COLORADO
Water Quality
Control Commission
Department of Public Health & Environment

NOTICE OF PUBLIC RULEMAKING HEARING
BEFORE THE
COLORADO WATER QUALITY CONTROL COMMISSION

SUBJECT:

For consideration of the adoption of revisions the Colorado Primary Drinking Water Regulations, Regulation #11 (5 CCR 1002-11). Revisions proposed by the Water Quality Control Division, along with a proposed Statement of Basis, Specific Statutory Authority and Purpose, are attached to this notice as Exhibit 1.

In these attachments, proposed new language is shown with double-underlining and proposed deletions are shown with ~~strikeouts~~. Any alternative proposals related to the subject of this hearing will also be considered.

SCHEDULE OF IMPORTANT DATES

Party status requests due	01/17/2018 5 pm	Additional information below.
Proponent's prehearing statement due	01/24/2018 5 pm	Additional information below.
Responsive prehearing statements due	02/21/2018 5 pm	Additional information below.
Rebuttal statements due	03/20/2018 5 pm	Additional information below.
Last date for submittal of motions	03/21/2018 5 pm	Additional information below.
Notify commission office if participating in prehearing conference by phone	03/23/2018 by noon	Send email to cdphe.wqcc@state.co.us with participant(s) name(s)
Prehearing Conference (mandatory for parties)	03/26/2018 10:30 am	Florence Sabin Conference Room Department of Public Health and Environment 4300 Cherry Creek Drive South Denver, CO 80246 Call-in: 1-857-216-6700, Code: 425132
Rulemaking Hearing	04/09/2018 9:00 am	Florence Sabin Conference Room Department of Public Health and Environment 4300 Cherry Creek Drive South Denver, CO 80246

HEARING SUBMITTALS:

For this hearing, the commission will receive all submittals electronically. Submittals must be provided as PDF documents, except for raw data exhibits which may be provided as Excel

workbooks. Submittals may be emailed to cdphe.wqcc@state.co.us, provided via an FTP site, CD or flash drive, or otherwise conveyed to the commission office so as to be received no later than the specified date.

PARTY STATUS:

Party status requests must be in writing and must provide:

- the organization's name,
- one contact person,
- a mailing address,
- a phone number, and
- email addresses of all individuals associated with the party who wish to be notified when new submittals are available on the commission's website for review.

In accordance with section 25-8-104(2)(d), C.R.S., any person who believes that the actions proposed in this notice have the potential to cause material injury to his or her water rights is requested to so indicate, along with an explanation of the alleged harm, in their party status request.

PREHEARING AND REBUTTAL STATEMENTS:

Each party must submit a prehearing statement: parties that have proposed revisions attached as exhibits to the notice must submit a proponent's prehearing statement. All other parties must submit a responsive prehearing statement. Proponents may also submit responsive prehearing statements when there are multiple proposals attached to the notice.

Each prehearing and rebuttal statement must be provided as a separate PDF document from any accompanying written testimony or exhibits.

Following the rebuttal statement due date, no other written materials will be accepted from parties except for good cause shown.

Oral testimony at the hearing should primarily summarize written material previously submitted. The hearing will emphasize commission questioning of parties and other interested persons about their written prehearing submittals. Introduction of written material at the hearing by those with party status will not be permitted unless authorized by the commission.

PREHEARING CONFERENCE:

Attendance at the prehearing conference is mandatory for all persons requesting party status. Parties needing to participate by telephone are encouraged to notify the commission office prior to the prehearing conference. Remote participants can call 1-857-216-6700 and enter the conference code 425132.

Following the cut-off date for motions, no motions will be accepted, except for good cause shown.

PUBLIC PARTICIPATION ENCOURAGED:

The commission encourages input from non-parties, either orally at the hearing or in writing prior to the hearing. Written submissions should be emailed to cdphe.wqcc@state.co.us by March 28, 2018.

SPECIFIC STATUTORY AUTHORITY:

The provisions of sections 25-8-202(1)(a), (b), and (2); 25-8-203; 25-8-204; and 25-8-402, C.R.S., provide the specific statutory authority for consideration of the regulatory amendments proposed by this notice. Should the commission adopt the regulatory language as proposed in this notice or alternative amendments, it will also adopt, in compliance with section 24-4-103(4) C.R.S., an appropriate Statement of Basis, Specific Statutory Authority, and Purpose.

Dated this 11th day of December, 2017 at Denver, Colorado.

WATER QUALITY CONTROL COMMISSION

Digitally signed by Trisha Oeth
DN: cn=Trisha Oeth, o, ou=Water Quality Control Commission, email=trisha.oeth@state.co.us, c=US
Date: 2017.12.11 10:34:21 -07'00'

Trisha Oeth, Administrator

EXHIBIT 1
WATER QUALITY CONTROL COMMISSION

DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT

Water Quality Control Commission

REGULATION NO. 11 - COLORADO PRIMARY DRINKING WATER REGULATIONS

5 CCR 1002-11

....

11.2(6) Materials Incorporated by Reference

(a) Date of Incorporation

(i) Throughout these regulations, requirements promulgated by the U.S. Environmental Protection Agency have been adopted and incorporated by reference. The federal references cited herein include only those versions that were in effect as of April 9, 2018, and not later amendments to the incorporated material.

(ii) All other materials incorporated by reference in the *Colorado Primary Drinking Water Regulations* include only those versions cited and not later amendments to incorporated material.

(b) The incorporated material may be examined at any state publications depository library, the Laboratory Services Division of the Department, or the Department at:

Colorado Department of Public Health and Environment
Water Quality Control Division
4300 Cherry Creek Drive South
Denver, Colorado 80246-1530
(303) 692-3500

(c) If the material incorporated by reference refers to other sections of the referenced document that conflict with current language of the *Colorado Primary Drinking Water Regulations*, the current language of the *Colorado Primary Drinking Water Regulations* takes precedence.

11.3 DEFINITIONS, ACRONYMS AND ABBREVIATIONS

Definitions of general applicability to the *Colorado Primary Drinking Water Regulations* are as specified here and shall be liberally construed to protect public health and the quality of drinking water supplied to the public. Additional definitions are specified throughout the *Colorado Primary Drinking Water Regulations* and are applicable to the rule in which they are defined. As used in the *Colorado Primary Drinking Water Regulations*:

…

(40) "LEVEL 1 ASSESSMENT" means~~, beginning April 1, 2016,~~ an evaluation conducted by the supplier to identify sanitary defects, inadequate or inappropriate distribution system coliform sampling practices, and (when possible) the ~~possible~~ cause(s) that triggered the assessment. Minimum elements must 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, including water storage, that could affect distributed water quality, source and treatment considerations that affect distributed water quality, existing water quality monitoring data, and inadequacies in sample sites, sampling protocol, and sample processing. The supplier must conduct the assessment consistent with any Department-specified directives based on the size and type of the system and the size, type, and characteristics of the distribution system. ~~Level 1 assessments must meet the requirements specified in 11.16(10).~~

(41) "LEVEL 2 ASSESSMENT" means~~, beginning April 1, 2016,~~ an evaluation conducted by the Department or Department-approved party to identify sanitary defects, inadequate or inappropriate distribution system coliform sampling practices, and (when possible) the ~~possible~~ cause(s) that triggered the assessment. ~~Level 2 assessments must meet the requirements specified in 11.16(10).~~ A Level 2 assessment is a more detailed examination of the system than a Level 1 assessment. A Level 2 assessment involves a comprehensive investigation and review of available information, additional internal and external resources, and other relevant practices. A Level 2 assessment must be completed by the Department or a Department-approved party. Minimum elements must 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, including water storage, that could affect distributed water quality, source and treatment considerations that affect distributed water quality, existing water quality monitoring data, and inadequacies in sample sites, sampling protocol, and sample processing. If required by the Department, the supplier must comply with any expedited schedules or additional actions ~~.~~

…

(67) "SANITARY DEFECT" means~~, beginning April 1, 2016,~~ a defect:

(i) That could provide a pathway of entry for microbial contamination into the distribution system; or

(ii) That is indicative of a failure or imminent failure in a barrier that is already in place.

(68) "SEASONAL SYSTEM" means a non-community water system that is not operated as a public water system on a year-round basis, regardless of whether the system is pressurized or de-pressurized during the off-season.

(6~~9~~8) "SECONDARY MAXIMUM CONTAMINANT LEVELS or "SMCLs" means the maximum level of a contaminant allowed in water which is delivered to the consumer of a public water system. The SMCLs apply to public water systems and which, in the judgment of the EPA Administrator, are requisite to protect the public health. Contaminants added to the water under circumstances controlled by the consumer, except those resulting from corrosion of piping and plumbing caused by water quality, are excluded from this definition. The SMCLs are not enforceable, but are intended as guidelines. The SMCLs are defined in 40 CFR 143.3 ~~as amended July 1, 2014~~.

(70~~69~~) "SEDIMENTATION" means a process for removal of solids before filtration by gravity or separation.

(710) "SERVICE CONNECTION" means a connection to a system that delivers water by constructed conveyance. The definition does not include connections that deliver water by a constructed conveyance other than a pipe if:

(i) The water is used exclusively for purposes other than residential uses (consisting of drinking, bathing, and cooking, or other similar uses);

(ii) The Department determines that an alternative water source to achieve the equivalent level of public health protection provided by the applicable *Colorado Primary Drinking Water Regulations* is provided for residential or similar uses for drinking and cooking; or

(iii) The Department determines that the water provided for residential or similar uses for drinking, cooking, and bathing is centrally treated or treated at the point of entry by the provider, a pass-through entity, or the user to achieve the equivalent level of protection provided by the applicable *Colorado Primary Drinking Water Regulations*.

(721) "SIGNIFICANT DEFICIENCY" means any situation, practice, or condition in a public water system with respect to design, operation, maintenance, or administration, that the state determines may result in or have the potential to result in production of finished drinking water that poses an unacceptable risk to health and welfare of the public served by the water system. Significant deficiencies include, but are not limited to, defects in design, operation, or maintenance, or a failure or malfunction of the sources, treatment, storage, or distribution system that the Department determines to be causing, or have potential for causing, the introduction of contamination into the water delivered to consumers.

(732) "SMALL SYSTEM COMPLIANCE TECHNOLOGY" or "SSCT" means a treatment technology that is affordable (according to the affordability criteria set forth by the EPA) by small systems and allows systems to achieve compliance with the MCL or treatment technique.

(743) "SLOW SAND FILTRATION" means a process involving passage of raw water through a bed of sand at low velocity (generally less than 0.4 meters per hour (m/h)) resulting in substantial particulate removal by physical and biological mechanisms.

(754) "SOURCE" means the point at which a public water system diverts water from its natural or man-made origin.

(765) "SOURCE WATER SAMPLE" means a sample collected before any treatment that represents influent raw source water quality.

(776) "SPECIAL IRRIGATION DISTRICT" means an irrigation district in existence before May 18, 1994 that provides primarily agricultural service through a piped water system with only incidental residential or similar use where the system or the residential or similar users of the system comply with the exclusion provisions outlined in the definition of service connections.

(787) "SPECIAL PURPOSE SAMPLE" means~~, beginning April 1, 2016,~~ a total coliform sample that is not collected in accordance with the sampling plan. Special purpose samples include samples that are taken to determine whether disinfection practices are sufficient following pipe placement, replacement, or repair. Repeat samples collected pursuant to 11.16(5) are not considered special purpose samples and must be used to determine if the coliform treatment technique trigger has been exceeded. Special purpose samples will not be used to determine compliance with sampling requirements, the *E. coli* MCL, or in determining if a treatment technique is triggered.

(798) "SPENT FILTER BACKWASH WATER" means a stream containing particles that are dislodged from filter media when water is forced back through a filter (backwashed) to clean the filter. Spent

filter backwash water contains particles including coagulants, metals, and microbes such as *Cryptosporidium*.

(8079) "STATE" means the State of Colorado.

(810) "SUPPLIER OF WATER" or "SUPPLIER" means any person who owns or operates a public water system.

(821) "SURFACE WATER" means any water source that is open to the atmosphere and subject to surface runoff. Groundwater found to be under the direct influence of surface water is classified as surface water.

(832) "SURFACE WATER SYSTEM" means a public water system that uses, in whole or in part, surface water or groundwater under the direct influence of surface water as a source of water.

(843) "TRANSIENT, NON-COMMUNITY WATER SYSTEM" means a non-community water system that serves a population of at least 25 people per day for at least 60 days per year and is not a non-transient, non-community water system or a community water system.

(854) "TRANSIENT POPULATION" means the average number of individuals served per day during the year or annual operating period(s), who have an opportunity to consume water from the system, but who do not meet the definition of either resident population or non-transient population.

(865) "TREATMENT TECHNIQUE REQUIREMENT" means a requirement that specifies a treatment technique(s) for a contaminant which leads to a sufficient reduction in the level of the contaminant to comply with the requirements of the *Colorado Primary Drinking Water Regulations*. A treatment technique may also be a requirement that is intended to prevent situations that have the potential to have serious adverse effects on human health.

(876) "VIOLATION" means failure to comply with any requirement of the *Colorado Primary Drinking Water Regulations*.

(887) "VIRUS" means a virus of fecal origin, which is infectious to humans by waterborne transmission.

(898) "WATERBORNE DISEASE OUTBREAK" means the significant occurrence of acute infectious illness, epidemiologically associated with the ingestion of water from a public water system which is deficient in treatment, as determined by the appropriate local or State agency.

(9089) "WATERWORKS" means the facilities that are directly involved in the production, treatment, or distribution of water for public water systems.

(910) "WATER QUALITY CONTROL COMMISSION" means the commission that has been created within the Colorado Department of Public Health and Environment pursuant to section 25-8-201, Colorado Revised Statutes.

(921) "WATER VENDING AND DISPENSING MACHINES" means any device which, upon payment dispenses water into a container.

(932) "WHOLESALER" means any person who owns or operates and is legally responsible for a wholesale system.

(943) "WHOLESALE SYSTEM" means a public water system that treats source water as necessary to produce finished water and then delivers some or all of that finished water to another public water system.

Delivery may be through a direct connection or through the distribution system of one or more consecutive systems.

TABLE 11.3-I ACRONYMS AND ABBREVIATIONS

Term:	Means:
AL	Action Level
BAT	Best Available Technology
C	Disinfectant Concentration
CCR	Consumer Confidence Report
CDC	Centers for Disease Control and Prevention
CFR	Code of Federal Regulations
CFU	Colony-Forming Units
CPDWR	*Colorado Primary Drinking Water Regulations*
CPE	Comprehensive Performance Evaluation
CT	Disinfectant Concentration x Contact Time
CTAP	Comprehensive Technical Assistance Project
EPA	United States Environmental Protection Agency
HAA5	Haloacetic Acids
HPC	Heterotrophic Plate Count
IDSE	Initial Distribution System Evaluation
IFE	Individual Filter Effluent
LRAA	Locational Running Annual Average
LRV	Log Removal Value
$LRV_{C\text{-}Test}$	Removal Efficiency
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
MFL	Million Fibers per Liter
mJ/cm^2	Millijoules per Square Centimeter
MPN	Most Probable Number
MRDL	Maximum Residual Disinfectant Level
MRDLG	Maximum Residual Disinfectant Level Goal
mrem	Millirems
nm	Nanometers
NPDWR	National Primary Drinking Water Regulations
NTU	Nephelometric Turbidity Unit
PCB	Polycarbonated Biphenyls
pCi	Picocurie
ppb	Parts Per Billion, or Micrograms (10^{-6}) per Liter (mg/L)
ppm	Parts Per Million, or Milligrams (10^{-3}) per Liter (mg/L)
ppq	Parts Per Quadrillion, or Picograms (10^{-12}) per Liter (pg/L)
ppt	Parts Per Trillion, or Nanograms (10^{-9}) per Liter (ng/L)
PVC	Polyvinyl Chloride
QCRV	Quality Control Release Value
RAA	Running Annual Average
SMCL	Secondary Maximum Contaminant Level
SSCT	Small System Compliance Technology
SOC	Synthetic Organic Chemical
SUVA	Specific Ultraviolet Absorbance
T	Disinfectant Contact Time
TOC	Total Organic Carbon
TTHM	Total Trihalomethanes

UV	Ultraviolet
VOC	Volatile Organic Chemical

…

11.5 MONITORING PLAN RULE

11.5(1) Applicability

For all public water systems, the supplier must comply with the monitoring plan requirements specified in this rule.

11.5(2) General Requirements

(a) The supplier must develop and implement a monitoring plan which must ensure that the water quality monitoring performed by the supplier is representative of the water supplied to consumers and is consistent with regulatory requirements of the *Colorado Primary Drinking Water Regulations*.

(b) The supplier must maintain the monitoring plan and make it available for inspection by the Department.

11.5(3) Monitoring Plan Required Elements

(a) The supplier must include all of the following information in the monitoring plan:

(i) Part 1 - System Summary:

(A) The Colorado public water system identification number (PWSID).

(B) The full name of the supplier (e.g., the name of a corporation, LLC, partnership, sole proprietor, HOA, etc.).

(C) The system's mailing address.

(D) The name of the supplier's authorized contact person(s) responsible for the development and implementation of the monitoring plan, if other than the supplier.

(E) The telephone number of the supplier or the supplier's authorized monitoring plan contact person.

(F) The system's classification (i.e., community, non-transient, non-community, or transient, non-community).

(G) The total population supplied by the system, by population type (i.e., the number of resident, non-transient, and transient consumers).

(H) The physical addresses of all system facilities, including master meters, and the latitude and longitude of all facilities.

(I) The physical location of all records required under 11.36.

(ii) Part 2 - Water Sources Details:

(A) Identification of all water sources capable of being used by the system, (i.e., those connected by conveyances, whether currently producing or not).

(B) A schematic, diagram or sketch showing how the flow from each source is connected to the treatment processes and the distribution system.

(iii) Part 3 - Water Treatment Details:

(A) A summary of the system's operating characteristics.

(B) A schematic of the water treatment plant(s) identifying:

(I) All treatment processes, including all chemical feed points, and the associated periods of operation that were assumed in the design of the monitoring plan (e.g., use of peaking facilities, alternative water sources, maintenance schedules that take facilities offline, etc.).

(II) All treatment plant monitoring locations.

(iv) Part 4 - Distribution System Details:

(A) A schematic of the distribution system identifying all of the following:

(I) All entry points.

(II) All treatment facilities located after the entry point(s) (e.g., booster chlorination).

(III) All storage facilities and finished water reservoirs.

(IV) All distribution system sampling locations.

(V) All master meters to other public water systems.

(VI) All pump stations.

(v) Part 5 - Individual Rule Sampling Plans:

(A) For each applicable monitoring or sampling requirement:

(I) The frequency and approximate time of collection.

(II) The monitoring and sampling location identification and associated identification number.

(III) The justification for distribution system monitoring location selections and, if appropriate, the justification for all other monitoring and sampling location selections.

(IV) The sample preservation, quality assurance, and quality control procedures, including procedures for equipment calibration.

(V) The analysis procedure (i.e., certified laboratory or on-site by a Department-approved party).

(VI) The monitoring and sampling results presentation format.

(VII) Procedures to assess and report compliance status for MCLs, MRDLs, action levels, treatment techniques and, if applicable, disinfection byproduct precursor removal efficiency.

(VIII) A process to review and update the selected distribution system monitoring and sampling locations to account for changes due to growth or other significant changes to the distribution system.

(b) The supplier may use one schematic if it includes all elements specified in 11.5(3)(a)(ii-iv).

11.5(4) Monitoring Plan Reporting Requirements

(a) For new systems, the supplier must submit the information specified in 11.5(3)(a)(i-iv) to the Department no later than the 10th of the month following the end of the first quarter in which monitoring is required.

(i) For surface water systems supplying greater than (>) 3,300 people, the supplier must also submit a copy of the Individual Rule Sampling Plan for the following no later than the date the supplier collects the first sample: 11.23: Maximum Residual Disinfectant Levels Rule, 11.24: Disinfection Byproduct Precursors Rule, 11.25(2): Chlorite, and 11.25(3): Bromate.

(A) The Department may review and require the supplier to revise the sampling plan.

(b) The supplier must submit the Individual Rule Sampling Plan information specified in 11.5(3)(a)(v) to the Department as specified in the following rules: for integrated systems in 11.42(4), ~~and~~ for the Disinfection Byproducts Rule in 11.25(1)(d), for the Groundwater Rule: Disinfection Waivers in 11.13(2), and ~~and beginning April 1, 2016~~ for the Revised Total Coliform Rule in 11.16(34).

11.5(5) Monitoring Plan Revisions

The supplier must submit any changes to the monitoring plan no later than 30 days after the effective date of the change.

11.6 RESERVED

11.7 RESERVED

11.8 SURFACE WATER TREATMENT RULE

11.8(1) General Requirements

(a) Applicability and Definitions

(i) For all surface water systems, the supplier must comply with the requirements specified in this rule.

(ii) "COMBINED FILTER EFFLUENT" means a location representative of the filtered water quality which includes the filter effluent of all filters in use at any given time and is as close as practical to the point where all individual filter effluents combine or as approved by the Department.

(iii) "COMPREHENSIVE PERFORMANCE EVALUATION" or "CPE" means a thorough review and analysis of a treatment plant's performance capabilities and associated administrative, operational and maintenance practices. It is conducted to identify factors that may be adversely impacting a plant's capability to achieve compliance and emphasizes approaches that can be implemented without significant capital improvements. The CPE must include at least all of the following components:

(A) Assessment of plant performance.

(B) Evaluation of major unit processes.

(C) Identification and prioritization of performance limiting factors.

(D) Assessment of whether a CTAP would improve treatment plant performance.

(iv) "COMPREHENSIVE TECHNICAL ASSISTANCE PROJECT" or "CTAP" means a performance improvement project that uses CPE results to set priorities for process control improvements and to establish a long-term training program for staff and administrators.

(v) "FILTER PROFILE" means a graphical representation of individual filter performance, based on continuous turbidity measurements or total particle counts versus time for an entire filter run, from startup to backwash inclusively, that includes an assessment of filter performance while another filter is being backwashed.

(vi) "INDIVIDUAL FILTER EFFLUENT" means a location representative of the filtered water quality from an individual filter's effluent which is at a point before combining with the effluent flow from other filters.

(vii) "POINT OF DISINFECTANT APPLICATION" means the point where the disinfectant is applied and water downstream of that point is not subject to recontamination.

(b) Treatment Technique Requirements

(i) The supplier must provide filtration and disinfection of surface water sources that meets the treatment technique requirements for all of the following: *Cryptosporidium, Giardia lamblia*, viruses, Heterotrophic Plate Count bacteria, *Legionella*, and turbidity. These treatment techniques are as follows:

(A) At a point between where the source water is not subject to recontamination and the entry point, the supplier must install and properly operate water treatment processes that reliably achieve at least the following levels of treatment:

(I) 99 percent (2-log) removal of *Cryptosporidium.*

(II) 99.9 percent (3-log) treatment, including filtration and disinfection, of *Giardia lamblia.*

(III) 99.99 percent (4-log) treatment, including filtration and disinfection, of viruses.

(ii) The supplier is considered to be in compliance with the requirements specified in 11.8(1)(b)(i), if the supplier meets all of the following:

(A) The filtration requirements specified in 11.8(2)(b).

(B) The disinfection requirements specified in 11.8(3)(b).

(iii) Until March 31, 2016, the supplier must not use uncovered finished water storage facilities.

(A) "UNCOVERED FINISHED WATER STORAGE FACILITY" means, until March 31, 2016, a tank, reservoir, or other facility used to store water that will undergo no further treatment except residual disinfection and that is open to the atmosphere without properly screened vents, screened overflow pipe, or cover.

(iv) When the Department determines that a groundwater source is under the direct influence of surface water, and therefore the system is reclassified as a surface water system, the supplier must comply with the requirements specified in this section, 11.8(1)(b), no later than 18 months after receiving written notification from the Department of the source's reclassification.

~~(c) Additional Requirements~~

~~(i) The supplier must have the system operated by qualified personnel who meet the requirements of Regulation 100, the *Water and Wastewater Facility Operators Certification Requirements.*~~

11.8(2) Filtration Requirements

(a) Applicability for Filtration Requirements

(i) For all surface water systems, the supplier must comply with the requirements specified in this section, 11.8(2).

(b) Treatment Technique Requirements for the Combined Filter Effluent

(i) The combined filter effluent treatment technique requirements are as follows:

(A) At the combined filter effluent, the supplier must:

(I) Maintain treated water turbidity levels of less than or equal to (≤) the 95th percentile limit specified in Table 11.8-I in at least 95 percent of the turbidity monitoring results collected each month.

(a) For systems using slow sand filtration, the Department may allow an elevated turbidity level if the Department determines there is no significant interference with disinfection at the elevated turbidity limit for that system.

(II) Maintain treated water turbidity levels that are less than or equal to (≤) the maximum limit specified in Table 11.8-I at all times.

TABLE 11.8-I TURBIDITY LIMITS

For systems using:	95th percentile limit	Maximum limit
Conventional Filtration	0.3 NTU	1 NTU
Direct Filtration	0.3 NTU	1 NTU
Slow Sand Filtration	1 NTU	5 NTU
Diatomaceous Earth Filtration	1 NTU	5 NTU
Alternative Filtration	1 NTU	5 NTU

Technologies -Bag Filtration		
Alternative Filtration Technologies - Cartridge Filtration	1 NTU	5 NTU
Alternative Filtration Technologies - Membranes and all other alternative filtration	As approved by the Department, but no greater than 1 NTU	As approved by the Department, but no greater than 5 NTU

(ii) If approved by the Department, the supplier may use alternative filtration technologies including membrane filtration or filtration technologies other than those specified in Table 11.8-I.

(A) In order for the Department to approve an alternative filtration technology, the supplier must demonstrate, using pilot plant studies or other means, that the filtration technology, in combination with the disinfection treatment as specified in 11.8(3)(b), consistently achieves 99 percent (2-log) removal of *Cryptosporidium*, 99.9 percent (3-log) removal and inactivation of *Giardia lamblia*, 99.99 percent (4-log) removal and inactivation of viruses.

(B) If the Department approves the use of an alternative filtration technology, the Department shall approve combined filter effluent turbidity limits that are less than or equal to (≤):

(I) 1 NTU in 95 percent of measurements collected each month; and

(II) 5 NTU at any time.

(iii) When the Department determines that a groundwater source is under the direct influence of surface water, and therefore the system is reclassified as a surface water system, the supplier must comply with the requirements specified in this section, 11.8(2)(b), no later than 18 months after receiving written notification from the Department of the source's reclassification.

(c) Monitoring Requirements for Combined Filter Effluent Treatment Technique Requirements

(i) To determine compliance with the combined filter effluent treatment technique requirements, the supplier must monitor turbidity at least every four hours at a location(s) representative of the combined filter effluent.

(A) The supplier may monitor turbidity continuously if the supplier validates the continuous monitoring equipment for accuracy at a Department-approved regular frequency and using a Department-approved protocol.

(B) The Department may reduce the turbidity monitoring frequency to daily if the Department determines that less frequent monitoring is sufficient to indicate effective filtration performance for systems that meet one or more of the following:

(I) The system uses filtration treatment other than conventional filtration treatment, direct filtration, or diatomaceous earth filtration.

(II) The system supplies less than or equal to (≤) 500 people.

(ii) For systems using lime softening, the supplier may acidify turbidity samples before analysis using a Department-approved protocol.

(iii) When the Department determines that a groundwater source is under the direct influence of surface water, and therefore the system is reclassified as a surface water system, the supplier must comply with the requirements specified in this section, 11.8(2)(c), no later than when filtration is installed.

(d) Treatment Technique Violations for Combined Filter Effluent

(i) The following constitute combined filter effluent treatment technique violations:

(A) More than 5 percent of turbidity monitoring results in any month are greater than (>) the applicable 95th percentile limits specified in Table 11.8-I.

(B) At any time a turbidity monitoring result is greater than (>) the applicable maximum turbidity limit specified in Table 11.8-I.

(e) Response to Combined Filter Effluent Treatment Technique Violations

(i) In the event of a 95th percentile combined filter effluent turbidity limit treatment technique violation, as specified in 11.8(2)(d)(i)(A), the supplier must:

(A) Notify the Department no later than 48 hours after the violation occurs.

(B) Distribute Tier 2 public notice as specified in 11.33.

(ii) In the event of a maximum combined filter effluent turbidity limit treatment technique violation, as specified in 11.8(2)(d)(i)(B), the supplier must consult with the Department as soon as possible but no later than 24 hours after the violation occurs.

(A) The Department shall determine from the consultation whether Tier 1 or Tier 2 public notice is required to protect public health. The supplier must distribute public notice as specified by the Department.

(B) If the supplier fails to consult with the Department within 24 hours, the supplier must distribute Tier 1 public notice, as specified in 11.33, for the violation.

(f) Reporting Requirements for Combined Filter Effluent Monitoring

(i) For combined filter effluent turbidity monitoring results collected under 11.8(2)(c), the supplier must submit the following information no later than the 10th of the following month:

(A) Number of combined filter effluent turbidity monitoring results recorded during the month.

(B) Number and percentage of combined filter effluent turbidity monitoring results recorded during the month that were greater than (>) the 95th percentile turbidity limit specified in 11.8(2)(b).

(C) The date and value of any combined filter effluent turbidity monitoring results collected during the month, which were greater than (>) the maximum turbidity limit.

(g) Monitoring Requirements for Individual Filter Effluent Turbidity

(i) For systems using conventional filtration treatment or direct filtration treatment, the supplier must monitor turbidity continuously at locations representative of each individual filter effluent.

(A) The supplier must record the individual filter effluent turbidity monitoring results at least every 15 minutes.

(B) The supplier must calibrate the continuous monitoring equipment using the manufacturer-specified procedure.

(C) If there is a failure of the continuous monitoring equipment, the supplier must monitor the individual filter effluent turbidity by collecting a grab sample no later than four hours after the last recorded monitoring result and continue collecting grab samples every four hours until the continuous monitoring equipment is returned to service.

(I) For systems supplying greater than or equal to (≥) 10,000 people, the supplier must resume continuous individual filter effluent turbidity monitoring no later than five working days after the equipment failure.

(II) For systems supplying less than (<) 10,000 people, the supplier must resume continuous individual filter effluent turbidity monitoring no later than 14 days after the equipment failure.

(D) For systems supplying less than (<) 10,000 people that consist of two or fewer filters, the supplier may conduct continuous combined filter effluent turbidity monitoring to represent individual filter effluent turbidity monitoring.

(I) Continuous combined filter effluent turbidity monitoring must meet the requirements specified in 11.8(2)(g)(i)(A-C).

(E) For systems using lime softening, the supplier may acidify turbidity samples before analysis using a Department-approved protocol.

(h) Reporting Requirements for Individual Filter Effluent Turbidity Monitoring

For individual filter effluent turbidity monitoring, the supplier must submit documentation that the monitoring was conducted, no later than the 10th of the following month in which the monitoring was conducted.

(i) Response to Individual Filter Effluent Turbidity Monitoring Results for Systems Supplying Greater Than or Equal to (≥) 10,000 People

(i) If the individual filter effluent turbidity monitoring results at the same filter are greater than (>) 1.0 NTU in two consecutive recordings collected 15 minutes apart, an exceedance occurs and the supplier must:

(A) Produce a filter profile no later than seven days after the exceedance if the cause for the exceedance is not known.

(B) Submit all of the following no later than the 10th of the month following the exceedance:

(I) Which filter exceeded.

(II) Date of the exceedance.

(III) The turbidity monitoring results which exceeded 1.0 NTU.

(IV) The cause for the exceedance or if the cause of the exceedance is not known, documentation that a filter profile was produced.

(ii) If, in each month, for three consecutive months, the individual filter effluent turbidity monitoring results at the same filter are greater than (>) 1.0 NTU in two consecutive recordings collected 15 minutes apart, an exceedance occurs.

(A) The supplier must conduct a self-assessment of that filter no later than 14 days after the exceedance.

(B) The self-assessment must include at least all of the following:

(I) Assessment of filter performance.

(II) Development of a filter profile.

(III) Identification and prioritization of factors limiting filter performance.

(IV) Assessment of the applicability of corrections.

(V) Preparation of a written self-assessment report.

(C) In addition to the reporting requirements specified in 11.8(2)(i)(i)(B), the supplier must submit notification by the 10th of the month following the exceedance that the self-assessment was conducted.

(iii) If, in each month, for two consecutive months, the individual filter effluent turbidity monitoring results at the same filter are greater than (>) 2.0 NTU in two consecutive recordings collected 15 minutes apart, an exceedance occurs.

(A) The supplier must comply with the reporting requirements specified in 11.8(2)(i)(i)(B).

(B) No later than 30 days after the exceedance occurs, the supplier must arrange for a CPE to be conducted by the Department or by a Department-approved third party.

(C) No later than 90 days after the exceedance occurs, the supplier must submit the completed CPE report.

(D) If the CPE indicates the potential for improved water system performance, the supplier must complete a CTAP.

(I) During the CTAP, the supplier must identify and systematically address plant-specific factors as outlined in the CPE and include them in a report submitted no later than 90 days after the completion of the CPE.

(iv) When a filter is brought online, if after the first four hours of operation, the individual filter effluent turbidity monitoring results at that filter are greater than (>) 0.5 NTU in two consecutive readings collected 15 minutes apart, an exceedance occurs and the supplier must:

(A) Produce a filter profile no later than seven days after the exceedance if the cause for the exceedance is not known.

(B) Submit all of the following no later than the 10th of the month following the exceedance:

(I) Which filter exceeded.

(II) Date of the exceedance.

(III) The turbidity monitoring results which exceeded 0.5 NTU.

(IV) The cause for the exceedance or if the cause of the exceedance is not known, documentation that a filter profile was produced.

(v) For systems using lime softening, the supplier may apply to the Department for higher individual filter effluent turbidity limits than the limits specified in this section, 11.8(2)(i), if the supplier can demonstrate that higher individual filter effluent limits are due only to lime carryover and not degraded filter performance.

(j) Response to Individual Filter Effluent Turbidity Monitoring Results for Systems Supplying Less Than (<) 10,000 People

(i) If the individual filter effluent turbidity monitoring results at the same filter are greater than (>) 1.0 NTU in two consecutive recordings collected 15 minutes apart, an exceedance occurs and the supplier must submit all of the following no later than the 10th of the month following the exceedance:

(A) Which filter exceeded.

(B) Date of the exceedance.

(C) Turbidity monitoring results which exceeded 1.0 NTU.

(D) Cause for the exceedance, if known.

(ii) If, in each month, for three consecutive months the individual filter effluent turbidity monitoring results at the same filter are greater than (>) 1.0 NTU in two consecutive recordings collected 15 minutes apart, an exceedance occurs.

(A) The supplier must conduct a self-assessment of that filter no later than 14 days after the exceedance occurs, unless a CPE is required as specified in 11.8(2)(j)(iii).

(I) For systems with two or fewer filters that monitor combined filter effluent instead of individual filter effluent as specified in 11.8(2)(g)(i)(D), the supplier must conduct the self-assessment on both filters.

(B) The self-assessment must include at least all of the following:

(I) Assessment of filter performance.

(II) Development of a filter profile.

(III) Identification and prioritization of factors limiting filter performance.

(IV) Assessment of the applicability of corrections.

(V) Preparation of a written self-assessment report.

(C) In addition to the reporting requirements specified in 11.8(2)(j)(i), the supplier must submit all of the following no later than the 10th of the month following the exceedance:

(I) The date the self-assessment was triggered.

(II) The date the self-assessment was completed.

(iii) If, in each month, for two consecutive months, the individual filter effluent turbidity monitoring results at the same filter are greater than (>) 2.0 NTU in two consecutive recordings collected 15 minutes apart, an exceedance occurs.

(A) No later than 60 days after the exceedance occurs, the supplier must arrange for a CPE to be conducted by the Department or by a Department-approved third party.

(B) No later than 120 days after the exceedance occurs, the supplier must submit the completed CPE report.

(C) The supplier is not required to arrange for a CPE and submit a CPE report if:

(I) A CPE has been completed by the Department or by a Department-approved third party within the last 12 months; or

(II) The supplier and Department are participating in an ongoing CTAP at the system.

(D) In addition to the reporting requirements specified in 11.8(2)(j)(i), if a CPE is required, the supplier must submit all of the following no later than the 10th of the month following the exceedance:

(I) That a CPE is required.

(II) The date the CPE was triggered.

(E) If the CPE indicates the potential for improved water system performance, the supplier must complete a CTAP.

(I) During the CTAP, the supplier must identify and systematically address plant-specific factors as outlined in the CPE and include them in a report submitted no later than 90 days after the completion of the CPE.

(iv) For systems using lime softening, the supplier may apply to the Department for higher individual filter effluent turbidity limits than the limits specified in this section, 11.8(2)(j), if the supplier can demonstrate that higher individual filter effluent turbidity limits are due only to lime carryover and not due to degraded filter performance.

11.8(3) Disinfection Treatment Technique Requirements

(a) Applicability for Disinfection Treatment Technique Requirements

(i) For all surface water systems, the supplier must comply with the disinfection treatment technique requirements specified in this section, 11.8(3).

(ii) When the Department determines that a groundwater source is under the direct influence of surface water, and therefore the system is reclassified as a surface water system, the supplier must comply with all of the following:

(A) Either Department-determined interim disinfection requirements or disinfection treatment technique requirements specified in 11.8(3)(b), no later than 60 days after written notification from the Department of the decision to change the source's classification; and

(B) All requirements specified in this section, 11.8(3), no later 18 months after written notification from the Department of the decision to change the source's classification or no later than when the filtration is installed, whichever is sooner.

(b) Treatment Technique Requirements for Disinfection

(i) The disinfection treatment technique requirements are as follows:

(A) The supplier must maintain disinfection treatment sufficient to ensure that the total treatment processes, including filtration and disinfection, achieve 99.9 percent (3-log) treatment of *Giardia lamblia* cysts and 99.99 percent (4-log) treatment of viruses, as determined by the Department.

(B) The supplier must maintain a residual disinfectant concentration at each entry point and throughout the distribution system.

(I) At each entry point, the residual disinfectant concentration cannot be less than (<) 0.2 mg/L for more than four hours.

(II) In the distribution system, ~~until March 31, 2016,~~ the residual disinfectant concentration cannot be undetectable in more than 5 percent of the samples collected in each month, for two consecutive months during which the system supplies water to the public.

(III) In the distribution system, ~~beginning April 1, 2016,~~ the residual disinfectant concentration must be greater than or equal to (≥) 0.2 mg/L.

(ii) No later than December 31, 2015, the supplier may apply to the Department for an extension for complying with the treatment technique requirements specified in 11.8(3)(b)(i)(B)(III).

(A) In the application, the supplier must include all of the following information:

(I) An explanation of why the supplier is unable to comply with the treatment technique requirements specified in 11.8(3)(b)(i)(B)(III).

(II) A distribution system disinfectant residual data analysis demonstrating the inability to comply with the treatment technique requirements specified in 11.8(3)(b)(i)(B)(III).

(III) An engineering report prepared by a professional engineer registered in the state of Colorado demonstrating that capital improvements are

necessary to comply with the treatment technique requirements specified in 11.8(3)(b)(i)(B)(III).

(IV) A proposed schedule for completing the system modifications.

(B) The Department shall consider the following criteria when determining if an extension will be granted:

(I) The supplier submitted a complete application that included the information specified above;

(II) The supplier has complied with the monitoring requirements specified in 11.17 in the last 36 months; and

(III) The supplier has not incurred an MCL violation specified in 11.17(9) in the last 36 months.

(iii) The Department will only grant an extension for up to four years.

(iv) If the supplier receives written Department-approval for an extension, the supplier must:

(A) Continue to comply with the treatment technique requirements specified in 11.8(3)(b)(i)(B)(II) and is subject to the violation specified in 11.8(3)(d)(i)(B) until the capital improvements are completed or the extension expires, whichever comes first; and

(B) Comply with any Department-specified requirements.

(c) Monitoring Requirements for Disinfection Treatment Technique Requirements

(i) To determine compliance with the disinfection treatment technique requirements, the supplier must monitor the residual disinfectant concentration.

(A) At each entry point, the supplier must continuously monitor the residual disinfectant concentration.

(I) The supplier must record the lowest monitoring result each day.

(II) If there is a failure of the continuous monitoring equipment, the supplier must monitor the residual disinfectant concentration by collecting a grab sample no later than four hours after the equipment failure and continue collecting grab samples every four hours until the continuous monitoring equipment is returned to service.

(a) The supplier must resume continuous residual disinfectant concentration monitoring no later than five working days after the equipment failure.

(III) For systems supplying less than or equal to (≤) 3,300 people, the supplier is not required to monitor continuously if the supplier collects grab samples at the frequency specified in Table 11.8-II.

(a) If more than one sample per day is required, the supplier must collect the samples throughout the day. The sampling intervals are subject to Department approval.

(b) If any grab sample result is less than (<) 0.2 mg/L, the supplier must increase the monitoring frequency of the residual disinfectant concentration at that entry point to at least every four hours until the residual disinfectant concentration is greater than or equal to (≥) 0.2 mg/L.

TABLE 11.8-II MINIMUM GRAB SAMPLES	
Population supplied by the system	Samples per day
≤ 500	1
501 – 1,000	2
1,001 – 2,500	3
2,501 – 3,300	4

(B) In the distribution system, the supplier must monitor the residual disinfectant concentration at the same time and at the same sampling locations that total coliform samples are collected under ~~11.17(3) until March 31, 2016, and collected under~~ 11.16(4~~6-7~~) ~~beginning April 1, 2016~~.

(I) The supplier must measure the residual disinfectant concentration as free chlorine unless the supplier uses a disinfection process that results in a monochloramine residual disinfectant, then the supplier must measure the residual disinfectant concentration as total chlorine. If the supplier uses a different type of chemical disinfectant (e.g., ozone or chlorine dioxide), the supplier must measure the appropriate residual disinfectant concentration.

(II) For systems using both surface water and groundwater sources, the Department may allow the supplier to collect residual disinfectant concentration samples at locations other than the total coliform sampling locations if the Department determines that other locations are more representative of finished water quality in the distribution system.

(d) Treatment Technique Violations for Disinfection

(i) The following constitute disinfection treatment technique violations:

(A) At any entry point, the residual disinfectant concentration is less than (<) 0.2 mg/L for more than four hours.

(B) In the distribution system, ~~until March 31, 2016,~~ the residual disinfectant concentration is not detectable in more than 5 percent of the samples collected in each month, for two consecutive months that the system supplies water to the public.

(I) If the Department grants an extension under 11.8(3)(b)(ii), the supplier is subject to this violation after March 31, 2016 and until capital improvements are completed or the extension expires, whichever comes first.

(C) In the distribution system~~, beginning April 1, 2016~~:

(I) If the supplier collects greater than or equal to (≥) 40 residual disinfectant concentration samples per month, the residual disinfectant concentration is less than (<) 0.2 mg/L in more than 5 percent of the samples collected.

(II) If the supplier collects greater than (>) one but less than (<) 40 residual disinfectant concentration samples per month, the residual disinfectant concentration is less than (<) 0.2 mg/L in more than one sample collected.

(III) If the supplier collects greater than (>) one but less than (<) 40 residual disinfectant concentration samples per month, the residual disinfectant concentration is less than (<) 0.2 mg/L in more than 5 percent of the samples collected in each month for two consecutive months that the system supplies water to the public.

(IV) If the supplier collects only one residual disinfectant concentration sample per monitoring period, the residual disinfectant concentration is less than (<) 0.2 mg/L.

(D) Any time the supplier fails to comply with the treatment technique requirements specified in 11.8(3)(b)(i)(A).

(e) Response to Disinfection Treatment Technique Violations

(i) In the event of an entry point disinfection treatment technique violation as specified in 11.8(3)(d)(i)(A), the supplier must:

(A) Notify the Department no later than the end of the next business day.

(B) Distribute Tier 2 public notice as specified in 11.33.

(ii) In the event of a disinfection treatment technique violation as specified in 11.8(3)(d)(i)(B-D), the supplier must:

(A) Notify the Department no later than 48 hours after the violation occurs.

(B) Distribute Tier 2 public notice as specified in 11.33.

(f) Reporting Requirements for Disinfection Monitoring

(i) If at any time the entry point residual disinfectant concentration is less than (<) 0.2 mg/L, the supplier must notify the Department as soon as possible but no later than the end of the next business day.

(A) The supplier must also report, no later than the end of the next business day, whether the entry point residual disinfectant concentration was restored to at least 0.2 mg/L within four hours.

(ii) For residual disinfectant concentration samples collected under 11.8(3)(c), the supplier must submit all of the following information no later than the 10th of the following month:

(A) For each entry point, the lowest daily residual disinfectant concentration result in mg/L.

(B) The date and duration of each period when the entry point residual disinfectant concentration fell below 0.2 mg/L and when the Department was notified of the occurrence.

~~(C) For distribution system residual disinfectant concentration samples until March 31, 2016:~~

~~(I) The number of sample results that were undetectable.~~

~~(II) The percentage of sample results that were undetectable for each of the last two months.~~

(C~~D~~) For distribution system residual disinfectant concentration samples ~~beginning April 1, 2016~~:

(I) The number of sample results that were less than (<) 0.2 mg/L.

(II) The percentage of sample results that were less than (<) 0.2 mg/L for each of the last two months.

(g) Monitoring Requirements for Alternative Disinfection- Heterotrophic Bacteria

(i) In the distribution system, the supplier may monitor for heterotrophic bacteria, measured as Heterotrophic Plate Count (HPC), instead of residual disinfectant concentration.

(A) If the supplier is monitoring for heterotrophic bacteria instead of residual disinfectant concentration, heterotrophic bacteria concentrations less than or equal to (≤) 500 CFU/ml are considered to have a detectable residual disinfectant concentration for purposes of determining compliance with the treatment technique requirement specified in 11.8(3)(b)(i)(B)(II) and must be included with the reporting requirements specified in 11.8(3)(f)(ii)(C).

(B) If the supplier is monitoring for heterotrophic bacteria, the supplier is not required to comply with the requirements for the distribution system residual disinfectant concentration specified in this section, 11.8(3) if the Department determines that the supplier meets all of the following criteria:

(I) Providing adequate disinfection in the distribution system.

(II) Not capable of having a sample transported and analyzed for HPC by a certified laboratory within the required time and temperature conditions specified by approved analytical methods.

11.8(4) Disinfection Profiling

The purpose of disinfection profiling and benchmarking is to allow the supplier and the Department to assess whether a change in disinfection practices creates a microbial risk. The supplier must develop a disinfection profile, calculate a benchmark (lowest monthly inactivation) based on the profile, and consult with the Department before making a significant change to disinfection.

(a) Applicability and Definitions for Disinfection Profiling

(i) For new surface water systems or reclassified systems that now meet the applicability of this rule, applicability for this section, 11.8(4), is determined by evaluating TTHM and HAA5 sample results. Applicability must be determined no later than 12 months after the system is classified as a surface water system.

(A) The supplier must collect TTHM and HAA5 samples that meet the routine sampling requirements specified in 11.25(1)(c) and submit the results to the Department. Alternatively, the supplier may:

(I) Request that the Department approve the use of a more appropriate data set for determination of applicability; or

(II) Choose not to collect the TTHM and HAA5 data, if the supplier notifies the Department of the decision. The supplier must then develop a disinfection profile to determine log inactivation of *Giardia lamblia* under 11.8(4)(a)(i)(B).

(B) The supplier must comply with the treatment technique requirement to develop a disinfection profile to determine log inactivation of *Giardia lamblia* if the system meets either of the following criteria:

(I) A system supplying greater than or equal to (≥) 10,000 people and has a TTHM annual average of quarterly samples greater than or equal to (≥) 0.064 mg/L or has an HAA5 annual average of quarterly samples greater than or equal to (≥) 0.048 mg/L.

(II) A community or non-transient, non-community water systems supplying less than (<) 10,000 people and has a TTHM sample result greater than or equal to (≥) 0.064 mg/L or has an HAA5 sample result greater than or equal to (≥) 0.048 mg/L.

(C) For systems that use chloramines, ozone, or chlorine dioxide that meet the criteria specified in 11.8(4)(a)(i)(B), the supplier must also develop a disinfection profile to determine log inactivation of viruses.

(ii) If a supplier plans to make a significant change in disinfection practices, the supplier must comply with the treatment technique requirement to develop a disinfection profile to determine log inactivation of *Giardia lamblia* and log inactivation of viruses before making the change.

(iii) “DISINFECTION PROFILE” means the graphical representation of a system's microbial inactivation over 12 consecutive months.

(iv) “SIGNIFICANT CHANGES IN DISINFECTION PRACTICE” means one or more of the following:

(A) Changes to the point of disinfection.

(B) Changes to the disinfectant(s) used in the treatment plant.

(C) Changes to the disinfection process.

(D) Any other modification identified by the Department.

(b) Monitoring Requirements for Disinfection Profiling

(i) To determine the log inactivation ratio(s) for each disinfection segment before the distribution system, the supplier must monitor the following set of parameters during daily peak hourly flow:

(A) The residual disinfectant concentration(s) (C) at each entry point.

(I) For systems with one point of disinfectant application and multiple disinfection segments, the supplier must also monitor before each sequential segment of disinfection.

(II) For systems with multiple points of disinfectant application, the supplier must also monitor before each additional point of disinfectant application.

(B) The temperature of the disinfected water at each residual disinfectant concentration sampling location or at an alternative Department-approved location(s).

(C) For systems using chlorine, the pH of the disinfected water at each residual disinfectant concentration sampling location or at an alternative Department-approved location(s).

(D) System-specific parameters to determine the disinfectant contact time(s) (T).

(ii) The supplier must monitor the set of parameters specified in 11.8(4)(b)(i) at the following frequencies:

(A) For systems meeting the criteria as specified in 11.8(4)(a)(i)(B)(I), at least daily for 12 consecutive months.

(B) For systems meeting the criteria as specified in 11.8(4)(a)(i)(B)(II) or 11.8(4)(a)(ii), at least weekly on the same calendar day for 12 consecutive months.

(C) For seasonal systems, at the frequency specified above in 11.8(4)(b)(ii)(A) or 11.8(4)(b)(ii)(B) only when the system operates.

(D) If the supplier monitors more frequently than required, the monitoring frequency must be evenly spaced.

(iii) For systems meeting the criteria specified in 11.8(4)(a)(ii) the supplier is not required to conduct monitoring as specified in 11.8(4)(b)(i-ii), if the system meets one of the following criteria:

(A) If the supplier has at least one year of existing data that are substantially equivalent to the data set required under 11.8(4)(b)(i-ii), the supplier may use this data to develop a disinfection profile(s), with the all of the following conditions:

(I) If the supplier has made a significant change to treatment practices or changed sources since the data was collected, the supplier must not use previously collected data.

(II) The supplier may develop a disinfection profile(s) using up to three years of existing data.

(B) If the supplier was required to develop a disinfection profile as specified in 11.8(4)(a)(i)(B), the supplier may use the previously developed disinfection profile(s) and is not required to develop a new disinfection profile, with all of the following conditions:

(I) If the supplier has made a significant change to treatment practices or changed sources since the disinfection profile(s) was developed, the supplier must not use a previously developed disinfection profile(s).

(II) If a virus disinfection profile(s) was not previously developed, the supplier must develop a virus disinfection profile(s) using the same monitoring data on which the *Giardia lamblia* disinfection profile(s) is based.

(c) Disinfection Profiling Calculations

(i) For each set of parameters collected under 11.8(4)(b), the supplier must calculate total inactivation ratio(s) and total logs of inactivation for *Giardia lamblia* based on the $CT_{99.9}$ values in 11.46 as follows:

(A) The supplier must determine the total inactivation ratio as follows:

Inactivation ratio is equal to: $(CT_{calc} / CT_{99.9})$.

(I) For a supplier monitoring at a single location, calculate one inactivation ratio.

(II) For a supplier monitoring at multiple locations:

(a) Determine the inactivation ratio value for each segment.

(b) Add all inactivation ratio values to determine the total inactivation ratio: $(\sum (CT_{calc} / CT_{99.9}))$.

(B) The supplier must determine the total logs of inactivation by multiplying the total inactivation ratio by 3.0.

Total logs of inactivation is equal to: $3.0 \times \sum (CT_{calc} / CT_{99.9})$.

(ii) If the supplier is required to calculate the logs of inactivation for viruses as specified in 11.8(4)(a)(i)(C) or 11.8(4)(a)(ii), the supplier must use a Department-approved calculation method.

(iii) The supplier must maintain disinfection profile data in graphic form, as a spreadsheet, or in a Department-accepted format for review as part of sanitary surveys.

(d) Treatment Technique Violations and Response for Disinfection Profiling

(i) If the supplier fails to comply with the requirements specified in this section, 11.8(4), a disinfection profiling treatment technique violation occurs.

(ii) In the event of a disinfection profile treatment technique violation, the supplier must:

(A) Notify the Department no later than 48 hours after the violation occurs.

(B) Distribute Tier 2 public notice as specified in 11.33.

11.8(5) Disinfection Benchmarking

(a) Applicability and Definitions for Disinfection Benchmarking

(i) If the supplier was required to develop a disinfection profile for *Giardia lamblia* and/or viruses as specified in 11.8(4) and plans to make a significant change in disinfection practices, as defined in 11.8(4)(a)(iv), the supplier must comply with all of the following treatment technique requirements before making the change:

(A) Calculate a disinfection benchmark for each profile developed under 11.8(4)(c).

(B) Consult with the Department.

(ii) "DISINFECTION BENCHMARK" means the lowest monthly average of total log inactivation values calculated in the disinfection profile. The disinfection benchmark is used as a baseline of inactivation when considering changes in the disinfection process.

(b) Disinfection Benchmarking Calculations

(i) The supplier must calculate a disinfection benchmark as follows:

(A) Calculate the average log inactivation for each month using the total logs of inactivation value(s) calculated in the disinfection profile developed under 11.8(4)(c).

(B) If the supplier has collected one year of data, the lowest monthly average log inactivation value is the disinfection benchmark.

(C) If the supplier has collected more than one year of data, the average of the lowest monthly average log inactivation value for each calendar year is the disinfection benchmark.

(c) Reporting Requirements for Department Consultation

(i) The supplier must submit all of the following information as part of the consultation process:

(A) A description of the proposed change in disinfection practice.

(B) The disinfection profile and benchmark for *Giardia lamblia*.

(C) If required to be developed, the disinfection profile and benchmark for viruses.

(D) An analysis of how the proposed change will affect the current levels of disinfection.

(E) Any additional information requested by the Department.

(d) Treatment Technique Violations and Response for Disinfection Benchmarking

(i) If the supplier fails to comply with the requirements specified in this section, 11.8(5), a disinfection benchmarking treatment technique violation occurs.

(ii) In the event of a disinfection benchmark treatment technique violation, the supplier must:

(A) Notify the Department no later than 48 hours after the violation occurs.

(B) Distribute Tier 2 public notice as specified in 11.33.

…

11.11 GROUNDWATER RULE

11.11(1) General Applicability and Definitions

(a) For all groundwater systems, the supplier must comply with the requirements specified in this rule.

(i) For the purposes of this rule, a "GROUNDWATER SYSTEM" means any public water system that meets one or more of the following criteria:

(A) The system only uses groundwater sources.

(B) The system uses both surface water and groundwater sources and does not combine the groundwater sources and surface water sources before treatment.

(I) This rule only applies to the groundwater sources.

(II) Systems that combine groundwater sources with surface water sources before treatment are not considered groundwater systems.

(C) The system is a consecutive system that receives finished water from a groundwater system.

~~(b) "DETECTABLE" means, until March 31, 2015, at or above the detection limit of the approved methods specified in 11.46(8)(b) .~~

11.11(2) Minimum Disinfection Treatment Requirements

(a) Applicability for Minimum Disinfection Treatment Requirements

(i) The supplier must comply with the requirements specified in this section, 11.11(2), unless one or more of the following conditions apply:

(A) The groundwater system is operating under a disinfection waiver and the supplier is required to comply with 11.13.

(B) The groundwater system has only hand-pumped wells and the supplier is required to comply with 11.12.

(C) The groundwater system has hand-pumped wells and other sources and the supplier is required to comply with this section, 11.11(2), for the groundwater sources that are not hand-pumped wells and with 11.12 for the groundwater sources that are hand-pumped wells.

(D) The groundwater system is a consecutive system that only supplies finished groundwater received from a wholesale system and therefore supplier is required to comply with 11.11(2)(b)(i)(B)(II-III), 11.11(2)(c)(i)(B), 11.11(2)(c)(i)(C), 11.11(2)(d)(i)(B-C), and 11.11(2)(e)(ii).

(b) Treatment Technique Requirements for Minimum Disinfection Treatment

(i) The minimum disinfection treatment technique requirements are as follows:

(A) When a groundwater source is used to supply water to the public, the supplier must disinfect the water using a chemical treatment method.

(B) When a groundwater source is used to supply water to the public, the supplier must maintain a residual disinfectant concentration at each entry point and throughout the distribution system.

(I) At each entry point, the residual disinfectant concentration must be greater than or equal to (≥) 0.2 mg/L.

(II) ~~In the distribution system, until March 31, 2016, the residual disinfectant concentration must be detectable throughout the distribution system.~~

~~(III)~~ In the distribution system, ~~beginning April 1, 2016, t~~the residual disinfectant concentration must be greater than or equal to (≥) 0.2 mg/L.

(ii) No later than December 31, 2015, the supplier may apply to the Department for an extension for complying with the treatment technique requirements specified in 11.11(2)(b)(i)(B)(III).

(A) In the application, the supplier must include all of the following information:

(I) An explanation of why the supplier is unable to comply with the treatment technique requirements specified in 11.11(2)(b)(i)(B)(III).

(II) A distribution system disinfectant residual data analysis demonstrating the inability to comply with the treatment technique requirements specified in 11.11(2)(b)(i)(B)(III).

(III) An engineering report prepared by a professional engineer registered in the state of Colorado demonstrating that capital improvements are necessary to comply with the treatment technique requirements specified in 11.11(2)(b)(i)(B)(III).

(IV) A proposed schedule for completing the system modifications.

(B) The Department shall consider the following criteria when determining if an extension will be granted:

(I) The supplier submitted a complete application that included the information specified above;

(II) The supplier has complied with the monitoring requirements specified in 11.17 in the last 36 months; and

(III) The supplier has not incurred an MCL violation specified in 11.17(9) in the last 36 months.

(iii) The Department will only grant an extension for up to four years.

(iv) If the supplier receives written Department-approval for an extension, the supplier must:

(A) Continue to comply with the treatment technique requirements specified in 11.11(2)(b)(i)(B)(II) and is subject to the violation specified in 11.11(2)(d)(i)(B)

until the capital improvements are completed or the extension expires, whichever comes first; and

(B) Comply with any Department-specified requirements.

(c) Monitoring Requirements for Minimum Disinfection Treatment Technique Requirements

(i) To determine compliance with the minimum disinfection treatment technique requirements, the supplier must monitor the residual disinfectant concentration.

(A) At each entry point, the supplier must monitor the residual disinfectant concentration at least once each week that water is supplied to the public from that entry point.

(I) If any entry point residual disinfectant concentration result is less than (<) 0.2 mg/L, the supplier must increase the residual disinfectant concentration monitoring frequency at that entry point to at least once every 24 hours from the time of discovery until the residual disinfectant concentration is greater than or equal to (≥) 0.2 mg/L.

(B) In the distribution system, the supplier must, at a minimum, monitor the residual disinfectant concentration at the same time and at the same sampling locations as the total coliform samples collected under ~~under 11.17(3) until March 31, 2016, and collected under~~ 11.16(4) and 11.16(5)~~(6-7) beginning April 1, 2016~~.

(C) The supplier must measure the residual disinfectant concentration as free chlorine unless the supplier uses a disinfection process that results in a monochloramine residual disinfectant, then the supplier must measure the residual disinfectant concentration as total chlorine. If the supplier uses a different type of chemical disinfectant (e.g., ozone or chlorine dioxide), the supplier must measure the appropriate residual disinfectant concentration.

(d) Treatment Technique Violations for the Minimum Disinfection Treatment Requirements

(i) The following constitute disinfection treatment technique violations:

(A) At any entry point, the residual disinfectant concentration is less than (<) 0.2 mg/L for more than 72 hours after the time of discovery.

~~(B) In the distribution system, until March 31, 2016, the residual disinfectant concentration is not detectable in more than 5 percent of the samples collected each monitoring period (i.e., month or quarter), for two consecutive monitoring periods during which the system supplies water to the public.~~

~~(I) If the Department grants an extension under 11.11(2)(b)(ii), the supplier is subject to this violation after March 31, 2016 and until capital improvements are completed or the extension expires, whichever comes first.~~

(B~~C~~) In the distribution system~~, beginning April 1, 2016~~:

(I) If the supplier collects greater than or equal to (≥) 40 residual disinfectant concentration samples per month, the residual disinfectant concentration is less than (<) 0.2 mg/L in more than 5 percent of the samples collected.

(II) If the supplier collects greater than (>) one but less than (<) 40 residual disinfectant concentration samples per month, the residual disinfectant concentration is less than (<) 0.2 mg/L in more than one sample collected.

(III) If the supplier collects greater than (>) one but less than (<) 40 residual disinfectant concentration samples per month, the residual disinfectant concentration is less than (<) 0.2 mg/L in more than 5 percent of the samples collected in each month for two consecutive months that the system supplies water to the public.

(IV) If the supplier collects only one residual disinfectant concentration sample per monitoring period, the residual disinfectant concentration is less than (<) 0.2 mg/L.

(e) Response to Treatment Technique Violations for the Minimum Disinfection Treatment Requirements

(i) In the event of an entry point treatment technique violation as specified in 11.11(2)(d)(i)(A), the supplier must:

(A) Notify the Department as soon as possible but no later than the end of the next business day.

(B) Determine and resolve the failure that resulted in the treatment technique violation.

(C) No later than 48 hours after the resolution of the failure, document all of the following:

(I) The date, time and duration of the failure.

(II) The cause of the failure.

(III) The steps taken to correct the failure.

(IV) What steps will be taken to prevent future failures.

(D) Submit the documentation specified above in 11.11(2)(e)(i)(C) if required by the Department.

(E) Distribute Tier 2 public notice as specified in 11.33.

(ii) In the event of a distribution system treatment technique violation as specified in 11.11(2)(d)(i)(B-C), the supplier must:

(A) Notify the Department no later than 48 hours after the violation occurs.

(B) Distribute Tier 2 public notice as specified in 33.

…

11.11(4) Triggered Source Water Monitoring

(a) Applicability for Triggered Source Water Monitoring

(i) The supplier must conduct triggered source water monitoring if:

(A) The supplier does not provide at least 4-log treatment of viruses at the entry point for each groundwater source as specified in 11.11(3); and ~~either~~

~~(B) Until March 31, 2016, the supplier is notified that a sample collected under 11.17(3)(b) is total coliform-positive and the sample was not invalidated under 11.17(5); or.~~

(B~~C~~) ~~Beginning April 1, 2016, t~~The supplier is notified that a sample collected under 11.16(4~~6~~)(b-d) is total coliform-positive and the sample was not invalidated under 11.16(7~~8~~).

(ii) The supplier is not required to conduct triggered source water monitoring if either of the following conditions are met:

(A) The Department determines and documents in writing that the routine total coliform-positive sample was caused by a distribution system deficiency and not by the source water.

(B) The supplier collected the routine total coliform-positive sample at a location that meets Department criteria for distribution system conditions that will cause total coliform-positive sample results and therefore the total coliform-positive sample result was not caused by the source water.

(I) No later than 30 days after receiving the total coliform-positive sample result, the supplier must submit documentation that demonstrates the sample location met Department criteria.

(b) Monitoring Requirements for Triggered Source Water Monitoring

(i) The supplier must collect triggered source water monitoring samples no later than 24 hours after being notified of a total coliform-positive sample collected ~~under 11.17(3)(b) until March 31, 2016, or collected~~ under 11.16(4~~6~~)(b-d) ~~beginning April 1, 2016~~.

(A) If the supplier experiences circumstances beyond their control that prevent the supplier from collecting the source water samples, the Department may extend the 24-hour limit on a case-by-case basis.

(I) If the Department approves the extension, the Department shall specify how much time the supplier has to collect the source water samples.

(ii) The supplier must collect at least one triggered source water monitoring sample from each groundwater source that was in use at the time the total coliform-positive sample was collected. These samples must be collected at the well, before any treatment is applied.

(A) If the system's configuration does not allow for the supplier to sample at the well itself, the Department may:

(I) Approve the collection of triggered source water monitoring samples at a location that represents the water quality of that well or a location after treatment; and/or

(II) Require that sampling equipment be installed at the well itself.

(B) For systems with more than one groundwater source, the Department may approve collection of the triggered source water monitoring samples from a representative groundwater source(s).

(I) The representative source(s) must supply water to the section of the distribution system where the total coliform-positive sample was collected.

(II) If required by the Department, the supplier must submit, for approval, a triggered source water monitoring plan to use a representative source(s).

(a) The triggered source water monitoring plan must identify which source(s) the supplier intends to use for representative sampling of groundwater sources. For each representative source identified, the supplier must identify each total coliform sampling location that the source represents in the system's sampling plan specified in ~~11.17(3)(a)(ii) until March 31, 2016, or~~ 11.16(3~~4~~) ~~beginning April 1, 2016~~.

(C) For a groundwater system supplying less than or equal to (≤) 1,000 people that uses *E. coli* as a fecal indicator for triggered source water monitoring, the supplier may use a triggered source water monitoring sample to meet both the repeat sampling requirements specified in ~~11.17(3)(c) until March 31, 2016, or~~ 11.16(5~~7) beginning April 1, 2016~~, and the triggered source water monitoring requirements. If the repeat sample collected from the groundwater source is E. coli-positive, the supplier must comply with the requirements in 11.11(4)(d).

(iii) The supplier must have all groundwater source samples analyzed for the presence of one of the following fecal indicators: *E. coli*, enterococci, or coliphage.

(c) Additional Triggered Source Water Monitoring Requirements for Consecutive and Wholesale Systems

(i) For consecutive systems, no later than 24 hours after being notified of the sample result, the supplier responsible for the consecutive system must notify all of their wholesalers of a total coliform-positive sample result collected under ~~11.17(3)(b) until March 31, 2016, or collected under~~ 11.16(4~~6~~)(b-d) ~~beginning April 1, 2016~~.

(ii) A ~~For~~ wholesale system that receives~~s,~~ notification from a consecutive system it serves that a sample collected under 11.16(4)(b) is total coliform-positive, the wholesaler must sample ~~the~~ all of its groundwater source(s) as specified above in 11.11(4)(b) no later than 24 hours and analyze the samples for a fecal indicator under 11.46(2)(b) ~~after being notified by the supplier responsible for the consecutive system of their total coliform-positive sample result collected under 11.17(3)(b) until March 31, 2016, or collected under 11.16(6)(b-d) beginning April 1, 2016~~.

(d) Response to Triggered Source Water Monitoring Fecal Indicator-Positive Sample Results

(i) If the supplier has a fecal indicator-positive triggered source water monitoring sample result, that is not invalidated under 11.11(4)(e)(i), the supplier must:

(A) Notify the Department and initiate consultation no later than 24 hours after being notified of the fecal indicator-positive initial triggered source water monitoring sample result.

(B) Distribute Tier 1 public notice as specified in 11.33.

(I) For all consecutive systems supplied by the groundwater source that tested positive for a fecal indicator, the supplier responsible for the consecutive system must also distribute Tier 1 public notice to its consumers as specified in 11.33.

(C) No later than 24 hours after being notified of the fecal indicator-positive triggered source water monitoring sample result, the supplier must collect five confirmation samples from the same source unless the Department requires the supplier to implement corrective action as specified in 11.11(6).

(I) ~~Beginning April 1, 2016, i~~If the supplier collects more than one triggered source water monitoring sample at the location required to meet the total coliform repeat sampling requirements specified in 11.16(4(a)(v)~~7~~)(A~~g~~)(I~~i~~), the supplier may use any of those triggered source water monitoring samples that were *E.* coli-negative toward complying with the five required confirmation samples.

(II) If one or more of the confirmation samples is fecal indicator-positive, the supplier must implement corrective action as specified in 11.11(6).

(D) For a wholesale system, notify all consecutive systems that are supplied by that source of the original fecal indicator-positive sample result no later than 24 hours after being notified of the sample result.

(e) Sample Invalidation for Triggered Source Water Monitoring

(i) At the supplier's request, the Department may invalidate a fecal indicator-positive triggered source water monitoring sample based on one of the following conditions:

(A) The supplier submits written notice from the laboratory that improper sample analysis occurred.

(B) The Department determines and documents in writing that there is substantial evidence that the fecal indicator-positive triggered source water monitoring sample result is not related to source water quality.

(ii) If the Department invalidates a fecal indicator-positive triggered source water monitoring sample result, the supplier must collect a replacement source water sample no later than 24 hours after being notified by the Department of the invalidation.

(A) The replacement sample must meet all triggered source water monitoring requirements specified in 11.11(4). Additionally, the replacement sample must be analyzed by the laboratory for the same fecal indicator as the invalidated source sample.

(B) If the supplier experiences circumstances beyond their control that prevent the supplier from collecting the source water sample(s), the Department may extend the 24-hour limit on a case-by-case basis.

(I) If the Department approves the extension, the Department shall specify how much time the supplier has to collect the replacement source water samples.

…

11.13 GROUNDWATER RULE: DISINFECTION WAIVERS

11.13(1) Applicability for Disinfection Waivers

(a) The Department shall not approve new disinfection waivers.

(b) If the system has an existing disinfection waiver, the supplier must comply with the requirements specified in this rule.

(i) The supplier is not required to comply with the minimum residual disinfectant concentration requirements specified in 11.11(2).

11.13(2) Requirements for Maintaining a Disinfection Waiver

To maintain a disinfection waiver, the supplier must:

(a) Only supply water from groundwater sources.

(b) Distribute a special public notice regarding the disinfection waiver.

(i) For community water systems, the supplier must distribute the special public notice annually to inform consumers of the disinfection waiver.

(A) The supplier may use the consumer confidence report required under 11.34 to satisfy this requirement.

(ii) For non-community water systems, the supplier must continuously post the special public notice in conspicuous locations.

(iii) The special public notice must include the following language and provide the specific information for the text in brackets:

(A) [Name of groundwater system] has a waiver from disinfection requirements and serves well water that has not been chlorinated.

(iv) The supplier must comply with the public notice requirements specified in 11.33(5)(e-f).

(v) The Department may require the supplier to distribute the special public notice to new billing units or new customers as specified in 11.33(6)(b).

(c) Have the ability to provide a residual disinfectant concentration for the groundwater system in an emergency.

(i) The supplier must have Department-approved emergency disinfection equipment or be operating in accordance with the Department-approved emergency operating plan.

(d) Have a Department-approved monitoring plan that meets the requirements specified in 11.5.

(i) The supplier must operate in accordance with the Department-approved monitoring plan.

(e) Have a Department-approved distribution system protection plan.

(i) The supplier must operate in accordance with the Department-approved distribution system protection plan.

(ii) At a minimum, the distribution system protection plan must include all of the following:

(A) A description of protection measures designed to reduce public health risks for water provided through storage and the distribution system.

(B) A description of distribution system operation and maintenance practices (e.g., flushing schedules, scheduled upgrades, disinfection schedules);

~~(C) Until December 31, 2015, a description of a cross-connection control program that meets the requirements specified in 11.37.~~

(C~~D~~) ~~Beginning January 1, 2016, the~~A backflow prevention and cross-connection control program that meets the requirements specified in 11.39.

(D~~E~~) Identification of each potential point of entry for hazards and/or contaminants into the storage and distribution system and a description of the hazard and/or contaminant control measures to be used to mitigate the potential public health risks.

(E~~F~~) A description of monitoring locations and parameters that will be used to verify and document that the hazard and/or contaminant control measures are effective.

(F~~G~~) A description of incident response procedures to be followed in the case of a distribution system breach, hazard condition and/or contamination event. The procedure must at least include confirmation and repeat sampling protocols and flushing procedures.

(f) Have a Department-approved source water protection plan.

(i) The supplier must operate in accordance with the Department-approved source water protection plan.

(ii) At a minimum, the source water protection plan must include all of the following:

(A) A description of protection measures designed to reduce public health risks for water provided from groundwater sources.

(B) Delineation of source water protection areas.

(C) An inventory of potential sources of contamination.

(D) A plan for management of potential sources of contamination.

(E) Well failure emergency and contingency plans.

(F) Capacity development plan for new wells.

(G) A description of the methods to be used to involve and educate the public during the source water protection planning and implementation process.

(g) Keep records of chlorination activities as specified in 11.36(4)(c)(i)(C).

11.13(3) Disinfection Waiver Health-based Evaluations

(a) The Department may evaluate a groundwater system's wells and storage systems to determine if there are potential health risks from these sources. The Department shall conduct the evaluation based on criteria found in:

(i) Well construction and location criteria outlined in the rules, regulations, and Colorado statutes governing water well construction as enforced by the State Board of Examiners of Water Well and Pump Installation Contractors.

(ii) The State of Colorado Design Criteria for Potable Water Systems or other criteria developed by the Department.

(b) For new or existing sources, the Department may require assessment source water monitoring as specified in 11.11(5), additional testing, and additional information to establish that the water being supplied to the public is from a groundwater source determined to be free from microbial contamination.

(i) For new sources, the Department may require that all testing and evaluation be completed before the source may be used to supply water to the public.

(c) The Department may, at any time, conduct a full or partial sanitary survey to establish that the groundwater system is at low risk for contamination.

11.13(4) Disinfection Waiver Withdrawal

(a) A disinfection waiver may be withdrawn immediately if:

(i) The supplier fails to correct significant deficiencies as specified in 11.38(3).

(ii) ~~Until March 31, 2016, the supplier fails to comply with 11.17 Total Coliform Rule, or beginning April 1, 2016, t~~The supplier fails to comply with 11.16 Revised Total Coliform Rule or a treatment technique for a Level 1 or Level 2 assessment is triggered under 11.16(8~~3~~).

(iii) The supplier fails to comply with the triggered source water monitoring and reporting requirements specified in 11.11(4).

(iv) ~~Until December 31, 2015, the supplier fails to comply with 11.37 Cross-Connection Control Rule, or beginning January 1, 2016 t~~The supplier fails to comply with 11.39 Backflow Prevention and Cross-Connection Control Rule.

(v) There is an incidence of microbial disease, the source of which is reasonably identified by the Department as originating from consumption of drinking water from the groundwater system.

(vi) There is an occurrence of unforeseeable situations or conditions which are reasonably identified by the Department as having the potential to contribute to a microbial disease incident.

(vii) The supplier fails to have the system operated by qualified personnel who meet the requirements of Regulation 100, Water and Wastewater Facility Operators Certification Requirements, and are included in a State register of qualified operators.

(viii) The groundwater system is in violation of the *Colorado Primary Drinking Water Regulations*.

(ix) The groundwater system is not in compliance with all disinfection waiver requirements specified in 11.13(2), or if based on other information obtained, it appears that the water being supplied to the public presents a potential risk to public health.

(b) If the groundwater system has a source that has been determined by the Department to be fecally contaminated or is required to comply with the 4-log treatment of viruses requirements specified in 11.11(3), the waiver shall be withdrawn immediately.

11.13(5) Response to a Disinfection Waiver Withdrawal

(a) If the Department withdraws the disinfection waiver, the supplier must disinfect the groundwater and comply with the minimum disinfectant residual concentration requirements as specified in 11.11(2).

(b) The supplier may request a hearing to contest the withdrawal of the waiver. The request for such a hearing must be filed in writing no later than 60 days after service of the Department's withdrawal. The hearing must be conducted under the procedures established by Article 4 of Title 24, Colorado Revised Statutes.

11.14 RESERVED

11.15 RESERVED

11.16 REVISED TOTAL COLIFORM RULE

(a) The requirements of this section constitute the regulations for total coliforms and *E. coli*. This regulation establishes a maximum contaminant level and treatment technique requirements.

~~11.16~~11.16 (1) Applicability and Definitions

(a) A~~For a~~ll public water systems~~, the supplier~~ must comply with the requirements specified in this rule~~, beginning April 1, 2016~~ unless otherwise specified.

(b) "CLEAN COMPLIANCE HISTORY" means a record of no MCL violations under 11.45(1), ~~,~~ no sampling violations under 11.16(4) and 11.16(5), and no treatment technique triggers or treatment technique violations under 11.16(8) or 11.16(11)(b) for a minimum of 12 months. ~~this rule.~~

(c) ~~"SEASONAL SYSTEM" means a non-community water system that is not operated as a public water system on a year-round basis.~~Failure to comply with the applicable requirements of 11.16 is a violation of the Colorado Primary Drinking Water Regulations.

(d) The supplier must have the system operated by qualified personnel who meet the requirements of Regulation 100, the *Water and Wastewater Facility Operators Certification Requirements*.

11.16(2) Analytical Methods and Laboratory Certification

(a) Suppliers must analyze all compliance samples, required by 11.16 and 11.46(2), using a Department-certified laboratory using a certified method.

11.16(3) Sample Siting Plan Requirements

(a) As part of the monitoring plan specified in 11.5, the supplier must develop a written sample siting~~ing~~ plan that identifies all of the following:

(i) Sampling sites and a ~~A~~ sample collection schedule that are representative of water throughout the distribution system. ~~meets the requirements specified in 11.16(6)(a)(iii).~~The supplier must collect total coliform samples according to the written sample siting plan. Monitoring required by 11.16(4) and 11.16(5) may include a customer's premises, dedicated sampling station, or other designated compliance sampling site. The sample siting plan must include routine and repeat sample sites and any other sampling sites necessary to meet the requirements of 11.11.

(~~iii~~iv) Suppliers must identify r~~R~~epeat sample sites in the sample siting plan. Unless the requirements of 11.16(3)(a)(ii)(A) or 11.16(4)(a)(v)(A) are met, the supplier must collect

~~(A)The supplier must identify repeat sampling sites in one of the following ways:~~

~~(I) Identify sampling sites based on the following requirements:~~

~~(a)~~ at least o~~O~~ne repeat total coliform sample at the site where the original total coliform-positive sample was collected. ~~.~~

~~(b)~~ at least o~~O~~ne repeat total coliform sample at a site within five service connections upstream from the site where the original total-coliform positive sample was collected, and ~~.~~

~~(c)~~ at least o~~O~~ne repeat total coliform sample at a site within five service connections downstream from the site where the original total-coliform positive sample was collected.

(A~~d~~) ~~If the supplier collected the original total coliform-positive sample from the end of the distribution system or one site away from the end of the distribution system, the Department may allow an alternative sampling site for collecting repeat samples at the upstream or downstream sites.~~Alternatively, suppliers may propose repeat monitoring locations to the Department that the supplier believes to be more representative of a pathway for contamination of the distribution system. A supplier may elect to:

~~(II)~~ Identify alternative fixed repeat sampling sites that the supplier believes to be representative of a pathway for contamination of the distribution system.

(III) Develop criteria for selecting repeat sampling sites on a situational basis that the supplier believes to best verify and determine the extent of potential contamination and a potential pathway for contamination of the distribution system in a standard operating procedure (SOP) that is included in the sampling plan.

~~(a)~~ The Department may modify the SOP or require alternative repeat sampling sites.

(B) If the supplier collected the original total coliform-positive sample from the end of the distribution system or one site away from the end of the distribution system, the Department may allow an alternative sampling site for collecting repeat samples at the upstream or downstream sites.

~~(ii) (iii) Any sample sites necessary to meet the triggered source water monitoring requirements specified in 11.11(4)(b).~~

~~(iv) Repeat sample sites.~~

~~(A) The supplier must identify repeat sampling sites in one of the following ways:~~

~~(I) Identify sampling sites based on the following requirements:~~

~~(a) One total coliform sample at the site where the original total coliform-positive sample was collected.~~

~~(b) One total coliform sample at a site within five service connections upstream from the site where the original total-coliform positive sample was collected.~~

~~(c) One total coliform sample at a site within five service connections downstream from the site where the original total-coliform positive sample was collected.~~

~~(d) If the supplier collected the original total coliform-positive sample from the end of the distribution system or one site away from the end of the distribution system, the Department may allow an alternative sampling site for collecting repeat samples at the upstream or downstream sites.~~

~~(II) Identify alternative fixed repeat sampling sites that the supplier believes to be representative of a pathway for contamination of the distribution system.~~

~~(III) Develop criteria for selecting repeat sampling sites on a situational basis that the supplier believes to best verify and determine the extent of potential contamination and a potential pathway for contamination of the distribution system in a standard operating procedure (SOP) that is included in the sampling plan.~~

~~(a) The Department may modify the SOP or require alternative repeat sampling sites.~~

~~(b) Sample sites may include a customer's premises, dedicated sampling station, or other designated compliance sampling site.~~

iii~~(c)~~ The Department may review, revise, and approve the written sample sitin~~ging~~ plan. The supplier must demonstrate that the sample siting plan remains representative of the water quality in the distribution system.

11.16(4)~~11.16(6)~~ Sampling Requirements

(a) To determine compliance with the MCL for *E. coli* or to determine if a treatment technique is triggered, the supplier must collect total coliform samples as specified in 11.16(4~~6~~) and 11.16(5~~7~~).

~~(A) If an *E. coli* MCL violation occurs or if a treatment technique is triggered, the supplier must still collect at least the minimum number of required routine samples.~~

(i~~i~~) The supplier must collect total coliform samples at regular time intervals throughout the month, except:

(A) For groundwater systems that supply less than or equal to (≤) 4,900 people, the supplier may collect all required samples on a single day if the samples are collected from different sites.

(i~~v~~) The supplier may collect more samples than the minimum number of routine total coliform samples required as specified in Table 11.16-I as a tool to investigate potential problems in the distribution system.

(A) The supplier must use these sample results to determine if a treatment technique in 11.16(8)(a)(i) or 11.16(a)(ii) has been triggered if the supplier collects these samples in accordance with the sample siting plan and are representative of water throughout the distribution system.

~~(A) (A) A supplier may collect more than the minimum number of required routine samples and must include the results in calculating whether the coliform treatment technique trigger in ADD CITATION.~~

~~(B) (I) The supplier must use these sample results to determine if a treatment technique has been triggered if the supplier collects these samples in accordance with the sampling plan and are representative of water throughout the distribution system.~~

~~(C)~~(B) ~~(II)~~ If any of the sample results are total coliform-positive, the supplier must collect repeat samples as specified in 11.16(5~~7~~).

(iii) ~~If the supplier collects special purpose samples, these samples are not routine or repeat samples and these sample results will not be used to determine compliance with the *E. coli* MCL or to determine if a treatment technique is triggered.~~

~~(A)~~ The supplier is not required to submit special purpose samples unless the sample result is *E. coli*-positive and is representative of water in the distribution system.

~~(I)~~ The supplier must submit *E. coli*-positive special purpose sample results to the Department as specified in 11.35(2)(a).

(iv) If an *E. coli* MCL violation occurs under 11.16(10) or if a treatment technique is triggered under 11.16(8), the supplier must still collect at least the minimum number of required samples.

(vg) For groundwater systems, the supplier must collect triggered source water monitoring samples as specified in 11.11(4) in addition to repeat samples required in ~~this section,~~ 11.16(5)~~11.16(7)~~.

(Ai) For a groundwater system with a single well supplying less than or equal to (≤) 1,000 people, if the supplier is required to collect a triggered source water monitoring sample, the supplier, with written Department approval, may collect one of the repeat total coliform samples at the sample site required for triggered source water monitoring under 11.11(4), if the supplier demonstrates to the Department's satisfaction that the sample siting plan remains representative of water quality in the distribution system.

(IA) If approved by the Department, the supplier may use the repeat total coliform sample to meet both the triggered source water monitoring requirements specified in 11.11(4) and the total coliform repeat sampling requirements specified in this section, 11.16(5~~7~~).

(II) If the repeat sample collected from the groundwater source is *E. coli*-positive, the supplier must comply with the requirements in 11.11(4).

(b) Routine Sampling Requirements for Total Coliform

(i) For all public water systems, the supplier must collect the number of routine total coliform samples specified in Table 11.16-I each month except:

(A) For non-community groundwater systems that supply less than or equal to (≤) 1,000 people, the supplier must collect one total coliform sample during each quarter that water is supplied to the public, unless the supplier is required to increase the routine sampling frequency as specified in 11.16(4~~6~~)(c).

(I) In any month where the system supplies greater than (>) 1,000 people, the supplier must collect the number of routine total coliform samples specified in Table 11.16-I each month.

(a) The supplier must have written Department-approval to alternate between quarterly and monthly sampling frequencies based on when the population supplied is less than or equal to (≤) 1,000 people or when the population supplied is greater than (>) 1,000 people.

(ii) For public water systems that haul water, the water hauler must collect at least one total coliform sample from the outlet port of each tank or container each month that the tank or container is used to supply water to the public.

(iii) For hand-pumped wells, the supplier must collect at least one total coliform sample from each hand-pumped well each month that it supplies water to the public.

(iv) For the following public water systems, the supplier is not eligible for a quarterly sampling frequency as specified in 11.16(4~~6~~)(b)(i)(A):

(A) Seasonal systems.

(B) Public water systems that do not provide chemical disinfection.

(C) Public water systems that haul water.

(D) Groundwater systems with hand-pumped wells.

(v) The Department ~~shall~~ must perform a special monitoring~~sampling~~ evaluation during each sanitary survey to review the status of the system, including the distribution system, and determine whether the supplier is on an appropriate monitoring schedule~~collecting total coliform samples on an appropriate frequency~~.

(A) Based on the Department's special monitoring ~~sampling~~ evaluation, the Department may modify the Supplier's monitoring ~~sampling frequency~~schedule, consistent with 11.16(4) and 11.16(5), or the Department may allow the supplier to stay on its existing monitoring schedule.

TABLE 11.16-I NUMBER OF ROUTINE TOTAL COLIFORM SAMPLES REQUIRED PER MONITORING PERIOD

Population supplied	Minimum number of samples required	Population supplied	Minimum number of samples required
25 to 1,000[1]	1	59,001 to 70,000	70
1,001 to 2,500	2	70,001 to 83,000	80
2,501 to 3,300	3	83,001 to 96,000	90
3,301 to 4,100	4	96,001 to 130,000	100
4,101 to 4,900	5	130,001 to 220,000	120
4,901 to 5,800	6	220,001 to 320,000	150
5,801 to 6,700	7	320,001 to 450,000	180
6,701 to 7,600	8	450,001 to 600,000	210
7,601 to 8,500	9	600,001 to 780,000	240
8,501 to 12,900	10	780,001 to 970,000	270
12,901 to 17,200	15	970,001 to 1,230,000	300
17,201 to 21,500	20	1,230,001 to 1,520,000	330
21,501 to 25,000	25	1,520,001 to 1,850,000	360
25,001 to 33,000	30	1,850,001 to 2,270,000	390
33,001 to 41,000	40	2,270,001 to 3,020,000	420
41,001 to 50,000	50	3,020,001 to 3,960,000	450
50,001 to 59,000	60	3,960,001 or more	480

1 Includes systems that have greater than or equal to (≥) 15 service connections, but supply less than (<) 25 people.

(c) For Non-community Groundwater Systems Supplying Less Than or Equal to (≤) 1,000 People – Increased Routine Sampling Requirements for Total Coliform

(i) If the supplier is sampling quarterly, the supplier must increase the routine sampling frequency to monthly if any of the following events occur:

(A) A Level 2 assessment is triggered ~~under~~ when~~11.16(3)(b)~~~~or~~ two Level 1 assessments under 11.16(8) occur within a rolling 12-month period.

(B) A total coliform treatment technique violation occurs under 11.16(11)(b)~~12)(b)~~.

(C) Two sampling violations under 11.16(4) or 11.16(5) occur within 12 consecutive months.

(D) A Level 1 assessment is triggered and a sampling violation occurs within 12 consecutive months.

(E) The supplier receives an *E. coli* MCL violation.

(ii) The supplier must begin the monthly sampling frequency in the month following the month that the event occurred under 11.16(46)(c)(i).

(iii) If the supplier is sampling monthly, the Department may allow the supplier to return to a routine quarterly sampling frequency if all of the following criteria are met:

(A) Within the last 12 months, the Department or a Department-approved party has completed a sanitary survey or a Level 2 assessment.

(B) The system is free of sanitary defects and all significant deficiencies have been corrected, has a protected source water, and meets approved construction standards.

(C) The system's water source(s) is protected from the direct influence of surface water or any other source of contamination.

(D) The system has a clean compliance history for at least 12 consecutive months.

(d) For Non-community Groundwater Systems Supplying Less Than or Equal to (≤) 1,000 People – Additional Routine Sampling Requirements in the Month Following a Total Coliform-positive Sample Result

(i) If the supplier is collecting total coliform samples on a quarterly frequency and one or more of the samples collected is total coliform-positive, the supplier must collect at least three additional routine samples during the following month.

(A) The supplier may either collect the samples at regular time intervals throughout the month or collect all required additional routine samples on a single day if the samples are collected from different sites.

(ii) If any of the additional routine sample results are total coliform-positive, the supplier must collect repeat samples as specified in 11.16(57).

(iii) The supplier must use the results of additional routine samples to determine whether an *E. coli* MCL violation has occurred or if a treatment technique is triggered.

(iv) If all three additional routine samples are total coliform-negative, the supplier may return to collecting one total coliform sample on a quarterly sampling frequency. The supplier must begin collecting the quarterly sampling frequency in the calendar quarter following the month that the three additional routine samples were required.

~~11.16(6) Sampling Requirements for *E. coli*~~

(ea) If any routine or repeat sample result is total coliform-positive, the supplier must have a laboratory analyze the total coliform-positive culture medium to determine if *E. coli* are present.

(ib) If any routine, repeat, or special purpose sample result is *E. coli*-positive, the supplier must notify the Department no later than the end of the day that the supplier is notified of the sample result.

(Ai) If the supplier is notified of the sample result after the Department is closed, the supplier must contact the Department's after-hours phone line.

~~(ii) The supplier must only notify the Department of *E. coli*-positive special purpose sample results if the result is representative of water throughout the distribution system.~~

~~(c)~~

11.16(5~~7~~) Repeat Sampling Requirements for Total Coliform

(a) For each routine sample result that is total coliform-positive, the supplier must collect a sample set of at least three repeat total coliform samples no later than 24 hours after being notified of the positive sample result.

(i) If the supplier has a logistical problem beyond their control that prevents the supplier from collecting the repeat samples within the 24-hour limit, the Department may extend the 24-hour limit on a case-by-case basis.

(A) If the Department grants the extension, the Department shall specify how much time the supplier has to collect the repeat samples.

(ii) The Department shall not waive the requirement to collect repeat samples.

(b) The supplier must collect repeat samples in accordance with the written sample siting~~ing~~ plan required under 11.16(3~~4~~)~~(a)(iv)~~.

(c) The supplier must collect all repeat samples on the same day.

(i) If the system has only one service connection, the Department may allow the supplier 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.

(d) If a treatment technique is triggered based only on routine sample results, the supplier is required to collect only one repeat sample set for each total coliform-positive routine sample and is not required to comply with the requirements specified in 11.16(5~~7~~)(e).

(e) If one or more of the repeat sample results is total coliform-positive, the supplier must:

(i) Collect an additional repeat sample set as specified in 11.16(5~~7~~)(a-d) for each site that had a total coliform-positive sample result.

(A) The additional repeat sample set(s) must be collected no later than 24 hours after being notified of the total coliform-positive sample result(s), unless the Department extends the 24-hour limit as specified in 11.16(5~~7~~)(a)(i).

(ii) Continue to collect additional repeat sample sets as specified in 11.16(5~~7~~)(e)(i) until either:

(A) Total coliforms are not detected in one complete repeat sample set; or

(B) A treatment technique is triggered as specified in 11.16(8~~3~~) based on total coliform-positive repeat sample results and the supplier has notified the Department.

(f) If the supplier collects a routine sample, which after analysis is found to be total coliform-positive, but before receiving that sample result the supplier collects another routine sample within five service connections of the original sample, the supplier may use the subsequent routine sample as a repeat sample instead of as a routine sample.

~~(g) For groundwater systems, the supplier must collect triggered source water monitoring samples as specified in 11.11(4) in addition to repeat samples required in this section, 11.16(7).~~

~~(i) For a groundwater system with a single well supplying less than or equal to (≤) 1,000 people, if the supplier is required to collect a triggered source water monitoring sample, the supplier, with written Department approval, may collect one of the repeat total coliform samples at the sample site required for triggered source water monitoring under 11.11(4).~~

~~(A) If approved by the Department, the supplier may use the repeat total coliform sample to meet both the triggered source water monitoring requirements specified in 11.11(4) and the total coliform repeat sampling requirements specified in this section, 11.16(7).~~

~~(h) The Department shall not waive the requirement to collect repeat samples.~~

(g~~i~~) ~~Repeat samples~~Results of all routine and repeat samples collected under 11.16(4) and or 11.16(5) not ~~-~~invalidated by the Department under 11.16(7) ~~are not considered special purpose samples and~~ must be used to determine if a treatment technique is triggered.

~~Sampling Requirements for *E. coli*~~

~~(a) If any routine or repeat sample result is total coliform-positive, the supplier must have a laboratory analyze the total coliform-positive culture medium to determine if *E. coli* are present.~~

~~(b) If any routine, repeat, or special purpose sample result is *E. coli*-positive, the supplier must notify the Department no later than the end of the day that the supplier is notified of the sample result.~~

~~(i) If the supplier is notified of the sample result after the Department is closed, the supplier must contact the Department's after-hours phone line.~~

~~(ii) The supplier must only notify the Department of *E. coli*-positive special purpose sample results if the result is representative of water throughout the distribution system~~

11.16(6) Additional Requirements for Seasonal Systems

(a) The supplier must complete Department-approved start-up procedures and certify that the start-up procedures were completed before supplying water to the public each season.

(i) No later than the 10th of the month following the month that the system began supplying water to the public, the supplier must submit the certification that start-up procedures were completed.

(b) The supplier must either submit start-up procedures for Department approval or use the pre-approved procedures in the Department's *Revised Total Coliform Rule Start-up Procedures for Seasonal Systems Handbook*.

(c) As part of the start-up procedures, the supplier must collect a total coliform sample in the distribution system before supplying water to the public.

(d) All seasonal systems are required to collect monthly bacteriological samples during the operating season according to Table 11.16-I.

~~**for Total Coliform**~~

11.16(7~~8~~) Invalidation of Total Coliform Samples

(a) A~~If a~~ total coliform-positive sample result ~~is~~ invalidated under 11.16(7)(b)~~, the sample result will~~ does not count towards ~~meeting~~ the minimum reporting requirements of 11.16(4) and 11.16(5)~~determining~~ .

~~any of the following:~~

~~(i) Compliance with the sampling requirements specified in this rule.~~

~~(ii) Compliance with the *E. coli* MCL.~~

~~(iii) Whether a treatment technique has been triggered.~~

(b)~~a)~~ The Department may invalidate a total coliform-positive sample result only if one or more of the following conditions are met:

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

(i~~i~~) Based on repeat sample results, the Department determines that the total coliform-positive sample resulted from a domestic or other non-distribution system plumbing problem that is limited to the specific service connection from which the total coliform sample was collected.

~~(A) "DOMESTIC OR OTHER NON-DISTRIBUTION SYSTEM PLUMBING PROBLEM" means coliform contamination that is limited to the specific service connection from which the total coliform-positive sample was collected in a public water system with more than one service connection.~~

~~(B)~~ The Department shall ~~not~~ invalidate a total coliform-positive sample result on the basis of repeat sample results unless all repeat sample(s) collected at the same site as the original total coliform-positive sample are also total coliform-positive, and all repeat samples collected at a site other than the original site are total coliform-negative.

~~(I)~~ The Department shall not invalidate a total coliform-positive sample result solely on the basis that all repeat sample results are total coliform-negative, or if the system has only one service connection.

(ii~~i~~) The Department has substantial grounds to believe that a total coliform-positive sample result was due to a circumstance or condition that does not reflect water quality in the distribution system. If the Department makes this determination, the supplier must still collect the required number of repeat samples and use them to determine if a treatment technique is triggered as specified in 11.16(8~~3~~). ~~(A)~~ The Department ~~shall~~ must document the decision and supporting rationale for invalidating a total coliform-positive sample result in writing, have it approved and signed by a supervisor of the Department official who recommended the decision, and make this document available to the EPA and the public.

~~(I)~~ ~~The~~ The written documentation must state the specific cause of the total coliform-positive sample result and what action the supplier has taken, or will take, to correct the ~~problem.~~

~~(II)~~ ~~The~~problem. The Department shall not invalidate a total coliform-positive sample result solely on the basis that all repeat sample results are total coliform-negative.

~~(B) If the Department makes this determination, the supplier must still collect the required number of repeat samples and use them to determine if a treatment technique is triggered as specified in 11.16(3).~~

(iii) ~~(b) The Department shall not invalidate total coliform-positive samples if the system has only one service connection.~~

~~(c) If a total coliform-positive sample result is invalidated, the sample result will not count towards determining any of the following:~~

~~(i) Compliance with the sampling requirements specified in this rule.~~

~~(ii) Compliance with the *E. coli* MCL.~~

~~(iii) Whether a treatment technique has been triggered.~~

~~(d)~~ The laboratory shall invalidate a total coliform-negative sample result (unless total coliforms are detected) if ~~one or more of the following conditions are met:~~

~~(i)~~ ~~T~~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)~~,~~.

~~(ii)~~ ~~T~~the sample produces a turbid culture in the absence of an acid reaction in the Presence-Absence (P-A) Coliform Test~~,~~.

~~(iii)~~ ~~T~~the sample exhibits confluent growth or produces colonies too numerous to count with an analytical method using a membrane filter (e.g., Membrane Filter Technique). If the laboratory invalidates a total coliform-negative sample result, the supplier must collect a replacement total coliform sample from the same site as the invalidated sample no later than 24 hours after being notified of the invalidation, and have it analyzed for the presence of total coliforms.

~~(i)~~ The Department may extend the 24-hour limit on a case-by-case basis.

~~(ii)~~ The supplier must continue to collect replacement total coliform samples until a valid sample result is obtained.

(A) “CONFLUENT GROWTH” means, in the context of bacterial testing, a continuous bacterial growth covering the entire filtration area of a membrane filter, or a portion thereof, in which bacterial colonies are not discrete.

(B) "TOO NUMEROUS TO COUNT" means that the total number of bacterial colonies exceeds 200 on a 47-millimeter (mm) diameter membrane filter used for coliform detection.

~~(e) The laboratory shall not invalidate a total coliform-positive sample result.~~

~~(f) If the laboratory invalidates a total coliform-negative sample result, the supplier must collect a replacement total coliform sample from the same site as the invalidated sample no later than 24 hours after being notified of the invalidation, and have it analyzed for the presence of total coliforms.~~

~~(i) The Department may extend the 24-hour limit on a case-by-case basis.~~

~~(ii) The supplier must continue to collect replacement total coliform samples until a valid sample result is obtained.~~

~~**11.16(2) MCL for *Escherichia coli (E. coli)***~~

~~(a) The system exceeds the *E. coli* MCL if:~~

~~(i) A repeat sample is *E. coli*-positive following a total coliform-positive routine sample.~~

~~(ii) A repeat sample is total coliform-positive following an *E. coli*-positive routine sample.~~

~~(iii) The supplier fails to collect the required repeat samples following an *E. coli*-positive routine sample.~~

~~(iv) The supplier fails to analyze a total coliform-positive repeat sample for *E. coli*.~~

~~(b) The BATs for achieving compliance with the MCLs for *E. coli* are specified in 40 CFR 141.63(e-f) as amended July 1, 2014.~~

11.16(8~~3~~) Total Coliform Treatment Technique Triggers

(a) The treatment technique triggers for a Level 1 assessment are as follows:

(i) If the supplier collects greater than or equal to (≥) 40 samples per month, more than 5.0 percent of the samples collected for the month are total coliform-positive.

(ii) If the supplier collects less than (<) 40 samples per month, two or more ~~than one~~ sample~~s~~ collected for the monitoring period are~~is~~ total coliform-positive.

(iii) The supplier fails to collect all required repeat samples after any single total coliform-positive sample.

(b) The treatment technique triggers for a Level 2 assessment are as follows:

(i) An *E. coli* MCL violation occurs as specified in 11.16(11)(a)~~2)(a)~~.

(ii) A second treatment technique trigger for a Level 1 assessment, as specified in 11.16(8~~3~~)(a), occurred within 12 consecutive months, except:

(A) If the Department has determined the possible cause(s) for the total coliform-positive sample(s) that caused the first Level 1 assessment to be triggered and the Department has established that the supplier has corrected the problem(s)~~.),~~

a second Level 1 assessment that is triggered will not result in a Level 2 assessment.

11.16(4) Individual Rule Sampling Plan for the Revised Total Coliform Rule

(a) No later than March 31, 2016, as part of the monitoring plan specified in 11.5, the supplier must develop a written sampling plan that identifies all of the following:

(i) A sample collection schedule that meets the requirements specified in 11.16(6)(a)(iii).

(ii) Routine total coliform sample sites that are representative of water throughout the distribution system.

(iii) Any sample sites necessary to meet the triggered source water monitoring requirements specified in 11.11(4)(b).

(iv) Repeat sample sites.

(A) The supplier must identify repeat sampling sites in one of the following ways:

(I) Identify sampling sites based on the following requirements:

(a) One total coliform sample at the site where the original total coliform-positive sample was collected.

(b) One total coliform sample at a site within five service connections upstream from the site where the original total-coliform positive sample was collected.

(c) One total coliform sample at a site within five service connections downstream from the site where the original total-coliform positive sample was collected.

(d) If the supplier collected the original total coliform-positive sample from the end of the distribution system or one site away from the end of the distribution system, the Department may allow an alternative sampling site for collecting repeat samples at the upstream or downstream sites.

(II) Identify alternative fixed repeat sampling sites that the supplier believes to be representative of a pathway for contamination of the distribution system.

(III) Develop criteria for selecting repeat sampling sites on a situational basis that the supplier believes to best verify and determine the extent of potential contamination and a potential pathway for contamination of the distribution system in a standard operating procedure (SOP) that is included in the sampling plan.

(a) The Department may modify the SOP or require alternative repeat sampling sites.

(b) Sample sites may include a customer's premises, dedicated sampling station, or other designated compliance sampling site.

(c) The Department may review, revise, and approve the written sampling plan.

11.16(5) Start-up Requirements for Seasonal Systems

(a) The supplier must complete Department-approved start-up procedures and certify that the start-up procedures were completed before supplying water to the public each season.

(i) No later than the 10th of the month following the month that the system began supplying water to the public, the supplier must submit the certification that start-up procedures were completed.

(b) The supplier must either submit start-up procedures for Department approval or use the pre-approved procedures in the Department's *Revised Total Coliform Rule Start-up Procedures for Seasonal Systems Handbook*.

(c) As part of the start-up procedures, the supplier must collect a total coliform sample in the distribution system before supplying water to the public.

11.16(6) Sampling Requirements for Total Coliform

(a) General Sampling Requirements for Total Coliform

(i) To determine compliance with the MCL for *E. coli* or to determine if a treatment technique is triggered, the supplier must collect total coliform samples as specified in 11.16(6) and 11.16(7).

(A) If an *E. coli* MCL violation occurs or if a treatment technique is triggered, the supplier must still collect at least the minimum number of required routine samples.

(ii) The supplier must collect total coliform samples according to the written sampling plan as specified in 11.16(4).

(iii) The supplier must collect total coliform samples at regular time intervals throughout the month, except:

(A) For groundwater systems that supply less than or equal to (≤) 4,900 people, the supplier may collect all required samples on a single day if the samples are collected from different sites.

(iv) The supplier may collect more samples than the minimum number of routine total coliform samples required as specified in Table 11.16-I as a tool to investigate potential problems in the distribution system.

(A) The supplier must use these sample results to determine if a treatment technique has been triggered if:

(I) The supplier collects these samples in accordance with the sampling plan; and

(II) The supplier collects these samples from sites that are representative of water throughout the distribution system.

(B) If any of the sample results are total coliform-positive, the supplier must collect repeat samples as specified in 11.16(7).

(v) If the supplier collects special purpose samples, these samples are not routine or repeat samples and these sample results will not be used to determine

~~compliance with the *E. coli* MCL or to determine if a treatment technique is triggered.~~

~~(A) The supplier is not required to submit special purpose samples unless the sample result is *E. coli*-positive and is representative of water in the distribution system.~~

~~(I) The supplier must submit *E. coli*-positive special purpose sample results as specified in 11.35(2)(a).~~

~~(b) Routine Sampling Requirements for Total Coliform~~

~~(i) For all public water systems, the supplier must collect the number of routine total coliform samples specified in Table 11.16-I each month except:~~

~~(A) For non-community groundwater systems that supply less than or equal to (≤) 1,000 people, the supplier must collect one total coliform sample during each quarter that water is supplied to the public, unless the supplier is required to increase the routine sampling frequency as specified in 11.16(6)(c).~~

~~(I) In any month where the system supplies greater than (>) 1,000 people, the supplier must collect the number of routine total coliform samples specified in Table 11.16-I each month.~~

~~(a) The supplier must have written Department-approval to alternate between quarterly and monthly sampling frequencies based on when the population supplied is less than or equal to (≤) 1,000 people or when the population supplied is greater than (>) 1,000 people.~~

~~(ii) For public water systems that haul water, the water hauler must collect at least one total coliform sample from the outlet port of each tank or container each month that the tank or container is used to supply water to the public.~~

~~(iii) For hand-pumped wells, the supplier must collect at least one total coliform sample from each hand-pumped well each month that it supplies water to the public.~~

~~(iv) For the following public water systems, the supplier is not eligible for a quarterly sampling frequency as specified in 11.16(6)(b)(i)(A):~~

~~(A) Seasonal systems.~~

~~(B) Public water systems that do not provide chemical disinfection.~~

~~(C) Public water systems that haul water.~~

~~(D) Groundwater systems with hand-pumped wells.~~

~~(v) The Department shall perform a sampling evaluation during each sanitary survey to determine whether the supplier is collecting total coliform samples on an appropriate frequency.~~

~~(A) Based on the sampling evaluation, the Department may modify the sampling frequency.~~

TABLE 11.16-I NUMBER OF ROUTINE TOTAL COLIFORM SAMPLES REQUIRED PER MONITORING PERIOD

Population supplied	Minimum number of samples required	Population supplied	Minimum number of samples required
25 to 1,000[1]	1	59,001 to 70,000	70
1,001 to 2,500	2	70,001 to 83,000	80
2,501 to 3,300	3	83,001 to 96,000	90
3,301 to 4,100	4	96,001 to 130,000	100
4,101 to 4,900	5	130,001 to 220,000	120
4,901 to 5,800	6	220,001 to 320,000	150
5,801 to 6,700	7	320,001 to 450,000	180
6,701 to 7,600	8	450,001 to 600,000	210
7,601 to 8,500	9	600,001 to 780,000	240
8,501 to 12,900	10	780,001 to 970,000	270
12,901 to 17,200	15	970,001 to 1,230,000	300
17,201 to 21,500	20	1,230,001 to 1,520,000	330
21,501 to 25,000	25	1,520,001 to 1,850,000	360
25,001 to 33,000	30	1,850,001 to 2,270,000	390
33,001 to 41,000	40	2,270,001 to 3,020,000	420
41,001 to 50,000	50	3,020,001 to 3,960,000	450
50,001 to 59,000	60	3,960,001 or more	480

1 Includes systems that have greater than or equal to (≥) 15 service connections, but supply less than (<) 25 people.

(c) For Non-community Groundwater Systems Supplying Less Than or Equal to (≤) 1,000 People – Increased Routine Sampling Requirements for Total Coliform

(i) If the supplier is sampling quarterly, the supplier must increase the routine sampling frequency to monthly if any of the following events occur:

(A) A Level 2 assessment is triggered under 11.16(3)(b).

(B) A treatment technique violation occurs under 11.16(12)(b).

(C) Two sampling violations occur within 12 consecutive months.

(D) A Level 1 assessment is triggered and a sampling violation occurs within 12 consecutive months.

(ii) The supplier must begin the monthly sampling frequency in the month following the month that the event occurred under 11.16(6)(c)(i).

(iii) If the supplier is sampling monthly, the Department may allow the supplier to return to a routine quarterly sampling frequency if all of the following criteria are met:

(A) Within the last 12 months, the Department or a Department-approved party has completed a sanitary survey or a Level 2 assessment.

(B) The system is free of sanitary defects and all significant deficiencies have been corrected.

~~(C) The system's water source(s) is protected from the direct influence of surface water or any other source of contamination.~~

~~(D) The system has a clean compliance history for at least 12 consecutive months.~~

~~(d) For Non-community Groundwater Systems Supplying Less Than or Equal to (≤) 1,000 People –Additional Routine Sampling Requirements in the Month Following a Total Coliform-positive Sample Result~~

~~(i) If the supplier is collecting total coliform samples on a quarterly frequency and one or more of the samples collected is total coliform-positive, the supplier must collect at least three routine samples during the following month.~~

~~(A) The supplier may either collect the samples at regular time intervals throughout the month or collect all required additional routine samples on a single day if the samples are collected from different sites.~~

~~(ii) If any of the additional routine sample results are total coliform-positive, the supplier must collect repeat samples as specified in 11.16(7).~~

~~(iii) The supplier must use the results of additional routine samples to determine whether an *E. coli* MCL violation has occurred or if a treatment technique is triggered.~~

~~(iv) If all three additional routine samples are total coliform-negative, the supplier may return to collecting one total coliform sample on a quarterly sampling frequency. The supplier must begin collecting the quarterly sampling frequency in the calendar quarter following the month that the three additional routine samples were required.~~

~~11.16(7) Repeat Sampling Requirements for Total Coliform~~

~~(a) For each routine sample result that is total coliform-positive, the supplier must collect a sample set of at least three repeat total coliform samples no later than 24 hours after being notified of the positive sample result.~~

~~(i) If the supplier has a logistical problem beyond their control that prevents the supplier from collecting the repeat samples within the 24-hour limit, the Department may extend the 24-hour limit on a case-by-case basis.~~

~~(A) If the Department grants the extension, the Department shall specify how much time the supplier has to collect the repeat samples.~~

~~(b) The supplier must collect repeat samples in accordance with the written sampling plan required under 11.16(4)(a)(iv).~~

~~(c) The supplier must collect all repeat samples on the same day.~~

~~(i) If the system has only one service connection, the Department may allow the supplier 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.~~

~~(d) If a treatment technique is triggered based only on routine sample results, the supplier is required to collect only one repeat sample set for each total coliform-~~

positive routine sample and is not required to comply with the requirements specified in 11.16(7)(e).

(e) If one or more of the repeat sample results is total coliform-positive, the supplier must:

(i) Collect an additional repeat sample set as specified in 11.16(7)(a-d) for each site that had a total coliform-positive sample result.

(A) The additional repeat sample set(s) must be collected no later than 24 hours after being notified of the total coliform-positive sample result(s), unless the Department extends the 24-hour limit as specified in 11.16(7)(a)(i).

(ii) Continue to collect additional repeat sample sets as specified in 11.16(7)(e)(i) until either:

(A) Total coliforms are not detected in one complete repeat sample set; or

(B) A treatment technique is triggered as specified in 11.16(3) based on total coliform-positive repeat sample results and the supplier has notified the Department.

(f) If the supplier collects a routine sample, which after analysis is found to be total coliform-positive, but before receiving that sample result the supplier collects another routine sample within five service connections of the original sample, the supplier may use the subsequent routine sample as a repeat sample instead of as a routine sample.

(g) For groundwater systems, the supplier must collect triggered source water monitoring samples as specified in 11.11(4) in addition to repeat samples required in this section, 11.16(7).

(i) For a groundwater system with a single well supplying less than or equal to (≤) 1,000 people, if the supplier is required to collect a triggered source water monitoring sample, the supplier, with written Department approval, may collect one of the repeat total coliform samples at the sample site required for triggered source water monitoring under 11.11(4).

(A) If approved by the Department, the supplier may use the repeat total coliform sample to meet both the triggered source water monitoring requirements specified in 11.11(4) and the total coliform repeat sampling requirements specified in this section, 11.16(7).

(h) The Department shall not waive the requirement to collect repeat samples.

(i) Repeat samples are not considered special purpose samples and must be used to determine if a treatment technique is triggered.

11.16(8) Invalidation of Total Coliform Samples

(a) The Department may invalidate a total coliform-positive sample result only if one or more of the following conditions are met:

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

(ii) Based on repeat sample results, the Department determines that the total coliform-positive sample resulted from a domestic or other non-distribution system plumbing problem.

(A) "DOMESTIC OR OTHER NON-DISTRIBUTION SYSTEM PLUMBING PROBLEM" means coliform contamination that is limited to the specific service connection from which the total coliform-positive sample was collected in a public water system with more than one service connection.

(B) The Department shall not invalidate a total coliform-positive sample result on the basis of repeat sample results unless all repeat sample(s) collected at the same site as the original total coliform-positive sample are also total coliform-positive, and all repeat samples collected at a site other than the original site are total coliform-negative.

(I) The Department shall not invalidate a total coliform-positive sample result solely on the basis that all repeat sample results are total coliform-negative.

(iii) The Department has substantial grounds to believe that a total coliform-positive sample result was due to a circumstance or condition that does not reflect water quality in the distribution system.

(A) The Department shall document the decision and supporting rationale for invalidating a total coliform-positive sample result in writing, have it approved and signed by a supervisor of the Department official who recommended the decision, and make this document available to the EPA and the public.

(I) The written documentation must state the specific cause of the total coliform-positive sample result and what action the supplier has taken, or will take, to correct the problem.

(II) The Department shall not invalidate a total coliform-positive sample result solely on the basis that all repeat sample results are total coliform-negative.

(B) If the Department makes this determination, the supplier must still collect the required number of repeat samples and use them to determine if a treatment technique is triggered as specified in 11.16(3).

(b) The Department shall not invalidate total coliform-positive samples if the system has only one service connection.

(c) If a total coliform-positive sample result is invalidated, the sample result will not count towards determining any of the following:

(i) Compliance with the sampling requirements specified in this rule.

(ii) Compliance with the *E. coli* MCL.

(iii) Whether a treatment technique has been triggered.

(d) The laboratory shall invalidate a total coliform-negative sample result if one or more of the following conditions are met:

~~(i) 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).~~

~~(ii) The sample produces a turbid culture in the absence of an acid reaction in the Presence-Absence (P-A) Coliform Test.~~

~~(iii) The sample exhibits confluent growth or produces colonies too numerous to count with an analytical method using a membrane filter (e.g., Membrane Filter Technique).~~

~~(A) "CONFLUENT GROWTH" means, in the context of bacterial testing, a continuous bacterial growth covering the entire filtration area of a membrane filter, or a portion thereof, in which bacterial colonies are not discrete.~~

~~(B) "TOO NUMEROUS TO COUNT" means that the total number of bacterial colonies exceeds 200 on a 47-millimeter (mm) diameter membrane filter used for coliform detection.~~

~~(e) The laboratory shall not invalidate a total coliform-positive sample result.~~

~~(f) If the laboratory invalidates a total coliform-negative sample result, the supplier must collect a replacement total coliform sample from the same site as the invalidated sample no later than 24 hours after being notified of the invalidation, and have it analyzed for the presence of total coliforms.~~

~~(i) The Department may extend the 24-hour limit on a case-by-case basis.~~

~~(ii) The supplier must continue to collect replacement total coliform samples until a valid sample result is obtained.~~

~~**11.16(9) Sampling Requirements for *E. coli***~~

~~(a) If any routine or repeat sample result is total coliform-positive, the supplier must have a laboratory analyze the total coliform-positive culture medium to determine if *E. coli* are present.~~

~~(b) If any routine, repeat, or special purpose sample result is *E. coli*-positive, the supplier must notify the Department no later than the end of the day that the supplier is notified of the sample result.~~

~~(i) If the supplier is notified of the sample result after the Department is closed, the supplier must contact the Department's after-hours phone line.~~

~~(ii) The supplier must only notify the Department of *E. coli*-positive special purpose sample results if the result is representative of water throughout the distribution system.~~

11.16(9~~10~~) Treatment Technique Requirements: Level 1 and Level 2 Assessment ~~Requirements~~

(a) Once all of the monitoring required by 11.16(4) and or 11.16(5) has been completed, the supplier must determine if any ~~If at the end of the monitoring period a~~ treatment technique has been triggered as specified in 11.16(8~~3~~). If at any time a treatment technique trigger has been exceeded, ~~,~~ the supplier must complete the assessments as required by 11.16(9). ~~comply with the treatment technique requirements specified in this section 11.16(10).~~

(b~~a~~) General Requirements for Assessments

(i) To identify the possible presence of sanitary defects and defects in distribution system ~~and correct sanitary defects and identify inadequate or inappropriate distribution system~~ coliform sampling practices~~,~~, the supplier must ensure that a Level 1 or Level 2 assessment is conducted.

(ii) The supplier must ensure that the assessor evaluates at least all of the following elements:

(A) Inadequacies in sample sites.

(B) Inadequacies in sampling protocol.

(C) Inadequacies in sample processing.

(D) Atypical events that could affect distributed water quality or indicate that distributed water quality was impaired.

(E) Changes in distribution system maintenance and operation, including water storage, that could affect distributed water quality.

(F) Source and treatment considerations that affect distributed water quality.

(G) Existing water quality monitoring data.

(iii) The supplier or the Department may request a consultation with the other party at any time during the assessment or corrective action phase. The consultation may be used to determine appropriate actions to be taken or to discuss relevant information that may impact the supplier's ability to comply with the requirements specified in 11.16(9~~10~~).

(iv) If required by the Department, the supplier must ensure that the assessment is conducted consistent with any Department-specified modifications to assessment elements based on the size and type of the system and the size, type, and characteristics of the distribution system.

(v) ~~If required by the Department, the supplier must comply with any expedited schedules or additional actions that may include requiring the supplier to collect additional total coliform samples and chlorine residual disinfectant concentration samples.~~

~~(vi)~~ The supplier must ~~complete corrective action by correcting sanitary defects identified during~~correct sanitary defects found through either Level 1 or Level 2 assessments.

~~(A)~~ If the supplier has not completed corrective action for any sanitary defect before the submission of the assessment form, the supplier must complete the corrective action(s) on a Department-approved schedule.

~~(I)~~ The supplier must notify the Department when each scheduled corrective action is completed.

(c~~b~~) Level 1 Assessments

(i) If any treatment technique for a Level 1 assessment is triggered, the supplier must complete a Level 1 assessment, consistent with Department requirements, as soon as practical.

(ii) No later than 30 days after learning of a treatment technique trigger for a Level 1 assessment, the supplier must submit for review a completed Level 1 assessment form.

~~(A)~~ In the completed form, the supplier must state whether sanitary defects were identified and if so, describe all of the following:

(A~~I~~) Sanitary defects identified.

(B~~II~~) The possible cause(s) for the treatment technique trigger.

(C~~III~~) If sanitary defects are identified, corrective actions completed.

(D~~IV~~) If sanitary defects are identified, a proposed schedule for any corrective actions not already completed.

(iii) If the Department reviews the Level 1 assessment form and determines that the assessment was not sufficient or the assessment form is not complete, the Department shall consult with the supplier.

~~(A)~~ If the Department requires revisions after consultation, the supplier must submit a revised assessment form to the Department on an agreed-upon date no later than 30 days from the date of the consultation.

(iv) Upon completion and submission of the assessment form by the supplier, the Department shall determine if the supplier identified the possible cause(s) for the ~~treatment technique~~Level 1 trigger.

~~(A)~~ If the supplier identified the possible cause(s) for the treatment technique trigger, the Department shall determine if the supplier corrected the problem or included a Department-approved schedule for correcting the problem.

~~(v) For systems operating under a disinfection waiver, the supplier must distribute Tier 2 public notice as specified in 11.33 if a treatment technique for a Level 1 assessment is triggered~~.

(d~~c~~) Level 2 Assessments

(i) If any treatment technique for a Level 2 assessment is triggered, the supplier must ensure that a Level 2 assessment is conducted as soon as practical.

~~(A)~~ The supplier must ensure that the Level 2 assessment is completed by the Department or Department-approved party.

(ii) The supplier must comply with any expedited actions or additional actions required by the Department in the case of an *E. coli* violation.

(ii~~i~~) No later than 30 days after learning of a Level 2 treatment technique trigger exceedance, the supplier must submit for review a completed Level 2 assessment ~~form.~~

~~(A) The~~form. The supplier must state whether sanitary defects were identified and if so, describe all of the following:

(A~~I~~) Sanitary defects identified.

(B~~II~~) The possible cause(s) for the Level 2 treatment technique trigger.

(CIII) If sanitary defects are identified, corrective actions completed.

(DIV) If sanitary defects are identified, a proposed schedule for any corrective actions not already completed.

(iv~~ii~~) If the Department reviews the Level 2 assessment form and determines that the assessment was not sufficient or the assessment form is not complete, the Department shall consult with the supplier.

~~(A)~~ If the Department requires revisions after consultation, the supplier must submit a revised assessment form to the Department on an agreed-upon schedule no later than 30 days from the date of the consultation.

(~~i~~v) Upon completion and submission of the assessment form by the supplier, the Department shall determine if the supplier identified the possible cause(s) for the treatment technique trigger.

~~(A)~~ If the supplier identified the possible cause(s) for the treatment technique trigger, the Department shall determine if the supplier corrected the problem or included a Department-approved schedule for correcting the problem.

11.16(10~~1~~) Compliance Determination for the *E. coli* MCL

(a) To determine if an *E. coli* MCL violation has occurred, the supplier must include the results of all routine and repeat samples collected in the monitoring period under 11.16(4~~6~~) and 11.16(5~~7~~).

11.16(11~~2~~) Violations ~~for the Revised Total Coliform Rule~~

(a) The following constitute *E. coli* MCL violations:

(i) A repeat sample is *E. coli*-positive following a total coliform-positive routine sample.

(ii) A repeat sample is total coliform-positive following an *E. coli*-positive routine sample.

(iii) The supplier fails to collect all required repeat samples following an *E. coli*-positive routine sample.

(iv) The supplier fails to analyze a total coliform-positive repeat sample for *E. coli*.

(~~i~~v) If a repeat sample collected at the monitoring location for triggered source water monitoring is *E. coli-positive*. The supplier must also comply with 11.11(4)(d). If a supplier collects more than one repeat sample at the monitoring location for triggered source water monitoring, the supplier may reduce the number of additional source water samples required under 11.11(4)(d) by the number of repeat samples collected at that location that were not *E. coli*-positive.

(vi) If a supplier collects more than one repeat sample at the triggered source water monitoring location under 11.11(4)(d), and more than one repeat sample is *E. coli*-positive, the supplier has violated the *E. coli* MCL and must also comply with 11.11(6) .

(vii) If all of the repeat samples collected at the triggered source water monitoring location are *E. coli* negative and a repeat sample collected other than the one for triggered source water monitoring is *E. coli*-positive, the supplier has violated the *E. coli* MCL under 11.16(11)(a) and the supplier is not required to comply with 11.11(4)(d).

(b) The following constitute treatment technique violations:

(i) A treatment technique was triggered and the supplier failed to conduct the required assessment or corrective action(s) as specified in 11.16(9~~10~~).

(ii) For seasonal systems, the supplier fails to complete Department-approved start-up procedures before supplying water to the public.

(c) The following constitute monitoring violations:

(i) Failure to collect every required routine or additional routine sample in the supplier's compliance period.

(ii) Failure to analyze for *E. coli* following a total coliform-positive routine sample.

(d) The following constitute reporting violations:

(i) Failure to submit monitoring results or a completed assessment form after a supplier conducts the required monitoring or assessment in a timely manner.

(ii) Failure to notify the Department following an *E. coli*-positive sample as required by 11.16(4)(e)(i) in a timely manner.

(iii) For seasonal systems, failure to submit certification of completion of Department-approved start-up procedures.

11.16(12~~3~~) ~~Response to Violations of the Revised Total Coliform Rule~~Reporting Requirements

(a) In the event of an *E. coli* MCL violation, the supplier must:

(i) Notify the Department no later than the end of the day that the supplier learns of the violation.

~~(A)~~ If the supplier learns of the violation after the Department is closed, the supplier must contact the Department's ~~after-hours phone line~~24 Hour Environmental Release/Incident report line (i.e., after-hours phone line).

(ii) Distribute Tier 1 public notice as specified in 11.33.

(b) In the event of a treatment technique violation, the supplier must:

(i) Notify the Department no later than the end of the next business day after the supplier learns of the violation.

(ii) Distribute Tier 2 public notice as specified in 11.33.

(c) In the event of an *E. coli*-positive routine or repeat sample event, the supplier must notify the Department no later than the end of the day when the supplier is notified. If the supplier learns of the violation after the Department is closed, the Supplier must contact the Department's 24 Hour Environmental Release/Incident report line (i.e., after-hours phone line).

(d) A supplier required to conduct an assessment under 11.16(9) must submit the assessment report within 30 days. The supplier must notify the Department when each scheduled corrective action is completed for corrections not completed at the time of submission of the assessment form.

(e) In the event of a coliform monitoring violation, the supplier must:

(i) Notify the Department within 10 days after the system discovers the violation.

(ii) Conduct Tier 3 public notice as specified in 11.33.

(f) No later than the 10th of the month following the month that the system began supplying water to the public, the supplier must submit certification that start-up procedures were completed.

11.17 ~~TOTAL COLIFORM RULE~~RESERVED

~~11.17(1) Applicability and Definitions~~

~~(a) For all public water systems, the supplier must comply with the requirements specified in this rule until March 31, 2016.~~

~~(i) The supplier must complete all requirements specified in this rule that are initiated by a total coliform-positive sample collected before April 1, 2016.~~

~~(b) "CONFLUENT GROWTH" means, in the context of bacterial testing, a continuous bacterial growth covering the entire filtration area of a membrane filter, or a portion thereof, in which bacterial colonies are not discrete.~~

~~(c) "TOO NUMEROUS TO COUNT" means that the total number of bacterial colonies exceeds 200 on a 47-millimeter (mm) diameter membrane filter used for coliform detection.~~

~~11.17(2) MCLs for Microbial Contaminants~~

~~(a) The microbial contaminant MCLs are as follows:~~

~~TABLE 11.17-I MCLs FOR MICROBIAL CONTAMINANTS~~

~~Contaminant~~	~~Total number of samples collected~~	~~MCL~~
~~Total coliforms~~	~~The supplier collects less than (<) 40 samples per month~~	~~No more than one sample collected during a month is total coliform-positive~~
	~~The supplier collects greater than or equal to (≥) 40 samples per month~~	~~No more than 5.0 percent of all the samples collected during a month are total coliform-positive~~
~~Fecal coliform or *E. coli* repeat sample~~	~~.~~	~~Absent~~
~~Total coliform-positive repeat sample following a fecal coliform-positive or *E. coli*-positive routine sample~~	~~.~~	~~Absent~~

~~(b) The BATs for achieving compliance with the MCLs for microbial contaminants are specified in 40 CFR 141.63(e) as amended July 1, 2014.~~

~~11.17(3) Sampling Requirements for Total Coliform~~

(a) General Sampling Requirements for Total Coliform

(i) To determine compliance with the MCL for microbial contaminants, the supplier must collect total coliform samples at locations that are representative of water throughout the distribution system and at regular time intervals throughout the month.

(A) For groundwater systems that supply less than or equal to (≤) 4,900 people, the supplier may collect all required samples on a single day if the samples are collected from different locations.

(ii) The supplier must maintain a written individual rule sampling plan identifying the total coliform sample locations as part of the monitoring plan as specified in 11.5.

(A) The Department may review the individual rule sampling plan and revise it as necessary.

(b) Routine Sampling Requirements for Total Coliform

(i) The supplier must collect the number of routine total coliform samples specified in Table 11.17-II each month, except:

(A) For non-community water systems using only groundwater sources that supply less than or equal to (≤) 1,000 people, the supplier must collect one total coliform sample during each quarter that water is supplied to the public.

(I) If the system is reclassified as a surface water system, the supplier must collect the number of total coliform samples specified in Table 11.17-II each month beginning with the month following written Department determination of the reclassification.

TABLE 11.17-II NUMBER OF ROUTINE TOTAL COLIFORM SAMPLES REQUIRED PER MONITORING PERIOD

Population supplied	Minimum number of samples required	Population supplied	Minimum number of samples required
25 to 1,000[1]	1	59,001 to 70,000	70
1,001 to 2,500	2	70,001 to 83,000	80
2,501 to 3,300	3	83,001 to 96,000	90
3,301 to 4,100	4	96,001 to 130,000	100
4,101 to 4,900	5	130,001 to 220,000	120
4,901 to 5,800	6	220,001 to 320,000	150
5,801 to 6,700	7	320,001 to 450,000	180
6,701 to 7,600	8	450,001 to 600,000	210
7,601 to 8,500	9	600,001 to 780,000	240
8,501 to 12,900	10	780,001 to 970,000	270
12,901 to 17,200	15	970,001 to 1,230,000	300
17,201 to 21,500	20	1,230,001 to 1,520,000	330
21,501 to 25,000	25	1,520,001 to 1,850,000	360
25,001 to 33,000	30	1,850,001 to 2,270,000	390
33,001 to 41,000	40	2,270,001 to 3,020,000	420
41,001 to 50,000	50	3,020,001 to 3,960,000	450
50,001 to 59,000	60	3,960,001 or more	480

1 Includes systems that have greater than or equal to (≥) 15 service connections, but supply less than (<) 25 people.

(ii) For a non-community water system that is not open year round, the supplier must collect a total coliform sample at least 10 days before opening for the season.

(iii) For hand-pumped wells, the supplier must collect a total coliform sample from the hand-pumped well each month that it supplies water to the public.

(iv) For public water systems that haul water, the water hauler must collect at least one total coliform sample from the outlet port of each tank or container each month that the tank or container is used to supply water to the public.

(v) If the supplier collects special purpose samples (e.g., samples collected to determine whether disinfection practices are sufficient following pipe placement, replacement, or repair), the Department will not consider these as routine samples and will not use the sample results to determine compliance with the MCLs.

(c) Repeat Sampling Requirements for Total Coliform

(i) If a routine sample result is total coliform-positive, the supplier must collect a set of repeat samples no later than 24 hours after being notified of the positive sample result.

(A) If the supplier has a logistical problem beyond their control that prevents the supplier from collecting the repeat samples, the Department may extend the 24-hour limit on a case-by-case basis.

(I) The supplier must request the extension as soon as possible but no later than 24 hours after being notified of the positive sample result.

(II) If the Department approves the extension, the Department shall notify the supplier no later than the end of the next business day and specify how much time the supplier has to collect the repeat samples.

(ii) The supplier must collect repeat samples as follows:

(A) If the supplier is required to collect one routine total coliform sample each month or each quarter, the supplier must collect four repeat total coliform samples for each total coliform-positive sample result.

(B) If the supplier is required to collect more than one routine total coliform sample each month, the supplier must collect three repeat total coliform samples for each total coliform-positive sample result.

(iii) The supplier must collect repeat samples at the following locations:

(A) One total coliform sample at the tap where the original total coliform-positive sample was collected.

(B) One total coliform sample at a tap within five service connections upstream from the tap where the original total coliform-positive sample was collected.

(C) One total coliform sample at a tap within five service connections downstream from the tap where the original total coliform-positive sample was collected.

(D) If the supplier is required to collect four repeat samples, the supplier may choose where to collect the fourth repeat sample.

(E) If the supplier collected the original total coliform-positive sample from the end of the distribution system or one tap away from the end of the distribution system, the Department may waive the requirement to collect one repeat sample upstream or downstream of tap where the original total coliform-positive sample was collected and specify more appropriate sampling locations for collecting the repeat samples.

(iv) The supplier must collect all repeat samples on the same day.

(A) If the system has only one service connection, the Department may allow the supplier to collect the repeat samples over a four-day period.

(v) If one or more of the repeat sample results is total coliform-positive, the supplier must:

(A) Collect an additional repeat sample set as specified in 11.17(3)(c)(ii-iv) for each location that had a total coliform-positive sample result.

(I) The additional repeat sample set(s) must be collected no later than 24 hours after being notified of the total coliform-positive sample result(s), unless the Department extends the 24-hour limit as specified in 11.17(3)(c)(i)(A).

(B) Continue to collect repeat sample sets as specified in 11.17(3)(c)(v)(A) until either:

(I) Total coliforms are not detected in one complete repeat sample set; or

(II) The MCL for microbial contaminants has been exceeded and the supplier has notified the Department of the MCL exceedance.

(vi) If the supplier collects a routine sample, which after analysis is found to be total coliform-positive, but before receiving that sample result the supplier collects another routine sample within five service connections of the original sample, the supplier may use the subsequent routine sample as a repeat sample instead of as a routine sample.

(vii) Repeat samples are not considered special purpose samples and must be used to determine compliance with the MCL for microbial contaminants as specified in 11.17(8).

(viii) The Department shall not waive the requirement to collect repeat samples.

(d) For Systems Supplying Less Than or Equal to (≤) 4,100 People – Monitoring Requirements Following a Total Coliform-positive Sample Result

(i) If the supplier is collecting fewer than five routine samples each month and one or more of the samples collected is total coliform-positive, the supplier must collect five routine samples during the next month that the system supplies water to the public.

(A) The Department may waive the requirement to collect five routine samples the next month if one of the following conditions is met:

(I) The Department, or an agent approved by the Department, performs a site visit before the end of the next month that the system supplies water to the public.

(a) The site visit is not required to be a sanitary survey, but the site visit must be sufficiently detailed to allow the Department to determine whether additional monitoring and/or corrective action is needed.

(b) The Department will not approve an employee of the system to perform the site visit, even if the employee is an agent approved by the Department to perform sanitary surveys.

(II) The Department has determined the reason that the sample result was total coliform-positive and establishes that the supplier has corrected the problem or will correct the problem before the end of the next month that the system supplies water to the public.

(a) The Department must document the decision to waive the requirement in writing, have it approved and signed by a supervisor of the Department official who recommends the 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 result and what action the supplier has taken and/or will take to correct this problem.

(b) The supplier must still collect the number of routine samples specified in Table 11.17-II before the end of the next month that the system supplies water to the public and use it to determine compliance with the MCL for microbial contaminants unless the Department determines that the supplier corrected the contamination problem before the supplier collected the set of repeat samples required under 11.17(3)(c)(i-v), and all repeat samples were total coliform-negative.

(B) The Department will not waive the requirement to collect five routine total coliform samples the next month based only on the fact that all repeat samples are total coliform-negative.

(ii) The supplier may return to collecting the routine number of total coliform samples specified in Table 11.17-II after the month in which five total coliform samples were required if all five samples were total coliform-negative.

11.17(4) Investigation of Total Coliform-Positive Routine Sample Results

(a) For each total coliform-positive sample result, after the supplier collects repeat samples, the supplier must investigate the cause of the total coliform-positive routine sample result(s).

(1) The investigation is to include information regarding the conditions at the source(s), treatment facility(s), storage facilities, and distribution system including an evaluation of the potential for unprotected cross connection(s).

(A) The supplier may modify the scope of the investigation to take into account conditions that are unique to the system's size, source(s), distribution system layout, and cross connection control devices relative to the location of the total coliform-positive sample result(s).

(b) The supplier must complete the investigation before the repeat sample results become available.

(c) The Department will use the information collected during the investigation in the event an acute MCL violation occurs.

11.17(5) Invalidation of Total Coliform Samples

(a) The Department may invalidate a total coliform-positive sample result if any of the following conditions are met:

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

(ii) Based on the repeat sample results, the Department determines that the total coliform-positive sample resulted from a domestic or other non-distribution system plumbing problem.

(A) "DOMESTIC OR OTHER NON-DISTRIBUTION SYSTEM PLUMBING PROBLEM" means a coliform contamination problem in a public water system with more than one service connection that is limited to the specific service connection from which the coliform-positive sample was taken.

(B) The Department shall not invalidate a sample result 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 within five service connections of the original tap are total coliform-negative.

(iii) The Department has substantial grounds to believe that the total coliform-positive sample result was due to a circumstance or condition that does not reflect water quality in the distribution system.

(A) The Department shall document the decision and rationale for invalidating a total coliform-positive sample result in writing, have it approved and signed by a supervisor of the Department official who recommended the decision, and make this document available to the EPA and the public.

(I) The written documentation must state the specific cause of the total coliform-positive sample result, and what action the supplier has taken, or will take, to correct the problem.

(II) The Department will not invalidate a total coliform-positive sample result based only on the fact that all repeat sample results are total coliform-negative.

(B) If the Department makes this determination, the supplier must still collect the required number of repeat samples as specified in 11.17(3)(c)(i-v) and use them to determine compliance with the MCL for microbial contaminants.

(b) The laboratory must invalidate a total coliform-negative sample result if one or more of the following conditions are met:

(i) 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).

(ii) The sample produces a turbid culture in the absence of an acid reaction in the Presence-Absence (P-A) Coliform Test.

(iii) The sample exhibits confluent growth or produces colonies too numerous to count with an analytical method using a membrane filter (i.e., Membrane Filter Technique).

(c) If the laboratory invalidates a total coliform sample result, the supplier must collect a replacement total coliform sample from the same location as the invalidated sample no later than 24 hours after being notified of the invalidation.

(i) If the supplier has a logistical problem beyond their control that prevents the supplier from collecting the replacement samples, the Department may extend the 24-hour limit on a case-by-case basis.

(A) If the Department approves the extension, the Department will specify how much time the supplier has to collect the replacement sample.

(ii) The supplier must continue to collect replacement samples until a valid result is obtained.

(d) If a total coliform-positive sample result is invalidated, the sample result will not count towards meeting the monitoring requirements as specified in this rule.

11.17(6) Sampling Requirements for Fecal Coliforms/*Escherichia coli (E. coli)*

(a) If any routine or repeat sample result is total coliform-positive, the supplier must have a laboratory certified by the state of Colorado analyze that total coliform-positive culture medium to determine if fecal coliforms or *E. coli* are present.

(b) If fecal coliforms or *E. coli* are present, the supplier must notify the Department no later than the end of the next business day after the day the supplier was notified of the sample result.

(c) On a case-by-case basis, the Department may allow the supplier to forgo fecal coliform or *E. coli* analysis on a total coliform-positive sample if the supplier assumes that the total coliform-positive sample result is fecal coliform-positive or *E. coli* -positive for the purposes of determining compliance with the MCL.

11.17(7) Analytical Requirements for Microbial Contaminants

(a) The supplier must collect total coliform samples that are 100 ml in volume, regardless of the analytical method used for total coliform analysis.

(b) The supplier is only required to determine the presence or absence of total coliforms; a determination of total coliform density is not required.

(c) If fecal coliform analysis is performed following a total coliform-positive sample result, the supplier is only required to determine the presence or absence of fecal coliforms; a determination of fecal coliform density is not required.

11.17(8) Compliance Determination for Microbial Contaminants

(a) Compliance with the MCL is based on the presence or absence of total coliforms and fecal coliforms or *E. coli*.

(b) The supplier must determine compliance with the MCL each month that total coliform samples are collected.

~~(c) The supplier must include the results of all routine and repeat samples collected in the month when determining compliance with the MCL.~~

~~(i) Sample results that are invalidated by the Department or the laboratory are not included in determining compliance.~~

~~**11.17(9) Violations for Microbial Contaminant MCLs**~~

~~(a) The following constitute acute MCL violations:~~

~~(i) A repeat sample is fecal coliform-positive or *E. coli* -positive.~~

~~(ii) A repeat sample is total coliform-positive following a fecal coliform-positive or *E. coli* -positive routine sample.~~

~~(b) The following constitute non-acute MCL violations:~~

~~(i) If the supplier collects less than (<) 40 samples per month, more than one sample collected during a monitoring period is total coliform-positive.~~

~~(ii) If the supplier collects greater than or equal to (≥) 40 samples per month, more than 5.0 percent of all samples collected during a monitoring period are total coliform-positive.~~

~~**11.17(10) Response to Violations for Microbial Contaminants**~~

~~(a) In the event of an acute MCL violation or if the supplier fails to analyze a total-coliform positive sample for fecal coliforms or *E. coli*, the supplier must:~~

~~(i) Consult with the Department as soon as possible but no later than 24 hours after learning of the violation to determine the need for requiring the public to boil their water or use alternative sources of water.~~

~~(ii) Distribute Tier 1 public notice as specified in 11.33.~~

~~(b) In the event of a non-acute MCL violation, the supplier must:~~

~~(i) Notify the Department no later than the end of the next business day after the supplier learns of the violation; and~~

~~(ii) Distribute Tier 2 public notice as specified in 11.33.~~

~~(c) In the event of a monitoring and reporting violation for failure to submit the required number of repeat samples, the supplier may be required to distribute Tier 2 public notice as specified in 11.33.~~

~~(d) If the supplier fails to comply with a monitoring requirement specified in this rule, the supplier must:~~

~~(i) Notify the Department no later than ten days after the supplier learns of the violation.~~

~~(ii) Distribute Tier 3 public notice as specified in 11.33.~~

11.18 NITRATE AND NITRITE RULE

11.18(1) Applicability

For all public water systems, the supplier must comply with the requirements specified in this rule.

11.18(2) MCL Requirements for Nitrate and Nitrite

(a) The nitrate and nitrite MCLs are as follows:

TABLE 11.18-I NITRATE AND NITRITE CHEMICALS MCLs	
Chemical	MCL (mg/L)
Nitrate	10 (as Nitrogen)
Nitrite	1 (as Nitrogen)
Total Nitrate and Nitrite	10 (as Nitrogen)

(b) The cited detection limits for nitrate and nitrite are specified in 40 CFR 141.23(a)(4)(i) ~~as amended July 1, 2014~~.

(c) The BATs for achieving compliance with the MCLs for nitrate and nitrite are specified in 40 CFR 141.62(c) ~~as amended July 1, 2014~~.

(d) Elevated MCL Requirements for Nitrate

(i) For non-community water systems, the Department may allow an elevated MCL of 20 mg/L for nitrate, if the supplier can demonstrate to the satisfaction of the Department that:

(A) Such water will not be available to children under 6 months of age; and

(B) It will not result in any adverse health effects.

(ii) If the Department allows an elevated MCL for nitrate, the supplier must:

(A) Continuously post public notice stating that nitrate levels are greater than (>) 10 mg/L and include the potential health effects of exposure.

(I) The supplier must distribute Tier 1 public notice as specified in 11.33.

(B) Notify local and State public health authorities annually of nitrate levels greater than (>) 10 mg/L.

11.18(3) Sampling Requirements for Nitrate and Nitrite

(a) General Sampling Requirements for Nitrate and Nitrite

(i) To determine compliance with the MCLs for nitrate and nitrite, the supplier must comply with the sampling requirements specified in this section, 11.18(3).

(ii) The supplier may apply to the Department to sample more frequently than required.

(iii) The Department may:

(A) Require the supplier to sample more frequently than the minimum requirements specified in 11.18(3)(b) or 11.18(3)(c).

(B) Require the supplier to collect a confirmation sample for any sample result.

(C) Invalidate sample results based on sampling or analytical errors.

(D) Specify when the supplier must sample during each monitoring period.

(iv) If the system draws water from more than one source and the sources are combined before distribution, the supplier must sample during periods of normal operating conditions.

(b) Sampling Requirements for Nitrate

(i) To determine compliance with the MCL for nitrate, the supplier must comply with the sampling requirements specified in this section, 11.18(3)(b).

(ii) For new systems or new sources, the supplier must begin sampling at a routine frequency when the new system or source begins supplying water to the public.

(iii) For routine sampling, the supplier must collect one sample at each entry point:

(A) For community and non-transient, non-community water systems:

(I) For surface water systems, quarterly.

(II) For groundwater systems, annually.

(B) For transient, non-community water systems, annually.

(iv) For community and non-transient, non-community water systems, if the supplier is sampling annually and any sample result is greater than or equal to (≥) 50 percent of the MCL, the supplier must increase the sampling frequency at that entry point to quarterly for at least one year.

(v) If the supplier is required to sample quarterly, the Department may allow the supplier to reduce the sampling frequency at that entry point to annually if the sample results from four consecutive quarters are:

(A) For groundwater systems, reliably and consistently below the MCL.

(B) For community and non-transient, non-community surface water systems, less than (<) 50 percent of the MCL.

(vi) If the Department allows the supplier to reduce the sampling frequency to annually, the supplier must sample during the quarter that previously had the highest sample result.

(vii) If any sample result is greater than (>) the MCL, the supplier must collect a confirmation sample at that entry point no later than 24 hours after being notified of the original sample result.

(A) If the supplier is unable to collect a confirmation sample within 24 hours, the supplier must:

(I) Distribute Tier 1 public notice as specified in 11.33 no later than 24 hours after being notified of the original sample result.

(II) Collect and analyze a confirmation sample no later than 14 days after being notified of the original sample result.

(viii) If the Department allows an elevated MCL for nitrate, the supplier must sample at a Department-specified frequency.

(A) If any sample result is greater than (>) the elevated MCL, the supplier must:

(I) Notify the Department no later than seven days after being notified of the original sample result.

(II) Collect three confirmation samples at the same entry point no later than one month after being notified of the original sample result.

(c) Sampling Requirements for Nitrite

(i) To determine compliance with the MCL for nitrite, the supplier must comply with the sampling requirements specified in this section, 11.18(3)(c).

(ii) For new systems or new sources, the supplier must collect an initial sample at each entry point within the first year of operation.

(iii) After collecting the initial sample, if the sample result is less than (<) 50 percent of the MCL, the supplier must sample at a routine frequency. For routine sampling, the supplier must sample at that entry point once during each nine-year compliance cycle.

(iv) If any sample result is greater than or equal to (≥) 50 percent of the MCL, the supplier must increase the sampling frequency at that entry point to quarterly for at least one year.

(A) If the sample results are reliably and consistently below the MCL, the Department may allow the supplier to reduce the sampling frequency at that entry point to annually.

(I) If the Department allows the supplier to reduce the sampling frequency to annually, the supplier must sample during the quarter that previously had the highest sample result.

(v) If any sample result is greater than (>) the MCL, the supplier must collect a confirmation sample at that entry point no later than 24 hours after being notified of the original sample result.

(A) If the supplier is unable to collect a confirmation sample within 24 hours, the supplier must:

(I) Distribute Tier 1 public notice as specified in 11.33 no later than 24 hours after being notified of the original sample result.

(II) Collect and analyze a confirmation sample no later than 14 days after being notified of the original sample result.

(d) Sampling Requirements for Consecutive Systems with Their Own Additional Sources

(i) For consecutive systems, the Department may change the nitrate and nitrite sampling requirements if the system meets all of the following criteria:

(A) The purchased water enters the distribution system separate from any additional sources owned by the consecutive system.

(B) The interconnection of the systems justifies the modification of sampling requirements.

(ii) The supplier must comply with the Department-specified schedule.

11.18(4) Compliance Determination for Nitrate and Nitrite

Compliance with the MCL is based on the individual sample result, unless a confirmation sample is required.

(a) If a confirmation sample is required, compliance will be based on the average of the original sample result and the confirmation sample result.

(b) If a sample result is less than (<) the cited detection limit, the sample result will be given a value of zero to calculate the average.

(c) If the supplier fails to collect the required number of samples, compliance will be based on the available sample results.

(d) If the Department allows an elevated MCL for nitrate and confirmation samples are required, compliance will be based on the average of the original sample result and the three confirmation sample results.

(i) The Department may determine compliance or initiate an enforcement action based on analytical results and other information gathered by Department-authorized representatives and agencies.

11.18(5) MCL Violation and Response for Nitrate and Nitrite

(a) If the average of any sample and its confirmation sample(s) is greater than (>) the MCL for nitrate and/or nitrite, an MCL violation occurs.

(b) In the event of a nitrate and/or nitrite MCL violation, the supplier must:

(i) Notify the Department and initiate consultation no later than 24 hours after the violation occurs.

(ii) Distribute Tier 1 public notice as specified in 11.33.

11.19 INORGANIC CHEMICALS RULE

11.19(1) Applicability and Definitions

(a) For all community and non-transient, non-community water systems, the supplier must comply with the requirements specified in this rule.

(i) For non-transient, non-community water systems, the supplier is required to comply with the sampling requirements for fluoride but is not required to comply with the fluoride MCL unless the Department determines that complying with the MCL is necessary to protect public health.

(ii) For transient, non-community water systems, the supplier may be required to comply with the fluoride MCL if the Department determines that complying with the MCL is necessary to protect public health.

(b) For the purpose of this rule, "INORGANIC CHEMICALS" means all the chemicals listed in Table 11.19-I.

11.19(2) MCL Requirements for Inorganic Chemicals

(a) The inorganic chemical MCLs are as follows:

TABLE 11.19-I INORGANIC CHEMICAL MCLs	
Chemical	MCL (mg/L)
Antimony	0.006
Arsenic	0.010
Asbestos	7 Million Fibers/liter (Longer than 10 µm)
Barium	2
Beryllium	0.004
Cadmium	0.005
Chromium	0.1
Cyanide (as free Cyanide)	0.2
Fluoride	4.0[1]
Mercury	0.002
Nickel	N/A[2]
Selenium	0.05
Thallium	0.002

1 This is the primary MCL for fluoride. Fluoride also has a secondary MCL of 2.0 mg/L.

2 Nickel has no MCL. The supplier must sample for nickel as specified in 11.19(3)(b).

(b) The cited detection limits for inorganic chemical analysis are specified in 40 CFR 141.23(a)(4)(i) ~~as amended July 1, 2014~~.

(c) The BATs for achieving compliance with the MCLs for inorganic chemicals, with the exception of fluoride, are specified in 40 CFR 141.62(c) ~~as amended July 1, 2014~~.

(d) For systems supplying less than or equal to (≤) 10,000 people, the SSCTs for achieving compliance with the MCL for arsenic are specified in 40 CFR 141.62(d) ~~as amended July 1, 2014~~.

11.19(3) Sampling Requirements for Inorganic Chemicals

(a) General Sampling Requirements for Inorganic Chemicals

(i) To determine compliance with the MCLs for inorganic chemicals, the supplier must comply with the sampling requirements specified in this section, 11.19(3).

(ii) The supplier may apply to the Department to sample more frequently than required.

(iii) The Department may:

(A) Require the supplier to sample more frequently than the minimum requirements specified in this section, 11.19(3).

(B) Require the supplier to collect a confirmation sample for any sample result.

(C) Invalidate sample results based on sampling or analytical errors.

(D) Specify when the supplier must sample during each monitoring period.

(iv) If the system draws water from more than one source and the sources are combined before distribution, the supplier must sample during periods of normal operating conditions.

(b) Sampling Requirements for Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cyanide, Fluoride, Mercury, Nickel, Selenium and Thallium

(i) To determine compliance with the MCLs for antimony, arsenic, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, selenium and thallium, the supplier must comply with the sampling requirements specified in this section, 11.19(3)(b).

(A) For nickel, the supplier must comply with the sampling requirements specified in this section, 11.19(3)(b), and the requirements specified in 11.19(3)(a).

(ii) For new systems, new sources, or reclassified systems that now meet the applicability of this rule, the Department shall specify the initial sampling frequency at each entry point. The supplier must demonstrate compliance with the MCLs no later than one year after beginning supplying water to the public or one year after being reclassified.

(iii) After completing initial sampling, if the Department requires the supplier to sample at a routine frequency, the supplier must collect one sample at each entry point:

(A) For surface water systems, annually.

(B) For groundwater systems, once during each three-year compliance period.

(iv) The Department may allow the supplier to reduce the sampling frequency based on all of the following information:

(A) All previous sample results.

(B) The degree of variation in previous sample results.

(C) Other factors which may affect chemical concentrations (e.g., changes in groundwater pumping rates, the system's configuration, the system's operating procedures, or stream flows or characteristics).

(v) If any sample result is greater than (>) the MCL, the supplier must collect a confirmation sample at that entry point as soon as possible, but no later than 14 days after the original sample was collected.

(vi) If the average of any sample result and its confirmation sample result is greater than (>) the MCL, the supplier must increase the sampling frequency to quarterly at that entry point.

(A) The Department may allow the supplier to return to a routine sampling frequency at that entry point if the Department determines that the sample results are reliably and consistently below the MCL. To make that determination, the supplier must collect:

(I) For surface water systems, at least four quarters of samples at the entry point where the exceedance occurred.

(II) For groundwater systems, at least two quarters of samples at the entry point where the exceedance occurred.

(c) Sampling Waiver Requirements for Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cyanide, Fluoride, Mercury, Nickel, Selenium and Thallium

(i) The supplier may apply to the Department or the Department may initiate a sampling waiver from antimony, arsenic, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, selenium and thallium.

(ii) If the Department grants a waiver, the supplier is not required to sample at the frequencies specified in 11.19(3)(b).

(iii) The Department may grant a waiver to the supplier if all previous sample results are reliably and consistently below the MCL. To make that determination, the supplier must have collected:

(A) For surface water systems, annual samples for at least three years.

(B) For groundwater systems, samples for at least three consecutive three-year compliance periods.

(C) For a new source, samples for at least three monitoring periods.

(iv) For a cyanide waiver, the supplier must only demonstrate that the system is not vulnerable to cyanide based on the lack of any industrial source of cyanide.

(v) If the supplier is granted a waiver, the waiver will be effective for no more than one nine-year compliance cycle. The supplier must collect at least one sample while the waiver is effective.

(vi) When the supplier submits new sample results, or when other relevant data are available, the Department may revise the required sampling frequency.

(d) Sampling Requirements for Asbestos

(i) To determine compliance with the MCL for asbestos, the supplier must comply with the sampling requirements specified in this section, 11.19(3)(d).

(ii) For new systems, new sources, or reclassified systems that now meet the applicability of this rule, the supplier must begin sampling at a routine frequency when the new system or source begins supplying water to the public or when the system is reclassified.

(iii) For routine sampling, the supplier must collect one sample during the first three-year compliance period of each nine-year compliance cycle at the following locations:

(A) For systems that are vulnerable to asbestos from corrosion of asbestos-cement pipe, at taps that are supplied by asbestos-cement pipe under conditions where asbestos contamination is most likely to occur.

(B) For systems that are vulnerable to asbestos from source water contamination, at each entry point.

(C) For systems that are vulnerable to asbestos from both corrosion of asbestos-cement pipe and source water contamination, at taps that are supplied by asbestos-cement pipe under conditions where asbestos contamination is most likely to occur.

(iv) If any sample result is greater than (>) the MCL, the supplier must collect a confirmation sample at that sampling location no later than 14 days after the original sample was collected.

(v) If the average of any sample result and its confirmation sample result is greater than (>) the MCL, the supplier must increase the sampling frequency at that sampling location to quarterly.

(A) The Department may allow the supplier to return to routine sampling if the Department determines the sample results at that sampling location are reliably and consistently below the MCL. To make that determination, the supplier must collect:

(I) For surface water systems, at least four quarters of samples at the sampling location where the exceedance occurred.

(II) For groundwater systems, at least two quarters of samples at the sampling location where the exceedance occurred.

(e) Sampling Waiver Requirements for Asbestos

(i) The supplier may apply to the Department for an asbestos waiver or the Department may initiate an asbestos waiver.

(ii) The Department may grant a waiver to the supplier if the system is not vulnerable to potential asbestos contamination based on all of the following information:

(A) Potential asbestos contamination of the source water.

(B) The use of asbestos-cement pipe in the distribution system and the corrosivity of treated water.

(iii) If the Department grants an asbestos waiver, the supplier is not required to sample for asbestos as specified in 11.19(3)(d).

(A) The waiver is effective for one nine-year compliance cycle.

(f) Sampling Requirements for Consecutive Systems with Their Own Sources

(i) For consecutive systems, the Department may modify the inorganic chemical sampling requirements if the system meets all of the following criteria:

(A) The purchased water enters the distribution system separate from any source owned by the consecutive system.

(B) The interconnection of the systems justifies the modification of sampling requirements.

(ii) The supplier must comply with the Department-specified schedule.

11.19(4) Compliance Determination for Inorganic Chemicals

(a) If the supplier samples more frequently than annually, MCL compliance is based on the LRAA.

(i) If a confirmation sample is required, the original sample result will be replaced with the average of the original sample result and the confirmation sample result when calculating the LRAA.

(A) If the supplier fails to collect the confirmation sample, the original sample result will be used when calculating the LRAA.

(ii) If a sample result is less than (<) the cited detection limit, the sample result will be given a value of zero when calculating the LRAA.

(b) If the supplier samples annually or less frequently, MCL compliance is based on each individual sample result, unless a confirmation sample is required.

(i) If a confirmation sample is required, compliance is based on the average of the sample result and its confirmation sample result.

(A) If the supplier fails to collect the confirmation sample, the original sample result will be used to determine compliance.

(ii) If the average of any sample result and its confirmation sample result is greater than (>) the MCL, the supplier must increase the sampling frequency to quarterly as specified in 11.19(3)(b)(vi). This average will count as the first quarter sample result and compliance with the MCL will be based on the LRAA.

11.19(5) MCL Violations for Inorganic Chemicals

The following constitute inorganic chemical MCL violations:

(a) The LRAA at any entry point is greater than (>) the MCL for any inorganic chemical.

(b) The LRAA, calculated before four consecutive quarters of samples have been collected at any entry point or sampling location, is greater than (>) the MCL for any inorganic chemical regardless of the subsequent sample results.

11.19(6) Response to MCL Violations for Inorganic Chemicals

In the event of an inorganic chemical MCL violation, the supplier must:

(a) Notify the Department no later than 48 hours after the violation occurs.

(b) Distribute Tier 2 public notice as specified in 11.33.

11.19(7) Response to Exceeding the Secondary MCL for Fluoride

(a) For community water systems, if a fluoride sample result is greater than (>) the SMCL of 2.0 mg/L and less than (<) the MCL (4.0 mg/L), the supplier must distribute public notice as specified in this section, 11.19(7).

(b) The supplier must distribute the public notice no later than 12 months after the day the supplier learns of the exceedance.

(i) On a case-by-case basis, the Department may require the supplier to distribute the public notice sooner than 12 months.

(c) The supplier must submit a copy of the notice to the Department and all new billing units and new customers at the time service begins.

(d) If the public notice is posted, the notice must remain in place for as long as the SMCL is exceeded or seven days, whichever is longer.

(e) The supplier must redistribute the notice at least annually for as long as the SMCL is exceeded.

(i) On a case-by-case basis, the Department may require the supplier to redistribute the notice more frequently than annually.

(f) The public notice, including repeat notices, must comply with the requirements for Tier 3 public notice as specified in 11.33.

(g) The supplier must include the following language in the public notice exactly as written and provide the specific information for the text in brackets:

(i) This is an alert about your drinking water and a cosmetic dental problem that might affect children under nine years of age. At low levels, fluoride can help prevent cavities, but children drinking water containing more than 2 milligrams per liter (mg/L) of fluoride may develop cosmetic discoloration of their permanent teeth (dental fluorosis). The drinking water provided by your community water system [name] has a fluoride concentration of [value] mg/L.

Dental fluorosis, in its moderate or severe forms, may result in a brown staining and/or pitting of the permanent teeth. This problem occurs only in developing teeth, before they erupt from the gums. Children under nine years of age should be provided with alternate sources of drinking water or water that has been treated to remove the fluoride to avoid the possibility of staining and pitting of their permanent teeth. You may also want to contact your dentist about proper use by young children of fluoride-containing products. Older children and adults may safely drink the water.

Drinking water containing more than 4 mg/L of fluoride (the Colorado Department of Public Health and Environment's drinking water standard) can increase your risk of developing bone disease. Your drinking water does not contain more than 4 mg/L of fluoride, but we're required to notify you when we discover that the fluoride levels in your drinking water exceed 2 mg/L because of this cosmetic dental problem.

For more information, please call [name of water system contact] of [name of community water system] at [phone number]. Some home water treatment units are also available to remove fluoride from drinking water. To learn more about available home water treatment units, you may call NSF International at 1-877-8-NSF-HELP.

11.20 SODIUM RULE

11.20(1) Applicability

For all community water systems, the supplier must comply with the requirements specified in this rule.

11.20(2) Requirements for Sodium

(a) For new sources, new systems, or reclassified systems that now meet the applicability of this rule, the supplier must begin collecting routine samples when the new system or source begins serving water to the public or when the system is reclassified.

(b) For routine sampling, the supplier must collect one sample at each entry point:

(i) For surface water systems, annually.

(ii) For groundwater systems, every three years.

(c) If the system has multiple wells drawing raw water from a single aquifer, the Department may reduce the number of sodium samples required if a single entry point is determined to be representative of multiple entry points.

(d) In addition to the general reporting requirements specified in 11.35, the supplier must submit a notice of the sodium sample results to appropriate local public health officials, by direct mail, each year.

(i) The supplier must submit a copy of the notice to the Department no later than ten days after issuing the notice to the appropriate local public health officials.

11.21 ORGANIC CHEMICALS RULE

11.21(1) Applicability and Definitions

(a) For all community and non-transient, non-community water systems, the supplier must comply with the requirements specified in this rule.

(b) "SYNTHETIC ORGANIC CHEMICALS" or "SOCs" mean all of the chemicals specified in Table 11.21-II.

(c) "VOLATILE ORGANIC CHEMICALS" or "VOCs" mean all of the chemicals specified in Table 11.21-I.

11.21(2) MCL Requirements for Organic Chemicals

(a) MCL Requirements for VOCs

(i) The VOC MCLs and cited detection limits are as follows:

TABLE 11.21-I VOC MCLs AND DETECTION LIMITS

CAS No.	Chemical	MCL (mg/L)	Cited detection limit (mg/L)
75-01-4	Vinyl chloride	0.002	0.0005
71-43-2	Benzene	0.005	0.0005
56-23-5	Carbon tetrachloride	0.005	0.0005
107-06-2	1,2-Dichloroethane	0.005	0.0005
79-01-6	Trichloroethylene	0.005	0.0005
106-46-7	Para-Dichlorobenzene	0.075	0.0005
75-35-4	1,1-Dichloroethylene	0.007	0.0005
71-55-6	1,1,1-Trichloroethane	0.2	0.0005
156-59-2	cis-1,2 Dichloroethylene	0.07	0.0005
78-87-5	1,2-Dichloropropane	0.005	0.0005
100-41-4	Ethylbenzene	0.7	0.0005
108-90-7	Monochlorobenzene	0.1	0.0005
95-50-1	o-Dichlorobenzene	0.6	0.0005
100-42-5	Styrene	0.1	0.0005

127-18-4	Tetrachloroethylene	0.005	0.0005
108-88-3	Toluene	1	0.0005
156-60-5	Trans-1,2 Dichloroethylene	0.1	0.0005
1330-20-7	Xylenes (total)	10	0.0005
75-09-2	Dichloromethane (methylene chloride)	0.005	0.0005
120-82-1	1,2,4-Trichlorobenzene	0.07	0.0005
79-00-5	1,1,2-Trichloroethane	0.005	0.0005

(ii) The BATs for achieving compliance with the MCLs for VOCs are specified in 40 CFR 141.61(b) ~~as amended July 1, 2014~~.

(b) MCL Requirements for SOCs

(i) The SOC MCLs and cited detection limits are as follows:

TABLE 11.21-II SOC MCLs AND DETECTION LIMITS

CAS No.	Chemical	MCL (mg/L)	Cited detection limit (mg/L)
15972-60-8	Alachlor	0.002	0.0002
116-06-3	Aldicarb[1]	0.003	0.0005
1646-87-3	Aldicarb sulfoxide[1]	0.004	0.0005
1646-88-4	Aldicarb sulfone[1]	0.002	0.0008
1912-24-9	Atrazine	0.003	0.0001
1563-66-2	Carbofuran	0.04	0.0009
57-74-9	Chlordane	0.002	0.0002
96-12-8	Dibromochloropropane	0.0002	0.00002
94-75-7	2,4-D	0.07	0.0001
106-93-4	Ethylene dibromide	0.00005	0.00001
76-44-8	Heptachlor	0.0004	0.00004
1024-57-3	Heptachlor epoxide	0.0002	0.00002
58-89-9	Lindane	0.0002	0.00002
72-43-5	Methoxychlor	0.04	0.0001
1336-36-3	Polychlorinated biphenyls	0.0005	0.0001
87-86-5	Pentachlorophenol	0.001	0.00004
8001-35-2	Toxaphene	0.003	0.001
93-72-1	2,4,5-TP (Silvex)	0.05	0.0002
50-32-8	Benzopyrene	0.0002	0.00002
75-99-0	Dalapon	0.2	0.001
103-23-1	Di(2-ethylhexyl)adipate	0.4	0.0006
117-81-7	Di(2-ethylhexyl)phthalate	0.006	0.0006
88-85-7	Dinoseb	0.007	0.0002
85-00-7	Diquat	0.02	0.0004
145-73-3	Endothall	0.1	0.009
72-20-8	Endrin	0.002	0.00001
1071-53-6	Glyphosate	0.7	0.006
118-74-1	Hexachlorobenzene	0.001	0.0001
77-47-4	Hexachlorocyclopentadiene	0.05	0.0001
23135-22-0	Oxamyl (Vydate)	0.2	0.002
1918-02-1	Picloram	0.5	0.0001
122-34-9	Simazine	0.004	0.00007
1746-01-6	2,3,7,8-TCDD (Dioxin)	3×10^{-8}	0.000000005

1 Aldicarb, aldicarb sulfoxide, and aldicarb sulfone are currently under “administrative stay” as a result of litigation. They are

therefore treated as unregulated contaminants. The supplier is not required to sample for them or comply with their MCLs.

(ii) The BATs for achieving compliance with the MCLs for SOCs are specified in 40 CFR 141.61(b) ~~as amended July 1, 2014~~.

11.21(3) Sampling Requirements for Organic Chemicals

(a) General Sampling Requirements for Organic Chemicals

(i) To determine compliance with the MCLs for organic chemicals, the supplier must comply with the sampling specified in this section, 11.21(3).

(ii) The Department may:

(A) Require the supplier to sample more frequently than the minimum requirements specified in this section, 11.21(3).

(B) Require the supplier to collect a confirmation sample for any sample result.

(C) Invalidate sample results based on sampling or analytical errors.

(D) Specify when the supplier must sample during each monitoring period.

(iii) If the system draws water from more than one source and the sources are combined before distribution, the supplier must sample during periods of normal operating conditions.

(b) Sampling Requirements for VOCs

(i) To determine compliance with the MCLs for VOCs, the supplier must comply with the sampling requirements specified in this section, 11.21(3)(b).

(ii) For new systems, new sources, or reclassified systems that now meet the applicability of this rule, the supplier must sample for an initial four consecutive quarters at each entry point and demonstrate compliance with the MCLs no later than one year after beginning supplying water to the public or one year after being reclassified.

(A) For surface water systems, the supplier must sample for vinyl chloride as specified by the Department.

(B) For groundwater systems, the supplier must collect samples for vinyl chloride only as specified in 11.21(3)(b)(vi).

(iii) After completing initial sampling, if all sample results were less than (<) the cited detection limit at an entry point, the supplier must sample at a routine frequency at that entry point. For routine sampling, the supplier must collect one sample annually at that entry point.

(iv) For groundwater systems, if the supplier has collected at least three years of annual samples at an entry point and all sample results were less than or equal to (≤) the cited detection limit, the Department may reduce the required sampling frequency at that entry point to once during each three-year compliance period.

(v) If any sample result is greater than (>) the cited detection limit, but less than or equal to (≤) the MCL, the supplier must increase the sampling frequency to quarterly at each entry point where the detection occurred.

(A) The Department may allow the supplier to return to a routine sampling frequency if the Department determines that the sample results at that entry point are reliably and consistently below the MCL. To make that determination, the supplier must collect:

(I) For surface water systems, at least four quarters of samples at the entry point where the detection occurred.

(II) For groundwater systems, at least two quarters of samples at the entry point where the detection occurred.

(vi) For groundwater systems, if a sample result is greater than (>) the cited detection limit for one or more of the following chemicals, the supplier must sample quarterly for vinyl chloride at each entry point where the detection occurred:

(A) Trichloroethylene.

(B) Tetrachloroethylene.

(C) 1,2-dichloroethane.

(D) 1,1,1-trichloroethane.

(E) Cis-1,2-dichloroethylene.

(F) Trans-1,2-dichloroethylene.

(G) 1,1-dichloroethylene.

(vii) If the first sample result for vinyl chloride is less than or equal to (≤) the cited detection limit, the Department may reduce the quarterly sampling frequency at that entry point to one sample during each three-year compliance period.

(viii) If any sample result is greater than (>) the MCL, the supplier must increase the sampling frequency to quarterly.

(A) The Department may allow the supplier to return to a routine sampling frequency if all of the following criteria are met:

(I) The supplier has collected four consecutive quarters of samples at that entry point after the exceedance that demonstrate that the system is in compliance.

(II) The Department determines that the sample results at that entry point are reliably and consistently below the MCL.

(ix) When returning to routine sampling, the supplier must collect samples during the quarter that previously resulted in the highest sample result.

(c) Sampling Waiver Requirements for VOCs

(i) The supplier may apply to the Department for a VOC waiver if:

(A) After completing initial sampling, all sample results are less than (<) the cited detection limit for VOCs; or

(B) After three consecutive years of annual sampling following detection of a VOC, all sample results are less than (<) the cited detection limit.

(ii) If the Department grants a VOC waiver, the supplier is not required to sample at the frequencies specified in 11.21(3)(b).

(iii) The Department may grant a VOC waiver to the supplier if the supplier demonstrates that within the watershed or zone of influence no VOCs were used.

(iv) If VOCs have been used or VOC use is unknown, the Department shall consider all of the following factors to determine whether to grant a waiver:

(A) Previous sample results.

(B) How well the source is protected against contamination.

(I) For groundwater sources, the Department shall consider factors including depth of the well, the type of soil, and wellhead protection.

(II) For surface water sources, the Department shall consider watershed protection.

(C) The proximity of the system to a potential point or non-point source of contamination.

(I) Point sources include spills and leaks of chemicals at or near a water treatment facility or at manufacturing, distribution, or storage facilities, or from hazardous and municipal waste landfills and other waste handling or treatment facilities.

(D) The environmental persistence and transport of VOCs.

(E) The population supplied by the system and the proximity of a smaller system to a larger system.

(v) For groundwater systems, a VOC waiver is effective for six years.

(A) The supplier must update the vulnerability assessment during the effective period of the waiver.

(I) The Department shall reconfirm that the system is non-vulnerable based on the vulnerability assessment.

(a) If the Department does not reconfirm that the system is non-vulnerable no later than three years after the initial determination, the waiver is withdrawn.

(B) The supplier must collect one sample at each entry point while the waiver is effective.

(vi) For surface water systems, the Department shall specify how long a VOC waiver is effective.

(A) The Department shall determine if the system is non-vulnerable based on a vulnerability assessment completed during each compliance period.

(B) The supplier must collect one sample at each entry point at the Department-specified frequency while the waiver is effective.

(vii) For small groundwater systems, the Department may grant a waiver from the initial sampling requirements for 1,2,4-trichlorobenzene specified in 11.21(3)(b)(ii).

(d) Sampling Requirements for SOCs

(i) To determine compliance with the MCLs for SOCs, the supplier must comply with the sampling specified in this section, 11.21(3)(d).

(ii) For new systems, new sources, or reclassified systems that now meet the applicability of this rule, the supplier must collect an initial four consecutive quarters of samples at each entry point and demonstrate compliance with the MCL no later than one year after beginning supplying water to the public or one year after being reclassified.

(iii) After completing initial sampling, if all sample results for an SOC were less than (<) the cited detection limit at an entry point, the supplier must sample at a routine sampling frequency at that entry point. For routine sampling, the supplier must:

(A) For systems supplying greater than (>) 3,300 people, collect one sample in at least two different quarters in one calendar year during each three-year compliance period at that entry point.

(B) For systems supplying less than or equal to (≤) 3,300 people, collect at least one sample during each three-year compliance period at that entry point.

(iv) If any sample result is greater than or equal to (≥) the cited detection limit for an SOC, but less than or equal to the (≤) MCL, the supplier must increase the sampling frequency to quarterly for that SOC at each entry point where the detection occurred.

(A) If a sample result is greater than or equal to (≥) the cited detection limit for one or more of the following the supplier must increase the sampling frequency to quarterly for all of the following at that entry point:

(I) Aldicarb.

(II) Aldicarb sulfone.

(III) Aldicarb sulfoxide.

(B) If a sample result is greater than or equal to (≥) the cited detection limit for one or more of the following the supplier must increase the sampling frequency to quarterly for all of the following at that entry point:

(I) Heptachlor.

(II) Heptachlor epoxide.

(C) The Department may allow the supplier to reduce the sampling frequency to annually if the Department determines that the sample results at that entry point are reliably and consistently below the MCL. To make that determination, the supplier must collect:

(I) For surface water systems, at least four quarters of samples at the entry point where the detection occurred.

(II) For groundwater systems, at least two quarters of samples at the entry point where the detection occurred.

(v) If any sample result is greater than (>) the MCL, the supplier must increase the sampling frequency to quarterly.

(A) The Department may allow the supplier to reduce the sampling frequency to annually if all of the following criteria are met:

(I) The supplier has collected four consecutive quarters of samples at that entry point after the exceedance that demonstrate that the system is in compliance.

(II) The Department determines that the sample results at that entry point are reliably and consistently below the MCL.

(vi) When reducing to annual sampling, the supplier must sample during the quarter that previously resulted in the highest sample result.

(e) Sampling Waiver Requirements for SOCs

(i) The supplier may apply to the Department for a waiver from any or all of the SOCs.

(A) If an SOC is detected, the supplier must sample annually for three consecutive years and if all sample results are less than (<) the cited detection limit, the supplier may apply to the Department for a waiver.

(ii) If the Department grants the waiver, the supplier is not required to sample at the frequencies specified in 11.21(3)(d) for that SOC.

(iii) The Department may grant an SOC waiver to the supplier if the supplier demonstrates that within the watershed or zone of influence, that SOC was not used (including transport, storage, or disposal).

(iv) If an SOC has been used or the use is unknown, the Department shall consider all of the following factors in determining whether to grant a waiver:

(A) Previous sample results.

(B) How well the source is protected against contamination, factors may include the depth of the well, the type of soil, and the integrity of the well casing.

(C) The proximity of the system to a potential point or non-point source of contamination.

(I) Point sources include spills and leaks of chemicals at or near a water treatment facility or at manufacturing, distribution, or storage facilities, or

from hazardous and municipal waste landfills and other waste handling or treatment facilities.

(II) Non-point sources include the use of pesticides to control insect and weed pests on agricultural areas, forest lands, home and gardens, and other land application uses.

(D) The environmental persistence and transport of pesticides or PCBs.

(E) Elevated nitrate levels at the source(s).

(F) Use of PCBs in equipment used in the production, storage, or distribution of water.

(v) The supplier must reapply for an SOC waiver each three-year compliance period.

11.21(4) Compliance Determination for Organic Chemicals

(a) If the supplier samples more frequently than annually, MCL compliance is based on the LRAA.

(i) If a confirmation sample is required, the original sample result will be replaced with the average of the original sample result and the confirmation sample result when calculating the LRAA.

(A) If the supplier fails to collect the confirmation sample, the original sample result will be used when calculating the LRAA.

(ii) If a sample result is less than (<) the cited detection limit, the sample result will be given a value of zero when calculating the LRAA.

(b) If the supplier samples annually or less frequently, MCL compliance is based on each individual sample result, unless a confirmation sample is required.

(i) If a confirmation sample is required, compliance will be based on by the average of the sample result and its confirmation sample result.

(A) If the supplier fails to collect the confirmation sample, the original sample result will be used to determine compliance.

(ii) If the sample result or average of any sample result and its confirmation sample result, if a confirmation sample is required, is greater than (>) the MCL, the supplier must increase the sampling frequency to quarterly as specified in 11.21(3)(b)(viii) and/or 11.21(3)(d)(v). This average, or sample result, will count as the first quarter result and compliance with the MCL will be based on an LRAA.

(c) The Department may determine compliance or initiate enforcement action based on sample results and other information gathered by Department-authorized representatives and agencies.

11.21(5) Acrylamide and Epichlorohydrin Certification

If acrylamide and epichlorohydrin are used in the drinking water system, the supplier must annually certify, in writing, to the Department, using a Department-approved third party or manufacturer's certification, that the combination of dose and monomer level is less than or equal to (≤) the following levels:

(a) Acrylamide = 0.05% dosed at 1 ppm (or equivalent).

(b) Epichlorohydrin = 0.01% dosed at 20 ppm (or equivalent).

11.21(6) Violations for Organic Chemicals

(a) The following constitute organic chemical MCL violations:

(i) The LRAA at any entry point is greater than (>) the MCL for any organic chemical.

(ii) The LRAA, calculated before four consecutive quarters of samples have been collected at any entry point, is greater than (>) the MCL for any organic chemical regardless of the subsequent sample results.

(b) Failure to comply with the acrylamide and epichlorohydrin certification requirements as specified in 11.21(5) constitutes a treatment technique violation.

11.21(7) Response to Violations for Organic Chemicals

In the event of an organic chemical MCL violation or an acrylamide and epichlorohydrin treatment technique violation, the supplier must:

(a) Notify the Department no later than 48 hours after the violation occurs.

(b) Distribute Tier 2 public notice as specified in 11.33.

11.22 RADIONUCLIDES RULE

11.22(1) Applicability and Definitions

(a) For all community water systems, the supplier must comply with the requirements specified in this rule.

(i) The supplier is not required to comply with the beta particle and photon radioactivity requirements, unless the Department determines the system is vulnerable to beta particle and photon radioactivity contamination or the system is using sources contaminated by effluents from nuclear facilities.

(b) "BETA PARTICLE AND PHOTON RADIOACTIVITY" means the radiation from a group of 179 man-made radionuclides, including tritium, strontium-90, and iodine-131, that emit beta and photon radiation. These man-made beta particle and photon emitters are listed in the *Maximum Permissible Body Burdens and Maximum Permissible Concentration of Radionuclides in Air or Water for Occupational Exposure*, NBS Handbook 69, except the daughter products of thorium-232, uranium-235 and uranium-238.

(c) "GROSS ALPHA PARTICLE ACTIVITY" means the radiation from all radionuclides emitting alpha radiation, including radium-226, excluding radon and uranium.

(d) "GROSS BETA PARTICLE ACTIVITY" means the radiation from all radionuclides that emit beta radiation. This measurement is used as part of the calculation to determine the beta particle and photon radioactivity.

(e) "PICOCURIE" or "pCi" means the quantity of radioactive material producing 2.22 nuclear transformations per minute.

(f) "REM" means the unit of dose equivalent from ionizing radiation to the total body or any internal organ or organ system. A "millirem (mrem)" is 1/1000 of a rem.

11.22(2) MCL Requirements for Radionuclides

(a) The radionuclide MCLs are as follows:

TABLE 11.22-I RADIONUCLIDE MCLs	
Contaminant	MCL
Gross alpha particle activity (including radium-226, excluding radon[1] and uranium)	15 pCi/L
Combined radium-226 and radium-228[2]	5 pCi/L
Uranium[3]	30 µg/L
Beta particle and photon radioactivity[4]	4 mrem/yr

1 Radon is not currently regulated in drinking water.

2 Radium-228 is an individual alpha particle activity emitter, however it is not included in the gross alpha particle activity and is measured separately. Radium-228 sample results are combined with radium-226 sample results for the purposes of determining compliance.

3 Uranium is an individual alpha particle activity emitter, however it is not included in the gross alpha particle activity and is measured separately. If uranium is determined by mass, a 0.67 pCi/µg of uranium conversion factor must be used. This conversion factor is based on the 1:1 activity ratio of U-234 and U-238 that is characteristic of naturally occurring uranium.

4 The average annual concentration of beta particle and photon radioactivity from man-made radionuclides in drinking water must not produce an annual dose equivalent to the total body or any internal organ greater than (>) 4 mrem/yr.

(b) The cited detection limits for radionuclides are specified in 40 CFR 141.25(c) ~~as amended July 1, 2014~~.

(c) The BATs for achieving compliance with the MCLs for radionuclides are specified in 40 CFR 141.66(g) ~~as amended July 1, 2014~~.

(d) The SSCTs for systems supplying less than or equal to (≤) 10,000 people for achieving compliance with the MCL for radionuclides are specified in 40 CFR 141.66(h) ~~as amended July 1, 2014~~.

11.22(3) Sampling Requirements for Radionuclides

(a) General Radionuclide Sampling Requirements for Radionuclides

(i) To determine compliance with the radionuclide MCLs, the supplier must comply with the sampling requirements specified in this section, 11.22(3).

(ii) The supplier must sample at the time specified by the Department during each monitoring period.

(iii) The Department may:

(A) Require the supplier to sample more frequently than the minimum requirements specified in this section, 11.22(3).

(B) Require the supplier to collect a confirmation sample for any sample result.

(C) Invalidate sample results based on sampling or analytic errors.

(b) Sampling Requirements for Gross Alpha Particle Activity, Combined Radium-226 and Radium-228, and Uranium

(i) To determine compliance with the MCLs for gross alpha particle activity, combined radium-226 and radium-228, and uranium, the supplier must comply with the sampling requirements specified in this section, 11.22(3)(b).

(ii) For new systems, new sources, or reclassified systems that now meet the applicability of this rule, the supplier must collect four consecutive quarterly samples at each entry point no later than one year after beginning supplying water to the public or one year after being reclassified.

(A) If the sample results from the first two quarters are less than (<) the detection limit at an entry point, the Department may waive the final two quarters of initial sampling at that entry point and initial sampling will be considered complete at that entry point.

(iii) After completing initial sampling, if the LRAA of the initial sample results is greater than (>) the MCL, the supplier must continue to sample quarterly at that entry point.

(A) The supplier must continue to sample quarterly until the sample results from four consecutive quarters are less than or equal to (≤) the MCL, unless the supplier enters into another schedule as part of a formal compliance agreement with the Department.

(iv) If the LRAA is less than or equal to (≤) the MCL after completing initial sampling, the Department may allow the supplier to reduce the sampling frequency. There is no routine sampling frequency for gross alpha particle activity, combined radium-226 and radium-228, and uranium. Sampling frequencies will be based on the LRAA of the initial sample results at each entry point. If the LRAA is:

(A) Less than (<) the detection limit, the supplier must collect at least one sample for that radionuclide every nine years at that entry point.

(B) Greater than or equal to (≥) the detection limit and less than or equal to (≤) one-half the MCL, the supplier must collect at least one sample for that radionuclide every six years at that entry point.

(C) Greater than (>) one-half the MCL and less than or equal to (≤) the MCL, the supplier must collect at least one sample for that radionuclide every three years at that entry point.

(v) Each time sample results are received subsequent sampling frequencies will be determined as follows:

(A) If a sample result is less than or equal to (≤) the MCL:

(I) Subsequent sampling frequencies will be determined as specified in 11.22(3)(b)(iv)(A-C).

(B) If a sample result is greater than (>) the MCL, the supplier must increase the sampling frequency to quarterly at that entry point.

(I) The supplier must continue to sample quarterly until the sample results from four consecutive quarters are less than or equal to (≤) the MCL, unless the supplier enters into another schedule as part of a formal compliance agreement with the Department.

(II) Subsequent sampling frequencies will be determined as specified in 11.22(3)(b)(iv)(A-C) based on the LRAA of the sample results.

(vi) The supplier may substitute the gross alpha particle activity sample result for the radium-226 sample result if the gross alpha particle activity sample result meets all of the following criteria:

(A) The sample result is less than or equal to (≤) 5 pCi/L.

(B) The sample result has a confidence interval of 95 percent (1.65σ, where σ is the standard deviation of the net counting rate of the sample).

(vii) The supplier may substitute the gross alpha particle activity sample result for uranium, if the gross alpha particle activity sample result meets both the following criteria:

(A) Is less than or equal to (≤) 15 pCi/L.

(B) Has a confidence interval of 95 percent (1.65σ, where σ is the standard deviation of the net counting rate of the sample).

(viii) If the supplier substitutes the gross alpha particle activity sample result for radium-226 and/or uranium, the gross alpha particle activity sample result will be used to determine the sampling frequency for radium-226 and radium-228 and/or uranium.

(A) If the gross alpha particle activity sample result is less than (<) the detection limit, one-half the detection limit for gross alpha particle activity will be used to determine compliance and the sampling frequency.

(ix) The Department may require the supplier to sample more frequently in the event of possible contamination, or when changes in the distribution system or treatment processes occur that may increase the concentration of radioactivity in finished water.

(c) Sampling Requirements for Beta Particle and Photon Radioactivity

(i) To determine compliance with the MCL for beta particle and photon radioactivity the supplier must comply with the sampling requirements specified in this section, 11.22(3)(c).

(ii) If the Department determines a system is vulnerable to beta particle and photon radioactivity, the supplier must sample at each entry point as follows:

(A) For beta emitters, quarterly.

(B) For tritium and strontium-90, annually.

(iii) If the Department determines a system uses source waters contaminated by effluents from nuclear facilities, the supplier must sample at each entry point as follows:

(A) For beta emitters, monthly.

(I) The supplier may composite three monthly samples.

(II) The supplier must submit the sample results quarterly.

(B) For iodine-131, daily for five consecutive days each quarter.

(I) The supplier must composite the samples.

(II) If iodine-131 is detected in the finished water, the Department may require the supplier to sample more frequently.

(C) For tritium and strontium-90, quarterly.

(I) The supplier may composite four consecutive quarterly samples.

(II) The supplier must submit the sample results annually.

(iv) If the Department requires the supplier to sample for beta particle and photon radioactivity, the supplier must begin sampling no later than one quarter after receiving Department notification.

(v) For systems near a nuclear facility, if the Department determines environmental surveillance data collected by the nuclear facility applies to the system, the Department may allow the supplier to use that data instead of sampling as specified 11.22(3)(c)(ii) or 11.22(3)(c)(iii).

(A) If there is a nuclear release from a nuclear facility, the supplier must begin sampling as specified in 11.22(3)(c)(ii) or 11.22(3)(c)(iii).

(vi) If the gross beta particle activity minus the naturally occurring potassium-40 beta particle activity has a LRAA less than or equal to (≤) 15 pCi/L at an entry point, the Department may allow the supplier to reduce the sampling frequency at that entry point to once every three years.

(vii) If a sample result is greater than (>) the MCL, the supplier must increase the sampling frequency to monthly at that entry point beginning the month following the exceedance.

(A) If the LRAA of three consecutive monthly samples is less than (<) the MCL, the supplier may reduce the sampling frequency to quarterly.

(B) After reducing the sampling frequency to quarterly, the Department may allow the supplier to further reduce the sampling frequency as specified in 11.22(3)(c)(vi).

(viii) The supplier must continue to sample until the Department reviews and either reaffirms or removes the designation that the system is vulnerable to beta particle and photon radioactivity contamination.

11.22(4) Compliance Determination for Radionuclides

(a) General Compliance Determination for Radionuclides

(i) If the supplier samples more frequently than annually, MCL compliance is based on the LRAA:

(A) If a confirmation sample is required, the original sample result will be replaced with the average of the original sample result and the confirmation sample result when calculating the LRAA.

(I) If the supplier fails to collect the confirmation sample, the original sample result will be used when calculating the LRAA.

(B) If a sample result is less than (<) the cited detection limit, the sample result will be given a value of zero when calculating the LRAA.

(I) If the supplier is substituting the gross alpha particle activity sampling result for radium-226 and/or uranium and the sample result is less than (<) the cited detection limit, the sample result will be given a value of one-half the cited detection limit to calculate the LRAA for radium-226 and/or uranium.

(C) If the supplier collects more than the required number of samples, all sample results must be used to determine compliance.

(ii) The Department may determine compliance or initiate enforcement action based on sample results and other information gathered by Department representatives and agencies.

(b) Additional Compliance Determination for Beta Particle and Photon Radioactivity

(i) In addition to the compliance determination requirements specified in 11.22(4)(a), the supplier must comply with the requirements specified in this section, 11.22(4)(b), to determine compliance with the gross beta particle and photon radioactivity MCL.

(ii) The supplier may analyze for naturally occurring potassium-40 beta particle activity from the same sample used for the gross beta particle activity analysis.

(iii) The supplier may subtract the potassium-40 beta particle activity result from the total gross beta particle activity result to determine if the screening level, 15 pCi/L, is exceeded.

(iv) The potassium-40 beta particle activity must be calculated by multiplying elemental potassium concentrations (in mg/L) by a factor of 0.82.

(v) If the gross beta particle activity minus the naturally occurring potassium-40 beta particle activity is greater than the screening level of (>) 15 pCi/L:

(A) The sample must be analyzed to identify the major radioactive constituents present in the sample.

(B) To determine compliance with the MCL, the appropriate doses must be calculated and summed.

(I) Except tritium and strontium-90, the concentration of man-made radionuclides causing 4 mrem total body or organ dose equivalents must be calculated on the basis of 2 liter per day drinking water intake using the 168 hour data list in the Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and in Water for Occupational Exposure, NBS (National Bureau of Standards) Handbook 69 as amended August 1963, U.S. Department of Commerce.

(a) Copies of this document are available from the National Technical Information Service, NTIS ADA 280 282, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161. The toll-free number is 800-553-6847. Copies may be inspected at EPA's Drinking Water Docket, 401 M Street, SW, Washington, DC 20460; or at the Office of the Federal

Register, 800 North Capitol Street, NW, Suite 700, Washington, DC.

(II) To determine compliance, doses must also be calculated and combined for measured levels of tritium and strontium as specified in Table 11.22-II below.

TABLE 11.22-II AVERAGE ANNUAL CONCENTRATIONS ASSUMED TO PRODUCE A TOTAL BODY OR ORGAN DOSE OF 4 mrem/yr

Radionuclide	Critical organ	picoCurie per liter (pCi/L)
Tritium	Total body	20,000
Strontium-90	Bone Marrow	8

11.22(5) MCL Violations for Radionuclides

The following constitute radionuclide MCL violations:

(a) The LRAA at any entry point is greater than (>) the MCL for any radionuclide.

(b) The LRAA, calculated before four consecutive quarters of samples have been collected at any entry point, is greater than (>) the MCL for any radionuclide, regardless of the subsequent sample results.

11.22(6) Response to MCL Violations for Radionuclides

In the event of a radionuclide MCL violation, the supplier must:

(a) Notify the Department no later than 48 hours after the violation occurs.

(b) Distribute Tier 2 public notice as specified in 11.33.

11.23 MAXIMUM RESIDUAL DISINFECTANT LEVELS RULE

11.23(1) Chlorine and Chloramines MRDL

(a) Applicability for Chlorine and Chloramines MRDL

For all community and non-transient, non-community water systems that supply water treated with chlorine or chloramines, the supplier must comply with the requirements specified in this section, 11.23(1).

(b) MRDL Requirements for Chlorine and Chloramines

(i) The chlorine and chloramines MRDLs are as follows:

TABLE 11.23-I MRDLs FOR CHLORINE AND CHLORAMINES	
Disinfectant	MRDL (mg/L as Cl_2)
Chlorine	4.0
Chloramines	4.0

(ii) The BATs for achieving compliance with the MRDLs for chlorine and chloramines are specified in 40 CFR 141.65(c) ~~as amended July 1, 2014~~.

(iii) To protect public health, the supplier may increase residual disinfectant concentration in the distribution system to a level greater than (>) the MRDL for a time necessary to address specific microbiological contamination problems caused by circumstances including but not limited to:

(A) Distribution system line breaks.

(B) Storm run-off events.

(C) Source water contamination events.

(D) Backflow contamination events.

(c) Monitoring Requirements for Chlorine and Chloramines

(i) To determine compliance with the MRDLs for chlorine and/or chloramines, the supplier must monitor the residual disinfectant concentration in the distribution system at the same time and at the same ~~samplin g~~ locations that total coliform samples are ~~s that total coliform samples are~~ collected under 11.~~17~~16(4) and 11.16(5),~~(3)~~ as identified in the ~~monitoring~~ supplier's sample siting plan under ~~plan developed under 11.5(3)(a)(v) until March 31, 2016, and under~~ 11.16(3~~6-7~~) ~~beginning April 1, 2016~~.

(A) The supplier may use the results of samples collected under 11.8(3)(c)(i)(B) or 11.11(2)(c)(i)(B) to satisfy both the requirements specified in this section, 11.23(1), and 11.8(3)(c)(i)(B) or 11.11(2)(c)(i)(B).

(d) Compliance Determination for Chlorine and Chloramines

(i) Compliance with the MRDL for chlorine or chloramines is determined quarterly based on the RAA of all sample results collected.

(A) If the supplier collects more than one sample in a month, the supplier must average all sample results collected that month to get the monthly average.

(I) The supplier must use the monthly average in the RAA calculation.

(B) If the supplier switches between the use of chlorine and chloramines for disinfection during the year, the supplier must include all sample results for both chlorine and chloramines in calculating the RAA and determining compliance.

(C) If the supplier collects samples under the conditions specified in 11.23(1)(b)(iii), the supplier should not include those sample results in calculating the RAA.

(e) MRDL Violations for Chlorine and Chloramines

(i) The following constitute chlorine and/or chloramines MRDL violations:

(A) The RAA is greater than (>) the MRDL for chlorine and/or chloramines.

(B) The RAA, calculated before four consecutive quarters of samples have been collected, is greater than (>) the MRDL for chlorine and/or chloramines regardless of the subsequent sample results.

(f) Response to MRDL Violations for Chlorine and Chloramines

(i) In the event of a chlorine and/or chloramines MRDL violation, the supplier must:

(A) Notify the Department no later than 48 hours after the violation occurs.

(B) Distribute Tier 2 public notice as specified in 11.33.

(g) Reporting Requirements for Chlorine and Chloramines

(i) The supplier must submit all of the following information no later than the 10th of the month following the end of each quarter in which samples were collected.

(A) The number of samples collected during each month of the last quarter.

(B) The monthly average of all sample results collected in each month for the last 12 months.

(C) The RAA of the monthly averages.

(D) Indicate which residual disinfectant was analyzed for each sample.

(E) Whether the MRDL was violated.

(ii) The Department may complete the calculations and determine whether the MRDL was violated, instead of having the supplier report that information.

11.23(2) Chlorine Dioxide MRDL

(a) Applicability for Chlorine Dioxide MRDL

For all systems that use chlorine dioxide for disinfection or oxidation, the supplier must comply with the requirements specified in this section, 11.23(2), when using chlorine dioxide.

(b) MRDL Requirements for Chlorine Dioxide

(i) The chlorine dioxide MRDL is as follows:

TABLE 11.23-II MRDL FOR CHLORINE DIOXIDE	
Disinfectant	MRDL (mg/L as ClO_2)
Chlorine dioxide	0.8

(ii) The BATs for achieving compliance with the MRDLs for chlorine dioxide are specified in 40 CFR 141.65(c) ~~as amended July 1, 2014~~.

(c) Monitoring Requirements for Chlorine Dioxide

(i) To determine compliance with the chlorine dioxide MRDL, the supplier must monitor the residual disinfectant concentration daily at each entry point during normal operating conditions and as identified in the monitoring plan developed under 11.5(3)(a)(v).

(A) If any daily entry point sample result is greater than (>) the MRDL, the next day, the supplier must collect three chlorine dioxide residual disinfectant concentration samples in the distribution system. The three samples must be collected at least six hours apart and at a location that is as close to the first customer as possible unless:

(I) The supplier uses chlorine to maintain a residual disinfectant concentration in the distribution system and there are one or more points where disinfection is added after the entry point (i.e., booster chlorination), then the supplier must collect one sample at each of the following locations:

(a) As close to the first customer as possible.

(b) At a location representative of average residence time.

(c) At a location representative of maximum residence time.

(d) Compliance Determination for Chlorine Dioxide

If the supplier collects more than the required number of samples, all sample results must be used to determine compliance.

(e) MRDL Violations for Chlorine Dioxide

(i) The following constitute acute chlorine dioxide MRDL violations:

(A) Any daily entry point sample result is greater than (>) the MRDL and on the next day one or more of the three additional distribution system sample results is greater than (>) the MRDL.

(B) The supplier fails to collect any of the three additional distribution system samples the day after a daily entry point sample result was greater than (>) the MRDL.

(ii) The following constitute non-acute chlorine dioxide MRDL violations:

(A) Any two consecutive daily entry point sample results are greater than (>) the MRDL and all three additional distribution system results are less than or equal to (≤) the MRDL.

(B) The supplier fails to collect a daily entry point sample the day after a daily entry point sample result was greater than (>) the MRDL.

(f) Response to MRDL Violations for Chlorine Dioxide

(i) In the event of an acute chlorine dioxide MRDL violation, the supplier must:

(A) Notify the Department of the violation and initiate consultation as soon as possible but no later than 24 hours after the violation occurs.

(B) Distribute Tier 1 public notice as specified in 11.33.

(C) For an acute MRDL violation specified in 11.23(2)(e)(i)(A), take immediate corrective action to lower the level of chlorine dioxide to less than (<) the MRDL.

(ii) In the event of a non-acute chlorine dioxide MRDL violation, the supplier must:

(A) Notify the Department no later than 48 hours after the violation occurs.

(B) Distribute Tier 2 public notice as specified in 11.33.

(C) For an MRDL violation specified in 11.23(2)(e)(ii)(A), take corrective action to lower the level of chlorine dioxide to less than (<) the MRDL at the entry point.

(g) Reporting Requirements for Chlorine Dioxide

(i) The supplier must submit the following information no later than the 10th of the month following the end of each quarter in which samples were collected:

(A) The dates, results, and locations of samples collected during the last quarter.

(B) Whether an MRDL violation occurred and whether the resulting violation was acute or non-acute.

(ii) The Department may complete the calculations and determine whether the MRDL was violated, instead of having the supplier report that information.

11.24 DISINFECTION BYPRODUCT PRECURSORS RULE

11.24(1) Applicability and Definitions for Disinfection Byproduct Precursors

(a) For all community and non-transient, non-community surface water systems that use conventional filtration treatment, the supplier must comply with the disinfection byproduct precursor requirements specified in this rule.

(b) "DISINFECTION BYPRODUCT PRECURSORS" means the natural organic and inorganic compounds that react with chemical disinfectants in water to form disinfection byproducts.

(c) "ENHANCED COAGULATION" means the addition of sufficient coagulant for improved removal of disinfection byproduct precursors by conventional filtration treatment.

(d) "ENHANCED SOFTENING" means the improved removal of disinfection byproduct precursors by precipitative softening.

(e) "PAIRED TOC SAMPLE SET" means one source water TOC sample and one treated water TOC sample collected at the same time during normal operating conditions.

(i) The source water TOC sample must be representative of influent water quality.

(ii) The treated water TOC sample must be collected before or at the point of combined filter effluent turbidity monitoring and must represent the treated water.

(f) "SPECIFIC ULTRAVIOLET ABSORPTION" or "SUVA" means specific ultraviolet absorption at 254 nanometers, an indicator of the humic content of water. It is a calculated parameter obtained by dividing a sample's ultraviolet absorption, in 1/m, at a wavelength of 254 nm (i.e., UV254) by its concentration of dissolved organic carbon, in mg/L.

(g) "TOTAL ORGANIC CARBON" or "TOC" means a parameter measuring the total amount of carbon in water, present as organic molecules. It is used as a surrogate for disinfection byproduct precursors.

11.24(2) Treatment Technique Requirements for Disinfection Byproduct Precursors

(a) For each conventional filtration treatment plant, the supplier must comply with one of the following:

(i) The disinfection byproduct precursor treatment technique by meeting the Step 1 TOC removal requirements as specified in 11.24(5).

(ii) The disinfection byproduct precursor treatment technique requirements by meeting at least one of alternative compliance criteria specified in 11.24(7).

(iii) The disinfection byproduct precursor treatment technique by meeting the Step 2 TOC removal requirements as specified in 11.24(6).

(iv) Have a disinfection byproduct precursor waiver as specified in 11.24(6)(j).

(b) For compliance with the Step 1 or Step 2 TOC removal requirements, the supplier must operate with enhanced coagulation or enhanced softening.

11.24(3) Sampling Requirements for Disinfection Byproduct Precursors Treatment Technique Requirements

(a) To determine compliance with the disinfection byproduct precursor treatment technique requirements, the supplier must sample TOC and source water alkalinity as specified in this section, 11.24(3) and as identified in the monitoring plan developed under 11.5(3)(a)(v).

(b) For each conventional filtration treatment plant, the supplier must collect one routine paired TOC sample set and one routine source water alkalinity sample each month.

(i) The source water alkalinity sample must be collected at the same time as the paired TOC sample set and must be representative of influent water quality.

(c) The supplier may reduce the sampling frequency to quarterly at each treatment plant if the RAA of the monthly treated water TOC sample results meets one of the following criteria:

(i) Is less than (<) 1.0 mg/L for one year.

(ii) Is less than (<) 2.0 mg/L for two consecutive years.

(d) If the supplier is sampling at a reduced sampling frequency and the RAA of quarterly treated water TOC sample results is greater than or equal to (≥) 2.0 mg/L, the supplier must return to the routine monthly sampling frequency.

(e) For suppliers that intend to comply with the disinfection byproduct precursor treatment technique requirements by meeting one of the alternative compliance criteria specified in 11.24(7)(b)(v-vii), the supplier must also sample the necessary optional parameters to demonstrate compliance with the applicable alternative compliance criteria (i.e., specific ultraviolet absorption or magnesium hardness) at the same locations and sampling frequency as the paired TOC sample set.

11.24(4) Compliance Options for Disinfection Byproduct Precursors

For each conventional filtration treatment plant, the supplier must comply with the Step 1 TOC removal requirements under 11.24(5), unless one or more of the following criteria are met:

(a) The supplier complies with at least one of the alternative compliance criteria specified in 11.24(7).

(b) For systems using enhanced coagulation, the Department approves the supplier to comply with the Step 2 TOC removal requirements specified in 11.24(6).

(c) The supplier has a Department-approved waiver from enhanced coagulation requirements as specified in 11.24(6)(j).

11.24(5) Step 1 TOC Removal Requirements

To comply with the Step 1 TOC removal requirements, the supplier must achieve the applicable Step 1 required TOC percent removals in Table 11.24-I based on the source water TOC sample results and the source water alkalinity sample results collected under 11.24(3).

(a) For systems that use softening, the supplier must comply with the Step 1 required TOC percent removal based on the source water TOC sample results and the far-right column, Source water alkalinity >120 mg/L, regardless of the source water alkalinity sample results collected under 11.24(3).

TABLE 11.24-I STEP 1 TOC PERCENT REMOVAL REQUIREMENTS			
.	Source water alkalinity, mg/L as $CaCO_3$		
	0-60	>60-120	>120
Source water TOC, mg/L	Required step 1 TOC percent removal		
>2.0-4.0	35.0	25.0	15.0
>4.0-8.0	45.0	35.0	25.0
>8.0	50.0	40.0	30.0

11.24(6) Step 2 TOC Removal Requirements

(a) For systems using enhanced coagulation, if the supplier fails to achieve the Step 1 TOC removal requirement and the alternative compliance criteria, either due to water quality parameters or operational constraints, the supplier must apply to the Department for approval of alternative minimum TOC removal requirements (Step 2 TOC removal requirements) as specified in this section, 11.24(6), and if approved comply with the Step 2 TOC removal requirements.

(b) No later than three months after the system fails to comply with the Step 1 TOC removal requirements and the alternative compliance criteria, the supplier must:

(i) Complete bench- or pilot-scale testing to determine the recommended Step 2 TOC percent removal.

(ii) Apply to the Department for approval of the recommended Step 2 TOC percent removal.

(A) If approved, this value is the Step 2 required TOC percent removal that will be used for determining compliance with the Step 2 TOC removal requirements.

(iii) Include the results of the bench- or pilot-scale testing in the Step 2 TOC removal requirements application.

(c) For the required bench- or pilot-scale testing, the supplier must incrementally add 10 mg/L of alum, or equivalent addition of iron coagulant, to a representative source water sample until the pH is reduced to a level less than or equal to (≤) the applicable Step 2 target pH specified in Table 11.24-II.

(i) If the source water alkalinity is less than or equal to (≤) 60 mg/L and the pH is reduced to less than (<) 5.5 before significant TOC removal occurs, the supplier must adjust the pH to between 5.3 and 5.7 until a TOC removal of less than (<) 0.3 mg/L per incremental addition of alum, or equivalent addition of iron coagulant, is reached.

TABLE 11.24-II STEP 2 TARGET pH	
Source water alkalinity (mg/L as $CaCO_3$)	Target pH
0–60	5.5
>60–120	6.3
>120–240	7.0
>240	7.5

(d) At the coagulant dose of alum, or equivalent addition of iron coagulant, where the TOC removal is less than (<) 0.3 mg/L, the supplier must calculate the recommended Step 2 TOC percent removal from the results of the bench- or pilot-scale testing as follows:

(i) The recommended Step 2 TOC percent removal is equal to:

(1-(treated water TOC result ÷ source water TOC result)) x 100

(e) The results of the bench- or pilot-scale testing shall be used by the Department to assess the recommended Step 2 TOC percent removal submitted by the supplier.

(i) If the Department approves the recommended Step 2 TOC percent removal, the Department may make the Step 2 required TOC percent removal retroactive for the purposes of determining compliance.

(f) Until the Department approves the recommended Step 2 TOC percent removal, the supplier must either comply with the Step 1 TOC removal requirements as specified in 11.24(5) or the alternative compliance criteria as specified in 11.24(7).

(g) If approved by the Department, the Step 2 required TOC percent removal supersedes the Step 1 required TOC percent removal specified in Table 11.24-I.

(h) If the supplier completes a new bench- and pilot-scale test and the Department approves a new Step 2 required TOC percent removal, the previous Step 2 required TOC percent removal will no longer be effective.

(i) The supplier may operate the treatment plant at any coagulant dose or pH necessary to achieve the Step 2 required TOC percent removal as long as it is consistent with other requirements of the *Colorado Primary Drinking Water Regulations*.

(j) The supplier may apply to the Department for a waiver from enhanced coagulation requirements if the water is deemed to contain TOC not amenable to enhanced coagulation.

(i) The water is deemed to contain TOC not amenable to enhanced coagulation if the TOC removal in the bench- or pilot-scale testing is consistently less than (<) 0.3 mg/L of TOC per incremental addition of alum at all dosages, or equivalent addition of iron coagulant.

11.24(7) Alternative Compliance Criteria Requirements for Disinfection Byproduct Precursors

(a) If the supplier complies with any of the alternative compliance criteria in any quarter, the supplier is not required to comply with the Step 1 or Step 2 TOC removal requirements for that quarter.

(b) The alternative compliance criteria are as follows:

(i) The LRAA of the source water TOC sample results is less than (<) 2.0 mg/L.

(ii) The LRAA of the treated water TOC sample results is less than (<) 2.0 mg/L.

(iii) Sample results demonstrate all of the following:

(A) The LRAA of source water TOC is less than (<) 4.0 mg/L.

(B) The LRAA of source water alkalinity is greater than (>) 60 mg/L (as $CaCO_3$).

(C) The RAAs of TTHM and HAA5 samples are less than (<) 0.040 mg/L and 0.030 mg/L, respectively.

(iv) For systems using only chlorine for primary disinfection and maintenance of the residual disinfectant concentration in the distribution system, the RAA of the TTHM and HAA5 sample results are less than (<) 0.040 mg/L and 0.030 mg/L, respectively.

(v) The LRAA of source water SUVA is less than or equal to (≤) 2.0 L/mg-m.

(vi) The LRAA of finished water SUVA is less than or equal to (≤) 2.0 L/mg-m.

(vii) For systems using softening, the LRAA of removed magnesium hardness is greater than or equal to (≥) 10 mg/L (as $CaCO_3$).

(viii) For systems using softening, the LRAA of treated water alkalinity is less than (<) 60 mg/L (as $CaCO_3$).

11.24(8) Compliance Determination for Step 1 and Step 2 TOC Removal

(a) To determine compliance with the Step 1 or Step 2 TOC removal requirements, the supplier must calculate compliance quarterly based on a LRAA as follows:

(i) Determine the actual monthly TOC percent removal.

The actual monthly TOC percent removal is equal to: (1-(treated water TOC sample result ÷ source water TOC sample result)) ×t; 100

(ii) Determine the required monthly TOC percent removal:

(A) If the supplier is determining compliance with the Step 1 TOC removal requirements, refer to Table 11.24-I for the Step 1 required TOC percent removal.

(B) If the supplier is determining compliance with the Step 2 TOC removal requirements, use the Department-approved Step 2 required TOC percent removal.

(iii) Determine the monthly removal ratio.

The monthly removal ratio is equal to: (actual monthly TOC percent removal ÷ required monthly TOC percent removal)

(A) If one or more of the following conditions apply, the supplier may substitute a value of 1.0 for the monthly removal ratio in that month:

(I) The source water or treated water TOC sample result(s) is less than (<) 2.0 mg/L.

(II) The source water or finished water SUVA is less than (<) 2.0 L/mg-m.

(III) For systems using enhanced softening, treated water alkalinity is less than (<) 60 mg/L (as $CaCO_3$).

(IV) For systems using enhanced softening, removed magnesium hardness (as $CaCO_3$) is greater than or equal to (≥) 10 mg/L.

(iv) Determine the LRAA of the monthly removal ratios.

(b) For new or reclassified systems that now meet the applicability of this rule, the supplier must begin determining compliance after collecting 12 months of data.

11.24(9) Treatment Technique Violations and Response for Disinfection Byproduct Precursors

(a) If the supplier fails to comply with any of the alternative compliance criteria and the LRAA of the monthly removal ratios is less than (<) 1.00 as calculated for Step 1 or Step 2 TOC removal requirements, a disinfection byproduct precursors treatment technique violation occurs.

(b) In the event of disinfection byproduct precursors treatment technique violation, the supplier must:

(i) Notify the Department no later than 48 hours after the violation occurs.

(ii) Distribute Tier 2 public notice as specified in 11.33.

11.24(10) Reporting Requirements for Disinfection Byproduct Precursors

(a) The supplier must submit all of the following information no later than the 10th of the month following the end of each quarter in which samples were collected:

(i) The number of paired TOC sample sets collected during the last quarter.

(ii) The location, date, and results of each paired TOC sample set and each associated alkalinity sample collected during the last quarter.

(iii) If the supplier is complying with either the Step 1 or Step 2 TOC removal requirements as specified in 11.24(5) and 11.24(6):

(A) For each month in the quarter that paired TOC sample sets were collected, the monthly removal ratio for each paired TOC sample set and the required TOC percent removal.

(B) Compliance calculations for determining TOC percent removals as specified in 11.24(8).

(C) Whether the system is in compliance with the Step 1 or Step 2 TOC removal requirements as specified in 11.24(5) and 11.24(6) for the last four quarters.

(iv) If the supplier meets one or more of the alternative compliance criteria as specified in 11.24(7):

(A) The alternative compliance criterion that the supplier is using for compliance and whether the system is in compliance with that particular alternative compliance criterion.

(B) For systems meeting the criteria specified in 11.24(7)(b)(i) or 11.24(7)(b)(iii), the LRAA of source water TOC.

(C) For systems meeting the criterion specified in 11.24(7)(b)(ii), the LRAA of treated water TOC.

(D) For systems meeting the criteria specified in 11.24(7)(b)(iii), the LRAA of source water alkalinity.

(E) For systems meeting the criteria specified in 11.24(7)(b)(iii) or 11.24(7)(b)(iv), the RAA for both TTHM and HAA5.

(F) For systems meeting the criterion specified in 11.24(7)(b)(v), the LRAA of source water SUVA.

(G) For systems meeting the criterion specified in 11.24(7)(b)(vi), the LRAA of finished water SUVA.

(H) For systems meeting the criterion specified in 11.24(7)(b)(vii), the LRAA of monthly removed magnesium hardness (as $CaCO_3$ in mg/L).

(I) For systems meeting the criterion specified in 11.24(7)(b)(viii), the LRAA of treated water alkalinity.

(b) The Department may complete the calculations and determine whether the treatment technique was met, instead of having the supplier report that information.

11.25 DISINFECTION BYPRODUCTS RULE

11.25(1) Total Trihalomethanes (TTHM) and Haloacetic Acids (HAA5)

(a) Applicability and Definitions for TTHM and HAA5

(i) For all community water systems and non-transient, non-community water systems that supply water treated with a primary or residual disinfectant other than ultraviolet light, the supplier must comply with the requirements specified in this section, 11.25(1).

(ii) "DUAL SAMPLE SET" means a set of two samples collected at the same time and same location for the purposes of determining compliance with the TTHM and HAA5 MCLs. One sample is analyzed for TTHM and the other is analyzed for HAA5.

(iii) "INITIAL DISTRIBUTION SYSTEM EVALUATION REPORT" or "IDSE REPORT" means a report resulting from a historical requirement where the supplier identified sampling locations that represent high TTHM and HAA5 concentrations in the distribution system.

(A) IDSE Reports include:

(I) Historical TTHM and HAA5 individual sampling results and LRAAs;

(II) A schematic of the distribution system;

(III) The population supplied;

(IV) System type; and

(V) A recommendation and explanation of sampling timing and locations that will represent the highest TTHM and HAA5 concentrations.

(a) The supplier must include the peak historical month for TTHM and HAA5 concentrations in the recommendation, unless the Department approved another month to collect samples.

(B) For new systems or reclassified systems that now meet the applicability of this rule, the supplier is not required to complete an IDSE Report.

(iv) "HALOACETIC ACIDS" or "HAA5" means the sum of the concentrations in mg/L of the five regulated haloacetic acid compounds (monochloroacetic acid, dichloroacetic acid, trichloroacetic acid, monobromoacetic acid, and dibromoacetic acid), rounded to two significant figures after addition.

(v) "TOTAL TRIHALOMETHANES" or "TTHM" means the sum of the concentrations in mg/L of the four regulated trihalomethane compounds (trichloromethane [chloroform], dibromochloromethane, bromodichloromethane and tribromomethane [bromoform]), rounded to two significant figures after addition.

(b) MCL Requirements for TTHM and HAA5

(i) The TTHM and HAA5 MCLs are as follows:

TABLE 11.25-I MCLs FOR TTHM AND HAA5	
Disinfection byproduct	MCL (mg/L)
Total trihalomethanes (TTHM)	0.080
Haloacetic acids (five) (HAA5)	0.060

(ii) The BATs for achieving compliance with the MCLs for TTHM and HAA5 are specified in 40 CFR 141.64(b)(2)(ii) ~~as amended July 1, 2014~~.

(iii) The BATs for achieving compliance with the MCLs for TTHM and HAA5 for consecutive systems which only apply to the disinfected water that the consecutive system buys or receives are specified in 40 CFR 141.64(b)(2)(iii) ~~as amended July 1, 2014~~.

(c) Sampling Requirements for TTHM and HAA5

(i) To determine compliance with the MCLs for TTHM and HAA5, the supplier must comply with the sampling requirements specified in this section, 11.25(1)(c).

(ii) If the supplier submitted an IDSE report, the supplier must sample for TTHM and HAA5 at the sampling locations and in the months recommended in the IDSE report, unless the Department requires other or additional sampling locations or months.

(iii) If the supplier did not submit an IDSE report, the supplier must select TTHM and HAA5 sampling locations as follows, unless the Department requires other or additional locations:

(A) Alternate between selecting sampling locations that represent high TTHM concentrations and sampling locations that represent high HAA5 concentrations until the required number of sampling locations, as specified in Table 11.25-II, have been identified.

(B) For systems not chemically disinfecting, if the supplier begins using a chemical disinfectant, the supplier must consult with the Department to identify TTHM and HAA5 sampling locations.

(iv) For routine sampling, the supplier must sample at the number of sampling locations and at the sampling frequencies specified in Table 11.25-II.

TABLE 11.25-II ROUTINE SAMPLING LOCATIONS AND FREQUENCIES

Source water type	Population supplied	Sampling frequency	Number of sampling locations and sample type
Surface Water	<500	annually	1 individual sample for TTHM collected at the sampling location with the highest TTHM concentration and 1 individual sample for HAA5 collected at the sampling location with the highest HAA5 concentration; or 1 dual sample set if the highest TTHM and HAA5 concentrations occur at the same sampling location and in the same month.
Surface Water	500 – 3,300	quarterly	1 individual sample for TTHM collected at the sampling location with the highest TTHM concentration and 1 individual sample for HAA5 collected at the sampling location with the highest HAA5 concentration.
Surface Water	3,301 – 9,999	quarterly	2 dual sample sets at sampling locations as specified in 11.25(1)(c)(ii) or 11.25(1)(c)(iii).
Surface Water	10,000 – 49,999	quarterly	4 dual sample sets at sampling locations as specified in 11.25(1)(c)(ii) or 11.25(1)(c)(iii).
Surface Water	50,000 – 249,999	quarterly	8 dual sample sets at sampling locations as specified in 11.25(1)(c)(ii) or 11.25(1)(c)(iii).
Surface Water	250,000 – 999,999	Quarterly	12 dual sample sets at sampling locations as specified in 11.25(1)(c)(ii) or 11.25(1)(c)(iii).
Surface Water	1,000,000 – 4,999,999	quarterly	16 dual sample sets at sampling locations as specified in 11.25(1)(c)(ii) or 11.25(1)(c)(iii).
Surface Water	≥ 5,000,000	quarterly	20 dual sample sets at sampling locations as specified in 11.25(1)(c)(ii) or 11.25(1)(c)(iii).
Groundwater	<500	annually	1 individual sample for TTHM collected at the sampling location with the highest TTHM concentration and 1 individual sample for HAA5 collected at the sampling location with the highest HAA5 concentration; or 1 dual sample set if the highest TTHM and HAA5 concentrations occurred at the same sampling location and in the same month.
Groundwater	500 – 9,999	annually	2 dual sample sets at sampling locations as specified in 11.25(1)(c)(ii) or 11.25(1)(c)(iii).
Groundwater	10,000 – 99,999	quarterly	4 dual sample sets at sampling locations as specified in 11.25(1)(c)(ii) or 11.25(1)(c)(iii).
Groundwater	100,000 – 499,999	quarterly	6 dual sample sets at sampling locations as specified in 11.25(1)(c)(ii) or 11.25(1)(c)(iii).
Groundwater	≥ 500,000	quarterly	8 dual sample sets at sampling locations as specified in 11.25(1)(c)(ii) or 11.25(1)(c)(iii).

(v) For routine sampling, the supplier must collect samples during the month when the highest TTHM and HAA5 concentrations occur.

(vi) For routine, reduced, or increased sampling, if the supplier is on a quarterly sampling frequency, the supplier must collect samples at least every 90 days.

(vii) The supplier may reduce the sampling frequency and/or the number of sampling locations as specified in Table 11.25-III if all of the following criteria are met:

(A) The LRAA for TTHM is less than or equal to (≤) 0.040 mg/L at all sampling locations.

(B) The LRAA for HAA5 is less than or equal to (≤) 0.030 mg/L at all sampling locations.

(C) For surface water systems, the LRAA of the source water TOC samples is less than or equal to (≤) 4.0 mg/L at each surface water treatment plant.

(I) If the supplier is required to sample as specified in 11.24(3), the supplier must use these TOC sample results to determine the LRAA.

(II) If the supplier is not required to sample as specified in 11.24(3), the supplier must collect optional source water TOC samples every 30 days for at least 12 months and use these optional TOC sample results to determine the LRAA.

(a) If the supplier chooses to sample source water TOC and the system subsequently qualifies for reduced TTHM and HAA5 sampling, the supplier must continue to sample the source water for TOC but may reduce the sampling frequency to at least every 90 days.

TABLE 11.25-III REDUCED SAMPLING LOCATIONS AND FREQUENCIES

Source water type	Population supplied	Sampling frequency	Number of sampling locations and sample type
Surface Water	<500	The sampling may not be reduced.	The sampling cannot be reduced.
Surface Water	500 – 3,300	annually	1 individual sample for TTHM collected at the sampling location and during the quarter with the highest TTHM concentration and 1 individual sample for HAA5 collected at the sampling location and during the quarter with the highest HAA5 concentration; or 1 dual sample set if the highest TTHM and HAA5 concentrations occurred at the same sampling location and in the same quarter.
Surface Water	3,301 – 9,999	annually	2 dual sample sets with 1 collected at the sampling location and during the quarter with the highest TTHM concentration and 1 collected at the sampling location and during the quarter with the highest HAA5 concentration.
Surface Water	10,000 – 49,999	quarterly	2 dual sample sets collected at the sampling locations with the highest TTHM and highest HAA5 LRAAs.
Surface Water	50,000 – 249,999	quarterly	4 dual sample sets collected at the sampling locations with the 2 highest TTHM and 2 highest

			HAA5 LRAAs.
Surface Water	250,000 – 999,999	quarterly	6 dual sample sets collected at the sampling locations with the 3 highest TTHM and 3 highest HAA5 LRAAs.
Surface Water	1,000,000 – 4,999,999	quarterly	8 dual sample sets collected at the sampling locations with the 4 highest TTHM and 4 highest HAA5 LRAAs.
Surface Water	≥ 5,000,000	quarterly	10 dual sample sets collected at the sampling locations with the 5 highest TTHM and 5 highest HAA5 LRAAs.
Groundwater	<500	every third calendar year	1 individual sample for TTHM collected at the sampling location and during the quarter with the highest TTHM concentration and 1 individual sample for HAA5 collected at the sampling location and during the quarter with the highest HAA5 concentration; or 1 dual sample set if the highest TTHM and HAA5 concentrations occurred at the same sampling location and in the same quarter.
Groundwater	500 – 9,999	annually	1 individual sample for TTHM collected at the sampling location and during the quarter with the highest TTHM concentration and 1 individual sample for HAA5 collected at the sampling location and during the quarter with the highest HAA5 concentration; or 1 dual sample set if the highest TTHM and HAA5 concentrations occurred at the same sampling location and in the same quarter.
Groundwater	10,000 – 99,999	annually	2 dual sample sets with 1 collected at the sampling location and during the quarter with the highest TTHM concentration and 1 collected at the location and during the quarter with the highest HAA5 concentration.
Groundwater	100,000 – 499,999	quarterly	2 dual sample sets at the sampling locations with the highest TTHM and highest HAA5 LRAAs.
Groundwater	≥ 500,000	quarterly	4 dual sample sets collected at the sampling locations with the 2 highest TTHM and 2 highest HAA5 LRAAs.

(viii) If the supplier is sampling at a reduced sampling frequency and/or at the reduced number of sampling locations, the supplier must return to the routine sampling frequency and the routine number of sampling locations specified in Table 11.25-II if one or more of the following criteria are met:

(A) For surface water systems, the LRAA of the source water TOC samples collected under 11.24(3) or 11.25(1)(c)(vii)(C)(II), is greater than (>) 4.0 mg/L at any surface water treatment plant.

(B) For a supplier sampling at a quarterly sampling frequency, the TTHM LRAA is greater than (>) 0.040 mg/L or the HAA5 LRAA is greater than (>) 0.030 mg/L.

(C) For a supplier sampling at an annual or less frequent sampling frequency, any individual TTHM sample is greater than (>) 0.060 mg/L or any individual HAA5 sample is greater than (>) 0.045 mg/L at any sampling location.

(ix) If the supplier is sampling at an annual or less frequent sampling frequency and any individual TTHM sample result is greater than (>) 0.080 mg/L or any individual HAA5

sample result is greater than (>) 0.060 mg/L, the supplier must increase the sampling to dual sample sets collected quarterly at all sampling locations.

(A) The supplier may return to routine sampling at the frequency and at the number of sampling locations specified in Table 11.25-II if all of the following criteria are met:

(I) The supplier conducted increased sampling for at least four consecutive quarters.

(II) The LRAA is less than or equal to (≤) 0.060 mg/L for TTHM and less than or equal to (≤) 0.045 mg/L for HAA5 at all sampling locations.

(d) Sampling Plan for TTHM and HAA5

(i) The supplier must develop and comply with a TTHM and HAA5 individual rule sampling plan as part of the system's monitoring plan specified in 11.5.

(A) If the supplier submitted an IDSE report that includes all the information required by this section, 11.25(1)(d), the supplier is not required to develop the individual rule sampling plan.

(B) The sampling plan must consist of all of the following:

(I) Sampling locations.

(II) Sampling dates.

(III) Compliance calculation procedures.

(IV) The rationale for identifying the sampling locations as having high concentrations of TTHM or HAA5.

(V) For consecutive systems, if the Department has reduced the sampling requirements for the supplier responsible for the consecutive system under 11.42(4), the sampling plans for all other systems included in the combined distribution system.

(C) The sampling plan must be complete no later than the date the supplier collects the first TTHM or HAA5 sample.

(D) The supplier must keep the sampling plan on file for Department and public review.

(ii) For surface water systems supplying greater than (>) 3,300 people, the supplier must submit a copy of the sampling plan no later than the date the supplier collects the first TTHM or HAA5 sample.

(iii) The supplier may revise the sampling plan to reflect changes in treatment, distribution system operations and layout, other factors that may affect TTHM or HAA5 formation or for Department-approved reasons after consulting with the Department regarding the need and appropriateness of changes.

(A) If the supplier revises the sampling locations, the supplier must replace the existing sampling locations with the lowest LRAA with new locations that reflect the highest expected TTHM or HAA5 concentrations.

(iv) The Department may require the supplier to revise the sampling plan.

(v) If the supplier revises the sampling plan, the supplier must submit a copy of the revised sampling plan before the Department-specified date that the supplier must comply with the revised sampling plan.

(e) Operational Evaluation Levels for TTHM and HAA5

(i) The supplier must calculate operational evaluation levels for TTHMs and HAA5s quarterly as follows:

(A) The sum of the two previous quarters' TTHM results plus twice the current quarter's TTHM result, divided by 4.

(B) The sum of the two previous quarters' HAA5 results plus twice the current quarter's HAA5 result, divided by 4.

(ii) If the operational evaluation level is greater than (>) 0.080 mg/L for TTHM or greater than (>) 0.060 mg/L for HAA5 at any monitoring location, the supplier must:

(A) Complete an operational evaluation that includes all of the following:

(I) An examination of the system's treatment and distribution operational practices for all of the following:

(a) Storage tanks.

(b) Excess storage capacity.

(c) Distribution system flushing.

(d) Treatment changes or failures that may contribute to TTHM and HAA5 formation.

(II) Changes in sources or source water quality.

(III) Steps to consider for minimizing future exceedances.

(B) Submit an operational evaluation report no later than 90 days after being notified of the sample result(s) that caused the system to exceed the operational evaluation level.

(I) The operational evaluation report must be made available to the public upon request.

(f) Compliance Determination for TTHM and HAA5

(i) If the supplier samples at a quarterly frequency, MCL compliance is based on the LRAA.

(A) For new systems or reclassified systems that now meet the applicability of this rule, the supplier must calculate the LRAA after the end of the fourth quarter of

required sampling or earlier if the LRAA calculated based on fewer than four quarters of data would cause the MCL to be exceeded regardless of the monitoring results of subsequent quarters.

(B) If the supplier collects more than one sample in a quarter at a sampling location, the supplier must average all sample results collected in the quarter at that sampling location to determine a quarterly average to be used in the LRAA calculation instead of the individual sample results.

(ii) If the supplier samples at an annual or less frequent sampling frequency, compliance is based on each individual sample result.

(A) If any sample result is greater than (>) the MCL, the supplier must increase the sampling frequency to quarterly sampling as specified in 11.25(1)(c)(ix). This sample will count as the first quarterly sample. Compliance with the MCLs will be determined after the fourth quarter of required sampling.

(B) For new or reclassified systems that now meet the applicability of this rule, the supplier must determine compliance beginning with the first sample collected.

(g) MCL Violations for TTHM and HAA5

(i) The following constitute TTHM and/or HAA5 MCL violations:

(A) The LRAA at any sampling location is greater than (>) the MCL for TTHM and/or HAA5.

(B) The LRAA, calculated before four consecutive quarters of samples have been collected at a sampling location, is greater than (>) the MCL for TTHM and/or HAA5 regardless of the subsequent sample results.

(h) Response to MCL Violations for TTHM and HAA5

(i) In the event of a TTHM and/or HAA5 MCL violation, the supplier must:

(A) Notify the Department no later than 48 hours after the violation occurs.

(B) Distribute Tier 2 public notice as specified in 11.33.

(i) Reporting Requirements for TTHM and HAA5

(i) The supplier must submit all of the following information for each sampling location no later than the 10th of the month following the end of each quarter in which the sample(s) was collected:

(A) Number of samples collected during the last quarter.

(B) Date each sample was collected.

(C) Results of each sample collected during the last quarter.

(D) If the supplier is required to sample at a quarterly frequency, LRAA(s).

(I) For new systems or reclassified systems that now meet the applicability of this rule, the supplier must begin submitting the LRAA after the end of the fourth quarter that the supplier is required to sample.

(E) Whether the MCL was exceeded at any sampling location.

(F) Whether the operational evaluation level(s) was exceeded during the quarter.

(I) If the operational evaluation level(s) was exceeded, the supplier must submit the location and date of the exceedance and the calculated operational evaluation level(s).

(ii) For the supplier of a surface water system seeking to qualify for, or remain on, reduced TTHM and HAA5 sampling, the supplier must submit all of the following source water TOC information for each surface water treatment plant no later than the 10th of the month following the end of each quarter in which samples were collected:

(A) Number of source water TOC samples collected each month during the last quarter.

(B) Date each TOC sample was collected during the last quarter.

(C) Result of each TOC sample collected during the last quarter.

(D) The quarterly average of monthly TOC samples collected during the last quarter or the result of the quarterly sample.

(E) The LRAA of quarterly averages.

(F) Whether the LRAA was greater than (>) 4.0 mg/L.

(iii) The Department may choose to complete the calculations and determine whether the MCL was violated or whether the supplier is eligible for reduced sampling instead of having the supplier report that information.

11.25(2) Chlorite

(a) Applicability and Definitions for Chlorite

(i) For all community and non-transient, non-community water systems that use chlorine dioxide for disinfection or oxidation, the supplier must comply with the requirements specified in this section, 11.25(2), when using chlorine dioxide.

(ii) "THREE-SAMPLE SET" means that one chlorite sample is collected at each of the following locations:

(A) As close to the first customer as possible;

(B) At a location representative of average residence time; and

(C) At a location representative of maximum residence time.

(b) MCL Requirement for Chlorite

(i) The chlorite MCL is as follows:

TABLE 11.25-IV MCL FOR CHLORITE	
Disinfection byproduct	MCL (mg/L)
Chlorite	1.0

(ii) The BATs for achieving compliance with the MCL for chlorite are specified in 40 CFR 141.64(b)(1)(ii) ~~as amended July 1, 2014~~.

(c) Sampling Requirements for Chlorite

(i) To determine compliance with the MCL for chlorite, the supplier must comply with the sampling requirements specified in this section, 11.25(2)(c) and as identified in the monitoring plan developed under 11.5(3)(a)(v).

(ii) At each entry point that supplies water from a treatment plant using chlorine dioxide and at a time that represents normal operating conditions, the supplier must collect daily chlorite samples.

(iii) In the distribution system, the supplier must collect a routine three-sample set each month.

(iv) If any daily entry point sample result collected under 11.25(2)(c)(ii) is greater than (>) the chlorite MCL, the next day the supplier must collect a three-sample set in the distribution system in addition to the daily entry point sample.

(A) The supplier may use the results from the three-sample set collected in the distribution system to meet the routine sampling requirement specified in 11.25(2)(c)(iii).

(v) The supplier may reduce the routine three-sample set sampling frequency in the distribution system to a three-sample set each quarter if, after one year of sampling all of the following criteria are met:

(A) No individual chlorite sample result collected in the distribution system was greater than (>) the chlorite MCL.

(B) No daily entry point sample result was greater than (>) the chlorite MCL.

(vi) If the supplier is sampling at a reduced sampling frequency in the distribution system, the supplier must return to the routine monthly sampling frequency if:

(A) An individual chlorite sample in the distribution system is greater than (>) the chlorite MCL; or

(B) A daily entry point sample result is greater than (>) the chlorite MCL.

(d) Compliance Determination for Chlorite

Compliance with the MCL for chlorite is based on the average of the results of any three-sample set collected in the distribution system under 11.25(2)(c)(iii), 11.25(2)(c)(iv), or 11.25(2)(c)(v).

(e) MCL Violation and Response for Chlorite

(i) If the average of the results of any three-sample set collected in the distribution system is greater than (>) the chlorite MCL, a chlorite MCL violation occurs.

(ii) In the event of a chlorite MCL violation, the supplier must:

(A) Distribute Tier 2 public notice as specified in 11.33.

(B) Report the violation to the Department as specified in 11.25(2)(f).

(f) Reporting Requirements for Chlorite

(i) The supplier must submit all of the following information no later than the 10th of the month following the end of each quarter in which samples were collected:

(A) The number of entry point samples collected each month during the last quarter.

(B) The location, date, and sample result of each sample (both entry point and distribution system) collected during the last quarter.

(C) For each month in the quarter, the average of the results of each three-sample set collected in the distribution system.

(D) Whether the MCL was violated, in which month(s) the MCL was violated, and how many times it was violated in that month(s).

(ii) The Department may complete the calculations and determine whether the MCL was violated instead of having the supplier report that information.

11.25(3) Bromate

(a) Applicability for Bromate

For all community and non-transient, non-community water systems that use ozone for disinfection or oxidation, the supplier must comply with the requirements specified in this section, 11.25(3), when using ozone.

(b) MCL Requirement for Bromate

(i) The bromate MCL is as follows:

TABLE 11.25-V MCL FOR BROMATE	
Disinfection byproduct	MCL (mg/L)
Bromate	0.010

(ii) The BATs for achieving compliance with the MCL for bromate are specified in 40 CFR 141.64(b)(1)(ii) ~~as amended July 1, 2014~~.

(c) Sampling Requirements for Bromate

(i) To determine compliance with the MCL for bromate, the supplier must comply with the sampling requirements specified in this section, 11.25(3)(c) and as identified in the monitoring plan developed under 11.5(3)(a)(v).

(ii) At each entry point that supplies water from a treatment plant using ozone and at a time that represents normal operating conditions, the supplier must collect one routine samples each month.

(iii) The supplier may reduce the routine sampling frequency at each entry point to one sample each quarter if, during the four most recent quarters all of the following criteria are met:

(A) The LRAA of all sample results collected under 11.25(3)(c)(ii) is less than or equal to (≤) 0.0025 mg/L.

(B) Monthly samples were analyzed using Method 317.0 Revision 2.0, 326.0 or 321.8.

(iv) If the supplier is sampling at a reduced sampling frequency and the LRAA of all sample results analyzed using Method 317.0 Revision 2.0, 326.0 or 321.8 is greater than (>) 0.0025 mg/L, the supplier must return to the routine monthly sampling frequency immediately.

(d) Compliance Determination for Bromate

(i) Compliance with the MCL for bromate is determined quarterly based on the LRAA of all monthly sample results collected.

(A) If the supplier collects more than one bromate sample in a month at an entry point, the supplier must average all sample results collected that month at that entry point to get the monthly average. The supplier must use the monthly average when calculating the LRAA.

(e) MCL Violation for Bromate

(i) The following constitute bromate MCL violations:

(A) The LRAA is greater than (>) the bromate MCL.

(B) The LRAA, calculated during the first four consecutive quarters of sampling at a sampling location, is greater than (>) the MCL for bromate regardless of the subsequent sample results.

(f) Response to an MCL Violation for Bromate

(i) In the event of a bromate MCL violation, the supplier must:

(A) Distribute Tier 2 public notice as specified in 11.33.

(B) Report the violation to the Department as specified in section 11.25(3)(g).

(g) Reporting Requirements for Bromate

(i) The supplier must submit all of the following information no later than the 10th of the month following the end of each quarter in which samples were collected:

(A) The number of samples collected during the last quarter.

(B) The location, date, and sample result of each sample collected during the last quarter.

(C) The LRAA of all sample results collected in the last year.

(D) Whether the MCL was violated.

(ii) The Department may complete the calculations and determine whether the MCL was violated, instead of having the supplier report that information.

…

11.27 COMPOSITING SAMPLES RULE

11.27(1) Applicability and Definitions

(a) For all public water systems, the supplier may composite samples if they comply with the requirements specified in this rule.

(b) "COMPOSITING" means combining samples before analysis, to reduce the total number of samples analyzed.

11.27(2) Compositing Samples for Nitrate, Nitrite, Inorganic Chemicals, VOCs, and SOCs

(a) To composite inorganic chemical, nitrate, nitrite, VOC, or SOC samples collected under 11.18, 11.19, 11.20, and 11.21 the supplier must comply with the requirements specified in this section 11.27(2).

(b) The supplier may composite samples from up to five entry points.

(i) For systems supplying greater than (>) 3,300 people, the supplier must only composite samples from entry points within a single public water system.

(ii) For systems supplying less than or equal to (≤) 3,300 people, the supplier may composite samples with other public water systems.

(c) Compositing of samples must be performed by certified laboratory personnel.

(d) Composite samples must be analyzed using a method where the method detection limit is less than (<) one-fifth (1/5) of the MCL.

(e) For VOCs and SOCs, the composite sample must be analyzed no later than 14 days after the first sample was collected.

(f) If a composite sample result is greater than or equal to (≥) one-fifth (1/5) the MCL for nitrate, nitrite, or an inorganic chemical, or greater than or equal to (≥) the cited detection limit for VOCs or SOCs, the supplier must collect a confirmation sample at each entry point included in the composite sample.

(i) The supplier must collect the confirmation samples no later than 14 days after receiving notification of the composite result.

(ii) The confirmation samples must be analyzed for the chemical that was:

(A) For nitrate, nitrite, or an inorganic chemical, greater than or equal to (≥) one-fifth (1/5) of the MCL; or

(B) For VOCs or SOCs, greater than or equal to (≥) the cited detection limit.

(iii) If duplicates of the original sample collected from each entry point used in the composite sample are available, the supplier may use these samples instead of collecting confirmation samples.

(A) The duplicate samples must be analyzed and the supplier must submit the sample results no later than 14 days after receiving the results of the original composite sample.

11.27(3) Compositing Samples for Gross Alpha Particle Activity, Combined Radium-226 and Radium-228, and Uranium

(a) To composite gross alpha particle activity, combined radium-226 and radium-228, and uranium samples collected under 11.22, the supplier must comply with the requirements specified in this section 11.27(3).

(b) The supplier may composite samples from up to four consecutive quarters from a single entry point.

(c) The composite sample must be analyzed no later than one year after the first sample was collected.

(d) The Department shall consider the composite sample result as an average of the individual samples included in the composite sample to determine compliance with the MCLs and to determine the future sampling frequency.

(e) If the composite sample result is greater than (>) one-half (1/2) the MCL, the Department may require the supplier to collect additional quarterly samples before allowing the supplier to sample at a reduced frequency.

11.27(4) Compositing Samples for Lead and Copper Entry Point Samples

(a) To composite lead and copper entry point samples collected under 11.26, the supplier must comply with the requirements specified in this section 11.27(4).

(b) The supplier may composite samples from no more than five entry points.

(c) Compositing of samples must be performed by certified laboratory personnel.

(d) If the lead concentration in the composite sample is greater than or equal to (≥) 0.001 mg/L or the copper concentration in the composite sample is greater than or equal to (≥) 0.160 mg/L, the supplier must collect confirmation samples no later than 14 days after receiving notification of the composite result.

(i) Instead of collecting confirmation samples, the supplier may use one of the following:

(A) Duplicates of each original sample used in the composite sample.

(B) The original samples used in the composite sample, if a sufficient volume is available.

11.28 STORAGE TANK RULE

11.28(1) Applicability and Definitions

(a) AFor all public water systems that use finished water storage tanks, the supplier must comply with the requirements specified in this rule. beginning April 1, 2016.

(b) "COMPREHENSIVE INSPECTION" means an internal and external storage tank inspection to identify sanitary defects that covers all aspects of the condition of the storage tank including but not limited to sanitary, structural, and coating systems conditions, as well as security and safety concerns.

(c) "FINISHED WATER STORAGE TANK" means a tank or vessel owned by the supplier that is located downstream of the entry point and is not pressurized at the air water interface. Pressurized storage tanks are not included in the definition of finished water storage tanks.

(d) "PERIODIC INSPECTION" means a visual external storage tank inspection that is typically performed by the supplier to identify evident sanitary defects (e.g., lack of screens on vents).

11.28(2) Written Plan for Finished Water Storage Tank Inspections Requirements

(a) The supplier must develop and maintain a written plan for finished water storage tank inspections which must include all of the following:

(i) An inventory of finished water storage tank(s) including all of the following information for each finished water storage tank:

(A) Tank type and construction materials (e.g., elevated, buried, etc.).

(B) Volume in gallons.

(C) Approximate dimensions.

(D) Location.

(E) Number of inlets, outlets, overflows, hatches, and vents.

(F) Coating systems.

(G) Date put in service.

(H) Rehabilitation and major maintenance history.

(ii) The methods for performing and documenting periodic and comprehensive inspections for each finished water storage tank including identification of qualified personnel to perform periodic and comprehensive inspections.

(iii) The schedule for performing periodic and comprehensive inspections for each finished water storage tank.

(A) Periodic inspections of each finished water storage tank must be scheduled at least quarterly or on an alternative schedule.

(B) Comprehensive inspections of each finished water storage tank must be scheduled at least every five years or on an alternative schedule.

(C) If the supplier schedules periodic or comprehensive inspections on an alternative schedule, the supplier must provide justification for the alternative schedule in the written plan for finished water storage tank inspections.

(iv) The timelines for correcting typical storage tank sanitary defects that the supplier will use to develop corrective action schedules. The supplier must at least address timelines for the following typical sanitary defects: improper screening or protection on vents and overflows, inadequate hatches, and unprotected openings.

(b) The written plan for finished water storage tank inspections is subject to Department review and revision.

11.28(3) Treatment Technique Requirements for Storage Tanks

(a) The supplier is prohibited from using uncovered finished water storage tanks.

(i) "UNCOVERED FINISHED WATER STORAGE TANK" means a tank, reservoir, or other facility used to store water that will undergo no further treatment except residual disinfection and that is open to the atmosphere.

(b) The supplier must operate and maintain finished water storage tanks so that they are free of sanitary defects.

(c) The supplier must perform periodic and comprehensive inspections of each finished water storage tank.

(d) The supplier must implement the written plan for finished water storage tank inspections.

(e) If any sanitary defects are identified during a periodic or comprehensive inspection, the supplier must develop and implement a corrective action schedule for correcting each sanitary defect.

(f) The supplier must develop an inspection summary no later than 60 days after each completed inspection that includes all of the following information:

(i) The date and type of inspection performed.

(ii) Inspection findings and tank conditions.

(iii) Any sanitary defects identified during the inspection.

(iv) If sanitary defects are identified, the corrective action schedule for correcting sanitary defects.

(v) If sanitary defects are identified, the corrective actions completed and the associated completion dates.

11.28(4) Violations of the Storage Tank Rule

(a) If the supplier fails to develop or maintain an acceptable written plan for finished water storage tank inspections, a storage tank rule violation occurs.

(b) The following constitute treatment technique violations:

(i) The supplier uses an uncovered finished water storage tank.

(ii) The supplier fails to perform or document a periodic or comprehensive inspection.

(iii) The supplier fails to implement the written plan for finished water storage tank inspections.

(iv) The supplier fails to complete or document corrective action or follow a corrective action schedule for any sanitary defects identified during a periodic or comprehensive inspection.

11.28(5) Response to Violations of the Storage Tank Rule

(a) In the event of a storage tank rule violation, the supplier must:

(i) Notify the department no later than 48 hours after the violation occurs.

(ii) Distribute Tier 3 public notice as specified in 11.33.

(b) In the event of a treatment technique violation, the supplier must:

(i) Notify the Department no later than 48 hours after the violation occurs.

(ii) Distribute Tier 2 public notice as specified in 11.33.

11.29 RESERVED

11.30 RESERVED

11.31 RESERVED

11.32 RESERVED

11.33 PUBLIC NOTIFICATION RULE

11.33(1) Applicability and Definitions

(a) For all public water systems, the supplier must comply with the public notice requirements specified in this rule for the violations or situations specified in Table 11.33-I.

TABLE 11.33-I VIOLATION CATEGORIES AND OTHER SITUATIONS REQUIRING A PUBLIC NOTICE	
CPDWR violations	Failure to comply with an MCL or MRDL
	Failure to comply with a treatment technique requirement
	Failure to perform required water quality monitoring
	Failure to comply with required testing procedures
Variance or exemption under 11.43	Operation under a variance or an exemption
	Failure to comply with the terms and schedule of any variance or exemption
Other situations requiring public notice	Occurrence of a waterborne disease outbreak or other waterborne emergency
	Exceedance of the elevated nitrate MCL by non-community water systems, when granted Department approval as specified in 11.18(2)(d)
	Exceedance of the secondary maximum contaminant level for fluoride
	Availability of unregulated contaminant monitoring data
	Repeated failure to sample the source water for *Cryptosporidium*
	Failure to determine bin classification
	Groundwater systems with a waiver from disinfection requirements under 11.13
	Significant deficiencies identified at non-community groundwater systems
	Other violations and situations determined by the Department to require a public notice

(b) Public notice requirements are divided into three tiers based on the seriousness of the violation or situation and any potential public health effects. Each tier has different requirements. The tiers are as follows:

(i) "TIER 1 PUBLIC NOTICE" means the public notice required for violations and situations with significant potential to have serious adverse effects on public health as a result of short-term exposure.

(ii) "TIER 2 PUBLIC NOTICE" means the public notice required for violations and situations with potential to have serious adverse effects on public health.

(iii) "TIER 3 PUBLIC NOTICE" means the public notice required for all other violations and situations not included in Tier 1 or Tier 2.

11.33(2) Tier 1 Public Notice Form, Manner, and Frequency of Notice

(a) The supplier must distribute Tier 1 public notice for the following violations or situations specified in Table 11.33-II:

TABLE 11.33-II VIOLATION CATEGORIES AND OTHER SITUATIONS REQUIRING TIER 1 PUBLIC NOTICE

Violation or Situation Description	As specified in
~~Violation of the total coliform MCL where fecal coliforms or *E. coli* are present in the distribution system[1]~~	~~11.17(9)(a)~~
Failure to test for fecal coliforms or *E. coli* following a total coliform-positive repeat sample[1]	11.16~~7~~(e~~10)(a~~)
Violation of the *E. coli* MCL[2]	11.16(11~~2~~)(a)
Violation of the nitrate, nitrite, or total nitrate and nitrite MCL	11.18(5)(a)
Failure to collect a confirmation sample no later than 24 hours after a nitrate or nitrite sample result greater than (>) the MCL	11.18(3)(b)(vii) and 11.18(3)(c)(v)
Exceedance of the elevated nitrate MCL by non-community water systems, permitted to exceed the MCL by the Department	11.18(2)(d)
Acute violation of the chlorine dioxide MRDL	11.23(2)(e)(i)(A)
Failure to collect the required chlorine dioxide samples in the distribution system	11.23(2)(e)(i)(B)
Violation of the maximum turbidity limit treatment technique requirement, as required by the Department after consultation	11.8(2)(d)(i)(B)
Occurrence of a waterborne disease outbreak or other waterborne emergency (e.g. 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)	.
For groundwater systems, presence of *E. coli*, enterococci, or coliphage in a source water sample	11.11(4)(d)(i) and 11.11(5)(c)(i)
Other violations or situations with significant potential to have serious adverse effects on public health as a result of short-term exposure, as determined by the Department either in *Colorado Primary Drinking Water Regulations* or on a case-by-case basis	.

~~1 Effective until March 31, 2016.~~

~~2 Effective beginning April 1, 2016.~~

(b) For Tier 1 public notice the supplier must:

(i) Distribute public notice as soon as possible, but no later than 24 hours after learning of the violation or situation.

(ii) Begin consultation with the Department as soon as possible, but no later than 24 hours after learning of the violation or situation, to determine additional public notice requirements.

(A) The supplier must comply with any additional public notification requirements set up as a result of the consultation with the Department (e.g., the timing, form, manner, frequency, and content of repeat notices, if any, and other actions to reach all consumers).

(iii) Distribute the public notice in a form and manner that fits the specific situation and is designed to reach residential, transient, and non-transient consumers. The supplier must use one or more of the following delivery methods:

(A) Appropriate broadcast media, including radio, television and a phone call to each consumer using a reverse 911 system, where available.

(B) Hand delivery of the notice to consumers.

(C) Another direct delivery method approved, in writing, by the Department.

(c) The Department may also require posting of the public notice in conspicuous locations throughout the area supplied by the system.

11.33(3) Tier 2 Public Notice Form, Manner, and Frequency of Notice

(a) The supplier must distribute Tier 2 public notice for the following violations or situations specified in Table 11.33-III:

TABLE 11.33-III VIOLATION CATEGORIES AND OTHER SITUATIONS REQUIRING TIER 2 PUBLIC NOTICE

Violation or Situation Description	As specified in
Violations of the MCL, MRDL, or treatment technique requirements, except where Tier 1 public notice is required or where the Department determines that Tier 1 public notice is required	~~.~~Under Regulation 11 for all monitoring and reporting violations or 11.33 for public notification.
Violations of the monitoring and testing procedure requirements, if the Department determines that Tier 2 public notice is required instead of Tier 3 public notice, considering potential public health impacts and the persistence of the violation	Under Regulation 11 for all monitoring and reporting violations or 11.33 for public notification.~~.~~
Failure to comply with the terms and schedule of any variance or exemption	11.43
For groundwater systems, failure to maintain at least 4-log treatment of viruses at the entry point	11.11(3)(e)(i)
Failure to complete corrective action	11.38(4)(a), 11.11(6)(c)(i) 11.16(9)

(b) For Tier 2 public notice the supplier must:

(i) Distribute public notice as soon as possible, but no later than 30 days after learning of the violation or situation.

(A) If the supplier posts the public notice, the notice must remain in place for as long as the violation or situation persists or for seven days, whichever is longer.

(B) The Department may grant a written extension for the initial public notice of up to three months from the time the supplier learns of the violation.

(I) The Department shall not grant an extension to the 30-day deadline for any unresolved violation(s) or allow across-the-board extensions for violations or situations requiring Tier 2 public notice.

(ii) Repeat the distribution of the public notice every three months as long as the violation or situation persists.

(A) Based on the circumstances, the Department may require a different repeat notice frequency.

(I) In no case will the repeat public notice frequency be less than annual.

(II) The Department shall not allow a less frequent repeat public notice for any of the following situations:

(a) ~~Until March 31, 2016, an MCL violation under 11.17.~~

(b) A~~Beginning April 1, 2016, a~~n MCL or treatment technique violation under 11.16.

(c) A treatment technique violation under 11.8.

(d) Across-the-board reductions for other ongoing violations requiring a Tier 2 repeat public notice.

(III) If the Department allows repeat public notices to be distributed less frequently than once every three months, the decision must be documented in writing.

(iii) Distribute the public notice and any repeat public notices in a form and manner that fits the specific situation and is designed to reach residential, transient, and non-transient consumers. The supplier must meet all of the following distribution requirements:

(A) For community water systems, unless otherwise directed in writing by the Department, the supplier must distribute public notice by:

(I) Mail or other direct delivery method to each customer and to other service connections; and

(II) Any other method designed to reach all other consumers regularly supplied by the system. Such consumers may include those who do not pay water bills or do not have service connection addresses (e.g., house renters, apartment dwellers, university students, nursing home patients, prison inmates, etc.). Other methods may include publication in a local newspaper, delivery of multiple copies for distribution by customers that provide their drinking water to others (e.g., apartment building owners or

large private employers), posting in public places supplied by the system or on the Internet, or delivery to community organizations.

(B) For non-community water systems, unless otherwise directed in writing by the Department, the supplier must distribute public notice by:

(I) Posting the notice in conspicuous locations throughout the distribution system frequented by consumers or by mail or direct delivery to each customer and service connection; and

(II) Any other method designed to reach all other consumers. Such consumers may include those supplied who may not see a posted notice because the posted notice is not in a location they routinely pass by. Other methods may include publication in a local newspaper or newsletter distributed to customers, use of E-mail to notify employees or students, or delivery of multiple copies in central locations (e.g., community centers).

11.33(4) Tier 3 Public Notice Form, Manner, and Frequency of Notice

(a) The supplier must distribute Tier 3 public notice for the following violations or situations specified in Table 11.33-IV:

TABLE 11.33-IV VIOLATION CATEGORIES AND OTHER SITUATIONS REQUIRING TIER 3 PUBLIC NOTICE

Violation or Situation Description	As specified in
Monitoring and reporting violations, except where a Tier 1 or Tier 2 public notice is required	Under Regulation 11 for all monitoring and reporting violations or 11.33 for public notification.
Failure to comply with a testing procedure, except where a Tier 1 or Tier 2 public notice is required	Under Regulation 11 for all monitoring and reporting violations or 11.33 for public notification.
Operation under a variance or an exemption	11.43
Availability of unregulated contaminant monitoring results	11.47
Exceedance of the fluoride secondary maximum contaminant level	11.19(7)
Revised Total Coliform Rule recordkeeping violations[1]	11.36(4)(d)

1 Beginning April 1, 2016.

(b) For Tier 3 public notice the supplier must:

(i) Distribute public notice as soon as possible, but no later than one year after learning of the violation or situation or beginning operation under a variance or an exemption.

(A) If the supplier is required to distribute more than one Tier 3 public notice, the supplier may use an annual report detailing all violations and situations that occurred during the previous 12 months instead of individual Tier 3 public notices, as long as the timing requirements specified in 11.33(4)(b)(i) are met.

(B) For community water systems, the supplier may use the consumer confidence report (CCR) specified in 11.34 to comply with the Tier 3 public notice requirements if the CCR meets all of the following criteria:

(I) The CCR is distributed to customers no later than 12 months after the supplier learns of the violation or situation.

(II) The Tier 3 public notice in the CCR complies with the content requirements specified in 11.33(5).

(III) The CCR is distributed as specified in 11.33(3)(b)(iii).

(C) If the supplier posts the public notice, the notice must remain in place for as long as the violation or situation persists or for seven days, whichever is longer.

(ii) Repeat the distribution of the public notice annually as long as the violation, variance, exemption, or other situation persists.

(A) For community water systems, the supplier may use the CCR specified in 11.34 to comply with the repeat Tier 3 public notice requirement if the requirements specified in 11.33(4)(b)(i)(B)(I-III) are met.

(iii) Distribute the public notice and any repeat public notices as specified in 11.33(3)(b)(iii).

11.33(5) Content of the Public Notice

(a) The supplier must include all of the following ten elements in all public notices:

(i) A description of the violation or situation, including the contaminant(s) of concern, and the applicable contaminant level(s).

(ii) When the violation or situation occurred.

(iii) Any potential adverse health effects from the violation or situation, including the standard language under 11.33(5)(b) or (c), whichever is applicable.

(iv) The population at risk, including sub-populations particularly vulnerable if exposed to the contaminant in drinking water.

(v) Whether alternative water supplies should be used.

(vi) What actions consumers should take, including when they should seek medical help, if known.

(vii) What the supplier is doing to correct the violation or situation.

(viii) When the supplier expects to return to compliance or resolve the situation.

(ix) The name, business address, and phone number for the supplier or designee that the consumer may call for additional information about the public notice.

(x) The following language, where applicable:

(A) “Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example,

people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail."

(b) For each applicable MCL, MRDL, treatment technique violation, or other situation requiring public notice specified in Table 11.33-V, the supplier must include in the public notice the corresponding health effects language specified in Table 11.33-VI.

(c) For all monitoring and testing procedure violations specified in Table 11.33-V, the supplier must include in the public notice the following language, exactly as written, and the specific information for the text in brackets:

(i) We are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not your drinking water meets health standards. During [compliance period], we "did not monitor or test" or "did not complete all monitoring or testing" for [contaminant(s)], and therefore cannot be sure of the quality of your drinking water during that time.

(d) If the system is operating under a variance or exemption, the supplier must include all of the following information in all public notices:

(i) An explanation of the reasons for the variance or exemption.

(ii) The date on which the variance or exemption was issued.

(iii) A brief status report on the steps the supplier is taking to install treatment, find alternative sources of water, or otherwise comply with the terms and schedule of the variance or exemption.

(iv) A notice of any opportunity for public input on the review of the variance or exemption.

(e) For systems supplying a large proportion of non-English speaking consumers, as determined by the Department, or if the Department has not yet made this determination, the supplier must include either of the following:

(i) Information in the appropriate language(s) regarding the importance of the public notice.

(ii) A telephone number or address where the consumer may contact the supplier to obtain a translated copy of the public notice or request assistance in the appropriate language.

(f) All public notices must meet all of the following criteria:

(i) Not include overly technical language or very small print.

(ii) Not be formatted in a way that defeats the purpose of the public notice.

(iii) Not include language that defeats the purpose of the public notice.

(iv) Be displayed in a conspicuous way when printed or posted.

11.33(6) General Distribution Requirements

(a) The supplier must distribute public notice to consumers supplied by the public water system.

(i) For wholesale systems, the wholesaler must distribute the public notice to the supplier(s) responsible for the consecutive system(s).

(A) For consecutive systems, the supplier responsible for the consecutive system must distribute the public notice received from the wholesaler to consumers supplied by the consecutive system.

(ii) If a system has a violation that affects only a portion of the distribution system that is physically or hydraulically isolated from other parts of the distribution system and the supplier is granted approval by the Department in writing the supplier may limit public notice distribution to only the consumers supplied by the portion of the distribution system which is out of compliance.

(b) Public Notice Distribution to New Customers

(i) For community water systems, the supplier must provide a copy of the most recent public notice for any continuing violation, variance or exemption, or other ongoing situation(s) requiring a public notice to all new customers no later than the time service begins.

(ii) For non-community water systems, the supplier must continuously post the public notice in conspicuous locations to inform new consumers of any continuing violation, variance or exemption, or other situation requiring a public notice for as long as the violation, variance, exemption, or other situation persists.

(c) Public Notice Distribution by the Department on Behalf of the Public Water System

(i) The Department may distribute the public notice on behalf of the supplier in accordance with the requirements specified in this rule.

(A) Regardless, the supplier remains responsible for ensuring that the requirements specified in this rule are met.

11.33(7) Public Notice Reporting Requirements

No later than 10 calendar days after completing initial or repeat public notice requirements, the supplier must submit a certification that states that the supplier has fully complied with the public notice requirements.

(a) The supplier must include a representative copy of each public notice distributed, published, posted, and/or made available to consumers and the media.

TABLE 11.33-V TABLE OF CPDWR VIOLATIONS AND OTHER SITUATIONS REQUIRING PUBLIC NOTICE[1]				
Contaminant	MCL/MRDL/TT violations		Monitoring & testing procedure violations	
	Tier of public notice required	Citation	Tier of public notice required	Citation
Violations of *Colorado Primary Drinking Water Regulations*[2]				
Microbiological Contaminants				
~~Total coliform[3]~~	~~2~~	~~11.17(9)(b)~~	~~3~~	~~11.17(3)~~
~~Fecal coliform/*E. coli*[3]~~	~~1~~	~~11.17(9)(a)~~	~~1[4], 3~~	~~11.17(6)~~
Total coliform (TT violations resulting from failure to conduct assessments or corrective actions, and violations resulting from failure to monitor or report)[5]	2	11.16(11~~2~~)(b~~)(i~~)	3	11.16(11~~6~~)(c-d) 11.16(12)(b)
Seasonal system failure to follow Department-approved start-up procedures before supplying water to the public or failure to submit certification of completed start-up procedures[5]	2	11.16(11~~2~~)(b)(ii)	3	11.16(11~~5~~)(d~~a~~)(iii)
E. coli (MCL violation, monitoring violations, and reporting violations)[5]	1	11.16~~(12)(a)~~(11)(a)	3	11.16(11~~9~~)(c~~a-b~~) 11.16(11~~0~~)(d~~b~~)~~(ii)~~ 11.16(12~~0~~)(a~~c~~)~~(ii~~) 11.16(12)(c)
E. coli (TT violations resulting from failure to conduct Level 2 assessments or corrective action)[5]	2	11.16(11~~2~~)(b)(i)	N/A	N/A
Turbidity MCL	2	11.8(2)(d)	3	11.8(2)(c)
Turbidity (for TT violations resulting from a single exceedance of maximum allowable turbidity level)	2, 1[3~~6~~]	11.8(2)(d)	3	11.8(2)(c), 11.8(2)(g), 11.46(7)
Surface Water Treatment Rule violations, other than violations resulting from single exceedance of maximum allowable turbidity level (TT)	2	11.8(2)(b)	3	11.8(2)(c), 11.46(7)
Surface Water Treatment Rule: Filter Backwash Recycle Rule	2	11.9(2)	3	11.9(3)
Surface Water Treatment Rule: Enhanced Treatment for *Cryptosporidium* Rule	2	11.10(3)(c), 11.10(4)(b)	2, 3[4~~7~~]	11.10(2)
Groundwater Rule	2	11.11(2)(d), 11.11(6)(c), 11.11(3)(e)(i), 11.38(4)	3	11.11(2)(c), 11.11(3), 11.11(4), 11.11(5), 11.11(6), 11.38(4)

Disinfectant residual (TT in the distribution system)[5]	2	11.8(3)(d)(i), 11.11(2)(d)(i)	3	11.8(3)(c)(i), 11.11(2)(c)(i)
Disinfectant residual for public water systems that haul water[5]	N/A	N/A	3	11.8(3)(c)(i)(B), 11.11(2)(c)(i)(B), 11.41(2)(b)
Inorganic Chemicals				
Antimony	2	11.19(5)	3	11.19(3)
Arsenic	2	11.19(5)	3	11.19(3)
Asbestos (fibers >10 µm)	2	11.19(5)	3	11.19(3)
Barium	2	11.19(5)	3	11.19(3)
Beryllium	2	11.19(5)	3	11.19(3)
Cadmium	2	11.19(5)	3	11.19(3)
Chromium (total)	2	11.19(5)	3	11.19(3)
Cyanide	2	11.19(5)	3	11.19(3)
Fluoride	2	11.19(5)	3	11.19(3)
Mercury (inorganic)	2	11.19(5)	3	11.19(3)
Nitrate	1	11.18(5)	1[5][8], 3	11.18(3)
Nitrite	1	11.18(5)	1[5][8], 3	11.18(3)
Total Nitrate and Nitrite	1	11.18(5)	3	11.18(3)
Selenium	2	11.19(5)	3	11.19(3)
Thallium	2	11.19(5)	3	11.19(3)
Lead and Copper Rule				
Lead and Copper Rule (TT)	2	11.26(3)(e), 11.26(4)(k), 11.26(5)(i), 11.26(6)(d), 11.26(7)(f)	3	11.26(2)(d), 11.26(4), 11.26(5)
Synthetic Organic Chemicals (SOCs)				
2,4–D	2	11.21(6)	3	11.21(3)(d)
2,4,5–TP (Silvex)	2	11.21(6)	3	11.21(3)(d)
Alachlor	2	11.21(6)	3	11.21(3)(d)
Atrazine	2	11.21(6)	3	11.21(3)(d)
Benzo(a)pyrene (PAHs)	2	11.21(6)	3	11.21(3)(d)
Carbofuran	2	11.21(6)	3	11.21(3)(d)
Chlordane	2	11.21(6)	3	11.21(3)(d)
Dalapon	2	11.21(6)	3	11.21(3)(d)
Di (2-ethylhexyl) adipate	2	11.21(6)	3	11.21(3)(d)
Di (2-ethylhexyl) phthalate	2	11.21(6)	3	11.21(3)(d)
Dibromochloropropane	2	11.21(6)	3	11.21(3)(d)
Dinoseb	2	11.21(6)	3	11.21(3)(d)
Dioxin (2,3,7,8-TCDD)	2	11.21(6)	3	11.21(3)(d)

Diquat	2	11.21(6)	3	11.21(3)(d)
Endothall	2	11.21(6)	3	11.21(3)(d)
Endrin	2	11.21(6)	3	11.21(3)(d)
Ethylene dibromide	2	11.21(6)	3	11.21(3)(d)
Glyphosate	2	11.21(6)	3	11.21(3)(d)
Heptachlor	2	11.21(6)	3	11.21(3)(d)
Heptachlor epoxide	2	11.21(6)	3	11.21(3)(d)
Hexachlorobenzene	2	11.21(6)	3	11.21(3)(d)
Hexachlorocyclo-pentadiene	2	11.21(6)	3	11.21(3)(d)
Lindane	2	11.21(6)	3	11.21(3)(d)
Methoxychlor	2	11.21(6)	3	11.21(3)(d)
Oxamyl (Vydate)	2	11.21(6)	3	11.21(3)(d)
Pentachlorophenol	2	11.21(6)	3	11.21(3)(d)
Picloram	2	11.21(6)	3	11.21(3)(d)
Polychlorinated biphenyls (PCBs)	2	11.21(6)	3	11.21(3)(d)
Simazine	2	11.21(6)	3	11.21(3)(d)
Toxaphene	2	11.21(6)	3	11.21(3)(d)
Volatile Organic Chemicals (VOCs)				
Benzene	2	11.21(6)	3	11.21(3)(b)
Carbon tetrachloride	2	11.21(6)	3	11.21(3)(b)
Chlorobenzene (monochlorobenzene)	2	11.21(6)	3	11.21(3)(b)
o-Dichlorobenzene	2	11.21(6)	3	11.21(3)(b)
p-Dichlorobenzene	2	11.21(6)	3	11.21(3)(b)
1,2-Dichloroethane	2	11.21(6)	3	11.21(3)(b)
1,1-Dichloroethylene	2	11.21(6)	3	11.21(3)(b)
cis-1,2-Dichloroethylene	2	11.21(6)	3	11.21(3)(b)
trans-1,2-Dichloroethylene	2	11.21(6)	3	11.21(3)(b)
Dichloromethane	2	11.21(6)	3	11.21(3)(b)
1,2-Dichloropropane	2	11.21(6)	3	11.21(3)(b)
Ethylbenzene	2	11.21(6)	3	11.21(3)(b)
Styrene	2	11.21(6)	3	11.21(3)(b)
Tetrachloroethylene	2	11.21(6)	3	11.21(3)(b)
Toluene	2	11.21(6)	3	11.21(3)(b)
1,2,4-Trichlorobenzene	2	11.21(6)	3	11.21(3)(b)
1,1,1-Trichloroethane	2	11.21(6)	3	11.21(3)(b)
1,1,2-Trichloroethane	2	11.21(6)	3	11.21(3)(b)
Trichloroethylene	2	11.21(6)	3	11.21(3)(b)
Vinyl chloride	2	11.21(6)	3	11.21(3)(b)

Xylenes (total)	2	11.21(6)	3	11.21(3)(b)
Radionuclides				
Beta/photon emitters	2	11.22(5)	3	11.22(3)(c)
Alpha emitters	2	11.22(5)	3	11.22(3)(b)
Combined radium (226 & 228)	2	11.22(5)	3	11.22(3)(b)
Uranium	2	11.22(5)	3	11.22(3)(b)
Disinfection Byproducts (DBPs), Disinfection 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). The Department sets standards for controlling the levels of disinfectants and DBPs in drinking water, including trihalomethanes (THMs) and haloacetic acids (HAAs).				
Total trihalomethanes (TTHMs)	2	11.25(1)(g)	3	11.25(1)(c)
Haloacetic Acids (HAA5)	2	11.25(1)(g)	3	11.25(1)(c)
Bromate	2	11.25(3)(c)	3	11.25(3)(e)
Chlorite	2	11.25(2)(c)	3	11.25(2)(e)
Chlorine (MRDL)	2	11.23(1)(e)	3	11.23(1)(c)
Chloramine (MRDL)	2	11.23(1)(e)	3	11.23(1)(c)
Chlorine dioxide (MRDL), where any 2 consecutive daily samples at entrance to distribution system only are above MRDL	2	11.23(2)(e)(ii)	2~~6~~, 3	11.23(2)(c)
Chlorine dioxide (MRDL), where sample(s) in distribution system the next day are also above MRDL	1~~7~~~~10~~	11.23(2)(e)(i)	1	11.23(2)(c)
Control of DBP precursors—TOC (TT)	2	11.24(9)	3	11.24(3)
Disinfection profiling and benchmarking	2	11.8(4)(d), 11.8(5)(d)	3	11.8(4), 11.8(5)
Development of monitoring plan	N/A	N/A	3	11.25(1)(d)
Other Treatment Techniques				
Acrylamide (TT)	2	11.21(6)(b)	N/A	N/A
Epichlorohydrin (TT)	2	11.21(6)(b)	N/A	N/A
Water hauler failure to operate in accordance with Department-approved operational plan	2	11.41(3)(a)	N/A	N/A
Storage Tanks (TT)~~5~~	2	11.28(4)(b)	N/A	N/A
Unregulated Contaminant Monitoring~~8~~~~11~~				
Unregulated contaminants	N/A	N/A	3	11.47
Nickel	N/A	N/A	3	11.19(3)(b)
Public Notification for Variances and Exemptions				
Operation under a variance or exemption	3	11.43(10)(f)~~9~~~~12~~	N/A	N/A
Violation of conditions of a variance or exemption	2	11.43(10)(f)~~10~~~~13~~	N/A	N/A

Other Situations Requiring Public Notification				
Fluoride secondary maximum contaminant level (SMCL) exceedance	3	11.19(7)	N/A	N/A
Exceedance of nitrate MCL for non-community water systems, as allowed by the Department	1	11.18(2)(d)	N/A	N/A
Availability of unregulated contaminant monitoring data	3	11.47	N/A	N/A
Waterborne disease outbreak	1	11.3(81)	N/A	N/A
Other waterborne emergency~~11~~~~14~~	1	N/A	N/A	N/A
Source Water Sample Positive for GWR Fecal indicators: *E. coli*, enterococci, or coliphage	1	11.11(4)(d)(i), 11.11(5)(c)(i)	N/A	N/A
Waiver of Disinfection	N/A	N/A	N/A	11.13(2)
Backflow Prevention and Cross Connection Control Rule violations~~15~~	2	11.39(6)(a)	3	11.39(6)(b)
Other situations as determined by the Department	1, 2, 3~~12~~6	N/A	N/A	N/A

1 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 discretion, 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 specified in Table 11.33-V, as authorized under 11.33(2)(a) and 11.33(3)(a).

2 The term "Violations of *Colorado Primary Drinking Water Regulations*" is used here to include violations of MCL, MRDL, treatment technique, monitoring, and testing procedure requirements.

~~3 Effective until March 31, 2016.~~

~~4 Failure to test for fecal coliform or *E. coli* requires Tier 1 public notice if testing is not done after any repeat sample is positive for coliform. All other total coliform monitoring and testing procedure violations require Tier 3 public notice.~~

~~5 Effective beginning April 1, 2016.~~

~~3~~6 Systems with treatment technique violations involving a single exceedance of a maximum turbidity limit under 11.8(2)(b) are required to consult with the Department no later than 24 hours after learning of the violation. Based on this consultation, the Department may elevate the violation to Tier 1. If the supplier is unable to make contact with the Department in the 24-hour period, the violation is automatically elevated to Tier 1.

~~4~~7 Failure to collect three or more samples for *Cryptosporidium* analysis requires a special Tier 2 public notice as specified in 11.10(2)(e). All other monitoring and testing procedure violations require Tier 3 public notice.

~~5~~8 Failure to collect a confirmation sample no later than 24 hours for nitrate or nitrite after an initial sample exceeds the MCL requires Tier 1 public notice. Other monitoring violations for nitrate require Tier 3 public notice.

~~6~~9 Failure to monitor for chlorine dioxide at the entry point the day after exceeding the MRDL at the entrance to the distribution system requires Tier 2 public notice.

~~7~~10 If any daily sample collected at the entry point exceeds the MRDL for chlorine dioxide and one or more samples collected in the distribution system the next day exceed the MRDL, Tier 1 public notice is required. Failure to collect the required samples in the distribution system after the MRDL is exceeded at the entry point also triggers Tier 1 public notice.

~~8~~11 Some water systems must monitor for certain unregulated contaminants under 11.47.

912 This citation refers to §§1415 and 1416 of the Safe Drinking Water Act. §§1415 and 1416 require that "a schedule prescribed . . . for a public water system granted a variance shall require compliance by the system . . ."

103 In addition to §§1415 and 1416 of the Safe Drinking Water Act, 11.43(3) of the *Colorado Primary Drinking Water Regulations* specifies the items and schedule milestones that must be included in a variance for small systems.

1114 Other waterborne emergencies require a Tier 1 public notice under 33.2(a) for situations that do not meet the definition of a waterborne disease outbreak specified in 11.3, 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.

~~15 Effective beginning January 1, 2016.~~

1216 The Department may place other situations in any tier believed appropriate, based on threat to public health.

TABLE 11.33-VI TABLE OF STANDARD HEALTH EFFECTS LANGUAGE FOR PUBLIC NOTIFICATION			
Contaminant	MCLG mg/L	MCL mg/L	Standard health effects language for public notification
Colorado Primary Drinking Water Regulations			
Microbiological Contaminants			
Total coliform[1]	Zero	See footnote 12	Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially-harmful, bacteria may be present. Coliforms were found in more samples than allowed and this was a warning of potential problems.
Fecal coliform/*E. coli*[1]	Zero	Zero	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.
Fecal indicators (GWR)	Zero	TT	Fecal indicators are microbes whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term health effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.
E. coli (GWR)	None	TT	Fecal indicators are microbes whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term health effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.
Enterococci (GWR)	None	TT	Fecal indicators are microbes whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term health effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.

Coliphage (GWR)	.	.	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.
Groundwater Rule (GWR) TT violations	None	TT	Inadequately treated or inadequately protected water may contain disease-causing organisms. These organisms can cause symptoms such as diarrhea, nausea, cramps, and associated headaches.
A violation that occurred for failure to conduct an assessment not triggered by the presence of *E. coli* and/or violations for corrective action~~3~~	.	TT	Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, waterborne pathogens may be present or that a potential pathway exists through which contamination may enter the drinking water distribution system. We found coliforms indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct assessments to identify problems and to correct any problems that are found. [THE SUPPLIER MUST ALSO INCLUDE THE FOLLOWING APPLICABLE SENTENCES.] We failed to conduct the required assessment. We failed to correct all identified sanitary defects that were found during the assessment(s).
A violation that occurred for failure to conduct an assessment triggered by the presence of *E. coli* and/or violations for corrective action[3]	.	TT	*E. coli* are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Human pathogens in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a greater health risk for infants, young children, the elderly, and people with severely compromised immune systems. We violated the standard for *E. coli,* indicating the need to look for potential problems in water treatment or distribution. When this occurs, we are required to conduct a detailed assessment to identify problems and to correct any problems that are found. [THE SUPPLIER MUST ALSO INCLUDE THE FOLLOWING APPLICABLE SENTENCES.] We failed to conduct the required assessment. We failed to correct all identified sanitary defects that were found during the assessment that we conducted.
E. coli MCL violations~~3~~	Zero	See footnote 2~~4~~	*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.

A violation occurred for for failure to conduct seasonal start-up procedures	None	TT	Failure to perform the required start-up procedures prior to serving water to the public has the potential to distribute contaminated water. When our system shuts down operation, the lack of pressure in our pipes can allow the entry of bacteria and other disease-causing microorganisms into the drinking water. By performing start-up procedures such as flushing the pipes, disinfecting the water, and collecting a coliform bacteria sample before we open, we can be sure that we are providing you with safe water.
Turbidity	None	TT	Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea and associated headaches.
Disinfectant residual~~3~~	N/A	TT (in the distribution system)	Disinfectant residual serves as one of the final barriers to protect public health. Lack of an adequate disinfectant residual may increase the likelihood that disease-causing organisms are present.
Surface Water Treatment Rule, Surface Water Treatment Rule: Filter Backwash Recycle Rule, and Surface Water Treatment Rule: Enhanced Treatment for Cryptosporidium Rule violations			
Giardia lamblia	Zero	TT~~35~~	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.
Viruses~~a~~	.	.	.
Heterotrophic plate count (HPC) bacteria~~46~~	.	.	.
Legionella	.	.	.
Cryptosporidium	.	.	.
Inorganic Chemicals			
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.
Arsenic	0	0.010	Some people who drink water containing arsenic in excess of the MCL over many years could experience skin damage or problems with their circulatory system, and may have an increased risk of getting cancer.
Asbestos (10 µm)	7 MFL	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.
Barium	2	2	Some people who drink water containing barium in excess of the MCL over many years could experience an increase in their blood pressure.
Beryllium	0.004	0.004	Some people who drink water containing beryllium well in excess of the MCL over many years could develop intestinal lesions.
Cadmium	0.005	0.005	Some people who drink water containing cadmium in excess of the MCL over many years could experience kidney damage.

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.
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.
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.
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.
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.
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.
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.
Selenium	0.05	0.05	Selenium is an essential nutrient. However, some people who drink water containing selenium in excess of the MCL over many years could experience hair or fingernail losses, numbness in fingers or toes, or problems with their circulation.
Thallium	0.0005	0.002	Some people who drink water containing thallium in excess of the MCL over many years could experience hair loss, changes in their blood, or problems with their kidneys, intestines, or liver.
Lead and Copper			
Lead	Zero	TT[57]	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.
Copper	1.3	TT[68]	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.
Synthetic Organic Chemicals (SOCs)			

2,4–D	0.07	0.07	Some people who drink water containing the weed killer 2,4–D well in excess of the MCL over many years could experience problems with their kidneys, liver, or adrenal glands.
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.
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.
Atrazine	0.003	0.003	Some people who drink water containing atrazine well in excess of the MCL over many years could experience problems with their cardiovascular system or reproductive difficulties.
Benzo(a)pyrene (PAHs)	Zero	0.0002	Some people who drink water containing benzo(a)pyrene in excess of the MCL over many years may experience reproductive difficulties and may have an increased risk of getting cancer.
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.
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.
Dalapon	0.2	0.2	Some people who drink water containing dalapon well in excess of the MCL over many years could experience minor kidney changes.
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 general toxic effects such as weight loss, liver enlargement or possible reproductive difficulties.
Di (2-ethylhexyl) phthalate	Zero	0.006	Some people who drink water containing di (2-ethylhexyl) phthalate well in excess of the MCL over many years may have problems with their liver, or experience reproductive difficulties, and may have an increased risk of getting cancer.
Dibromochloro-propane (DBCP)	Zero	0.0002	Some people who drink water containing DBCP in excess of the MCL over many years could experience reproductive difficulties and may have an increased risk of getting cancer.
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.
Dioxin (2,3,7,8-TCDD)	Zero	$3x10^{-8}$	Some people who drink water containing dioxin in excess of the MCL over many years could experience reproductive difficulties and may have an increased risk of getting cancer.
Diquat	0.02	0.02	Some people who drink water containing diquat in excess of the MCL over many years could get cataracts.
Endothall	0.1	0.1	Some people who drink water containing endothall in excess of the MCL over many years could experience problems with their stomach or intestines.

Endrin	0.002	0.002	Some people who drink water containing endrin in excess of the MCL over many years could experience liver problems.
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.
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.
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.
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.
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.
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.
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.
Methoxychlor	0.04	0.04	Some people who drink water containing methoxychlor in excess of the MCL over many years could experience reproductive difficulties.
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.
Pentachlorophenol	Zero	0.001	Some people who drink water containing pentachlorophenol in excess of the MCL over many years could experience problems with their liver or kidneys, and may have an increased risk of getting cancer.
Picloram	0.5	0.5	Some people who drink water containing picloram in excess of the MCL over many years could experience problems with their liver.
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.
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.
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.
Volatile Organic Chemicals (VOCs)			

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.
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.
Chlorobenzene (monochloro- benzene)	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.
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.
p-Dichlorobenzene	0.075	0.075	Some people who drink water containing p-dichlorobenzene in excess of the MCL over many years could experience anemia, damage to their liver, kidneys, or spleen, or changes in their blood.
1,2-Dichloroethane	Zero	0.005	Some people who drink water containing 1,2-dichloroethane in excess of the MCL over many years may have an increased risk of getting cancer.
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.
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.
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.
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.
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.
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.
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.
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.
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.
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.

1,1,1-Trichloroethane	0.2	0.2	Some people who drink water containing 1,1,1-trichloroethane in excess of the MCL over many years could experience problems with their liver, nervous system, or circulatory system.
1,1,2-Trichloroethane	0.003	0.005	Some people who drink water containing 1,1,2-trichloroethane well in excess of the MCL over many years could have problems with their liver, kidneys, or immune systems.
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.
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.
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.
Radionuclides			
Beta/photon emitters	Zero	4 mrem/yr	Certain minerals are radioactive and may emit forms of radiation known as photons and beta radiation. Some people who drink water containing beta and photon emitters in excess of the MCL over many years may have an increased risk of getting cancer.
Alpha emitters	Zero	15 pCi/L	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 (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.
Uranium	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.
Disinfection Byproducts (DBPs), Disinfection 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). The Department sets standards for controlling the levels of disinfectants and DBPs in drinking water, including trihalomethanes (THMs) and haloacetic acids (HAAs).[18]			
Total trihalomethanes (TTHMs)	N/A	0.080[7~~9~~]	Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous system, and may have an increased risk of getting cancer.
Haloacetic Acids (HAA)	N/A	0.060[8~~10~~]	Some people who drink water containing haloacetic acids in excess of the MCL over many years may have an increased risk of getting cancer.
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.
Chlorite	0.08	1.0	Some infants and young children who drink water containing chlorite in excess of the MCL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorite in excess of the MCL. Some people may experience anemia.

Chlorine	4 (MRDLG)	4.0 (MRDL)	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.
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.
Chlorine dioxide, where any 2 consecutive daily samples collected at the entrance to the distribution system are above the MRDL.	0.8 (MRDLG)	0.8 (MRDL)	Some infants and young children who drink water containing chlorine dioxide in excess of the MRDL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorine dioxide in excess of the MRDL. Some people may experience anemia. Add for public notification only: The chlorine dioxide 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.
Chlorine dioxide, where one or more distribution system samples are above the MRDL.	0.8 (MRDLG)	0.8 (MRDL)	Some infants and young children who drink water containing chlorine dioxide in excess of the MRDL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorine dioxide in excess of the MRDL. Some people may experience anemia. Add for public notification only: The chlorine dioxide violations reported today include exceedances of the State 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.
Control of DBP precursors (TOC)	None	TT	Total organic carbon (TOC) has no health effects. However, total organic carbon provides a medium for the formation of disinfection byproducts. These byproducts include trihalomethanes (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.
Other Treatment Techniques			
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.
Epichlorohydrin	Zero	TT	Some people who drink water containing high levels of epichlorohydrin over a long period of time could experience stomach problems, and may have an increased risk of getting cancer.

Backflow Prevention and Cross-Connection Control Rule~~11~~	None	TT	Uncontrolled cross connections can lead to inadvertent contamination of the drinking water. [THE SUPPLIER MUST ALSO INCLUDE THE FOLLOWING APPLICABLE SENTENCES.] We have installed or permitted an uncontrolled cross connection. We failed to notify the Department of a backflow contamination event. We failed to complete the testing requirements for backflow prevention devices. We failed to comply with the requirements for surveying our system for cross connections.

~~1 Effective until March 31, 2016.~~

1~~2~~ If the supplier is collecting at least 40 samples per month, no more than 5.0 percent of the monthly samples may be positive for total coliforms. If the supplier is collecting fewer than 40 samples per month, no more than one sample per month may be positive for total coliforms.

~~3 Effective beginning April 1, 2016.~~

2~~4~~ *E. coli*-positive repeat sample following a total coliform-positive routine sample, total coliform-positive repeat sample following an *E. coli*-positive routine sample, failure to collect all required repeat samples following an *E. coli*-positive routine sample, or failure to analyze a total-coliform positive repeat sample for *E. coli*.

3~~5~~ 11.8 treatment technique violations that involve turbidity exceedances may use the health effects language for turbidity instead.

4~~6~~ 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 disinfection in the distribution system.

5~~7~~ Action Level = 0.015 mg/L

6~~8~~ Action Level = 1.3 mg/L

7~~9~~ The MCL for total trihalomethanes is the sum of the concentrations of the individual trihalomethanes.

8~~10~~ The MCL for haloacetic acids is the sum of the concentrations of the individual haloacetic acids.

~~11 Effective beginning January 1, 2016.~~

11.34 CONSUMER CONFIDENCE REPORT (CCR) RULE

11.34(1) Applicability and Definitions

(a) For community water systems, the supplier must distribute an annual consumer confidence report that complies with the requirements specified in this rule.

(i) For a wholesale system that supplies water to a consecutive community water system(s), the wholesaler must provide the applicable information to the supplier(s) responsible for the consecutive system(s) necessary to complete the CCR.

(b) "CONSUMER CONFIDENCE REPORT" or "CCR" means an annual report that includes information on the quality of the water supplied by a public water system and characterizes the risks, if any, from exposure to contaminants detected in the drinking water in an accurate and understandable manner.

(c) "DETECTED" means a sample result was greater than or equal to (≥) the detection limits specified in 11.46 for disinfection byproducts and individual rules for inorganic chemical contaminants, volatile organic chemical contaminants, synthetic organic chemical contaminants, disinfection byproducts, and radioactive contaminants.

(d) "REGULATED CONTAMINANT" means a contaminant subject to a MCL, action level, MRDL, or treatment technique under the *Colorado Primary Drinking Water Regulations*.

11.34(2) Content Requirements for the CCR

(a) General Content Requirements for the CCR

(i) The supplier must include data collected for compliance purposes during the previous calendar year in the CCR.

(A) If the supplier sampled for a contaminant less frequently than annually, the supplier must include the date and result(s) of the most recent sampling for that contaminant.

(I) The supplier must include a brief statement that explains that the data presented are from the most recent sampling conducted.

(II) The supplier is not required to include data older than five years.

(ii) The supplier must include all of the following definitions in the CCR:

(A) *Maximum Contaminant Level Goal* (MCLG) means the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

(B) *Maximum Contaminant Level* (MCL) means the highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

(iii) If the CCR includes any of the following terms, the supplier must include the applicable definition(s) in the CCR:

(A) *Treatment Technique* means a required process intended to reduce the level of a contaminant in drinking water.

(B) *Action Level* means the concentration of a contaminant, which if exceeded, triggers treatment or other requirements that a water system must comply with.

(C) *Maximum residual disinfectant level goal* (MRDLG) means the level of a drinking water disinfectant below which, there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

(D) *Maximum residual disinfectant level* (MRDL) means the highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

(E) *Variances and Exemptions* mean that the supplier has Department permission to not meet an MCL or a treatment technique requirement under certain conditions.

(F) *Level 1 assessment* means a study of the water system to identify possible problems and determine, if possible, why total coliform bacteria have been found in our water system.

(G) *Level 2 assessment* means a very detailed study of the water system to identify possible 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.

(iv) The supplier must include in the CCR the telephone number for the system that the consumer may call for additional information about the CCR.

(v) The supplier must include in the CCR information about opportunities for public participation in decisions that may affect the quality of the water (e.g., time and place of regularly scheduled board meetings).

(vi) For systems supplying a large proportion of non-English speaking consumers, as determined by the Department, the supplier must include either of the following in the CCR:

(A) Information in the appropriate language(s) regarding the importance of the CCR.

(B) A telephone number or address where the consumer may contact the supplier to obtain a translated copy of the CCR or request assistance in the appropriate language.

(vii) For each violation that occurs during the year covered by the CCR specified in 11.34(2)(d)(vi), the supplier must include a clear and readily understandable explanation of each violation, any potential adverse health effects, and the steps the supplier has taken to correct the violation.

(b) Language Requirements for the CCR

(i) The supplier must include all of the following language in the CCR, exactly as written:

(A) “Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants

does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline (800-426-4791)."

(B) "Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791)."

(ii) The supplier must also include in the CCR a brief explanation regarding contaminants which may reasonably be expected to be found in drinking water including bottled water.

(A) The supplier may use the following language or comparable language:

(I) "The sources of drinking water include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source water include:

- Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.

- Inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.

- Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban storm water runoff, and residential uses.

- Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and also may come from gas stations, urban storm water runoff, and septic systems.

- Radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, the Colorado Department of Public Health and Environment prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration regulations establish limits for contaminants in bottled water that must provide the same protection for public health."

(iii) The supplier must include in the CCR a short informational statement about lead in drinking water and its effects on children.

(A) The supplier may use the following language, providing the specific information for the text in brackets, or other Department-approved language written by the supplier:

(I) If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. [NAME OF WATER SYSTEM] is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://water.epa.gov/drink/info/lead.

(c) Source Water Content Requirements for the CCR

(i) The supplier must include all of the following information about each of the system's sources in the CCR:

(A) The type of source (e.g., surface water or groundwater).

(B) The commonly used name(s) of the source(s), if any.

(C) The general location(s) of the source(s).

(D) If a source water assessment has been completed, the supplier must include all of the following:

(I) Notification of the availability of this information.

(II) How to obtain this information.

(III) If the Department has provided a source water assessment, a brief summary of the system's susceptibility to potential sources of contamination, using language provided by the Department or written by the supplier.

(d) Detected Contaminant Content Requirements for the CCR

(i) The supplier must include in the CCR information on all of the following detected contaminants, except Cryptosporidium:

(A) Regulated contaminants.

(B) Unregulated contaminants that the supplier must sample for under 11.47.

(ii) The information for detected contaminants must be displayed in a table or several adjacent tables.

(A) If the supplier chooses to include information related to any additional sample results not required by 11.34(2)(d)(i), the supplier must display this information separately from the table(s) of detected contaminants.

(iii) For each regulated contaminant, the table(s) of detected contaminants must include all of the following:

(A) The MCL expressed as a whole number as specified in Table 11.34-I.

(I) If there is no MCL for a detected contaminant, the supplier must show in the table(s) that there is a treatment technique, or specify the action level, applicable to that contaminant.

(B) The MCLG expressed in the same units as the MCL.

(C) For contaminants subject to an MCL, except total coliforms and *E. coli*, the highest contaminant level used to determine compliance and the range of detected levels as follows:

(I) If compliance with the MCL is determined annually or less frequently, the highest detected level and the range of all detected levels expressed in the same units as the MCL.

(II) If compliance with the MCL is determined based on a RAA, the RAA and range of all detected sample results expressed in the same units as the MCL.

(III) If compliance with the MCL is determined based on an LRAA, the highest LRAA and the range of all LRAAs expressed in the same units as the MCL.

(a) For the TTHM and HAA5 MCLs, the supplier must also include the range of all individual sample results expressed in the same units as the MCL.

(b) For the TTHM and HAA5 MCLs, if more than one LRAA exceeds the MCL, the supplier must include the LRAAs for all sampling locations that exceeded the MCL.

(D) For turbidity reported under 11.8, the highest single turbidity measurement and the lowest monthly percentage of samples meeting the turbidity limit specified in 11.8 for the filtration technology being used.

(I) The supplier should include an explanation of the reasons for measuring turbidity.

(E) For lead and copper, the 90th percentile value(s) and the number of sampling sites that exceeded the action levels.

~~(F) For total coliform until March 31, 2016:~~

~~(I) If the supplier collects less than (<) 40 total coliform samples per month, the highest number of total coliform-positive samples in a month.~~

~~(II) If the supplier collects greater than or equal to (≥) 40 samples per month, the highest monthly percentage of total coliform-positive samples.~~

~~(G) For fecal coliform until March 31, 2016, the total number of fecal coliform-positive samples.~~

(F~~H~~) For *E. coli*, the total number of *E. coli*-positive samples that are not special purpose samples.

(iv) For each unregulated contaminant for which the supplier must monitor, the table(s) of detected contaminants must include the average of the sample results and the range of all detected levels.

(A) The supplier may include a brief explanation of the reasons for monitoring for unregulated contaminants.

(v) The table(s) of detected contaminants must also include the likely source(s) of the contaminants to the best of the supplier's knowledge.

(A) If the supplier lacks specific information on the likely source, the supplier must include one or more of the typical sources for that contaminant listed in Table 11.34-I that is most applicable to the system.

(vi) The table(s) of detected contaminants must clearly identify any data that show a violation of any of the requirements listed below that occurred during the year covered by the CCR:

(A) MCLs.

(B) MRDLs.

(C) Treatment techniques.

(D) Monitoring and reporting of compliance data.

(E) Filtration and disinfection as specified in 11.8.

(F) Recordkeeping of compliance data.

(G) Special monitoring requirements as specified in 11.47 and 11.20.

(H) If applicable, the terms of a variance, an exemption, or an administrative or judicial order.

(vii) If a system supplies water through multiple hydraulically independent distribution systems that use different sources, the supplier should identify each separate distribution system in the CCR and should include a separate column for each independent distribution system in the table(s) of detected contaminants.

(A) Alternatively, the supplier may produce separate CCRs that only include data for each independent distribution system.

(e) Additional Content Requirements for the CCR

(i) If the supplier is required to comply with 11.11:

(A) The supplier must include all of the following information in the CCR about any significant deficiency that has not been corrected at the time of delivery of the CCR:

(I) The nature of the significant deficiency(s).

(II) The date(s) the significant deficiency(s) was identified by the Department.

(III) For each significant deficiency that was required to be addressed under 11.38(3) that has not been addressed, the Department-approved plan and schedule for correction, including interim measures, progress to date, and any interim measures completed.

(B) The supplier must continue to include the information under 11.34(2)(e)(i)(A) each year until the Department determines that the significant deficiency was corrected under 11.38(3).

(C) If directed by the Department, the supplier must include all of the following information for any significant deficiency that was corrected before the CCR is issued:

(I) Inform the customers of the significant deficiency.

(II) How the deficiency was corrected.

(III) The date of correction.

(D) The supplier must include all of the following information in the CCR about any fecal indicator-positive groundwater source sample:

(I) The source of the fecal contamination, if the source is known.

(II) The date(s) of the fecal indicator-positive groundwater source sample(s).

(III) For each fecal indicator-positive contamination event in the groundwater source that was required to be addressed under 11.11(6)(b) that has not been addressed, the Department-approved plan and schedule for correction, including interim measures, progress to date, and any interim measures completed.

(IV) If the fecal contamination in the groundwater source was addressed under 11.11(6), the date of such action.

(V) The applicable potential health effects language specified in Table 11.34-I for a fecal indicator-positive groundwater source sample(s) that was not invalidated by the Department.

(E) The supplier must continue to include the information specified in 11.34(2)(e)(i)(D) each year until the Department determines that the fecal contamination in the groundwater source was addressed under 11.11(6)(b).

(ii) If the supplier has nitrate sample result(s) greater than (>) 5 mg/L but less than (<) the MCL, the supplier must include a short informational statement about nitrate's effect on children.

(A) The supplier may use the following language or other Department-approved language written by the supplier:

(I) "Nitrate in drinking water at levels above 10 ppm is a health risk for infants of less than six months of age. High nitrate levels in drinking water can cause blue baby syndrome. Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. If you are caring for an infant you should ask advice from your health care provider."

(iii) If the supplier has arsenic sample result(s) greater than (>) 0.005 mg/L but less than or equal to (≤) 0.010 mg/L, the supplier must include a short informational statement about arsenic.

(A) The supplier may use the following language or other Department-approved language written by the supplier:

(I) "While your drinking water meets the EPA's standard for arsenic, it does contain low levels of arsenic. The EPA's standard balances the current understanding of arsenic's possible health effects against the costs of removing arsenic from drinking water. The EPA continues to research the health effects of low levels of arsenic, which is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems."

(iv) If the supplier sampled for *Cryptosporidium* and the sample results show that *Cryptosporidium* may be present in the source water or the finished water, the supplier must include all of the following:

(A) A summary of the sample results.

(B) An explanation of the significance of the sample results.

(v) If the supplier sampled for radon and the sample results show that radon may be present in the finished water, the supplier must include all of the following:

(A) The sample results.

(B) An explanation of the significance of the sample results.

(vi) If a supplier is operating under a variance or an exemption as specified in 11.43, the supplier must include all of the following:

(A) An explanation of the reasons for the variance or exemption.

(B) The date on which the variance or exemption was issued.

(C) A brief status report on the steps the supplier is taking to install treatment, find alternative sources of water, or otherwise comply with the terms and schedules of the variance or exemption.

(D) A notice of any opportunity for public input in the review or renewal, of the variance or exemption.

(vii) For surface water systems, if the supplier failed to install adequate filtration or disinfection equipment or processes, or has had a failure of such equipment or processes which are a violation as specified in 11.8, the supplier must include the following language exactly as written as part of the explanation of potential adverse health effects:

(A) "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."

(viii) If the supplier failed to take one or more actions for lead and copper control as specified in 11.26, the supplier must include the applicable language from Table 11.34-I.

(ix) If the supplier failed to comply with the acrylamide and epichlorohydrin certification requirements as specified in 11.21(5), the supplier must include the applicable language from Table 11.34-I.

(x) The supplier must include a clear and readily understandable explanation of any violation specified in 11.34(2)(d)(vi), including the length of the violation, any potential adverse health effects, and the actions the supplier has taken to correct the violation.

(A) To describe the potential adverse health effects, the supplier must include the applicable language from Table 11.34-I.

(xi) If the supplier has collected additional voluntary samples and the sample results show the presence of other contaminants in the finished water, the Department strongly encourages the supplier to report any sample results which may show a health concern.

(A) To determine if results may show a health concern, the Department recommends that the supplier find out if EPA has proposed a National Primary Drinking Water Regulation or has issued a health advisory for that contaminant by calling the Safe Drinking Water Hotline (800-426-4791).

(B) Detects above a proposed MCL or health advisory level show possible health concerns. For such contaminants, the Department recommends that the supplier include all of the following:

(I) The sample results.

(II) An explanation of the significance of the sample results noting the existence of a health advisory or a proposed regulation.

(xii) ~~Beginning January 1, 2016, if~~If a backflow prevention and cross-connection control violation occurs under 11.39(6), the supplier must include the following.

(A) The following language exactly as written:

(I) "We have an inadequate backflow prevention and cross-connection control program. Uncontrolled cross connections can lead to inadvertent contamination of the drinking water."

(B) If applicable, one or both of the following statements:

(I) We have installed or permitted an uncontrolled cross connection.

(II) We experienced a backflow contamination event.

(xiii) ~~Beginning April 1, 2016, i~~If the supplier is required to conduct a Level 1 assessment and/or a Level 2 assessment that is not triggered by an *E. coli* MCL violation, the supplier must include the following:

(A) The following language exactly as written:

(I) "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) The following applicable language for a Level 1 assessment and/or a Level 2 assessment exactly as written, providing the specific information for the text in brackets:

(I) 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.

(II) 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.

(xiv) ~~Beginning April 1, 2016, i~~If the supplier is required to conduct a Level 2 assessment that is triggered by an *E. coli* MCL violation, the supplier must include the following language exactly as written, providing the specific information for the text in brackets:

(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.

(xv) ~~Beginning April 1, 2016, i~~If a treatment technique violation occurs under 11.16(1~~12~~)(b)(i), the supplier must include one or both of the following statements, as applicable:

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

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

(xvi) ~~Beginning April 1, 2016, I~~if an *E. coli*-positive sample has not violated the *E. coli* MCL, the supplier must include a statement that explains that although they have detected *E. coli*, they are not in violation of the *E. coli* MCL.

(xvii) ~~Beginning April 1, 2016, i~~If an *E. coli* MCL violation occurs, the supplier must include one or more of the following statements, 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.

(xviii) The supplier may include additional information necessary for public education consistent with, and not detracting from, the purpose of the CCR.

11.34(3) Distribution of the CCR

(a) For a wholesale system that supplies water to a consecutive community water system(s), the wholesaler must:

(i) Distribute all the applicable information specified in 11.34(2)(a), 11.34(2)(b)(i)(A), 11.34(2)(b)(ii), 11.34(2)(c), 11.34(2)(d), 11.34(2)(e)(i), and 11.34(2)(e)(iv-xii) to the supplier responsible for the consecutive system(s) no later than either:

(A) April 1 each year.

(B) A date mutually agreed on that is included in the written contract between the suppliers.

(b) The supplier must distribute the CCR to customers no later than July 1 each year.

(i) For new systems or reclassified systems that now meet the applicability of this rule, the supplier must distribute the first CCR no later than July 1 of the year after the first full calendar year in operation.

(c) The supplier must mail or otherwise directly deliver one copy of the CCR to each customer.

(i) For systems supplying less than (<) 10,000 people, this requirement may be waived if the supplier complies with all of the following:

(A) Publishes the CCR in one or more local newspapers serving the area in which the system is located.

(B) Informs the customers that the CCR will not be mailed, either in the newspapers in which the reports are published or by other Department-approved means.

(C) The supplier makes the CCR available to the public upon request.

(ii) For systems supplying less than or equal to (≤) 500 people, the requirements specified in 11.34(3)(c)(i)(A) and 11.34(3)(c)(i)(B) may be waived if the supplier provides notice to customers at least annually that the CCR is available upon request. This notice may be distributed either by mail, door-to-door delivery, or by posting in an appropriate location.

(d) The supplier must make a good faith effort to reach consumers who are supplied by the system but are not customers (e.g. renters, workers, etc.) using methods recommended by the Department.

(i) A good faith effort to reach consumers includes a combination of methods appropriate to the system such as:

(A) Posting the reports on the Internet.

(B) Mailing to postal patrons in metropolitan areas.

(C) Advertising the availability of the report in the news media.

(D) Publication in a local newspaper.

(E) Posting in public places (e.g., cafeterias or lunch rooms of public buildings).

(F) Delivery of multiple copies for distribution by single-billed customers (e.g., apartment buildings or large private employers).

(G) Delivery to community organizations.

(e) For systems supplying greater than or equal to (≥) 100,000 people, the supplier must post the most recent CCR to a publicly accessible site on the Internet.

(f) The supplier must make the CCR available to the public upon request.

11.34(4) Reporting Requirements for the CCR

(a) No later than July 1 of each calendar year, the supplier must submit a copy of the CCR along with a Certification of Delivery to the Department.

(i) The Certification of Delivery must state that the CCR has been distributed to customers and that the information is correct and consistent with the information that the supplier previously submitted to the Department.

(ii) The supplier must also distribute the CCR to any other agency or clearinghouse as directed to by the Department.

(b) For wholesale systems, the wholesaler must submit a copy of the information provided to the supplier responsible for the consecutive system along with a Certification of Delivery to the Department no later than the date specified in 11.34(3)(a)(i).

(i) The Certification of Delivery must state that the information has been distributed to the supplier responsible for the consecutive system(s) and that the information is correct and

consistent with the information that the wholesaler previously submitted to the Department.

TABLE 11.34-I TABLE OF REGULATED CONTAMINANTS						
Contaminant (units)	MCL (in mg/L unless otherwise noted)	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects language
Microbiological Contaminants						
~~Total coliform bacteria[1]~~	~~(Systems that collect greater than or equal to (≥) 40 samples/ month) 5% of monthly samples are positive~~ ~~(Systems that collect less than (<) 40 samples/ month) 1 positive monthly sample.~~	~~N/A~~	~~(Systems that collect greater than or equal to (≥) 40 samples/ month) 5% of monthly samples are positive~~ ~~(Systems that collect less than (<) 40 samples/ month) 1 positive monthly sample.~~	~~0~~	~~Naturally present in the environment.~~	~~Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, bacteria may be present. Coliforms were found in more samples than allowed and this was a warning of potential problems.~~
~~Total coliform bacteria[2]~~	~~TT~~	~~N/A~~	~~TT~~	~~N/A~~	~~Naturally present in the environment~~	~~Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, 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.~~

Fecal Indicators including *E. coli*, enterococci or coliphage	TT	N/A	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.
Fecal coliform and *E. coli*~~1~~	0	N/A	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.

E. coli[2]	*E. coli*-positive repeat sample following a total coliform-positive routine sample, total coliform-positive repeat sample following an *E. coli*-positive routine sample, failure to collect all required repeat samples following an *E. coli*-positive routine sample, or failure to analyze a total-coliform positive repeat sample for *E. coli*.	N/A	*E. coli*-positive repeat sample following a total coliform-positive routine sample, total coliform-positive repeat sample following an *E. coli*-positive routine sample, failure to collect all required repeat samples following an *E. coli*-positive routine sample, or failure to analyze a total-coliform positive repeat sample for *E. coli*.	0	Human and animal fecal waste	*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.

Total organic carbon (ppm)	TT	N/A	TT	N/A	Naturally present in the environment.	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 (TTHMs) and haloacetic acids (HAA5s). Drinking water containing these byproducts in excess of the MCL may lead to adverse health effects, liver or kidney problems, or nervous system effects, and may lead to an increased risk of getting cancer.
Turbidity (NTU)	TT	N/A	TT	N/A	Soil runoff.	Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.
Disinfectant residual[2]	TT (in the distribution system)	N/A	TT (in the distribution system)	N/A	Water additive used to control microbes.	Disinfectant residual serves as one of the final barriers to protect public health. Lack of an adequate disinfectant residual may increase the likelihood that disease-causing organisms are present.
Radionuclides						

Beta/photon emitters (mrem/yr)	4 mrem/yr	N/A	4	0	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 particle and photon radioactivity in excess of the MCL over many years may have an increased risk of getting cancer.
Alpha emitters (pCi/L)	15 pCi/L	N/A	15	0	Erosion of natural deposits.	Certain minerals are radioactive and may emit a form of radiation known as alpha radiation. Some people who drink water containing alpha emitters in excess of the MCL over many years may have an increased risk of getting cancer.
Combined radium (pCi/L)	5 pCi/L	N/A	5	0	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 (µg/L)	30 µg/L	N/A	30	0	Erosion of natural deposits.	Some people who drink water containing uranium in excess of the MCL over many years may have an increased risk of getting cancer and kidney toxicity.
Inorganic Chemicals						
Antimony (ppb)	0.006	1000	6	6	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder.	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.

Arsenic (ppb)	0.010	1000	10[4]	0[4]	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes.	Some people who drink water containing arsenic in excess of the MCL over many years could experience skin damage or problems with their circulatory system, and may have an increased risk of getting cancer.
Asbestos (MFL)	7 MFL	N/A	7	7	Decay of asbestos cement water mains; Erosion of natural deposits.	Some people who drink water containing asbestos in excess of the MCL over many years may have an increased risk of developing benign intestinal polyps.
Barium (ppm)	2	N/A	2	2	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits.	Some people who drink water containing barium in excess of the MCL over many years could experience an increase in their blood pressure.
Beryllium (ppb)	0.004	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)	0.010	1000	10	0	By-product of drinking water disinfection.	Some people who drink water containing bromate in excess of the MCL over many years may have an increased risk of getting cancer.
Cadmium (ppb)	0.005	1000	5	5	Corrosion of galvanized pipes; Erosion of natural deposits; Discharge from metal refineries; Runoff from waste batteries and paints.	Some people who drink water containing cadmium in excess of the MCL over many years could experience kidney damage.

Chloramines (ppm)	MRDL = 4	N/A	MRDL = 4	MRDLG = 4	Water additive used to control microbes.	Some people who use water containing chloramines well in excess of the MRDL could experience irritating effects to their eyes and nose. Some people who drink water containing chloramines well in excess of the MRDL could experience stomach discomfort or anemia.
Chlorine (ppm)	MRDL = 4	N/A	MRDL = 4	MRDLG = 4	Water additive used to control microbes.	Some people who use water containing chlorine well in excess of the MRDL could experience irritating effects to their eyes and nose. Some people who drink water containing chlorine well in excess of the MRDL could experience stomach discomfort.
Chlorine dioxide (ppb)	MRDL = 0.8	1000	MRDL = 800	MRDLG = 800	Water additive used to control microbes.	Some infants and young children who drink water containing chlorine dioxide in excess of the MRDL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorine dioxide in excess of the MRDL. Some people may experience anemia.
Chlorite (ppm)	1	N/A	1	0.8	By-product of drinking water disinfection.	Some infants and young children who drink water containing chlorite in excess of the MCL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorite in excess of the MCL. Some people may experience anemia.

Chromium (ppb)	0.1	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	N/A	AL=1.3	1.3	Corrosion of household plumbing systems; 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)	0.2	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)	4.0	N/A	4.0	4.0	Erosion of natural deposits; Water additive that 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=0.015	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)	0.002	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	N/A	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	N/A	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)	0.05	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)	0.002	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 Chemicals (SOCs)						
2,4-D (ppb)	0.07	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.
2,4,5-TP (Silvex)(ppb)	0.05	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	N/A	N/A	TT	0	Added to water during sewage/wastewater treatment.	Some people who drink water containing high levels of acrylamide over a long period of time could have problems with their nervous system or blood, and may have an increased risk of getting cancer.
Alachlor (ppb)	0.002	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)	0.003	1000	3	3	Runoff from herbicide used on row crops.	Some people who drink water containing atrazine well in excess of the MCL over many years could experience problems with their cardiovascular system or reproductive difficulties.

Benzo(a)pyrene (PAH) (nanograms/L)	0.0002	1,000,000	200	0	Leaching from linings of water storage tanks and distribution lines.	Some people who drink water containing benzo(a)pyrene in excess of the MCL over many years may experience reproductive difficulties and may have an increased risk of getting cancer.
Carbofuran (ppb)	0.04	1000	40	40	Leaching of soil fumigant used on rice and alfalfa.	Some people who drink water containing carbofuran in excess of the MCL over many years could experience problems with their blood, or nervous or reproductive systems.
Chlordane (ppb)	0.002	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)	0.2	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)	0.4	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)	0.006	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.

Dibromochloro-propane (ppt)	0.0002	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)	0.007	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)	0.02	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)	0.00000003	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)	0.1	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)	0.002	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	N/A	TT	0	Discharge from industrial chemical factories; an impurity of some water treatment chemicals.	Some people who drink water containing high levels of epichlorohydrin over a long period of time could experience stomach problems, and may have an increased risk of getting cancer.

Ethylene dibromide (ppt)	0.00005	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)	0.7	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)	0.0004	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)	0.0002	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)	0.001	1000	1	0	Discharge from metal refineries and agricultural chemical factories.	Some people who drink water containing hexachlorobenzene in excess of the MCL over many years could experience problems with their liver or kidneys, or adverse reproductive effects, and may have an increased risk of getting cancer.
Hexachloro-cyclopentadiene (ppb)	0.05	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)	0.0002	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)	0.04	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)	0.2	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)	0.0005	1,000,000	500	0	Runoff from landfills; discharge of waste chemicals.	Some people who drink water containing PCBs in excess of the MCL over many years could experience changes in their skin, problems with their thymus gland, immune deficiencies, or reproductive or nervous system difficulties, and may have an increased risk of getting cancer.
Pentachloro-phenol (ppb)	0.001	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)	0.5	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)	0.004	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)	0.003	1000	3	0	Runoff/leaching from insecticide used on cotton and cattle.	Some people who drink water containing toxaphene in excess of the MCL over many years could have problems with their kidneys, liver, or thyroid, and may have an increased risk of getting cancer.
Volatile Organic Chemicals (VOCs)						
Benzene (ppb)	0.005	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)	0.005	1000	5	0	Discharge from chemical plants and other industrial activities.	Some people who drink water containing carbon tetrachloride in excess of the MCL over many years could experience problems with their liver and may have an increased risk of getting cancer.
Chlorobenzene (ppb)	0.1	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)	0.6	1000	600	600	Discharge from industrial chemical factories.	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.

p-Dichlorobenzene (ppb)	0.075	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)	0.005	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)	0.007	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)	0.07	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)	0.1	1000	100	100	Discharge from industrial chemical factories.	Some people who drink water containing trans-1,2-dichloroethylene well in excess of the MCL over many years could experience problems with their liver.
Dichloromethane (ppb)	0.005	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 increased risk of getting cancer.
1,2-Dichloropropane (ppb)	0.005	1000	5	0	Discharge from industrial chemical factories.	Some people who drink water containing 1,2-dichloropropane in excess of the MCL over many years may have an increased risk of getting cancer.

Ethylbenzene (ppb)	0.7	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)	0.060	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)	0.1	1000	100	100	Discharge from rubber and plastic factories; leaching from landfills.	Some people who drink water containing styrene well in excess of the MCL over many years could have problems with their liver, kidneys, or circulatory system.
Tetrachloro-ethylene (ppb)	0.005	1000	5	0	Discharge from factories and dry cleaners.	Some people who drink water containing tetrachloroethylene in excess of the MCL over many years could have problems with their liver, and may have an increased risk of getting cancer.
1,2,4-Trichloro-benzene (ppb)	0.07	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)	0.2	1000	200	200	Discharge from metal degreasing sites and other factories.	Some people who drink water containing 1,1,1-trichloroethane in excess of the MCL over many years could experience problems with their liver, nervous system, or circulatory system.
1,1,2-Trichloroethane (ppb)	0.005	1000	5	3	Discharge from industrial chemical factories.	Some people who drink water containing 1,1,2-trichloroethane well in excess of the MCL over many years could have problems with their liver, kidneys, or immune systems.

Trichloro-ethylene (ppb)	0.005	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)	0.080	1000	80	N/A	Byproduct of drinking water disinfection.	Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer.
Toluene (ppm)	1	N/A	1	1	Discharge from petroleum factories.	Some people who drink water containing toluene well in excess of the MCL over many years could have problems with their nervous system, kidneys, or liver.
Vinyl Chloride (ppb)	0.002	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	N/A	10	10	Discharge from petroleum factories; discharge from chemical factories.	Some people who drink water containing xylenes in excess of the MCL over many years could experience damage to their nervous system.

~~1 Effective until March 31, 2016.~~

~~2 Effective beginning April 1, 2016.~~

11.35 GENERAL REPORTING REQUIREMENTS RULE

11.35(1) Applicability

For all public water systems, the supplier must comply with the reporting requirements specified in this rule.

11.35(2) General Reporting Requirements

(a) Except where a different reporting period is specified, the supplier must submit to the Department all sample results or test measurements required by the *Colorado Primary Drinking Water Regulations* no later than whichever of the following comes first:

(i) The 10th of the month following the month when the sample result(s) or test measurement(s) was received; or

(ii) The first 10 calendar days following the end of the monitoring period specified by the Department.

(b) If the State laboratory performs the analysis and submits the sample results to the Department, the supplier is not required to submit those sample results to the Department.

(c) Except where a different reporting period is specified, the supplier must report to the Department the failure to comply with any requirement of the *Colorado Primary Drinking Water Regulations*, no later than 48 hours after the failure.

(d) The supplier must notify the Department of any waterborne disease outbreak that is potentially attributable to the water system as soon as possible but no later than 24 hours after discovering the outbreak or potential outbreak.

(e) For all documentation required to be submitted under the *Colorado Primary Drinking Water Regulations*, the supplier must submit the documentation to the Department in writing unless otherwise stated.

(i) When the supplier is required to submit documentation to the Department, the supplier must submit documentation electronically or by mail to:

Colorado Department of Public Health and Environment
Water Quality Control Division
Safe Drinking Water Program
4300 Cherry Creek Drive South
Denver, Colorado 80246-1530
Fax: 303-758-1398

11.35(3) Violations for Reporting

The following constitute reporting violations:

(a) Failure to comply with any reporting requirement of this rule.

(b) Failure to comply with any reporting requirement specified elsewhere in the *Colorado Primary Drinking Water Regulations*.

11.35(4) Response to Reporting Violations

In the event of a reporting violation, the supplier must:

(a) Notify the Department no later than 48 hours after the violation occurs.

(b) Distribute Tier 3 public notice as specified in 11.33, unless otherwise specified.

11.36 RECORDKEEPING REQUIREMENTS RULE

11.36(1) Applicability

For all public water systems, the supplier must comply with the recordkeeping requirements specified in this rule.

11.36(2) Records Availability

(a) All records pertaining to the operation and water quality of a public water system are public information and the Department shall make them available to the public upon request, during normal working hours.

(b) Upon request by the Department, the supplier must submit copies of any records required to be maintained or any documents in existence, which the Department is entitled to inspect pursuant to the *Colorado Primary Drinking Water Regulations*.

11.36(3) General Recordkeeping Requirements

(a) The supplier must maintain all records required to be maintained under the *Colorado Primary Drinking Water Regulations* on the system's premises or at a convenient location near the premises.

(b) For each sample result, the supplier must either maintain the actual laboratory reports or transfer the data to tabular summaries.

(i) If the supplier maintains tabular summaries, the supplier must include all of the following information in the summaries:

(A) The date, place, and time of sample collection, and the name of the person who collected the sample.

(B) Identification of the sample type (i.e., routine distribution system sample, routine entry point sample, confirmation sample, source water or finished water sample, or a special purpose sample).

(C) Date of laboratory analysis.

(D) The name of the laboratory and the person responsible for performing the analysis.

(E) The analytical method used.

(F) The results of the analyses.

(c) Unless otherwise specified, the supplier must maintain the records of the action(s) taken to correct each violation for at least three years from the date on which the last action was taken to correct the violation.

(d) The supplier must maintain records of microbiological sample results for at least five years.

(e) The supplier must maintain records of chemical sample results for at least ten years, unless otherwise specified.

11.36(4) Additional Recordkeeping Requirements by Rule

(a) Recordkeeping Requirements for Monitoring Plans

For each sample result, the supplier must maintain the monitoring plan specified in 11.5 under which the sample was collected for the same time period that the sample result is required to be maintained.

(b) Recordkeeping Requirements for the Surface Water Treatment Rules

(i) The supplier must maintain all of the following information for at least three years:

(A) The results of individual filter monitoring collected under 11.8(2)(g).

(B) Any notification to the Department that the supplier will not conduct source water monitoring due to meeting the criteria specified in 11.10(2)(a)(v).

(C) The results of treatment monitoring associated with microbial toolbox options collected under 11.10(5)(b) through 11.10(5)(o), as applicable.

(ii) The supplier must maintain all of the following information for at least three years after bin classification under 11.10(3)(b):

(A) The initial round of source water monitoring results collected under 11.10(2).

(B) The second round of source water monitoring results collected under 11.10(2).

(iii) The supplier must maintain the records of turbidity sample results collected under 11.8 for at least five years.

(iv) The supplier must maintain the following recycle flow information:

(A) A copy of the recycle notification and information submitted to the Department under 11.9(4).

(B) A list of all recycle flows and the frequency with which they are returned.

(C) The average and maximum backwash flow rate through the filters and the average and maximum duration of the filter backwash process in minutes.

(D) The typical filter run length and a written summary of how filter run length is determined.

(E) The type of treatment provided for the recycle flow.

(F) Data on the physical dimensions of the equalization and/or treatment units, typical and maximum hydraulic loading rates, type of treatment chemicals used

and average dose and frequency of use, and frequency at which solids are removed, if applicable.

(v) The supplier must maintain all of the following information indefinitely:

(A) The results of the disinfection profile, including raw data and analysis, specified in 11.8(4).

(B) The results of the disinfection benchmark, including raw data and analysis, specified in 11.8(5).

(c) Recordkeeping Requirements for the Groundwater Rules

(i) The supplier must maintain all of the following information for at least five years:

(A) For each minimum residual disinfection concentration treatment technique requirement sample collected under 11.11(2)(c):

(I) The date, place, and time of sample collection, and the name of the person(s) who collected and analyzed the sample;

(II) The analytical technique/method used; and

(III) The results of the analyses.

(B) Documentation specified in 11.11(2)(e)(i)(C) relating to any entry point minimum disinfection treatment technique violation.

(C) For systems operating under a disinfection waiver under 11.13, all records of all chlorination activities including:

(I) The date, duration, locations and purpose of each chlorination event; and

(II) The maximum and minimum chlorine dose in mg/L the supplier applied during each chlorination event and the results of any and all residual disinfectant concentration results collected during each chlorination event.

(D) Records of decisions that a total coliform-positive sample result meets Department criteria for distribution system conditions that cause total coliform-positive sample results under 11.11(4)(a)(ii)(B).

(E) Records of invalidation of fecal indicator-positive groundwater source samples under 11.11(4)(e)(i).

(F) For consecutive systems, documentation of notification to wholesalers of total-coliform positive samples specified in 11.11(4)(c)(i) that are not invalidated ~~under 11.17(5) until March 31, 2016, or~~ under 11.16(78)~~ beginning April 1, 2016~~.

(G) For systems that provide 4-log treatment of viruses using chemical disinfection and are required to comply with the requirements specified in 11.11(3):

(I) Records of the lowest daily residual disinfectant concentration; and

(II) Records of the date and duration of any failure to maintain the Department-specified minimum residual disinfectant concentration for a period of more than four hours.

(H) For systems that provide 4-log treatment of viruses using alternative treatment methods and are required to comply with 11.11(3):

(I) Records of Department-specified parameters for approved alternative treatment; and

(II) Records of the date and duration of any failure to meet the alternative treatment operating requirements for a period of more than four hours.

(ii) The supplier must maintain all of the following information for at least 10 years:

(A) For all systems that provide 4-log treatment of viruses that are required comply with 11.11(3), records of the Department-approved minimum residual disinfectant concentration.

(B) Documentation of corrective actions required in response to fecal indicator positive triggered source water monitoring sample results under 11.11(6).

(iii) For a system operating under a disinfection waiver, the supplier must maintain records of all correspondence and documentation relating to the requirements specified in 11.13 for as long as the system is operating under the disinfection waiver and for at least five years after waiver withdrawal.

(d) Recordkeeping Requirements for the Revised Total Coliform Rule

(i) ~~Beginning April 1, 2016, t~~The supplier must maintain all of the following information for at least five years after completion of the assessment or corrective action:

(A) Completed assessment forms, regardless of who conducts the assessment.

(B) Documentation of corrective actions completed as a result of those assessments.

(C) Available summary documentation of the sanitary defects and corrective actions as specified in 11.16(9~~10~~).

(ii) ~~Beginning April 1, 2016, i~~If the supplier collects special purpose samples, the supplier must keep *E. coli*-positive sample results that are representative of water throughout the distribution system and a summary of any related follow-up activities on file for Department review for at least five years.

(e) Recordkeeping Requirements for the Disinfection Byproducts Rule

(i) If the supplier was required to complete an IDSE report, the supplier must maintain a complete copy of the IDSE report for at least 10 years after the date that the report was submitted.

(A) If the Department modified the supplier's sampling requirements that were in the system's IDSE report or if the Department approved alternative sampling locations, the supplier must keep a copy of the Department's notification on file for 10 years after the date of the Department's notification.

(B) The supplier must make the IDSE report and any Department notification available for review by the Department or the public.

(ii) If the supplier submitted a 40/30 certification, the supplier must maintain a complete copy of the 40/30 certification for at least 10 years after the date that the certification was submitted.

(A) "40/30 CERTIFICATION" means a historical requirement where the supplier certified to the Department that every individual sample result collected during eight consecutive quarters was less than or equal to (≤) 0.040 mg/L for TTHM and less than or equal to (≤) 0.030 mg/L for HAA5 and no TTHM or HAA5 violations occurred during that time.

(B) The supplier must make the 40/30 certification and any Department notification available for review by the Department or the public.

(f) Recordkeeping Requirements for the Lead and Copper Rule

The supplier must maintain the original records of all sample results and analyses, reports, surveys, letters, evaluations, schedules, Department determinations, and any other information required by 11.26 for at least 12 years.

(g) Recordkeeping Requirements for the Storage Tank Rule

For each completed inspection, the supplier must maintain the inspection summary required by 11.28(3)(f) for at least ten years.

(h) Recordkeeping Requirements for the Public Notification Rule

The supplier must maintain copies of each public notice and certification made to the Department under 11.33 for at least three years after issuance.

(i) Recordkeeping Requirements for the Consumer Confidence Report (CCR) Rule

The supplier must retain copies of each CCR required by 11.34 for at least three years after issuance.

(j) Recordkeeping Requirements for the Cross-Connection Control Rule

The supplier must maintain all control device maintenance records under 11.37 for at least three years.

(k) Recordkeeping Requirements for the Sanitary Survey Rule

(i) The supplier must maintain all of the following information regarding sanitary surveys conducted under 11.38 for at least 10 years:

(A) Copies of any written reports, summaries or communications relating to sanitary surveys of the system conducted by the system itself, a private consultant, or a local, state or federal agency.

(B) Documentation of corrective actions required in response to significant deficiencies and/or violations identified on a sanitary survey under 11.38(3).

(l) Recordkeeping Requirements for the Backflow Prevention and Cross-Connection Control Rule

(i) The supplier must maintain all backflow prevention assembly and backflow prevention method testing, inspection, and maintenance records:

(A) For community water systems, for at least three years.

(B) For non-community water systems, for at least five years.

(ii) The supplier must maintain each annual backflow prevention and cross-connection control program report developed:

(A) For community water systems, for at least three years.

(B) For non-community water systems, for at least five years.

(m) Recordkeeping Requirements for the Water Hauler Rule

(i) The supplier must maintain all of the following information for at least five years for each tank or container:

(A) The date, time, and location of each water loading station used.

(B) The date, time, and location of each water delivery.

(C) The date, time, and result of each residual disinfectant concentration sample collected under 11.41(2)(b).

(D) The date, time, type and quantity of any chemical added to the tank or container containing water intended for delivery.

(E) A maintenance record for all hose materials, hose containers, pumps, fittings and tank and/or container including the date, time and method of cleaning and/or disinfection.

(n) Recordkeeping Requirements for the Variances and Exemptions Rule

The supplier must maintain records concerning a variance or exemption granted under 11.43 for at least five years after the expiration of the variance or exemption.

11.37 RESERVED ~~CROSS-CONNECTION CONTROL RULE~~

~~**11.37(1) Applicability and Definitions**~~

~~**(a) For all public water systems, the supplier must comply with the requirements specified in this rule until December 31, 2015.**~~

~~**(b) "CERTIFIED CROSS-CONNECTION CONTROL TECHNICIAN" means a person who has responsibility for the testing, operation and maintenance of cross-connection control devices and is certified as specified in 11.37(4).**~~

~~**(c) "CONTROL DEVICE" means any Department-approved cross connection control device or method installed on service connections to a premises or auxiliary system consistent with the degree of hazard posed by the uncontrolled cross-connection.**~~

~~**(d) "SERVICE CROSS CONNECTION" means a type of cross-connection which could allow any used water, industrial fluid, gas, or water of a quality below the drinking water**~~

~~standards of these regulations to flow from a consumer's water system into a public water system's distribution system."~~

~~(e) "UNCONTROLLED" means not having an accepted cross-connection control device properly installed and maintained. The control device must continuously provide cross-connection protection consistent with the degree of hazard posed by the cross-connection.~~

~~11.37(2) Control of Cross Connections~~

~~(a) The supplier must not permit any uncontrolled cross connections.~~

~~(b) If any uncontrolled cross connections are discovered, the supplier must:~~

~~(i) Notify the Department no later than ten calendar days after the time of discovery.~~

~~(ii) Properly install and maintain a control device or remove the uncontrolled cross connection no later than ten days after being ordered by the Department in writing to correct the problem.~~

~~11.37(3) Control of Service Cross Connections~~

~~(a) The supplier must identify any uncontrolled service cross connections.~~

~~(b) If any uncontrolled service cross connections are identified, in addition to the requirements of 11.37(2)(b), the supplier must:~~

~~(i) Require the proper installation and maintenance of control devices at that connection.~~

~~(ii) Approve the proper installation of control devices upon installation.~~

~~(iii) Ensure that all installed control devices are tested and maintained as necessary by a Certified Cross-Connection Control Technician upon installation and then at least annually.~~

~~11.37(4) Cross-Connection Control Technician Certification~~

~~(a) A Certified Cross-Connection Control Technician must possess a valid certification from one of the following approved organizations: American Society of Sanitary Engineering (ASSE) or the American Backflow Prevention Association (ABPA).~~

~~(i) The process for certification must include successful completion of an examination administered by one of the approved organizations.~~

~~(ii) If a certification is not renewed on or before their expiration date, the certification is invalid.~~

~~(b) At least every two years, the Department will conduct an evaluation of each approved organization's certification process and submit the results of the evaluation to the Water Quality Control Commission.~~

~~(i) If the Department determines that an organization's certification process is inadequate to protect public water systems, it may request that the Water Quality Control Commission revoke the approval of the organization's certification.~~

~~**11.37(5) Violations for Cross Connection Control**~~

~~**(a) If the supplier permits or creates an uncontrolled cross connection and therefore fails to comply with the requirements specified in 11.37(2)(a), a treatment technique violation occurs.**~~

~~**(b) If the supplier discovers an uncontrolled cross connection and fails to comply with the requirements specified in 11.37(2)(b), a treatment technique violation occurs.**~~

~~**(c) If the supplier fails to identify uncontrolled service cross connections or comply with the requirements specified in 11.37(3)(b), a monitoring and reporting violation occurs.**~~

~~**11.37(6) Response to Violations for Cross Connection Control**~~

~~**Violations will be subject to the provisions and penalties prescribed by sections 25-1-114 and 25-1-114.1, Colorado Revised Statutes, and to such other actions as provided by law.**~~

…

11.39 BACKFLOW PREVENTION AND CROSS-CONNECTION CONTROL RULE

11.39(1) Applicability and Definitions

(a) ~~For a~~All public water systems~~, the supplier~~ must comply with the requirements specified in this rule~~ beginning January 1, 2016~~.

(b) "ACTIVE DATE" means the first day that a backflow prevention assembly or backflow prevention method is used to control a cross connection in each calendar year.

(c) "BACKFLOW" means the reverse flow of water, fluid, or gas caused by back pressure or back siphonage.

(d) "BACKFLOW PREVENTION ASSEMBLY" means any mechanical assembly installed at a water service line or at a plumbing fixture to prevent a backflow contamination event, provided that the mechanical assembly is appropriate for the identified contaminant at the cross connection and is an in-line field-testable assembly.

(e) "BACKFLOW PREVENTION ASSEMBLY ANNUAL TESTING COMPLIANCE RATIO" means the number of backflow prevention assemblies tested during the calendar year divided by the number of backflow prevention assemblies installed at a cross connection that were used during the calendar year.

(f) "BACKFLOW PREVENTION METHOD" means any method and/or non-testable device installed at a water service line or at a plumbing fixture to prevent a backflow contamination event, provided that the method or non-testable device is appropriate for the identified contaminant at the cross connection.

(g) "BACKFLOW PREVENTION METHOD ANNUAL INSPECTION COMPLIANCE RATIO" means the number of backflow prevention methods inspected during the calendar year divided by the number of backflow prevention methods installed at a cross connection that were used during the calendar year.

(h) "CERTIFIED CROSS-CONNECTION CONTROL TECHNICIAN" means a person who possesses a valid Backflow Prevention Assembly Tester certification from one of the following approved

organizations: American Society of Sanitary Engineering (ASSE) or the American Backflow Prevention Association (ABPA). If a certification has expired, the certification is invalid.

(i) "CONTROLLED" means having a properly installed, maintained, and tested or inspected backflow prevention assembly or backflow prevention method that prevents backflow through a cross connection.

(j) "SINGLE-FAMILY-RESIDENTIAL" means:

(i) A single living unit that is supplied by its own separate service line; or

(ii) Multiple living units where each individual living unit is supplied by a separate service line; or

(iii) Two separate single living units supplied by a common service line.

(kj) "SURVEY COMPLIANCE RATIO" means the total number of connections surveyed, including the number of all non-single-family-residential connections to the public water system with the most protective backflow prevention assembly or method that was not surveyed as specified in 11.39(3)(c), divided by the total number of non-single-family-residential connections to the public water system and connections within the supplier's waterworks.

(i) The supplier is not required to include any non-single-family-residential connections identified after October 31 of the calendar year in the total number of non-single-family-residential connections to the public water system until the following calendar year.

(lk) "UNCONTROLLED" means not having a properly installed and maintained and tested or inspected backflow prevention assembly or backflow prevention method, or the backflow prevention assembly or backflow prevention method does not prevent backflow through a cross connection.

11.39(2) Backflow Prevention and Cross-Connection Control Program Requirements

(a) The supplier must develop a written backflow prevention and cross-connection control program. The written backflow prevention and cross-connection control program must include all of the following:

(i) The supplier's process for conducting surveys.

(ii) The supplier's legal authority to perform a survey of a customer's property to determine whether a cross connection is present unless the supplier controls all non-single-family-residential connections to the public water system with the most protective backflow prevention assembly or backflow prevention method.

(iii) The process the supplier will use to select a backflow prevention assembly or backflow prevention method to control a cross connection.

(iv) The supplier's legal authority to install, maintain, test, and inspect backflow prevention assemblies and/or backflow prevention methods and/or require customers to install, maintain, test, and inspect backflow prevention assemblies and/or backflow prevention methods.

(v) The process the supplier will use to track the installation, maintenance, testing, and inspection of all backflow prevention assemblies and backflow prevention methods used to control cross connections.

(vi) The process the supplier will use to ensure backflow prevention assemblies are tested by a Certified Cross-Connection Control Technician.

(b) The Department may review and revise the written backflow prevention and cross-connection control program.

11.39(3) Treatment Technique Requirements for the Control of Cross Connections

(a) If the supplier learns of a suspected or confirmed backflow contamination event, the supplier must notify and consult with the Department on any appropriate corrective measures no later than 24 hours after learning of the backflow contamination event.

(b) The supplier is prohibited from installing or permitting any uncontrolled cross connection to the distribution system or within the supplier's waterworks.

(c) The supplier must survey all non-single-family-residential connections to the public water system to determine if the connection is a cross connection unless the supplier controls that connection with the most protective backflow prevention assembly or backflow prevention method. The supplier must survey all connections within the supplier's waterworks to determine if the connection is a cross connection.

(i) If the supplier identifies a cross connection during a survey, the supplier must determine the type of backflow prevention assembly or backflow prevention method to control the cross connection.

(ii) If the supplier becomes aware of a single-family-residential connection to the public water system that is a cross connection, the supplier must determine the type of backflow prevention assembly or backflow prevention method to control the cross connection.

(iii) The supplier must achieve the survey compliance ratios as specified in Table 11.39-I.

TABLE 11.39-I Survey Compliance Ratio

Compliance Date	Compliance Ratio
By December 31, 2016	Greater than 0.60
By December 31, 2017	Greater than 0.70
By December 31, 2018	Greater than 0.80
By December 31, 2019	Greater than 0.90
By December 31, 2020 and each year after	1.0

(iv) The supplier may apply to the Department for alternative survey compliance ratios for the compliance dates from December 31, 2016 through December 31, 2019 specified in Table 11.39-I.

(A) In the application, the supplier must include all of the following information:

(I) An explanation of why the supplier is unable to comply with the survey compliance ratios specified in Table 11.39-I.

(II) The proposed alternative survey compliance ratios for the compliance dates from December 31, 2016 through December 31, 2019 specified in Table 11.39-I.

(a) The proposed alternative survey compliance ratios must meet the survey compliance ratio of 1.0 by December 31, 2020.

(III) A discussion of the supplier's strategy to achieve the proposed alternative survey compliance ratios and the survey compliance ratio of 1.0 by December 31, 2020.

(B) The Department will only grant alternative compliance ratios for the compliance dates from December 31, 2016 through December 31, 2019.

(C) If the supplier receives written Department-approval for alternative survey compliance ratios, the supplier must comply with any Department-specified requirements in the approval.

(d) If the supplier discovers an uncontrolled cross connection and a suspected or confirmed backflow contamination event has not occurred, the supplier must:

(i) No later than 120 days after its discovery, install and maintain or require the customer to install and maintain a backflow prevention assembly or backflow prevention method at the uncontrolled cross connection, suspend service to the customer, or remove the cross connection.

(A) If the supplier is unable to meet the 120-day deadline, the supplier must consult with the Department and the Department may approve an alternative schedule.

(B) The supplier can either control cross connections discovered within a customer's water system by containment or containment by isolation.

(I) "CONTAINMENT" means the installation of a backflow prevention assembly or a backflow prevention method at any connection to the public water system that supplies an auxiliary water system, location, facility, or area such that backflow from a cross connection into the public water system is prevented.

(II) "CONTAINMENT BY ISOLATION" means the installation of backflow prevention assemblies or backflow prevention methods at all cross connections identified within a customer's water system such that backflow from a cross connection into the public water system is prevented.

(C) The supplier must ensure that all installed backflow prevention assemblies used to control cross connections are tested by a Certified Cross-Connection Control Technician upon installation.

(D) The supplier must ensure that all installed backflow prevention methods used to control cross connections are inspected by the supplier or a Certified Cross-Connection Control Technician upon installation.

(e) The supplier must ensure that backflow prevention assemblies used to control cross connections are tested annually by a Certified Cross-Connection Control Technician and maintained. The supplier must achieve the backflow prevention assembly annual testing compliance ratios as specified in Table 11.39-II.

TABLE 11.39-II Backflow Prevention Assembly Annual Testing Compliance Ratio	
Compliance Date	Annual Compliance Ratio
By December 31, 2016	Greater than 0.50
By December 31, 2017	Greater than 0.60
By December 31, 2018	Greater than 0.70

By December 31, 2019	Greater than 0.80
By December 31, 2020 and each year after	Greater than 0.90

(i) No later than 60 days after the supplier is notified of a failed test, the supplier must ensure that the backflow prevention assembly that produced the failed test is repaired or replaced and tested, service is suspended to the customer, or the cross connection is removed.

(A) If the supplier is unable to meet the 60-day deadline, the supplier must consult with the Department and the Department may approve an alternative schedule.

(ii) Beginning January 1, 2021, for each backflow prevention assembly not tested during the previous calendar year, the supplier must ensure the backflow prevention assembly is tested no later than 90 days after the active date of the backflow prevention assembly in the following calendar year.

(A) If the supplier is unable to meet the 90-day deadline, the supplier must consult with the Department and the Department may approve an alternative schedule.

(f) The supplier must ensure that backflow prevention methods used to control cross connections are inspected annually by the supplier or a Certified Cross-Connection Control Technician and maintained. The supplier must achieve a backflow prevention method annual inspection compliance ratio of greater than (>) 0.90.

(i) No later than 60 days after the supplier is notified of an inadequate backflow prevention method, the supplier must ensure that the inadequate backflow prevention method is repaired or replaced, service is suspended to the customer, or the cross connection is removed.

(A) If the supplier is unable to meet the 60-day deadline, the supplier must consult with the Department and the Department may approve an alternative schedule.

(ii) Beginning January 1, 2017, for each backflow prevention method not inspected during the previous calendar year, the supplier must ensure the backflow prevention method is inspected no later than 90 days after the active date of the backflow prevention method in the following calendar year.

(A) If the supplier is unable to meet the 90-day deadline, the supplier must consult with the Department and the Department may approve an alternative schedule.

(g) The supplier must control or remove any uncontrolled cross connection or ensure that any cross connection is controlled no later than 10 days after being ordered in writing by the Department.

11.39(4) Backflow Prevention and Cross-Connection Control Program Annual Written Report

(a) Beginning in 2017, the supplier must develop a written backflow prevention and cross-connection control program report for the previous calendar year that includes all of the following information:

(i) Total number of non-single-family-residential connections to the public water system and connections within the supplier's waterworks.

(A) The supplier is not required to include any non-single-family-residential connections identified after October 31 of the calendar year in the total number of

non-single-family-residential connections to the public water system until the following calendar year.

(ii) Total number of connections surveyed to determine if cross connections are present.

(iii) Survey compliance ratio.

(iv) Total number of identified cross connections.

(v) Number of uncontrolled cross connections identified during the calendar year.

(A) Number of identified uncontrolled cross connections that were controlled within 120 days of discovery.

(B) Number of identified uncontrolled cross connections that were not controlled within 120 days of discovery.

(vi) Number of backflow prevention assemblies installed at cross connections that were used during the calendar year.

(vii) Number of backflow prevention methods installed at cross connections that were used during the calendar year.

(viii) Number of connections where service was suspended as specified in 11.39(3) during the calendar year.

(ix) Number of backflow prevention assemblies used to control cross connections that were tested by a Certified Cross Connection Control Technician during the calendar year.

(x) Backflow prevention assembly annual testing compliance ratio.

(xi) Beginning January 1, 2021, the number and location of backflow prevention assemblies not tested during the calendar year covered by the report.

(xii) Number of backflow prevention methods used to control cross connections that were inspected during the calendar year.

(xiii) Backflow prevention method annual inspection compliance ratio.

(xiv) Beginning January 1, 2017, the number and location of backflow prevention methods not inspected during the calendar year covered by the report.

(b) For each calendar year, the supplier must complete the annual backflow prevention and cross-connection control program report no later than May 1 of the following calendar year.

11.39(5) Compliance Determinations for Backflow Prevention and Cross-Connection Control

(a) Compliance with the survey treatment technique requirement is based on the survey compliance ratio.

(i) The supplier is not required to include any non-single-family-residential connections identified after October 31 of the calendar year in the total number of non-single-family-residential connections to the public water system until the following calendar year.

(b) Compliance with the backflow prevention assembly testing treatment technique requirement is based on the backflow prevention assembly annual testing compliance ratio.

(c) Compliance with the backflow prevention method inspection treatment technique requirement is based on the backflow prevention method annual inspection compliance ratio.

11.39(6) Violations for Backflow Prevention and Cross-Connection Control

(a) The following constitute backflow prevention and cross-connection control treatment technique violations:

(i) The supplier fails to notify the Department of any suspected or confirmed backflow contamination event as specified in 11.39(3)(a).

(ii) The supplier installs or permits an uncontrolled cross connection.

(iii) The supplier fails to achieve the survey compliance ratio specified in 11.39(3)(c) or the Department-approved alternative survey compliance ratios.

(iv) The supplier discovers an uncontrolled cross connection and fails to comply with the requirements specified in 11.39(3)(d).

(v) The supplier fails to achieve the annual backflow prevention assembly testing compliance ratio specified in 11.39(3)(e).

(vi) The supplier fails to comply with the backflow prevention assembly failed test requirements specified in 11.39(3)(e)(i).

(vii) The supplier fails to comply with the backflow prevention assembly testing requirements specified in 11.39(3)(e)(ii).

(viii) The supplier fails to achieve the backflow prevention method inspection compliance ratio specified in 11.39(3)(f).

(ix) The supplier fails to comply with the backflow prevention method inadequate method requirements specified in 11.39(3)(f)(i).

(x) The supplier fails to comply with the backflow prevention method inspection requirements specified in 11.39(3)(f)(ii).

(xi) The supplier fails to comply with a written order from the Department specified in 11.39(3)(g).

(b) The following constitute backflow prevention and cross-connection control violations:

(i) The supplier fails to develop or implement a written backflow prevention and cross-connection control program as specified in 11.39(2).

(ii) The supplier fails to complete an annual backflow prevention and cross-connection control program report as specified in 11.39(4).

11.39(7) Response to Violations for Backflow Prevention and Cross-Connection Control

(a) In the event of a backflow prevention and cross-connection control treatment technique violation, the supplier must:

(i) Notify the Department no later than 48 hours after the violation occurs.

(ii) Distribute Tier 2 public notice as specified in 11.33.

(b) In the event of a backflow prevention and cross-connection control violation, the supplier must:

(i) Notify the Department no later than 48 hours after the violation occurs.

(ii) Distribute Tier 3 public notice as specified in 11.33.

…

11.43 VARIANCES AND EXEMPTIONS RULE

11.43(1) Applicability and Definitions

(a) For all public water systems, the supplier may apply for a variance or exemption as specified in this rule.

(b) "EXEMPTION" means the supplier is temporarily not required to comply with an MCL or treatment technique. The Department may grant an exemption if the supplier meets the requirements specified in 11.43(4).

(c) "SMALL SYSTEM VARIANCE" means a variance from an MCL or treatment technique for systems that supply less than (<) 10,000 people and meet the requirements specified in 11.43(3).

(d) "SMALL SYSTEM VARIANCE TECHNOLOGY" means a specific treatment or treatment technology that the EPA has identified for use by small systems that are otherwise unable to afford to comply with the *National Primary Drinking Water Regulations*.

(e) "VARIANCE" means the supplier is temporarily not required to comply with an MCL. The Department may grant a variance to a supplier if characteristics of the source(s) that are reasonably available to the system prevent compliance with the MCL, despite implementation of BATs or treatment techniques, and the system meets the requirements specified in 11.43(2).

11.43(2) Variance Qualifications

(a) The Department may grant a variance from an MCL if all of the following criteria are met:

(i) ~~The supplier is unable to comply with the MCL.~~

~~(ii)~~ Because of the characteristics of the raw water source(s) which are reasonably available to the system, the supplier cannot meet the requirements respecting the MCLs of such drinking water regulations despite application ~~The supplier has applied~~of the BAT(s), treatment techniques, or other means identified by the EPA Administrator.

(ii~~i~~) Based on a Department-approved evaluation, an alternative source is not reasonably available to the system after taking costs into consideration.

(ii~~i~~iv~~)~~) The variance will not result in an unreasonable risk to public health.

(b) If the supplier can demonstrate to the satisfaction of the Department that a specific treatment technique for a contaminant is not necessary to protect public health because of the nature of the

system's source, the supplier may receive one or more variances from any requirement that requires the use of that treatment technique.

(i) If the supplier is granted a variance under 11.43(2)(b), the supplier must comply with any Department-specified monitoring or other requirements.

(c) The Department will not grant a variance from:

~~(i) The total coliform MCLs.~~

~~(A) The effective date relating to the total coliform MCL has been stayed for a supplier that demonstrates to the Department that the violation of the total coliform MCL is due to a 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.~~

(i~~i~~) The *E. coli* MCLs.

(ii~~i~~) Any treatment technique requirement of 11.8, ~~or~~ 11.9, or 11.10.

11.43(3) Small System Variance Qualifications

(a) The Department may grant a small system variance from an MCL or treatment technique if all of the following criteria apply:

(i) The system supplies (including the supplier's consecutive system's population served):

(A) Less than or equal to (≤) 3,300 people; or

(B) With EPA Administrator approval, greater than (>) 3,300 people and less than (<) 10,000 people.

(ii) The Department determines that the supplier cannot financially afford to comply with an MCL or treatment technique based on the Department-specified affordability criteria. This includes compliance through one or more of the following:

(A) Treatment.

(B) An alternative source.

(C) Restructuring or consolidation, unless the Department makes a written determination that restructuring or consolidation is not practical.

(iii) The EPA Administrator has identified a small system variance technology that is applicable to the system's size and source water quality.

(A) The supplier must be financially and technically capable of installing, operating, and maintaining the applicable small system variance technology, as specified in guidance or regulations issued by the EPA Administrator.

(iv) The Department determines that the small system variance technology provides adequate protection of public health, considering the system's source water quality and the removal efficiencies and expected useful life of the small system variance technology.

(b) The Department will not grant a small system variance from:

(i) Treatment technique requirements or MCLs for a contaminant which was regulated in the *National Primary Drinking Water Regulations* on or before January 1, 1986.

(ii) A microbial contaminant (e.g., a bacterium, virus or other organism), an indicator for a microbial contaminant, or treatment technique requirement for a microbial contaminant.

(iii) A treatment technique for filtration of surface water sources specified in 11.8, 11.9, or 11.10.

11.43(4) Exemption Qualifications

(a) The Department may grant an exemption from an MCL or treatment technique if all of the following criteria apply:

(i) Due to compelling factors, the supplier is unable to comply with an MCL or treatment technique requirement, or implement measures to develop an alternative source.

(A) Compelling factors may include economic factors (e.g., qualifying as a system that supplies a disadvantaged community).

(ii) The exemption will not result in an unreasonable risk to public health.

(iii) The supplier cannot reasonably make management and/or restructuring changes that result in compliance or, if compliance cannot be achieved, improve the drinking water quality.

(iv) The public water system was in operation on the effective date of the MCL or treatment technique requirement.

(A) The Department may grant an exemption to systems not in operation on the effective date of the MCL or treatment technique requirement if a reasonable alternative source is not available.

(b) If the supplier was granted a variance or small system variance, the supplier will not be granted an exemption.

(c) The supplier will not be granted an exemption from:

(i) The total coliform MCL.

(A) The effective date relating to the total coliform MCL has been stayed for a supplier that demonstrates to the Department that the violation of the total coliform MCL is due to a 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.

(ii) The *E. coli* MCLs.

(iii) The entry point residual disinfectant concentration requirement for surface water systems.

(d) To be granted an exemption, the supplier must establish that all practical steps are being taken to meet the MCL or treatment technique requirement and that at least one of the following apply:

(i) The system cannot meet the MCL or treatment technique requirement without capital improvements and the capital improvements cannot be completed before the effective date of the MCL or treatment technique requirement.

(ii) The supplier has entered into an enforceable agreement to become a part of a regional public water system.

(iii) If the supplier needs financial assistance for necessary improvements, either:

(A) The supplier has entered into an agreement to obtain financial assistance; or

(B) Within the period of the exemption, a federal or state program will likely be available.

11.43(5) Applications for Variances and Exemptions

(a) To be granted a variance or exemption, the owner or the owner's authorized representative listed with the Department must submit a completed and signed application.

(b) The application must include all of the following information:

(i) The nature and duration of the variance or exemption requested.

(ii) Relevant water quality sample results, including the results of relevant tests required under the *Colorado Primary Drinking Water Regulations*.

(iii) The interim measures to be continuously implemented during the requested variance or exemption period to adequately protect public health.

(iv) For a variance, an explanation of the compelling factors specified in 11.43(2) or 11.43(3).

(v) For an exemption, an explanation of the compelling factors specified in 11.43(4).

11.43(6) Public Notification and Meeting Requests

(a) The Department shall provide notice and the opportunity for a public hearing on the proposed variance or exemption and its respective schedule as specified in 11.43(9)(d)(iii).

(i) No later than 30 days after the Department has provided notice, any person may file a written request for the Department to hold a public meeting regarding the application for a variance or exemption.

(ii) No later than 30 days after the Department has provided notice, any person may submit written comments on the proposed variance or exemption and its schedule.

(b) For small system variances, the Department shall provide at least one public meeting on the small system variance no later than 15 days after the application is received.

11.43(7) Application Review for Variances and Exemptions

(a) If a submitted application is incomplete, the Department shall notify the supplier in writing no later than 20 days after receiving the application of items needed to complete the application.

(b) No later than 90 days after receiving a complete variance or exemption application, the Department shall make an initial determination to approve or deny the application.

(c) After making the initial determination:

(i) If a written request for a public meeting has not been received, the Department shall issue a final order granting or denying the variance or exemption as specified in 11.43(9).

(ii) If a written request for a public meeting has been received, the Department shall hold a public meeting as specified in 11.43(8).

(iii) If the Department makes an initial determination to deny the application, the Department shall notify the supplier in writing of the initial determination and the grounds on which the application is being denied.

(A) No later than 15 days after receiving the notice of the application's denial, the supplier may submit a response of intent to provide additional argument or information.

(iv) If the Department makes an initial determination to grant a small system variance to a system supplying greater than (>) 3,300 people and less than (<) 10,000 people, any consumer may petition the EPA Administrator to object to the granting of the variance no later than 30 days after the Department makes the initial determination.

(A) No later than 60 days after receiving the petition, the EPA Administrator shall respond to the petition and determine whether to object to the small system variance.

11.43(8) Public Meetings

(a) The Department shall hold a public meeting upon written request or as required by federal law.

(i) The Department may deny frivolous or insubstantial requests for a public meeting.

(b) At least 15 days before the public meeting, the Department shall arrange for publication of the notice of the public meeting.

(i) Notice of the public meeting shall include all of the following:

(A) Name, address, and telephone number of the system for which the variance or exemption is being requested.

(B) The provision of the *Colorado Primary Drinking Water Regulations* from which a variance or exemption is being requested.

(C) The initial determination of the Department regarding the variance or exemption.

(D) The Department's address and telephone number.

(E) A statement that a copy of the application is available for inspection at the Department during regular business hours.

(F) The date, time, and location of the public meeting.

(c) At the public meeting:

(i) Any person is permitted to submit oral or written statements concerning the variance or exemption application.

(ii) A representative of the Department shall preside and:

(A) Maintain a list of the name, address, and telephone number of each person who submits an oral or written statement.

(B) Has the discretion to set reasonable time limits for oral statements.

(iii) The Department shall record the oral statements.

11.43(9) Final Order to Grant or Deny a Variance or Exemption

(a) In determining whether to grant or deny a variance or exemption, the Department shall consider all of the following:

(i) Whether the completed application complies with the criteria for a variance or exemption.

(ii) Any written comments regarding the application received by the Department no later than 30 days after the notice to the public was provided as specified in 11.43(6).

(iii) If the Department has made an initial determination to deny the application, any written response by the supplier as specified in 11.43(7)(c)(iii)(A).

(iv) If a public meeting is held regarding the application, any written or oral statements submitted at the public meeting.

(b) For systems supplying greater than (>) 3,300 people and less than (<) 10,000 people if the supplier has requested a small system variance, the EPA Administrator must approve the small system variance request before the Department may issue a final order to grant the small system variance.

(i) The EPA Administrator shall grant or deny the small system variance no later than 90 days after the Department submits the request for approval.

(c) If there is no compelling evidence to change the Department's initial determination, the Department shall issue a final order to either grant or deny the variance or exemption according to the initial determination.

(d) If the variance or exemption is granted, the final order will include all of the following:

(i) The provision of the *Colorado Primary Drinking Water Regulations* from which the exemption or variance is granted.

(ii) The duration of the variance or exemption.

(iii) A schedule for all of the following:

(A) Achieving compliance with the MCL or treatment technique from which the variance or exemption was granted, including increments of progress.

(B) The date by which compliance with the MCL or treatment technique is required. For variances and exemptions, compliance must be achieved as soon as the Department determines possible.

(I) For exemptions, this must be no later than three years after the otherwise applicable compliance date for the MCL or treatment technique requirement for which the exemption was granted.

(II) For small system variances, this must be no later than three years after the small system variance is granted. If the Department determines that additional time is necessary for capital improvements, or to allow for financial assistance from a federal or state program, the Department may allow up to two additional years to comply with a variance technology, secure an alternative source, restructure or consolidate.

(C) Implementation of any Department-required control measures, including any Department-required control measures ending on the date when compliance with the MCL or treatment technique is required.

(e) A copy of the Department's final order will be mailed to all of the following people:

(i) The applicant.

(ii) All of those who submitted written comments that were received by the Department no later than 30 days after the notice to the public as specified in 11.43(6).

(iii) If a public meeting was held, all of those who submitted statements at the public meeting regarding the variance or exemption.

(f) If granted, the variance or exemption will become effective 90 days after the Department issues the final order.

(g) Any person adversely affected or aggrieved by the Department's final order may request an adjudicatory hearing on the final order.

(i) The hearing request must be filed in writing no later than 60 days after the effective date of the Department's final order granting the variance or exemption, or no later than 60 days after service of the order denying the variance or exemption.

(A) If granted, the variance or exemption will remain in effect until a determination is made at the hearing.

(ii) The hearing shall be conducted as specified in section 24-4-105, Colorado Revised Statutes.

11.43(10) Operation with a Variance or Exemption

(a) To maintain the variance or exemption, the supplier must comply with the Department-issued final order including the schedule specified in 11.43(9)(d)(iii).

(b) For small system variances, the supplier must install, operate, and maintain the small system variance technology in accordance with guidance or regulations issued by the EPA Administrator.

(c) The Department may enforce any requirement of the schedule, variance, or exemption as if it were a requirement of the *Colorado Primary Drinking Water Regulations*.

(d) If the supplier fails to comply with the final order granting the variance or exemption, the Department may revoke the variance or exemption pursuant to section 24-4-104, Colorado

Revised Statutes, and will conduct hearings regarding such revocations as specified in section 24-4-105, Colorado Revised Statues.

(e) The supplier must distribute Tier 3 public notice as specified in 11.33.

(f) The supplier must distribute consumer notice as specified in 11.34.

(g) To determine whether the supplier remains eligible for a small system variance, the Department shall review each small system variance at least every five years after the compliance date established in the small system variance.

(h) For systems that have been granted an exemption and supply less than or equal to (≤) 3,300 people, and need financial assistance for necessary improvements, the Department may renew an exemption granted under 11.43(4)(d)(i) or 11.43(4)(d)(iii) for no more than three additional two-year periods if the supplier establishes that all practical steps are taken to meet the MCL or treatment technique requirement.

…

11.46 ANALYTICAL REQUIREMENTS AND LABORATORY CERTIFICATION RULE

11.46(1) Applicability

For all public water systems, the supplier must ensure that all samples meet the testing requirements and analytical methods of this rule.

11.46(2) Bacteriological Analytical Requirements

(a) Total Coliform Analytical Requirements

~~(i) Until March 31, 2016, the testing requirements and analytical methods for total coliform analysis are specified in 40 CFR 141.21(f)(3) as amended July 1, 2014.~~

~~(ii) Beginning April 1, 2016, t~~The testing requirements and analytical methods for total coliform analysis are specified in 40 CFR 141.852(a-c)~~. as amended July 1, 2014.~~

(b) Fecal Coliform Analytical Requirements

~~Until March 31, 2016, t~~The testing requirements and analytical methods for fecal coliform analysis are specified in 40 CFR 141.21(f)(5)~~ as amended July 1, 2014~~.

(c) *Escherichia coli* Analytical Requirements

~~(i) Until March 31, 2016, the testing requirements and analytical methods for *Escherichia coli* analysis are specified in 40 CFR 141.21(f)(6-7) and 40 CFR 141.704(b) as amended July 1, 2014.~~

~~(ii) Beginning April 1, 2016, t~~The testing requirements and analytical methods for *Escherichia coli* analysis are specified in 40 CFR 141.25(f)(6-7), 40 CFR 141.704(b) and 40 CFR 141.852(a-c)~~ as amended July 1, 2014~~.

(d) *Cryptosporidium* Analytical Requirements

The testing requirements and analytical methods for *Cryptosporidium* analysis are specified in 40 CFR 141.704(a) and 40 CFR 141.707(c)(2)~~ as amended July 1, 2014~~.

(e) Groundwater Source Analytical Requirements

The testing requirements and analytical methods for groundwater source water sample analysis are specified in 40 CFR 141.402(c) ~~as amended July 1, 2014~~.

(f) Heterotrophic Bacteria Analytical Requirements

The testing requirements and analytical methods for heterotrophic bacteria are specified in 40 CFR 141.74(a).

11.46(3) Inorganic Chemical Analytical Requirements

The testing requirements and analytical methods for inorganic chemical analysis are specified in 40 CFR 141.23(a)(4)(i) and 40 CFR 141.23(k)(1-2) ~~as amended July 1, 2014~~.

11.46(4) SOC and VOC Analytical Requirements

The testing requirements and analytical methods for SOCs and VOCs are specified in 40 CFR 141.24(e) ~~as amended July 1, 2014~~.

11.46(5) PCB Analytical Requirements

The testing requirements and analytical methods for PCBs are specified in 40 CFR 141.24(h)(13) ~~as amended July 1, 2014~~.

11.46(6) Radionuclide Analytical Requirements

The testing requirements and analytical methods for radionuclides are specified in 40 CFR 141.25(a-c) ~~as amended July 1, 2014~~.

11.46(7) Turbidity ~~and Heterotrophic Plate Count~~ Analytical Requirements

The testing requirements and analytical methods for turbidity ~~and HPC~~ are specified in 40 CFR 141.74(a) ~~as amended July 1, 2014~~.

11.46(8) Disinfection, Disinfection Byproducts, and Disinfection Byproduct Precursors Analytical Requirements

(a) Disinfection Byproduct Precursors Rule Analytical Requirements

The testing requirements and analytical methods for the disinfection byproduct precursor rule are specified in 40 CFR 141.131(a)(1-2) and 40 CFR 141.131(d)(1-6) ~~as amended July 1, 2014~~.

(b) Disinfection Residual Analytical Requirements

The testing requirements and analytical methods for free chlorine, chloramines, chlorine dioxide, and ozone are specified in 40 CFR 141.74(a), 40 CFR 141.131(a), and 40 CFR 141.131(c) ~~as amended July 1, 2014~~.

(c) Disinfection Byproducts Rule Analytical Requirements

The testing requirements and analytical methods for disinfection byproducts rule are specified in 40 CFR 141.131(a~~b~~) and 40 CFR 141.131(b~~a~~) ~~as amended July 1, 2014~~.

11.46(9) Lead and Copper Rule Analytical Requirements

The testing requirements and analytical methods for lead, copper, pH, conductivity, calcium, alkalinity, orthophosphate, silica, and temperature are specified in 40 CFR 141.89(a)(1-4) ~~as amended July 1, 2014~~.

11.46(10) Secondary Contaminants Analytical Requirements

The testing requirements and analytical methods for secondary contaminants are specified in 40 CFR 143.4(b) ~~as amended July 1, 2014~~.

11.46(11) Alternative Analytical Techniques

The use of alternative testing requirements and analytical methods are specified in 40 CFR 141.27(a) and Appendix A to Subpart C of 40 CFR 141 ~~as amended July 1, 2014~~.

11.46(12) Certified Laboratories and Laboratory Certification

(a) Certified Laboratories

The requirements for a certified laboratory are specified in 40 CFR 141.28(a) ~~as amended July 1, 2014~~.

(b) Laboratory Certification for Inorganic Chemicals

The laboratory certification requirements for inorganic chemicals are specified in 40 CFR 141.23(k)(3) ~~as amended July 1, 2014~~.

(c) Laboratory Certification for VOCs

The laboratory certification requirements for VOCs are specified in 40 CFR 141.24(f)(17) and 40 CFR 141.24(f)(20) ~~as amended July 1, 2014~~.

(d) Laboratory Certification for SOCs

The laboratory certification requirements for SOCs are specified in 40 CFR 141.24(h)(19) ~~as amended July 1, 2014~~.

(e) Laboratory Certification for *Cryptosporidium*, *E. coli*, and Turbidity

The laboratory certification requirements for *Cryptosporidium*, *E. coli*, and turbidity are specified in 40 CFR 141.705(a-c) ~~as amended July 1, 2014~~.

11.46(13) Laboratory Compositing

The requirements for compositing of samples by a laboratory are specified in 40 CFR 141.24(f)(14) ~~as amended July 1, 2014~~.

11.46(14) Calculating Contact Time Values

(a) The requirements for calculating contact time values are specified in 40 CFR 141.74(b)(3-4) ~~as amended July 1, 2014~~.

(b) Disinfectant contact time in pipelines must be calculated based on the consideration of the liquid level in the pipeline and dividing that volume by the maximum hourly flow rate through that pipe. Disinfectant contact time within mixing basins and storage reservoirs must be determined by tracer studies, or an equivalent demonstration, or by baffling factor estimates considering the minimum operating level.

11.47 UNREGULATED CONTAMINANT MONITORING RULE

11.47(1) Applicability and Requirements for Unregulated Contaminant Monitoring

All public water systems must monitor for unregulated contaminants as specified in 40 CFR 141.40 ~~as amended July 1, 2014~~ and comply with the requirements specified in this rule.

11.47(2) Public Notice for Unregulated Contaminant Monitoring

No later than 12 months after receiving the unregulated contaminant monitoring results, the supplier must distribute Tier 3 public notice to consumers notifying them of the availability of the monitoring results as specified in rule 11.33.

11.48 RESERVED

11.49 RESERVED

. . . .

11.58 STATEMENT OF BASIS, SPECIFIC STATUTORY AUTHORITY AND PURPOSE: November 2017; Final Action April 9, 2018; Effective Date May 14, 2018

The following sections were affected by this rulemaking hearing: 11.2 – Definitions, Acronyms, and Abbreviations, 11.5 – Monitoring Plan Rule, 11.8 – Surface Water Treatment Rule, 11.11 - Groundwater Rule, 11.13 – Groundwater Rule: Disinfection Waivers, 11.16 - Revised Total Coliform Rule, 11.17 Total Coliform Rule, 11.23 – Maximum Residual Disinfectant Levels Rule, 11.28 – Storage Tank Rule, 11.33 – Public Notification Rule, 11.34 – Consumer Confidence Report Rule, 11.36 – Recordkeeping Requirements Rule, 11.37 – Cross-Connection Control Rule, 11.39 – Backflow Prevention and Cross-Connection Control Rule, 11.43 – Variances and Exemptions Rule, and 11.45 MCLs, MCLGs, SMCLs, MRDLs, MRDLGs, and Action Levels. The provisions of the Colorado Revised Statutes (CRS), section 25-1.5-202, provide specific statutory authority for adoption of these regulatory amendments. The Commission also adopted, in compliance with section 24-4-103(4), CRS, the following statement of basis and purpose.

BASIS AND PURPOSE

Revisions to the Revised Total Coliform Rule (RTCR)

The Commission revised the Colorado Primary Drinking Water Regulations in 2015 to include the Revised Total Coliform Rule, as part of the Colorado Department of Public Health and Environment's federally-mandated primacy agreement with the United States Environmental Protection Agency (EPA). Additionally, the 2015 rulemaking included Colorado-specific requirements for storage tanks, backflow prevention and cross-connection control, water haulers, minimum chlorine residual disinfection concentration in the distribution system, and various other editorial revisions and clarifications.

The Department's Water Quality Control Division submitted its Revised Total Coliform Rule primacy to the EPA in June 2015. As part of its review, the EPA granted the Department temporary primacy due to concerns about missing regulatory language/requirements. For this rulemaking, in order to address the EPA's comments to obtain full primacy for the Revised Total Coliform Rule and to provide additional clarity and accuracy, the Commission has made the following revisions:

- Removed outdated requirements;
- Removed outdated references;

- Added missing references;
- Corrected or removed obsolete references;
- Reorganized the structure of 11.16 Revised Total Coliform Rule for increased clarity; and
- Moved the operator certification requirements from 11.8 – Surface Water Treatment Rule to 11.16 – Revised Total Coliform Rule.

Revisions to Cross-Connection Control Rule (Regulation 11.39)

In 2015, the Commission also amended Section 11.39 of the Colorado Primary Drinking Water Regulations' Backflow Prevention Cross-Connection Control Rule to further protect public health and public water systems from potential contamination associated with cross-connections and ensure public water system compliance with Section 25.1.114 & 25.1.114.1 of the Colorado Revised Statutes. The Water Quality Control Division committed during the rulemaking process to continue to engage with stakeholders, solicit input and further evaluate the adopted rule, while providing appropriate protection of the public health and public water systems.

The intent of the cross-connection portion of the rulemaking is to provide additional flexibility to water systems while continuing to protect public health and public water systems from potential contamination associated with cross-connections. Prior to this rulemaking, Section 11.39 of the Backflow Prevention Cross-Connection Control Rule required that all non-single-family-residential connections be evaluated for potential cross connections or that such connections be controlled appropriately. Stakeholders throughout the state expressed concern that certain types on multi-family-residential connections present a similar risk to the public water system as single-family-residential connections and should not be required to be evaluated for cross connections. The stakeholder community and the Water Quality Control Division have held two stakeholder meetings in September of 2017 to evaluate the apparent risks to the public water system from single-family-residential-service connections, and multi-family-residential connections. Based on the stakeholder process, the impact to public health and public water systems, and considerations including the applicable plumbing codes (Colorado Plumbing Code), and the volume of water in the service connections, the Water Quality Control Division proposed to adopt language in this rulemaking which considers duplex-residential connections as single-family-residential connections.

The Commission agrees with the Water Quality Control Division that single-family-residential connections and duplex-residential connections generally present a similar risk to a public water system' distribution system and it is reasonable to consider duplex-residential connections as single-family-residential connections for the purpose of this rule. The Commission also deleted outdated the former Cross-Connection Rule (Regulation 11.37) because it is outdated and no longer applicable.

Updated Date for Federal Regulations Incorporated by Reference

The Commission also updated the date of the EPA regulations incorporated by reference throughout the Colorado Primary Drinking Water Regulations. To do this, the Commission deleted specific references to dates of EPA regulations throughout the Colorado Primary Drinking Water Regulations and added a new section to Regulation 11.2(6) which makes April 9, 2018 the effective date of all incorporated EPA regulations.