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 to the Colorado Primary Drinking Water Regulations, Regulation #11 (5 CCR 1002-11).

The revisions to Regulation #11 proposed by the Water Quality Control Division (Division), along with a proposed Statement of Basis, Specific Statutory Authority and Purpose are attached to this notice as Exhibit 1.
Proposed new language is shown with double-underlining and proposed deletions are shown with ~~strikeouts~~. Any alternative proposals related to the revisions proposed in Exhibit 1 and developed in response to those proposed revisions will also be considered.

HEARING SCHEDULE:

DATE:	Monday, January 12, 2015
TIME:	10:00 a.m.
PLACE:	Florence Sabin Conference Room Department of Public Health and Environment 4300 Cherry Creek Drive South Denver, CO 80246

PUBLIC PARTICIPATION ENCOURAGED:

The Commission encourages all interested persons to provide their opinions or recommendations regarding the matters to be addressed in this rulemaking hearing, either orally at the hearing or in writing prior to or at the hearing. Although oral testimony from those with party status (see below) and other interested persons will be received at the hearing, the time available for such oral testimony may be limited. The Commission requests that all interested persons submit to the Commission any available information that may be relevant in considering the noticed proposals.

Written submissions prior to the hearing by interested members of the public that do not have party status are encouraged. In order to be distributed to the Commission for review prior to the hearing, such submissions need to be received in the Commission Office or the Colorado Department of Public Health and Environment's (Department's) mail room by December 29, 2014. Written submissions received after this date will be distributed to Commissioners at the hearing. However, for logistical reasons, the Commission office cannot guarantee that electronic submissions received after 1:00 p.m. Friday, January 9, 2015 will be provided to Commissioners. Interested persons wishing to submit comments or other documents after that date and time should bring paper copies to the hearing and provide PDF versions to the Commission office as soon as possible after the hearing.

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 generally will not be permitted.

PARTY STATUS:

Participation as a "party" to this hearing will require compliance with section 21.3(D) of the Procedural Rules, Regulation #21 (5 CCR 1002-21). It is not necessary to acquire party status in order to testify or comment. **For each request for party status, please provide the organization's name, a contact person, mailing address, phone number, and email address.** Written party status requests are due in the Commission Office on or before:

DATE: Tuesday, October 23, 2014
TIME: 5:00 p.m.

A single copy of the party status request may be transmitted as an email attachment to cdphe.wqcc@state.co.us, submitted by fax to 303-691-7702, mailed or otherwise conveyed so as to be received in the Department's mail room no later than this deadline.

PREHEARING STATEMENTS:

PLEASE NOTE that for this hearing two separate deadlines for prehearing statements are established:

(1) A PDF version of a **Proponent's Prehearing Statement** from the Division, as the proponent of revisions proposed in Exhibit 1 attached to this notice, including written testimony and exhibits providing the basis for the proposals, must be submitted to the Commission office no later than **November 4, 2014**. **In addition,** one complete paper copy, including written testimony and exhibits providing the basis for the proposals, **AND** 13 paper copies of the Proponent's Prehearing Statements, **without** written testimony and exhibits, must be received in the Department's mail room no later than **November 4, 2014**; and

(2) A PDF version of a **Responsive Prehearing Statement**, including any exhibits, written testimony, and alternative proposals of **anyone seeking party status and intending to respond to the proponent's proposal** must be submitted to the Commission office no later than **November 25, 2014**. **In addition,** one complete paper copy, including written testimony and exhibits providing the basis for the proposals, **AND** 13 paper copies, **without** written testimony and exhibits, must be received in the Department's mail room no later than **November 25, 2014**.

The PDF versions of all prehearing statements may be emailed to cdphe.wqcc@state.co.us, provided via an FTP site or submitted on a CD so as to be received no later than the specified due date.

As soon as prehearing statements are posted on the Commission's web site, the Commission office will email a link to the page containing the prehearing statements to proponents, parties and the Attorney General's Office representatives for the Commission and the Division.

Please **note** that the Commission has prepared a document entitled **Information for Parties to Water Quality Control Commission Rulemaking Hearings.** A copy of this document will be emailed to all persons requesting party status. It is also posted on the Commission's web site as Appendix C to the Public Participation Handbook. Following the suggestions set forth in this document will enhance the effectiveness of parties' input for this proceeding. **Please note the request that all parties submit two-sided copies of all hearing documents on three-hole punch paper.**

REBUTTAL STATEMENTS:

Written rebuttal statements responding to the prehearing statements due on November 25, 2014 may be submitted by the Division or anyone seeking party status. Any such rebuttal statements must be received in the Commission Office by **December 29, 2014**. A PDF version (emailed to

cdphe.wqcc@state.co.us, provided via an FTP site or submitted on a CD) must be submitted to the Commission office by this deadline. **In addition**, one complete paper copy of written rebuttal statements, including any exhibits, **AND** 14 paper copies **without** exhibits must be received in the Department's mail room by this deadline. No other written materials will be accepted following this deadline except for good cause shown.

PREHEARING CONFERENCE:

DATE: Tuesday, December 9, 2014
TIME: 1:00 p.m.
PLACE: Sabin Conference Room
Department of Public Health and Environment
4300 Cherry Creek Drive South
Denver, Colorado 80246

Attendance at the prehearing conference is mandatory for all persons requesting party status. An opportunity may be available to participate in this prehearing conference by telephone. Persons wishing to participate by telephone should notify the Commission Office as early as possible.

Any motions regarding the conduct of this rulemaking shall be submitted by Thursday, December 4, 2014, so that they can be considered at the prehearing conference. No motions will be accepted after December 4, 2014, except for good cause shown.

SPECIFIC STATUTORY AUTHORITY:

The provisions of sections 25-1.5-202; 25-8-202(1)(n); and 25-8-401 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.

NOTIFICATION OF POTENTIAL MATERIAL INJURY TO WATER RIGHTS:

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 in the party status request submitted. In order for this potential to be considered fully by the Commission and the other agencies listed in the statute, persons must fully explain the basis for their claim in their prehearing statement which is due in the Commission Office on the date specified above. This explanation should identify and describe the water right(s), and explain how and to what degree the material injury will be incurred.

Dated this 22nd day of September, 2014 at Denver, Colorado.

WATER QUALITY CONTROL COMMISSION

Trisha Oeth
cn=Trisha Oeth, o, ou=Water Quality Control Commission, email=trisha.oeth@state.co.us, c=US
2014.09.22 08:48:35 -06'00'

Trisha Oeth, Administrator

EXHIBIT 1

WATER QUALITY CONTROL DIVISION

COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT

WATER QUALITY CONTROL COMMISSSION

REGULATION NO. 11

COLORADO PRIMARY DRINKING WATER REGULATIONS (5 CCR 1002-11)

....

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:*

(1) "4-LOG TREATMENT OF VIRUSES" means 99.99 percent inactivation and/or removal of viruses.

(2) "ACT" means the federal Public Health Service Act, as amended by the Safe Drinking Water Act, Public Law 93-523.

(3) "AVERAGE RESIDENCE TIME" means a point in the distribution system where treated water has been in the system for approximately half of its longest or maximum time in the system, as measured by water transport time. Sample locations between 25 and 75 percent of the maximum are considered to be representative of average residence time, provided that in total, the average of the selected locations approximate 50 percent of the maximum residence time and take into account population densities and their locations.

(4) "BACKFLOW CONTAMINATION EVENT" means backflow into a public water system from an uncontrolled cross connection such that the water quality no longer meets the *Colorado Primary Drinking Water Regulations* or presents an immediate health and/or safety risk to the public.

(45) "BAG FILTERS" means pressure–driven separation devices that remove particulate matter larger than 1 micrometer using an engineered porous filtration media. They are typically constructed of a non-rigid, fabric filtration media housed in a pressure vessel in which the direction of flow is from the inside of the bag to the outside.

(56) "BEST AVAILABLE TECHNOLOGY" or "BAT" means the best technology, treatment techniques, or other means that the EPA Administrator finds available, considering cost and after examination for efficacy under field conditions and not solely under laboratory conditions.

(~~6~~7) “CARTRIDGE FILTERS” means pressure-driven separation devices that remove particulate matter larger than 1 micrometer using an engineered porous filtration media. They are typically constructed as rigid or semi-rigid, self-supporting filter elements housed in pressure vessels in which flow is from the outside of the cartridge to the inside.

(~~7~~8) “CERTIFIED LABORATORY” means a laboratory certified by the State of Colorado for analysis of drinking water.

(~~8~~9) “COAGULATION” means a process using coagulant chemicals and mixing by which colloidal and suspended materials are destabilized and agglomerated into flocs.

(~~9~~10) “COMBINED DISTRIBUTION SYSTEM” means an interconnected distribution system consisting of the distribution systems of wholesale systems and of the consecutive systems that receive finished water.

(~~10~~11) “COMMUNITY WATER SYSTEM” means a public water system that supplies at least 15 service connections used by year-round residents or that regularly supplies at least 25 year-round residents.

(~~11~~12) “COMPLIANCE CYCLE” means the nine-year calendar year cycle during which the supplier must monitor. Each compliance cycle consists of three three-year compliance periods.

(~~12~~13) “COMPLIANCE PERIOD” means a three-year calendar year period within a compliance cycle.

(~~13~~14) “CONSECUTIVE SYSTEM” means a public water system that receives some or all of its finished water from one or more wholesale systems. Delivery may be through a direct connection or through the distribution system of one or more consecutive systems.

(~~14~~15) “CONSTRUCTION” means the erection, building, modification, reconstruction, improvement or expansion of waterworks.

(~~15~~16) “CONTAMINANT” means any physical, chemical, biological, or radiological substance or matter in water.

(~~16~~17) “CONSUMER” means any person that has the opportunity to consume finished water from a public water system.

(~~17~~18) “CONVENTIONAL FILTRATION TREATMENT” means a series of processes including coagulation, flocculation, sedimentation (or equivalent form of clarification), and granular media filtration resulting in substantial particulate removal.

(~~18~~19) “CROSS~~-~~ CONNECTION” means any connection that ~~which~~ could allow any ~~used water, industrial fluid, gas, or water of a quality below the drinking water standards in these regulations~~ water, fluid, or gas such that the water quality no longer meets the *Colorado Primary Drinking Water Regulations*, or such that the water quality could present an unacceptable health and/or safety risk to the public, to flow from any pipe, plumbing fixture, or a ~~consumer's~~ customer's water system into a public water system's distribution system or any other part of the public water system through backflow. ~~Examples of cross-connections include: by-pass arrangements, jumper connections, removable sections, swivel or changeover devices and other temporary or permanent devices through which or because of which backflow can or may occur.~~

(~~19~~20) “CT” or “CT_{calc}” means the product of residual disinfectant concentration (C) in mg/L determined before or at the first customer, and the corresponding disinfectant contact time (T) in minutes (i.e., C x T).

(~~20~~21) “CUSTOMER” means billing units or service connections that receive finished water.

(~~21~~22) “DEPARTMENT” means the Colorado Department of Public Health and Environment as created by section 25-1-102(1), Colorado Revised Statutes.

(~~22~~23) “DIATOMACEOUS EARTH FILTRATION” means a process resulting in substantial particulate removal in which (1) a precoat cake of diatomaceous earth filter media is deposited on a support membrane (septum), and (2) while the water is filtered by passing through the cake on the septum, additional filter media known as body feed is continuously added to the feed water to maintain the permeability of the filter cake.

(~~23~~24) “DIRECT FILTRATION” means a series of processes including coagulation and filtration but excluding sedimentation resulting in substantial particulate removal.

(~~24~~25) “DISINFECTANT” means any oxidant, including but not limited to chlorine, chlorine dioxide, chloramines, ozone, and ultraviolet light, added to water in any part of the treatment or distribution process that is intended to kill or inactivate pathogenic microorganisms.

(~~25~~26) “DISINFECTANT CONTACT TIME” means the time in minutes that it takes for water to move from the point of disinfectant application, or the previous point of disinfectant residual measurement, to a point before or at the point where residual disinfectant concentration (C) is measured.

(~~26~~27) “DISINFECTION” means a process that inactivates pathogenic microorganisms in water by chemical oxidants, ultraviolet light, or equivalent agents.

(~~27~~28) “EMERGENCY SOURCE/CONNECTION” means a water facility that is only used as the result of extreme circumstances, and is otherwise kept offline. These facilities may be either connected or disconnected from a treatment plant/distribution system.

(~~28~~29) “ENFORCEMENT ORDER” means an order issued for the purpose of notifying the supplier of a public water system that it is in violation of the *Colorado Primary Drinking Water Regulations* or for the purpose of requiring the supplier of a public water system to cease such violations. Enforcement orders may prescribe corrective measures necessary to achieve compliance with the *Colorado Primary Drinking Water Regulations*.

(~~29~~30) “ENTRY POINT” means a location before or at the first customer which is representative of finished water. The entry point may represent finished water from multiple treatment plants and/or multiple sources.

(~~30~~31) “FILTRATION” means a process for removing particulate matter from water by passage through porous media.

(~~31~~32) “FINISHED WATER” means water that is supplied to the distribution system of a public water system and intended for distribution and human consumption without further treatment, including disinfection contact time, except treatment as necessary to maintain water quality in the distribution system (e.g., booster disinfection, addition of corrosion control chemicals).

(~~32~~33) “FIRST CUSTOMER” means the first potable water service connection that serves finished water. Typically, the first customer is the water treatment plant’s domestic water system.

(~~33~~34) “FLOCCULATION” means a process to enhance agglomeration or collection of smaller floc particles into larger, more easily settled particles through gentle stirring by hydraulic or mechanical means.

(~~34~~35) "GROUNDWATER" means any water under the surface of the ground that is not surface water or groundwater under the direct influence of surface water.

(~~35~~36) "GROUNDWATER SYSTEM" means a public water system that uses groundwater not under the direct influence of surface water as its sole source of water and does not include public water systems that combine all of their groundwater with surface water or groundwater under the direct influence of surface water before to treatment.

(~~36~~37) "GROUNDWATER UNDER THE DIRECT INFLUENCE OF SURFACE WATER" or "GWUDI" means any water beneath the surface of the ground with:

(a) Significant occurrence of insects or other macro-organisms, algae, or large-diameter pathogens such as *Giardia lamblia* or *Cryptosporidium*; or

(b) Significant and relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity, or pH, which closely correlate to climatological or surface water conditions.

(~~37~~38) "INACTIVATION" means the use of a disinfectant (e.g., chorine, chloramines, ozone) to interrupt the ability of a pathogen to replicate therefore leaving it unable to infect.

(~~38~~39) "LEAD FREE" means:

(a) Less than or equal to (≤) 0.2 percent lead ~~When~~when used with respect to solders and flux~~, solders and flux containing less than or equal to (≤) 0.2 percent lead~~.

(b) A weighted average of less than or equal to (≤) 0.25 percent lead ~~When~~when used with respect to the wetted surfaces of pipes~~,~~ ~~and~~ pipe fittings, plumbing fittings, and fixtures ~~pipes and pipe fittings containing less than or equal to (≤) 8.0 percent lead~~.

(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 the possible cause(s) that triggered the assessment. 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 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.

(~~39~~42) "LOCATIONAL RUNNING ANNUAL AVERAGE" or "LRAA" means the average of sample results for samples collected at a particular monitoring location during the most recent four calendar quarters. If the supplier fails to complete four consecutive quarters of sampling, the LRAA is based on the available sample results from the most recent four calendar quarters.

(~~40~~43) "MAXIMUM CONTAMINANT LEVEL" or "MCL" means the maximum level of a contaminant allowed in drinking water, which is delivered to any consumer.

(~~41~~44) "MAXIMUM CONTAMINANT LEVEL GOAL" or "MCLG" means the maximum level of a contaminant in drinking water at which no known or anticipated adverse effects on human health would occur, and which allows an adequate margin of safety. Maximum contaminant level goals are non-enforceable health goals.

(4245) “MAXIMUM RESIDENCE TIME” means a point in the distribution system where the treated water has been in the system for the longest or maximum time, as measured by water transport time. Sample locations between 90 and 100 percent of the maximum are considered to be representative of maximum residence time.

(4346) “MAXIMUM RESIDUAL DISINFECTANT LEVEL” or “MRDL” means the level of a disinfectant added for water treatment that may not be exceeded at the consumer's tap without an unacceptable possibility of adverse effects on human health.

(4447) “MAXIMUM RESIDUAL DISINFECTANT LEVEL GOAL” or “MRDLG” means the maximum level of a disinfectant added for water treatment at which no known or anticipated adverse effect on the human health would occur, and which allows an adequate margin of safety. MRDLGs are non-enforceable health goals and do not reflect the benefit of the addition of the chemical for control of waterborne microbial contaminants.

(4548) “MEMBRANE FILTRATION” means a pressure or vacuum driven separation process in which particulate matter larger than 1 micrometer is rejected by an engineered barrier, primarily through a size-exclusion mechanism, and which has a measurable removal efficiency of a target organism that can be verified through the application of a direct integrity test. This definition includes the common membrane technologies of microfiltration, ultrafiltration, nanofiltration, and reverse osmosis.

(4649) “NEW SOURCE” means a source not previously used by the public water system or a source not previously approved by the Department.

(4750) “NON-COMMUNITY WATER SYSTEM” means a public water system that is not a community water system. A non-community water system is either a "transient, non-community water system" or a "non-transient, non-community water system."

(4851) “NON-TRANSIENT, NON-COMMUNITY WATER SYSTEM” means a public water system that regularly serves a population of at least 25 of the same people for at least six months per year and is not a community water system.

(4952) “NON-TRANSIENT POPULATION” means the average number of people served per day during the year or normal operating period(s), who do not reside at the place supplied by the system, but have a regular opportunity to consume water produced by the system. Regular opportunity is defined as four or more hours per day, for four or more days per week, for six or more months per year.

(5053) “NOTIFY” means to inform by written, verbal, or other means, unless otherwise stated.

(5154) “PERSON” means an individual, corporation, company, association, partnership, municipality, or State, Federal, or tribal agency.

(5255) “PLANS AND SPECIFICATIONS” means the technical design drawings and specifications for waterworks. For new waterworks, this also includes technical, financial, and managerial plans.

(5356) “PLANT INTAKE” or “INTAKE” means the works or structures at the head of a conduit through which water is diverted from a source (e.g., river or lake) into the treatment plant.

(5457) “POINT-OF-ENTRY TREATMENT DEVICE” or “POE” means a treatment device applied to the drinking water entering a house or building for the purpose of reducing contaminants in the drinking water distributed throughout the house or building.

(~~55~~58) "POPULATION SUPPLIED" means the average daily population that occurs during the busiest month of the year or normal operating period(s). Population supplied is further defined as the sum of resident, non-transient, and transient populations.

(~~56~~59) "PRESEDIMENTATION" means a preliminary treatment process used to remove gravel, sand and other particulate material from the source water through settling before the water enters the primary clarification and filtration processes in a treatment plant.

(~~57~~60) "PUBLIC WATER SYSTEM" or "PWS" means a system for the provision to the public of water for human consumption through pipes or other constructed conveyances, if such system has at least fifteen service connections or regularly serves an average of at least 25 individuals daily at least 60 days per year. A public water system is either a community water system or a non-community water system. Such term does not include any special irrigation district. Such term includes:

(a) Any collection, treatment, storage, and distribution facilities under control of the supplier of such system and used primarily in connection with such system.

(b) Any collection or pretreatment storage facilities not under such control, which are used primarily in connection with such system.

(61) "PUBLIC WATER SYSTEM THAT HAULS WATER" means a public water system that delivers, by vehicle, finished water through a non-piped conveyance such as a vehicle mounted tank or container.

(~~58~~62) "RECYCLE" means the act of returning recycle flows to a plant's primary treatment process.

(~~59~~63) "RECYCLE FLOWS" means any water, solid or semi-solid, generated by a plant's treatment processes, operational processes, and residual treatment processes, that is returned to the plant's primary treatment process.

(~~60~~64) "RESIDENT POPULATION" means the average number of people whose primary residence is supplied by the system. The resident does not have to live at the residence for 365 days per year for it to be considered his/her primary residence.

(~~61~~65) "RESIDUAL DISINFECTANT CONCENTRATION" means the concentration of disinfectant measured in mg/L in a representative sample of water.

(~~62~~66) "RUNNING ANNUAL AVERAGE or "RAA" means the average of sample results for samples collected during the most recent four calendar quarters. If the supplier fails to complete four consecutive quarters of sampling, the RAA is based on the available sample results from the most recent four calendar quarters.

(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.

(~~63~~68) "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, 2013~~July 1, 2014.

(~~64~~69) "SEDIMENTATION" means a process for removal of solids before filtration by gravity or separation.

(~~65~~70) "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*.

(~~66~~71) "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.

(~~67~~72) "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.

(~~68~~73) "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.

(~~69~~74) "SOURCE" means the point at which a public water system diverts water from its natural or man-made origin.

(~~70~~75) "SOURCE WATER SAMPLE" means a sample collected before any treatment that represents influent raw source water quality.

(~~71~~76) "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.

(77) "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 will not be used to determine compliance with sampling requirements, the *E. coli* MCL, or in determining if a treatment technique is triggered.

(~~72~~78) "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*.

(~~73~~79) "STATE" means the State of Colorado.

(~~74~~80) "SUPPLIER OF WATER" or "SUPPLIER" means any person who owns or operates a public water system.

(~~75~~81) "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.

(~~76~~82) "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.

(~~77~~83) "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.

(~~78~~84) "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.

(~~79~~85) "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.

(~~80~~86) "VIOLATION" means failure to comply with any requirement of the *Colorado Primary Drinking Water Regulations*.

(~~81~~87) "VIRUS" means a virus of fecal origin, which is infectious to humans by waterborne transmission.

(~~82~~88) "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.

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

(~~83~~90) "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.

(~~84~~91) "WATER VENDING AND DISPENSING MACHINES" means any device which, upon payment dispenses water into a container.

(~~85~~92) "WHOLESALER" means any person who owns or operates and is legally responsible for a wholesale system.

(~~86~~93) "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.

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11.4 PLANS APPROVAL FOR THE LOCATION AND CONSTRUCTION OF WATERWORKS

11.4(1) Prior Approval Requirements

(a) For new community or non-transient, non-community water systems, the supplier must not begin construction of the new water system until the supplier completes and receives Department approval of a capacity (technical, managerial and financial) assessment using the criteria found in the *New Public Water System Capacity Planning Manual*.

(b) For all public water systems, the supplier must not begin construction of any new waterworks, make improvements to or modify existing waterworks, or begin using a new source until the supplier submits and receives Department approval of plans and specifications for such construction, improvements, modifications, or use.

(i) "BEGIN CONSTRUCTION" means initiation of the physical effort to construct a project, excluding engineering, architectural, legal, fiscal and economic investigations, studies, and completion of plans and specifications, and surveys. Physical effort includes, but is not limited to, site clearance, excavation, construction, or the establishment of an office or construction building on site.

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

(ii~~i~~) "NEW WATERWORKS" means:

(A) Any newly constructed public water system; or

(B) An existing system that becomes, by definition, a public water system by extending its infrastructure through physical expansion by virtue of increasing the number of connections, the number of individuals served, or by extending the number of days of service.

(~~iv~~iii) For community water systems, a Professional Engineer registered in the State of Colorado must design all treatment systems.

(~~v~~iv) Decisions regarding the review and approval of plans and specifications for new waterworks or improvements or modifications to existing waterworks shall be based on conformance to the design criteria developed by the Department specified in Policy DW-005, *State of Colorado Design Criteria for Potable Water Systems*.

(~~vi~~v) The Department shall grant approval upon finding that the proposed facilities conform to the design criteria specified in Policy DW-005, *State of Colorado Design Criteria for Potable Water Systems*, and are capable of continuously complying with all applicable laws, standards, rules and regulations.

11.4(2) Siting Requirements

Waterworks must ~~not~~ avoid being located at a site which:

(a) Is subject to a significant risk from earthquakes, floods, fires or other disasters which could cause a breakdown of the public water system or a portion of the public water system; or

(b) Is within the floodplain of a 100-year flood, except for intake structures.[1]

(i) The Department shall not seek to override land use decisions affecting public water systems siting which are made at the local government level.

1 Records of the 100-year projections are available at the office of the Colorado Water Conservation Board, 1313 Sherman Street, Denver, Colorado 80203.

....

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~~I) The frequency and approximate time of collection.

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

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

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

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

(~~vi~~VI) The monitoring and sampling results presentation format.

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

(~~viii~~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), ~~and~~ for the Groundwater Rule: Disinfection Waivers in 11.13(2), and beginning April 1, 2016 for the Revised Total Coliform Rule in 11.16(4).

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.

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11.8 SURFACE WATER TREATMENT RULE

11.8(1) General Requirements

....

(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, t~~T~~he 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(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 ~~supplier~~ 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(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 ~~supplier~~ 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.

(~~C~~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) ~~or 11.8(3)(d)(i)(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 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 10^{th} 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.

(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.

~~(iii) If the Department determines that the supplier has submitted all the residual disinfectant concentration information as specified in 11.8(3)(f)(ii)(A-C) for at least 12 months and the supplier keeps records of the information, the supplier is not required to submit the lowest daily entry point residual disinfectant concentration results as specified in 11.8(3)(f)(ii)(A).~~

....

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, 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 11.17(3) until March 31, 2016, and collected under 11.16(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 ~~supplier~~ 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.

(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(3) Requirements for 4-Log Treatment of Viruses

(a) Applicability for 4-Log Treatment of Viruses

(i) For any new or existing groundwater source that is treated to at least 4-log treatment of viruses at the entry point, either by choice or because the supplier is required to as specified in 11.38(3)(a)(i)(D) or 11.11(6), the supplier must comply with the requirements specified in this section, 11.11(3).

(A) If the supplier is subject to the requirements specified in this section, 11.11(3), the supplier is not required to meet the source water monitoring requirements specified in 11.11(4) and 11.11(5).

(b) Notification of 4-Log Treatment of Viruses

(i) The supplier must submit notification that the system is providing at least 4-log treatment of viruses at the entry point(s).

(A) The submission must include engineering, operational, or other information that the Department requests to evaluate the submission.

(c) Treatment Technique Requirements for 4-Log Treatment of Viruses

(i) The supplier may use one of the following to comply with the 4-log treatment of viruses treatment technique requirements, as approved by the Department:

(A) Chemical disinfection.

~~(B) Membrane filtration.~~

(~~C~~B) Alternative treatment methods.

(ii) If the supplier uses chemical disinfection to comply with the 4-log treatment of viruses treatment technique requirements, the supplier must maintain the Department-approved residual disinfectant concentration at the Department-approved location(s) that represent treated water at the entry point.

~~(iii) If the supplier uses membrane filtration to comply with the 4-log treatment of viruses treatment technique requirements, the supplier must operate the membrane filtration process according to Department-specified requirements.~~

~~(A) The membrane must reliably achieve at least 4-log removal of viruses.~~

~~(I) The membrane must have an absolute molecular weight cut-off, or an alternative parameter that describes the exclusion characteristics of the membrane and demonstrates that the membrane can achieve 4-log removal of viruses.~~

~~(B) The integrity of the membrane must remain intact.~~

(~~iv~~iii) If the supplier uses a Department-approved alternative treatment method to comply with the 4-log treatment of viruses treatment technique requirements, the supplier must operate the alternative treatment according to Department-specified requirements.

(d) Monitoring Requirements for 4-Log Treatment of Viruses

(i) To determine compliance with the 4-log treatment of viruses treatment technique requirements, the supplier must:

(A) Begin monitoring no later than 30 days after placing the source in service.

(B) Monitor at the Department-approved location and/or according to the Department-specified requirements.

(ii) If the supplier uses chemical disinfection to comply with the 4-log treatment of viruses treatment technique requirements, the supplier must also:

(A) For a system that supplies greater than (>) 3,300 people, continuously monitor the residual disinfectant concentration at the Department-approved location(s).

(I) If there is a failure in the continuous monitoring equipment, the supplier must monitor the residual disinfectant concentration by 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 14 days after the equipment failure.

(B) For a system that supplies less than or equal to (≤) 3,300 people, monitor the residual disinfectant concentration daily by collecting grab samples at the Department-approved location(s).

(I) The supplier must collect a daily grab sample during the hour of peak flow or at another time specified by the Department.

(II) If any daily grab sample result is less than (<) the Department-approved residual disinfectant concentration, the supplier must monitor the residual disinfectant concentration every four hours until it is greater than or equal to (≥) the Department-approved residual disinfectant concentration.

(III) Alternatively, the supplier may monitor continuously as specified in 11.11(3)(d)(ii)(A).

(C) When a groundwater source is used to supply water to the public, record the lowest residual disinfectant concentration monitored each day.

~~(iii) If the supplier uses membrane filtration to comply with the 4-log treatment of viruses treatment technique requirements, the supplier must monitor the membrane filtration process according to Department-specified requirements.~~

(~~iv~~iii) If the supplier uses a Department-approved alternative treatment method to comply with the 4-log treatment of viruses treatment technique requirements, the supplier must monitor according to Department-specified requirements.

....

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

(~~A~~)(B) Until March 31, 2016, ~~T~~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); ~~and~~or

~~(B) 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).~~

(C) Beginning April 1, 2016, the supplier is notified that a sample collected under 11.16(6)(b-d) is total coliform-positive and the sample was not invalidated under 11.16(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(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(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(7) beginning April 1, 2016, and the triggered source water monitoring requirements.

(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(6)(b-d) beginning April 1, 2016 ~~no later than 24 hours after being notified of the sample result~~.

(ii) For wholesale systems, the wholesaler must sample the groundwater source(s) as specified above in 11.11(4)(b) no later than 24 hours 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 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, 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, 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(7)(g)(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.

(~~I~~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.

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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~~a description of a cross-connection control program that meets the requirements specified in 11.37.

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

(E~~D~~) 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.

(F~~E~~) 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.

(G~~F~~) 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~~the supplier fails to comply with 11.17 Total Coliform Rule, or beginning April 1, 2016, 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(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~~the supplier fails to comply with 11.37 Cross-Connection Control Rule, or beginning January 1, 2016 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.

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11.16 REVISED TOTAL COLIFORM RULE

11.16(1) Applicability and Definitions

(a) For all 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, no sampling violations, and no treatment technique triggers or treatment technique violations under 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.

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(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, more than one sample collected for the monitoring period 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(12)(a).

(ii) A second treatment technique trigger for a Level 1 assessment, as specified in 11.16(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 Procudures 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(10) Treatment Technique Requirements: Level 1 and Level 2 Assessment Requirements

If at the end of the monitoring period a treatment technique has been triggered as specified in 11.16(3), the supplier must comply with the treatment technique requirements specified in this section 11.16(10).

(a) General Requirements for Assessments

(i) To identify 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(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 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.

(b) Level 1 Assessments

(i) If any treatment technique for a Level 1 assessment is triggered, the supplier must complete a Level 1 assessment 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:

(I) Sanitary defects identified.

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

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

(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 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.

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

(I) Sanitary defects identified.

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

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

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

(iii) 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.

(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 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(11) Compliance Determination for the *E. coli* MCL

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(6) and 11.16(7).

11.16(12) 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.

(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(10).

(ii) For seasonal systems, the supplier fails to complete Department-approved start-up procedures before supplying water to the public.

11.16(13) Response to Violations of the Revised Total Coliform Rule

(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.

(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.

11.17 TOTAL COLIFORM RULE

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	No more than 5.0 percent of all the

	equal to (≥) 40 samples per month	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, 2013~~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.

(~~i~~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.

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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, 2013~~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, 2013~~July 1, 2014.

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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, 2013~~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, 2013~~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, 2013~~July 1, 2014.

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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, 2013~~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
~~1646-87-4~~ 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, 2013~~July 1, 2014.

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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, 2013~~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, 2013~~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, 2013~~July 1, 2014.

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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, 2013~~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) ~~Cross-connection events~~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 sampling locations that total coliform samples are collected under 11.17(3) as identified in the monitoring plan developed under 11.5(3)(a)(v) until March 31, 2016, and under 11.16(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).

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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, 2013~~July 1, 2014.

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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, 2013~~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, 2013~~July 1, 2014.

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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, 2013~~July 1, 2014.

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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, 2013~~July 1, 2014.

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11.26(4) Monitoring Requirements for Water Quality Parameters

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(l) Response to a Treatment Technique Violation for Water Quality Parameters

(i) In the event of a 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.

(C) Begin lead and copper tap sampling every six months at the number of sites specified in Table 11.26-IV no later than the six-month compliance period beginning January 1 of the calendar year following the violation.

(D) Monitor water quality parameters as specified in ~~26.4.6 or 26.4.7~~11.26(4)(f) or 11.26(4)(g).

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11.28 STORAGE TANK RULE

11.28(1) Applicability and Definitions

(a) For 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.

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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]	11.17(10)(a)
Violation of the *E. coli* MCL[2]	11.16(12)(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	.
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	.
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)

(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) Beginning April 1, 2016, an 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.

~~(II) The Department shall not allow a less frequent repeat public notice for an MCL violation under 11.17. or a treatment technique violation under 11.8, or across-the-board reductions in the repeat public notice frequency 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	.
Failure to comply with a testing procedure, except where a Tier 1 or Tier 2 public notice is required	.
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).

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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[3,4], 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(12)(b)(i)	3	11.16(6)
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(12)(b)(ii)	3	11.16(5)(a)
E. coli (MCL violation, monitoring violations, and reporting violations)[5]	1	11.16(12)(a)	3	11.16(9)(a-b) 11.16(10)(b)(ii) 11.16(10)(c)(ii)
E. coli (TT violations resulting from failure to conduct Level 2 assessments or corrective action)[5]	2	11.16(12)(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[4,6]	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[5~~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[6~~8~~], 3	11.18(3)
Nitrite	1	11.18(5)	1[6~~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 ~~7~~9, 3	11.23(2)(c)
Chlorine dioxide (MRDL), where sample(s) in distribution system the next day are also above MRDL	1~~8~~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[9~~10~~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) [~~10~~12]	N/A	N/A
Violation of conditions of a variance or exemption	2	11.43(10)(f) [~~11~~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 [~~12~~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~~13~~16	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.

~~3~~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.

~~4~~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.

~~5~~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.

~~6~~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.

~~7~~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.

~~8~~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.

~~9~~11 Some water systems must monitor for certain unregulated contaminants under 11.47.

~~10~~12 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 . . ."

~~11~~13 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.

~~12~~14 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.

~~13~~15 Effective beginning January 1, 2016.

16 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 ~~1~~2	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 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.

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[25]	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	.	.	.
Heterotrophic plate count (HPC) bacteria[36]	.	.	.
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[47]	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[58]	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[69]	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[710]	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	We have an inadequate backflow prevention and cross-connection control program. 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 experienced a backflow contamination event.

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.

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*.

~~2~~5 11.8 treatment technique violations that involve turbidity exceedances may use the health effects language for turbidity instead.

~~3~~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.

~~4~~7 Action Level = 0.015 mg/L

~~5~~8 Action Level = 1.3 mg/L

~~6~~9 The MCL for total trihalomethanes is the sum of the concentrations of the individual trihalomethanes.

~~7~~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.

....

(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 90^{th} 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.

(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) The supplier may include additional information necessary for public education consistent with, and not detracting from, the purpose of the CCR.~~

(xii) Beginning January 1, 2016, 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, 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 1ASSESSMENTS] 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, 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, if a treatment technique violation occurs under 11.16(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 the required assessment.

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

(xvi) Beginning April 1, 2016, 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, 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(4)(a) and 11.34(4)(a)(i)~~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.

….

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.

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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) ~~Additional~~ 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) ~~Additional~~ 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(8) 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 ~~membrane filtration or~~ alternative treatment methods and are required to comply with 11.11(3):

(I) Records of ~~Department-determined compliance requirements for membrane filtration and of~~ Department-specified parameters for approved alternative treatment; and

(II) Records of the date and duration of any failure to meet the ~~membrane operating, membrane integrity, or~~ 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, 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(10).

(ii) Beginning April 1, 2016, 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.

(~~d~~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.

(~~f~~h) Recordkeeping Requirements for the Public ~~Notice~~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.

(~~g~~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.

(~~h~~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.

(~~i~~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.

(~~j~~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 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.

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11.39 BACKFLOW PREVENTION AND CROSS-CONNECTION CONTROL RULE

11.39(1) Applicability and Definitions

(a) For 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) "SURVEY COMPLIANCE RATIO" means the total number of connections surveyed divided by the total number of non-single-family-residential connections to the public water system and connections within the supplier's waterworks and domestic wastewater treatment works.

(i) The supplier is not required to include any non-single-family-residential connections identified in the last 60 days of the calendar year in the total number of non-single-family-residential connections to the public water system until the following calendar year.

(k) "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 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 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 and domestic wastewater treatment works.

(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 all non-single-family-residential connections to the public water system with the most protective backflow prevention assembly or backflow prevention method. The supplier must survey all connections within the supplier's waterworks and domestic wastewater treatment works 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.

(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.

(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 and domestic wastewater treatment works.

(A) The supplier is not required to include any non-single-family-residential connections identified in the last 60 days 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 of backflow prevention assemblies not tested during the calendar year covered by the report but tested no later than 90 days after the active date of the backflow prevention assembly in the following calendar year.

(xii) Number 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 of backflow prevention methods not inspected during the calendar year covered by the report but inspected no later than 90 days after the active date of the backflow prevention method in the following calendar year.

(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 in the last 60 days 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.

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11.41 WATER HAULER RULE

11.41(1) Applicability and Definitions

(a) For a public water system that hauls water, the water hauler must comply with the requirements specified in this rule in addition to other applicable requirements of the *Colorado Primary Drinking Water Regulations*.

(b) The water hauler is a supplier and means any person that owns or operates a public water system that hauls water.

11.41(2) Treatment Technique and Monitoring Requirements for Public Water Systems That Haul Water

(a) The water hauler must operate in accordance with a Department-approved operational plan.

(i) The water hauler must either submit an operational plan for Department approval or use the pre-approved operational plan in the Department's *Operational Handbook for a Colorado Public Water System That Hauls Water*.

(b) In addition to the applicable residual disinfectant concentration monitoring requirements specified in 11.8, 11.11 and 11.23, on each day a tank or container is used to deliver water, the water hauler must monitor the residual disinfectant concentration of the water dispensed from each tank or container at least once.

(i) If the water hauler uses more than one water loading station per day, the water hauler must also monitor the residual disinfectant concentration of the water dispensed from the tank or container at least once for each water loading station used.

11.41(3) Treatment Technique Violation and Response for the Water Hauler Rule

(a) If the water hauler fails to operate in accordance with a Department-approved operational plan, a treatment technique violation occurs.

(b) In the event of a treatment technique violation, the water hauler 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.

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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) The supplier has applied the BATs, treatment techniques, or other means identified by the EPA Administrator.

(iii) Based on a Department-approved evaluation, an alternative source is not reasonably available to the system after taking costs into consideration.

(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.

(ii) The E. coli MCLs.

(iii) Any treatment technique requirement of 11.8 or 11.9.]

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:

(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.

11.43(4) <u>Exemption Qualifications</u>

(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.

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11.45 MCLs, MCLGs, SMCLs, MRDLs, MRDLGs, AND ACTION LEVELS

11.45(1) MCLs and MCLGs for Microbiological Contaminants

The following MCLs and MCLGs apply to all public water systems regardless of size or type.

TABLE 11.45-I MCLs AND MCLGs FOR MICROBIOLOGICAL CONTAMINANTS			
Contaminant	Number of samples	MCL	MCLG
Cryptosporidium	.	N/A	Zero
Giardia lamblia	.	N/A	Zero
Viruses	.	N/A	Zero
Legionella	.	N/A	Zero
Coliforms (including fecal coliforms and *Escherichia coli*)[1]			Zero
Total Coliforms[1]	System collects 40 or more samples per month	No more than 5.0 percent of the samples collected during a month are total coliform-positive	.

	System collects less than 40 samples per month	No more than one sample collected during a month is total coliform-positive	.
Fecal coliform or *E. coli* repeat sample (following routine total coliform-positive sample) or any total coliform-positive repeat sample following a fecal coliform-positive or *E. coli*-positive routine sample.[1]	.	Absent	.
Escherichia 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*.	Zero

1 These MCLs and MCLGs are effective until March 31, 2016.

2 These MCLs and MCLGs are effective beginning April 1, 2016.

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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~~the testing requirements and analytical methods for total coliform analysis are specified in 40 CFR 141.21(f)(3) as amended ~~March 1, 2014~~July 1, 2014.

(ii) Beginning April 1, 2016, 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, ~~The~~the testing requirements and analytical methods for fecal coliform analysis are specified in 40 CFR 141.21(f)(5) as amended ~~March 1, 2014~~July 1, 2014.

(c) *Escherichia coli* Analytical Requirements

(i) Until March 31, 2016, ~~The~~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 ~~March 1, 2014~~July 1, 2014.

(ii) Beginning April 1, 2016, the testing requirements and analytical methods for *Escherichia coli* analysis are specified in 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 ~~March 1, 2014~~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 ~~March 1, 2014~~July 1, 2014.

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 ~~March 1, 2014~~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 ~~March 1, 2014~~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 ~~March 1, 2014~~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 ~~March 1, 2014~~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 ~~March 1, 2014~~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 ~~March 1, 2014~~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 ~~March 1, 2014~~July 1, 2014.

(c) Disinfection~~s~~ Byproducts Rule Analytical Requirements

The testing requirements and analytical methods for disinfection byproducts rule are specified in 40 CFR 141.131(b) and 40 CFR 141.131(a) as amended ~~March 1, 2014~~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 ~~March 1, 2014~~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 ~~March 1, 2014~~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 ~~March 1, 2014~~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 ~~March 1, 2014~~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 ~~March 1, 2014~~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 ~~March 1, 2014~~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 ~~March 1, 2014~~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 ~~March 1, 2014~~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 ~~March 1, 2014~~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 ~~March 1, 2014~~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, 2013~~July 1, 2014 and comply with the requirements specified in this rule.

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WATER QUALITY CONTROL DIVISON PROPOSED

11.57 STATEMENT OF BASIS, SPECIFIC STATUTORY AUTHORITY AND PURPOSE: January 12, 2015 rulemaking; Final Action March 10, 2015; Effective Date May 1, 2015

The following sections were affected by this rulemaking hearing: Adoption of 11.16 – Revised Total Coliform Rule, 11.28 – Storage Tank Rule, 11.39 – Backflow Prevention and Cross Connection Control Rule, and 11.41 – Water Hauler Rule, with amendments to Sections 11.3(38), 11.4(2), 11.5(3)(a)(iv)(A)(V), 11.8(3)(f)(iii), 11.11(3)(c)(i)(B), 11.11(3)(c)(iii), and 11.11(3)(d)(iii). 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

Background

All suppliers of drinking water in Colorado are subject to regulations adopted by the U.S. Environmental Protection Agency (EPA) under the Safe Drinking Water Act, (42 U.S.C. 300f et seq.) as well as regulations adopted by the Water Quality Control Commission. Colorado, with the Colorado Department of Public Health and Environment (the Department) as the administering agency, has been granted primary enforcement responsibility (primacy) for the public water system supervision program under the federal Safe Drinking Water Act. The Water Quality Control Division (Division) is part of the Department and is responsible for implementing and enforcing the drinking water regulations that are adopted by the Commission and applicable regulations adopted by the Board of Health. In order to maintain primacy from the EPA, states must also promulgate new regulations that are no less stringent than those adopted by the federal government. In this rulemaking the Commission is adopting the Revised Total Coliform Rule which is no less stringent than the federally-mandated Revised Total Coliform Rule. By retaining primacy, the Department is able to protect the public health by ensuring that public water systems provide safe drinking water to Colorado citizens and visitors.

In addition to adopting the federally-mandated Revised Total Coliform Rule to maintain primacy, this rulemaking also included Colorado-specific requirements for storage tanks, backflow prevention and cross connection control, water haulers, minimum chlorine residual disinfectant concentration in the distribution system, and various other editorial revisions and clarifications. The Commission adopted these revisions to address outstanding waterborne disease outbreak reduction strategies that were developed as a result of the Salmonella outbreak in Alamosa in 2008. As published in the November 2009 report "Waterborne Salmonella Outbreak in Alamosa, Colorado March and April 2008" the following strategies were identified and were addressed with these amendments:

- Revise regulations associated with controlling hazardous cross connections at water systems;
- Enhance oversight of total coliform sampling, water storage, and distribution systems during inspections, and collect inventory information on these facilities;
- Ensure compliance with the requirement for water systems to maintain residual chlorine levels in water distribution systems.

Additionally, with this rulemaking, the Commission adopted the federal revisions to the definition of “lead free” as specified in the Federal Reduction of Lead in Drinking Water Act.

Policies, Handbooks and Guidance and Regulation 11

The Division originally adopted WQCD Policy Number 1, *Implementation Policy Framework* (Policy 1) in November 2010 and the associated *Procedure* 1 in August 2012; both were prepared in accordance with the Colorado Administrative Procedures Act, Article 4, Title 24 of the CRS.

The Commission adopts regulations that create binding norms or legal obligations of the Department or regulated entities. The Department may develop implementation policies and guidance/handbooks where implementation of Regulation 11 may require interpretation, decision-making flexibility, or a stream-lined approach for meeting compliance requirements.

These amendments to Regulation 11 include references to guidance/handbooks that the Department intends to develop as part of ongoing implementation of Regulation 11.

Policy 1 specifically states that implementation policies and associated procedures are not binding regulations and are not to be applied as such. The referenced guidance/handbooks in these amendments are not requirements. Violations or other notices of non-compliance cannot be issued against a policy or guidance/handbook. Violations or other notices of non-compliance can, and will, only be issued for a failure to comply with Regulation 11 or an applicable statute (law) included in the CRS. Implementation policies and guidance/handbooks have no compliance expectation.

Revised Total Coliform Rule

The Commission replaced the Total Coliform Rule in section 11.17 with the Revised Total Coliform Rule in section 11.16. The Revised Total Coliform Rule increases public health protection by requiring a more proactive approach to identifying and fixing issues that make the distribution system vulnerable to microbial contamination, and therefore provide incentives for improved water system operation. The Revised Total Coliform Rule includes the following provisions of the federal regulations as published in the Federal Register, Volume 78, Number 30, February 13, 2013, pages 10270 through 10365, National Primary Drinking Water Regulations:

- Additional definitions and recordkeeping and reporting requirements.
- Treatment technique triggers for Level 1 and Level 2 assessments.
- Additions to the written sampling plan as part of the monitoring plan requirements in section 11.5.
- Start-up procedures for seasonal systems.
- Reporting requirements for *E. coli*-positive special purpose samples.
- Increased routine sampling requirements for non-community groundwater systems supplying less than or equal to (≤) 1,000 people.
- Level 1 and Level 2 assessments.
- Treatment technique violations.
- Additional public notification requirements.

The amendments adopted by the Commission remain as stringent as the federal requirements for the Revised Total Coliform Rule while also establishing requirements that are more protective of public health. Examples of these requirements include the following:

- No allowance for reduced monitoring. Colorado did not adopt the allowance for reduced monitoring in the federal Total Coliform Rule and therefore not allowing reduced monitoring has

historically been the Department's practice. Reducing the number of samples collected reduces the likelihood of detecting total coliforms and *E. coli*.

- No waivers will be granted from collecting three routine samples in the month following a total coliform-positive sample result. Collecting these additional routine samples helps identify whether the contamination is still present or if the previous month's activities fixed the problem. Granting a waiver from collecting these samples reduces the likelihood of detecting a persistent issue.

- No allowance for the supplier to forgo *E. coli* testing on a total coliform-positive sample in exchange for assuming that the sample is *E. coli*-positive. Certified laboratories automatically test total coliform-positive samples for *E. coli*. Also, having these data allow the Department to direct the appropriate follow-up activities in response to an *E. coli*-positive sample result.

- Adding a requirement that any special purpose sample that is *E. coli*-positive and is representative of water in the distribution system must be submitted to the Department but will not be used for compliance. This information will alert the Department to the potential of an acute contamination event and allow the Department to respond if necessary.

Minimum Distribution System Residual Disinfectant Concentration

The Centers for Disease Control and Prevention has called providing safe drinking water one of the greatest public health achievements of the 20th century. Colorado has long recognized the use of mandatory disinfection and the maintenance of a chlorine residual throughout distribution systems as necessary for the protection of public health from waterborne diseases. The Commission and the Department agree that the intent of the regulations has always been to actually have a chlorine residual present throughout all distribution systems.

Recently, two disease outbreaks occurred in Colorado - the 2008 salmonella outbreak in Alamosa and the Skyline Ranch norovirus outbreak in 2007. The Alamosa outbreak was particularly serious due to the large number of people who were sickened and one death associated with this particular disease outbreak. Alamosa had a disinfection waiver at the time of the outbreak (which has since been withdrawn) and, as a result, the city's drinking water was not being disinfected and the distribution system maintained no disinfectant residual. An extensive report was developed in the wake of the Alamosa outbreak. This report outlined a combined failure of physical, regulatory and human infrastructure all of which contributed to the outbreak. A key recommendation of this report was that all distribution systems should maintain appropriate disinfectant residual to maintain the final barrier to protect public health.

The Department presented evidence of the occurrence of *E. coli* within drinking water samples and found that there exists over a 300 percent rise in probability of a bacteria sample having *E. coli* when the chlorine residual is less than 0.2 mg/L. Furthermore, between eight and ten percent of samples taken in Colorado are at or below the proposed disinfectant residual limit.

Given the history and statewide practices of distribution system residual maintenance, the threat of waterborne illness, and to protect public health the Commission adopted a minimum allowable residual disinfectant concentration in the distribution system of 0.2 mg/L. The value of 0.2 mg/L includes only one significant digit and therefore any measurement of 0.15 mg/L or greater is compliant with this requirement.

These amendments replace the federal requirements for surface water systems and the Colorado-specific requirements for groundwater systems to maintain a detectable residual disinfectant concentration in the distribution system. The adopted minimum requirement for residual disinfectant concentration in the distribution system of 0.2 mg/L remains no less stringent than the federal standard of a detectable residual disinfectant concentration. The overall goal of these amendments is to further protect the public from microbial contamination and to correct the practice of maintaining less than a

reasonable amount of chlorine in distribution systems. Amendments were made to sections 11.8, 11.11, 11.33 and 11.34.

The amendments included the following provisions:

- Replacement of the requirement that the disinfectant residual 'not be undetectable' with the requirement that public water systems maintain a minimum of 0.2 mg/L in the distribution system sampled at the same time as total coliform samples for all public water systems that are required to disinfect in sections 11.8 and 11.11.

- Establishment of a treatment technique violation for failure to comply with the minimum residual disinfectant concentration for only one monitoring period and maintenance of federal violation for failure to comply with the minimum residual disinfectant concentration for two consecutive monitoring periods in sections 11.8 and 11.11.

- Specific language requirements for public notification and consumer confidence reports in sections 11.33 and 11.34 when violations occur.

Backflow Prevention and Cross-connection Control Rule

The Commission amended Regulation 11 to include regulatory requirements for backflow prevention and cross-connection control in section 11.39 that replaces the Cross-connection Control Rule in section 11.37. The Cross-connection Control Rule in section 11.37 was written approximately 30 years ago and provided compliance challenges for public water systems, and for Department staff to determine and assure compliance. The Cross-connection Control Rule in section 11.37 required 100 percent compliance with annual cross connection control device testing requirements. Very few public water systems were able to comply with this unrealistic requirement. These amendments address many outstanding issues with the 30 year old rule including issues brought up by stakeholders during the November 2013 rulemaking; the amendments included the following provisions in sections 11.39, 11.33, and 11.36:

- Development of a written backflow prevention and cross-connection control program.

- Required notification to the Department of any suspected or confirmed backflow contamination event.

- System survey requirements to determine if cross connections are present including a five year compliance schedule for public water systems to build toward full compliance.

- Installation of backflow prevention assemblies or methods on uncontrolled cross connections.

- Annual backflow prevention assembly testing requirements to determine if assemblies are properly functioning including a five year compliance schedule for public water systems to build towards full compliance.

- Annual backflow prevention method inspection requirements to determine if methods are properly functioning.

- Development of an annual backflow prevention and cross-connection control program report.

- Specific language requirements for public notification in section 11.33 when violations occur.

- Recordkeeping requirements.

In considering the above revisions to the Backflow Prevention and Cross-connection Control Rule, the Department took into consideration many of the stakeholder comments. Specifically, stakeholders felt that

they should have latitude to develop alternative compliance schedules for controlling cross connections or for surveying their system. The adopted revisions reflect these stakeholder recommendations. In addition, the stakeholder community agreed that the cross connection rule is difficult to implement in either form, and so they concurred with the five year timeline to move into full compliance with the regulation with increasingly stringent performance each year. Stakeholders agreed with lessening the 100 percent compliance requirement to 90 percent compliance after the five year ramp-up period.

Storage Tank Rule

The Commission amended Regulation 11 to include regulatory requirements for the inspection of finished water storage tanks in the Storage Tank Rule in section 11.28. Storage tanks are infrastructure assets that require inspections and maintenance throughout their useful life. While EPA discussed including storage tank requirements when developing the Revised Total Coliform Rule, it ultimately did not directly address storage tank inspection and maintenance in the final Revised Total Coliform Rule. The Commission believes that the Storage Tank Rule provides increased public health protection, since storage tanks that lack inspection and maintenance can present a pathway for microbial contamination.

One person died and 1,300 people got sick during the Alamosa outbreak including about 40 percent of the infants in the city. The outbreak cost millions of dollars and storage tank defects were the likely cause of that outbreak.

The rule is in response to the 2008 Alamosa outbreak as well as hundreds of preventable significant deficiencies that have been identified at storage tanks during sanitary surveys since 2008. The Storage Tank Rule makes it clear that uncorrected sanitary defects in storage tanks are violations and suppliers are required to develop and implement a plan to properly inspect and maintain their storage tanks. This rule is a measured, flexible and appropriate response that was developed with stakeholders and represents best practices that are already in place at many Colorado public water systems.

The adopted revisions, in response to stakeholder concerns, only apply to finished water storage tanks. The Commission believes that raw groundwater tanks and finished water clearwells may still need to be regulated; however the Department will evaluate the need for this as it implements the Storage Tank Rule.

The amendments included the following provisions in sections 11.28, 11.33, and 11.36:

- Development of a written plan for storage tank inspections.
- Requirements to conduct periodic and comprehensive inspections of all finished water storage tanks.
- Requirements to correct sanitary defects identified during periodic and comprehensive inspections.
- Specific language requirements for public notification in section 11.33 when violations occur.
- Recordkeeping requirements.

Water Hauler Rule

The Commission amended Regulation 11 to include regulatory requirements for water haulers which are defined as public water systems that transport drinking water using a vehicle, in section 11.41. On November 26, 1976 EPA published EPA Water System Guidance 6A: “Applicability of the Safe Drinking Water Act to Water Haulers” that clarified that water haulers are public water systems under the Safe Drinking Water Act and therefore are subject to the National Primary Drinking Water Regulations. In May, 1986 the Water Quality Control Division adopted policy DWT-8: “Monitoring Requirements for Water

Haulers" to establish specific requirements for water haulers which address their unique drinking water operations. In addition to the policy, the Department has historically applied Regulation 11 to these types of public water systems. The amendments adopted in this rulemaking add regulatory requirements to address the unique operations of water haulers. It is not intended that water haulers not previously regulated will be regulated as a result of these amendments but the Commission does believe that the addition of these requirements to the regulations, instead of in policy, will make the water hauler industry more aware of the applicability of Regulation 11 to their industry.

The amendments adopted include many aspects of policy DWT-8 as well as provisions to comply with Department-approved operational standards.

The amendments included the following provisions in sections 11.16, 11.17, 11.36, and 11.41:

- Total Coliform Rule monitoring.
- Residual disinfectant concentration monitoring.
- Compliance with an Operational Plan.
- Recordkeeping requirements.

During the stakeholder process, water haulers were generally in agreement with the proposed rule. Based on stakeholder input, the adopted revisions include terminology that is consistent with and understood by the water hauler community.

Additional Amendments

The Commission made the following amendments to be consistent with Department practices, to add clarity, or update outdated requirements:

- 11.3(38) - Revisions to the lead free definition to be consistent with the new Federal Reduction of Lead in Drinking Water Act.
- 11.4(2) – Revisions to the siting requirements for waterworks.
- 11.5(3)(a)(iv)(A)(V) - Revisions to the requirements for master meters to be included in the monitoring plan.
- 11.8(3)(f)(iii) – Removal of the allowance for the supplier of a surface water system to not submit entry point chlorine residual measurements.
- 11.11(3)(c)(i)(B), 11.11(3)(c)(iii), and 11.11(3)(d)(iii) – Removal of the allowance for the supplier of a groundwater system to use membrane filters for virus treatment credit.
- All requirements incorporated by reference from 40 CFR 141 were updated to reference 40 CFR 141 as amended on July 1, 2014.
- Typographical errors, renumbering, and updated cross references were revised as necessary throughout Regulation 11.