier with a partial waiver shall conduct tap water monitoring for the waived contaminant in accordance with sub. (4) (d) 4. at the reduced number of sampling sites specified in sub. (3) at least once every 9 years and provide the materials certification specified in par. (a) pertaining to the waived contaminant along with the monitoring results. The water supplier shall also continue to monitor for the non-waived contaminant in accordance with requirements of sub. (4) (a) to (d), as appropriate.

3. Any water supplier for a public water system with a full or partial waiver shall notify the department in writing in accordance with 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 must review and approve the addition of a new source or long-term change in water treatment before it is implemented by the public water system. The department has the authority to require the public water system to add or modify waiver conditions. The department may require recertification that the public water system is free of lead-containing or copper-containing materials, or both, and may require additional rounds of monitoring, if it deems the modifications are necessary to address treatment or source water changes at the public water system.

4. If a water supplier for a public water system with a full or partial waiver becomes aware that the public water system is no longer free of lead-containing or copper-containing materials as a result of new construction or repairs, the water supplier shall notify the department in writing no later than 60 days after becoming aware of a change.

(e) *Continued eligibility.* If the public water system continues to satisfy the requirements of par. (d), the waiver shall be renewed automatically, unless any of the conditions listed in subds. 1. to 3. occurs. A water supplier for a public water system whose waiver has been revoked may re-apply for a waiver at the time the public water system again meets the appropriate materials and monitoring criteria of pars. (a) and (b).

1. A public water system with a lead waiver no longer satisfies the materials criteria of par. (a) 1. if the 90th percentile lead level is greater than 0.005 mg/L.

2. A public water system with a copper waiver no longer satisfies the materials criteria of par. (a) 2. if the 90th percentile copper level is greater than 0.65 mg/L.

3. The department notifies the water supplier, in writing, that the waiver has been revoked, setting forth the basis of its decision.