

## Froneberger, Dale

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**From:** Kinard, Doug <kinarddb@dhec.sc.gov>  
**Sent:** Friday, May 16, 2014 10:48 AM  
**To:** Froneberger, Dale  
**Cc:** Riley, Pamela; Olone, Dan; Smith, Brian  
**Subject:** Re: Phone Call  
**Attachments:** RTCR Attachment C Text of Proposed Amendments.docx

*GWRT + LCR STR - also evaluated for responsiveness to comments on GWRT + LCR STR  
Primary applicator.*

Here is an updated copy. Upon further review, we identified some mistakes in the first copy I sent you.

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On Thu, May 15, 2014 at 3:44 PM, Froneberger, Dale <[Froneberger.Dale@epa.gov](mailto:Froneberger.Dale@epa.gov)> wrote:

Doug,

Got your phone message – thanks. Forwarded it on to Pamela Riley, who as Rule Manager I expect will be reviewing the draft that you sent. I did look at the two issues you highlighted though. On omitting the “certified” circuit rider from the list of possible enhancements that must be in place to get returned to annual monitoring for NCWS, that should be just fine – as by making the list of options smaller than the federal regs allow I think that your regs would be MORE stringent than federal. I sent the possible typo issue in (subparagraph a vs. subparagraph b in 141.857(d)) to HQs for confirmation that this is an error. Like you, I think the Federal Register is in error, but will get back to you once we hear from HQs.

Pamela can correct me if I'm off base on any of this.

Thanks.

Dale Froneberger

Safe Drinking Water Branch

EPA Region 4 - Atlanta

PH: 404/562-9446



**ATTACHMENT A**  
**STATEMENT OF NEED AND REASONABLENESS**  
**PROPOSED AMENDMENT OF R.61-58, STATE PRIMARY DRINKING WATER**  
**REGULATIONS**  
**June 12, 2014**

Deleted text is shown by ~~strikeout~~  
Added text is shown by underlining

**Amend R.61-58.A to read:**

A. General

Regulations 61-58 through ~~61-58.15~~ 61-58.17 are promulgated pursuant to S.C. Code Sections 44-55-10 et seq. and are collectively known as the State Primary Drinking Water Regulations. The Department finds the standards and procedures prescribed are necessary to maintain reasonable standards of purity of the drinking water of the State consistent with the public health, safety, and welfare of its citizens.

**Amend R.61-58.B to add the following definitions in alphanumeric order:**

"Clean compliance history" is, for the purposes of R.61-58.17, a record of no MCL violations under R.61-58.5.F; no monitoring violations under R.61-58.5.G or R.61-58.17; and no coliform treatment technique trigger exceedances or treatment technique violations under R.61-58.17.

"Level 1 assessment" is an evaluation to identify the possible presence of sanitary defects, defects in distribution system coliform monitoring practices, and (when possible) the likely reason that the system triggered the assessment. It is conducted by the system operator or owner. Minimum elements include review and identification of atypical events that could affect distributed water quality or indicate that distributed water quality was impaired; changes in distribution system maintenance and operation that could affect distributed water quality (including water storage); source and treatment considerations that bear on distributed water quality, where appropriate (e.g., whether a ground water system is disinfected); existing water quality monitoring data; and inadequacies in sample sites, sampling protocol, and sample processing. The system must conduct the assessment consistent with any Department directives that tailor specific assessment elements with respect to the size and type of the system and the size, type, and characteristics of the distribution system.

"Level 2 assessment" is an evaluation to identify the possible presence of sanitary defects, defects in distribution system coliform monitoring practices, and (when possible) the likely reason that the system triggered the assessment. A Level 2 assessment provides a more detailed examination of the system (including the system's monitoring and operational practices) than does a Level 1 assessment through the use of more comprehensive investigation and review of available information, additional internal and external resources, and other relevant practices. It is conducted by an individual approved by the Department, which may include the system operator. Minimum elements include review and identification of atypical events that could affect distributed water quality or indicate that distributed water quality was impaired; changes in distribution system maintenance and operation that could affect distributed water quality (including water storage); source and treatment considerations that bear on distributed water quality, where appropriate (e.g., whether a ground water system is disinfected); existing water quality monitoring data; and inadequacies in sample sites, sampling protocol, and sample processing. The system must conduct the assessment consistent with any Department directives that tailor specific assessment elements with respect to the size and type of the system and the size, type, and

characteristics of the distribution system. The system must comply with any expedited actions or additional actions required by the Department in the case of an *E. coli* MCL violation.

"Sanitary defect" is a defect that could provide a pathway of entry for microbial contamination into the distribution system or that is indicative of a failure or imminent failure in a barrier that is already in place.

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

**Amend R.61-58.5.F to read:**

F. Maximum Contaminant Levels (MCLs) for Microbiological Contaminants.

These maximum contaminant levels shall apply to all public water systems.

(1) Until March 31, 2016, the total coliform ~~The~~ MCL is based on the presence or absence of total coliforms in a sample, rather than coliform density.

(a) For a system which collects at least forty (40) samples per month, if no more than five (5.0) percent of the samples collected during a month are total coliform-positive, the system is in compliance with the MCL for total coliforms.

(b) For a system which collects fewer than forty (40) samples per month, if no more than one (1) sample collected during a month is total coliform -positive, the system is in compliance with the MCL for total coliforms.

(2) Until March 31, 2016, ~~Any~~ fecal coliform-positive repeat sample or *E. coli*-positive repeat sample, or any total coliform-positive repeat sample following a fecal coliform-positive or *E. coli*-positive routine sample constitutes a violation of the MCL for total coliforms. For purposes of the public notification requirements in R.61 58.6.E, this is a violation that may pose an acute risk to health.

(3) ~~A water system shall determine compliance with the MCL for total coliforms in paragraphs (1) and (2) of this section for each month in which it is required to monitor for total coliforms. Beginning April 1, 2016, a system is in compliance with the MCL for *E. coli* for samples taken under provisions of R.61-58.17 unless any of the conditions identified in R.61-58.5.F(3)(a) through (d) occur. For purposes of the public notification requirements in R.61-58.6.E, violation of the MCL may pose an acute risk to health.~~

(a) The system has an *E. coli*-positive repeat sample following a total coliform-positive routine sample.

(b) The system has a total coliform-positive repeat sample following an *E. coli*-positive routine sample.

(c) The system fails to take all required repeat samples following an *E. coli*-positive routine sample.

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

(4) Until March 31, 2016, a public water system must determine compliance with the MCL for total coliforms in R.61-58.5.F(1) and (2) for each month in which it is required to monitor for total coliforms.

Beginning April 1, 2016, a public water system must determine compliance with the MCL for *E. coli* in R.61-58.5.F(3) for each month in which it is required to monitor for total coliforms.

(5) The United States Environmental Protection Agency Administrator, pursuant to section 1412 of the federal Safe Drinking Water Act, has identified the following as the best technology, treatment techniques, or other means available for achieving compliance with the maximum contaminant level for total coliforms in R.61-58.5.F (1)and (2) and for achieving compliance with the maximum contaminant level for *E. coli* in R.61-58.5.F(3):

(a) Protection of wells from fecal contamination by appropriate placement and construction;

(b) Maintenance of a disinfection residual throughout the distribution system;

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

(d) Filtration and/or disinfection of surface water, as described in R.61-58.10, or disinfection of ground water , as described in R.61-58.16, using strong oxidants such as chlorine, chlorine dioxide, or ozone; and

(e) For systems using ground water, compliance with the requirements of an EPA-approved Department Wellhead Protection Program developed and implemented under section 1428 of the federal Safe Drinking Water Act.

(6) The United States Environmental Protection Agency Administrator, pursuant to section 1412 of the federal Safe Drinking Water Act, identifies the technology, treatment techniques, or other means available identified in R.61-58.5.F(5) as affordable technology, treatment techniques, or other means available to systems serving 10,000 or fewer people for achieving compliance with the maximum contaminant level for total coliforms in R.61-58.5.F(1) and (2) and for achieving compliance with the maximum contaminant level for *E. coli* in R.61-58.5.F(3).

**Add R.61-58.5.G(8) to read:**

(8) The provisions of R.61-58.5.G(1) and (4) are applicable until March 31, 2016. The provisions of R.61-58.5.G(2), (3), (5), (6), and (7) are applicable until all required repeat monitoring under R.61-58.5.G(2) and fecal coliform or *E. coli* testing under R.61-58.5.G(5) that was initiated by a total coliform-positive sample taken before April 1, 2016 is completed, as well as analytical method, reporting, recordkeeping, public notification, and consumer confidence report requirements associated with that monitoring and testing. Beginning April 1, 2016, the provisions of R.61-58.17 are applicable, with systems required to begin regular monitoring at the same frequency as the system-specific frequency required on March 31, 2016.

**Amend R.61-58.6.E(2)(a) to read:**

**(a) Which violations or situations require a Tier 1 public notice?** Table 1 of this section lists the violation categories and other situations requiring a Tier 1 public notice. Appendix A to this regulation identifies the tier assignment for each specific violation or situation.

**TABLE 1: VIOLATION CATEGORIES AND OTHER SITUATIONS REQUIRING A TIER 1 PUBLIC NOTICE**

- (1) Violation of the MCL for total coliforms when fecal coliform or *E. coli* are present in the water distribution system (as specified in R.61-58.5.F(2)), or when the water system fails to test for fecal coliforms or *E. coli* when any repeat sample tests positive for coliform (as specified in R.61-58.5.G(5)), violation of the MCL for *E. coli* (as specified in R.61-58.5.F);
- (2) Violation of the MCL for nitrate, nitrite, or total nitrate and nitrite, as defined in R.61-58.5.B, or when the water system fails to take a confirmation sample within 24 hours of the system's receipt of the first sample showing an exceedance of the nitrate or nitrite MCL, as specified in R.61-58.5.C(12)(b);
- (3) Exceedance of the nitrate MCL by non-community water systems, where permitted to exceed the MCL by the Department under R.61-58.5.B(3), as required under paragraph (9) of this section;
- (4) Violation of the MRDL for chlorine dioxide, as defined in R.61-58.5.Q(1), when one or more samples taken in the distribution system the day following an exceedance of the MRDL at the entrance of the distribution system exceed the MRDL, or when the water system does not take the required samples in the distribution system, as specified in R.61-58.13.D(3)(b)(i);
- (5) Violation of the turbidity MCL under R.61-58.10(C), (E), (H), or (I), where the Department determines after consultation that a Tier 1 notice is required or where consultation does not take place within 24 hours after the system learns of the violation;
- (6) Violation of the Surface Water Treatment Rule (SWTR), Interim Enhanced Surface Water Treatment Rule (IESWTR) or Long Term 1 Enhanced Surface Water Treatment Rule (LT1EWSTR) treatment technique requirement resulting from a single exceedance of the maximum allowable turbidity limit (as identified in Appendix A to this regulation), where the Department determines after consultation that a Tier 1 notice is required or where consultation does not take place within twenty-four (24) hours after the system learns of the violation;
- (7) Occurrence of a waterborne disease outbreak, as defined in R.61-58(B)(174), or other waterborne emergency (such as a failure or significant interruption in key water treatment processes, a natural disaster that disrupts the water supply or distribution system, or a chemical spill or unexpected loading of possible pathogens into the source water that significantly increases the potential for drinking water contamination);
- (8) Detection of *E. coli*, enterococci, or coliphage in source water samples as specified in R.61-58.16.E(1) or R.61-58.16.E(2).
- (9) Other violations or situations with significant potential to have serious

**Amend R.61-58.9.G(2) to read:**

(2) No variances or exemptions from the maximum contaminant level in R.61 58.5.F are permitted. EPA has stayed the effective date of this section relating to the total coliform MCL of R.61-58.5.F(1) for systems that demonstrate to the Department that the violation of the total coliform MCL is due to persistent growth of total coliforms in the distribution system rather than fecal or pathogenic contamination, a treatment lapse or deficiency, or a problem in the operation or maintenance of the distribution system. This is stayed until March 31, 2016, at which time the total coliform MCL is no longer effective.

**Amend R.61-58.10.C(2)(e) to read:**

(e) The public water system shall comply with the maximum contaminant level (MCL) for total coliforms in R.61-58.5.F(1) and (2) and the MCL for *E. coli* in R.61-58.5.F(3) at least 11 months of the 12 previous months that the system served water to the public, on an ongoing basis, unless the Department determines that failure to meet this requirement was not caused by a deficiency in treatment of the source water.

**Amend R.61-58.10.F(2)(f)(i) to read:**

(f) (i) Until March 31, 2016, the~~The~~ residual disinfectant concentration shall be measured at least at the same points in the distribution system and at the same time as total coliforms are sampled, as specified in R.61-58.5.G. Beginning April 1, 2016, the residual disinfectant concentration shall be measured at least at the same points in the distribution system and at the same time as total coliforms are sampled, as specified in R.61-58.17.E through R.61-58.17.I . ~~except that the~~ The Department may allow a public water system which uses both a surface water source or a ground water source under the direct influence of surface water, and a ground water source, to take disinfectant residual samples at points other than the total coliform sampling points if the Department determines that such points are more representative of treated (disinfected) water quality within the distribution system. Heterotrophic bacteria, measured as heterotrophic plate count (HPC) as specified in ~~paragraph (1)(e) of this section~~ R.61-58.10.F(1), may be measured in lieu of residual disinfectant concentration.

**Amend R.61-58.10.F(3)(c)(i) to read:**

(c) (i) Until March 31, 2016, the ~~The~~ residual disinfectant concentration shall be measured at least at the same points in the distribution system and at the same time as total coliforms are sampled, as specified in ~~R.61-58.5(I) R.61-68.5.G. ,~~ Beginning April 1, 2016, the residual disinfectant concentration shall be measured at least at the same points in the distribution system and at the same time as total coliforms are sampled, as specified in R.61-58.17.E through R.61-58.17.I. The Department may allow a public water system which uses both a surface water source or a ground water source under the direct influence of surface water, and a ground water source to take disinfectant residual samples at points other than the total coliform sampling points if the Department determines that such points are more representative of treated (disinfected) water quality within the distribution system. Heterotrophic bacteria, measured as heterotrophic plate count (HPC) as specified in ~~paragraph (1)(e) of this section~~ R.61-58.10.F(1), may be measured in lieu of residual disinfectant concentration.

**Amend R.61-58.11.F(2)(b) to read:**

(b) Any water system resuming a lead service line replacement program after the cessation of its lead service line replacement program as allowed by paragraph ~~(7)~~ (6) of this section shall update its inventory

adverse effects on human health as a result of short-term exposure, as determined by the Department either in its regulations or on a case-by-case basis.

**Amend R.61-58.6.E(3)(b)(ii) to read:**

(ii) The public water system must repeat the notice every three (3) months as long as the violation or situation persists, unless the Department determines that appropriate circumstances warrant a different repeat notice frequency. In no circumstance may the repeat notice be given less frequently than once per year. It is not appropriate for the Department to allow less frequent repeat notice for an MCL or treatment technique violation under the Total Coliform Rule or the Revised Total Coliform Rule (R.61-58.17) or a treatment technique violation under the Surface Water Treatment Rule or Interim Enhanced Surface Water Treatment Rule. It is also not appropriate for the Department to allow through its rules or policies across-the-board reductions in the repeat notice frequency for other ongoing violations requiring a Tier 2 repeat notice. Department determinations allowing repeat notices to be given less frequently than once every three (3) months must be in writing.

**Replace R.61-58.6.E(4)(a) to read:**

(a) **Which violations or situations require a Tier 3 public notice?** Table 1 of this section lists the violation categories and other situations requiring a Tier 3 public notice. Appendix A to this regulation identifies the tier assignment for each specific violation or situation.

**TABLE 1: VIOLATION CATEGORIES AND OTHER SITUATIONS REQUIRING A TIER 3 PUBLIC NOTICE**

- (1) Monitoring violations under R.61-58.5, except where a Tier 1 notice is required under paragraph (2)(a) of this section or where the Department determines that a Tier 2 notice is required;
- (2) Failure to comply with a testing procedure established in R.61-58.5, except where a Tier 1 notice is required under paragraph (2)(a) of this section or where the Department determines that a Tier 2 notice is required;
- (3) Operation under a variance or an exemption granted under R.61-58.9;
- (4) Availability of unregulated contaminant monitoring results, as required under paragraph R.61-58.6.E(7) of this section; and
- (5) Exceedance of the fluoride secondary maximum contaminant level (SMCL), as required under paragraph R.61-58.6.E (8) of this section; and
- (6) Reporting and Recordkeeping violations under R.61-58.17.

of lead service lines to include those sites that were previously determined not to require replacement through the sampling provision under paragraph ~~(4)~~ (3) of this section. The system will 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 (7) percent lead service line replacement is based on a fifteen (15) year replacement program, so, for example, systems resuming lead service line replacement after previously conducting two years of replacement would divide the updated inventory by thirteen (13)). For those systems that have completed a fifteen (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 system re-exceeded the action level.

**Amend R.61-58.11.G introductory paragraph only to read:**

G. Public Education and Supplemental Monitoring Requirements.

All water systems must deliver a consumer notice of lead tap water monitoring results to persons served by the water system at sites that are tested, as specified in paragraph ~~(4)~~ (4) of this section. A water system that exceeds the lead action level based on tap water samples collected in accordance with Section H shall deliver the public education materials contained in paragraph ~~(a)~~ (1) this section in accordance with the requirements in paragraph ~~(b)~~ (2) of this section. Water systems that exceed the lead action level must sample the tap water of any customer who requests it in accordance with paragraph ~~(e)~~ (3) of this section.

**Amend R.61-58.11.G(1)(b) to read:**

(b) Community water systems. In addition to including the elements specified in paragraph (1)(a) of this section, community water systems must:

~~(1)~~ (i) Tell consumers how to get their water tested.

~~(2)~~ (ii) Discuss lead in plumbing components and the difference between low lead and lead free.

**Amend R.61-58.11.G(2)(b)(i) to read:**

(i) Deliver printed materials meeting the content requirements of paragraph ~~(a)~~ (1) of this section to all ~~billing~~ bill paying customers.

**Amend R.61-58.11.G(2)(b)(ii) to read:**

(ii) (A) Contact customers who are most at risk by delivering education materials that meet the content requirements of paragraph ~~(a)~~ (1) of this section to local public health agencies even if they are not located within the 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 system must 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 water system. If such lists are provided, systems must deliver education materials that meet the content requirements of paragraph ~~(a)~~ (1) of this section to all organizations on the provided lists.

(B) Contact customers who are most at risk by delivering materials that meet the content requirements of paragraph ~~(a)~~ (1) of this section to the following organizations listed in (1) through (6) below that are located within the water system's service area, along with an information notice that

encourages distribution to all the organization's potentially affected customers or community water system's users:

- (1) Public and private schools or school boards.
- (2) Women, Infants and Children (WIC) and Head Start Programs.
- (3) Public and private hospitals and medical clinics.
- (4) Pediatricians.
- (5) Family planning clinics.
- (6) Local welfare agencies.

**Amend R.61-58.11.G(2)(b)(ii)(C) to read:**

(C) Make a good faith effort to locate the following organizations within the service area and deliver materials that meet the content requirements of paragraph ~~(a)~~ (1) of this section 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 water system's service area:

- (1) Licensed childcare centers.
- (2) Public and private preschools.
- (3) Obstetricians-Gynecologist and Midwives.

**Amend R.61-58.11.G(2)(b)(iv) to read:**

(iv) Post materials meeting the content requirements of paragraph ~~(a)~~ (1) of this section on the water system's Web site if the system serves a population of greater than 100,000.

**Amend R.61-58.11.G(2)(b)(vi) to read:**

(vi) In addition to paragraph ~~2(a)(i)~~ 2(b)(i) through (v) of this section, systems must implement at least three activities from one or more categories listed below. The educational content and selection of these activities must 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.

**Amend R.61-58.11.G(2)(c)(i) to read:**

(i) A community water system shall repeat the tasks contained in paragraphs ~~(2)(e)(i)~~ (2)(b)(i), (ii) and (vi) of this section every 12 months.

**Amend R.51-58.11.G(2)(c)(ii) to read:**

(ii) A community water system shall repeat the tasks contained in paragraph ~~(2)(e)(iii)~~ (2)(b)(iii) of this section with each billing cycle.

**Amend R.61-58.11.G(2)(c)(iii) to read:**

(iii) A community water system serving a population greater than 100,000 shall post and retain material on a publicly accessible Web site pursuant to paragraph ~~(2)(e)(iv)~~ (2)(b)(iv) of this section.

**Amend R.51-58.11.G(2)(c)(iv) to read:**

(iv) The community water system shall repeat the task in paragraph ~~(2)(e)(v)~~ (2)(b)(v) of this section twice every twelve (12) months on a schedule agreed upon with the Department. The Department can allow activities in paragraph (2)(b) of this section to extend beyond the sixty (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 sixty (60) day deadline.

**Amend R.61-58.11.G(2)(h)(i) to read:**

(i) With respect to the requirements of paragraph ~~(b)(2)(vi)~~ (2)(b)(vi) of this section, a system serving 3,300 or fewer people must implement at least one of the activities listed in that paragraph.

**Amend R.61-58.11.G(2)(h)(ii) to read:**

(ii) With respect to the requirements of paragraph ~~(b)(2)(ii)~~ (2)(b)(ii) of this section, a 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 system that are most likely to be visited regularly by pregnant women and children.

**Amend R.61-58.11.G(2)(h)(iii) to read:**

(iii) With respect to the requirements of paragraph ~~(b)(2)(v)~~ (2)(b)(v) of this section, the Department may waive this requirement for systems serving 3,300 or fewer persons as long as the system distributes notices to every household served by the system.

**Amend R.61-58.11.G(4)(c) to read:**

(c) Content. The consumer notice must include the results of lead tap water monitoring for the tap that was tested, an explanation of the health effects of lead, list steps consumers can take to reduce exposure to lead in drinking water and contact information for the water utility. The notice must also provide the maximum contaminant level goal and the action level for lead and the definitions for these two terms from ~~R.61-58.6 Appendix D: R.61-58.12.C(3)~~.

**Amend R.61-58.11.K to read:**

K. Analytical Methods.

(1) Analyses for lead, copper, pH, conductivity, calcium, alkalinity, orthophosphate, silica, and temperature shall be conducted using EPA-approved methods listed in 40 CFR 141.89.

(a) Analyses under this section shall only be conducted by laboratories that are certified by the Department.

(b) The Department has the authority to allow the use of previously collected monitoring data for purposes of monitoring, if the data were collected and analyzed in accordance with the requirements of this section.

(c) All lead and copper levels measured between the PQL and the MDL must be either reported as measured or they can be reported as one-half the PQL specified for lead and copper in paragraph (1)(d) below. All levels below the lead and copper MDL must be reported as zero.

(d) The Practical Quantitation Level, or PQL for lead is 0.005 mg/L. The Practical Quantitation Level, or PQL for copper is 0.050 mg/L.

**Add R.61-58.12.C(3)(d) to read:**

(d) A report that contains information regarding a Level 1 or Level 2 Assessment required under R.61-58.17 must include the applicable definitions:

(i) Level 1 Assessment: A Level 1 Assessment is a study of the water system to identify potential problems and determine (if possible) why total coliform bacteria have been found in our water system.

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

**Amend R.61-58.12.C(4)(d)(iv) to read:**

(iv) For contaminants subject to an MCL, except turbidity, ~~and~~ total coliforms, fecal coliform and *E.coli*, the highest contaminant level used to determine compliance with R. 61-58.5, Maximum Contaminant Levels in Drinking Water, and the range of detected levels, as follows:

(A) When compliance with the MCL is determined annually or less frequently: The highest detected level at any sampling point and the range of detected levels expressed in the same units as the MCL.

(B) When compliance with the MCL is determined by calculating a running annual average of all samples taken at a monitoring location: the highest average of any of the monitoring locations and the range of all monitoring locations expressed in the same units as the MCL. For the MCLs for TTHM and HAA5 in R.61-58.5.P(2)(b), systems must include the highest locational running annual average for TTHM and HAA5 and the range of individual sample results for all monitoring locations expressed in the same units as the MCL. If more than one location exceeds the TTHM or HAA5 MCL, the system must include the locational running annual averages for all locations that exceed the MCL.

(C) When compliance with the MCL is determined on a system-wide basis by calculating a running annual average of all samples at all monitoring locations: the average and range of detection expressed in the same units as the MCL. The system is required to include individual sample results for the IDSE conducted under R.61-58.14 when determining the range of TTHM and HAA5 results to be reported in the annual consumer confidence report for the calendar year that the IDSE samples were taken.

**Note to paragraph (4)(d)(iv): When rounding of results to determine compliance with the MCL is allowed by the regulations, rounding should be done prior to multiplying the results by the factor listed in Appendix D of this regulation;**

**Amend R.61-58.12.C(4)(d)(vii) to read:**

(vii) For total coliform analytical results until March 31, 2016:

(A) The highest monthly number of positive samples for systems collecting fewer than forty (40) samples per month; or

(B) The highest monthly percentage of positive samples for systems collecting at least forty (40) samples per month;

**Amend R.61-58.12.C(4)(d)(viii) to read:**

(viii) For fecal coliform and E.coli. until March 31, 2016: The total number of positive samples; ~~and~~

**Add R.61-58.12.C(4)(d)(x) to read:**

(x) For E.coli analytical results under R.61-58.17: The total number of positive samples.

**Amend R.61-58.12.C(11)(f)(i) to read:**

(i) Any ground water system that receives notice from the Department of a significant deficiency or notice from a laboratory of a fecal indicator positive ground water source sample that is not invalidated by the Department must inform its customers ~~in the next report. The report must contain information on~~ of any significant deficiency that is uncorrected at the time of the next report or of any fecal indicator positive ground water source sample in the next report. The system must continue to inform the public annually until the Department determines that particular significant deficiency is corrected or the fecal contamination in the ground water source is addressed under R.61-58.16.F(1). Each report must include the following elements.

(A) The nature of the particular significant deficiency or the source of the fecal contamination (if the source is known) and the date the significant deficiency was identified by the Department or the dates of the fecal indicator-positive ground water source samples.

(B) If the fecal contamination in the ground water source has been addressed under R.61-58.16.F(1) and the date of such action.

(C) For each significant deficiency or fecal contamination in the ground water source that has not been addressed under R.61-58.16.F(1), the Department approved plan and schedule for correction, including interim measures, progress to date, and any interim measures completed. ~~completed;~~ and

(D) If the system receives notice of a fecal indicator positive ground water source sample that is not invalidated by the Department , the potential health effects using the health effects language of Appendix D of R.61-58.12.

**Add R.61-58.12.C(11)(g) to read:**

(g) Systems required to comply with R.61-58.17:

(i) Any system required to comply with the Level 1 assessment requirement or a Level 2 assessment requirement that is not due to an *E. coli* MCL violation must include in the report the text found in paragraph R.61-58.12.C(11)(g)(i)(A) and paragraphs R.61-58.12.C(11)(g)(i)(B) and R.61-58.12.C(11)(g)(i)(C) as appropriate, filling in the blanks accordingly and the text found in paragraphs R.61-58.12.C(11)(g)(i)(D)(1) and R.61-58.12.C(11)(g)(i)(D)(2) if appropriate.

(A) Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, waterborne pathogens may be present or that a potential pathway exists through which contamination may enter the drinking water distribution system. We found coliforms indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct assessment(s) to identify problems and to correct any problems that were found during these assessments.

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

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

(D) Any system that has failed to complete all the required assessments or correct all identified sanitary defects, is in violation of the treatment technique requirement and must also include one or both of the following statements, as appropriate:

(1) During the past year we failed to conduct all of the required assessment(s).

(2) During the past year we failed to correct all identified defects that were found during the assessment.

(ii) Any system required to conduct a Level 2 assessment due to an *E. coli* MCL violation must include in the report the text found in paragraphs R.61-58.12.C(11)(g)(ii)(A) and R.61-58.12.C(11)(g)(ii)(B), filling in the blanks accordingly and the text found in paragraphs R.61-58.12.C(11)(g)(ii)(C)(1) and R.61-58.12.C(11)(g)(ii)(C)(2), if appropriate.

(A) *E. coli* are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Human pathogens in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a greater health risk for infants, young children, the elderly, and people with severely compromised immune systems. We found *E. coli* bacteria, indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct assessment(s) to identify problems and to correct any problems that were found during these assessments.

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

(C) Any system that has failed to complete the required assessment or correct all identified sanitary defects, is in violation of the treatment technique requirement and must also include one or both of the following statements, as appropriate:

(1) We failed to conduct the required assessment.

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

(iii) If a system detects *E. coli* and has violated the *E. coli* MCL, in addition to completing the table as required in R.61-58.12.C(4)(d), the system must include one or more of the following statements to describe any noncompliance, as applicable:

(A) We had an *E. coli*-positive repeat sample following a total coliform-positive routine sample.

(B) We had a total coliform-positive repeat sample following an *E. coli*-positive routine sample.

(C) We failed to take all required repeat samples following an *E. coli*-positive routine sample.

(D) We failed to test for *E. coli* when any repeat sample tests positive for total coliform.

(iv) If a system detects *E. coli* and has not violated the *E. coli* MCL, in addition to completing the table as required in paragraph R.61-58.12.C(4)(d), the system may include a statement that explains that although they have detected *E. coli*, they are not in violation of the *E. coli* MCL.

**Amend R.61-58.13.C(3)(a)(i) to read:**

(i) Routine Monitoring--Until March 31, 2016, community ~~Community~~ and nontransient non-community water systems that use chlorine or chloramines must measure the residual disinfectant level in the distribution system at the same points in the distribution system and at the same time as total coliforms are sampled, as specified in R.61-58.5.G. Beginning April 1, 2016, community and non-transient non-community water systems that use chlorine or chloramines must measure the residual disinfectant level in the distribution system at the same point in the distribution system and at the same time as total coliforms are sampled, as specified in R.61-58.17.E through R.61-68.17.I. Systems that use a surface water source or a ground water source under the influence of surface water may use the results of residual disinfectant concentration sampling conducted under R.61-58.10.F(2)(f) for unfiltered systems or R.61-58.10.F(3)(c) for systems which filter, in lieu of taking separate samples.

**Amend R.61-58.16.D(2) to read:**

(2) For the purposes of R.61-58.16, a "sanitary survey," as conducted by the Department, includes ~~by~~ but is not limited to, an onsite review of the water source(s) (identifying sources of contamination by using results of source water assessments or other relevant information where available), facilities, equipment, operation, maintenance, and monitoring compliance of a public water system to evaluate the adequacy of the system, its sources and operations and the distribution of safe drinking water.

**Amend R.61-58.16.F(2)(c)(i)(A) to read:**

(A) A ground water ~~systems~~ system that serves greater than 3,300 people must continuously monitor the residual disinfectant concentration using analytical methods specified in 40 CFR 141.74(a)(2)

at a location approved by the Department and must record the lowest residual disinfectant concentration each day that the water from the ground water source is served to the public. The ground water system must maintain the Department-determined residual disinfectant concentration every day the ground water system serves the water from the ground water source to the public. If there is a failure in the continuous monitoring equipment, the ground water system must conduct grab sampling every four hours until the continuous monitoring equipment is returned to service. The system must resume continuous residual disinfectant monitoring within 14 days.

**Amend R.61-58.16.E(1) to read:**

(1) Triggered source water monitoring.

(a) General Requirement. A ground water system must conduct triggered source water monitoring if the conditions identified in paragraphs (1)(a)(i) and either (1)(a)(ii) or 1(a)(iii) of this section apply. ~~exist.~~

(i) the system does not provide 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 for each ground water source; and either

(ii) The system is notified that a sample collected under R.61-58.5.G(1) is total coliform-positive and the sample is not invalidated under R.61-58.5.G(3) until March 31, 2016, or:

(iii) The system is notified that a sample collected under R.61-58.17.E through R61-58.17.H is total coliform-positive and the sample is not invalidated under R.61-58.17.D(3) beginning April 1, 2016.

(b) Sampling Requirements. A ground water system must collect, within 24 hours of notification of the total coliform-positive sample, at least one ground water source sample from each ground water source in use at the time the total coliform-positive sample was collected under R.61-58.5.G(1) until March 31, 2016, or collected under R.61-58.17.E through R61-58.17.H beginning April 1, 2016, except as provided in R.61-58.16.E(1)(b)(ii).

(i) The Department may extend the 24-hour time limit on a case-by-case basis if the system cannot collect the ground water source sample within 24 hours due to circumstances beyond its control. In the case of an extension, the Department must specify how much time the system has to collect the sample.

(ii) If approved by the Department, systems with more than one ground water source may meet the requirements of R.61-58.16.E(1)(b) by sampling a representative ground water source or sources. If directed by the Department, systems must submit a triggered source water monitoring plan for Department approval that identifies one or more ground water sources that are representative of each monitoring site in the system's sample siting plan under R.61-58.5.G(1) until March 31, 2016, or under R.61-58.17.D beginning April 1, 2016, and that the system intends to use for representative sampling under this paragraph.

(iii) Until, March 31, 2016, a A ground water system serving 1,000 ~~people~~ or fewer people may use a repeat sample collected from a ground water source to meet both the requirements of R.61-58.5.G(2) and to satisfy the monitoring requirements of R.61-58.16.E(1)(b) for that ground water source only if the Department approves the use of E.coli as a fecal indicator for source water monitoring under R.61-58.16.E(1). If the repeat sample collected from the ground water source is E.coli-positive, the system must comply with R.61-58.16.E(1)(c).

(iv) Beginning April 1, 2016, a ground water system serving 1,000 or fewer people may use a repeat sample collected from a ground water source to meet both the requirements of R.61-58.17 and to satisfy the monitoring requirements of R.61-58.16.E(1)(b) for that ground water source only if the Department approves the use of *E. coli* as a fecal indicator for source water monitoring under R.61-58.16.E(1) and approves the use of a single sample for meeting both the triggered source water monitoring requirements in R.61-58.16.E(1) and the repeat monitoring requirements in R.61-58.17.I. If the repeat sample collected from the ground water source is *E. coli*-positive, the system must comply with R.61-58.16.E(1)(c).

(c) Additional Requirements. If the Department does not require corrective action under R.61-58.16.F(1)(b) for a fecal indicator positive source water sample collected under R.61-58.16.E(1)(b) that is not invalidated under R.61-58.16.E(4), the system must collect five additional source water samples from the same source within 24 hours of being notified of the fecal indicator positive sample.

(d) Consecutive and wholesale systems.

(i) In addition to the other requirements of R.61-58.16.E(1), a consecutive ground water system that has a total coliform-positive sample collected under R.61-58.5.G(1) until March 31, 2016, or under R.61-58.17.E through R61-58.17.H beginning April 1, 2016 must notify the wholesale system(s) within 24 hours of being notified of the total coliform-positive sample.

(ii) In addition to the other requirements of R.61-58.16.E(1), a wholesale ground water system must comply with R.61-58.16.E(1)(d)(ii)(A) and R.61-58.16.E(1)(d)(ii)(B).

(A) A wholesale ground water system that receives notice from a consecutive system it serves that a sample collected under R.61-58.5.G(1) until March 31, 2016, or collected under R.61-58.17.E through R61-58.17.H beginning April 1, 2016, is total coliform-positive must, within 24 hours of being notified, collect a sample from its ground water source(s) under R.61-58.16.E(1)(b) and analyze it for a fecal indicator under R.61-58.16.E(3).

(B) If the sample collected under R.61-58.16.E(1)(d)(ii)(A) is fecal indicator positive, the wholesale ground water system must notify all consecutive systems served by that ground water source of the fecal indicator positive sample within 24 hours of being notified of the ground water source sample monitoring result and must meet the requirements of R.61-58.16.E(1)(c).

(e) Exceptions to the triggered source water monitoring requirements. A ground water system is not required to comply with the source water monitoring requirements of R.61-58.16.E(1) if either one of the following conditions exists:

(i) The Department determines, and documents in writing, that the total coliform-positive sample collected under R.61-58.5(G)(1) until March 31, 2016, or under R.61-58.17.E through R61-58.17.H beginning April 1, 2016, is caused by a distribution system deficiency; or

(ii) The total coliform-positive sample collected under R.61-58.5(G)(1) until March 31, 2016, or under R.61-58.17.E through R61-58.17.H beginning April 1, 2016, is collected at a location that meets Department criteria for distribution system conditions that will cause total coliform-positive samples.

**Amend R.61-58.16.H(2)(d) to read:**

(d) For consecutive systems, documentation of notification to the wholesale system(s) of total coliform-positive samples that are not invalidated under R.61-58.5.G(3) until April 1, 2016, or under R.61-58.17.D beginning April 1, 2016, shall be kept for a period of not less than five years.

**Add R.61-58.17 to read:**

**R.61-58.17 REVISED TOTAL COLIFORM RULE**

A. Applicability. The provisions of R.61-58.17 apply to all community and non-community public water systems.

B. General Requirements.

(1) General.

The provisions of R.61-58.17 include both maximum contaminant level and treatment technique requirements.

(2) Compliance date.

Systems must comply with the provisions of R.61-58.17 beginning April 1, 2016, unless otherwise specified in R.61-58.17.

(3) Violations of State Primary Drinking Water Regulations. Failure to comply with the applicable requirements of this regulation R.61-58.17 shall constitute a violation of the State Primary Drinking Water Regulations.

C. Analytical Methods and Laboratory Certification

(1) Analytical methodology.

(a) The standard sample volume required for analysis, regardless of analytical method used, is 100 ml.

(b) Systems need only determine the presence or absence of total coliforms and *E. coli*; a determination of density is not required.

(c) The time from sample collection to initiation of test medium incubation may not exceed 30 hours. Systems are encouraged but not required to hold samples below 10 deg. C during transit.

(d) If water having residual chlorine (measured as free, combined, or total chlorine) is to be analyzed, sufficient sodium thiosulfate (Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>) must be added to the sample bottle before sterilization to neutralize any residual chlorine in the water sample. Dechlorination procedures are addressed in Section 9060A.2 of Standard Methods for the Examination of Water and Wastewater (20th and 21st editions).

(e) Systems must conduct total coliform and *E. coli* analyses in accordance with one of the analytical methods in 40 CFR 141.852 (Federal Register February 13, 2013 edition) or one of the alternative methods listed in Appendix A to subpart C of CFR 141 (Federal Register February 13, 2013 edition).

(2) Laboratory Certification.

Systems must have all compliance samples required under R.61-58.17 analyzed by a laboratory certified by the EPA or the Department to analyze drinking water samples. The laboratory used by the system must be certified for each method (and associated contaminant(s)) used for compliance monitoring analyses under this rule.

D. General Monitoring Requirements for All Public Water Systems.

(1) Sample siting plans.

(a) Systems must develop a written sample siting plan that identifies sampling sites and a sample collection schedule that are representative of water throughout the distribution system not later than March 31, 2016. These plans are subject to Department review and revision. Systems must collect total coliform samples according to the written sample siting plan. Monitoring required by R.61-58.17.E through R.61-58.17.I may take place at a customer's premise, dedicated sampling station, or other designated compliance sampling location. Routine and repeat sample sites and any sampling points necessary to meet the requirements of R.61-58.16 must be reflected in the sampling plan.

(b) Systems must collect samples at regular time intervals throughout the month, except that systems that use only ground water and serve 4,900 or fewer people may collect all required samples on a single day if they are taken from different sites.

(c) Systems must take at least the minimum number of required samples even if the system has had an *E. coli* MCL violation or has exceeded the coliform treatment technique triggers in R.61-58.17.J(1).

(d) A system may conduct more compliance monitoring than is required by R.61-58.17 to investigate potential problems in the distribution system and use monitoring as a tool to assist in uncovering problems. A system may take more than the minimum number of required routine samples and must include the results in calculating whether the coliform treatment technique trigger in R.61-58.17.J(1)(a)(i) and (ii) has been exceeded only if the samples are taken in accordance with the existing sample siting plan and are representative of water throughout the distribution system.

(e) Systems must identify repeat monitoring locations in the sample siting plan. Unless the provisions of R.61-58.17.D(1)(e)(i) or (1)(e)(ii) are met, the system must collect at least one repeat sample from the sampling tap where the original total coliform-positive sample was taken, and at least one repeat sample at a tap within five service connections upstream and at least one repeat sample at a tap within five service connections downstream of the original sampling site. If a total coliform-positive sample is at the end of the distribution system, or one service connection away from the end of the distribution system, the system must still take all required repeat samples. However, the Department may allow an alternative sampling location in lieu of the requirement to collect at least one repeat sample upstream or downstream of the original sampling site. Except as provided for in R.61-58.17.D (1)(e)(ii), systems required to conduct triggered source water monitoring under R.61-58.16.E(1) must take ground water source sample(s) in addition to repeat samples required under R.61-58.17.

(i) Systems may propose repeat monitoring locations to the Department that the system believes to be representative of a pathway for contamination of the distribution system. A system may elect to specify either alternative fixed locations or criteria for selecting repeat sampling sites on a situational basis in a standard operating procedure (SOP) in its sample siting plan. The system must design its SOP to focus the repeat samples at locations that best verify and determine the extent of potential

contamination of the distribution system area based on specific situations. The Department may modify the SOP or require alternative monitoring locations as needed.

(ii) Ground water systems serving 1,000 or fewer people may propose repeat sampling locations to the Department that differentiate potential source water and distribution system contamination (e.g., by sampling at entry points to the distribution system). A ground water system with a single well required to conduct triggered source water monitoring may, with written Department approval, take one of its repeat samples at the monitoring location required for triggered source water monitoring under R.61-58.16.E(1) if the system demonstrates to the Department's satisfaction that the sample siting plan remains representative of water quality in the distribution system. If approved by the Department, the system may use that sample result to meet the monitoring requirements in both R.61-58.16.E(1) and this section R.61-58.17.D.

(A) If a repeat sample taken at the monitoring location required for triggered source water monitoring is *E. coli*-positive, the system has violated the *E. coli* MCL and must also comply with R.61-58.16.E(1)(c). If a system takes more than one repeat sample at the monitoring location required for triggered source water monitoring, the system may reduce the number of additional source water samples required under R.61-58.16.E(1)(c) by the number of repeat samples taken at that location that were not *E. coli*-positive.

(B) If a system takes more than one repeat sample at the monitoring location required for triggered source water monitoring under R.61-58.16.E(1), and more than one repeat sample is *E. coli*-positive, the system has violated the *E. coli* MCL and must also comply with R.61-58.16.F(1)(a).

(C) If all repeat samples taken at the monitoring location required for triggered source water monitoring are *E. coli*-negative and a repeat sample taken at a monitoring location other than the one required for triggered source water monitoring is *E. coli*-positive, the system has violated the *E. coli* MCL, but is not required to comply with R.61-58.16.E(1)(c).

(f) The Department may review, revise, and approve, as appropriate, repeat sampling proposed by systems under R.61-58.17.D(1)(e)(i) and (ii). The system must demonstrate that the sample siting plan remains representative of the water quality in the distribution system. The Department may determine that monitoring at the entry point to the distribution system (especially for undisinfected ground water systems) is effective to differentiate between potential source water and distribution system problems.

## (2) Special purpose samples.

Special purpose samples, such as those taken to determine whether disinfection practices are sufficient following pipe placement, replacement, or repair, must not be used to determine whether the coliform treatment technique trigger has been exceeded. Repeat samples taken pursuant to R.61-58.17.I are not considered special purpose samples, and must be used to determine whether the coliform treatment technique trigger has been exceeded.

## (3) Invalidation of total coliform samples.

A total coliform-positive sample invalidated under this paragraph R.61-58.17.D(3) does not count toward meeting the minimum monitoring requirements of this R.61-58.17.

(a) The Department may invalidate a total coliform-positive sample only if the conditions of R.61-58.17.D(3)(a)(i), (ii), or (iii) are met.

(i) The laboratory establishes that improper sample analysis caused the total coliform-positive result.

(ii) The Department, on the basis of the results of repeat samples collected as required under R.61-58.17.I(1), determines that the total coliform-positive sample resulted from a domestic or other non-distribution system plumbing problem. The Department cannot invalidate a sample on the basis of repeat sample results unless all repeat sample(s) collected at the same tap as the original total coliform-positive sample are also total coliform-positive, and all repeat samples collected at a location other than the original tap are total coliform negative (e.g., the Department cannot invalidate a total coliform-positive sample on the basis of repeat samples if all the repeat samples are total coliform negative, or if the system has only one service connection).

(iii) The Department has substantial grounds to believe that a total coliform-positive result is due to a circumstance or condition that does not reflect water quality in the distribution system. In this case, the system must still collect all repeat samples required under R.61-58.17.I(1), and use them to determine whether a coliform treatment technique trigger in R.61-58.17.J has been exceeded. To invalidate a total coliform-positive sample under this paragraph, the decision and supporting rationale must be documented in writing, and approved and signed by the supervisor of the Department official who recommended the decision. The Department must make this document available to EPA and the public. The written documentation must state the specific cause of the total coliform-positive sample, and what action the system 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.

(b) A laboratory must invalidate a total coliform sample (unless total coliforms are detected) if the sample produces a turbid culture in the absence of gas production using an analytical method where gas formation is examined (e.g., the Multiple-Tube Fermentation Technique), produces a turbid culture in the absence of an acid reaction in the Presence-Absence (P-A) Coliform Test, or exhibits confluent growth or produces colonies too numerous to count with an analytical method using a membrane filter (e.g., Membrane Filter Technique). If a laboratory invalidates a sample because of such interference, the system must 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 system must continue to re-sample within 24 hours and have the samples analyzed until it obtains a valid result. The Department may waive the 24-hour time limit on a case-by-case basis. Alternatively, the Department may implement criteria for waiving the 24-hour sampling time limit to use in lieu of case-by-case extensions.

E. Routine monitoring requirements for non-community water systems serving 1,000 or fewer people using only ground water.

(1) General.

(a) The provisions of this section apply to non-community water systems using only ground water (except ground water under the direct influence of surface water, as defined in R.61-58.B - Definitions) and serving 1,000 or fewer people.

(b) Following any total coliform-positive sample taken under the provisions of this section, systems must comply with the repeat monitoring requirements and *E. coli* analytical requirements in R.61-58.17.I.

(c) Once all monitoring required by this section R.61-58.17.E and R.61-58.17.I for a calendar month has been completed, systems must determine whether any coliform treatment technique triggers specified

in R.61-58.17.J have been exceeded. If any trigger has been exceeded, systems must complete assessments as required by R.61-58.17.J.

(d) For the purpose of determining eligibility for remaining on or qualifying for quarterly monitoring under the provisions of R.61-58.17.E(6)(d) and (7)(b), respectively, of this section R.61-58.17.E for transient non-community water systems, the Department may elect to not count monitoring violations under R.61-58.17.K(3)(a) if the missed sample is collected no later than the end of the monitoring period following the monitoring period in which the sample was missed. The system must collect the make-up sample in a different week than the routine sample for that monitoring period and should collect the sample as soon as possible during the monitoring period. The Department may not use this provision under R.61-58.17.E(8). This authority does not affect the provisions of R.61-58.17.K(3)(a) and R.61-58.17.L(1)(d).

 (2) Monitoring frequency for total coliforms.

Systems must monitor each calendar quarter that the system provides water to the public, except for seasonal systems or as provided under R.61-58.17.E(3) through R.61-58.17.E(8) and R.61-58.17.E(10). Seasonal systems must meet the monitoring requirements of R.61-58.17.E(9).

(3) Transition to R.61-58.17 - Revised Total Coliform Rule.

(a) Systems, including seasonal systems, must continue to monitor according to the total coliform monitoring schedules under R.61-58.5.G(1) that were in effect on March 31, 2016, unless any of the conditions for increased monitoring in R.61-58.17.E(6) are triggered on or after April 1, 2016, or unless otherwise directed by the Department.

(b) Beginning April 1, 2016, the Department must perform a special monitoring evaluation during each sanitary survey to review the status of the system, including the distribution system, to determine whether the system is on an appropriate monitoring schedule. After the Department has performed the special monitoring evaluation during each sanitary survey, the Department may modify the system's monitoring schedule, as necessary, or it may allow the system to stay on its existing monitoring schedule, consistent with the provisions of R.61-58.17.E. The Department may not allow systems to begin less frequent monitoring under the special monitoring evaluation unless the system has already met the applicable criteria for less frequent monitoring in R.61-58.17.E. For seasonal systems on quarterly or annual monitoring, this evaluation must include review of the approved sample siting plan, which must designate the time period(s) for monitoring based on site-specific considerations (e.g., during periods of highest demand or highest vulnerability to contamination). The seasonal system must collect compliance samples during these time periods.

(4) Annual site visits.

Beginning no later than calendar year 2017, systems on annual monitoring, including seasonal systems, must have an initial and recurring annual site visit by the Department that is equivalent to a Level 2 assessment or an annual voluntary Level 2 assessment that meets the criteria in R.61-58.17.J(2) to remain on annual monitoring. The periodic required sanitary survey may be used to meet the requirement for an annual site visit for the year in which the sanitary survey was completed.

(5) Criteria for annual monitoring. Beginning April 1, 2016, the Department may reduce the monitoring frequency for a well-operated ground water system from quarterly routine monitoring to no less than annual monitoring, if the system demonstrates that it meets the criteria for reduced monitoring in R.61-58.17.E(5)(a) through (5)(c), except for a system that has been on increased monitoring under the

provisions of R.61-58.17.E(6). A system on increased monitoring under R.61-58.17.E(6) must meet the provisions of R.61-58.17.E(7) to go to quarterly monitoring and must meet the provisions of R.61-58.17.E(8) to go to annual monitoring.

(a) The system has a clean compliance history for a minimum of 12 months;

(b) The most recent sanitary survey shows that the system is free of sanitary defects or has corrected all identified sanitary defects, has a protected water source, and meets approved construction standards; and

(c) The Department has conducted an annual site visit within the last 12 months and the system has corrected all identified sanitary defects. The system may substitute a Level 2 assessment that meets the criteria in R.61-58.17.J(2) for the Department annual site visit.

(6) Increased Monitoring Requirements for systems on quarterly or annual monitoring.

A system on quarterly or annual monitoring that experiences any of the events identified in R.61-58.17.E(6)(a) through (6)(d) must begin monthly monitoring the month following the event. A system on annual monitoring that experiences the event identified in R.61-58.17.E(6)(e) must begin quarterly monitoring the quarter following the event. The system must continue monthly or quarterly monitoring until the requirements in R.61-58.17.E(7) for quarterly monitoring or R.61-58.17.E(8) for annual monitoring are met. A system on monthly monitoring for reasons other than those identified in R.61-58.17.E(6)(a) through (6)(d) is not considered to be on increased monitoring for the purposes of R.61-58.17.E(7) and (8).

(a) The system triggers a Level 2 assessment or two Level 1 assessments under the provisions of R.61-58.17.J in a rolling 12-month period.

(b) The system has an *E. coli* MCL violation.

(c) The system has a coliform treatment technique violation.

(d) The system has two monitoring violations under R.61-58.17 or one monitoring violation under R.61-58.17 and one Level 1 assessment under the provisions of R.61-58.17.J in a rolling 12-month period for a system on quarterly monitoring.

(e) The system has one monitoring violation under R.61-58.17 for a system on annual monitoring.

(7) Requirements for returning to quarterly monitoring.

The Department may reduce the monitoring frequency for a system on monthly monitoring triggered under R.61-58.17.E(6) to quarterly monitoring if the system meets the criteria in R.61-58.17.E(7)(a) and (7)(b).

(a) Within the last 12 months, the system must have a completed sanitary survey or a site visit by the Department or a voluntary Level 2 assessment by a party approved by the Department, be free of sanitary defects, and have a protected water source; and

(b) The system must have a clean compliance history for a minimum of 12 months.

(8) Requirements for systems on increased monitoring to qualify for annual monitoring.

The Department may reduce the monitoring frequency for a system on increased monitoring under R.61-58.17.E(6) if the system meets the criteria in R.61-58.17.E(7) plus the criteria in R.61-58.17.E(8)(a) and (8)(b).

(a) An annual site visit by the Department and correction of all identified sanitary defects. The system may substitute a voluntary Level 2 assessment by a party approved by the Department for the Department annual site visit in any given year.

(b) The system must have in place or adopt one or more additional enhancements to the water system barriers to contamination in R.61-58.17.E(8)(b)(i) through (8)(b)(v).

(i) Cross connection control, as approved by the Department.

(ii) An operator certified by the South Carolina Department of Labor, Licensing and Regulation - Environmental Certification Board or regular visits by a circuit rider certified by an appropriate State certification program.

(iii) Continuous disinfection entering the distribution system and a residual in the distribution system in accordance with criteria specified by the Department.

(iv) Demonstration of maintenance of at least a 4-log removal or inactivation of viruses as provided for under R.61-58.16.F(2)(c).

(v) Other equivalent enhancements to water system barriers as approved by the Department.

(9) Seasonal systems.

(a) Beginning April 1, 2016, all seasonal systems must demonstrate completion of a Department-approved start-up procedure, which may include a requirement for startup sampling prior to serving water to the public.

(b) A seasonal system must monitor every month that it is in operation unless it meets the criteria in R.61-58.17.E(9)(b)(i) through (iii) to be eligible for monitoring less frequently than monthly beginning April 1, 2016, except as provided under R.61-58.17.E(3).

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

(ii) To be eligible for quarterly monitoring, the system must meet the criteria in R.61-58.17.E(7).

(iii) To be eligible for annual monitoring, the system must meet the criteria under R.61-58.17.E(8).

(c) The Department may exempt any seasonal system from some or all of the requirements for seasonal systems if the entire distribution system remains pressurized during the entire period that the system is not operating, except that systems that monitor less frequently than monthly must still monitor during the vulnerable period designated by the Department.

(10) Additional routine monitoring the month following a total coliform-positive sample.

Systems collecting samples on a quarterly or annual frequency must conduct additional routine monitoring the month following one or more total coliform-positive samples (with or without a Level 1 treatment technique trigger). Systems must collect at least three routine samples during the next month, except that the Department may waive this requirement if the conditions of R.61-58.17.E(10)(a), (b), or (c) are met. Systems may either collect samples at regular time intervals throughout the month or may collect all required routine samples on a single day if samples are taken from different sites. Systems must use the results of additional routine samples in coliform treatment technique trigger calculations under R.61-58.17.J(1).

(a) The Department may waive the requirement to collect three routine samples the next month in which the system provides water to the public if the Department, or an agent approved by the Department, performs a site visit before the end of the next month in which the system provides water to the public. Although a sanitary survey need not be performed, the site visit must be sufficiently detailed to allow the Department to determine whether additional monitoring and/or any corrective action is needed. The Department cannot approve an employee of the system to perform this site visit, even if the employee is an agent approved by the Department to perform sanitary surveys.

(b) The Department may waive the requirement to collect three routine samples the next month in which the system provides water to the public if the Department has determined why the sample was total coliform-positive and has established that the system has corrected the problem or will correct the problem before the end of the next month in which the system serves water to the public. In this case, the Department must document this decision to waive the following month's additional monitoring requirement in writing, have it approved and signed by the supervisor of the Department official who recommends such a decision, and make this document available to the EPA and public. The written documentation must describe the specific cause of the total coliform-positive sample and what action the system has taken and/or will take to correct this problem.

(c) The Department may not waive the requirement to collect three additional routine samples the next month in which the system provides water to the public solely on the grounds that all repeat samples are total coliform negative. If the Department determines that the system has corrected the contamination problem before the system takes the set of repeat samples required in R.61-58.17.I, and all repeat samples were total coliform negative, the Department may waive the requirement for additional routine monitoring the next month.

F. Routine monitoring requirements for community water systems serving 1,000 or fewer people using only ground water.

(1) General.

(a) The provisions of this section apply to community water systems using only ground water (except ground water under the direct influence of surface water, as defined in R.61-58.B - Definitions) and serving 1,000 or fewer people.

(b) Following any total coliform-positive sample taken under the provisions of this section, systems must comply with the repeat monitoring requirements and *E. coli* analytical requirements in R.61-58.17.I.

(c) Once all monitoring required by this section and R.61-58.17.I for a calendar month has been completed, systems must determine whether any coliform treatment technique triggers specified in R.61-58.17.J have been exceeded. If any trigger has been exceeded, systems must complete assessments as required by R.61-58.17.J.

(2) Monitoring frequency for total coliforms.

The monitoring frequency for total coliforms is one sample per month, except as provided for under R.61-58.17.F(3) through (6).

(3) Transition to R.61-58.17 - Revised Total Coliform Rule.

(a) All systems must continue to monitor according to the total coliform monitoring schedules under R.61-58.5.G that were in effect on March 31, 2016, unless any of the conditions in R.61-58.17.F(5) are triggered on or after April 1, 2016, or unless otherwise directed by the Department.

(b) Beginning April 1, 2016, the Department must perform a special monitoring evaluation during each sanitary survey to review the status of the system, including the distribution system, to determine whether the system is on an appropriate monitoring schedule. After the Department has performed the special monitoring evaluation during each sanitary survey, the Department may modify the system's monitoring schedule, as necessary, or it may allow the system to stay on its existing monitoring schedule, consistent with the provisions of R.61-58.17.F. The Department may not allow systems to begin less frequent monitoring under the special monitoring evaluation unless the system has already met the applicable criteria for less frequent monitoring in R.61-58.17.F.

(4) Criteria for reduced monitoring.

(a) The Department may reduce the monitoring frequency from monthly monitoring to no less than quarterly monitoring if the system is in compliance with Department-certified operator provisions and demonstrates that it meets the criteria in R.61-58.17.F(4)(a)(i) through (4)(a)(iii). A system that loses its certified operator must return to monthly monitoring the month following that loss.

(i) The system has a clean compliance history for a minimum of 12 months.

(ii) The most recent sanitary survey shows the system is free of sanitary defects (or has an approved plan and schedule to correct them and is in compliance with the plan and the schedule), has a protected water source and meets approved construction standards.

(iii) The system meets at least one of the following criteria:

(A) An annual site visit by the Department that is equivalent to a Level 2 assessment or an annual Level 2 assessment by a party approved by the Department and correction of all identified sanitary defects (or an approved plan and schedule to correct them and is in compliance with the plan and schedule).

(B) Cross connection control, as approved by the Department.

(C) Continuous disinfection entering the distribution system and a residual in the distribution system in accordance with criteria specified by the Department.

(D) Demonstration of maintenance of at least a 4-log removal or inactivation of viruses as provided for under R.61-58.16.F(2)(c).

(E) Other equivalent enhancements to water system barriers as approved by the Department.

(b) Reserved

(5) Return to routine monthly monitoring requirements.

Systems on quarterly monitoring that experience any of the events in R.61-58.17.F(5)(a) through (5)(d) must begin monthly monitoring the month following the event. The system must continue monthly monitoring until it meets the reduced monitoring requirements in R.61-58.17.F(4).

(a) The system triggers a Level 2 assessment or two Level 1 assessments in a rolling 12-month period.

(b) The system has an *E. coli* MCL violation.

(c) The system has a coliform treatment technique violation.

(d) The system has two monitoring violations under R.61-58.17 in a rolling 12-month period.

(6) Additional routine monitoring the month following a total coliform-positive sample.

Systems collecting samples on a quarterly frequency must conduct additional routine monitoring the month following one or more total coliform-positive samples (with or without a Level 1 treatment technique trigger). Systems must collect at least three routine samples during the next month, except that the Department may waive this requirement if the conditions of R.61-58.17.F(6)(a), (b), or (c) are met. Systems may either collect samples at regular time intervals throughout the month or may collect all required routine samples on a single day if samples are taken from different sites. Systems must use the results of additional routine samples in coliform treatment technique trigger calculations.

(a) The Department may waive the requirement to collect three routine samples the next month in which the system provides water to the public if the Department, or an agent approved by the Department, performs a site visit before the end of the next month in which the system provides water to the public. Although a sanitary survey need not be performed, the site visit must be sufficiently detailed to allow the Department to determine whether additional monitoring and/or any corrective action is needed. The Department cannot approve an employee of the system to perform this site visit, even if the employee is an agent approved by the Department to perform sanitary surveys.

(b) The Department may waive the requirement to collect three routine samples the next month in which the system provides water to the public if the Department has determined why the sample was total coliform-positive and has established that the system has corrected the problem or will correct the problem before the end of the next month in which the system serves water to the public. In this case, the Department must document this decision to waive the following month's additional monitoring requirement in writing, have it approved and signed by the supervisor of the Department official who recommends such a decision, and make this document available to the EPA and the public. The written documentation must describe the specific cause of the total coliform-positive sample and what action the system has taken and/or will take to correct this problem.

(c) The Department may not waive the requirement to collect three additional routine samples the next month in which the system provides water to the public solely on the grounds that all repeat samples are total coliform negative. If the Department determines that the system has corrected the contamination problem before the system takes the set of repeat samples required in R.61-58.17.I, and all repeat samples were total coliform negative, the Department may waive the requirement for additional routine monitoring the next month.

G. Routine monitoring requirements for subpart H public water systems serving 1,000 or fewer people.

(1) General.

(a) The provisions of this section apply to subpart H public water systems serving 1,000 or fewer people.

(b) Following any total coliform-positive sample taken under the provisions of R.61-58.17.G, systems must comply with the repeat monitoring requirements and *E. coli* analytical requirements in R.61-58.17.I.

(c) Once all monitoring required by this section and R.61-58.17.I for a calendar month has been completed, systems must determine whether any coliform treatment technique triggers specified in R.61-58.17.J have been exceeded. If any trigger has been exceeded, systems must complete assessments as required by R.61-58.17.J.

(d) Seasonal systems.

(i) Beginning April 1, 2016, all seasonal systems must demonstrate completion of a Department-approved start-up procedure, which may include a requirement for start-up sampling prior to serving water to the public.

(ii) The Department may exempt any seasonal system from some or all of the requirements for seasonal systems if the entire distribution system remains pressurized during the entire period that the system is not operating.

(2) Routine monitoring frequency for total coliforms.

Subpart H systems (including consecutive systems) must monitor monthly. Systems may not reduce monitoring.

(3) Unfiltered subpart H systems.

A subpart H system that does not practice filtration in compliance with R.61-58.10 must collect at least one total coliform sample near the first service connection each day the turbidity level of the source water, measured as specified in R.61-58.10.F(2)(b), exceeds 1 NTU. When one or more turbidity measurements in any day exceed 1 NTU, the system must collect this coliform sample within 24 hours of the first exceedance, unless the Department determines that the system, for logistical reasons outside the system's control, cannot have the sample analyzed within 30 hours of collection and identifies an alternative sample collection schedule. Sample results from this coliform monitoring must be included in determining whether the coliform treatment technique trigger in R.61-58.17.J has been exceeded.

H. Routine monitoring requirements for public water systems serving more than 1,000 people.

(1) General.

(a) The provisions of R.61-58.17.H apply to public water systems serving more than 1,000 persons.

(b) Following any total coliform-positive sample taken under the provisions of R.61-58.17.H, systems must comply with the repeat monitoring requirements and *E. coli* analytical requirements in R.61-58.17.I.

(c) Once all monitoring required by this section and R.61-58.17.I for a calendar month has been completed, systems must determine whether any coliform treatment technique triggers specified in R.61-58.17.J have been exceeded. If any trigger has been exceeded, systems must complete assessments as required by R.61-58.17.J.

(d) Seasonal systems.

(i) Beginning April 1, 2016, all seasonal systems must demonstrate completion of a Department-approved start-up procedure, which may include a requirement for start-up sampling prior to serving water to the public.

(ii) The Department may exempt any seasonal system from some or all of the requirements for seasonal systems if the entire distribution system remains pressurized during the entire period that the system is not operating.

(2) Monitoring frequency for total coliforms.

The monitoring frequency for total coliforms is based on the population served by the system, as follows:

<u>Population served</u>	<u>Minimum number of samples per month</u>
<u>1,001 to 2,500.....</u>	<u>2</u>
<u>2,501 to 3,300.....</u>	<u>3</u>
<u>3,301 to 4,100.....</u>	<u>4</u>
<u>4,101 to 4,900.....</u>	<u>5</u>
<u>4,901 to 5,800.....</u>	<u>6</u>
<u>5,801 to 6,700.....</u>	<u>7</u>
<u>6,701 to 7,600.....</u>	<u>8</u>
<u>7,601 to 8,500.....</u>	<u>9</u>
<u>8,501 to 12,900.....</u>	<u>10</u>
<u>12,901 to 17,200.....</u>	<u>15</u>
<u>17,201 to 21,500.....</u>	<u>20</u>
<u>21,501 to 25,000.....</u>	<u>25</u>
<u>25,001 to 33,000.....</u>	<u>30</u>
<u>33,001 to 41,000.....</u>	<u>40</u>
<u>41,001 to 50,000.....</u>	<u>50</u>
<u>50,001 to 59,000.....</u>	<u>60</u>
<u>59,001 to 70,000.....</u>	<u>70</u>
<u>70,001 to 83,000.....</u>	<u>80</u>
<u>83,001 to 96,000.....</u>	<u>90</u>
<u>96,001 to 130,000.....</u>	<u>100</u>
<u>130,001 to 220,000.....</u>	<u>120</u>
<u>220,001 to 320,000.....</u>	<u>150</u>
<u>320,001 to 450,000.....</u>	<u>180</u>
<u>450,001 to 600,000.....</u>	<u>210</u>
<u>600,001 to 780,000.....</u>	<u>240</u>

780,001 to 970,000.....	270
970,001 to 1,230,000.....	300
1,230,001 to 1,520,000.....	330
1,520,001 to 1,850,000.....	360
1,850,001 to 2,270,000.....	390
2,270,001 to 3,020,000.....	420
3,020,001 to 3,960,000.....	450
3,960,001 or more.....	480

(3) Unfiltered subpart H systems.

A subpart H system that does not practice filtration in compliance with R.61-58.10 must collect at least one total coliform sample near the first service connection each day the turbidity level of the source water, measured as specified in R.61-58.10.F(2)(b), exceeds 1 NTU. When one or more turbidity measurements in any day exceed 1 NTU, the system must collect this coliform sample within 24 hours of the first exceedance, unless the Department determines that the system, for logistical reasons outside the system's control, cannot have the sample analyzed within 30 hours of collection and identifies an alternative sample collection schedule. Sample results from this coliform monitoring must be included in determining whether the coliform treatment technique trigger in R.61-58.17.J has been exceeded.

(4) Reduced monitoring.

Systems may not reduce monitoring, except for non-community water systems using only ground water (and not ground water under the direct influence of surface water) serving 1,000 or fewer people in some months and more than 1,000 persons in other months. In months when more than 1,000 persons are served, the systems must monitor at the frequency specified in paragraph R.61-58.17.H(2). In months when 1,000 or fewer people are served, the Department may reduce the monitoring frequency, in writing, to a frequency allowed under R.61-58.17.E for a similarly situated system that always serves 1,000 or fewer people, taking into account the provisions in R.61-58.17.E(5) through (7).

I. Repeat monitoring and *E. coli* requirements.

(1) Repeat monitoring.

(a) If a sample taken under R.61-58.17.E though R.61-58.17.H is total coliform-positive, the system must collect a set of repeat samples within 24 hours of being notified of the positive result. The system must collect no fewer than three 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 system has a logistical problem in collecting the repeat samples within 24 hours that is beyond its control. Alternatively, the Department may implement criteria for the system to use in lieu of case-by-case extensions. In the case of an extension, the Department must specify how much time the system has to collect the repeat samples. The Department cannot waive the requirement for a system to collect repeat samples in R.61-58.17.I(1)(a) through (1)(c).

(b) The system must collect all repeat samples on the same day, except that the Department may allow a system with a single service connection to collect the required set of repeat samples over a three-day period or to collect a larger volume repeat sample(s) in one or more sample containers of any size, as long as the total volume collected is at least 300 ml.

(c) The system must collect an additional set of repeat samples in the manner specified in R.61-58.17.I(1)(a) through (1)(c) if one or more repeat samples in the current set of repeat samples is total

coliform-positive. The system must collect the additional set of repeat samples within 24 hours of being notified of the positive result, unless the Department extends the limit as provided in R.61-58.17.I(1)(a). The system must continue to collect additional sets of repeat samples until either total coliforms are not detected in one complete set of repeat samples or the system determines that a coliform treatment technique trigger specified in R.61-58.17.J(1) has been exceeded as a result of a repeat sample being total coliform-positive and notifies the Department. If a trigger identified in R.61-58.17.J is exceeded as a result of a routine sample being total coliform-positive, systems are required to conduct only one round of repeat monitoring for each total coliform-positive routine sample.

(d) After a system collects a routine sample and before it learns the results of the analysis of that sample, if it collects another routine sample(s) from within five adjacent service connections of the initial sample, and the initial sample, after analysis, is found to contain total coliforms, then the system may count the subsequent sample(s) as a repeat sample instead of as a routine sample.

(e) Results of all routine and repeat samples taken under R.61-58.17.E through R.61-58.17.I not invalidated by the Department must be used to determine whether a coliform treatment technique trigger specified in R.61-58.17.J has been exceeded.

(2) Escherichia coli (*E. coli*) testing.

(a) If any routine or repeat sample is total coliform-positive, the system must analyze that total coliform-positive culture medium to determine if *E. coli* are present. If *E. coli* are present, the system must notify the Department by the end of the day when the system is notified of the test result, unless the system is notified of the result after the Department office is closed and the Department does not have either an after-hours phone line or an alternative notification procedure, in which case the system must notify the Department before the end of the next business day.

(b) The Department has the discretion to allow a system, on a case-by-case basis, to forgo *E. coli* testing on a total coliform-positive sample if that system assumes that the total coliform-positive sample is *E. coli*-positive. Accordingly, the system must notify the Department as specified in R.61-58.17.I(2)(a) and the provisions of R.61-58.5.F(3) apply.

J. Coliform treatment technique triggers and assessment requirements for protection against potential fecal contamination.

(1) Treatment technique triggers.

Systems must conduct assessments in accordance with R.61-58.17.J(2) of this section after exceeding treatment technique triggers in R.61-58.17.J(1)(a) and (1)(b).

(a) Level 1 treatment technique triggers.

(i) For systems taking 40 or more samples per month, the system exceeds 5.0% total coliform-positive samples for the month.

(ii) For systems taking fewer than 40 samples per month, the system has two or more total coliform-positive samples in the same month.

(iii) The system fails to take every required repeat sample after any single total coliform-positive sample.

(b) Level 2 treatment technique triggers.

(i) An *E. coli* MCL violation, as specified in R.61-58.17.K(1).

(ii) A second Level 1 trigger as defined in R.61-58.17.J(1)(a), within a rolling 12-month period, unless the Department has determined a likely reason that the samples that caused the first Level 1 treatment technique trigger were total coliform-positive and has established that the system has corrected the problem.

(iii) For systems with approved annual monitoring, a Level 1 trigger in two consecutive years.

(2) Requirements for assessments.

(a) Systems must ensure that Level 1 and 2 assessments are conducted in order to identify the possible presence of sanitary defects and defects in distribution system coliform monitoring practices. Level 2 assessments must be conducted by parties approved by the Department.

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

(c) Level 1 Assessments.

A system must conduct a Level 1 assessment consistent with Department requirements if the system exceeds one of the treatment technique triggers in R.61-58.17.J(1)(a).

(i) The system must complete a Level 1 assessment as soon as practical after any trigger in R.61-58.17.J(1)(a). In the completed assessment form, the system must describe sanitary defects detected, corrective actions completed, and a proposed timetable for any corrective actions not already completed. The assessment form may also note that no sanitary defects were identified. The system must submit the completed Level 1 assessment form to the Department within 30 days after the system learns that it has exceeded a trigger.

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

(iii) Upon completion and submission of the assessment form by the system, the Department must determine if the system has identified a likely cause for the Level 1 trigger and, if so, establish that the system has corrected the problem, or has included a schedule acceptable to the Department for correcting the problem.

(d) Level 2 Assessments.

A system must ensure that a Level 2 assessment consistent with Department requirements is conducted if the system exceeds one of the treatment technique triggers in R.61-58.17.J(1)(b). The system must comply with any expedited actions or additional actions required by the Department in the case of an *E. coli* MCL violation.

(i) The system must ensure that a Level 2 assessment is completed by the Department or by a party approved by the Department as soon as practical after any trigger in R.61-58.17.J(1)(b). The system must submit a completed Level 2 assessment form to the Department within 30 days after the system learns that it has exceeded a trigger. The assessment form must describe sanitary defects detected, corrective actions completed, and a proposed timetable for any corrective actions not already completed. The assessment form may also note that no sanitary defects were identified.

(ii) The system may conduct Level 2 assessments if the system has staff or management with the certification or qualifications specified by the Department unless otherwise directed by the Department.

(iii) If the Department reviews the completed Level 2 assessment and determines that the assessment is not sufficient (including any proposed timetable for any corrective actions not already completed), the Department must consult with the system. If the Department requires revisions after consultation, the system must submit a revised assessment form to the Department on an agreed-upon schedule not to exceed 30 days.

(iv) Upon completion and submission of the assessment form by the system, the Department must determine if the system has identified a likely cause for the Level 2 trigger and determine whether the system has corrected the problem, or has included a schedule acceptable to the Department for correcting the problem.

### (3) Corrective Action.

Systems must correct sanitary defects found through either Level 1 or 2 assessments conducted under R.61-58.17.J(2). For corrections not completed by the time of submission of the assessment form, the system must complete the corrective action(s) in compliance with a timetable approved by the Department in consultation with the system. The system must notify the Department when each scheduled corrective action is completed.

### (4) Consultation.

At any time during the assessment or corrective action phase, either the water system or the Department may request a consultation with the other party to determine the appropriate actions to be taken. The system may consult with the Department on all relevant information that may impact on its ability to comply with a requirement of R.61-58.17, including the method of accomplishment, an appropriate timeframe, and other relevant information.

## K. Violations

### (1) *E. coli* MCL Violation.

A system is in violation of the MCL for *E. coli* when any of the conditions identified in R.61-58.17.K(1)(a) through (1)(d) occur.

(a) The system has an *E. coli*-positive repeat sample following a total coliform-positive routine sample.

(b) The system has a total coliform-positive repeat sample following an *E. coli*-positive routine sample.

(c) The system fails to take all required repeat samples following an *E. coli*-positive routine sample.

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

(2) Treatment technique violation.

(a) A treatment technique violation occurs when a system exceeds a treatment technique trigger specified in R.61-58.17.J(1) and then fails to conduct the required assessment or corrective actions within the timeframe specified in R.61-58.17.J(2) and (3).

(b) A treatment technique violation occurs when a seasonal system fails to complete a Department-approved start-up procedure prior to serving water to the public.

(3) Monitoring violations.

(a) Failure to take every required routine or additional routine sample in a compliance period is a monitoring violation.

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

(4) Reporting violations.

(a) Failure to submit a monitoring report or completed assessment form after a system properly conducts monitoring or assessment in a timely manner is a reporting violation.

(b) Failure to notify the Department following an *E. coli*-positive sample as required by R.61-58.17.I(2)(a) in a timely manner is a reporting violation.

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

L. Reporting and recordkeeping.

(1) Reporting.

(a) *E. coli*.

(i) A system must notify the Department by the end of the day when the system learns of an *E. coli* MCL violation, unless the system learns of the violation after the Department office is closed and the Department does not have either an after-hours phone line or an alternative notification procedure, in which case the system must notify the Department before the end of the next business day, and notify the public in accordance with R.61-58.6.

(ii) A system must notify the Department by the end of the day when the system is notified of an *E. coli*-positive routine sample, unless the system is notified of the result after the Department office is closed and the Department does not have either an after-hours phone line or an alternative notification procedure, in which case the system must notify the Department before the end of the next business day.

(b) A system that has violated the treatment technique for coliforms in R.61-58.17.J must report the violation to the Department no later than the end of the next business day after it learns of the violation, and notify the public in accordance with R.61-58.6.

(c) A system required to conduct an assessment under the provisions of R.61-58.17.J must submit the assessment report within 30 days. The system must notify the Department in accordance with R.61-58.17.J(3) when each scheduled corrective action is completed for corrections not completed by the time of submission of the assessment form.

(d) A system that has failed to comply with a coliform monitoring requirement must report the monitoring violation to the Department within 10 days after the system discovers the violation, and notify the public in accordance with R.61-58.6.

(e) A seasonal system must certify, prior to serving water to the public, that it has complied with the Department-approved start-up procedure.

(2) Recordkeeping.

(a) The system must maintain any assessment form, regardless of who conducts the assessment, and documentation of corrective actions completed as a result of those assessments, or other available summary documentation of the sanitary defects and corrective actions taken under R.61-58.17.J for Department review. This record must be maintained by the system for a period not less than five years after completion of the assessment or corrective action.

(b) The system must maintain a record of any repeat sample taken that meets Department criteria for an extension of the 24-hour period for collecting repeat samples as provided for under R.61-58.17.I(1)(a).



**Amend R.61-58 Appendix A to read:**

APPENDIX A TO 61-58.6: VIOLATIONS AND OTHER SITUATIONS REQUIRING PUBLIC NOTICE<sup>1</sup>

CONTAMINANT	MCL/MRDL/TT/VIOLATIONS <sup>2</sup>		MONITORING & TESTING PROCEDURE VIOLATIONS	
	TIER OF PUBLIC NOTICE REQUIRED	CITATION	TIER OF PUBLIC NOTICE REQUIRED	CITATION
I. Violations of the State Primary Drinking Water Regulations (SPDWR): <sup>3</sup>				
A. Microbiological Contaminants				
1.a Total coliform †	2	61-58.5.F(1)	3	61-58.5.G(1) - (5)
1.b Total coliform (TT violations resulting from failure to perform assessments or corrective actions, monitoring violations, and reporting violations) ‡	2	61-58.17.K(2)(a)	3	61-58.17.K(3)(a) ✓ 61-58.17.K(4)(a) ✓
1.c Seasonal system failure to follow Department-approved start-up plan prior to serving water to the public or failure to provide certification to the Department. ‡	2	61-58.17.K(2)(b)	3	61-58.17.K(4)(c)
2.a Fecal coliform/E. coli †	1	61-58.5.F(2)	4, 3	61-58.5.G(5)
2.b E.coli (MCL, monitoring, and reporting violations. ‡	1	61-58.17.K(1)	3	61-58.17.K(3)(b) ✓ 61-58.17.K(4)(a) ✓ 61-58.17.K(4)(b) ✓
2.c E. coli (TT violations resulting from failure to perform level 2 Assessments or corrective action) ‡	2	61-58.17.K(2)(a)		
3. Turbidity MCL	2	61-58.10.E, H, & I	3	61-58.10.F
4. Turbidity MCL (average of 2 days samples greater than 5 NTU)	<sup>5</sup> 2, 1	61-58.10.C, E, H & I	3	61-58.10.F
5. Turbidity (for TT violations resulting from a single exceedance of maximum allowable turbidity level)	<sup>6</sup> 2, 1	61-58.10.C(i)(b) 61-58.10.C(3)(b) 61-58.10.F(2)(b),	3	61-58.10.F 61-58.10.F(3)

*Reflects Tech Coms*

		61-58.10.E(1)(b), 61-58.10.E(2)(b), 61-58.10.E(3)(b), 61-58.10.E(4), 61-58.10.H(4)(a)(ii), 61-58.10.H(4)(b), 61-58.10.I(6)(b) 61-58.10.B - E		61-58.10.H  61-58.10(I)(7)(a) (i)-(iii) & (b)  61-58.10
6. Surface Water Treatment Rule violations, other than violations resulting from single exceedance of max. allowable turbidity level (TT).	2			
7. Interim Enhanced Surface Water Treatment Rule violations, other than violations resulting from single exceedance of max. turbidity level (TT)	<sup>7</sup> 2	61-58.10.B - E 61-58.10.I(1)-(7)	3	61-58.10.H(3), (5) 61-58.10.I(4) & (5) 61-58.10.I(7)
8. Filter Backwash Recycling Rule violations	2	61-58.10.J(3)	3	61-58.10.J(2) & (4)
9. Long Term 1 Enhanced Surface Water Treatment Rule Violations.	2	61-58.10.I(1)-(7)	3	61-58.10.I(4) & (5) 61-58.10.I(7)
10. LT2ESWTR violations	2	61-58.10.K(11) – (21)	<sup>22</sup> 2,3	61-58.10.K(2) – (6) & 61-58.10.K(9) – (10)
11. Ground Water Rule Violations	2	61-58.16.G	3	61-58.16.E(8) 61-58.16.F(4)

#### B. Inorganic Chemicals (IOCs)

1. Antimony	2	61-58.5.B(2)	3	61-58.5.C(7), (9)
2. Arsenic	2	<sup>8</sup> 61-58.5.B(2)	3	<sup>9</sup> 61-58.5.C(7)
3. Asbestos (fibers >10µm)	2	61-58.5.B(2)	3	61-58.5.C(7), (8)
4. Barium	2	61-58.5.B(2)	3	61-58.5.C(7), (9)
5. Beryllium	2	61-58.5.B(2)	3	61-58.5.C(7), (9)
6. Cadmium	2	61-58.5.B(2)	3	61-58.5.C(7), (9)
7. Chromium (total)	2	61-58.5.B(2)	3	61-58.5.C(7), (9)
8. Cyanide	2	61-58.5.B(2)	3	61-58.5.C(7), (9)
9. Fluoride	2	61-58.5.B(2)	3	61-58.5.C(7), (9)
10. Mercury (inorganic)	2	61-58.5.B(2)	3	61-58.5.C(7), (9)
11. Nitrate	1	61-58.5.B(2)	<sup>10</sup> 1, 3	61-58.5.C(7), (10)

12. Nitrite	1	61-58.5.B(2)	<sup>10</sup> 1, 3	61-58.5.C(12) 61-58.5.C (7), (10), 61-58.5.C(12)
13. Total Nitrate and Nitrite	1	61-58.5.B(2)	3	61-58.5.C(7)
14. Selenium	2	61-58.5.B(2)	3	61-58.5.C(7), (9)
15. Thallium	2	61-58.5.B(2)	3	61-58.5.C(7), (9)

C. Lead and Copper Rule (Action Level for lead is 0.015 mg/L, for copper is 1.3 mg/L)

1. Lead and Copper Rule (TT)	2	61-58.11.B - G	3	61-58.11.H - K
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D. Synthetic Organic Chemicals (SOCs)

1. 2,4-D	2	61-58.5.D	3	61-58.5.E(7)
2. 2,4,5-TP (Silvex)	2	61-58.5.D	3	61-58.5.E(7)
3. Alachlor	2	61-58.5.D	3	61-58.5.E(7)
4. Atrazine	2	61-58.5.D	3	61-58.5.E(7)
5. Benzo(a)pyrene (PAHs)	2	61-58.5.D	3	61-58.5.E(7)
6. Carbofuran	2	61-58.5.D	3	61-58.5.E(7)
7. Chlordane	2	61-58.5.D	3	61-58.5.E(7)
8. Dalapon	2	61-58.5.D	3	61-58.5.E(7)
9. Di (2-ethylhexyl) adipate	2	61-58.5.D	3	61-58.5.E(7)
10. Di (2-ethylhexyl) phthalate	2	61-58.5.D	3	61-58.5.E(7)
11. Dibromochloropropane	2	61-58.5.D	3	61-58.5.E(7)
12. Dinoseb	2	61-58.5.D	3	61-58.5.E(7)
13. Dioxin (2,3,7,8-TCDD)	2	61-58.5.D	3	61-58.5.E(7)
14. Diquat	2	61-58.5.D	3	61-58.5.E(7)
15. Endothall	2	61-58.5.D	3	61-58.5.E(7)
16. Endrin	2	61-58.5.D	3	61-58.5.E(7)
17. Ethylene dibromide	2	61-58.5.D	3	61-58.5.E(7)
18. Glyphosate	2	61-58.5.D	3	61-58.5.E(7)
19. Heptachlor	2	61-58.5.D	3	61-58.5.E(7)
20. Heptachlor epoxide	2	61-58.5.D	3	61-58.5.E(7)
21. Hexachlorobenzene	2	61-58.5.D	3	61-58.5.E(7)
22. Hexachlorocyclo-pentadiene	2	61-58.5.D	3	61-58.5.E(7)
23. Lindane	2	61-58.5.D	3	61-58.5.E(7)

24. Methoxychlor	2	61-58.5.D	3	61-58.5.E(7)
25. Oxamyl (Vydate)	2	61-58.5.D	3	61-58.5.E(7)
26. Pentachlorophenol	2	61-58.5.D	3	61-58.5.E(7)
27. Picloram	2	61-58.5.D	3	61-58.5.E(7)
28. Polychlorinated biphenyls (PCBs)	2	61-58.5.D	3	61-58.5.E(7)
29. Simazine	2	61-58.5.D	3	61-58.5.E(7)
30. Toxaphene	2	61-58.5.D	3	61-58.5.E(7)

#### E. Volatile Organic Chemicals (VOCs)

1. Benzene	2	61-58.5.N	3	61-58.5.O
2. Carbon tetrachloride	2	61-58.5.N	3	61-58.5.O
3. Chlorobenzene (monochlorobenzene)	2	61-58.5.N	3	61-58.5.O
4. o-Dichlorobenzene	2	61-58.5.N	3	61-58.5.O
5. p-Dichlorobenzene	2	61-58.5.N	3	61-58.5.O
6. 1,2-Dichloroethane	2	61-58.5.N	3	61-58.5.O
7. 1,1-Dichloroethylene	2	61-58.5.N	3	61-58.5.O
8. cis-1,2-Dichloroethylene	2	61-58.5.N	3	61-58.5.O
9. trans-1,2-Dichloroethylene	2	61-58.5.N	3	61-58.5.O
10. Dichloromethane	2	61-58.5.N	3	61-58.5.O
11. 1,2-Dichloropropane	2	61-58.5.N	3	61-58.5.O
12. Ethylbenzene	2	61-58.5.N	3	61-58.5.O
13. Styrene	2	61-58.5.N	3	61-58.5.O
14. Tetrachloroethylene	2	61-58.5.N	3	61-58.5.O
15. Toluene	2	61-58.5.N	3	61-58.5.O
16. 1,2,4-Trichlorobenzene	2	61-58.5.N	3	61-58.5.O
17. 1,1,1-Trichloroethane	2	61-58.5.N	3	61-58.5.O
18. 1,1,2-Trichloroethane	2	61-58.5.N	3	61-58.5.O
19. Trichloroethylene	2	61-58.5.N	3	61-58.5.O
20. Vinyl chloride	2	61-58.5.N	3	61-58.5.O
21. Xylenes (total)	2	61-58.5.N	3	61-58.5.O

#### F. Radioactive Contaminants

1. Beta/photon emitters	2	61-58.5.H(4)	3	61-58.5.K(1), 61-58.5.I.(3)
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2. Alpha emitters	2	61-58.5.H(3)	3	61-58.5.K(1), 61-58.5.I(2)
3. Combined radium (226 & 228)	2	61-58.5.H(2)	3	61-58.5.K(1), 61-58.5.I(2)
4. Uranium	<sup>112</sup>	61-58.5.H(5)	<sup>12</sup> 3	61-58.5.K(1), 61-58.5.I(2)

G. Disinfection Byproducts (DBPs), Byproduct Precursors, Disinfectant Residuals. Where disinfection is used in the treatment of drinking water, disinfectants combine with organic and inorganic matter present in water to form chemicals called disinfection byproducts (DBPs). EPA sets standards for controlling the levels of disinfectants and DBPs in drinking water, including trihalomethanes (THMs) and haloacetic acids (HAAs).<sup>13</sup>

1. Total trihalomethanes (TTHMs)	2	<sup>14</sup> 61-58.5.L, 61-58.5.P	3	<sup>14</sup> 61-58.5.M 61-58.13.C(1), (2) 61-58.14, 61-58.15
2. Haloacetic Acids (HAA5)	2	61-58.5.P	3	61-58.13.C(1), (2) 61-58.14, 61-58.15
3. Bromate	2	61-58.5.P	3	61-58.13.C(1), (2)
4. Chlorite	2	61-58.5.P	3	61-58.13.C(1), (2)
5. Chlorine (MRDL)	2	61-58.5.Q	3	61-58.13.C(1), (3)
6. Chloramine (MRDL)	2	61-58.5.Q	3	61-58.13.C(1), (3)
7. Chlorine dioxide (MRDL) where any 2 consecutive daily samples at entrance to distribution system only are above MRDL	2	61-58.5.Q, 61-58.13.D	2 <sup>15</sup> , 3	61-58.13.C(1), (3), 61-58.13.C(3)(b)
8. Chlorine dioxide (MRDL), where sample(s) in distribution system the next day are also above MRDL	<sup>16</sup> 1	61-58.5.Q, 61-58.13.D(3)	1	61-58.13.C(1), (3), 61-58.13.D(3)(b)
9. Control of DBP precursors--TOC (TT)	2	61-58.13.F(1), (2)	3	61-58.13.C(1), (4)
10. Bench marking and disinfection profiling.	N/A	N/A	3	61-58.10.G(3) 61-58.10.H(3) 61-58.10.I(4) & (5)
11. Development of monitoring plan	N/A	N/A	3	61-58.13.C(6)

#### H. Other Treatment Techniques

1. Acrylamide (TT)	2	61-58.5.AA	N/A	N/A
2. Epichlorohydrin (TT)	2	61-58.5.AA	N/A	N/A

II. Unregulated Contaminant Monitoring:<sup>17</sup>

A. Unregulated contaminants	N/A	N/A	3	61-58.5.T
B. Nickel	N/A	N/A	3	61-58.5.C(9), (17)

III. Public Notification for Variances and Exemptions:

A. Operation under a variance or exemption	3	<sup>18</sup> 61-58.9	N/A	N/A
B. Violation of conditions of a variance or exemption	2	<sup>19</sup> 61-58.9	N/A	N/A

IV. Other Situations Requiring Public Notification:

A. Fluoride secondary maximum contaminant level (SMCL) exceedance	3	61-58.5.R	N/A	N/A
B. Exceedance of nitrate MCL for non-community systems, as allowed by Department	1	61-58.5.B(3)	N/A	N/A
C. Availability of unregulated contaminant monitoring data	3	61-58.5.T	N/A	N/A
D. Waterborne disease outbreak	1	61-58.B(156) 61-58.10.C(3)(b)(ii)	N/A	N/A
E. Other waterborne emergency <sup>20</sup>	1	N/A	N/A	N/A
F. Source water sample positive for Ground Water Rule fecal indicators: E. coli, enterococci, or coliphage	1	61-58.16.E(7)	N/A	N/A
G. Other situations as determined by the Department	<sup>21</sup> 1, 2, 3	N/A	N/A	N/A

Appendix A to R.61-58.6 - Endnotes

† Until March 31, 2016

‡ Beginning April 1, 2016

- <sup>1</sup> Violations and other situations not listed in this table (e.g., failure to prepare Consumer Confidence Reports), do not require notice, unless otherwise determined by the Department. The Department may, at its option, also require a more stringent public notice tier (e.g., Tier 1 instead of Tier 2 or Tier 2 instead of Tier 3) for specific violations and situations listed in this Appendix, as authorized under R.61-58.6.E(2)(a) and (3)(a).
- <sup>2</sup> MCL--Maximum contaminant level, MRDL--Maximum residual disinfectant level, TT--Treatment technique
- <sup>3</sup> The term Violations of State Primary Drinking Water Regulations (SPDWR) is used here to include violations of MCL, MRDL, treatment technique, monitoring, and testing procedure requirements.
- <sup>4</sup> Failure to test for fecal coliform or E. coli is a Tier 1 violation if testing is not done after any repeat sample tests positive for coliform. All other total coliform monitoring and testing procedure violations are Tier 3.
- <sup>5</sup> Systems that violate the turbidity MCL of 5 NTU based on an average of measurements over two consecutive days must consult with the Department within 24 hours after learning of the violation. Based on this consultation, the Department may subsequently decide to elevate the violation to Tier 1. If a system is unable to make contact with the Department in the 24-hour period, the violation is automatically elevated to Tier 1.
- <sup>6</sup> Systems with treatment technique violations involving a single exceedance of a maximum turbidity limit under the Surface Water Treatment Rule (SWTR) Interim Enhanced Surface Water Treatment Rule (IESWTR), or the Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR) are required to consult with the Department within 24 hours after learning of the violation. Based on this consultation, the Department may subsequently decide to elevate the violation to Tier 1. If a system is unable to make contact with the Department in the 24-hour period, the violation is automatically elevated to Tier 1.
- <sup>7</sup> Most of the requirements of the Interim Enhanced Surface Water Treatment Rule, R.61-58.10.B - C become effective January 1, 2002 for surface water systems and ground water systems under the direct influence of surface water serving at least 10,000 persons. However, R.61-58.10.H(3) has some requirements that become effective as early as April 16, 1999. The Surface Water Treatment Rule remains in effect for systems serving at least 10,000 persons even after 2002; the Interim Enhanced Surface Water Treatment Rule adds additional requirements and does not in many cases supercede the SWTR.
- <sup>8</sup> The arsenic MCL citations are effective January 23, 2006. Until then the citations are R.61-58.5(B)(2).
- <sup>9</sup> The arsenic Tier 3 violations MCL citations are effective January 23, 2006. Until then, the citations are R.61-58.C(7).
- <sup>10</sup> Failure to take a confirmation sample within 24 hours for nitrate or nitrite after an initial sample exceeds the MCL is a Tier 1 violation. Other monitoring violations for nitrate are Tier 3.
- <sup>11</sup> The uranium MCL, Tier 2 violation citations are effective December 8, 2003 for all community water systems.
- <sup>12</sup> The uranium Tier 3 violation citations are effective December 8, 2000 for all community water systems.
- <sup>13</sup> Community and non-transient non-community surface water systems and ground water systems under the direct influence of surface water serving 10,000 must comply with new DBP MCLs, disinfectant MRDLs, and related monitoring requirements beginning January 1, 2002. All other community and non-transient non-community systems must meet the MCLs and MRDLs beginning January 1, 2004. Transient non-community surface water systems and ground water systems under the direct influence of surface water serving 10,000 or more persons and using chlorine dioxide as a disinfectant or oxidant must comply with the chlorine dioxide MRDL beginning January 1, 2002. Transient non-community surface water systems and ground water systems under the direct influence of surface water serving fewer than 10,000 persons and using only ground water not under the direct influence of surface water and using chlorine dioxide as a disinfectant or oxidant must comply with the chlorine dioxide MRDL beginning January 1, 2004.

- <sup>14</sup>. R.61-58.5.L, and R.61-58.13.C(1) – (2) apply until R.61-58.14 and R.61-58.15 take effect under the schedule in R.61-58.14.
- <sup>15</sup>. Failure to monitor for chlorine dioxide at the entrance to the distribution system the day after exceeding the MRDL at the entrance to the distribution system is a Tier 2 violation.
- <sup>16</sup>. If any daily sample taken at the entrance to the distribution system exceeds the MRDL for chlorine dioxide and one or more samples taken in the distribution system the next day exceed the MRDL, Tier 1 notification is required. Failure to take the required samples in the distribution system after the MRDL is exceeded at the entry point also triggers Tier 1 notification.
- <sup>17</sup>. Some water systems must monitor for certain unregulated contaminants listed in R.61-58.5.T
- <sup>18</sup>. This citation refers to the requirements of R.61-58.9 that "a schedule prescribed ...for a public water system granted a variance [or exemption] shall require compliance by the system . . ."
- <sup>19</sup>. In addition to R.61-58.9 specifies the items and schedule milestones that must be included in a variance for small systems.
- <sup>20</sup>. Other waterborne emergencies require a Tier 1 public notice under R.61-58.6.E(2)(a) for situations that do not meet the definition of a waterborne disease outbreak given in R.61-58.B(174) but that still have the potential to have serious adverse effects on health as a result of short-term exposure. These could include outbreaks not related to treatment deficiencies, as well as situations that have the potential to cause outbreaks, such as failures or significant interruption in water treatment processes, natural disasters that disrupt the water supply or distribution system, chemical spills, or unexpected loading of possible pathogens into the source water.
- <sup>21</sup>. The Department may place other situations in any tier they believe appropriate, based on threat to public health.
- <sup>22</sup>. Failure to collect three or more samples for Cryptosporidium analysis is a Tier 2 violation requiring special notice as specified in R.61-58.6.E(11). All other monitoring and testing procedure violations are Tier 3.

**Replace R.61-58 Appendix B to read:**

APPENDIX B TO R.61-58.6: STANDARD HEALTH EFFECTS LANGUAGE FOR PUBLIC NOTIFICATION

Contaminant	MCLG <sup>1</sup> mg/L	MCL <sup>2</sup> mg/L	Standard health effects language for public notification
State Primary Drinking Water Regulations (SPDWR):			
A. Microbiological Contaminants:			
1a. Total coliform †	Zero	See footnote <sup>3</sup>	Coliforms are bacteria that are naturally present in the and are used as an indicator that other, potentially-harmful, bacteria may be present. Coliforms were found in more samples than allowed and this was a warning of potential problems.
1b. Fecal coliform/E. coli ‡	Zero	Zero	Fecal coliforms and E. coli are bacteria whose presence indicates that the water may be contaminated human or animal wastes. Microbes in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants young children, some of the elderly, and people with severely compromised immune systems.
1c. Fecal Indicators (Ground Water Rule)			Fecal indicators are microbes whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term health effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.
i. E. coli	Zero	TT	
ii. enterococci	None	TT	
iii. coliphage	None	TT	
1d. Ground Water Rule TT violations	None	TT	Inadequately treated or inadequately protected water may contain disease-causing organisms. These organisms can cause symptoms such as diarrhea, nausea, cramps, and associated headaches.
1e. Revised Total Coliform Rule (R.61-58.17) Assessment and/or Corrective Action Violations †	N/A	TT <sup>3</sup>	<u>Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, waterborne pathogens may be present or that a</u>

1f. Revised Total Coliform Rule (R.61-58.17) *E. coli* Assessment and/or Corrective Action Violations ‡ N/A

TT<sup>3</sup>

potential pathway exists through which contamination may enter the drinking water distribution system. We found coliforms indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct assessments to identify problems and to correct any problems that are found. [THE SYSTEM MUST USE THE FOLLOWING APPLICABLE SENTANCES.]

We failed to conduct the required assessment. We failed to correct all identified sanitary defects that were found during the assessment(s).

*E. coli* are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Human pathogens in these waters can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a greater health risk for infants, young children, the elderly, and people with severely compromised immune systems. We violated the standard for *E. coli*, indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct a detailed assessment to identify problems and to correct any problems that are found.

[THE SYSTEM MUST USE THE FOLLOWING APPLICABLE SENTANCES.]

We failed to conduct the required assessment.

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

*E. coli* are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Human pathogens in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a greater health risk for infants, young children, the elderly, and people with severely compromised immune systems.

1g. *E. coli* ‡

Zero

In compliance unless one of the following conditions occurs:

(1) The system has an *E. coli*-positive repeat sample following a total coliform-positive routine sample.

(2) The system has a

1h. Revised Total Coliform Rule (R.61-58.17) Seasonal System TT Violations †	N/A	<p><u>total coliform-positive repeat sample following an <i>E. coli</i>-positive routine sample.</u></p> <p><u>(3) The system fails to take all required repeat samples following an <i>E. coli</i>-positive routine sample.</u></p> <p><u>(4) The system fails to test for <i>E. coli</i> when any repeat sample tests positive for total coliform.</u></p> <p>TT<sup>3</sup></p>	<p><u>When this violation includes the failure to monitor for total coliforms or <i>E. coli</i> prior to serving water to the public, the mandatory language found at R.61-58.6.E(5)(d)(ii) must be used. When this violation includes failure to complete other actions, the appropriate elements found in R.61-58.6.E(5)(a) to describe the violation must be used.</u></p>
2a. Turbidity (MCL) <sup>4</sup>	None	1 NTU <sup>5</sup> /5 NTU	<p>Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea and associated headaches.</p>
2b. Turbidity (SWTR TT) <sup>6</sup>	None	TT <sup>7</sup>	<p>Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea and associated headaches.</p>
2c. Turbidity (IESWTR TT) <sup>8</sup>	None	TT	<p>Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial</p>

growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea and associated headaches.

B. Surface Water Treatment Rule (SWTR), Interim Enhanced Surface Water Treatment Rule (IESWTR), Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR) and Filter Backwash Recycling Rule (FBRR) violations:

3.	<i>Giardia lamblia</i>	Zero	TT <sup>10</sup>	Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.
4.	Viruses			
5.	Heterotrophic plate count (HPC) bacteria	9		
6.	<i>Legionella</i>			
7.	<i>Cryptosporidium</i>			

C. Inorganic Chemicals (IOCs):

8.	Antimony	0.006	0.006	Some people who drink water containing antimony well in excess of the MCL over many years could experience increases in blood cholesterol and decreases in blood sugar.
9.	Arsenic <sup>11</sup>	Zero	0.010	Some people who drink water containing arsenic in excess of the MCL over many years could experience skin damage or problems with their circulatory system, and may have an increased risk of getting cancer.
10.	Asbestos (10 µm)	7 MFL <sup>12</sup>	7 MFL	Some people who drink water containing asbestos in excess of the MCL over many years may have an increased risk of developing benign intestinal polyps.
11.	Barium	2	2	Some people who drink water containing barium in excess of the MCL over many years could experience an increase in their

12. Beryllium	0.004	0.004	blood pressure. Some people who drink water containing beryllium well in excess of the MCL over many years could develop intestinal lesions.
13. Cadmium	0.005	0.005	Some people who drink water containing cadmium in excess of the MCL over many years could experience kidney damage.
14. Chromium (total)	0.1	0.1	Some people who use water containing chromium well in excess of the MCL over many years could experience allergic dermatitis.
15. Cyanide	0.2	0.2	Some people who drink water containing cyanide well in excess of the MCL over many years could experience nerve damage or problems with their thyroid.
16. Fluoride	4.0	4.0	Some people who drink water containing fluoride in excess of the MCL over many years could get bone disease, including pain and tenderness of the bones. Fluoride in drinking water at half the MCL or more may cause mottling of children's teeth, usually in children less than nine years old. Mottling, also known as dental fluorosis, may include brown staining and/or pitting of the teeth, and occurs only in developing teeth before they erupt from the gums.
17. Mercury (inorganic)	0.002	0.002	Some people who drink water containing inorganic mercury well in excess of the MCL over many years could experience kidney damage.
18. Nitrate	10	10	Infants below the age of six months who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome.
19. Nitrite	1	1	Infants below the age of six months who drink water containing nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome.
20. Total Nitrate and Nitrite	10	10	Infants below the age of six months who drink water containing nitrate and nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome.
21. Selenium	0.05	0.05	Selenium is an essential nutrient. However, some people who

22. Thallium	0.0005	0.002	drink water containing selenium in excess of the MCL over many years could experience hair or fingernail losses, numbness in fingers or toes, or problems with their circulation. Some people who drink water containing thallium in excess of the MCL over many years could experience hair loss, changes in their blood, or problems with their kidneys, intestines, or liver.
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D. Lead and Copper Rule:

23. Lead	Zero	TT <sup>13</sup>	Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure.
24. Copper	1.3	TT <sup>14</sup>	Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson's Disease should consult their personal doctor.

E. Synthetic Organic Chemicals (SOCs):

25. 2,4-D	0.07	0.07	Some people who drink water containing the weed killer 2,4-D well in excess of the MCL over many years could experience problems with kidneys, liver, or adrenal glands.
26. 2,4,5-TP (Silvex)	0.05	0.05	Some people who drink water containing silvex in excess of the MCL over many years could experience liver problems.
27. Alachlor	Zero	0.002	Some people who drink water containing alachlor in excess of the MCL over many years could have problems with their eyes, liver, kidneys, or spleen, or experience anemia, and may have an increased risk of getting cancer.
28. Atrazine	0.003	0.003	Some people who drink water containing atrazine well in

29. Benzo(a)pyrene (PAHs)	Zero	0.0002	excess of the MCL over many years could experience problems with their cardiovascular system or reproductive difficulties. Some people who drink water containing benzo(a)pyrene in excess of the MCL over many years may experience reproductive difficulties and may have an increased risk of getting cancer.
30. Carbofuran	0.04	0.04	Some people who drink water containing carbofuran in excess of the MCL over many years could experience problems with their blood, or nervous or reproductive systems.
31. Chlordane	Zero	0.002	Some people who drink water containing chlordane in excess of the MCL over many years could experience problems with their liver or nervous system, and may have an increased risk of getting cancer.
32. Dalapon	0.2	0.2	Some people who drink water containing dalapon well in excess of the MCL over many years could minor kidney changes.
33. Di (2-ethylhexyl) adipate	0.4	0.4	Some people who drink water containing di(2-ethylhexyl) adipate well in excess of the MCL over many years could experience toxic effects such as weight loss, liver enlargement or possible reproductive difficulties.
34. Di (2-ethylhexyl) phthalate	Zero	0.006	Some people who drink water containing di(2-ethylhexyl) phthalate well in excess of the MCL many years may have problems with their liver, or experience reproductive difficulties, and may have an increased risk of getting cancer.
35. Dibromochloropropane (DBCP)	Zero	0.0002	Some people who drink water containing DBCP in of the MCL over many years could experience reproductive difficulties and may have an increased risk of getting cancer.
36. Dinoseb	0.007	0.007	Some people who drink water containing dinoseb well in excess of the MCL over many years could experience reproductive difficulties.
37. Dioxin (2,3,7,8-TCDD).	Zero	$3 \times 10^{-8}$	Some people who drink water containing dioxin in excess of the MCL over many years could experience reproductive difficulties and may have an increased risk of getting cancer.
38. Diquat	0.02	0.02	Some people who drink water containing diquat in excess of the MCL over many years could get cataracts.
39. Endothall	0.1	0.1	Some people who drink water containing endothall in excess of

40. Endrin	0.002	0.002	the MCL over many years could experience problems with their stomach or intestines. Some people who drink water containing endrin in excess of the MCL over many years could experience liver problems.
41. Ethylene dibromide	Zero	0.00005	Some people who drink water containing ethylene dibromide in excess of the MCL over many years could experience problems with their liver, stomach, reproductive system, or kidneys, and may have an increased risk of getting cancer.
42. Glyphosate	0.7	0.7	Some people who drink water containing glyphosate in excess of the MCL over many years could experience problems with their kidneys or reproductive difficulties.
43. Heptachlor	Zero	0.0004	Some people who drink water containing heptachlor in excess of the MCL over many years could experience liver damage and may have an increased risk of getting cancer.
44. Heptachlor epoxide	Zero	0.0002	Some people who drink water containing heptachlor epoxide in excess of the MCL over many years could experience liver damage, and may have an increased risk of getting cancer.
45. Hexachlorobenzene	Zero	0.001	Some people who drink water containing hexachlorobenzene in excess of the MCL over many years could experience problems with their liver or kidneys, or adverse reproductive effects, and may have an increased risk of getting cancer.
46. Hexachlorocyclo pentadiene	0.05	0.05	Some people who drink water containing Hexachlorocyclopentadiene well in excess of the MCL over many years could experience problems with their kidneys or stomach.
47. Lindane	0.0002	0.0002	Some people who drink water containing lindane in excess of the MCL over many years could experience problems with their kidneys or liver.
48. Methoxychlor	0.04	0.04	Some people who drink water containing methoxychlor in excess of the MCL over many years could experience reproductive difficulties.
49. Oxamyl (Vydate)	0.2	0.2	Some people who drink water containing oxamyl in excess of the MCL over many years could experience slight nervous system effects.
50. Pentachlorophenol	Zero	0.001	Some people who drink water containing pentachlorophenol in excess of the MCL over many years could experience problems with their liver or kidneys, and may have an increased risk of

51. Picloram	0.5	0.5	getting cancer. Some people who drink water containing picloram in excess of the MCL over many years could experience problems with their liver.
52. Polychlorinated biphenyls (PCBs).	Zero	0.0005	Some people who drink water containing PCBs in excess of the MCL over many years could experience changes in their skin, problems with their thymus gland, immune deficiencies, or reproductive or nervous system difficulties, and may have an increased risk of getting cancer.
53. Simazine	0.004	0.004	Some people who drink water containing simazine in excess of the MCL over many years could experience problems with their blood.
54. Toxaphene	Zero	0.003	Some people who drink water containing toxaphene in excess of the MCL over many years could have problems with their kidneys, liver, or thyroid, and may have an increased risk of getting cancer.

F. Volatile Organic Chemicals (VOCs):

55. Benzene	Zero	0.005	Some people who drink water containing benzene in excess of the MCL over many years could experience anemia or a decrease in blood platelets, and may have an increased risk of getting cancer.
56. Carbon tetrachloride	Zero	0.005	Some people who drink water containing carbon tetrachloride in excess of the MCL over many years could experience problems with their liver and may have an increased risk of getting cancer.
57. Chlorobenzene (monochlorobenzene)	0.1	0.1	Some people who drink water containing chlorobenzene in excess of the MCL over many years could experience problems with their liver or kidneys.
58. o-Dichlorobenzene	0.6	0.6	Some people who drink water containing o-dichlorobenzene well in excess of the MCL over many years could experience problems with their liver, kidneys, or circulatory systems.
59. p-Dichlorobenzene	0.075	0.075	Some people who drink water containing p-dichlorobenzene in excess of the MCL over many years could experience anemia, damage to their liver, kidneys, or spleen, or changes in their

60. 1,2-Dichloroethane	Zero	0.005	blood. Some people who drink water containing 1,2-dichloroethane in excess of the MCL over many years may have an increased risk of getting cancer.
61. 1,1-Dichloroethylene	0.007	0.007	Some people who drink water containing 1,1-dichloroethylene in excess of the MCL over many years could experience problems with their liver.
62. cis-1,2-Dichloroethylene	0.07	0.07	Some people who drink water containing cis-1,2-dichloroethylene in excess of the MCL over many years could experience problems with their liver.
63. trans-1,2-Dichloroethylene	0.1	0.1	Some people who drink water containing trans-1,2-dichloroethylene well in excess of the MCL over many years could experience problems with their liver.
64. Dichloromethane	Zero	0.005	Some people who drink water containing dichloromethane in excess of the MCL over many years could have liver problems and may have an increased risk of getting cancer.
65. 1,2-Dichloropropane	Zero	0.005	Some people who drink water containing 1,2-dichloropropane in excess of the MCL over many years may have an increased risk of getting cancer.
66. Ethylbenzene	0.7	0.7	Some people who drink water containing ethylbenzene well in excess of the MCL over many years could experience problems with their liver or kidneys.
67. Styrene	0.1	0.1	Some people who drink water containing styrene well in excess of the MCL over many years could have problems with their liver, kidneys, or circulatory system.
68. Tetrachloroethylene	Zero	0.005	Some people who drink water containing tetrachloroethylene in excess of the MCL over many years could have problems with their liver, and may have an increased risk of getting cancer.
69. Toluene	1	1	Some people who drink water containing toluene well in excess of the MCL over many years could have problems with their nervous system, kidneys, or liver.
70. 1,2,4-Trichlorobenzene	0.07	0.07	Some people who drink water containing 1,2,4-trichlorobenzene well in excess of the MCL over many years could experience changes in their adrenal glands.
71. 1,1,1-Trichloroethane	0.2	0.2	Some people who drink water containing 1,1,1-trichloroethane in excess of the MCL over many years could experience

72. 1,1,2-Trichloroethane	0.003	0.005	problems with their liver, nervous system, or circulatory system. Some people who drink water containing 1,1,2-trichloroethane well in excess of the MCL over many years could have problems with their liver, kidneys, or immune systems.
73. Trichloroethylene	Zero	0.005	Some people who drink water containing trichloroethylene in excess of the MCL over many years could experience problems with their liver and may have an increased risk of getting cancer.
74. Vinyl chloride	Zero	0.002	Some people who drink water containing vinyl chloride in excess of the MCL over many years may have an increased risk of getting cancer.
75. Xylenes (total)	10	10	Some people who drink water containing xylenes in excess of the MCL over many years could experience damage to their nervous system.

G. Radioactive Contaminants:

76. Beta/photon emitters	Zero	4 mrem/yr <sup>15</sup>	Certain minerals are radioactive and may emit forms of radiation known as photons and beta radiation. Some people who drink water containing beta and photon emitters in excess of the MCL over many years may have an increased risk of getting cancer.
77. Alpha emitters	Zero	15 pCi/L <sup>16</sup>	Certain minerals are radioactive and may emit a form of radiation known as alpha radiation. Some people who drink water containing alpha emitters in excess of the MCL over many years may have an increased risk of getting cancer.
78. Combined radium (226 & 228)	Zero	5 pCi/L	Some people who drink water containing radium 226 or 228 in excess of the MCL over many years may have an increased risk of getting cancer.
79. Uranium <sup>17</sup>	Zero	30µg/L	Some people who drink water containing uranium in excess of the MCL over many years may have an increased risk of getting cancer and kidney toxicity.

H. Disinfection Byproducts (DBPs), Byproduct Precursors, and Disinfectant Residuals: Where disinfection is used in the treatment of drinking water, disinfectants combine with organic and inorganic matter present in water to form chemicals called disinfection byproducts (DBPs). EPA sets standards for controlling the levels of disinfectants and DBPs in drinking water, including trihalomethanes (THMs) and haloacetic acids (HAAs).<sup>18</sup>

80. Total trihalomethanes (TTHMs)	N/A	0.08017 <sup>19, 20</sup>	Some people who drink water containing trihalomethanes excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous system and may have an increased risk of getting cancer.
81. Haloacetic Acids (HAA)	N/A	0.060 <sup>21</sup>	Some people who drink water containing haloacetic acids in excess of the MCL over many years may have an increased risk of getting cancer.
82. Bromate	Zero	0.010	Some people who drink water containing bromate in excess of the MCL over many years may have an increased risk of getting cancer.
83. Chlorite	0.08	1.0	Some infants and young children who drinking water containing chlorite in excess of the MCL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorite in excess of the MCL. Some people may experience anemia.
84. Chlorine	4 (MRDLG) <sup>22</sup>	4.0 (MRDL) <sup>23</sup>	Some people who use water containing chlorine well in excess of the MRDL could experience irritating effects to their eyes and nose. Some people who drink water containing chlorine well in excess of the MRDL could experience stomach discomfort.
85. Chloramines	4 (MRDLG)	4.0 (MRDL)	Some people who use water containing chloramines well in excess of the MRDL could experience irritating effects to their eyes and nose. Some people who drink water containing chloramines well in excess of the MRDL could experience stomach discomfort or anemia.
86a. Chlorine dioxide, where any 2 consecutive daily samples taken at the entrance to the distribution system are above the MRDL.	0.8 (MRDLG)	0.8 (MRDL)	Some infants and young children who drink water containing chlorine dioxide in excess of a the MRDL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorine ioxide in excess of the MRDL. Some people may experience anemia. <i>Add for public notification only:</i> The chlorine dioxide

86b. Chlorine dioxide, where one or more water distribution system are above the MRDL 0.8 (MRDLG) 0.8 (MRDL)

violations reported today are the result of exceedances at the treatment facility only not within the distribution system which delivers water to consumers. Continued compliance with chlorine dioxide levels within the distribution system minimizes the potential risk of these violations to consumers. Some infants and young children who drink containing chlorine dioxide in excess of the MRDL could experience nervous effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorine dioxide in excess of the MRDL. Some people may experience anemia.

*Add for public notification only:* The chlorine dioxide violations reported today include exceedances of the EPA standard within the distribution system which delivers water to consumers. Violations of the chlorine dioxide standard within the distribution system may harm human health based on short-term exposures. Certain groups, including fetuses, infants, and young children, may be especially susceptible to nervous system effects from excessive chlorine dioxide exposure.

87. Control of DBP precursors (DBP) None TT

Total organic carbon (TOC) has no health effects. However, total organic carbon provides a medium for the formation of disinfection by-products. These byproducts include trihalomethanes (THMs) and haloacetic acids (HAAs). Drinking water containing these by-products in excess of the MCL may lead to adverse health effects, liver or kidney problems, or nervous system effects, and may lead to an increased risk of getting cancer.

I. Other Treatment Techniques:

88. Acrylamide Zero TT

Some people who drink water containing high levels of acrylamide over a long period of time could have problems with their nervous system or blood, and may have an increased risk of getting cancer.

89. Epichlorohydrin Zero TT

Some people who drink water containing high levels of epichlorohydrin over a long period of time could experience stomach problems, and may have an increased risk of getting

Appendix B to R.61-58.6 - endnotes

† Until March 31, 2016

‡ Beginning April 1, 2016

- <sup>1</sup>. MCLG - Maximum contaminant level goal
- <sup>2</sup>. MCL - Maximum contaminant level
- <sup>3</sup>. For water systems analyzing at least 40 samples per month, no more than 5.0 percent of the monthly samples may be positive for total coliforms. For systems analyzing fewer than 40 samples per month, no more than one sample per month may be positive for total coliforms.
- <sup>4</sup>. There are various regulations that set turbidity standards for different types of systems, including the 1989 Surface Water Treatment Rule, the 1998 Interim Enhanced Surface Water Treatment Rule, and the 2002 Long Term 1 Enhanced Surface Water Treatment Rule. The MCL for the monthly turbidity average is 1 NTU; the MCL for the 2-day average is 5 NTU for systems that are required to filter but have not yet installed filtration.
- <sup>5</sup>. NTU - Nephelometric turbidity unit
- <sup>6</sup>. There are various regulations that set turbidity standards for different types of systems, including the 1989 Surface Water Treatment Rule (SWTR), the 1998 Interim Enhanced Surface Water Treatment Rule (IESWTR), and the 2001 Long Term 1 Enhanced Surface Water Treatment Rule. Systems subject to the Surface Water Treatment Rule (both filtered and unfiltered) may not exceed 5 NTU. In addition, in filtered systems, 95 percent of samples each month must not exceed 0.5 NTU in systems using conventional or direct filtration and must not exceed 1 NTU in systems using slow sand or diatomaceous earth filtration or other filtration technologies approved by the Department.
- <sup>7</sup>. TT - Treatment technique
- <sup>8</sup>. There are various regulations that set turbidity standards for different types of systems, including the 1989 Surface Water Treatment Rule (SWTR), the 1998 Interim Enhanced Surface Water Treatment Rule (IESWTR), and the 2002 Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR). For systems subject to the IESWTR (systems serving at least 10,000 people, using surface water or ground water under the direct influence of surface water), that use conventional filtration or direct filtration, after January 1, 2002, the turbidity level of a system's combined filter effluent may not exceed 0.3 NTU in at least 95 percent of monthly measurements, and the turbidity level of a system's combined filter effluent must not exceed 1 NTU at any time. Systems subject to the IESWTR using technologies other than conventional, direct, slow sand, or diatomaceous earth filtration must meet turbidity limits set by the Department. For systems subject to the LT1ESWTR (systems serving fewer than 10,000 people, using surface water or ground water under the direct influence of surface water) that use conventional filtration or direct filtration, after January 1, 2005 the turbidity level of a system's combined filter effluent may not exceed 0.3 NTU in at least 95 percent of monthly measurements, and the turbidity level of a system's combined filter effluent must not exceed 1 NTU at any time. Systems subject to the LT1ESWTR using technologies other than conventional, direct, slow sand, or diatomaceous earth filtration must meet turbidity limits set by the Department.

9. The bacteria detected by heterotrophic plate count (HPC) are not necessarily harmful. HPC is simply an alternative method of determining disinfectant residual levels. The number of such bacteria is an indicator of whether there is enough disinfectant in the distribution system.
10. SWTR, IESWTR, and LT1ESWTR treatment technique violations that involve turbidity exceedances may use the health effects language for turbidity instead.
11. These arsenic values are effective January 23, 2006. Until then, the MCL is 0.05 mg/L and there is no MCLG.
12. Millions fibers per liter.
13. Action Level = 0.015 mg/L
14. Action Level = 1.3 mg/L
15. Millirems per years
16. Picocuries per liter
17. The uranium MCL is effective December 8, 2003 for all community water systems.
18. Surface water systems and ground water systems under the direct influence of surface water are regulated under R.61-58.10. Community and non-transient non-community systems serving greater than, or equal to 10,000 must comply with R.61-58.13 DBP MCLs and disinfectant maximum residual disinfectant levels (MRDLs) beginning January 1, 2002. All other community and non-transient non-community systems must comply with R.61.58.13 DBP MCLs and MRDLs beginning January 1, 2004. Transient non-community surface water systems and ground water systems under the direct influence of surface water serving 10,000 or more persons and using chlorine dioxide as a disinfectant or oxidant must comply with the chlorine dioxide MRDL beginning January 1, 2002. All other transient non-community systems that use chlorine dioxide as a disinfectant or oxidant must comply with the chlorine dioxide MRDL beginning on January 1, 2004.
19. Community and non-transient non-community systems that must comply with R.61-58.14 TTHM and HAA5 MCLs of 0.080 mg/L and 0.060 mg/L, respectively (with compliance calculated as a locational running annual average) on the schedule in R.61-58.15.
20. The MCL for total trihalomethanes is the sum of the concentrations of the individual trihalomethanes.
21. The MCL for haloacetic acids is the sum of the concentrations of the individual haloacetic acids.
22. MRDLG--Maximum residual disinfectant level goal.
23. MRDL--Maximum residual disinfectant level.

**Amend R.61-58 Appendix D to R.61-58.12 to read:**

APPENDIX D TO R.61-58.12: CONSUMER CONFIDENCE REPORTS: REGULATED CONTAMINANTS

Contaminant (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects language
<b>Microbiological contaminants:</b>						
Total Coliform Bacteria †	MCL: (systems that collect > 40 samples/month) 5% of monthly samples are positive; (systems that collect <40 samples/month) 1 positive monthly sample.		MCL: (systems that collect ≥40 samples/month) 5% of monthly samples are positive; (systems that collect <40 samples/month) 1 positive monthly sample.	0	Naturally present in the environment	Coliforms are bacteria that are naturally present in the and are used as an indicator that other, potentially harmful bacteria may be present. Coliforms were found in more samples than allowed and this was a warning of potential problems.
<u>Total Coliform Bacteria †</u>	<u>TT</u>			<u>TT</u>	<u>Naturally present in the environment</u>	<u>Use language in R.51-58.12.C(11)(g)(i)(A)</u>
Fecal coliform and E. coli †	0		0	0	Human and animal fecal waste	Fecal coliforms and E. Coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely-compromised immune systems.
<u>E. coli †</u>	<u>Routine and repeat samples are total</u>		<u>Routine and repeat samples are total</u>	<u>0</u>	<u>Human and animal fecal waste</u>	<u>E. coli are bacteria whose presence indicates that the water may be</u>

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

presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea and associated headaches.

**Radioactive contaminants:**

Beta/photon emitters (mrem/yr)	4 mrem/yr		4	N/A	Decay of natural and man-made deposits.	Certain minerals are radioactive and may emit forms of radiation known as photons and beta radiation. Some people who drink water containing beta and photon in excess of the MCL over many years may have an increased risk of getting cancer.
Alpha emitters (pCi/L)	15 pCi/L		15	N/A	Erosion of natural deposits.	Certain minerals are radioactive and may emit a form of radiation known as alpha radiation. Some people who drink water containing alpha emitters in excess of the MCL over many years may have an increased risk of getting cancer.
Combined radium (pCi/L)	5 pCi/L		5	N/A	Erosion of natural deposits.	Some people who drink water containing radium-226 or 228 in excess of the MCL over many years may have an increased risk of getting cancer.
Uranium (pCi/L)	30 µg/L		30	0	Erosion of natural deposits.	Some people who drink water containing uranium in excess of the MCL over many years may have an increased risk getting cancer and kidney toxicity.

**Inorganic contaminants:**

Antimony (ppb)	.006	1000	6	6	Discharge from petroleum refineries; fire retardants;	Some people who drink water containing antimony well in excess of the MCL over many years could experience increases
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Arsenic (ppb)	.010	1000	10.	10	ceramics; electronics; solder. Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes.	in blood cholesterol and decreases in blood sugar. Some people who drink water containing arsenic in excess of the MCL over many years could experience skin damage or problems with their circulatory system, and may have an increased risk of getting cancer.
Asbestos (MFL)	7 MFL		7	7	Decay of asbestos cement water mains; production wastes; erosion of natural deposits.	Some people who drink water containing asbestos in excess of the MCL over many years may have an increased risk of developing benign intestinal polyps.
Barium (ppm)	2		2	2	Discharge of drilling; wastes; Discharge from metal refineries; Erosion of natural deposits.	Some people who drink water containing barium in of the MCL over many years could experience an increase in their blood pressure.
Beryllium (ppb)	.004	1000	4	4	Discharge from metal refineries and coal-burning factories; Discharge from electrical, aerospace, and defense industries	Some people who drink water containing beryllium well in excess of the MCL over many years could develop intestinal lesions
Bromate (ppb)	.010	1000	10	0	By-product of drinking water chlorination.	Some people who drink water containing bromate in excess of the MCL over many years may have an increased risk of getting cancer.
Cadmium (ppb)	.005	1000	5	5	Corrosion of galvanized pipes; Erosion of natural deposits; Discharge from metal refineries; Runoff from waste batteries and paints.	Some people who drink water containing cadmium in excess of the MCL over many years could experience kidney damage.

Chloramines (ppm)	MRDL = 4		MRDL = 4	MRDLG = 4	Water additive used to control microbes.	Some people who use water containing chloramines well in excess of the MRDL could experience irritating to their eyes and nose. Some people who drink water containing chloramines well in excess of the MRDL could experience stomach discomfort or anemia.
Chlorine (ppm)	MRDL = 4		MRDL = 4	MRDLG = 4	Water additive used to control microbes	Some people who use water containing chlorine well in excess of the MRDL could experience irritating effects to their eyes and nose. Some people who drink water containing chlorine well in excess of the MRDL could experience stomach discomfort.
Chlorine dioxide (ppb)	MRDL = .8	1000	MRDL = 800	MRDLG = 800	Water additive used to control microbes	Some infants and young children who drink water containing chlorine dioxide in excess of the MRDL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorine dioxide in excess of the MRDL. Some people may experience anemia.
Chlorite (ppm)	1		1	0.8	By-product of drinking water chlorination.	Some infants and young children who drink water containing chlorite in excess of the MCL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorite in excess of the MCL. Some people may experience anemia.
Chromium (ppb)	.1	1000	100	100	Discharge from steel and pulp; mills; Erosion of Natural deposits.	Some people who use water containing chromium well in excess of the MCL over many years could experience allergic dermatitis.

Copper (ppm)	AL=1.3		AL=1.3	1.3	Corrosion of household plumbing. Erosion of natural deposits.	Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson's Disease should consult their personal doctor.
Cyanide (ppb)	2	1000	200	200	Discharge from steel/metal factories; Discharge from plastic and fertilizer factories.	Some people who drink water containing cyanide well in excess of the MCL over many years could experience nerve damage or problems with their thyroid.
Fluoride (ppm)	4		4	4	Erosion of natural deposits; Water additive which promotes strong teeth Discharge from fertilizer and aluminum factories	Some people who drink water containing fluoride in excess of the MCL over many years could get bone disease, including pain and tenderness of the bones. Fluoride in drinking water at half the MCL or more may cause mottling of children's teeth, usually in children less than nine years old. Mottling, also known as dental fluorosis, may include brown staining and/or pitting of the teeth, and occurs only in developing teeth before they erupt from the gums.
Lead (ppb)	AL=.015	1000	AL=15	0	Corrosion of household plumbing systems; Erosion of natural deposits	Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure.

Mercury [inorganic] (ppb)	.002	1000	2	2	Erosion of natural deposits; discharge from refineries and factories; Runoff from landfills; Runoff from cropland.	Some people who drink water containing inorganic mercury well in excess of the MCL over many years could experience kidney damage
Nitrate (ppm)	10		10	10	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits.	Infants below the age of six months who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome.
Nitrite (ppm)	1		1	1	Runoff from fertilizer use; Leaching from septic tanks sewage; Erosion of natural deposits	Infants below the age of six months who drink water containing nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome.
Selenium (ppb)	.05	1000	50	50	Discharge from petroleum and metal refineries; Erosion of natural deposits; Discharge from mines.	Selenium is an essential nutrient. However, some people who drink water containing selenium in excess of the MCL over many years could experience hair or fingernail losses, numbness in fingers or toes, or problems with their circulation
Thallium (ppb)	.002	1000	2	0.5	Leaching from ore-processing sites; Discharge from electronics, glass, and drug factories.	Some people who drink water containing thallium in excess of the MCL over many years could experience hair loss, changes in their blood, or problems with their kidneys, intestines, or liver.

**Synthetic organic contaminants including pesticides and herbicides:**

2,4-D (ppb)	.07	1000	70	70	Runoff from herbicide used on row crops.	Some people who drink water containing the weed killer 2,4-D well in excess of the MCL over many years could experience problems with their kidneys, liver, or adrenal glands.
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2,4,5-TP [Silvex](ppb)	.05	1000	50	50	Residue of banned herbicide	Some people who drink water containing silvex in excess of the MCL over many years could experience liver problems.
Acrylamide	TT		TT	0	Added to water during sewage/wastewater treatment.	Some people who drink water containing high levels of acrylamide over a long period of time could have an increased problems with their nervous system or blood, and may have risk of getting cancer.
Alachlor (ppb)	.002	1000	2	0	Runoff from herbicide used on row crops.	Some people who drink water containing alachlor in excess of the MCL over many years could have problems with their eyes, liver, kidneys, or spleen, or experience anemia, and may have an increased risk of getting cancer.
Atrazine (ppb)	.003	1000	3	3	Runoff from herbicide used on row crops.	Some people who drink water containing atrazine well in excess of the MCL over many years could experience on problems with their cardiovascular system or reproductive difficulties.
Benzo(a)pyrene (nanograms/l).	[PAH] .0002	1,000,000	200	0	Leaching from linings of water storage tanks distribution lines.	Some people who drink water containing benzo(a)pyrene in excess of the MCL over many years may experience reproductive difficulties and may have an increased risk of getting cancer.
Carbofuran (ppb)	.04	1000	40	40	Leaching of soil fumigant used on rice and alfalfa.	Some people who drink carbofuran in excess of the MCL over many years could experience problems with their blood, or nervous or reproductive systems.
Chlordane (ppb)	.002	1000	2	0	Residue of banned termiticide	Some people who drink water containing chlordane in excess of the MCL over many years could experience problems with their liver or nervous system, and may have an increased risk of getting cancer.

Dalapon (ppb)	.2	1000	200	200	Runoff from herbicide used on rights of way.	Some people who drink water containing dalapon well in excess of the MCL over many years could experience minor kidney changes.
Di(2-ethylhexyl) adipate (ppb).	.4	1000	400	400	Discharge from chemical factories.	Some people who drink water containing di(2-ethylhexyl) adipate well in excess of the MCL over many years could experience toxic effects such as weight loss, liver enlargement or possible reproductive difficulties.
Di(2-ethylhexyl) phthalate (ppb).	.006	1000	6	0	Discharge from rubber and chemical factories.	Some people who drink water containing di(2-ethylhexyl) phthalate well in excess of the MCL over many years may have problems with their liver, or experience reproductive difficulties, and may have an increased risk of getting cancer.
Dibromochloropropane (ppt)	.0002	1,000,000	200	0	Runoff/leaching from soil fumigant used on soybeans, cotton, pineapples, and orchards.	Some people who drink water containing DBCP in excess of the MCL over many years could experience reproductive problems and may have an increased risk of getting cancer.
Dinoseb (ppb)	.007	1000	7	7	Runoff from herbicide used on soybeans and vegetables.	Some people who drink water containing dinoseb well in excess of the MCL over many years could experience reproductive difficulties.
Diquat (ppb)	.02	1000	20	20	Runoff from herbicide use.	Some people who drink water containing diquat in excess of the MCL over many years could get cataracts.
Dioxin [2,3,7,8-TCDD] (ppq).	.00000003	1,000,000,000	30	0	Emissions from waste incineration and other combustion; Discharge from chemical factories.	Some people who drink water containing dioxin in excess of the MCL over many years could experience reproductive difficulties and may have an increased risk of getting cancer.

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

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

Picloram (ppb)	.5	1000	500	500	Herbicide runoff	Some people who drink water containing picloram in excess of the MCL over many years could experience problems with their liver.
Simazine (ppb)	.004	1000	4	4	Herbicide runoff	Some people who drink water containing simazine in excess of the MCL over many years could experience problems with their blood.
Toxaphene (ppb)	.003	1000	3	0	Runoff/leaching from insecticide used on cotton and cattle.	Some people who drink water containing toxaphene in excess of the MCL over many years could have problems with their kidneys, liver, or thyroid, and may have an increased risk of getting cancer

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**Volatile organic contaminants:**

Benzene (ppb)	.005	1000	5	0	Discharge from factories; Leaching from gas storage tanks and landfills.	Some people who drink water containing benzene in excess of the MCL over many years could experience anemia or a decrease in blood platelets, and may have an increased risk of getting cancer.
Carbon tetrachloride (ppb)	.005	1000	5	0	Discharge from chemical plants and other industrial activities.	Some people who drink water containing carbon tetrachloride in excess of the MCL over many years could experience problems with in their liver and may have an increased risk of getting cancer.
Chlorobenzene (ppb)	.1	1000	100	100	Discharge from chemical and agricultural chemical factories	Some people who drink water containing chlorobenzene in excess of the MCL over many years could experience problems with their liver or kidneys.
o-Dichlorobenzene (ppb)	.6	1000	600	600	Discharge from industrial chemical	Some people who drink water containing o-dichlorobenzene well in excess of the MCL over liver, kidneys, or circulatory systems.

p-Dichlorobenzene (ppb)	.075	1000	75	75	Discharge from industrial chemical factories	Some people who drink water containing p-dichlorobenzene in excess of the MCL over many years could experience anemia, damage to their liver, kidneys, or spleen, or changes in their blood.
1,2-Dichloroethane (ppb)	.005	1000	5	0	Discharge from industrial chemical factories.	Some people who drink water containing 1,2-dichloroethane in excess of the MCL over many years may have an increased risk of getting cancer
1,1-Dichloroethylene (ppb)	.007	1000	7	7	Discharge from industrial chemical factories.	Some people who drink water containing 1,1-dichloroethylene in excess of the MCL over many years could experience problems with their liver.
cis-1,2-Dichloroethylene (ppb)	.07	1000	70	70	Discharge from industrial chemical factories.	Some people who drink water containing cis-1,2-dichloroethylene in excess of the MCL over many years could experience problems with their liver.
trans-1,2-Dichloroethylene (ppb).	.1	1000	100	10	Discharge from industrial chemical factories.	Some people who drink water containing trans-1,2-dichloroethylene well in excess of the MCL over many years could experience problems with their liver.
Dichloromethane (ppb)	.005	1000	5	0	Discharge from pharmaceutical and chemical factories	Some people who drink water containing dichloromethane in excess of the MCL over many years could have liver problems and may have an increase risk of getting cancer.
1,2-Dichloropropane (ppb)	.005	1000	5	0	Discharge from industrial chemical factories.	Some people who drink water containing 1,2-Dichloropropane excess of the MCL over many years may have an increased risk of getting cancer.
Ethylbenzene (ppb)	.7	1000	700	700	Discharge from petroleum refineries.	Some people who drink water containing ethylbenzene well in excess of the MCL over many years could experience problems with their liver or kidneys.

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

TTHMs [Total trihalomethanes] (ppb)	0.10/080	1000	100/80	N/A	By-product of drinking water disinfection.	Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer.
Toluene (ppm)	1		1	1	Discharge from petroleum factories.	Some people who drink water containing toluene well in excess of the MCL over many years could have problems with their nervous system, kidneys, or liver.
Vinyl Chloride (ppb)	.002	1000	2	0	Leaching from PVC piping; Discharge from plastics factories.	Some people who drink water containing vinyl chloride in excess of the MCL over many years may have an increased risk of getting cancer.
Xylenes (ppm)	10		10	10	Discharge from petroleum factories; Discharge from chemical factories.	Some people who drink water containing xylenes in excess of the MCL over many years could experience damage to their nervous system.

**Key:**

AL=Action Level

MCL=Maximum Contaminant Level

MCLG=Maximum Contaminant Level Goal

MFL=million fibers per liter

MRDL=Maximum Residual Disinfectant Level

MRDLG=Maximum Residual Disinfectant Level Goal

mrem/year=millirems per year (a measure of radiation absorbed by the body)

N/A=Not Applicable

NTU=Nephelometric Turbidity Units (a measure of water clarity)

pCi/l=picocuries per liter (a measure of radioactivity)

ppm=parts per million, or milligrams per liter (mg/L)

ppb=parts per billion, or micrograms per liter (µg/l)

ppt=parts per trillion, or nanograms per liter

ppq=parts per quadrillion, or picograms per liter

TT=Treatment Technique

**Appendix D to R.61-58.12 - endnotes**

<sup>1</sup> These arsenic values are effective January 23, 2006. Until then, the MCL is 0.05 mg/L and there is no MCLG.

† Until March 31, 2016

‡ Beginning April 1, 2016