

The Texas Commission on Environmental Quality (TCEQ, agency, or commission) adopts amendments to §§290.38, 290.39, 290.46, 290.103, 290.109 - 290.112, 290.116, 290.119, 290.122, and 290.275.

Sections 290.38, 290.39, 290.46, 290.103, 290.109 - 290.112, 290.116, 290.119, 290.122, and 290.275 are adopted *without changes* to the proposed text as published in the June 15, 2012, issue of the *Texas Register* (37 TexReg 4353) and will not be republished.

Background and Summary of the Factual Basis for the Adopted Rules

The commission adopts this rulemaking for several reasons. First, the commission amends Chapter 290 for consistency with the federal Ground Water Rule (GWR) and the federal Total Organic Carbon (TOC) Rule. The rulemaking also addresses an inconsistency with federal rules that resulted when the United States Environmental Protection Agency (EPA) adopted Method 334.0 for continuous chlorine residual analyzers. In addition, this rulemaking adopts an expanded definition of groundwater under the direct influence of surface water (GUI) to bring it into conformity with agency practice and federal rules. Finally, the commission changes Chapter 290 to incorporate the requirements of House Bill (HB) 805 from the 82nd Legislature, 2011.

The purpose of the GWR is to provide increased protection against microbial pathogens in public water systems (PWSs) that use groundwater sources. The EPA is particularly concerned about groundwater systems that are susceptible to fecal contamination since disease-causing pathogens may be found in fecal contamination. The GWR requires additional microbial sampling from the groundwater source in the event of a coliform-positive sample in the distribution system. The GWR also requires that "significant deficiencies" identified by the TCEQ be corrected by the water system within an established time frame. In reviewing the state rule, the EPA and the executive director determined that state revisions are needed to conform to the federal GWR. The majority of the changes are minor, such as adding the terms "raw groundwater source monitoring," "significant deficiencies," and "situations." These terms are prominent in the federal language and are adopted in several areas to provide consistency with the federal rule and add clarity to the state rule.

GWR

Federal rules for microbiological monitoring have been in place since 1989. The GWR, which focuses primarily on groundwater sources, was adopted by the EPA on October 12, 2006, to provide additional protection from fecal contamination. The commission adopted the GWR on December 19, 2008 (Rule Project No. 2006-045-290-PR). The EPA granted the TCEQ a two-year extension until October 12, 2010, to complete the TCEQ's version of the rule. Under 40 Code of Federal Regulations (CFR) §142.10, the

commission must adopt rules at least as stringent as the federal rules to maintain primacy over PWSs in Texas. The TCEQ is revising Chapter 290 to provide language that is consistent with the federal rule.

HB 805

Senate Bill (SB) 361, 81st Legislature, 2009, was incorporated into TCEQ rules in 2009. SB 361 required a retail public utility, exempt utility, or provider or conveyor of potable or raw water in a county with a population of 3.3 million or in an adjacent county with a population of 400,000 or more that furnishes water service to more than one customer to: ensure the emergency operation of its water system during an extended power outage, as soon as safe and practicable following the occurrence of a natural disaster; adopt an emergency preparedness plan (EPP) that demonstrates the affected utility's ability to provide emergency operations; and submit the plan to the commission for approval. SB 361 required TCEQ to adopt rules implementing Texas Water Code (TWC), §13.1395, that required affected utilities ensure emergency operation at 35 pounds per square inch (psi) through the adoption of an EPP. In 2010, affected utilities with customers in Harris County were required to submit and implement an EPP. Based on HB 805, affected utilities in Harris and Fort Bend Counties were required to prepare and submit an EPP for TCEQ review and approval by February 1, 2012, and to begin implementing the plan by June 1, 2012.

In a corresponding rulemaking published in this issue of the *Texas Register*, the commission also adopts revisions to 30 TAC Chapter 291, Utility Regulations.

Section by Section Discussion

In addition to implementation of the state and federal laws discussed previously, the commission adopts administrative changes throughout the adopted rules to reflect the agency's existing practices and to conform with *Texas Register* and agency guidelines. These changes include updating cross-references and correcting typographical, spelling, and grammatical errors.

Subchapter D: Rules and Regulations for Public Water Systems

§290.38, Definitions

HB 805

The commission adopts §290.38(1), the definition of "affected utility," changing the population threshold to 550,000 as required by HB 805.

GWR

The commission adopts §290.38(30) updating the definition of "groundwater under the direct influence of surface water" to better reflect the criteria the commission uses to identify these types of water sources and also provide consistency with the federal definition outlined in 40 CFR §141.2. "Groundwater under the direct influence of

surface water" is mentioned in the federal GWR citation, 40 CFR §141.403(a)(3), and the commission is also adopting §290.116(a) which is the corresponding state citation for 40 CFR §141.403(a)(3) to harmonize the state definition with the federal definition. In reviewing the state definition for a GUI, the executive director determined that the definition in §290.38(30) needed to be consistent with the federal definition for a GUI. The federal definition allows for "site-specific" criteria which is not included in the state definition. Furthermore, the federal definition states that "direct influence must be determined for individual sources in accordance with criteria established by the state." The commission also adopts §290.38(71), the definition for "sanitary survey," to include all eight elements of the investigation process. The existing state definition does not include a list of the eight elements that are in the federal definition. The commission adds §290.38(75), defining "significant deficiency," because the state rules did not have such a definition, whereas the federal rules did. These amendments are necessary to provide consistency with the CFR. The commission also renumbers the existing definitions to maintain alphanumeric order.

§290.39, General Provisions

HB 805

The commission amends §290.39(o)(1) updating the due dates for submitting the EPP. The existing rule required systems that existed as of December 1, 2009 to submit the EPP by March 1, 2010. The adopted changes require a system that exists as of

November 1, 2011 to submit the EPP by February 1, 2012. These dates derive from HB 805. The commission adopts §290.39(o)(4) updating the due date for implementing the EPP from July 1, 2010, to June 1, 2012, as required by HB 805.

§290.46, Minimum Acceptable Operating Practices for Public Drinking Water Systems
GWR

The commission adopts §290.46(a) to include a reference to the definition of routine sanitary surveys. EPA staff recommended this clarification as sanitary surveys are one of the primary components of the GWR. The commission adopts §290.46(b) to add the statement that samples shall be submitted in a manner prescribed by the executive director to give the commission more flexibility with how data should be reported. The commission adopts §290.46(f)(2), which requires records to be available during investigation to also require the PWS to make records available to the executive director upon request. This requirement is in the CFR but not in all the appropriate state citations. The commission adopts §290.46(f)(3)(D)(v) to add the federal requirement to retain documentation of coliform-positive samples that could have been caused by distribution deficiencies rather than source issues. The commission adopts §290.46(f)(3)(D)(vi) to delete "and" from the end of the clause because it is no longer necessary with the addition of §290.46(f)(3)(D)(viii) and (ix). The commission adopts §290.46(f)(3)(D)(vii) to delete the period at the end of the rule citation and add a semicolon because of adopted §290.46(f)(3)(D)(viii) and (ix). The commission adopts

§290.46(f)(3)(D)(viii) to include the federal requirement to retain records of the lowest daily residual and of any failure to maintain 4-log treatment. The commission adopts §290.46(f)(3)(D)(ix) to include the federal requirement to retain compliance requirements and records for any executive director-approved alternative treatment techniques, including membrane filtration. These requirements were not in the state language but they are in the CFR. The commission adopts §290.46(f)(3)(E)(viii) to delete "and" from the end of the clause because it is no longer necessary with the addition of §290.46(f)(3)(E)(x). The commission adopts §290.46(f)(3)(E)(ix) to delete the period and add a semicolon and the word "and" to the end of the clause because of adopted §290.46(f)(3)(E)(x). The commission adopts §290.46(f)(3)(E)(x) to include the federal requirement to retain records of executive director-approved minimum specified disinfectant residual for systems providing 4-log treatment.

Method 334.0

The commission adopts §290.46(s)(2)(C)(i) reducing the frequency that the manual disinfectant residual analyzer accuracy must be evaluated from at least once every 30 days to at least once every 90 days to be consistent with the provisions of federally-approved EPA Method 334.0. The commission deletes existing §290.46(s)(2)(C)(ii) because Method 334.0 does not require on-line disinfectant residual analyzers to be recalibrated every 90 days. The commission rennumbers §290.46(s)(2)(C)(iii) as §290.46(s)(2)(C)(ii). Further, in order to achieve consistency with federally-approved

procedures, the commission adopts §290.46(s)(2)(C)(ii) by replacing the term "calibration" with the term "accuracy," increasing the frequency that the accuracy of on-line instruments must be checked from at least once every 30 days to at least once every seven days, and adding a reference to the federally-approved analytical methods identified in §290.119. The commission adopts §290.46(s)(2)(C)(iii), which requires a system to determine and correct the cause of a performance inaccuracy and, if necessary, to adjust, repair, or recalibrate the analyzer to be consistent with the provisions of federally-approved EPA Method 334.0.

***Subchapter F: Drinking Water Standards Governing Drinking Water
Quality and Reporting Requirements for Public Water Systems***

§290.103, Definitions

GWR

The commission amends §290.103(20) to insert the word "days" after "30" to insert a word which was inadvertently omitted from the rule. The commission amends §290.103(31) replacing the word "sampling" with "monitoring" to provide consistency with the GWR language and prevent additional confusion among the regulated community. The commission adopts §290.103(32) defining "significant deficiency" because this term is used throughout the rule and is defined in the GWR. The commission adopts §290.103(39) defining "4-log treatment." Existing TCEQ rules did not have a definition for "4-log treatment" and it is necessary to conform to the federal

rule because this term is discussed throughout the GWR. The commission further renumbers the existing definitions to maintain alphanumeric order.

§290.109, Microbial Contaminants

GWR

The commission adopts §290.109(c)(4) to include a reference to the updated analytical procedures to more accurately reflect the federal groundwater analytical methods because the state's existing methods did not include the *Escherichia coliform (E. coli)* methods. The commission amends §290.109(c)(4)(A)(i) to add a reference to the 4-log treatment definition and also remove the words "or at" to more accurately reflect the federal rule language as recommended by the EPA. The commission amends §290.109(c)(4)(A)(ii) to add a reference to the invalidation criteria specified in §290.109(d)(1). The existing reference in §290.109(c)(4)(A)(ii) and (D)(ii) says "as specified in paragraph (5)," which is incorrect. The commission amends §290.109(c)(4)(B) to specify that only "routine" coliform-positive samples trigger the raw sampling requirement because currently it can be interpreted that coliform-positive "repeat" samples trigger the GWR. The commission also amends §290.109(c)(4)(B) to specify that samples must be analyzed for *E. coli* or "other approved fecal indicator" because currently the language only includes *E. coli* and the federal rule allows for the analysis of additional fecal indicators. The commission further amends §290.109(c)(4)(B) to correct a typographical error. The commission adopts

§290.109(c)(4)(C)(ii) to include a statement that wholesale systems and all consecutive systems served by that groundwater source must notify all customers in accordance with §290.109(g)(2), which is consistent with federal language. The existing language placed the requirement only on the initial wholesale system and not the consecutive systems. The commission adopts §290.109(c)(4)(D)(ii) to clarify that this exception to the triggered source monitoring is contingent on a system meeting the distribution coliform sample invalidation criteria outlined in §290.109(d)(1) and to specify that the replacement sample must be negative for coliforms to meet the criteria. These revisions are necessary to provide consistency with the federal rule language while also deleting an incorrect reference in the existing language to "paragraph (5)." The commission adopts §290.109(c)(4)(E) to add language that describes a hydrogeological sensitivity assessment to be consistent with the federal rule. The commission adopts §290.109(c)(4)(E)(i) and (ii), under the assessment source monitoring subsection that better describes the assessment source monitoring requirements because the existing language does not have all of the requirements outlined in the federal language. The commission amends §290.109(f)(4) to specify that an *E. coli*-positive is not a treatment technique violation but a situation that requires public notice and that it is a violation if corrective action is not addressed within 120 days. The existing language was incorrect in stating that collecting an *E. coli*-positive sample is a violation. The commission adopts §290.109(f)(6) to be more specific with the violation criteria and add that a violation requires public notice. Existing language was not consistent with federal

language. The commission adopts §290.109(g)(2) to better reflect the intent of the federal rule, specify consecutive system requirements, and include instructions on posting the notice annually. The existing language did not include requirements for annual posting and consecutive systems.

§290.110, Disinfectant Residuals

Method 334.0

The changes incorporate in this section a federally-approved analytical method for on-line analyzers that continuously monitor chlorine residuals and to restore consistency with the analytical methods in §290.119 which are referenced in §290.110(d). The commission adopts §290.110(d)(1) and its subdivisions to incorporate the federally-approved analytical method for on-line chlorine residual analyzers by deleting specific analytical methods. The adopted language for chloramines requires approval to use color comparator analytical methods. The commission deletes §290.110(d)(2) and its subdivisions and inserts a reference to chloramines into §290.110(d)(1). Section 290.110(d)(2) is no longer necessary because the adopted language for free chlorine and chloramines is the same; therefore, the commission renumbers §290.110(d)(3) to subsection (d)(2).

§290.111, Surface Water Treatment

Method 334.0

The changes in this section incorporate the federally-approved analytical method for on-line analyzers that continuously monitor chlorine residuals and to restore consistency with the analytical methods in §290.119 which are referenced in §290.111(d)(4). The commission adopts §290.111(d)(4)(C) and its subdivisions to incorporate the federally-approved analytical method for on-line chlorine residual analyzers by deleting specific analytical methods listed as §290.111(d)(4)(C)(i) - (iv). The adopted language references chloramines and requires approval to use color comparator analytical methods. The commission deletes §290.111(d)(4)(D) and its subdivisions and inserts a reference to chloramines into §290.111(d)(4)(C). The remaining paragraphs are renumbered accordingly. Section 290.111(d)(4)(D) is no longer necessary because the adopted language for free chlorine and chloramines is the same; therefore, the commission deletes §290.111(d)(4)(D) and its subdivisions. As a result of these adopted amendments to §290.111(d)(4), the commission reletters the remaining subdivisions.

§290.112, Total Organic Carbon (TOC)

TOC Rule

The commission adopts §290.112(a) to correct an inaccuracy in the applicability statement that extended the state requirements of this section to treatment plants that are not subject to the corresponding federal requirements.

§290.116, Groundwater Corrective Actions and Treatment Techniques

GWR

The commission adopts §290.116(a) to include a description of mixed systems, state that significant deficiencies require corrective action, and specify that 4-log treatment is for each source. The existing language did not specify mixed systems, did not mention significant deficiencies, and implies that 4-log treatment is per PWS, not sources within a PWS. The existing language was not consistent with the federal language. The commission adopts §290.116(a)(1) to specify that 4-log treatment is on a source basis, not a system basis; remove the December 1, 2009, deadline and state that a system must notify the TCEQ in writing if it plans to discontinue the 4-log treatment to be consistent with federal rule language. The commission amends §290.116(a)(1) and (2) to replace the term "customer" with "connection" because this is more consistent with commission terminology. The commission also adopts §290.116(a)(2) to state that a system must conduct triggered source monitoring until the system is approved by TCEQ to do 4-log treatment, and that a system must conduct triggered source sampling if 4-log treatment is discontinued. The commission adopts §290.116(b) to include significant deficiencies as a reason that a corrective action may be necessary, which is included in the federal language. The commission adopts §290.116(b)(1) and (2) to include significant deficiencies as a reason that a corrective action may be necessary, which is included in the federal language. The commission adopts §290.116(b)(5)(B) to specify that by "source" the rule refers to groundwater sources as opposed to potential contaminant sources. The commission amends §290.116(b)(5)(D) to replace the term "customer"

with "connection" because this is more accurate with commission terminology. The commission adopts §290.116(b)(5)(E) to include the federal corrective action option to correct all significant deficiencies. The commission adopts §290.116(b)(5)(F) to include the federal corrective action option of assessment source monitoring. The existing state language did not contain two of the federal corrective action options. To make the language consistent with the federal GWR, the commission adopts §290.116(c) to add "significant deficiency" and specify that 4-log is achieved at or before the first connection for the specified groundwater source. To add clarity and consistency with the federal rule, the commission adopts §290.116(c)(1) to specify that disinfectant levels must be maintained "every day the specified source serves the public" and to add a reference to the monitoring plans required by §290.121. The commission adopts §290.116(c)(1)(A) to reference 40 CFR §141.74(a)(2), the requirement of continuous monitoring of chlorine residuals. The commission adopts §290.116(c)(1)(A)(i) to specify that a system must conduct grab sampling every four hours if the continuous monitoring equipment fails. The commission adopts §290.116(c)(1)(A)(ii) to require the PWS to resume continuous monitoring within 14 days. These requirements are included in the federal language and need to be included within the state rule. The commission amends §290.116(c)(1)(B) to state that the system population threshold is "3,300 or fewer" not "less than 3,300" and to include the federal requirements if such systems fall below the specified disinfectant residual. This amendment to §290.116(c)(1)(B) is necessary so as not to exclude any system with a population of exactly 3,300, provide consistency with

the corresponding federal citation, and give instructions for the situation described in §290.116(c)(1)(B). The commission adopts §290.116(c)(2) to reflect the federal alternative treatment requirements. The commission adopts §290.116(c)(4) to include the federal recordkeeping requirements for systems that provide 4-log treatment or other alternative treatment techniques. The amended §290.116(c)(4) will provide consistency with the corresponding federal citation, provides a reference to the recordkeeping requirements of §290.46, and also provides clarity for the regulated community. The commission amends §290.116(d) by adding the phrases "a significant deficiency" and "conducts 4-log treatment" to add clarity and consistency with the federal rule. The commission adopts §290.116(d)(1) to specify that documents must be made available upon request of the executive director because this is included in the federal rule. The commission adopts §290.116(d)(2) to remove the December 1, 2009, deadline and to add the phrase "for a specified groundwater source" to clarify that 4-log treatment is per source and not per PWS. The commission adopts §290.116(d)(4) to clarify that 4-log treatment is "for the specified groundwater source" and not the system and that when a system "met the state criteria" it is exempt from triggered source monitoring. The commission adopts §290.116(d)(5) to include the federal requirement that systems must notify the executive director if they fall below the minimum specified residual for more than four hours. The commission adopts §290.116(e) to add the 120-day time frame and remove the duplicative language which is already listed in §290.116(a). This amendment is necessary for consistency with the federal rule. The

commission adopts §290.116(e)(3) to specify that systems are in violation if they do not notify the executive director that their 4-log treatment was non-operational for more than four hours, to be consistent with the federal rule. The commission adopts §290.116(f) to add the phrase "or situation" to be more specific and consistent with the federal requirements. The commission adopts §290.116(f)(1) and (2) and its subdivisions to include the special notice requirements for community and noncommunity systems, which would be consistent with the federal rule.

Method 334.0

The changes in this section incorporate the federally-approved analytical method for on-line analyzers that continuously monitor chlorine residuals and restore consistency with the analytical methods in §290.119 referenced in §290.116(c)(3). The commission adopts §290.116(c)(3)(C) and its subdivisions to incorporate the federally-approved analytical method for on-line chlorine residual analyzers by deleting specific analytical methods. The revision to §290.116(c)(3)(C) is necessary to provide consistency with the federally-approved methods. The adopted language is added to chloramines to provide consistency with the federal language and to require approval to use color comparator analytical methods, which gives the commission the authority to deny the use of certain inaccurate color comparator devices. The commission deletes §290.116(c)(3)(D) and inserts a reference to chloramines into adopted §290.116(c)(3)(C). Section 290.116(c)(3)(D) would no longer be necessary because the adopted language for free

chlorine and chloramines is the same; therefore, the commission reletters existing §290.116(c)(3)(E) and (F) to adopted §290.116(c)(3)(D) and (E). These amendments are necessary to provide consistency with the federal language.

§290.119, Analytical Procedures

GWR

The commission adopts §290.119(a)(1) to include "raw groundwater source monitoring" to be consistent with the federal GWR. The commission amends §290.119(b)(8) and (9) to delete "and" from the end of each rule citation as this word is no longer necessary with the adoption of §290.119(b)(10). The commission adopts §290.119(b)(10) include raw groundwater microbiological analyses and reference the CFR methods because existing rule language only addressed total coliform and not *E. coli* which is the fecal indicator used for the GWR. The commission also renumbers the remaining subsection.

§290.122, Public Notification

GWR

The commission adopts §290.122(a) to include "situations" because the heading refers only to violations whereas notice is also required for situations such as an *E. coli*-positive source sample. The commission amends §290.122(a)(1)(F) to include the 24-hour public notice required for systems that have detections of *E. coli* in their source samples because the existing language did not give the time frame. The commission

adopts §290.122(a)(2) to add "public notice and/or boil water notice" because an *E. coli*-positive source sample requires a public notice, but not a boil water notice. The commission adopts §290.122(a)(2) to add "or situation" after "violation" because an *E. coli*-positive source sample is an acute situation, not an acute violation. The commission adopts §290.122(a)(2)(C) and (D) to include electronic delivery options for public notices to allow systems more flexibility for posting public notices. The commission deletes the term "violation" in §290.122(a)(2)(D) because the rule explains how to issue a notice, not a notice violation. This adoption also makes the rule language consistent with associated rules to prevent confusion. The commission adopts §290.122(a)(2)(E) and (4) to add "or situation" to clarify that some acute situations are not violations. The commission adopts §290.122(b)(1)(C) to add uncorrected significant deficiencies as a reason for public notice, to conform to the federal requirements. The commission adopts §290.122(b)(1)(E) to include "or situations" because an *E. coli*-positive sample at the source is not a violation, but an acute situation. The commission adopts §290.122(b)(2) to include "situation" and "significant deficiency" to be consistent with the federal rule. The commission adopts §290.122(b)(2)(A)(ii), (B)(ii), (c)(2)(A), and (B) to include electronic delivery options for public notices to allow systems more flexibility for posting public notices. The commission amends §290.122(c) to include "situations" as required by the federal rule. The commission amends §290.122(d)(1) to include significant deficiency to be consistent with the federal rule and to correct a typographical error. The commission amends §290.122(d)(2) to include "significant

deficiency" and the date of its identification to be consistent with the federal rule. The commission adopts §290.122(d)(3)(A) to include "situations" and uncorrected "significant deficiencies" as required by the federal rule. The commission adopts §290.122(d)(4) to include required federal language regarding details for significant deficiencies. The commission adopts §290.122(d)(7) to include detailed instructions for multilingual notices because the existing state rules did not give instructions on how to obtain a translated notice or help with an interpretation; however, these instructions were included in the federal language.

Subchapter H: Consumer Confidence Reports

§290.275, Appendices A - D

GWR

The commission adopts the figures in §290.275(1) and (2), Appendices A and B, to show that an uncorrected significant deficiency is a treatment technique violation for the GWR and not a Maximum Contaminant Level violation. This provides consistency with the federal language. The commission also adopts language in the figures in §290.275(1) and (2), Appendices A and B, to address raw groundwater source positive samples. This provides consistency with the federal language and differentiates between distribution system positive samples for the Total Coliform Rule and raw groundwater source positive samples for the GWR to prevent confusion among the regulated community.

Final Regulatory Impact Analysis Determination

The commission reviewed the adopted rules in light of the regulatory analysis requirements of Texas Government Code, §2001.0225, and determined that the rulemaking does not meet the definition of a "major environmental rule" as defined by that statute. A "major environmental rule" means a rule the specific intent of which is to protect the environment or reduce risks to human health from environmental exposure and that may adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, or the public health and safety of the state or a sector of the state (Texas Government Code, §2001.0225(g)(3)).

This rulemaking does not meet the statutory definition of a "major environmental rule" because it is not the specific intent of the HB 805 amendments to protect the environment or reduce risks to human health from environmental exposure. The specific intent of the HB 805 amendments is to require certain water utilities, providers, and conveyors, to have EPPs for maintaining water pressure following a disruption in service caused by a natural disaster. These rules are not required by federal regulations.

The amendments to Chapter 290 made in response to HB 805 change the county population threshold for identifying affected utilities from 400,000 to 550,000 and provide a timetable for newly affected utilities to comply with TWC, §13.1395.

Further, this rulemaking does not meet the statutory definition of a "major environmental rule" because the amendments do not adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, or the public health and safety of the state or a sector of the state. Although the specific intent of the amendments made in response to the federal regulations is to reduce risks to human health from environmental exposure, it is not a rulemaking that may adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, or the public health and safety of the state or a sector of the state. The specific intent of the rules is to bring Chapter 290 into conformity with HB 805, the federal GWR, TOC rule, the National Primary Drinking Water Regulations (NPDWR), and the chlorine residual analyzer Method 334.0. The federal regulations implement the federal Safe Drinking Water Act (40 CFR §141.1 and §142.1). The amendments made by HB 805 expand the counties to which the EPP requirement applies and provide a timeline for newly affected utilities to comply. The amendments based on the GWR would establish definitions consistent with those used in the federal regulations. The amendments based on the TOC rule are to correct a typographical error that extended the state requirements of this section to treatment plants that are not subject to the corresponding federal requirements. The amendments based on NPDWR would expand the definition of GUI to bring it into conformity with agency practice and 40 CFR §141.2. The amendments based on EPA Method 334.0 would make it an approved method for measuring contaminants in drinking water. It is

not anticipated that the cost of complying with the amendments would be significant with respect to the economy as a whole; therefore, the adopted amendments would not adversely affect in a material way the economy, a sector of the economy, competition, or jobs.

Additionally, this rulemaking does not meet any of the four applicability criteria for requiring a regulatory impact analysis for a major environmental rule, which are listed in Texas Government Code, §2001.0225(a). This section only applies to a major environmental rule, the result of which is to: 1) exceed a standard set by federal law, unless the rule is specifically required by state law; 2) exceed an express requirement of state law, unless the rule is specifically required by federal law; 3) exceed a requirement of a delegation agreement or contract between the state and an agency or representative of the federal government to implement a state and federal program; or 4) adopt a rule solely under the general powers of the agency instead of under a specific state law.

This rulemaking does not meet any of these four applicability requirements because this rulemaking: 1) does not exceed any standard set by federal law; 2) does not exceed an express requirement of state law; 3) does not exceed a requirement of a delegation agreement or contract between the state and an agency or representative of the federal government to implement any state and federal program in the regulation of PWSs, but rather is adopted to be consistent with state law, to ensure that emergency operations of

water systems following a natural disaster, and with federal regulations in order to ensure consistency of definitions and monitoring requirements across federal and state regulations; and 4) is not adopted solely under the general powers of the agency, but rather specifically under TWC, §13.041, which allows the commission to adopt and enforce rules reasonably required in the exercise of its powers and jurisdiction, including rules governing practice and procedure before the commission, and under Texas Health and Safety Code, §341.031(a), which allows the commission to adopt and enforce rules implement the federal Safe Drinking Water Act (42 United States Code, §300f *et seq.*).

The commission invited public comment regarding the draft regulatory impact analysis determination during the public comment period. The commission did not receive any comments regarding the draft regulatory impact analysis determination.

Takings Impact Assessment

The commission evaluated these rules and performed an analysis of whether they constitute a taking under Texas Government Code, Chapter 2007. The specific purpose of these rules is to implement certain recently enacted legislation relating to the emergency preparedness of affected utilities and federal drinking water regulations. The rules change the number of counties in which an EPP is required (HB 805); certain definitions relating to groundwater sourced drinking water (federal GWR); the reach of

the TOC rule, expanding the definition of GUI; and add Method 334.0 as an alternative method of continuous residual chlorine analysis. This rulemaking substantially advances this stated purpose by making the commission's rules consistent with HB 805 and the federal regulations. The commission's analysis indicates that Texas Government Code, Chapter 2007 does not apply because this action does not affect private real property.

Promulgation and enforcement of these rules will constitute neither a statutory nor a constitutional taking of private real property. These regulations do not adversely affect a landowner's rights in private real property, in whole or in part, temporarily or permanently, because this rulemaking does not burden nor restrict the owner's right to property. More specifically, these rules implement legislation addressing the adoption of EPPs by "affected utilities" (HB 805), the federal GWR, the TOC rule, the NPDWR, and the chlorine analyzer Method 334.0. These provisions do not impose any burdens or restrictions on private real property. Therefore, the amendments do not constitute a taking under Texas Government Code, Chapter 2007.

Consistency with the Coastal Management Program

The commission reviewed the adopted rules and found that they are neither identified in Coastal Coordination Act Implementation Rules, 31 TAC §505.11(b)(2) or (4), nor would they affect any action/authorization identified in Coastal Coordination Act

Implementation Rules, 31 TAC §505.11(a)(6). Therefore, the rules are not subject to the Texas Coastal Management Program (CMP).

The commission invited public comment regarding the consistency with the CMP during the public comment period. The commission did not receive any comments regarding the adopted rulemaking's consistency with the CMP.

Public Comment

The commission held a public hearing on July 10, 2012. The comment period closed on July 16, 2012. The commission did not receive any comments on this rulemaking.

**SUBCHAPTER D: RULES AND REGULATIONS FOR PUBLIC WATER
SYSTEMS**

§§290.38, 290.39, 290.46

Statutory Authority

These amendments are adopted under Texas Water Code (TWC), §5.013, which establishes the general jurisdiction of the commission; TWC, §5.102, which establishes the commission's general authority to perform any act necessary to carry out its jurisdiction; TWC, §5.103, which establishes the commission's authority to adopt any rules necessary to carry out its powers and duties; TWC, §5.105, which establishes the commission's authority to set policy by rule; Texas Health and Safety Code (THSC), §341.031(a), which establishes the commission's authority to adopt and enforce rules to implement the federal Safe Drinking Water Act (42 United States Code, §§300f *et seq.*); and THSC, §341.0315, which requires public drinking water systems to comply with commission rules adopted to ensure the supply of safe drinking water.

The amendments implement TWC, §13.1395, as amended by House Bill 805, the federal Ground Water Rule, the National Primary Drinking Water Regulations, and the chlorine residual analyzer Method 334.0, which implement the federal Safe Drinking Water Act.

§290.38. Definitions.

The following words and terms, when used in this chapter shall have the following meanings, unless the context clearly indicates otherwise. If a word or term used in this chapter is not contained in the following list, its definition shall be as shown in [Title] 40 Code of Federal Regulations (CFR) §141.2. Other technical terms used shall have the meanings or definitions listed in the latest edition of *The Drinking Water Dictionary*, prepared by the American Water Works Association.

(1) Affected utility--A retail public utility (§291.3 of this title (relating to Definitions of Terms)), exempt utility (§291.3 of this title), or provider or conveyor of potable or raw water service that furnishes water service to more than one customer:

(A) in a county with a population of 3.3 million or more; or

(B) in a county with a population of 550,000 [400,000] or more adjacent to a county with a population of 3.3 million or more.

(2) Air gap--The unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet conveying water to a tank, fixture, receptor, sink, or other assembly and the flood level rim of the receptacle.

The vertical, physical separation must be at least twice the diameter of the water supply outlet, but never less than 1.0 inch.

(3) ANSI standards--The standards of the American National Standards Institute, Inc., 1430 Broadway, New York, New York 10018.

(4) Approved laboratory--A laboratory approved by the executive director to analyze water samples to determine their compliance with certain maximum or minimum allowable constituent levels.

(5) ASME standards--The standards of the American Society of Mechanical Engineers, 346 East 47th Street, New York, New York 10017.

(6) ASTM International standards--The standards of the American Society for Testing and Materials, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, Pennsylvania, 19428.

(7) Auxiliary power--Either mechanical power or electric generators which can enable the system to provide water under pressure to the distribution system in the event of a local power failure. With the approval of the executive director, dual primary

electric service may be considered as auxiliary power in areas which are not subject to large scale power outages due to natural disasters.

(8) AWWA standards--The latest edition of the applicable standards as approved and published by the American Water Works Association, 6666 West Quincy Avenue, Denver, Colorado 80235.

(9) Bag Filter--Pressure-driven separation device that removes 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.

(10) Cartridge filter--Pressure-driven separation device that removes 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.

(11) Certified laboratory--A laboratory certified by the commission to analyze water samples to determine their compliance with maximum allowable

constituent levels. After June 30, 2008, laboratories must be accredited, not certified, in order to perform sample analyses previously performed by certified laboratories.

(12) Challenge test--A study conducted to determine the removal efficiency (log removal value) of a device for a particular organism, particulate, or surrogate.

(13) Chemical disinfectant--Any oxidant, including but not limited to chlorine, chlorine dioxide, chloramines, and ozone added to the water in any part of the treatment or distribution process, that is intended to kill or inactivate pathogenic microorganisms.

(14) Community water system--A public water system which has a potential to serve at least 15 residential service connections on a year-round basis or serves at least 25 residents on a year-round basis.

(15) Connection--A single family residential unit or each commercial or industrial establishment to which drinking water is supplied from the system. As an example, the number of service connections in an apartment complex would be equal to the number of individual apartment units. When enough data is not available to accurately determine the number of connections to be served or being served, the population served divided by three will be used as the number of connections for

calculating system capacity requirements. Conversely, if only the number of connections is known, the connection total multiplied by three will be the number used for population served. For the purposes of this definition, a dwelling or business which is connected to a system that delivers water by a constructed conveyance other than a pipe shall not be considered a connection if:

(A) the water is used exclusively for purposes other than those defined as human consumption (see human consumption);

(B) the executive director determines that alternative water to achieve the equivalent level of public health protection provided by the drinking water standards is provided for residential or similar human consumption, including, but not limited to, drinking and cooking; or

(C) the executive director determines that the water provided for residential or similar human consumption is centrally treated or is treated at the point of entry by a provider, a pass through entity, or the user to achieve the equivalent level of protection provided by the drinking water standards.

(16) Contamination--The presence of any foreign substance (organic, inorganic, radiological or biological) in water which tends to degrade its quality so as to constitute a health hazard or impair the usefulness of the water.

(17) Cross-connection--A physical connection between a public water system and either another supply of unknown or questionable quality, any source which may contain contaminating or polluting substances, or any source of water treated to a lesser degree in the treatment process.

(18) Direct integrity test--A physical test applied to a membrane unit in order to identify and isolate integrity breaches/leaks that could result in contamination of the filtrate.

(19) Disinfectant--A chemical or a treatment which is intended to kill or inactivate pathogenic microorganisms in water.

(20) Disinfection--A process which inactivates pathogenic organisms in the water by chemical oxidants or equivalent agents.

(21) Distribution system--A system of pipes that conveys potable water from a treatment plant to the consumers. The term includes pump stations, ground and

elevated storage tanks, potable water mains, and potable water service lines and all associated valves, fittings, and meters, but excludes potable water customer service lines.

(22) Drinking water--All water distributed by any agency or individual, public or private, for the purpose of human consumption or which may be used in the preparation of foods or beverages or for the cleaning of any utensil or article used in the course of preparation or consumption of food or beverages for human beings. The term "Drinking Water" shall also include all water supplied for human consumption or used by any institution catering to the public.

(23) Drinking water standards--The commission rules covering drinking water standards in Subchapter F of this chapter (relating to Drinking Water Standards Governing Drinking Water Quality and Reporting Requirements for Public Water Systems).

(24) Elevated storage capacity--That portion of water which can be stored at least 80 feet above the highest service connection in the pressure plane served by the storage tank.

(25) Emergency operations--The operation of an affected utility during an extended power outage at a minimum water pressure of 35 pounds per square inch.

(26) Emergency power--Either mechanical power or electric generators which can enable the system to provide water under pressure to the distribution system in the event of a local power failure. With the approval of the executive director, dual primary electric service may be considered as emergency power in areas which are not subject to large scale power outages due to natural disasters.

(27) Extended power outage--A [a] power outage lasting for more than 24 hours.

(28) Filtrate--The water produced from a filtration process; typically used to describe the water produced by filter processes such as membranes.

(29) Groundwater--Any water that is located beneath the surface of the ground and is not under the direct influence of surface water.

(30) Groundwater under the direct influence of surface water--Any water beneath the surface of the ground with:

(A) significant occurrence of insects or other macroorganisms, 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; or [.]

(C) site-specific characteristics including measurements of water quality parameters, well construction details, existing geological attributes, and other features that are similar to groundwater sources that have been identified by the executive director as being under the direct influence of surface water.

(31) Health hazard--A cross-connection, potential contamination hazard, or other situation involving any substance that can cause death, illness, spread of disease, or has a high probability of causing such effects if introduced into the potable drinking water supply.

(32) Human consumption--Uses by humans in which water can be ingested into or absorbed by the human body. Examples of these uses include, but are not limited to drinking, cooking, brushing teeth, bathing, washing hands, washing dishes, and preparing foods.

(33) Indirect integrity monitoring--The monitoring of some aspect of filtrate water quality, such as turbidity, that is indicative of the removal of particulate matter.

(34) Innovative/alternate treatment--Any treatment process that does not have specific design requirements in §290.42(a) - (f) of this title (relating to Water Treatment). For example, the adjustment of fluoride ion content, special treatment for metals, iron, manganese, organic and inorganic contaminant reduction, special methods for taste and odor control, demineralization, corrosion control processes, membrane filtration, bag/cartridge filters, ozone, chlorine dioxide, Ultraviolet (UV) light disinfection, and other treatment processes.

(35) Interconnection--A physical connection between two public water supply systems.

(36) International Fire Code (IFC)--The standards of the International Code Council, 500 New Jersey Avenue, NW, 6th Floor, Washington, DC 20001.

(37) Intruder-resistant fence--A fence six feet or greater in height, constructed of wood, concrete, masonry, or metal with three strands of barbed wire

extending outward from the top of the fence at a 45 degree angle with the smooth side of the fence on the outside wall. In lieu of the barbed wire, the fence must be eight feet in height. The fence must be in good repair and close enough to surface grade to prevent intruder passage.

(38) L/d ratio--The dimensionless value that is obtained by dividing the length (depth) of a granular media filter bed by the weighted effective diameter "d" of the filter media. The weighted effective diameter of the media is calculated based on the percentage of the total bed depth contributed by each media layer.

(39) Licensed professional engineer--An engineer who maintains a current license through the Texas Board of Professional Engineers in accordance with its requirements for professional practice.

(40) Log removal value (LRV)--Removal efficiency for a target organism, particulate, or surrogate expressed as \log_{10} (i.e., \log_{10} (feed concentration) - \log_{10} (filtrate concentration)).

(41) Maximum daily demand--In the absence of verified historical data or in cases where a public water system has imposed mandatory water use restrictions

within the past 36 months, maximum daily demand means 2.4 times the average daily demand of the system.

(42) Maximum contaminant level (MCL)--The MCL for a specific contaminant is defined in the section relating to that contaminant.

(43) Membrane filtration--A pressure or vacuum driven separation process in which particulate matter larger than one 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; includes the following common membrane classifications microfiltration (MF), ultrafiltration (UF), nanofiltration (NF), and reverse osmosis (RO), as well as any "membrane cartridge filtration" (MCF) device that satisfies this definition.

(44) Membrane LRV_{C-Test} --The number that reflects the removal efficiency of the membrane filtration process demonstrated during challenge testing. The value is based on the entire set of log removal values (LRVs) [LRVs] obtained during challenge testing, with one representative LRV established per module tested.

(45) Membrane module--The smallest component of a membrane unit in which a specific membrane surface area is housed in a device with a filtrate outlet structure.

(46) Membrane sensitivity--The maximum log removal value (LRV) that can be reliably verified by a direct integrity test.

(47) Membrane unit--A group of membrane modules that share common valving, which allows the unit to be isolated from the rest of the system for the purpose of integrity testing or other maintenance.

(48) Milligrams per liter (mg/L)--A measure of concentration, equivalent to and replacing parts per million in the case of dilute solutions.

(49) Monthly reports of water works operations--The daily record of data relating to the operation of the system facilities compiled in a monthly report.

(50) National Fire Protection Association (NFPA) standards--The standards of the NFPA, 1 Batterymarch Park, Quincy, Massachusetts, 02269-9101.

(51) National Sanitation Foundation (NSF)--The NSF or reference to the listings developed by the foundation, P.O. Box 1468, Ann Arbor, Michigan 48106.

(52) Noncommunity water system--Any public water system which is not a community system.

(53) Nonhealth hazard--A cross-connection, potential contamination hazard, or other situation involving any substance that generally will not be a health hazard, but will constitute a nuisance, or be aesthetically objectionable, if introduced into the public water supply.

(54) Nontransient noncommunity water system--A public water system that is not a community water system and regularly serves at least 25 of the same persons at least six months out of the year.

(55) psi--Pounds per square inch.

(56) Peak hourly demand--In the absence of verified historical data, peak hourly demand means 1.25 times the maximum daily demand (prorated to an hourly rate) if a public water supply meets the commission's minimum requirements for elevated storage capacity and 1.85 times the maximum daily demand (prorated to an

hourly rate) if the system uses pressure tanks or fails to meet the commission's minimum elevated storage capacity requirement.

(57) Plumbing inspector--Any person employed by a political subdivision for the purpose of inspecting plumbing work and installations in connection with health and safety laws and ordinances, who has no financial or advisory interest in any plumbing company, and who has successfully fulfilled the examinations and requirements of the Texas State Board of Plumbing Examiners.

(58) Plumbing ordinance--A set of rules governing plumbing practices which is at least as stringent and comprehensive as one of the following nationally recognized codes:

(A) the International Plumbing Code; or

(B) the Uniform Plumbing Code.

(59) Potable water customer service line--The sections of potable water pipe between the customer's meter and the customer's point of use.

(60) Potable water service line--The section of pipe between the potable water main to the customer's side of the water meter. In cases where no customer water meter exists, it is the section of pipe that is under the ownership and control of the public water system.

(61) Potable water main--A pipe or enclosed constructed conveyance operated by a public water system which is used for the transmission or distribution of drinking water to a potable water service line.

(62) Potential contamination hazard--A condition which, by its location, piping or configuration, has a reasonable probability of being used incorrectly, through carelessness, ignorance, or negligence, to create or cause to be created a backflow condition by which contamination can be introduced into the water supply. Examples of potential contamination hazards are:

(A) bypass arrangements;

(B) jumper connections;

(C) removable sections or spools; and

(D) swivel or changeover assemblies.

(63) Process control duties--Activities that directly affect the potability of public drinking water, including: making decisions regarding the day-to-day operations and maintenance of public water system production and distribution; maintaining system pressures; determining the adequacy of disinfection and disinfection procedures; taking routine microbiological samples; taking chlorine residuals and microbiological samples after repairs or installation of lines or appurtenances; and operating chemical feed systems, filtration, disinfection, or pressure maintenance equipment; or performing other duties approved by the executive director.

(64) Public drinking water program--Agency staff designated by the executive director to administer the Safe Drinking Water Act and state statutes related to the regulation of public drinking water. Any report required to be submitted in this chapter to the executive director must be submitted to the Texas Commission on Environmental Quality, Water Supply Division, MC 155, P.O. Box 13087, Austin, Texas 78711-3087.

(65) Public health engineering practices--Requirements in this subchapter or guidelines promulgated by the executive director.

(66) Public water system--A system for the provision to the public of water for human consumption through pipes or other constructed conveyances, which includes all uses described under the definition for drinking water. Such a system must have at least 15 service connections or serve at least 25 individuals at least 60 days out of the year. This term includes; any collection, treatment, storage, and distribution facilities under the control of the operator of such system and used primarily in connection with such system, and any collection or pretreatment storage facilities not under such control which are used primarily in connection with such system. Two or more systems with each having a potential to serve less than 15 connections or less than 25 individuals but owned by the same person, firm, or corporation and located on adjacent land will be considered a public water system when the total potential service connections in the combined systems are 15 or greater or if the total number of individuals served by the combined systems total 25 or greater at least 60 days out of the year. Without excluding other meanings of the terms "individual" or "served," an individual shall be deemed to be served by a water system if he lives in, uses as his place of employment, or works in a place to which drinking water is supplied from the system.

(67) Quality Control Release Value (QCRV)--A minimum quality standard of a non-destructive performance test (NDPT) established by the manufacturer for membrane module production that ensures that the module will attain the targeted log removal value (LRV) demonstrated during challenge testing.

(68) Reactor Validation Testing--A process by which a full-scale Ultraviolet (UV) [UV] reactor's disinfection performance is determined relative to operating parameters that can be monitored. These parameters include flow rate, UV intensity as measured by a UV sensor and the UV lamp status.

(69) Resolution--The size of the smallest integrity breach that contributes to a response from a direct integrity test in membranes used to treat surface water or groundwater under the direct influence of surface water.

(70) Sanitary control easement--A legally binding document securing all land, within 150 feet of a public water supply well location, from pollution hazards. This document must fully describe the location of the well and surrounding lands and must be filed in the county records to be legally binding.

(71) Sanitary survey--An onsite review of a public water system's adequacy for producing and distributing safe drinking water by evaluating the following elements: water source; treatment; distribution system; finished water storage; pump, pump facilities, and controls; monitoring, reporting, and data verification; system management, operation and maintenance; and operator compliance [An onsite review of the water source, facilities, equipment, operation and maintenance of a public water

system, for the purpose of evaluating the adequacy for producing and distributing safe drinking water].

(72) Sensitivity--The maximum log removal value (LRV) that can be reliably verified by a direct integrity test in membranes used to treat surface water or groundwater under the direct influence of surface water; also applies to some continuous indirect integrity monitoring methods.

(73) Service line--A pipe connecting the utility service provider's main and the water meter, or for wastewater, connecting the main and the point at which the customer's service line is connected, generally at the customer's property line.

(74) Service pump--Any pump that takes treated water from storage and discharges to the distribution system.

(75) Significant deficiency--Significant deficiencies cause, or have the potential to cause, the introduction of contamination into water delivered to customers. This may include defects in design, operation, or maintenance of the source, treatment, storage, or distribution systems.

(76) [(75)] Transfer pump--Any pump which conveys water from one point to another within the treatment process or which conveys water to storage facilities prior to distribution.

(77) [(76)] Transient noncommunity water system--A public water system that is not a community water system and serves at least 25 persons at least 60 days out of the year, yet by its characteristics, does not meet the definition of a nontransient noncommunity water system.

(78) [(77)] Wastewater lateral--Any pipe or constructed conveyance carrying wastewater, running laterally down a street, alley, or easement, and receiving flow only from the abutting properties.

(79) [(78)] Wastewater main--Any pipe or constructed conveyance which receives flow from one or more wastewater laterals.

§290.39. General Provisions.

(a) Authority for requirements. Texas Health and Safety Code (THSC), Chapter 341, Subchapter C prescribes the duties of the commission relating to the regulation and control of public drinking water systems in the state. The statute requires that the commission ensure that public water systems: supply safe drinking water in adequate

quantities, are financially stable and technically sound, promote use of regional and area-wide drinking water systems, and review completed plans and specifications and business plans for all contemplated public water systems not exempted by THSC, §341.035(d). The statute also requires the commission be notified of any subsequent material changes, improvements, additions, or alterations in existing systems and, consider compliance history in approving new or modified public water systems. Texas Water Code (TWC), Chapter 13, Subchapter E, §13.1395, prescribes the duties of the commission relating to standards for emergency operations of affected utilities. The statute requires that the commission ensure that affected utilities provide water service as soon as safe and practicable during an extended power outage following the occurrence of a natural disaster.

(b) Reason for this subchapter and minimum criteria. This subchapter has been adopted to ensure regionalization and area-wide options are fully considered, the inclusion of all data essential for comprehensive consideration of the contemplated project, or improvements, additions, alterations, or changes thereto and to establish minimum standardized public health design criteria in compliance with existing state statutes and in accordance with good public health engineering practices. In addition, minimum acceptable financial, managerial, technical, and operating practices must be specified to ensure that facilities are properly operated to produce and distribute safe, potable water.

(c) Required actions and approvals prior to construction. A person may not begin construction of a public drinking water supply system unless the executive director determines the following requirements have been satisfied and approves construction of the proposed system.

(1) A person proposing to install a public drinking water system within the extraterritorial jurisdiction of a municipality; or within 1/2-mile of the corporate boundaries of a district, or other political subdivision providing the same service; or within 1/2-mile of a certificated service area boundary of any other water service provider shall provide to the executive director evidence that:

(A) written application for service was made to that provider; and

(B) all application requirements of the service provider were satisfied, including the payment of related fees.

(2) A person may submit a request for an exception to the requirements of paragraph (1) of this subsection if the application fees will create a hardship on the person. The request must be accompanied by evidence documenting the financial hardship.

(3) A person who is not required to complete the steps in paragraph (1) of this subsection, or who completes the steps in paragraph (1) of this subsection and is denied service or determines that the existing provider's cost estimate is not feasible for the development to be served, shall submit to the executive director:

(A) plans and specifications for the system; and

(B) a business plan for the system.

(4) Emergency Preparedness Plan for Public Water Systems that are Affected Utilities.

(A) Each public water system that is also an affected utility, as defined by §290.38(1) of this title (relating to Definitions), is required to submit to the executive director, receive approval for, and adopt an emergency preparedness plan in accordance with §290.45 of this title (relating to Minimum Water System Capacity Requirements) using either the template in Appendix J of §290.47 of this title (relating to Appendices) or another emergency preparedness plan that meets the requirements of this section. Emergency preparedness plans are required to be prepared under the direction of a licensed professional engineer when an affected utility has been granted or

is requesting an alternative capacity requirement in accordance with §290.45(g) of this title, or is requesting to meet the requirements of TWC, §13.1395, as an alternative to any rule requiring elevated storage, or as determined by the executive director on a case by case basis.

(B) Each affected utility that supplies, provides, or conveys surface water to wholesale customers shall include in its emergency preparedness plan under subparagraph (A) of this paragraph provision for the actual installation and maintenance of automatically starting auxiliary generators or distributive generation facilities for each raw water intake pump station, water treatment plant, pump station, and pressure facility necessary to provide water to its wholesale customers.

(C) The executive director shall review an emergency preparedness plan submitted under subparagraph (A) of this paragraph. If the executive director determines that the plan is not acceptable, the executive director shall recommend changes to the plan. The executive director must make its recommendations on or before the 90th day after the executive director receives the plan. In accordance with commission rules, an emergency preparedness plan must include one of the options listed in §290.45(h)(1)(A) - (H) of this title.

(D) Each affected utility shall install any required equipment to implement the emergency preparedness plan approved by the executive director immediately upon operation.

(E) The executive director may grant a waiver of the requirements for emergency preparedness plans to an affected utility if the executive director determines that compliance with this section will cause a significant financial burden on customers of the affected utility. The affected utility shall submit financial, managerial, and technical information as requested by the executive director to demonstrate the financial burden.

(d) Submission of plans.

(1) Plans, specifications, and related documents will not be considered unless they have been prepared under the direction of a licensed professional engineer. All engineering documents must have engineering seals, signatures, and dates affixed in accordance with the rules of the Texas Board of Professional Engineers.

(2) Detailed plans must be submitted for examination at least 30 days prior to the time that approval, comments or recommendations are desired. From this, it is not to be inferred that final action will be forthcoming within the time mentioned.

(3) The limits of approval are as follows.

(A) The commission's public drinking water program furnishes consultation services as a reviewing body only, and its licensed professional engineers may neither act as design engineers nor furnish detailed estimates.

(B) The commission's public drinking water program does not examine plans and specifications in regard to the structural features of design, such as strength of concrete or adequacy of reinforcing. Only the features covered by this subchapter will be reviewed.

(C) The consulting engineer and/or owner must provide surveillance adequate to assure that facilities will be constructed according to approved plans and must notify the executive director in writing upon completion of all work. Planning materials shall be submitted to the Texas Commission on Environmental Quality, Water Supply Division, MC 153, P.O. Box 13087, Austin, Texas 78711-3087.

(e) Submission of planning material. In general, the planning material submitted shall conform to the following requirements.

(1) Engineering reports are required for new water systems and all surface water treatment plants. Engineering reports are also required when design or capacity deficiencies are identified in an existing system. The engineering report shall include, at least, coverage of the following items:

- (A) statement of the problem or problems;
- (B) present and future areas to be served, with population data;
- (C) the source, with quantity and quality of water available;
- (D) present and estimated future maximum and minimum water quantity demands;
- (E) description of proposed site and surroundings for the water works facilities;
- (F) type of treatment, equipment, and capacity of facilities;
- (G) basic design data, including pumping capacities, water storage and flexibility of system operation under normal and emergency conditions; and

(H) the adequacy of the facilities with regard to delivery capacity and pressure throughout the system.

(2) All plans and drawings submitted may be printed on any of the various papers which give distinct lines. All prints must be clear, legible and assembled to facilitate review.

(A) The relative location of all facilities which are pertinent to the specific project shall be shown.

(B) The location of all abandoned or inactive wells within 1/4-mile of a proposed well site shall be shown or reported.

(C) If staged construction is anticipated, the overall plan shall be presented, even though a portion of the construction may be deferred.

(D) A general map or plan of the municipality, water district, or area to be served shall accompany each proposal for a new water supply system.

(3) Specifications for construction of facilities shall accompany all plans. If a process or equipment which may be subject to probationary acceptance because of limited application or use in Texas is proposed, the executive director may give limited approval. In such a case, the owner must be given a bonded guarantee from the manufacturer covering acceptable performance. The specifications shall include a statement that such a bonded guarantee will be provided to the owner and shall also specify those conditions under which the bond will be forfeited. Such a bond will be transferable. The bond shall be retained by the owner and transferred when a change in ownership occurs.

(4) A copy of each fully executed sanitary control easement and any other documentation demonstrating compliance with §290.41(c)(1)(F) of this title (relating to Water Sources) shall be provided to the executive director prior to placing the well into service. Each original easement document, if obtained, must be recorded in the deed records at the county courthouse. Section 290.47(c) of this title includes a suggested form.

(5) Construction features and siting of all facilities for new water systems and for major improvements to existing water systems must be in conformity with applicable commission rules.

(f) **Submission of business plans.** The prospective owner of the system or the person responsible for managing and operating the system must submit a business plan to the executive director that demonstrates that the owner or operator of the system has available the financial, managerial, and technical capability to ensure future operation of the system in accordance with applicable laws and rules. The executive director may order the prospective owner or operator to demonstrate financial assurance to operate the system in accordance with applicable laws and rules as specified in Chapter 37, Subchapter O of this title (relating to Financial Assurance for Public Drinking Water Systems and Utilities), or as specified by commission rule, unless the executive director finds that the business plan demonstrates adequate financial capability. A business plan shall include the information and be presented in a format prescribed by the executive director. For community water systems, the business plan shall contain, at a minimum, the following elements:

(1) description of areas and population to be served by the potential system;

(2) description of drinking water supply systems within a two-mile radius of the proposed system, copies of written requests seeking to obtain service from each of those drinking water supply systems, and copies of the responses to the written requests;

(3) time line for construction of the system and commencement of operations;

(4) identification of and costs of alternative sources of supply;

(5) selection of the alternative to be used and the basis for that selection;

(6) identification of the person or entity which owns or will own the drinking water system and any identifiable future owners of the drinking water system;

(7) identification of any other businesses and public drinking water system(s) owned or operated by the applicant, owner(s), parent organization, and affiliated organization(s);

(8) an operations and maintenance plan which includes sufficient detail to support the budget estimate for operation and maintenance of the facilities;

(9) assurances that the commitments and resources needed for proper operation and maintenance of the system are, and will continue to be, available,

including the qualifications of the organization and each individual associated with the proposed system;

(10) for retail public utilities as defined by TWC, §13.002:

(A) projected rate revenue from residential, commercial, and industrial customers; and

(B) pro forma income, expense, and cash flow statements;

(11) identification of any appropriate financial assurance, including those being offered to capital providers;

(12) a notarized statement signed by the owner or responsible person that the business plan has been prepared under his direction and that he is responsible for the accuracy of the information; and

(13) other information required by the executive director to determine the adequacy of the business plan or financial assurance.

(g) Business plans not required. A person is not required to file a business plan if the person:

(1) is a county;

(2) is a retail public utility as defined by TWC, §13.002, unless that person is a utility as defined by that section;

(3) has executed an agreement with a political subdivision to transfer the ownership and operation of the water supply system to the political subdivision; or

(4) is a noncommunity nontransient water system and the person has demonstrated financial assurance under THSC, Chapter 361 or Chapter 382 or TWC, Chapter 26.

(h) Beginning and completion of work.

(1) No person may begin construction on a new public water system before receiving written approval of plans and specifications and, if required, approval of a business plan from the executive director. No person may begin construction of modifications to a public water system without providing notification to the executive

director and submitting and receiving approval of plans and specifications if requested in accordance with subsection (j) of this section.

(2) The executive director shall be notified in writing by the design engineer or the owner before construction is started.

(3) Upon completion of the water works project, the engineer or owner shall notify the executive director in writing as to its completion and attest to the fact that the completed work is substantially in accordance with the plans and change orders on file with the commission.

(i) Changes in plans and specifications. Any addenda or change orders which may involve a health hazard or relocation of facilities, such as wells, treatment units, and storage tanks, shall be submitted to the executive director for review and approval.

(j) Changes in existing systems or supplies. Public water systems shall notify the executive director prior to making any significant change or addition to the system's production, treatment, storage, pressure maintenance, or distribution facilities. Public water systems shall submit plans and specifications for the proposed changes upon request. Changes to an existing disinfection process at a treatment plant that treats surface water or groundwater that is under the direct influence of surface water shall not

be instituted without the prior approval of the executive director. Any long-term change in water treatment that will impact the corrosivity shall not be instituted without the prior approval of the executive director.

(1) The following changes are considered to be significant:

(A) proposed changes to existing systems which result in an increase or decrease in production, treatment, storage, or pressure maintenance capacity;

(B) proposed changes to the disinfection process used at plants that treat surface water or groundwater that is under the direct influence of surface water including changes involving the disinfectants used, the disinfectant application points, or the disinfectant monitoring points;

(C) proposed changes to the type of disinfectant used to maintain a disinfectant residual in the distribution system;

(D) proposed changes in existing distribution systems when the change is greater than 10% of the existing distribution capacity or 250 connections,

whichever is smaller, or results in the water system's inability to comply with any of the applicable capacity requirements of §290.45 of this title;

(E) proposed replacement or change of membranes modules;

(F) any other material changes specified by the executive director;

and

(G) examples of long-term treatment changes that could impact the corrosivity of the water include the addition of a new treatment process or modification of an existing treatment process. Examples of modifications include switching secondary disinfectants, switching coagulants, and switching corrosion inhibitor products. Long-term changes can include dose changes to existing chemicals if the system is planning long-term changes to its finished water pH or residual inhibitor concentration. Long-term treatment changes would not include chemical dose fluctuations associated with daily raw water quality changes.

(2) The executive director shall determine whether engineering plans and specifications will be required after reviewing the initial notification regarding the nature and extent of the modifications.

(A) Upon request of the executive director, the water system shall submit plans and specifications in accordance with the requirements of subsection (d) of this section.

(B) Unless plans and specifications are required by Chapter 293 of this title (relating to Water Districts), the executive director will not require another state agency or a political subdivision to submit planning material on distribution line improvements if the entity has its own internal review staff and complies with all of the following criteria:

(i) the internal review staff includes one or more licensed professional engineers that are employed by the political subdivision and must be separate from, and not subject to the review or supervision of, the engineering staff or firm charged with the design of the distribution extension under review;

(ii) a licensed professional engineer on the internal review staff determines and certifies in writing that the proposed distribution system changes comply with the requirements of §290.44 of this title (relating to Water Distribution) and will not result in a violation of any provision of §290.45 of this title;

(iii) the state agency or political subdivision includes a copy of the written certification described in this subparagraph with the initial notice that is submitted to the executive director.

(C) Unless plans and specifications are required by Chapter 293 of this title, the executive director will not require planning material on distribution line improvements from any public water system that is required to submit planning material to another state agency or political subdivision that complies with the requirements of subparagraph (B) of this paragraph. The notice to the executive director must include a statement that a state statute or local ordinance requires the planning materials to be submitted to the other state agency or political subdivision and a copy of the written certification that is required in subparagraph (B) of this paragraph.

(3) If a certificate of convenience and necessity (CCN) is required or must be amended, the CCN application must be included with the notice to the executive director.

(k) Planning material acceptance. Planning material for improvements to an existing system which does not meet the requirements of all sections of this subchapter will not be considered unless the necessary modifications for correcting the deficiencies are included in the proposed improvements, or unless the executive director determines

that reasonable progress is being made toward correcting the deficiencies and no immediate health hazard will be caused by the delay.

(l) Exceptions. Requests for exceptions to one or more of the requirements in this subchapter shall be considered on an individual basis. Any water system which requests an exception must demonstrate to the satisfaction of the executive director that the exception will not compromise the public health or result in a degradation of service or water quality.

(1) The exception must be requested in writing and must be substantiated by carefully documented data. The request for an exception shall precede the submission of engineering plans and specifications for a proposed project for which an exception is being requested.

(2) Any exception granted by the commission is subject to revocation.

(3) Any request for an exception which is not approved by the commission in writing is denied.

(4) The executive director may establish site specific design, operation, maintenance, and reporting requirements for systems that have been issued an exception to the subchapter.

(m) Notification of system startup or reactivation. The owner or responsible official must provide written notification to the commission of the startup of a new public water supply system or reactivation of an existing public water supply system. This notification must be made immediately upon meeting the definition of a public water system as defined in §290.38 of this title.

(n) The commission may require the owner or operator of a public drinking water supply system that was constructed without the approval required by THSC, §341.035, that has a history of noncompliance with THSC, Chapter 341, Subchapter C or commission rules, or that is subject to a commission enforcement action to take the following action:

(1) provide the executive director with a business plan that demonstrates that the system has available the financial, managerial, and technical resources adequate to ensure future operation of the system in accordance with applicable laws and rules. The business plan must fulfill all the requirements for a business plan as set forth in subsection (f) of this section;

(2) provide adequate financial assurance of the ability to operate the system in accordance with applicable laws and rules. The executive director will set the amount of the financial assurance, after the business plan has been reviewed and approved by the executive director.

(A) The amount of the financial assurance will equal the difference between the amount of projected system revenues and the projected cash needs for the period of time prescribed by the executive director.

(B) The form of the financial assurance will be as specified in Chapter 37, Subchapter O of this title and will be as specified by the executive director.

(C) If the executive director relies on rate increases or customer surcharges as the form of financial assurance, such funds shall be deposited in an escrow account as specified in Chapter 37, Subchapter O of this title and released only with the approval of the executive director.

(o) Emergency Preparedness Plans for Affected Utilities.

(1) Each public water system that is also an affected utility and that exists as of November 1, 2011 [December 1, 2009] is required to adopt and submit to the executive director an emergency preparedness plan in accordance with §290.45 of this title and using the template in Appendix J of §290.47 of this title or another emergency preparedness plan that meets the requirements of this subchapter no later than February 1, 2012 [March 1, 2010]. Emergency preparedness plans are required to be prepared under the direction of a licensed professional engineer when an affected utility has been granted or is requesting an alternative capacity requirement in accordance with §290.45(g) of this title, or is requesting to meet the requirements of TWC, §13.1395, as an alternative to any rule requiring elevated storage, or as determined by the executive director on a case by case basis.

(2) Each affected utility that supplies, provides, or conveys surface water to wholesale customers shall include in its emergency preparedness plan under this subsection provisions for the actual installation and maintenance of automatically starting auxiliary generators or distributive generation facilities for each raw water intake pump station, water treatment plant, pump station, and pressure facility necessary to provide water to its wholesale customers.

(3) The executive director shall review an emergency preparedness plan submitted under this subsection. If the executive director determines that the plan is not

acceptable, the executive director shall recommend changes to the plan. The executive director must make its recommendations on or before the 90th day after the executive director receives the plan. In accordance with the commission rules, an emergency preparedness plan must include one of the options listed in §290.45(h)(1)(A) - (H) of this title.

(4) Not later than June 1, 2012 [July 1, 2010], each affected utility shall implement the emergency preparedness plan approved by the executive director.

(5) An affected utility may file with the executive director a written request for an extension not to exceed 90 days, of the date by which the affected utility is required under this subsection to submit the affected utility's emergency preparedness plan or of the date by which the affected utility is required under this subsection to implement the affected utility's emergency preparedness plan. The executive director may approve the requested extension for good cause shown.

(6) The executive director may grant a waiver of the requirements for emergency preparedness plans to an affected utility if the executive director determines that compliance with this section will cause a significant financial burden on customers of the affected utility. The affected utility shall submit financial, managerial, and

technical information as requested by the executive director to demonstrate the financial burden.

§290.46. Minimum Acceptable Operating Practices for Public Drinking Water Systems.

(a) General. When a public drinking water supply system is to be established, plans shall be submitted to the executive director for review and approval prior to the construction of the system. All public water systems are to be constructed in conformance with the requirements of this subchapter and maintained and operated in accordance with the following minimum acceptable operating practices. Owners and operators shall allow entry to members of the commission and employees and agents of the commission onto any public or private property at any reasonable time for the purpose of inspecting and investigating conditions relating to public water systems in the state including the required elements of a sanitary survey as defined in §290.38(71) of this title (relating to Definitions). Members, employees, or agents acting under this authority shall observe the establishment's rules and regulations concerning safety, internal security, and fire protection, and if the property has management in residence, shall notify management or the person then in charge of his presence and shall exhibit proper credentials.

(b) Microbiological. Submission of samples for microbiological analysis shall be as required by Subchapter F of this chapter (relating to Drinking Water Standards Governing Drinking Water Quality and Reporting Requirements for Public Water Systems). Microbiological samples may be required by the executive director for monitoring purposes in addition to the routine samples required by the drinking water standards. These samples shall be submitted to an accredited laboratory. (A list of the accredited laboratories can be obtained by contacting the executive director). The samples shall be submitted to the executive director in a manner prescribed by the executive director.

(c) Chemical. Samples for chemical analysis shall be submitted as directed by the executive director.

(d) Disinfectant residuals and monitoring. A disinfectant residual must be continuously maintained during the treatment process and throughout the distribution system.

(1) Disinfection equipment shall be operated and monitored in a manner that will assure compliance with the requirements of §290.110 of this title (relating to Disinfectant Residuals).

(2) The disinfection equipment shall be operated to maintain the following minimum disinfectant residuals in each finished water storage tank and throughout the distribution system at all times:

(A) a free chlorine residual of 0.2 milligrams per liter (mg/L); or

(B) a chloramine residual of 0.5 mg/L (measured as total chlorine)

for those systems that feed ammonia.

(e) Operation by trained and licensed personnel. Except as provided in paragraph (1) of this subsection, the production, treatment, and distribution facilities at the public water system must be operated at all times under the direct supervision of a water works operator who holds an applicable, valid license issued by the executive director.

(1) Transient noncommunity public water systems are exempt from the requirements of this subsection if they use only groundwater or purchase treated water from another public water system.

(2) All public water systems that are subject to the provisions of this subsection shall meet the following requirements.

(A) Public water systems shall not allow new or repaired production, treatment, storage, pressure maintenance, or distribution facilities to be placed into service without the prior guidance and approval of a licensed water works operator.

(B) Public water systems shall ensure that their operators are trained regarding the use of all chemicals used in the water treatment plant. Training programs shall meet applicable standards established by the Occupational Safety and Health Administration (OSHA) or the Texas Hazard Communications Act, Texas Health and Safety Code, Title 6, Chapter 502.

(C) Public water systems using chlorine dioxide shall place the operation of the chlorine dioxide facilities under the direct supervision of a licensed operator who has a Class "C" or higher license.

(3) Systems that only purchase treated water shall meet the following requirements in addition to the requirements contained in paragraph (2) of this subsection.

(A) Purchased water systems serving no more than 250 connections must employ an operator who holds a Class "D" or higher license.

(B) Purchased water systems serving more than 250 connections, but no more than 1,000 connections, must employ an operator who holds a Class "C" or higher license.

(C) Purchased water systems serving more than 1,000 connections must employ at least two operators who hold a Class "C" or higher license and who each work at least 16 hours per month at the public water system's treatment or distribution facilities.

(4) Systems that treat groundwater and do not treat surface water or groundwater that is under the direct influence of surface water shall meet the following requirements in addition to the requirements contained in paragraph (2) of this subsection.

(A) Groundwater systems serving no more than 250 connections must employ an operator with a Class "D" or higher license.

(B) Groundwater systems serving more than 250 connections, but no more than 1,000 connections, must employ an operator with a Class "C" or higher groundwater license.

(C) Groundwater systems serving more than 1,000 connections must employ at least two operators who hold a Class "C" or higher groundwater license and who each work at least 16 hours per month at the public water system's production, treatment, or distribution facilities.

(5) Systems that treat groundwater that is under the direct influence of surface water must meet the following requirements in addition to the requirements contained in paragraph (2) of this subsection.

(A) Systems which serve no more than 1,000 connections and utilize cartridge or membrane filters must employ an operator who holds a Class "C" or higher groundwater license and has completed a four-hour training course on monitoring and reporting requirements or who holds a Class "C" or higher surface water license and has completed the Groundwater Production course.

(B) Systems which serve more than 1,000 connections and utilize cartridge or membrane filters must employ at least two operators who meet the requirements of subparagraph (A) of this paragraph and who each work at least 24 hours per month at the public water system's production, treatment, or distribution facilities.

(C) Systems which serve no more than 1,000 connections and utilize coagulant addition and direct filtration must employ an operator who holds a Class "C" or higher surface water license and has completed the Groundwater Production course or who holds a Class "C" or higher groundwater license and has completed a Surface Water Production course. Effective January 1, 2007, the public water system must employ at least one operator who has completed the Surface Water Unit I course and the Surface Water Unit II course.

(D) Systems which serve more than 1,000 connections and utilize coagulant addition and direct filtration must employ at least two operators who meet the requirements of subparagraph (C) of this paragraph and who each work at least 24 hours per month at the public water system's production, treatment, or distribution facilities. Effective January 1, 2007, the public water system must employ at least two operators who have completed the Surface Water Unit I course and the Surface Water Unit II course.

(E) Systems which utilize complete surface water treatment must comply with the requirements of paragraph (6) of this subsection.

(F) Each plant must have at least one Class "C" or higher operator on duty at the plant when it is in operation or the plant must be provided with continuous turbidity and disinfectant residual monitors with automatic plant shutdown and alarms to summon operators so as to ensure that the water produced continues to meet the commission's drinking water standards during periods when the plant is not staffed.

(6) Systems that treat surface water must meet the following requirements in addition to the requirements contained in paragraph (2) of this subsection.

(A) Surface water systems that serve no more than 1,000 connections must employ at least one operator who holds a Class "B" or higher surface water license. Part-time operators may be used to meet the requirements of this subparagraph if the operator is completely familiar with the design and operation of the plant and spends at least four consecutive hours at the plant at least once every 14 days and the system also employs an operator who holds a Class "C" or higher surface water license. Effective January 1, 2007, the public water system must employ at least one operator who has completed the Surface Water Unit I course and the Surface Water Unit II course.

(B) Surface water systems that serve more than 1,000 connections must employ at least two operators; one of the required operators must hold a Class "B" or higher surface water license and the other required operator must hold a Class "C" or higher surface water license. Each of the required operators must work at least 32 hours per month at the public water system's production, treatment, or distribution facilities. Effective January 1, 2007, the public water system must employ at least two operators who have completed the Surface Water Unit I course and the Surface Water Unit II course.

(C) Each surface water treatment plant must have at least one Class "C" or higher surface water operator on duty at the plant when it is in operation or the plant must be provided with continuous turbidity and disinfectant residual monitors with automatic plant shutdown and alarms to summon operators so as to ensure that the water produced continues to meet the commission's drinking water standards during periods when the plant is not staffed.

(D) Public water systems shall not allow Class "D" operators to adjust or modify the treatment processes at surface water treatment plant unless an operator who holds a Class "C" or higher surface license is present at the plant and has issued specific instructions regarding the proposed adjustment.

(f) Operating records and reports. Water systems must maintain a record of water works operation and maintenance activities and submit periodic operating reports.

(1) The public water system's operating records must be organized, and copies must be kept on file or stored electronically.

(2) The public water system's operating records must be accessible for review during inspections and be available to the executive director upon request.

(3) All public water systems shall maintain a record of operations.

(A) The following records shall be retained for at least two years:

(i) the amount of chemicals used:

(I) Systems that treat surface water or groundwater under the direct influence of surface water shall maintain a record of the amount of each chemical used each day.

(II) Systems that serve 250 or more connections or serve 750 or more people shall maintain a record of the amount of each chemical used each day.

(III) Systems that serve fewer than 250 connections, serve fewer than 750 people, and use only groundwater or purchased treated water shall maintain a record of the amount of each chemical used each week;

(ii) the volume of water treated:

(I) Systems that treat surface water or groundwater under the direct influence of surface water shall maintain a record of the amount of water treated each day.

(II) Systems that serve 250 or more connections or serve 750 or more people shall maintain a record of the amount of water treated each day.

(III) Systems that serve fewer than 250 connections, serve fewer than 750 people, and use only groundwater or purchase treated water shall maintain a record of the amount of water treated each week;

(iii) the date, location, and nature of water quality, pressure, or outage complaints received by the system and the results of any subsequent complaint investigation;

(iv) the dates that dead-end mains were flushed;

(v) the dates that storage tanks and other facilities were cleaned;

(vi) the maintenance records for water system equipment and facilities; and

(vii) for systems that do not employ full-time operators to meet the requirements of subsection (e) of this section, a daily record or a monthly summary of the work performed and the number of hours worked by each of the part-time operators used to meet the requirements of subsection (e) of this section.

(B) The following records shall be retained for at least three years:

(i) copies of notices of violation and any resulting corrective actions. The records of the actions taken to correct violations of primary drinking water regulations must be retained for at least three years after the last action taken with respect to the particular violation involved;

(ii) copies of any public notice issued by the water system;

(iii) the disinfectant residual monitoring results from the distribution system;

(iv) the calibration records for laboratory equipment, flow meters, rate-of-flow controllers, on-line turbidimeters, and on-line disinfectant residual analyzers;

(v) the records of backflow prevention device programs;

(vi) the raw surface water monitoring results and source water monitoring plans required by §290.111 of this title (relating to Surface Water Treatment) must be retained for three years after bin classification required by §290.111 of this title;

(vii) notification to the executive director that a system will provide 5.5-log *Cryptosporidium* treatment in lieu of raw surface water monitoring; and

(viii) except for those specified in subparagraphs [subparagraph] (C)(iv) and [of this paragraph and subparagraph] (E)(i) of this

paragraph, the results of all surface water treatment monitoring that are used to demonstrate log inactivation or removal.

(C) The following records shall be retained for a period of five years after they are no longer in effect:

(i) the records concerning a variance or exemption granted to the system;

(ii) Concentration Time (CT) studies for surface water treatment plants;

(iii) the Recycling Practices Report form and other records pertaining to site-specific recycle practices for treatment plants that recycle; and

(iv) the turbidity monitoring results and exception reports for individual filters as required by §290.111 of this title.

(D) The following records shall be retained for at least five years:

(i) the results of microbiological analyses;

(ii) the results of inspections (as required in subsection (m)(1) of this section) for all water storage and pressure maintenance facilities;

(iii) the results of inspections as required by subsection (m)(2) of this section for all pressure filters;

(iv) documentation of compliance with state approved corrective action plan and schedules required to be completed by groundwater systems that must take corrective actions;

(v) documentation of the reason for an invalidated fecal indicator source sample and documentation of a total coliform-positive sample collected at a location with conditions that could cause such positive samples in a distribution system;

(vi) notification to wholesale system(s) of a distribution coliform positive sample for consecutive systems using groundwater; [and]

(vii) Consumer Confidence Report compliance documentation; [.]

(viii) records of the lowest daily residual disinfectant concentration and records of the date and duration of any failure to maintain the executive director-approved minimum specified disinfectant residual for a period of more than four hours for groundwater systems providing 4-log treatment; and

(ix) records of executive director-specified compliance requirements for membrane filtration, records of parameters specified by the executive director for approved alternative treatment and records of the date and duration of any failure to meet the membrane operating, membrane integrity, or alternative treatment operating requirements for more than four hours for groundwater systems. Membrane filtration can only be used if it is approved by the executive director and if it can be properly validated.

(E) The following records shall be retained for at least ten years:

(i) copies of Monthly Operating Reports and any supporting documentation including turbidity monitoring results of the combined filter effluent;

(ii) the results of chemical analyses;

(iii) any written reports, summaries, or communications relating to sanitary surveys of the system conducted by the system itself, by a private consultant, or by the executive director shall be kept for a period not less than ten years after completion of the survey involved;

(iv) copies of the Customer Service Inspection reports required by subsection (j) of this section;

(v) copy of any Initial Distribution System Evaluation (IDSE) plan, report, approval letters, and other compliance documentation required by §290.115 of this title (relating to Stage 2 Disinfection Byproducts (TTHM and HAA5));

(vi) state notification of any modifications to an IDSE report;

(vii) copy of any 40/30 certification required by §290.115 of this title;

(viii) documentation of corrective actions taken by groundwater systems in accordance with §290.116 of this title (relating to Groundwater Corrective Actions and Treatment Techniques); [and]

(ix) any monitoring plans required by §290.121(b) of this title (relating to Monitoring Plans); and [.]

(x) records of the executive director-approved minimum specified disinfectant residual for groundwater systems providing 4-log treatment, including wholesale, consecutive, and mixed systems, regulated under §290.116(c) of this title.

(F) A public water system shall maintain records relating to lead and copper requirements under §290.117 of this title (relating to Regulation of Lead and Copper) for no less than 12 years. Any system subject to the requirements of §290.117 of this title shall retain on its premises original records of all sampling data and analyses, reports, surveys, letters, evaluations, schedules, executive determinations, and any other information required by the executive director under §290.117 of this title. These records include, but are not limited to, the following items: tap water monitoring results including the location of each site and date of collection; certification of the volume and validity of first-draw-tap sample criteria via a copy of the laboratory analysis request form; where residents collected the sample; certification that the water system informed the resident of proper sampling procedures; the analytical results for lead and copper concentrations at each tap sample site; and designation of any substitute site not used in previous monitoring periods.

(G) A public water system shall maintain records relating to special studies and pilot projects, special monitoring, and other system-specific matters as directed by the executive director.

(4) Water systems shall submit routine reports and any additional documentation that the executive director may require to determine compliance with the requirements of this chapter.

(A) The reports must be submitted to the Texas Commission on Environmental Quality, Water Supply Division, MC 155, P.O. Box 13087, Austin, Texas 78711-3087 by the tenth day of the month following the end of the reporting period.

(B) The reports must contain all the information required by the drinking water standards and the results of any special monitoring tests which have been required.

(C) The reports must be completed in ink, typed, or computer-printed and must be signed by the licensed water works operator.

(5) All public water systems that are affected utilities must maintain the following records for as long as they are applicable to the system:

(A) An emergency preparedness plan approved by the executive director and a copy of the approval letter.

(B) All required operating and maintenance records for auxiliary power equipment, including periodic testing of the auxiliary power equipment under load and any associated automatic switch over equipment.

(C) Copies of the manufacturer's specifications for all generators that are part of the approved emergency preparedness plan.

(g) Disinfection of new or repaired facilities. Disinfection by or under the direction of water system personnel must be performed when repairs are made to existing facilities and before new facilities are placed into service. Disinfection must be performed in accordance with American Water Works Association (AWWA) requirements and water samples must be submitted to a laboratory approved by the executive director. The sample results must indicate that the facility is free of microbiological contamination before it is placed into service. When it is necessary to

return repaired mains to service as rapidly as possible, doses may be increased to 500 mg/L and the contact time reduced to 1/2 hour.

(h) Calcium hypochlorite. A supply of calcium hypochlorite disinfectant shall be kept on hand for use when making repairs, setting meters, and disinfecting new mains prior to placing them in service.

(i) Plumbing ordinance. Public water systems must adopt an adequate plumbing ordinance, regulations, or service agreement with provisions for proper enforcement to insure that neither cross-connections nor other unacceptable plumbing practices are permitted (See §290.47(b) of this title (relating to Appendices)). Should sanitary control of the distribution system not reside with the purveyor, the entity retaining sanitary control shall be responsible for establishing and enforcing adequate regulations in this regard. The use of pipes and pipe fittings that contain more than 8.0% lead or solders and flux that contain more than 0.2% lead is prohibited for installation or repair of any public water supply and for installation or repair of any plumbing in a residential or nonresidential facility providing water for human consumption and connected to a public drinking water supply system. This requirement may be waived for lead joints that are necessary for repairs to cast iron pipe.

(j) Customer service inspections. A customer service inspection certificate shall be completed prior to providing continuous water service to new construction, on any existing service either when the water purveyor has reason to believe that cross-connections or other potential contaminant hazards exist, or after any material improvement, correction, or addition to the private water distribution facilities. Any customer service inspection certificate form which varies from the format found in §290.47(d) of this title must be approved by the executive director prior to being placed in use.

(1) Individuals with the following credentials shall be recognized as capable of conducting a customer service inspection certification.

(A) Plumbing Inspectors and Water Supply Protection Specialists licensed by the Texas State Board of Plumbing Examiners (TSBPE).

(B) Customer service inspectors who have completed a commission-approved course, passed an examination administered by the executive director, and hold current professional license as a customer service inspector.

(2) As potential contaminant hazards are discovered, they shall be promptly eliminated to prevent possible contamination of the water supplied by the

public water system. The existence of a health hazard, as identified in §290.47(i) of this title, shall be considered sufficient grounds for immediate termination of water service. Service can be restored only when the health hazard no longer exists, or until the health hazard has been isolated from the public water system in accordance with §290.44(h) of this title (relating to Water Distribution).

(3) These customer service inspection requirements are not considered acceptable substitutes for and shall not apply to the sanitary control requirements stated in §290.102(a)(5) of this title (relating to General Applicability).

(4) A customer service inspection is an examination of the private water distribution facilities for the purpose of providing or denying water service. This inspection is limited to the identification and prevention of cross-connections, potential contaminant hazards, and illegal lead materials. The customer service inspector has no authority or obligation beyond the scope of the commission's regulations. A customer service inspection is not a plumbing inspection as defined and regulated by the TSBPE. A customer service inspector is not permitted to perform plumbing inspections. State statutes and TSBPE adopted rules require that TSBPE licensed plumbing inspectors perform plumbing inspections of all new plumbing and alterations or additions to existing plumbing within the municipal limits of all cities, towns, and villages which have passed an ordinance adopting one of the plumbing codes recognized by TSBPE.

Such entities may stipulate that the customer service inspection be performed by the plumbing inspector as a part of the more comprehensive plumbing inspection. Where such entities permit customer service inspectors to perform customer service inspections, the customer service inspector shall report any violations immediately to the local entity's plumbing inspection department.

(k) Interconnection. No physical connection between the distribution system of a public drinking water supply and that of any other water supply shall be permitted unless the other water supply is of a safe, sanitary quality and the interconnection is approved by the executive director.

(l) Flushing of mains. All dead-end mains must be flushed at monthly intervals. Dead-end lines and other mains shall be flushed as needed if water quality complaints are received from water customers or if disinfectant residuals fall below acceptable levels as specified in §290.110 of this title.

(m) Maintenance and housekeeping. The maintenance and housekeeping practices used by a public water system shall ensure the good working condition and general appearance of the system's facilities and equipment. The grounds and facilities shall be maintained in a manner so as to minimize the possibility of the harboring of

rodents, insects, and other disease vectors, and in such a way as to prevent other conditions that might cause the contamination of the water.

(1) Each of the system's ground, elevated, and pressure tanks shall be inspected annually by water system personnel or a contracted inspection service.

(A) Ground and elevated storage tank inspections must determine that the vents are in place and properly screened, the roof hatches closed and locked, flap valves and gasketing provide adequate protection against insects, rodents, and other vermin, the interior and exterior coating systems are continuing to provide adequate protection to all metal surfaces, and the tank remains in a watertight condition.

(B) Pressure tank inspections must determine that the pressure release device and pressure gauge are working properly, the air-water ratio is being maintained at the proper level, the exterior coating systems are continuing to provide adequate protection to all metal surfaces, and the tank remains in watertight condition. Pressure tanks provided with an inspection port must have the interior surface inspected every five years.

(C) All tanks shall be inspected annually to determine that instrumentation and controls are working properly.

(2) When pressure filters are used, a visual inspection of the filter media and internal filter surfaces shall be conducted annually to ensure that the filter media is in good condition and the coating materials continue to provide adequate protection to internal surfaces.

(3) When cartridge filters are used, filter cartridges shall be changed at the frequency required by the manufacturer, or more frequently if needed.

(4) All water treatment units, storage and pressure maintenance facilities, distribution system lines, and related appurtenances shall be maintained in a watertight condition and be free of excessive solids.

(5) Basins used for water clarification shall be maintained free of excessive solids to prevent possible carryover of sludge and the formation of tastes and odors.

(6) Pumps, motors, valves, and other mechanical devices shall be maintained in good working condition.

(n) Engineering plans and maps. Plans, specifications, maps, and other pertinent information shall be maintained to facilitate the operation and maintenance of the

system's facilities and equipment. The following records shall be maintained on file at the public water system and be available to the executive director upon request.

(1) Accurate and up-to-date detailed as-built plans or record drawings and specifications for each treatment plant, pump station, and storage tank shall be maintained at the public water system until the facility is decommissioned. As-built plans of individual projects may be used to fulfill this requirement if the plans are maintained in an organized manner.

(2) An accurate and up-to-date map of the distribution system shall be available so that valves and mains can be easily located during emergencies.

(3) Copies of well completion data such as well material setting data, geological log, sealing information (pressure cementing and surface protection), disinfection information, microbiological sample results, and a chemical analysis report of a representative sample of water from the well shall be kept on file for as long as the well remains in service.

(o) Filter backwashing at surface water treatment plants. Filters must be backwashed when a loss of head differential of six to ten feet is experienced between the

influent and effluent loss of head gauges or when the turbidity level at the effluent of the filter reaches 1.0 nephelometric turbidity unit (NTU).

(p) Data on water system ownership and management. The agency shall be provided with information regarding water system ownership and management.

(1) When a water system changes ownership, a written notice of the transaction must be provided to the executive director. When applicable, notification shall be in accordance with Chapter 291 of this title (relating to Utility Regulations). Those systems not subject to Chapter 291 of this title shall notify the executive director of changes in ownership by providing the name of the current and prospective owner or responsible official, the proposed date of the transaction, and the address and phone number of the new owner or responsible official. The information listed in this paragraph and the system's public drinking water supply identification number, and any other information necessary to identify the transaction shall be provided to the executive director 120 days before the date of the transaction.

(2) On an annual basis, the owner of a public water system shall provide the executive director with a written list of all the operators and operating companies that the public water system employs. The notice shall contain the name, license

number, and license class of each employed operator and the name and registration number of each employed operating company (See §290.47(g) of this title).

(q) Special precautions. Special precautions must be instituted by the water system owner or responsible official in the event of low distribution pressures (below 20 pounds per square inch (psi)), water outages, microbiological samples found to contain *E. coli* or fecal coliform organisms, failure to maintain adequate chlorine residuals, elevated finished water turbidity levels, or other conditions which indicate that the potability of the drinking water supply has been compromised.

(1) Boil water notifications must be issued to the customers within 24 hours using the prescribed notification format as specified in §290.47(e) of this title. A copy of this notice shall be provided to the executive director. Bilingual notification may be appropriate based upon local demographics. Once the boil water notification is no longer in effect, the customers must be notified in a manner similar to the original notice.

(2) The flowchart found in §290.47(h) of this title shall be used to determine if a boil water notification must be issued in the event of a loss of distribution system pressure. If a boil water notice is issued under this section, it shall remain in effect until water distribution pressures in excess of 20 psi can consistently be

maintained, a minimum of 0.2 mg/L free chlorine residual or 0.5 mg/L chloramine residual (measured as total chlorine) is present throughout the system, and water samples collected for microbiological analysis are found negative for coliform organisms.

(3) A boil water notification shall be issued if the turbidity of the finished water produced by a surface water treatment plant exceeds 5.0 NTU. The boil water notice shall remain in effect until the water entering the distribution system has a turbidity level below 1.0 NTU, the distribution system has been thoroughly flushed, a minimum of 0.2 mg/L free chlorine residual or 0.5 mg/L chloramine residual (measured as total chlorine) is present throughout the system, and water samples collected for microbiological analysis are found negative for coliform organisms.

(4) Other protective measures may be required at the discretion of the executive director.

(r) Minimum pressures. All public water systems shall be operated to provide a minimum pressure of 35 psi throughout the distribution system under normal operating conditions. The system shall also be operated to maintain a minimum pressure of 20 psi during emergencies such as fire fighting. As soon as safe and practicable following the occurrence of a natural disaster, a public water system that is an affected utility shall

maintain a minimum of 35 psi throughout the distribution system during an extended power outage.

(s) Testing equipment. Accurate testing equipment or some other means of monitoring the effectiveness of any chemical treatment or pathogen inactivation or removal processes must be used by the system.

(1) Flow measuring devices and rate-of-flow controllers that are required by §290.42(d) of this title (relating to Water Treatment) shall be calibrated at least once every 12 months. Well meters required by §290.41(c)(3)(N) of this title (relating to Water Sources) shall be calibrated at least once every three years.

(2) Laboratory equipment used for compliance testing shall be properly calibrated.

(A) pH meters shall be properly calibrated.

(i) Benchtop pH meters shall be calibrated according to manufacturers specifications at least once each day.

(ii) The calibration of benchtop pH meters shall be checked with at least one buffer each time a series of samples is run, and if necessary, recalibrated according to manufacturers specifications.

(iii) On-line pH meters shall be calibrated according to manufacturer specifications at least once every 30 days.

(iv) The calibration of on-line pH meters shall be checked at least once each week with a primary standard or by comparing the results from the on-line unit with the results from a properly calibrated benchtop unit. If necessary, the on-line unit shall be recalibrated with primary standards.

(B) Turbidimeters shall be properly calibrated.

(i) Benchtop turbidimeters shall be calibrated with primary standards at least once every 90 days. Each time the turbidimeter is calibrated with primary standards, the secondary standards shall be restandardized.

(ii) The calibration of benchtop turbidimeters shall be checked with secondary standards each time a series of samples is tested, and if necessary, recalibrated with primary standards.

(iii) On-line turbidimeters shall be calibrated with primary standards at least once every 90 days.

(iv) The calibration of on-line turbidimeters shall be checked at least once each week with a primary standard, a secondary standard, or the manufacturer's proprietary calibration confirmation device or by comparing the results from the on-line unit with the results from a properly calibrated benchtop unit. If necessary, the on-line unit shall be recalibrated with primary standards.

(C) Chemical disinfectant residual analyzers shall be properly calibrated.

(i) The accuracy of manual disinfectant residual analyzers shall be verified at least once every 90 [30] days using chlorine solutions of known concentrations.

[(ii) Continuous disinfectant residual analyzers shall be calibrated at least once every 90 days using chlorine solutions of known concentrations.]

(ii) [(iii)] The accuracy [calibration] of continuous disinfectant residual analyzers shall be checked at least once every seven days [each month] with a chlorine solution of known concentration or by comparing the results from the on-line analyzer with the result of approved benchtop [amperometric, spectrophotometric, or titration] method in accordance with §290.119 of this title (relating to Analytical Procedures).

(iii) If a disinfectant residual analyzer produces a result which is not within 15% of the expected value, the cause of the discrepancy must be determined and corrected and, if necessary, the instrument must be recalibrated.

(D) Ultraviolet (UV) light disinfection analyzers shall be properly calibrated.

(i) The accuracy of duty UV sensors shall be verified with a reference UV sensor monthly, according to the UV sensor manufacturer.

(ii) The reference UV sensor shall be calibrated by the UV sensor manufacturer on a yearly basis, or sooner if needed.

(iii) If used, the Ultraviolet Transmittance (UVT) analyzer shall be calibrated weekly according to the UVT analyzer manufacturer specifications.

(E) Systems must verify the performance of direct integrity testing equipment in a manner and schedule approved by the executive director.

(t) System ownership. All community water systems shall post a legible sign at each of its production, treatment, and storage facilities. The sign shall be located in plain view of the public and shall provide the name of the water supply and an emergency telephone number where a responsible official can be contacted.

(u) Abandoned wells. Abandoned public water supply wells owned by the system must be plugged with cement according to 16 TAC [Texas Administrative Code (TAC)] Chapter 76 (relating to Water Well Drillers and Water Well Pump Installers). Wells that are not in use and are non-deteriorated as defined in those rules must be tested every five years or as required by the executive director to prove that they are in a non-deteriorated condition. The test results shall be sent to the executive director for review and approval. Deteriorated wells must be either plugged with cement or repaired to a non-deteriorated condition.

(v) Electrical wiring. All water system electrical wiring must be securely installed in compliance with a local or national electrical code.

(w) Security. All systems shall maintain internal procedures to notify the executive director by a toll-free reporting phone number immediately of the following events, if the event may negatively impact the production or delivery of safe and adequate drinking water:

(1) an unusual or unexplained unauthorized entry at property of the public water system;

(2) an act of terrorism against the public water system;

(3) an unauthorized attempt to probe for or gain access to proprietary information that supports the key activities of the public water system;

(4) a theft of property that supports the key activities of the public water system; or

(5) a natural disaster, accident, or act that results in damage to the public water system.

(x) Public safety standards. This subsection only applies to a municipality with a population of 1,000,000 or more, with a public utility within its corporate limits.

(1) In this subsection:

(A) "Regulatory authority" means, in accordance with the context in which it is found, either the commission or the governing body of a municipality.

(B) "Public utility" means any person, corporation, cooperative corporation, affected county, or any combination of these persons or entities, other than a municipal corporation, water supply or sewer service corporation, or a political subdivision of the state, except an affected county, or their lessees, trustees, and receivers, owning or operating for compensation in this state equipment or facilities for the transmission, storage, distribution, sale, or provision of potable water to the public or for the resale of potable water to the public for any use or for the collection, transportation, treatment, or disposal of sewage or other operation of a sewage disposal service for the public, other than equipment or facilities owned and operated for either purpose by a municipality or other political subdivision of this state or a water supply or sewer service corporation, but does not include any person or corporation not otherwise a public utility that furnishes the services or commodity only to itself or its employees or

tenants as an incident of that employee service or tenancy when that service or commodity is not resold to or used by others.

(C) "Residential area" means:

(i) an area designated as a residential zoning district by a governing ordinance or code or an area in which the principal land use is for private residences;

(ii) a subdivision for which a plat is recorded in the real property records of the county and that contains or is bounded by public streets or parts of public streets that are abutted by residential property occupying at least 75% of the front footage along the block face; or

(iii) a subdivision a majority of the lots of which are subject to deed restrictions limiting the lots to residential use.

(2) When the regulatory authority is a municipality, it shall by ordinance adopt standards for installing fire hydrants in residential areas in the municipality. These standards must, at a minimum, follow current AWWA standards pertaining to fire hydrants and the requirements of §290.44(e)(6) of this title.

(3) When the regulatory authority is a municipality, it shall by ordinance adopt standards for maintaining sufficient water pressure for service to fire hydrants adequate to protect public safety in residential areas in the municipality. The standards specified in paragraph (4) of this subsection are the minimum acceptable standards.

(4) A public utility shall deliver water to any fire hydrant connected to the public utility's water system located in a residential area so that the flow at the fire hydrant is at least 250 gallons per minute for a minimum period of two hours while maintaining a minimum pressure of 20 psi throughout the distribution system during emergencies such as fire fighting. That flow is in addition to the public utility's maximum daily demand for purposes other than firefighting.

(5) When the regulatory authority is a municipality, it shall adopt the standards required by this subsection within one year of the effective date of this subsection or within one year of the date this subsection first applies to the municipality, whichever occurs later.

(6) A public utility shall comply with the standards established by a municipality under both paragraphs (2) and (3) of this subsection within one year of the date the standards first apply to the public utility. If a municipality has failed to comply

with the deadline required by paragraph (5) of this subsection, then a public utility shall comply with the standards specified in paragraphs (2) and (4) of this subsection within two years of the effective date of this subsection or within one year of the date this subsection first applies to the public utility, whichever occurs later.

**SUBCHAPTER F: DRINKING WATER STANDARDS GOVERNING
DRINKING WATER QUALITY AND REPORTING REQUIREMENTS FOR
PUBLIC WATER SYSTEMS**

§§290.103, 290.109 - 290.112, 290.116, 290.119, 290.122

Statutory Authority

These amendments are adopted under Texas Water Code (TWC), §5.013, which establishes the general jurisdiction of the commission; TWC, §5.102, which establishes the commission's general authority to perform any act necessary to carry out its jurisdiction; TWC, §5.103, which establishes the commission's authority to adopt any rules necessary to carry out its powers and duties; TWC, §5.105, which establishes the commission's authority to set policy by rule; Texas Health and Safety Code (THSC), §341.031(a), which establishes the commission's authority to adopt and enforce rules to implement the federal Safe Drinking Water Act (42 United States Code, §§300f *et seq.*); and THSC, §341.0315, which requires public drinking water systems to comply with commission rules adopted to ensure the supply of safe drinking water.

The amendments implement the federal Ground Water Rule, Total Organic Carbon Rule, and the chlorine residual analyzer Method 334.0, which implement the federal Safe Drinking Water Act.

§290.103. Definitions.

The following definitions shall apply in the interpretation and enforcement of this subchapter. If a word or term used in this subchapter is not contained in the following list, its definition shall be as shown in §290.38 of this title (relating to Definitions) or in [Title] 40 Code of Federal Regulations (CFR) §141.2. Other technical terms used shall have the meanings or definitions listed in the latest edition of "Glossary, Water and Wastewater Control Engineering," prepared by a joint editorial board representing the American Public Health Association, American Society of Civil Engineers, American Water Works Association, and the Water Pollution Control Federation.

(1) Assessment source monitoring--Raw groundwater source monitoring required by the executive director based on groundwater source susceptibility to fecal contaminants.

(2) Combined distribution system (CDS)--The interconnected distribution system consisting of the distribution systems of wholesale systems and of the consecutive systems that receive finished water.

(A) The executive director may determine that the CDS does not include certain systems based on factors such as providing or receiving a relatively small amount of water or only on an emergency basis.

(B) A public water system may be determined to be in a different CDS for the purposes of compliance with regulations based on the Stage 2 Disinfection Byproducts Rule (DBP2) and the Long Term Stage 2 Enhanced Surface Water Treatment Rule (LT2).

(i) For the purposes of raw water monitoring under LT2, the CDS shall be based on the retail and wholesale population served by each surface water treatment plant or plant treating groundwater under the direct influence of surface water.

(ii) For the purposes of DBP2, the CDS shall be determined based on the retail population served within each individual system's distribution system.

(3) Compliance cycle--The nine-year (calendar year) cycle during which public water systems must monitor. Each compliance cycle consists of three, three-year compliance periods. The first compliance cycle begins January 1, 1993, and ends

December 31, 2001. The second begins January 1, 2002, and ends December 31, 2010. The third begins January 1, 2011, and ends December 31, 2019. The cycle continues thereafter in a similar pattern.

(4) Compliance period--A three-year (calendar year) period within a compliance cycle. Each compliance cycle has three, three-year compliance periods. Within the first compliance cycle, the first compliance period is called the initial compliance period and runs from January 1, 1993, to December 31, 1995. The second period from January 1, 1996, to December 31, 1998. The third period from January 1, 1999, to December 31, 2001. Compliance periods in subsequent compliance cycles follow the same pattern.

(5) Comprehensive performance evaluation (CPE)--A thorough review and analysis of a treatment plant's performance-based capabilities and the associated administrative, operation and maintenance practices. It is conducted to identify factors that may be adversely impacting a plant's capability to achieve compliance and to emphasize approaches that can be implemented without significant capital improvements. The comprehensive performance evaluation consists of the following components: assessment of plant performance; evaluation of major unit processes; identification and prioritization of performance limiting factors; assessment of the applicability of comprehensive technical assistance; and preparation of a CPE report.

(6) Consecutive system--A public water system that receives some or all of its finished water from one or more other public water systems.

(7) Disinfection profile--A summary of daily *Cryptosporidium*, *Giardia lamblia* and viral inactivation obtained through disinfection at the treatment plant.

(8) Disinfection by-products (DBP)--Chemical compounds formed by the reaction of a disinfectant with the natural organic matter present in water.

(9) DPD--Abbreviation for N,N-diethyl-p-phenylenediamine, a reagent used in the determination of several residuals. DPD methods are available for both volumetric (titration) and colorimetric determinations, and are commonly used in the field as part of a colorimetric test kit.

(10) Dual sample set--A set of two samples collected at the same time and same location, with one sample analyzed for total trihalomethanes (TTHM) and the other sample analyzed for haloacetic acids-group of five (HAA5). Dual sample sets are collected for the purposes of conducting an initial distribution system evaluation and determining compliance with the TTHM and HAA5 maximum contaminant levels.

(11) Enhanced coagulation--The removal of disinfection by-product precursors to a specified level by conventional coagulation and sedimentation.

(12) Enhanced softening--The removal of disinfection by-product precursors to a specified level by softening.

(13) Entry point--Any point where a source of treated water first enters the distribution system. Entry points to the distribution system may include points where chlorinated well water, treated surface water, rechlorinated water from storage, or water purchased from another supplier enters the distribution system.

(14) Entry point sampling site--A sampling site representing the quality of the water entering the distribution system at each designated entry point.

(15) Fecal indicators--Microbiological organisms used to indicate the presence of fecal contamination. Examples include; fecal coliform, *E. coli*, enterococci, and coliphage.

(16) Filter assessment--An in-depth evaluation of an individual filter, including the analysis of historical filtered water turbidity from the filter, development of a filter profile, evaluation of media condition, identification and prioritization of

factors limiting filter performance, appraisal of the applicability of corrections, and preparation of a filter self-assessment report.

(17) Filter profile--A graphical representation of individual filter performance, based on continuous turbidity measurements or total particle counts versus time for an entire filter run. The filter profile must include all the data collected from the time that the filter placed into service until the time that the backwash cycle is complete and the filter is restarted. The filter profile must also include data collected as another filter is being backwashed.

(18) Finished water--Water that is introduced into the distribution system of a public water system and intended for distribution and consumption without further treatment, except as necessary to maintain water quality within the distribution system (e.g., booster disinfection, addition of corrosion control chemicals).

(19) Groundwater corrective action--Action required when a raw groundwater source sample is found to be positive for *E. coli* or other fecal indicators as described under §290.116(b) of this title (relating to Groundwater Corrective Actions and Treatment Techniques).

(20) Groundwater corrective action plan--A plan approved by the executive director documenting the steps to be taken to address fecal contamination of a groundwater source as described under §290.116(b) of this title (relating to Groundwater Corrective Actions and Treatment Techniques). The groundwater corrective action plan must be approved within 30 days of being notified of the fecal contamination.

(21) Groundwater system--For the purposes of compliance with §290.109 of this title (relating to Microbial Contaminants) and with §290.116 of this title (relating to Groundwater Corrective Actions and Treatment Techniques), a public water system that provides, uses, or distributes any groundwater except if the groundwater is combined with surface water (or with groundwater under the direct influence of surface water) prior to treatment.

(22) Haloacetic acids (five) (HAA5)--The sum of the monochloroacetic acid, dichloroacetic acid, trichloroacetic acid, monobromoacetic acid, and dibromoacetic acid concentrations in milligrams per liter, rounded to two significant figures after adding the sum.

(23) Halogen--One of the chemical elements chlorine, bromine, or iodine.

(24) Hydrogeologic sensitivity assessment--A determination of whether groundwater systems obtain water from hydrogeologically sensitive sources.

(25) Locational running annual average (LRAA)--The average of analytical results for samples taken at a specific monitoring location during the previous four calendar quarters.

(26) Maximum contaminant level (MCL)--The maximum concentration of a regulated contaminant that is allowed in drinking water before the public water system is cited for a violation. Maximum contaminant levels for regulated contaminants are defined in the applicable sections of this subchapter.

(27) Maximum residual disinfectant level (MRDL)--The disinfectant concentration that may not be exceeded in the distribution system. There is convincing evidence that addition of a disinfectant is necessary for control of waterborne microbial contaminants.

(28) Minimum acceptable disinfectant residual--The lowest disinfectant concentration allowed in the distribution system for microbial control.

(29) Operational evaluation level (OEL)--Calculated level of TTHM or HAA5, an exceedance of which requires a system to perform an evaluation of factors in the distribution system contributing to disinfection by-product formation and submit an operation evaluation report as described in §290.115(e)(2) of this title (relating to Stage 2 Disinfection Byproducts [By-products] (TTHM and HAA5)). The OEL at any monitoring location is the sum of the two previous quarters' results plus twice the current quarter's result, divided by 4 to determine an average.

(30) Raw water--Water prior to any treatment including disinfection that is intended to be used, after treatment, as drinking water.

(A) Raw groundwater is water from a groundwater source.

(B) Raw surface water is any water from a surface water source or from a groundwater under the direct influence of surface water source.

(31) Raw groundwater source monitoring [sampling]--Fecal indicator sampling at untreated groundwater sources including triggered source water and assessment source monitoring.

(32) Significant deficiency--Significant deficiencies cause, or have the potential to cause, the introduction of contamination into water delivered to customers. This could include defects in design, operation, or maintenance of the source, treatment, storage, or distribution systems.

(33) [(32)] Specific ultraviolet absorption at 254 nanometers (nm) (SUVA)--An indirect indicator of whether the organic carbon in water is humic or non-humic. It is calculated by dividing a sample's ultraviolet absorption at a wavelength of 254 nm (UV254) (in inverse meters) by its concentration of dissolved organic carbon (DOC) (in milligrams per liter).

(34) [(33)] Total organic carbon (TOC)--The concentration of total organic carbon, in milligrams per liter, measured using heat, oxygen, ultraviolet irradiation, chemical oxidants, or combinations of these oxidants that convert organic carbon to carbon dioxide, rounded to two significant figures. TOC is a surrogate measure for precursors to formation of disinfection by-products.

(35) [(34)] Total trihalomethanes (TTHM)--The sum of the chloroform, dibromochloromethane, bromodichloromethane, and bromoform concentrations in milligrams per liter, rounded to two significant figures after summing.

(36) [(35)] Triggered source water monitoring--Raw groundwater source monitoring required for systems not providing at least 4-log treatment of viruses when a routine distribution coliform sample is positive.

(37) [(36)] Trihalomethane (THM)--One of the family of organic compounds named as derivatives of methane, wherein three of the four hydrogen atoms in methane are each substituted by a halogen atom in the molecular structure.

(38) [(37)] Wholesale system--A public water system that delivers water to another public water system.

(39) 4-log treatment--At least 99.99% (4-log) treatment of viruses using inactivation, removal, or a executive director-approved combination of 4-log virus inactivation and removal. The 4-log treatment must be able to be properly validated and achieved before the first connection of the specified water source.

§290.109. Microbial Contaminants.

(a) Applicability. All public water systems must produce and distribute water that meets the provisions of this section regarding microbial contaminants.

(b) Maximum contaminant levels (MCL) for microbial contaminants. Treatment techniques and MCL requirements for microbial contaminants are based on detection of those contaminants or fecal indicator organisms.

(1) The MCL for microbial contaminants in the distribution system is based on the presence of total or fecal coliform bacteria in routine, repeat, and increased monitoring distribution samples.

(A) For a system which collects at least 40 routine distribution samples per month, the MCL is defined as when more than 5.0% of samples collected in a month are coliform positive.

(B) For a system which collects fewer than 40 routine distribution samples per month, the MCL is defined as when more than one sample is coliform positive.

(C) The acute MCL is defined as when a repeat sample is fecal coliform or *E. coli* positive; or a total coliform positive repeat sample follows a fecal coliform or *E. coli* positive routine sample.

(2) For systems required to collect raw groundwater samples, the standard is no detection of fecal indicators in a raw groundwater samples.

(c) Monitoring requirements for microbial contaminants. Public water systems shall collect samples for total coliform, fecal coliform, *E. coli*, or other fecal indicator organisms at locations and frequency as directed by the executive director. All compliance samples must be collected during normal operating conditions.

(1) Routine microbial sampling locations. Public water systems shall routinely monitor for microbial contaminants at the following locations.

(A) Public water systems must collect routine distribution coliform samples at active service connections which are representative of water quality throughout the distribution system. Other sampling sites may be used if located adjacent to active service connections.

(B) Public water systems shall collect distribution coliform samples at locations specified in the system's monitoring plan.

(2) Routine distribution coliform sampling frequency. Public water systems must sample for distribution coliform at the following frequency:

(A) Community and noncommunity public water systems must collect routine distribution coliform samples at a frequency based on the population served by the system.

(i) the population for noncommunity systems will be based on the maximum number of persons served on any given day during the month;

(ii) the population of community systems will be based on the data reported during the most recent sanitary survey of the public water system; and

(iii) the minimum sampling frequency for public water systems is shown in the following table.

Figure: 30 TAC §290.109(c)(2)(A)(iii) (No change to the figure as it currently exists in TAC.)

(B) A public water system which uses surface water or groundwater under the direct influence of surface water must collect routine distribution coliform samples at regular time intervals throughout the month.

(C) A public water system which uses only uses only purchased water or groundwater not under the direct influence of surface water and serves more than 4,900 persons must collect routine distribution coliform samples at regular time intervals throughout the month.

(D) A public water system which uses only purchased water or groundwater not under the direct influence of surface water and serves 4,900 persons or fewer may collect all required routine distribution coliform samples on a single day if they are taken from different sites.

(E) A total coliform-positive sample invalidated under this subsection does not count towards meeting the minimum routine monitoring requirements of this subsection.

(F) If a system collecting fewer than five routine distribution coliform samples per month has one or more total coliform-positive samples and the executive director does not invalidate the sample(s) in accordance with subsection (d)(1) [(c)(4)] of this section, it must collect at least five routine distribution coliform samples during the next month the system provides water to the public.

(3) Repeat distribution coliform sampling requirements. Systems shall conduct repeat monitoring if one or more of the routine samples is found to contain coliform organisms.

(A) If a routine distribution coliform sample is coliform-positive, the public water system must collect a set of repeat distribution coliform samples within 24 hours of being notified of the positive result, or as soon as possible if the local laboratory is closed.

(i) A system which collects more than one routine distribution coliform sample per month must collect no fewer than three repeat samples for each coliform-positive sample found.

(ii) A system which collects one routine distribution coliform sample per month must collect no fewer than four repeat samples for each coliform-positive sample found.

(B) The system must collect all repeat samples on the same day, except a system with a single service connection may collect daily repeat samples until the required number of repeat samples has been collected.

(C) The system must collect at least one repeat sample from the sampling tap where the original coliform-positive sample was taken, and at least one repeat sample at a tap within five service connections upstream and at least one repeat sample at a tap within five service connections downstream of the original sampling site. If a fourth repeat sample is required, it must be collected within five service connections upstream or downstream. If the positive routine sample was collected at the end of the distribution line, one repeat sample must be collected at that point and all other samples must be collected within five connections upstream of that point.

(D) If one or more repeat samples in the set is total coliform-positive, the public water system must collect an additional set of repeat samples in the manner specified in subparagraphs (A) - (C) of this paragraph. The additional samples must be collected within 24 hours of being notified of the positive result or as soon as possible if the local laboratory is closed. The system must repeat this process until either total coliforms are not detected in one complete set of repeat samples or the system determines that the MCL for total coliforms has been exceeded.

(E) After a system collects a routine sample and before it learns the results of the analysis of that sample, if it collects another routine sample(s) from within five adjacent service connections of the initial sample, and the initial sample is found to

contain total coliform bacteria, then the system may count the subsequent sample(s) as a repeat sample instead of as a routine sample.

(4) Raw groundwater source monitoring. Groundwater systems must comply, unless otherwise noted, with the requirements of this section. Any raw groundwater source sample required under this paragraph must be collected at a location prior to any treatment of the groundwater source and use analytical procedures and methods described in §290.119(b)(10) of this title (relating to Analytical Procedures).

(A) General requirements. A groundwater system must conduct triggered source water monitoring for *E. coli* or other fecal indicators, if both of the following conditions exist.

(i) The system does not provide at least 4-log treatment of viruses (as defined in §290.103(39) of this title (relating to Definitions)) before [or at] the first customer for each groundwater source; and

(ii) The system is notified that a routine distribution coliform sample is positive and the sample is not invalidated under subsection (d)(1) of this section [paragraph (5) of this subsection].

(B) Sampling requirements. A groundwater system must collect, within 24 hours of notification of the routine distribution total coliform-positive [coliform positive] sample, at least one raw groundwater source *E. coli* (or other approved fecal indicator) sample from each groundwater source in use at the time the distribution coliform-positive sample was collected.

(i) The executive director may extend the 24-hour time limit on a case-by case basis if the system cannot collect the raw groundwater source sample within 24 hours due to circumstances beyond its control.

(ii) If approved by the executive director and documented in the system's monitoring plan, systems with more than one groundwater source may be allowed to sample a representative groundwater source or sources. Systems must modify their current monitoring plan to identify one or more groundwater sources that are representative of each distribution coliform sampling site and is intended to be used for representative source sampling.

(iii) A groundwater system serving 1,000 people or fewer may use one of the four required repeat samples collected from a raw groundwater source to meet both the repeat requirements of subparagraph (A) (ii) of this paragraph

and the triggered raw source monitoring requirements in this paragraph. If a required repeat sample is used to meet both requirements and found to be *E. coli* positive, the system will have achieved an acute MCL as defined in subsection (b)(1)(C) of this section and corrective action will be required for the groundwater source were the sample was found to be *E. coli* positive.

(C) Consecutive and wholesale systems. Consecutive groundwater systems receiving drinking water from a wholesaler must notify the wholesale system(s) within 24 hours of being notified of the positive coliform distribution sample. The wholesale groundwater system(s) must comply with the following:

(i) A wholesale groundwater system that receives notice of a distribution coliform sample positive from a consecutive system it serves must collect a sample from each of its groundwater sources within 24 hours of the notification and analyze each sample for the presence of *E. coli*.

(ii) If any raw source sample is *E. coli* positive, the wholesale groundwater system must notify all consecutive systems served by that groundwater source of the fecal indicator positive within 24 hours of being notified. The wholesale system and all consecutive systems served by that groundwater source must notify their water system customers in accordance with subsection (g)(2) of this section.

(D) Exceptions to the triggered source monitoring requirements. A groundwater system is not required to comply with the triggered source monitoring requirements if any of the following conditions exist.

(i) The executive director determines and documents in writing, that the distribution coliform positive sample is caused by a distribution system deficiency; or

(ii) The distribution coliform positive sample is collected at a location that meets the distribution coliform sample invalidation criteria as specified in subsection (d)(1) of this section and the replacement sample is negative for coliforms [paragraph (5) of this subsection].

(E) Assessment source monitoring. The executive director may require monthly source assessment raw monitoring without the presence of a positive total coliform distribution sample if well conditions exist that indicate the groundwater may be susceptible to fecal contamination. The executive director may conduct a hydrogeological sensitivity assessment to determine if the source is susceptible to fecal contamination. If requested by the executive director, groundwater systems must provide the executive director with any existing information that will enable the

executive director to perform a hydrogeological sensitivity assessment. A groundwater system conducting assessment source monitoring may use a triggered source sample collected under subparagraph (B) of this paragraph to meet the assessment source monitoring requirement. Additionally, an assessment source monitoring sample may be used as a triggered source monitoring sample if collected within 24 hours of notification of the coliform-positive distribution sample. Assessment source monitoring requirements may include:

(i) Source monitoring, collected in a manner described in §290.119(b)(10) of this title, for a period of 12 months that represents each month that the system provides groundwater to the public from the raw groundwater source or such time period as specified by the executive director.

(ii) Collection of samples from each well unless the system has an approved triggered source monitoring plan under subparagraph (B)(ii) of this paragraph.

(5) Culture analysis. If any routine or repeat sample is total coliform-positive, that total coliform-positive culture medium will be analyzed to determine if fecal coliforms or bacteria are present. If fecal coliforms or *E. coli* are present, the

system must notify the executive director by the end of the day in accordance with subsection (g) of this section.

(d) Analytical and invalidation requirements for microbial contaminants.

Analytical procedures shall be performed in accordance with §290.119 of this title [(relating to Analytical Procedures)]. Testing for microbial contaminants shall be performed at a laboratory certified by the executive director.

(1) Distribution coliform sample invalidation. The executive director may invalidate a distribution total coliform-positive sample if one of the following conditions is met.

(A) The executive director may invalidate a sample if the laboratory provides written notice that improper sample analysis caused the total coliform-positive result.

(B) The executive director may invalidate a sample if the results of repeat samples collected as required by this section determines that the total coliform-positive sample resulted from a domestic or other non-distribution system plumbing problem. The executive director cannot invalidate a sample on the basis of repeat sample results unless all repeat sample(s) collected at the same tap as the original total

coliform-positive sample are also total coliform-positive, and all repeat samples collected within five service connections of the original tap are total coliform-negative. Under those circumstances, the system may cease resampling and request that the executive director invalidate the sample. The system must provide copies of the routine positive and all repeat samples.

(C) The executive director may invalidate a sample if there are substantial grounds to believe that the total coliform-positive result is due to a circumstance or condition which does not reflect water quality in the distribution system. In this case, the system must still collect all repeat samples required by this section, and use them to determine compliance with the MCL for total coliforms in subsection (f) of this section. The system must provide written documentation which must state the specific cause of the total coliform-positive sample, and the action the system has taken, or will take, to correct this problem. The executive director may not invalidate a total coliform-positive sample solely on the grounds that all repeat samples are total coliform-negative.

(D) The executive director may invalidate a sample if the laboratory provides written notice that the sample was unsuitable for analysis.

(E) If a sample is invalidated by the laboratory, the system must collect another sample from the same location as the original sample within 24 hours of being notified, or as soon as possible if the laboratory is closed, and have it analyzed for the presence of total coliform. The system must continue to resample within 24 hours and have the samples analyzed until it obtains a valid result.

(2) A groundwater system may obtain invalidation of a fecal indicator positive groundwater source sample if the conditions of subparagraphs (A) and (B) of this paragraph apply. If the executive director invalidates a fecal indicator positive groundwater source sample, the system must collect another source sample as specified in subsection (c)(4) of this section within 24 hours of being notified of the invalidation.

(A) Notice from the laboratory must document that improper sample analysis occurred. If a laboratory invalidates a sample, the system must collect another sample from the same location as the original sample within 24 hours of being notified of the invalidated sample, and have it analyzed for the presence of *E. coli*. The system must continue to re-sample within 24 hours and have the samples analyzed until it obtains a valid result. If approved by the executive director, the 24-hour time limit may be extended.

(B) The executive director may invalidate the sample if the system provides written documentation that there is substantial evidence that a fecal indicator positive groundwater source sample is not related to source water quality. If the executive director invalidates a sample, the system must collect another sample from the same location as the original sample within 24 hours of being notified of the invalidated sample, and have it analyzed for the presence of *E. coli*.

(e) Reporting requirements for microbial contaminants. Upon the request of the executive director, the owner or operator of a public water system must provide the executive director with a copy of the results of any test, measurement, or analysis required by this subsection. The copies must be submitted within ten days of the request or within ten days of their receipt by the public water system, whichever is later. The copies must be mailed to the Water Supply Division, MC 155, Texas Commission on Environmental Quality, P.O. Box 13087, Austin, Texas 78711-3087.

(f) Compliance determination for microbial contaminants. Compliance with the requirements of this section shall be determined using the following criteria each month that the system is in operation.

(1) A system commits an acute MCL violation if:

(A) A repeat distribution system sample is fecal coliform-positive or *E. coli*-positive; or

(B) A total coliform-positive repeat distribution system sample follows a fecal coliform-positive or *E. coli*-positive routine distribution system sample.

(2) A system that collects at least 40 routine distribution coliform samples per month commits a nonacute MCL violation if more than 5.0 % of the samples collected during a month are total coliform-positive, but none of the initial or repeat samples are fecal coliform-positive or *E. coli*-positive.

(3) A system that collects fewer than 40 routine distribution coliform samples per month commits a nonacute MCL violation if more than one sample collected during a month is total coliform-positive, but none of the initial or repeat samples are fecal coliform-positive or *E. coli*-positive.

(4) A public groundwater system that is required to collect raw source samples [, commits a treatment technique violation if any source sample is found to be positive for *E. coli* or other approved fecal indicator. A public groundwater system] is required to conduct corrective action as described in §290.116 of this title (relating to Groundwater Corrective Actions and Treatment Techniques) and is required to provide

public notification in accordance with §209.122(a) of this title (relating to Public Notification) if a source sample is confirmed positive for *E. coli* or other approved fecal indicators.

(5) A public water system that fails to provide the required number of suitable distribution coliform samples commits a monitoring violation.

(6) A public water system that fails to monitor in accordance with the requirements of subsection (c)(4) of this section commits a monitoring violation and must provide public notification in accordance to §290.122 of this title [provide the required number of suitable raw source samples commits a monitoring violation].

(7) A public water system that fails to report the results of the monitoring tests required by this section commits a reporting violation.

(8) A public water system that fails to do a required public notice or certify that notification has been performed commits a public notice reporting violation.

(9) Results of all routine and repeat distribution coliform samples not invalidated by the executive director must be included in determining compliance with the MCL for total coliforms.

(10) Distribution coliform samples invalidated by the executive director shall not be included in determining compliance with the MCL for total coliforms.

(11) Special purpose samples, such as those taken to determine whether disinfection practices are sufficient following pipe placement, replacement, or repair, shall not be used to determine compliance with the MCL for microbiological contaminants.

(g) Public notification for microbial contaminants. A system that is out of compliance with the requirements described in this section must notify the public using the procedures described in §290.122 of this title [(relating to Public Notification)] for microbial contamination.

(1) A public water system that commits an acute MCL violation for microbial contaminants must notify the water system customers in accordance with the boil water notice requirements of §290.46(q) of this title (relating to Minimum Acceptable Operating Practices for Public Drinking Water Systems) and the public notice requirements of §290.122(a) of this title.

(2) A public groundwater system that receives an [a] *E. coli* or other fecal indicator positive source sample that has not been invalidated by the executive director, or a notice of an *E. coli* or other fecal indicator positive source sample from a wholesale system, including consecutive systems, must notify the water system customers within 24-hours in accordance with the requirements of §290.122(a) [§290.122(a)(1)(F)] of this title and include notice in the next Consumer Confidence Report for community systems or provide as a special notice for noncommunity systems in accordance with §290.272(g)(7) of this title (relating to Content of the Report) for community water systems and §290.116(f)(2) of this title for noncommunity systems. Consecutive systems must issue public notice in accordance with §290.122(g) of this title. The system must continue to notify the public annually until the fecal contamination in the source water is determined by the executive director to be corrected as specified under §290.116 of this title.

(3) A public water system that has fecal coliforms or *E. coli* present must notify the executive director by the end of the day when the system is notified of the test result, unless the system is notified of the result after the commission's office is closed, in which case the system must notify the executive director before the end of the next business day.

(4) A public water system which commits an MCL violation must report the violation to the executive director immediately after it learns of the violation, but no later than the end of the next business day, and notify the public in accordance with §290.122(b) of this title.

(5) A public water system which has failed to comply with a coliform monitoring requirement must report the monitoring violation to the executive director within ten days after the system discovers the violation and notify the public in accordance with §290.122(c) of this title.

§290.110. Disinfectant Residuals.

(a) Applicability. All public water systems shall properly disinfect water before it is distributed to any customer and shall maintain acceptable disinfectant residuals within the distribution system.

(b) Minimum and maximum acceptable disinfectant concentrations. Public water systems shall provide the minimum levels of disinfectants in accordance with the provisions of this section. Public water systems shall not exceed the maximum residual disinfectant levels (MRDLs) provided in this section.

(1) The disinfection process used by public water systems must ensure that water has been adequately disinfected before it enters the distribution system.

(A) The disinfection process used by public water systems treating surface water sources or groundwater sources that are under the direct influence of surface water must meet the requirements of §290.111(d) of this title (relating to Surface Water Treatment).

(B) The executive director may require the disinfection process used by public water systems treating groundwater sources that are not under the direct influence of surface water to meet the requirements of §290.116 of this title (relating to Groundwater Corrective Actions and Treatment Techniques).

(C) The disinfection process at other types of treatment plants shall provide the level of disinfection required by the executive director.

(2) The residual disinfectant concentration in the water entering the distribution system shall be at least 0.2 milligram per liter (mg/L) free chlorine or 0.5 mg/L chloramine.

(3) The chlorine dioxide residual of the water entering the distribution system shall not exceed an MRDL of 0.8 mg/L.

(4) The residual disinfectant concentration in the water within the distribution system shall be at least 0.2 mg/L free chlorine or 0.5 mg/L chloramine.

(5) The running annual average of the free chlorine or chloramine residual of the water within the distribution system shall not exceed an MRDL of 4.0 mg/L.

(c) Monitoring requirements. Public water systems shall monitor the performance of the disinfection facilities to ensure that appropriate disinfectant levels are maintained. All monitoring conducted pursuant to the requirements of this section must be conducted at sites designated in the public water system's monitoring plan.

(1) Public water systems that treat surface water or groundwater under the direct influence of surface water must verify that they meet the disinfection requirements of subsection (b)(2) of this section.

(A) Public water systems that treat surface water or groundwater under the direct influence of surface water and sell treated water on a wholesale basis or serve more than 3,300 people must continuously monitor and record the disinfectant

residual of the water entering the distribution system. If there is a failure in the continuous monitoring equipment, grab sampling every four hours may be conducted in lieu of continuous monitoring, but for no more than five working days following the failure of the equipment.

(B) Public water systems that treat surface water or groundwater under the direct influence of surface water, serve 3,300 or fewer people and do not sell treated water on a wholesale basis must monitor and record the disinfectant residual of the water entering the distribution system with either continuous monitors or grab samples.

(i) If a system uses grab samples, the samples must be collected on an ongoing basis at the frequency prescribed in the following table.

Figure: 30 TAC §290.110(c)(1)(B)(i) (No change to the figure as it currently exists in TAC.)

(ii) The grab samples cannot be taken at the same time and the sampling interval is subject to the executive director's review and approval.

(iii) Treatment plants that use grab samples and fail to detect an appropriate disinfectant residual must repeat the test at four-hour or shorter intervals until compliance has been reestablished.

(2) Public water systems that treat groundwater or that purchase and resell treated water must, upon the request of the executive director, verify that they meet the disinfection requirements of subsection (b)(2) of this section.

(3) Each treatment plant using chlorine dioxide must monitor and record the chlorine dioxide residual of the water entering the distribution system at least once each day. If the chlorine dioxide residual in the water entering the distribution system exceeds the MRDL contained in subsection (b)(3) of this section, the treatment plant must conduct additional tests.

(A) If the public water system does not have additional chlorination facilities in the distribution system, it must conduct three additional tests at the service connection nearest the treatment plant where an elevated chlorine dioxide residual was detected. The first additional test must be conducted within two hours after detecting an elevated chlorine dioxide residual at the entry point to the distribution system. The two subsequent tests must be conducted at six-hour to eight-hour intervals thereafter.

(B) If the public water system has additional chlorination facilities in the distribution system, it must conduct an additional test at the service connection nearest the treatment plant where an elevated chlorine dioxide residual was detected, an additional test at the first service connection after the point where the water is rechlorinated, and an additional test at a location in the far reaches of the distribution system. The additional test at the location nearest the treatment plant must be conducted within two hours after detecting an elevated chlorine dioxide residual at the entry point to the distribution system. The two other tests must be conducted at six-hour to eight-hour intervals thereafter.

(4) Public water systems shall monitor the disinfectant residual at various locations throughout the distribution system.

(A) Public water systems that use groundwater or purchased water sources only and serve fewer than 250 connections and fewer than 750 people daily, must monitor the disinfectant residual at representative locations in the distribution system at least once every seven days.

(B) Public water systems that serve at least 250 connections or at least 750 people daily, and use only groundwater or purchased water sources must

monitor the disinfectant residual at representative locations in the distribution system at least once per day.

(C) Public water systems using surface water sources or groundwater under the direct influence of surface water must monitor the disinfectant residual tests at least once per day at representative locations in the distribution system.

(D) All public water systems must monitor the residual disinfectant concentration each time that a bacteriological sample is collected, as specified in §290.109 of this title (relating to Microbial Contaminants).

(d) Analytical requirements. All monitoring required by this section must be conducted at a facility approved by the executive director and using methods that conform to the requirements of §290.119 of this title (relating to Analytical Procedures).

(1) The free chlorine or chloramine residual must be measured to a minimum accuracy of plus or minus 0.1 mg/L. Samples tested using a colorimetric method must be analyzed using a colorimeter; spectrophotometer; or, with the written permission of the executive director, a color comparator. [using one of the following methods:]

[(A) Amperometric titration;]

[(B) N,N-diethyl-p -phenylenediamine (DPD) Ferrous titration;]

[(C) DPD colorimetric; or]

[(i) The free chlorine residual within the treatment plant and at the point where the treated water enters the distribution system must be measured with a colorimeter or spectrophotometer.]

[(ii) The free chlorine residual within the distribution system must be measured with a colorimeter, spectrophotometer, or color comparator test kit.]

[(D) Springaldizine (FACTS).]

[(2) The chloramine residual must be measured to a minimum accuracy of plus or minus 0.1 mg/L using one of the following methods:]

[(A) Amperometric titration;]

[(B) DPD Ferrous titration; or]

[(C) DPD colorimetric.]

[(i) The chloramine residual within the treatment plant and at the point where the treated water enters the distribution system must be measured with a colorimeter or spectrophotometer.]

[(ii) The chloramine residual within the distribution system must be measured with a colorimeter, spectrophotometer, or color comparator test kit.]

(2) [(3)] The chlorine dioxide residual must be measured to a minimum accuracy of plus or minus 0.05 mg/L using one of the following methods:

(A) the amperometric titration method using a titrator with platinum-platinum electrodes;

(B) the spectrophotometric Lissamine Green B method, or

(C) with the written permission of the executive director, the DPD-glycine method using a colorimeter or spectrophotometer.

(e) Reporting requirements. Any owner or operator of a public water system subject to the provisions of this section is required to report to the executive director the results of any test, measurement, or analysis required by this section.

(1) Systems exceeding the MRDL for chlorine dioxide in subsection (b)(3) of this section must report the exceedance to the executive director within 24 hours of the event.

(2) Public water systems that use surface water sources or groundwater sources under the direct influence of surface water must submit a Surface Water Monthly Operating Report (commission Form 0102C) or a Surface Water Monthly Operating Report for 2-Filter Plants (commission Form 0103) each month.

(3) Public water systems that use chlorine dioxide must submit a Chlorine Dioxide Monthly Operating Report (commission Form 0690) each month.

(4) Public water systems that use purchased water or groundwater sources only must complete a Disinfection Level Quarterly Operating Report (DLQOR, commission Form 20067) each quarter.

(A) Community and nontransient noncommunity public water systems must submit the Disinfection Level Quarterly Operating Report each quarter, by the tenth day of the month following the end of the quarter.

(B) Transient noncommunity public water systems must retain the Disinfection Level Quarterly Operating Reports and must provide a copy if requested by the executive director.

(5) Monthly and quarterly reports required by this section must be submitted to the Water Supply Division, MC 155, Texas Commission on Environmental Quality, P.O. Box 13087, Austin, Texas 78711-3087 by the tenth day of the month following the end of the reporting period.

(f) Compliance determinations. Compliance with the requirements of this section shall be determined using the following criteria.

(1) All samples used for compliance must be obtained at sampling sites designated in the monitoring plan.

(A) All samples collected at sites designated in the monitoring plan as microbiological and disinfectant residual monitoring sites shall be included in the compliance determination calculations.

(B) Samples collected at sites in the distribution system not designated in the monitoring plan shall not be included in the compliance determination calculations.

(2) A public water system that fails to conduct the monitoring tests required by this section commits a monitoring violation.

(3) A public water system that fails to report the results of the monitoring tests required by this section commits a reporting violation.

(4) A public water system that uses surface water sources or groundwater sources under the direct influence of surface water and fails to meet the requirements of subsection (b)(2) of this section for a period longer than four consecutive hours commits a nonacute treatment technique violation. A public water system that fails to conduct the additional testing required by subsection (c)(1)(B)(iii) of this section also commits a nonacute treatment technique violation.

(5) A public water system that uses chlorine dioxide and exceeds the level specified in subsection (b)(3) of this section violates the MRDL for chlorine dioxide.

(A) If a public water system violates the MRDL for chlorine dioxide and any of the three additional distribution samples exceeds the MRDL, the system commits an acute MRDL violation for chlorine dioxide.

(B) If a public water system violates the MRDL for chlorine dioxide and fails to collect each of the three additional distribution samples required by subsection (c)(3) of this section, the system commits an acute MRDL violation for chlorine dioxide.

(C) If a public water system violates the MRDL for chlorine dioxide but none of the three additional distribution samples violates the MRDL, the system commits a nonacute MRDL violation for chlorine dioxide.

(6) A public water system that fails to meet the requirements of subsection (b)(4) of this section, in more than 5.0% of the samples collected each month, for any two consecutive months, commits a nonacute treatment technique violation. Specifically, the system commits a nonacute violation if the value "V" in the following formula exceeds 5.0% per month for any two consecutive months:

Figure: 30 TAC §290.110(f)(6) (No change to the figure as it currently exists in TAC.)

(7) A public water system violates the MRDL for chlorine or chloramine if, at the end of any quarter, the running annual average of monthly averages exceeds the level specified in subsection (b)(5) of this section.

(8) Notwithstanding the MRDLs listed in subsection (b) of this section, operators shall increase residual disinfectant levels of chlorine or chloramines (but not chlorine dioxide) in the distribution system to a level and for a time necessary to protect public health to address specific microbiological contamination problems caused by circumstances such as distribution line breaks, storm runoff events, source water contamination, or cross-connections.

(9) If a public water system's failure to monitor makes it impossible to determine compliance with the MRDL for chlorine or chloramines, the system commits an MRDL violation for the entire period covered by the annual average.

(10) A public water system that fails to issue a required public notice or certify that it has issued that notice commits a violation.

(g) Public notification requirements. The owner or operator of a public water system that violates the requirements of this section must notify the executive director and the people served by the system.

(1) A public water system that fails to meet the requirements of subsection (b)(3) of this section, shall notify the executive director within 24 hours of the event and the customers in accordance with the requirements of §290.122 of this title (relating to Public Notification).

(A) A public water system that has an acute violation of the MRDL for chlorine dioxide must notify the customers in accordance with the requirements of §290.122(a) of this title.

(B) A public water system that has a non-acute violation of the MRDL for chlorine dioxide must notify the customers in accordance with the requirements of §290.122(b) of this title.

(2) A public water system that uses surface water sources or groundwater sources under the direct influence of surface water and fails to meet the minimum disinfection requirements of subsection (b)(2) of this section shall notify the executive

director by the end of the next business day and the customers in accordance with the requirements of §290.122(b) of this title.

(3) A public water system that fails to meet the requirements of subsection (b)(4) of this section in more than 5.0% of the samples collected each month for two consecutive months must notify its customers.

(A) A public water system that uses surface water or groundwater under the direct influence of surface water must notify its customers in accordance with the requirements of §290.122(b) of this title.

(B) A public water system that uses only groundwater or purchased water must notify its customers when it issues its annual consumer confidence report.

(4) A public water system that fails to meet the requirements of subsection (b)(5) of this section shall notify the executive director by the end of the next business day and the customers in accordance with the requirements of §290.122(b) of this title.

(5) A public water system which fails to conduct the monitoring required by this section must notify its customers of the violation in accordance with the requirements of §290.122(c) of this title.

§290.111. Surface Water Treatment.

(a) Applicability. A public water system that treats surface water or groundwater under the direct influence of surface water must comply with the requirements of this section.

(1) A public water system that treats surface water must comply with the requirements of this section beginning on the effective date of the rule.

(2) A public water system that treats groundwater under the direct influence of surface water must comply with the requirements of this section beginning on a date specified by the executive director. This compliance date shall not exceed 18 months from the date that the executive director first notifies the system that the groundwater source is under the direct influence of surface water.

(3) A public water system that treats both surface water and groundwater under the direct influence of surface water must meet the compliance date in paragraph (1) of this subsection at plants that treat any surface water and must meet the compliance date in paragraph (2) of this subsection at plants that treat only groundwater under the direct influence of surface water.

(b) Raw surface water monitoring. A public water system that treats surface water or groundwater under the direct influence of surface water must conduct at least two rounds of special raw surface water monitoring at each surface water intake and at each well producing groundwater under the direct influence of surface water for the purpose of establishing minimum treatment technique requirements for *Cryptosporidium* and other pathogens. The executive director may waive the raw surface water monitoring requirements for an intake or a well if the combination of pathogen removal and disinfection processes used to treat the raw water achieves at least a 5.5-log total removal and inactivation of *Cryptosporidium parvum*.

(1) Raw water monitoring plans. A system must submit a proposed raw surface water monitoring plan when requested by the executive director. The proposed plan must identify all of the system's intakes and wells; provide the location of each raw water sampling point; include the parameters that will be monitored and the frequency and dates that samples will be collected; and specify the laboratories that will perform the analyses. Raw surface water monitoring must be conducted in accordance with a monitoring plan that has been approved by the executive director. The executive director shall not approve a raw surface water monitoring plan unless it indicates that the system will meet the requirements of 40 Code of Federal Regulations (CFR) §§141.701 - 141.707.

(2) Sampling location. A system must collect each raw water sample at a location approved by the executive director. Samples must be collected from the raw water line prior to any treatment and before the first point where a recycled stream is returned to the treatment process.

(3) Sampling parameters and frequency. A system must collect raw water samples at a frequency approved by the executive director.

(A) Unless the executive director approves an alternate sampling regimen, a system must monitor turbidity, *E. coli*, and *Cryptosporidium* levels in the raw water at least once each month for a period of not less than 24 consecutive months if the system:

(i) serves at least 10,000 people; or

(ii) is part of combined distribution system in which one or more systems serve at least 10,000 people and the system with the well or intake regularly provides water to another public water supply.

(B) A system that is not required to monitor under subparagraph (A) of this paragraph must either monitor in accordance with the requirements of

subparagraph (A) of this paragraph or monitor *E. coli* levels in their raw water at least once every two weeks for a period of not less than 12 consecutive months. A system that does not initially monitor for *Cryptosporidium* and has elevated *E. coli* levels must conduct additional raw water monitoring.

(i) A system must conduct additional monitoring if the average *E. coli* level exceeds 50 colony-forming units per 100 milliliters in the raw water produced by a surface water intake located on a river or flowing stream or the raw water from a well producing groundwater under the direct influence of surface water located closest to a river or flowing stream.

(ii) A system must conduct additional monitoring if the average *E. coli* level exceeds 10 colony-forming units per 100 milliliters in the raw water from a surface water intake not located on a river or flowing stream or the raw water produced by a well producing groundwater under the direct influence of surface water not located on a river or flowing stream.

(iii) A system that must conduct additional monitoring must monitor *Cryptosporidium* levels in the raw water at least twice each month for a period of not less than 12 consecutive months, or at least once each month for a period of not less than 24 consecutive months.

(C) The executive director may approve an alternate sampling frequency for intakes and wells that operate only part of the year.

(4) Sampling schedule and dates. A system must collect raw water samples in accordance with a schedule approved by the executive director.

(A) Except as provided in subparagraph (B) of this paragraph, a system must begin each round of raw source water monitoring no later than the date shown in the following table titled "Raw Source Water Monitoring Schedule."

Figure: 30 TAC §290.111(b)(4)(A) (No change to the figure as it currently exists in TAC.)

(B) If a system installs a new well or intake after the date the first round of raw source water monitoring must begin, the system must:

(i) submit a proposed monitoring schedule for the first round of special raw surface water monitoring no later than three months after first placing the new source in operation; and

(ii) begin the second round of special raw surface water monitoring no later than six years after initial bin classification.

(C) A system must collect a raw water sample no sooner than two days before the date approved by the executive director and no later than two days after the approved date, unless an extreme condition or situation exists that poses a danger to the sample collector.

(D) A system which is unable to collect a sample within this five-day period must collect the sample as close as possible to the approved date and must notify the executive director in writing why the sample was not collected on the approved date.

(5) Replacement samples. If, for any reason, the laboratory is unable to report a valid analytical result for a scheduled sample, the system must submit a replacement sample on a date approved by the executive director.

(6) Analytical requirements. Raw water samples collected pursuant to this subsection must be analyzed at an approved or accredited laboratory.

(A) *Cryptosporidium* samples must be analyzed using one of the methods approved in 40 CFR §141.704(a) and by a laboratory that is approved under United States Environmental Protection Agency's (EPA) Laboratory Quality Assurance Evaluation Program for Analysis of *Cryptosporidium* in Water.

(B) *E. coli* samples must be analyzed using one of the methods approved in 40 CFR §136.3(a) for the enumeration of *E. coli* in source water and by a laboratory that is certified or accredited by the executive director.

(i) Systems must ensure that samples are maintained between 0 degrees [o] C and 10 degrees [o] C during storage and transportation to the laboratory.

(ii) The time between sample collection and the initiation of the analysis may not exceed 30 hours without the prior approval of the executive director.

(iii) The executive director may allow up to 48 hours between sample collection and the initiation of the analysis if the analysis is conducted by the Colilert reagent version of Standard Method 9223B.

(C) Turbidity samples must be analyzed using a method and at a laboratory approved by the executive director.

(7) Reporting requirements for raw surface water sample results. The owner or operator of a public water system must provide to the executive director with a copy of the results of any test, measurement, or analysis required by this subsection.

(A) Results must be submitted using the Raw Surface Water Sampling Report (commission Form 20358) or in another format that is approved by the executive director and contains the information required by 40 CFR §141.706(e).

(i) If the sample was not collected within the five-day window described in paragraph (4)(C) of this subsection, the result must be accompanied by the information required in paragraph (4)(D) of this subsection.

(ii) If the laboratory report indicates that a valid analytical result could not be reported, the laboratory report must be accompanied by a request to collect a replacement sample.

(B) The results must be submitted within ten days of their receipt by the public water system and no later than 10 days after the end of the first month following the month that the sample was collected.

(C) The results and any additional information must be mailed to the Water Supply Division, MC 155, Texas Commission on Environmental Quality, P.O. Box 13087, Austin, Texas 78711-3087.

(c) Treatment technique requirements. A system that treats surface water or groundwater under the direct influence of surface water must meet minimum treatment technique requirements before the water reaches the entry point to the distribution system.

(1) The combination of pathogen removal and disinfection processes used by a public water system must achieve at least a 4.0-log removal/inactivation of viruses.

(2) The combination of pathogen removal and disinfection processes used by a public water system must achieve at least a 3.0-log removal/inactivation of *Giardia lamblia*.

(3) A public water system that is required by subsection (b) of this section to conduct raw surface water monitoring must comply with the requirements of this paragraph.

(A) The average *Cryptosporidium* level and Bin Classification shall be determined in accordance with the requirements established by 40 CFR §141.710.

(i) For systems that collect a total of at least 48 *Cryptosporidium* samples, the average concentration is equal to the arithmetic mean of all sample concentrations.

(ii) For systems that collect a total of at least 24 samples, but not more than 47 *Cryptosporidium* samples, the average concentration is equal to the highest arithmetic mean of all sample concentrations in any 12 consecutive months during which *Cryptosporidium* samples were collected.

(iii) For systems that serve fewer than 10,000 people and monitor for *Cryptosporidium* for only one year (i.e., collect 24 samples in 12 months), the average concentration is equal to the arithmetic mean of all sample concentrations.

(iv) For systems with plants operating only part of the year that monitor fewer than 12 months per year under 40 CFR §141.701(e), the bin concentration is equal to the highest arithmetic mean of all sample concentrations during any year of *Cryptosporidium* monitoring.

(v) If the monthly *Cryptosporidium* sampling frequency varies, systems must first calculate a monthly average for each month of monitoring.

Systems must then use these monthly average concentrations, rather than individual sample concentrations, in the applicable calculation for bin classification in paragraphs.

(B) Unless otherwise specified in this paragraph, the combination of pathogen removal and disinfection processes must achieve the removal/inactivation of *Cryptosporidium parvum* specified in the following table titled "Treatment Technique Requirements for *Cryptosporidium*," beginning 36 months after being assigned a Bin Classification by the executive director.

Figure: 30 TAC §290.111(c)(3)(B) (No change to the figure as it currently exists in TAC.)

(i) A system that conducts the first round of special raw surface water monitoring according to the schedule contained in subsection (b)(4)(A) of this section must comply with the requirements of this paragraph no later than the date shown in the following table, titled "Compliance Date for Existing Sources."

Figure: 30 TAC §290.111(c)(3)(B)(i) (No change to the figure as it currently exists in TAC.)

(ii) A system that conducts the first round of special raw surface water monitoring according to the schedule contained in subsection (b)(4)(B)(i)

of this section must comply with the requirements of this paragraph no later than six years after beginning the first round of monitoring on the new source.

(iii) The executive director may allow a system making capital improvements an additional two years to comply with the treatment requirement of this paragraph.

(C) A system that has been assigned to Bin 3 or Bin 4 must achieve at least 1.0-log removal/inactivation of *Cryptosporidium* using one or a combination of the following: bag filters, cartridge filters, chlorine dioxide, membranes, ozone, or ultraviolet light (UV).

(D) Prior to the effective date of subparagraph (B) of this paragraph, the combination of disinfection and filtration processes used by a public water system to treat for *Cryptosporidium* must achieve at least a 2.0-log removal/inactivation of *Cryptosporidium parvum*.

(4) The combination of disinfection and filtration processes at plants that do not monitor each source in accordance with the requirements of subsection (b) of this section must achieve at least a 5.5-log removal /inactivation of *Cryptosporidium*

parvum.

(5) The executive director may require additional levels of treatment in cases of poor source water quality.

(6) The executive director may establish minimum design, operational, and reporting requirements for watershed control programs and treatment processes used to meet the treatment technique requirements of this subsection.

(d) Microbial inactivation requirements. A system that treats surface water or groundwater under the direct influence of surface water must meet minimum disinfection requirements before the water is supplied to any consumer.

(1) Inactivation table. The disinfection process must achieve the minimum microbial inactivation levels shown in the following table.

Figure: 30 TAC §290.111(d)(1) (No change to the figure as it currently exists in TAC.)

(A) The disinfection process at treatment plants not described in the Microbial Inactivation Requirements table must provide the level of disinfection required by the executive director.

(B) The executive director may require additional levels of treatment in cases of poor source water quality.

(C) The executive director may reduce the inactivation requirement for plants that meet the individual filter effluent performance criteria contained in subsection (g)(1) of this section and have been assigned a Bin 1 classification under the provisions of subsection (c)(3) of this section.

(D) A system that fails to meet the inactivation requirements of this section for a period of longer than four consecutive hours commits a nonacute treatment technique violation. A system that fails to conduct the additional testing required by paragraph (2)(C) of this subsection also commits a nonacute treatment technique violation.

(E) A system that has a plant assigned a Bin 2, 3, or 4 classification under the provisions of subsection (c)(3) of this section and uses UV disinfection facilities to meet the treatment technique requirements for *Cryptosporidium* must meet the inactivation requirements of this subsection in at least 95% of the water treated each month.

(2) Monitoring requirements for chemical disinfectants. Public water systems must monitor the performance of the disinfection facilities to ensure that appropriate disinfectant levels are maintained. All monitoring conducted pursuant to the requirements of this subsection must be conducted at sites designated in the public water system's monitoring plan.

(A) The disinfectant residual, pH, temperature, and flow rate of the water in each disinfection zone must be measured at least once each day during a time when peak hourly raw water flow rates are occurring.

(B) Disinfection contact time will be based on tracer study data or a theoretical analysis submitted by the system owner or their designated agent and approved by the executive director and the actual flow rate that is occurring at the time that monitoring occurs.

(C) Treatment plants that fail to demonstrate an appropriate level of treatment must repeat these tests at four-hour or shorter intervals until compliance has been reestablished.

(3) Monitoring requirements for UV disinfection facilities. Public water systems must monitor the performance of the UV disinfection facilities.

(A) A system must continuously monitor and record UV intensity as measured by a UV sensor, lamp status, the flow rate through the unit, and other parameters prescribed by the executive director to ensure that the units are operating within validated conditions.

(B) A system with a plant that has been assigned a Bin 2, 3, or 4 classification under the provisions of subsection (c)(3) of this section must also monitor and record the amount of water treated by each UV unit each month and the amount of water produced each month when the unit was not operating within validated conditions.

(4) Analytical requirements. All monitoring required by this subsection must be conducted at a facility approved by the executive director and using methods that conform to the requirements of §290.119 of this title (relating to Analytical Procedures).

(A) The pH analysis must be conducted using a pH meter with a minimum accuracy of plus or minus 0.1 pH units.

(B) The temperature of the water must be measured using a thermometer or thermocouple with a minimum accuracy of plus or minus 0.5 degrees Celsius.

(C) The free chlorine or chloramine residual must be measured to a minimum accuracy of plus or minus 0.1 milligrams per liter (mg/L). Samples tested using a colorimetric method must be analyzed using a colorimeter; spectrophotometer; or, with the written permission of the executive director, a color comparator. [using one of the following methods:]

[i] Amperometric titration;

[ii] DPD Ferrous titration;

[iii] a DPD method that uses a colorimeter or spectrophotometer; or]

[iv] Springaldizine (FACTS).]

(D) The chloramine residual must be measured to a minimum accuracy of plus or minus 0.1 mg/L using one of the following methods:]

[(i) Amperometric titration;]

[(ii) DPD Ferrous titration; or]

[(iii) a DPD method that uses a colorimeter or spectrophotometer.]

(D) [(E)] The chlorine dioxide residual must be measured to a minimum accuracy of plus or minus 0.05 mg/L using one of the following methods:

(i) Amperometric titrator with platinum-platinum electrodes; or

(ii) Lissamine Green B.

(E) [(F)] The ozone residual must be measured to a minimum accuracy of plus or minus 0.05 mg/L using the Indigo Method and using a colorimeter or spectrophotometer.

(F) [(G)] The UV dose must be measured by a calibrated sensor approved by the executive director.

(e) Filtration requirements for conventional filters. A system that uses granular media filters to treat surface water or groundwater under the direct influence of surface water must meet minimum filtration requirements before the water is supplied to any consumer.

(1) Treatment technique requirements for combined filter effluent. Treatment plants using conventional media filtration must meet the following turbidity requirements.

(A) The turbidity level of the combined filter effluent must never exceed 1.0 nephelometric turbidity unit (NTU).

(B) The turbidity level of the combined filter effluent must be 0.3 NTU or less in at least 95% of the samples tested each month.

(2) Performance criteria for individual filter effluent. The filtration techniques must ensure the public water system meets the following performance criteria.

(A) The turbidity from each individual filter effluent should never exceed 1.0 NTU.

(B) At a public water system that serves 10,000 people or more, the turbidity from each individual filter effluent should not exceed 0.5 NTU at four hours after the individual filter is returned to service after backwash or shutdown.

(3) Routine turbidity monitoring requirements. A system must monitor the performance of its filtration facilities.

(A) A system that serves fewer than 500 people and continuously monitors the turbidity level of each individual filter must measure and record the turbidity level of the combined filter effluent at least once each day that the plant is in operation.

(B) A system that serves at least 500 people and continuously monitors the turbidity level of each individual filter must measure and record the turbidity level of the combined filter effluent at least every four hours that the system serves water to the public.

(C) Except as provided in subparagraph (D) of this paragraph, a system must continuously monitor the filtered water turbidity at the effluent of each individual filter and record the turbidity value every 15 minutes.

(D) A system that serves fewer than 10,000 people and monitors combined filter effluent turbidity in lieu of individual filter effluent turbidity under the provisions of §290.42(d)(11)(E)(ii) of this title (relating to Water Treatment) must:

(i) continuously monitor the turbidity of the combined filter effluent and record the turbidity value every 15 minutes; and

(ii) measure and record the turbidity level at the effluent of each filter at least once each day the plant is in operation.

(4) Special investigation requirements. A system which fails to produce water with acceptable turbidity levels must investigate the cause of the problem and take appropriate corrective action. The executive director can waive these special monitoring requirements for systems that have a corrective action schedule approved by the executive director.

(A) A public water system that fails to meet the turbidity criteria specified in paragraph (2) of this subsection must conduct additional monitoring.

(i) Each time a filter exceeds an applicable filtered water turbidity level specified in paragraph (2) of this subsection for two consecutive 15-minute readings, the public water system must either identify the cause of the exceedance or produce a filter profile on the filter within seven days of the exceedance.

(ii) Each time a filter exceeds the filtered turbidity level specified in paragraph (2)(A) of this subsection for two consecutive 15-minute readings on three separate occasions during any consecutive three-month period, the public water system must conduct a filter assessment on the filter within 14 days of the third exceedance.

(iii) Each time the filtered water turbidity level for a specific filter or any combination of individual filters exceeds 2.0 NTU on two consecutive 15-minute readings during two consecutive months, the public water system must participate in a third-party comprehensive performance evaluation (CPE). If the system serves at least 10,000 people, the CPE must be conducted within 90 days of the first exceedance in the second month. If the system serves fewer than 10,000 people, the CPE must be conducted within 120 days of the first exceedance in the second month.

(B) A system that serves fewer than 10,000 people, monitors combined filter effluent turbidity in lieu of individual filter effluent turbidity, and fails to meet the turbidity criteria in paragraph (1)(A) of this subsection must conduct additional monitoring. The executive director may waive these special monitoring requirements for systems that have a corrective action schedule approved by the executive director.

(i) Each time the combined filter effluent turbidity level exceeds 1.0 NTU for two consecutive 15-minute readings, the public water system must either identify the cause of the exceedance or complete a filter profile on the combined filter effluent within seven days of the exceedance.

(ii) Each time the combined filter effluent turbidity level exceeds 1.0 NTU for two consecutive 15-minute readings on three separate occasions during any consecutive three-month period, the public water system must conduct a filter assessment on each filter within 14 days of the third exceedance.

(iii) Each time the combined filter effluent turbidity level exceeds 2.0 NTU on two consecutive 15-minute readings during two consecutive

months, the public water system must participate in a third-party comprehensive performance evaluation within 120 days of the first exceedance in the second month.

(5) Analytical requirements for turbidity. All monitoring required by this subsection must be conducted by a facility approved by the executive director and using methods that conform to the requirements of §290.119 of this title. Equipment used for compliance measurements must be maintained and calibrated in accordance with §290.46(s) of this title (relating to Minimum Acceptable Operating Practices for Public Drinking Water Systems).

(A) Turbidity must be measured with turbidimeters that use one of the following methods:

(i) EPA Method 180.1 and Standard Method 2130B;

(ii) Great Lakes Instruments Method 2; or

(iii) Hach FilterTrak Method 10133.

(B) A system monitoring the performance of individual filters with on-line turbidimeters and recorders may monitor combined filter effluent turbidity

levels by either continuously monitoring turbidity levels with an on-line turbidimeter or measuring the turbidity level in grab samples with a bench-top turbidimeter.

(C) Continuous turbidity monitoring must be conducted using a continuous, on-line turbidimeter and a device that records the turbidity level reading at least once every 15 minutes.

(i) Turbidity data may be recorded electronically by a supervisory control and data acquisition system (SCADA) or on a strip chart. The recorder must be designed so that the operator can accurately determine the turbidity level readings at 15-minute intervals.

(ii) If there is a failure in the continuous turbidity monitoring equipment at a system serving 10,000 people or more, the system must conduct grab sampling every four hours in lieu of continuous monitoring, but for no more than five working days following the failure of the equipment.

(iii) If the continuous turbidity monitoring equipment at a system serving fewer than 10,000 people malfunctions, the system must conduct grab sampling every four hours in lieu of continuous monitoring, but for no more than 14 working days following the failure of the equipment.

(D) A system that monitors combined filter effluent turbidity in lieu of individual filter effluent turbidity under §290.42(d)(11)(E)(ii) of this title must monitor the performance of individual filters using a bench-top turbidimeter.

(f) Filtration requirements for other filters. A system that uses cartridge filters, membrane filters, or other unconventional filtration systems to treat surface water or groundwater under the direct influence of surface water must meet minimum filtration requirements before the water is supplied to any consumer.

(1) Treatment technique requirements. A system that uses unconventional filtration technologies such as membrane filters or cartridge filters must meet treatment technique requirements prescribed by the executive director.

(A) The filtration facilities must meet combined filter effluent and individual filter effluent turbidity limits established by the executive director.

(B) The filtration facilities must be operated and maintained in accordance with requirements that the executive director determines are needed to demonstrate the amount of *Giardia* and *Cryptosporidium* removal achieved.

(2) Monitoring requirements. A system must monitor the performance of its filtration facilities.

(A) A system that serves fewer than 500 people and continuously monitors the turbidity level of each individual cartridge or membrane unit must measure and record the turbidity level of the combined effluent at least once each day that the plant is in operation.

(B) A system that serves at least 500 people and continuously monitors the turbidity level of each individual cartridge or membrane unit must measure and record the turbidity level of the combined effluent at least every four hours that the system serves water to the public.

(C) A system using membranes must use a method approved by the executive director to continuously monitor the quality of the water produced by each membrane unit and record the monitoring results at least once every five minutes. The executive director may approve monitoring parameters other than turbidity and decrease the frequency to once every 15 minutes if the approved operating parameters will allow consecutive readings to be obtained between backwash or backflush cycles.

(D) A system using membranes must conduct direct integrity testing on each membrane unit using a procedure approved by the executive director.

(i) Direct integrity tests must be conducted in a manner that will detect a membrane defect of 3 microns or smaller and demonstrates a removal efficiency equal to or greater than the removal credit awarded to the membrane filtration process by the executive director.

(ii) Direct integrity test method must calculate the log removal value for a 3-micron size particle and establish an upper control limit which assures that the unit is capable of meeting the removal credit approved by the executive director.

(iii) A system that has been assigned a Bin 1 classification under the provisions of subsection (c)(3)(B) of this section must conduct direct integrity tests at least once every seven days. The executive director may reduce the testing requirements for other membrane units.

(iv) A system that has been assigned a Bin 2, 3, or 4 classification under the provisions of subsection (c)(3)(B) of this section must conduct direct integrity tests at least once each day that the membrane unit is used for filtration.

The executive director may approve less frequent testing, based on demonstrated process reliability, the use of multiple barriers effective for *Cryptosporidium* removal or inactivation, or reliable process safeguards.

(v) A system must immediately conduct a direct integrity test on any membrane unit that produces filtered water with turbidity level above 0.15 NTU on two consecutive readings. The executive director must establish alternate site-specific control limits for systems that use other approved technology in lieu of turbidimeters to continuously monitor the performance of membrane units.

(vi) A system must immediately remove any membrane unit that fails a direct integrity test from service until the membrane modules in that unit are inspected and, if necessary, repaired. A membrane unit that has been removed from service may not be returned to service until it has passed a direct integrity test.

(E) A system that uses cartridge filters must continuously monitor the performance of the filtration process in a manner approved by the executive director.

(3) Analytical requirements. All monitoring required by this subsection must be conducted by a facility approved by the executive director and using methods

that conform to the requirements of §290.119 of this title. Equipment used for compliance measurements must be maintained and calibrated in accordance with §290.46(s) of this title.

(A) Turbidity of the combined effluent must be measured with turbidimeters that meet the requirements of subsection (e)(5)(A) of this section.

(B) The turbidity of the water produced by each membrane unit must be measured using the Hach FilterTrak Method 10133. The executive director may approve the use of alternative technology to monitor the quality of the water produced by each membrane unit.

(C) A system continuously monitoring the performance of individual cartridges or membrane units may monitor combined effluent turbidity levels by either continuously monitoring turbidity levels with an on-line turbidimeter, or by measuring the turbidity level in grab samples with a bench-top turbidimeter.

(D) Data collected from on-line instruments may be recorded electronically by a SCADA system or on a strip chart recorder. The recorder must be designed so that the operator can accurately determine the value of readings at the monitoring interval approved by the executive director.

(i) If there is a failure in the continuous monitoring equipment at a system serving 10,000 people or more, the system must conduct grab sampling every four hours in lieu of continuous monitoring, but for no more than five working days following the failure of the equipment.

(ii) If there is a failure in the continuous monitoring equipment at a system serving fewer than 10,000 people, the system must conduct grab sampling every four hours in lieu of continuous monitoring, but for no more than 14 working days following the failure of the equipment.

(E) A system that uses cartridge filters and does not continuously monitor the turbidity of each filter unit must monitor the performance of individual filters at least once each day using a bench-top turbidimeter.

(g) Other treatment credits for systems in Bins 2 through 4. The executive director may grant additional pathogen removal and inactivation credit to systems that meet enhanced design, operational, maintenance, and reporting requirements.

(1) Individual filter effluent. The executive director may approve an additional 1.0-log removal credit for *Giardia* and *Cryptosporidium* to a treatment plant that uses conventional granular media filters.

(A) The executive director will approve the additional credit for a plant if:

(i) the system continuously monitored the filtered water turbidity at the effluent of each individual filter and recorded the turbidity value every 15 minutes that the filter was sending water to the clearwell;

(ii) the turbidity level at each individual filter effluent is less than or equal to 0.15 NTU in at least 95% of the measurements recorded during the month; and

(iii) no individual filter produced water with turbidity level above 0.3 NTU in two consecutive 15-minute readings.

(B) The executive director may also approve the additional credit for a plant that does not meet the requirements of subparagraph (A) of this paragraph if:

(i) the executive director determines that the failure to meet the requirements of subparagraph (A) of this paragraph could not have been prevented through optimizing plant operations, design, or maintenance; and

(ii) the system has experienced no more than two such failures within the most recent 12 months.

(2) Combined filter effluent. The executive director may approve an additional 0.5-log removal credit for *Cryptosporidium* to a treatment plant that uses conventional granular media filters if:

(A) the system continuously monitored the filtered water turbidity at the effluent of each individual filter and recorded the turbidity value every 15 minutes that the filter was sending water to the clearwell;

(B) the turbidity level at the combined filter effluent is less than or equal to 0.15 NTU in at least 95% of the measurements recorded during the month; and

(C) the plant does not receive additional treatment credit under paragraph (1) of this subsection.

(3) Second stage filtration. The executive director will approve an additional 0.5-log removal credit for *Giardia* and *Cryptosporidium* to a treatment plant that uses a second, separate stage of conventional granular media filters if:

(A) the filters in both stages meet minimum design criteria approved by the executive director;

(B) all of the water produced by the plant passes through both stages of filtration;

(C) the system continuously monitored the filtered water turbidity at the effluent of each individual filter in the first stage of filtration and recorded the turbidity value every 15 minutes that the filter was sending water to the clearwell; and

(D) no individual filter in the first stage of filtration produced water with turbidity level above 1.0 NTU in two consecutive 15-minute readings.

(4) Other pathogen control strategies. The executive director may approve an additional removal or inactivation credit for other pre-filtration, filtration, or post-filtration strategies that can demonstrate effective, consistent levels of enhanced pathogen control.

(A) The alternative strategy must achieve a quantifiable reduction in the risk of waterborne disease in all of the treated water produced by the plant.

(B) The alternative strategy must conform to any applicable requirement of 40 CFR §§141.715 - 141.720.

(C) The executive director may establish minimum site-specific design, operational, maintenance, and reporting requirements for any alternative strategy used to meet minimum treatment technique requirements of subsection (c) of this section.

(D) The executive director may not approve additional removal credit under the provisions of this paragraph to any strategy that includes a treatment process has been assigned additional removal or inactivation credit under any other provision of this subsection.

(h) Reporting requirements. Public water systems must properly complete and submit periodic reports to demonstrate compliance with this section.

(1) A system that has a turbidity level exceeding 1.0 NTU in the combined filter effluent must consult with the executive director within 24 hours.

(2) A system that continuously monitors the performance of individual filters must submit a Surface Water Monthly Operating Report (commission Form 0102C) each month for each plant that treats surface water sources or groundwater sources under the direct influence of surface water.

(3) A system that monitors combined filter effluent turbidity in lieu of individual filter effluent turbidity under §290.42(d)(11)(E)(ii) of this title must submit a Surface Water Monthly Operating Report for 2-Filter Plants (commission Form 0103) each month for each plant that treats surface water or groundwater under the direct influence of surface water.

(4) A system that must complete the additional monitoring required by subsection (e)(4)(A)(i) or (B)(i) of this section must submit a Filter Profile Report for Individual Filters (commission Form 10276) with its Surface Water Monthly Operating Report.

(5) A system that must complete the additional monitoring required by subsection (e)(4)(A)(ii) or (B)(ii) of this section must submit a Filter Assessment Report

for Individual Filters (commission Form 10277) with its Surface Water Monthly Operating Report.

(6) A system that must complete the additional monitoring required by subsection (e)(4)(A)(iii) or (B)(iii) of this section must submit a Comprehensive Performance Evaluation Request Form (commission Form 10278) with its Surface Water Monthly Operating Report.

(7) A system that uses membranes must submit a Membrane Monthly Operating Report (commission Form 20356) for each plant that treats surface water or groundwater under the direct influence of surface water. The report must accompany the plant's Surface Water Monthly Operating Report.

(8) A system that uses UV disinfection to meet the minimum treatment technique requirements for surface water or groundwater under the direct influence of surface water must submit a UV Monthly Operating Report (commission Form 20357) with its Surface Water Monthly Operating Report. The report must accompany the plant's Surface Water Monthly Operating Report.

(9) A system must submit any additional reports required by the executive director to verify the level of pathogen removal or inactivation achieved by the system's treatment plants.

(10) A system must submit its *Cryptosporidium* bin classification.

(11) A system must submit reports required by subsection (b)(7) of this section.

(12) Periodic reports required by this section must be submitted to the Water Supply Division, Texas Commission on Environmental Quality, MC 155, P.O. Box 13087, Austin, Texas 78711-3087 by the tenth day of the month following the end of the reporting period.

(i) Compliance determination. Compliance with the requirements of this section must be determined using the criteria of this subsection.

(1) A public water system that fails to complete source water monitoring or conduct the routine monitoring tests and any applicable special investigations required by this section commits a monitoring violation.

(2) A public water system that fails to submit a report required by subsection (h) of this section commits a reporting violation.

(3) A public water system using conventional filters that has a turbidity level exceeding 5.0 NTU in the combined filter effluent commits an acute treatment technique violation.

(4) A public water system using membrane filters that has a turbidity level exceeding 1.0 NTU in the combined filter effluent commits an acute treatment technique violation.

(5) Except as provided in paragraphs (3) and (4) of this subsection, a public water system that violates the requirements of subsections (c), (d)(1), (e)(1), and (f)(1) of this section commits a nonacute treatment technique violation.

(6) A system that fails to request a Bin Classification within six months of completing a round of source water monitoring commits a treatment technique violation.

(7) A system that fails to correct the performance-limiting factors identified in a comprehensive performance evaluation conducted under the requirements of subsection (e)(4)(A)(iii) or (B)(iii) of this section commits a violation.

(8) A system that fails to properly issue a public notice required by subsection (j) of this section commits a violation.

(j) Public notification. The owner or operator of a public water system that violates the requirements of this section must notify the executive director and the people served by the system.

(1) A public water system that commits an acute treatment technique violation must notify the executive director and the water system customers of the acute violation within 24 hours in accordance with the requirements of §290.46(q) of this title and §290.122(a) of this title (relating to Public Notification).

(2) A public water system that has a turbidity level exceeding 1.0 NTU in the combined filter effluent must consult with the executive director within 24 hours of the violation.

(A) Based on the results of the consultation, the executive director will determine whether the water system must notify its customers in accordance with the requirements of §290.122(a) or (b) of this title.

(B) A water system that fails to consult with the executive director as required by this paragraph must notify its customers in accordance with the requirements of §290.122(a) of this title.

(3) Except as provided in paragraphs (1) and (2) of this subsection, a public water system that fails to meet the treatment technique requirements of subsections (c), (d)(1), (e)(1), or (f)(1) of this section must notify the executive director by the end of the next business day and the water system customers in accordance with the requirements of §290.122(b) of this title.

(4) A public water system that fails to conduct the monitoring required by this section must notify its customers of the violation in accordance with the requirements of §290.122(c) of this title.

§290.112. Total Organic Carbon (TOC).

(a) Applicability. A water treatment plant must meet the provisions of this section if the plant: [All community and nontransient, noncommunity public water systems that

treat surface water or groundwater under the direct influence of surface water and use coagulation or flocculation or sedimentation or clarification facilities as part of the treatment process must meet the provisions of this section.]

(1) serves a community or nontransient noncommunity public water system;

(2) treats surface water or groundwater under the direct influence of surface water; and

(3) uses a series of treatment processes that includes coagulation, flocculation, sedimentation or clarification, and filtration as part of the overall treatment protocol.

(b) Treatment technique. Systems must achieve the Step 1 removal requirements in paragraph (1) of this subsection, meet one of the alternative compliance criteria described in paragraph (2) of this subsection, or apply for the alternative Step 2 removal requirements described in paragraph (3) of this subsection.

(1) Systems must determine their ability to meet the Step 1 removal requirements given in the following table. A water treatment plant's Step 1 total organic

carbon (TOC) required percent removal is based upon plant's source water TOC and alkalinity. Step 1 TOC percent removal requirements are indicated in the following table. Systems practicing softening are evaluated based on the Step 1 TOC removal in the far-right column (Source water alkalinity >120 milligrams per liter (mg/L)) for the specified source water TOC.

Figure: 30 TAC §290.112(b)(1) (No change to the figure as it currently exists in TAC.)

(2) Systems may determine their ability to meet one of the eight alternative compliance criteria listed in this paragraph.

(A) A system meets alternative compliance criteria Number 1 if the system's source water TOC level is less than 2.0 mg/L, calculated quarterly as a running annual average.

(B) A system meets alternative compliance criteria Number 2 if the system's treated water TOC level is less than 2.0 mg/L, calculated quarterly as a running annual average.

(C) A system meets alternative compliance criteria Number 3 if: the system's source water TOC level is less than 4.0 mg/L, calculated quarterly as a running

annual average; the source water alkalinity is greater than 60 mg/L (as calcium carbonate (CaCO₃), calculated quarterly as a running annual average; and the total trihalomethanes (TTHM) and haloacetic acid-group of five (HAA5) running annual averages are no greater than 0.040 mg/L and 0.030 mg/L, respectively.

(D) The system meets alternative compliance criteria Number 4 if the TTHM and HAA5 running annual averages are no greater than 0.040 mg/L and 0.030 mg/L, respectively, and the system uses only chlorine for primary disinfection and maintenance of a residual in the distribution system.

(E) The system meets alternative compliance criteria Number 5 if the system's source water specific ultraviolet absorbance (SUVA), prior to any treatment, measured monthly, is less than or equal to 2.0 liters per milligram-meter (L/mg-m), calculated quarterly as a running annual average.

(F) The system meets alternative compliance criteria Number 6 if the system's finished water SUVA, measured monthly at a point prior to any disinfection, is less than or equal to 2.0 L/mg-m, calculated quarterly as a running annual average.

(G) The system meets alternative compliance criteria Number 7 if the system practices softening, cannot achieve the Step 1 TOC removals required by paragraph (1) of this subsection, and has treated water alkalinity less than 60 mg/L (as CaCO₃) and calculated quarterly as a running annual average.

(H) The system meets alternative compliance criteria Number 8 if the system practices softening, cannot achieve the Step 1 TOC removals required by paragraph (1) of this subsection, and has magnesium hardness removal greater than or equal to 10 mg/L (as CaCO₃), measured monthly calculated quarterly as a running annual average.

(3) If a system fails to meet the Step 1 TOC removal requirement required by paragraph (1) of this subsection and does not meet one of eight alternative compliance criteria described in paragraph (2) of this subsection, the system must apply to the executive director for approval of Step 2 removal requirements.

(A) The plant must perform Step 2 jar testing to determine the coagulant dose at which the removal of TOC is less than 0.3 mg/L for an increase in coagulant of 10 mg/L alum or its equivalent. This dose is referred to as the point of diminishing returns (PODR).

(B) The system must submit the results of the Step 2 jar testing to the executive director for approval of the alternative removal requirements at least 15 days before the end of the applicable quarter.

(C) The executive director may approve Step 2 alternative removal requirements.

(i) If approved, the removal achieved at the PODR becomes the alternative full-scale TOC removal requirement for the plant.

(ii) The alternate removal requirements may be applied to the quarter in which the jar test results are received and for the following quarter.

(c) TOC monitoring requirements. Systems must conduct required TOC monitoring during normal operating conditions at sites and at the frequency designated in the system's monitoring plan.

(1) Systems must monitor for TOC and alkalinity in the source water prior to any treatment. Between one and eight hours after taking the source water sample, systems must measure each treatment plant TOC after filtration in the combined filter

effluent stream. These samples (source water alkalinity, source water TOC, and treated water TOC) are referred to as a TOC sample set.

(2) Systems must take one TOC sample set monthly (every 30 days) at a time representative of normal operating conditions and influent water quality. With the executive director's approval, a system may reduce monitoring according to subparagraphs (A) - (C) of this paragraph.

(A) Systems with a running annual average treated water TOC of less than 2.0 mg/L for two consecutive years may reduce monitoring to one TOC sample set per plant per quarter (every 90 days). The system must revert to routine monitoring in the month following the quarter when the running annual average treated water TOC is greater than or equal to 2.0 mg/L.

(B) Systems with a running annual average treated water TOC of less than 1.0 mg/L for one year may reduce monitoring to one TOC sample set per plant per quarter (every 90 days). The system must revert to routine monitoring in the month following the quarter when the running annual average treated water TOC is greater than or equal to 2.0 mg/L.

(C) Systems with a running annual average source water TOC at each plant of less than or equal to 4.0 mg/L based on the running annual average of the most recent four quarters of monitoring may reduce source TOC monitoring to one source TOC sample per quarter (every 90 days) if they also meet criteria for reduced disinfection byproduct monitoring. In order to remain on quarterly source TOC monitoring, the system must also meet the criteria for reduced trihalomethane and haloacetic acid monitoring given in §290.113(c)(4) of this title (relating to Stage 1 Disinfection Byproducts (TTHM and HAA5)) until the date shown in table §290.113(a)(2) of this title. After the date shown in §290.115(a)(2) of this title (relating to Stage 2 Disinfection Byproducts (TTHM and HAA5)), the system must also meet the criteria for reduced trihalomethane and haloacetic acid monitoring in §290.115(c)(3) of this title in order to remain on quarterly source TOC monitoring. The system must revert to routine monitoring in the first month following the quarter when the running annual average source water TOC is greater than 4.0 mg/L, or the system no longer meets the reduced monitoring criteria for disinfection byproducts.

(3) A public water system attempting to meet the treatment technique requirements for TOC using alternative compliance criteria Number 5 (as defined in subsection (b)(2)(E) of this section) must monitor for SUVA in the source water prior to any treatment at least once each month.

(4) A public water system attempting to meet the treatment technique requirements for TOC using alternative compliance criteria Number 7 (as defined in subsection (b)(2)(G) of this section) must monitor for alkalinity in the treated water at any point prior to distribution system at least once each month.

(5) A public water system attempting to meet the treatment technique requirements for TOC using alternative compliance criteria Number 8 (as defined in subsection (b)(2)(H) of this section) must monitor for magnesium in both the source water prior to any treatment at and the treated water at any point prior to the distribution system least once each month.

(d) Analytical requirements for TOC treatment. Analytical procedures required by this section must be conducted at a facility approved by the executive director and using methods that conform to the requirements of §290.119 of this title (relating to Analytical Procedures).

(e) Reporting requirements for TOC. Systems treating surface water or groundwater under the direct influence of surface water shall properly complete and submit periodic reports to demonstrate compliance with this section.

(1) The reports must be submitted to the Water Supply Division, MC 155, Texas Commission on Environmental Quality, P.O. Box 13087, Austin, Texas 78711-3087 by the tenth day of the month following the end of the reporting period.

(2) Public water systems must submit a Monthly Operational Report for Total Organic Carbon (commission Form 0879) each month.

(3) A system that does not meet the Step 1 removal requirements must submit a Request for Alternate TOC Requirements at least 15 days before the end of the quarter.

(A) If the system meets alternative compliance criterion Number 3, subsection (b)(2)(C) of this section, the system must report the running annual average TTHM and HAA5 concentrations as determined under the requirements of §290.113 of this title.

(B) If the system meets alternative compliance criterion Number 4, subsection (b)(2)(D) of this section, the system must report the running annual average TTHM and HAA5 concentrations as determined under the requirements of §290.113 [of this title] or §290.115 of this title, and report all disinfectants used by the system during last 12 months.

(C) If the system meets alternative compliance criterion Number 5, subsection (b)(2)(E) of this section, the system must report the average source water SUVA for each of the preceding 12 months.

(D) If the system meets alternative compliance criterion Number 6, subsection (b)(2)(F) of this section, the system must report the average treated water SUVA for each of the preceding 12 months.

(E) If the system practices softening and meets alternative compliance criterion Number 8, subsection (b)(2)(H) of this section, the system must report the source water and treated water magnesium concentrations and the average percent removal of magnesium obtained during each of the preceding 12 months.

(F) A system that does not meet any of the alternative compliance criteria must apply for the Step 2 alternative removal requirements and must submit the results of Step 2 jar testing.

(f) Compliance determination. Compliance with the requirements of this section shall be based on the following criteria:

(1) A system that fails to conduct the monitoring tests required by this section commits a monitoring violation. Failure to monitor will be treated as a violation for the entire period covered by the annual average.

(2) A system that fails to report the results of monitoring tests required by this section commits a reporting violation. Systems may use only data collected under the provisions of this section to qualify for reduced monitoring.

(3) A system that does not meet any of the alternative compliance criteria and does not achieve the required TOC removal commits a treatment technique violation. Compliance shall be determined quarterly by determining an annual average removal ratio using the following method:

(A) The actual monthly TOC percent removal must be determined for each month. The actual removal for a TOC sample set is equal to $(1 - \text{treated water TOC}/\text{source water TOC})$. The actual monthly percent removal is calculated by taking average removal for all TOC sample sets collected in the month, and expressing that value as a percent.

(B) The required monthly Step 1 or Step 2 TOC percent removal must be determined as provided in subsection (b) of this section. The executive director

will approve or disapprove Step 2 requirements based on jar or pilot data. Until the executive director approves the Step 2 TOC removal requirements, the system must meet the Step 1 TOC removals contained in subsection (b)(1) of this section.

(C) The monthly removal ratio must be determined. The monthly removal ratio is determined by dividing the actual monthly TOC percent removal for each month by the required monthly Step 1 or approved Step 2 TOC percent removal for the month. The alternative compliance criteria may be used on a monthly basis as described in clauses (i) - (iv) of this subparagraph.

(i) If the monthly average source or treated water TOC is less than 2.0 mg/L, a monthly removal ratio value of 1.0 may be assigned (in lieu of the value calculated in subparagraph (C) of this paragraph) when calculating compliance under the provisions of this section.

(ii) If the monthly average water source or treated SUVA level is less than 2.0 L/mg-m, a monthly removal ratio value of 1.0 may be assigned (in lieu of the value calculated in subparagraph (C) of this paragraph) when calculating compliance under the provisions of this section.

(iii) In any month that a softening system lowers alkalinity below 60 mg/L (as CaCO₃), a monthly removal ratio value of 1.0 may be assigned (in lieu of the value calculated in subparagraph (C) of this paragraph) when calculating compliance under the provisions of this section.

(iv) In any month that a softening system removes at least 10 mg/L of magnesium hardness (as CaCO₃) a monthly value of 1.0 may be assigned (in lieu of the value calculated in subparagraph (C) of this paragraph) when calculating compliance under the provisions of this section.

(D) The yearly removal ratio must be determined. The yearly removal ratio is the running annual average of the quarterly averages of the monthly averages. To determine this value, for each quarter in the compliance year, determine the monthly removal ratio, add the removal ratios and divide by three. Then, add the quarterly removal ratio and divide by four.

(E) If the yearly removal ratio is less than 1.00, the system commits a treatment technique violation.

(4) A public water system that fails to do a required public notice or certify that the public notice has been performed commits a public notice violation.

(g) Public Notification. A public water system that violates the treatment technique requirements of this section must notify the executive director and the system's customers.

(1) A public water system that commits a TOC treatment technique violation shall notify the executive director and the water system customers in accordance with the requirements of §290.122(b) of this title (relating to Public Notification).

(2) A public water system which fails to conduct the monitoring required by this section must notify its customers of the violation in accordance with the requirements of §290.122(c) of this title.

§290.116. Groundwater Corrective Actions and Treatment Techniques.

(a) Applicability. All groundwater public water systems, including such systems that use surface water or groundwater under the direct influence of surface water (mixed systems), must comply with one or more of the treatment techniques and corrective actions of this section if a raw groundwater source sample was positive for fecal indicators, if a significant deficiency was identified, or if the system is not required to

conduct raw groundwater source monitoring because it provides at least 4-log treatment of viruses at each groundwater source.

(1) A groundwater system must provide written notification to the executive director [before December 1, 2009,] that it is not required to meet the raw groundwater source monitoring requirements under §290.109(c)(4) of this title (relating to Microbial Contaminants) because it provides at least 4-log treatment of viruses for the specified groundwater source and begin compliance monitoring in accordance with subsection (c) this section. The notification must include engineering, operational, and other information required by the executive director to evaluate the submission. If the executive director determines and documents in writing that 4-log treatment of viruses is no longer necessary for a specified groundwater source or if the system discontinues 4-log treatment of viruses before the first connection [customer] for any groundwater source, the system must document this in writing and conduct raw groundwater source sampling as required under §290.109(c)(4) of this title.

(2) A groundwater system that places a groundwater source in service after November 30, 2009, that is not required to meet the raw source monitoring requirements under §290.109(c)(4) of this title because the system provides at least 4-log treatment of viruses for a specified groundwater source must begin compliance monitoring within 30 days of placing the source in service in accordance with subsection

(c) of this section. The system must provide written notification to the executive director that it provides at least 4-log treatment of viruses [at or] before the first connection [customer] for the specified groundwater source. The notification must include engineering, operational, and other information required by the executive director to evaluate the submission. The system must conduct triggered source monitoring under §290.109(c)(4) of this title until the executive director provides written approval of the system's request to provide the 4-log treatment. If the system discontinues 4-log treatment of viruses before [or at] the first connection [customer] for a groundwater source, the system must conduct raw groundwater source sampling as required under §290.109(c)(4) [subsection (c)(4)] of this title [section].

(b) Groundwater corrective action plan. All public water systems using groundwater must submit a corrective action plan and implement corrective action if a raw groundwater source sample was positive for fecal indicators or if a significant deficiency was identified.

(1) If a groundwater source sample was found to be fecal indicator positive or if a significant deficiency was identified, the system must consult with the executive director regarding appropriate corrective action and have an approved corrective action plan in place within 30 days of receiving written notification from a laboratory of the fecal indicator positive source sample collected under §290.109(c)(4) [subsection (c)(4)]

of this title or within 30 days of receiving written notification from the executive director of the identification of a significant deficiency [section].

(2) Within 120 days of receiving written notification from a laboratory of the fecal indicator positive source sample or receiving written notification from the executive director of a significant deficiency, the system must have completed corrective action or be in compliance with an approved corrective action plan and schedule.

(3) Any changes to the approved corrective action plan or schedule must be approved by the executive director.

(4) The executive director may require interim measures for the protection of public health pending approval of the corrective action plan. The system must comply with these interim measures as well as with any schedules specified by the executive director.

(5) Systems that are required to complete corrective action must implement one or more of the procedures in this paragraph and the details of the implementation must be specified in the approved corrective action plan.

(A) The system may disinfect the groundwater source where the fecal indicator positive source sample was collected following the American Water Works Association (AWWA) standards for well disinfection and start monthly fecal indicator sampling at that source within 30 days after well disinfection. The executive director may discontinue the monthly source sampling requirement if corrective action is sufficient.

(B) The system may eliminate the groundwater source that was found to be fecal indicator positive and provide an alternate groundwater source if necessary. Eliminated groundwater sources must be disconnected from the distribution system until the contamination is corrected and the executive director approves it for use.

(C) The system may identify and eliminate the source of fecal contamination followed by well disinfection according to AWWA well disinfection standards and begin monthly fecal indicator sampling within 30 days after well disinfection. The executive director may allow the system to discontinue the monthly source sampling requirement after making a determination that corrective action is sufficient.

(D) The system may provide treatment that reliably achieves at least 4-log treatment of viruses using inactivation, removal or an executive director-approved combination of inactivation and removal before the first connection [customer] of the groundwater source.

(E) Correct all significant deficiencies.

(F) Assessment source monitoring for a period of 12 months or a time period specified by the executive director from the raw groundwater source in accordance with §290.109(c)(4)(E) of this title.

(c) Microbial inactivation requirements. A system that treats groundwater in response to a fecal indicator positive source sample, significant deficiency, or in lieu of the raw groundwater source monitoring shall meet minimum disinfection requirements demonstrating at least 4-log treatment of viruses before the water is distributed to the first connection of the specified groundwater source.

(1) Monitoring requirements for chemical disinfectants. Groundwater systems shall monitor the performance of the disinfection facilities to ensure that appropriate disinfectant levels are maintained every day the specified source serves the public. All monitoring conducted pursuant to the requirements of this section must be

conducted at sites designated in the system's monitoring plan in accordance with §290.121 of this title (relating to Monitoring Plans).

(A) Groundwater systems serving a population greater than 3,300 must continuously monitor the residual disinfectant concentration in accordance with the analytical methods specified in 40 Code of Federal Regulations (CFR) §141.74(a)(2) at a location approved by the executive director and must record the lowest residual disinfectant concentration every day the groundwater source serves the public.

(i) The groundwater system must maintain the executive director-approved minimum specified disinfectant residual every day the groundwater system serves water from the specified groundwater source to the public. If there is a failure in the continuous monitoring equipment, the groundwater system must conduct grab sampling every four hours until the continuous monitoring equipment is returned to service.

(ii) The system must resume continuous residual disinfectant monitoring within 14 days.

(B) Groundwater systems serving a population of [less than] 3,300 or fewer must monitor the disinfectant residual in accordance with the analytical

methods specified in 40 CFR §141.74(a)(2) in each disinfection zone at least once each day that water from the specified groundwater source is served to the public during either a time when peak hourly raw water flow rates are occurring or at another time specified by the executive director. The system must record and maintain the disinfectant residual every day the system serves water from the groundwater source to the public. The system must collect a daily grab sample during the hour of peak flow or at another time specified by the executive director. If any daily grab sample measurement falls below the executive director-approved minimum specified disinfectant residual, the groundwater system must collect follow-up samples every four hours until the residual disinfectant concentration is restored to the executive director-approved level. Alternatively, a groundwater system that serves 3,300 or fewer people may monitor the residual disinfectant concentration continuously and meet the requirements of subparagraph (A) of this paragraph.

(C) Disinfection contact time will be based on tracer study data or a theoretical analysis submitted by the system owner or their designated agent and approved by the executive director.

(D) Groundwater treatment plants that fail to demonstrate an appropriate level of treatment must repeat these tests at four-hour or shorter intervals until compliance has been reestablished.

(2) Monitoring and operating requirements for commission-approved alternative treatment, including ultraviolet light (UV) disinfection facilities and other methods that can obtain 4-log inactivation of viruses and can be properly validated.

Public water systems shall monitor the UV intensity as measured by a UV sensor, lamp status, the flow rate through the unit, and other parameters prescribed by the executive director as specified in §290.42(g)(5) of this title (relating to Water Treatment) to ensure that the units are operating within validated conditions.

(3) Analytical requirements. All monitoring required by this section must be conducted at a facility approved by the executive director and using methods that conform to the requirements of §290.119 of this title (relating to Analytical Procedures).

(A) The pH analysis must be conducted using a pH meter with a minimum accuracy of plus or minus 0.1 pH units.

(B) The temperature of the water must be measured using a thermometer or thermocouple with a minimum accuracy of plus or minus 0.5 degrees Celsius.

(C) The free chlorine or chloramine residual must be measured to a minimum accuracy of plus or minus 0.1 mg/L. Samples tested using a colorimetric method must be analyzed using a colorimeter; spectrophotometer; or, with the written permission of the executive director, a color comparator. [using one of the following methods:]

[(i) Amperometric titration;]

[(ii) DPD Ferrous titration;]

[(iii) a DPD method that uses a colorimeter or spectrophotometer; or]

[(iv) Springaldizine (FACTS)]

(D) The chloramine residual must be measured to a minimum accuracy of plus or minus 0.1 mg/L using one of the following methods:]

[(i) Amperometric titration;]

[(ii) DPD Ferrous titration; or]

[(iii) a DPD method that uses a colorimeter or spectrophotometer.]

(D) [(E)] The chlorine dioxide residual must be measured to a minimum accuracy of plus or minus 0.05 mg/L using one of the following methods:

(i) Amperometric titrator with platinum-platinum electrodes; or

(ii) Lissamine Green B.

(E) [(F)] The ozone residual must be measured to a minimum accuracy of plus or minus 0.05 mg/L using an indigo method that uses a colorimeter or spectrophotometer.

(4) Recordkeeping requirements for microbial inactivation treatment. Groundwater systems, including wholesale, consecutive, and mixed systems, regulated under this subsection must comply with §290.46 of this title (relating to Minimum Acceptable Operating Practices for Public Drinking Water Systems).

(d) Reporting requirements. Groundwater systems conducting 4-log treatment in lieu of the raw groundwater source monitoring or required to conduct corrective action in response to a fecal indicator positive source sample, or a significant deficiency. [or in lieu of the raw groundwater source monitoring] must report to the executive director in accordance with this subsection.

(1) A groundwater system required to conduct compliance monitoring for chemical disinfectants must complete [submit] a Groundwater Treatment Monthly Operating Report (commission Form 20362) for groundwater disinfection facilities monthly. Groundwater systems must maintain the reports on site and make them available to the executive director upon request. [submit the first form starting before the month of December 2009, to avoid raw groundwater source monitoring.]

(2) A groundwater system must provide written notification to the executive director [before December 1, 2009,] that it is not required to meet the raw groundwater source monitoring requirements under [paragraph] §290.109(c)(4) of this title [(relating to Microbial Contaminants)] because it provides at least 4-log treatment of viruses for a specified groundwater source and begin compliance monitoring in accordance with subsection (c) [§290.116(c)] of this section. The notification must include engineering, operational, and other information required by the executive director to evaluate the submission.

(3) A groundwater system required to complete corrective action under subsection (b) of this section must notify the executive director within 30 days of completing the corrective action.

(4) If a groundwater system is subject to the triggered source monitoring requirements of §290.109(c)(4)(A) of this title and does not conduct source monitoring, the system must provide written documentation that it was providing 4-log treatment of viruses for the specified groundwater source or that it met the criteria set out in §290.109(c)(4)(D) of this title within 30 days of the positive distribution coliform sample.

(5) A groundwater system conducting compliance monitoring under subsection (a) of this section must notify the executive director any time the system fails to meet any executive director-specified requirements (including, but not limited to, minimum residual disinfectant concentration, and alternative treatment operating criteria) if the operation in accordance with the criteria or requirements is not restored within four hours. The system must notify the executive director as soon as possible, but no later than the end of the next business day.

(e) Compliance determination. In accordance with this subsection, the [The] executive director shall determine compliance for groundwater systems required to conduct corrective action within 120 days, or pursuant to a groundwater corrective action plan [in response to a fecal indicator positive source sample or in lieu of the raw groundwater source monitoring in accordance with this subsection].

(1) A groundwater system is in violation of the treatment technique requirement if it does not complete corrective action in accordance with the executive director-approved corrective action plan or any interim measures required by the executive director.

(2) A groundwater system is in violation of the treatment technique requirement if it is not in compliance with the executive director-approved corrective action plan and schedule.

(3) A groundwater system subject to the requirements of subsection (c) [§290.116(c)] of this section [title] that fails to maintain at least 4-log treatment of viruses is in violation of the treatment technique requirement if the failure is not corrected within four hours. The groundwater system must notify the executive director as soon as possible but no later than the next business day if there is a failure in maintaining the 4-log treatment for more than four hours.

(4) A groundwater system that fails to conduct the disinfectant monitoring required under subsection (c) of this section commits a monitoring violation.

(5) A groundwater system that fails to report the results of the disinfectant monitoring required under subsection (c) of this section commits a reporting violation.

(6) A groundwater system that fails to issue a required public notice or certify that the public notice has been performed commits a public notice violation.

(f) Public notification. A groundwater system that commits a treatment technique, monitoring, or reporting violation or situation as identified in this section must notify its customers of the violation in accordance with the requirements of §290.122 of this title (relating to Public Notification).

(1) Special notice to the public of significant deficiencies or source water fecal contamination for community systems. In addition to the applicable public notice requirements of §290.122(a) of this title, a community groundwater system that receives notice from the executive director of a significant deficiency or notification of a fecal indicator-positive groundwater source sample that is not invalidated under §290.109(d)(2) of this title must inform the public served by the water system of the

fecal indicator-positive source sample or of any significant deficiency that has not been corrected in its Consumer Confidence Report as specified in §290.272(g)(7) and (8) of this title (relating to Content of the Report).

(2) Special notice to the public of significant deficiencies or source water fecal contamination for noncommunity systems. In addition to the applicable public notice requirements of §290.122(a) of this title, a noncommunity groundwater system that receives notice from the executive director of a significant deficiency or notification of a fecal indicator-positive groundwater source sample that is not invalidated under §290.109(d)(2) of this title must inform the public served by the water system of any significant deficiency that has not been corrected within 12 months of being notified by the executive director, or earlier if directed by the executive director. The system must continue to inform the public annually until the significant deficiency is corrected. The information must include:

(A) posting the notice in conspicuous locations throughout the distribution system frequented by persons served by the system, or by mail or direct delivery to each customer and service connection; and

(B) any other method reasonably calculated to notify other persons served by the system, if they would not normally be notified by the methods set out in

subparagraph (A) of this paragraph. Such persons may include those who may not see a posted notice because the notice is not in a location they routinely frequent. Other methods may include publication in a local newspaper, newsletter, or e-mail; or, delivery of multiple copies in central locations (e.g., community centers).

(C) If directed by the executive director, a noncommunity groundwater system with significant deficiencies that have been corrected must inform its customers of the significant deficiencies, how deficiencies were corrected, and the dates of correction.

§290.119. Analytical Procedures.

(a) Acceptable laboratories. Samples collected to determine compliance with the requirements of this chapter shall be analyzed at accredited or approved laboratories.

(1) Samples used to determine compliance with the maximum contaminant levels, samples used to determine compliance with action level, and raw groundwater source monitoring requirements of this subchapter, and samples for microbial contaminants must be analyzed by a laboratory accredited by the executive director in accordance with Chapter 25 of this title (relating to Environmental Testing Laboratory Accreditation and Certification). These samples include:

- (A) compliance samples for synthetic organic chemicals;
- (B) compliance samples for volatile organic chemicals;
- (C) compliance samples for inorganic contaminants;
- (D) compliance samples for radiological contaminants;
- (E) compliance samples for microbial contaminants;
- (F) compliance samples for total trihalomethanes (TTHM);
- (G) compliance samples for haloacetic acid-group of five (HAA5);
- (H) compliance samples for chlorite;
- (I) compliance samples for bromate; and
- (J) compliance samples for lead and copper.

(2) Samples used to determine compliance with the treatment technique requirements and maximum residual disinfectant levels (MRDLs) of this subchapter must be analyzed by a laboratory approved by the executive director. These samples include:

(A) compliance samples for turbidity treatment technique requirements;

(B) compliance samples for the chlorine MRDL;

(C) compliance samples for the chlorine dioxide MRDL;

(D) compliance samples for the combined chlorine (chloramine) MRDL;

(E) compliance samples for the disinfection byproduct precursor treatment technique requirements, including alkalinity, total organic carbon, dissolved organic carbon analyses, and specific ultraviolet absorbance;

(F) samples used to monitor chlorite levels at the point of entry to the distribution system; and

(G) samples used to determine pH.

(3) Non-compliance tests, such as control tests taken to operate the system, may be run in the plant or at a laboratory of the system's choice.

(b) Acceptable analytical methods. Methods of analysis shall be as specified in 40 Code of Federal Regulations (CFR) or by any alternative analytical technique as specified by the executive director and approved by the Administrator under 40 CFR §141.27. Copies are available for review in the Water Supply Division, MC 155, Texas Commission on Environmental Quality, P.O. Box 13087, Austin, Texas 78711-3087. The following National Primary Drinking Water Regulations set forth in Title 40 CFR are adopted by reference:

(1) section 141.21(f) for microbiological analyses;

(2) section 141.74(a)(1) for turbidity analyses;

(3) section 141.23(k) for inorganic analyses;

(4) section 141.24(e), (f), and (g) for organic analyses;

(5) section 141.25 for radionuclide analyses;

(6) section 141.131(a) and (b) for disinfection byproduct methods and analyses;

(7) section 141.131(c) for disinfectant analyses other than ozone, and 141.74(b) for ozone disinfectant;

(8) section 141.131(d) for alkalinity analyses, bromide and magnesium, total organic carbon analyses, dissolved organic carbon analyses, specific ultraviolet absorbance analyses, and pH analyses; [and]

(9) section 141.89 for lead and copper analyses and for water quality parameter analyses that are performed as part of the requirements for lead and copper; [and]

(10) section 141.402(c) for groundwater source microbiological analyses;

and

(11) [(10)] if a method is not contained in this section, a drinking water quality method can be approved for analysis if it is listed in 40 CFR Part 141, Subpart C, Appendix A.

(c) The definition of detection contained in 40 CFR §141.151(d) is adopted by reference.

§290.122. Public Notification.

(a) Public notification requirements for acute violations or situations. The owner or operator of a public water system must notify persons served by their system of any maximum contaminant limit (MCL), maximum residual disinfectant level (MRDL), treatment technique violation, or other situation that poses an acute threat to public health. Each notice required by this section must meet the requirements of subsection (d) of this section.

(1) Situations that pose an acute threat to public health include:

(A) a violation of the acute MCL for microbial contaminants as defined in §290.109(f)(1) of this title (relating to Microbial Contaminants);

(B) an acute turbidity issue at a treatment plant that is treating surface water or groundwater under the direct influence of surface water, specifically:

(i) a combined filter effluent turbidity level above 5.0 nephelometric turbidity units (NTU);

(ii) a combined filter effluent turbidity level above 1.0 NTU at a treatment plant using membrane filters; or

(iii) a combined filter effluent turbidity level above 1.0 NTU at a plant using other than membrane filters at the discretion of the executive director after consultation with the system; or

(iv) failure of a system with treatment other than membrane filters to consult with the executive director within 24 hours after a combined filter effluent reading of 1.0 NTU;

(C) a violation of the MCL for nitrate or nitrite as defined in §290.106(f)(2) of this title (relating to Inorganic Contaminants);

(D) a violation of the acute MRDL for chlorine dioxide as defined in §290.110(f)(5)(A) or (B) of this title (relating to Disinfectant Residuals);

(E) occurrence of a waterborne disease outbreak;

(F) Detection of *E. coli* or other fecal indicators in source water samples as specified in §290.109(b)(2) of this title, which requires a public notice to be issued within 24 hours of notification of the positive sample; and

(G) other situations deemed by the executive director to pose an acute risk to human health.

(2) The initial acute public notice and/or [and] boil water notice required by this subsection shall be issued as soon as possible, but in no case later than 24 hours after the violation or situation is identified. The initial public notice for an acute violation or situation shall be issued in the following manner.

(A) The owner or operator of a water system with an acute microbiological or turbidity violation as described in paragraph (1)(A) or (B) of this subsection shall include a boil water notice issued in accordance with the requirements

of §290.46(q) of this title (relating to Minimum Acceptable Operating Practices for Public Drinking Water Systems).

(B) The owner or operator of a community water system shall furnish a copy of the notice to the radio and television stations serving the area served by the public water system.

(C) The owner or operator of a community water system shall publish the notice in a daily newspaper of general circulation in the area served by the system. If the area is not served by a daily newspaper of general circulation, notice shall instead be issued by direct delivery or by continuous posting in conspicuous places within the area served by the system. Other methods of delivery may include electronic delivery or alert systems (e.g. reverse 911).

(D) The owner or operator of a noncommunity water system shall issue the notice [violation] by direct delivery or by continuously posting the notice in conspicuous places within the area served by the water system. Other methods of delivery may include electronic delivery or alert systems (e.g. reverse 911).

(E) If notice is provided by posting, the posting must remain in place for as long as the violation or situation exists or seven days, whichever is longer.

(3) The owner or operator of a water system required to issue an initial notice for an acute MCL or treatment technique violation shall issue additional notices. The additional public notices for acute violations shall be issued in the following manner.

(A) Not later than 45 days after the violation, the owner or operator of a community water system shall notify persons served by the system using mail (by direct mail or with the water bill) or hand delivery. The executive director may waive mail or hand delivery if it is determined that the violation was corrected within the 45-day period. The executive director must make the waiver in writing and within the 45-day period.

(B) The owner or operator of a community water system must issue a notice at least once every three months by mail delivery (by direct mail or with the water bill) or by hand delivery, for as long as the violation exists.

(C) If the owner or operator of a noncommunity water system issued the initial notice by continuous posting, posting must continue for as long as the violation exists and in no case less than seven days. If the owner or operator of a

noncommunity water system issued the initial notice by direct delivery, notice by direct delivery must be repeated at least every three months for as long as the violation exists.

(4) The owner or operator of the public water system must issue a notice when the public water system has corrected the acute violation or situation. This notice must be issued in the same manner as the original notice was issued.

(5) Copies of all notifications required under this subsection must be submitted to the executive director within ten days of its distribution.

(b) Public notification requirements for other MCL, MRDL, or treatment technique violations and for variance and exemption violations. The owner or operator of a public water system must notify persons served by their system of any MCL, MRDL, or treatment technique violation other than those described in subsection (a)(1) of this section and of any violation involving a variance or exemption requirement. Each notice required by this section must meet the requirements of subsection (d) of this section.

(1) Violations that require notification under this subsection include:

(A) any violation of an MCL, MRDL, or treatment technique not listed under subsection (a) of this section;

(B) failure to comply with the requirements of any variance or exemption granted under §290.102(d) of this title (relating to General Applicability);

(C) failure for a groundwater system to take corrective action, including uncorrected significant deficiencies, or failure to maintain at least 4-log treatment of viruses (using inactivation, removal, or a combination of 4-log virus inactivation and removal approved by the executive director) before or at the first customer under §290.116 of this title (relating to Groundwater Corrective Actions and Treatment Techniques); or

(D) failure to perform any 3 months of raw surface water monitoring as required by §290.111(b) of this title (relating to Surface Water Treatment) or request bin classification from the executive director under §290.111(c)(3)(A) of this title; or

(E) other violations or situations deemed appropriate by the executive director that pose a non-acute risk to human health.

(2) The initial public notice for any violation, situation, or significant deficiency identified in this subsection must be issued as soon as possible, but in no case

later than 30 days after the violation is identified. The initial public notice shall be issued in the following manner.

(A) The owner or operator of a community water system shall issue the notice by:

(i) mail or other direct delivery to each customer receiving a bill and to other service connections to which water is delivered by the public water system; and

(ii) any other method reasonably calculated to reach other persons regularly served by the system, if they would not normally be reached by the notice required in clause (i) of this subparagraph. Such persons 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 drinking water to others (e.g., apartment building owners or large private employers); continuous posting in conspicuous public places within the area served by the system or on the Internet; electronic delivery or alert systems (e.g. reverse 911); or delivery to community organizations.

(B) The owner or operator of a noncommunity water system shall issue the notice by:

(i) posting the notice in conspicuous locations throughout the distribution system frequented by persons served by the system, or by mail or direct delivery to each customer and service connection (where known); and

(ii) any other method reasonably calculated to reach other persons served by the system if they would not normally be reached by the notice. Such persons may include those served 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; electronic delivery or alert systems (e.g. reverse 911); or, delivery of multiple copies in central locations (e.g., community centers).

(C) If notice is provided by posting, the posting must remain in place for as long as the violation exists or seven days, whichever is longer.

(3) The owner or operator of a system required to issue an initial violation notice shall issue additional notices. The additional notices shall be issued in the following manner.

(A) The owner or operator of a community water system must issue a notice at least once every three months by mail delivery (by direct mail or with the water bill) or by direct delivery, for as long as the violation exists.

(B) If the owner or operator of a noncommunity water system issued the initial notice by continuously posting the notice, the posting must continue for as long as the violation exists, and in no case less than seven days. If the owner or operator of a noncommunity water system issued the initial notice by direct delivery, notice by direct delivery must be repeated at least every three months for as long as the violation exists.

(4) The owner or operator of the public water system must issue a notice when the public water system has corrected the violation. This notice must be issued in the same manner as the original notice was issued.

(c) Public notification requirements for other violations, situations, variances, exemptions. The owner or operator of a public water system who fails to perform

monitoring required by this chapter, fails to comply with a testing procedure established by this chapter, or is subject to a variance or exemption granted under §290.102(b) of this title shall notify persons served by the system. Each notice required by this section must meet the requirements of subsection (d) of this section.

(1) Violations that require notification as described in this section include:

(A) exceedance of the secondary constituent levels (SCL) for fluoride;

(B) failure to perform monitoring or reporting required by this subchapter;

(C) failure to comply with the analytical requirements or testing procedures required by this subchapter;

(D) operating under a variance or exemption granted under §290.102(b) of this title; and

(E) failure to maintain records on recycle practices as required by §290.46(f)(3)(C)(iii) of this title.

(2) The initial public notice issued pursuant to this section shall be issued within three months of the violation or the granting of a variance or exemption. The initial public notice shall be issued in the following manner.

(A) The owner or operator of a community water system shall issue the notice by mail or other direct delivery to each customer receiving a bill and to other service connections. The owner or operator of a noncommunity water system shall issue the notice by either posting the notice in conspicuous locations throughout the distribution system frequented by persons served by the system, or by mail or direct delivery to each customer and service connection. Other methods of delivery may include electronic delivery or alert systems (e.g. reverse 911).

(B) The owner or operator of any public water system shall also notify the public using another method reasonably calculated to reach other persons regularly served by the system, if they would not normally be reached by the notice required in subparagraph (A) of this paragraph. Such persons may include people 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.). These 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 or on the Internet; or delivery to community organizations. Other methods of delivery may include electronic delivery or alert systems (e.g. reverse 911).

(C) If notice is provided by posting, the posting must remain in place for as long as the violation exists or seven days, whichever is longer.

(3) The owner or operator of a system required to issue an initial violation notice shall issue additional notices. The additional notices shall be issued in the following manner.

(A) The owner or operator of a community water system shall issue repeat notices at least once every 12 months by mail delivery (by direct mail or with the water bill) or by hand delivery, for as long as the violation exists or variance or exemption remains in effect. Repeat public notice may be included as part of the Consumer Confidence Report.

(B) If the owner or operator of a noncommunity water system issued the initial notice by continuously posting the notice, the posting must continue for as long as the violation exists, and in no case less than seven days. If the owner or operator of a noncommunity water system issued the initial notice by direct delivery,

notice by direct delivery must be repeated at least every 12 months for as long as the violation exists.

(4) The owner or operator of the public water system must issue a notice when the public water system has corrected the violation. This notice must be issued in the same manner as the original notice was issued.

(d) Each public notice must conform to the following general requirements.

(1) The notice must contain a clear and readily understandable explanation of the violation, significant deficiency, or situation that led [lead] to the notification. The notice must not contain very small print, unduly technical language, formatting, or other items that frustrate or defeat the purpose of the notice.

(2) If the notice is required for a specific event or significant deficiency, it must state when the event occurred or the date the significant deficiency was identified by the executive director.

(3) For notices required under subsections (a), (b), or (c)(1)(A) of this section, the notice must describe potential adverse health effects.

(A) For MCL, MRDL, or treatment technique violations or situations (including uncorrected significant deficiencies), the notice must contain the mandatory federal contaminant-specific language contained in 40 Code of Federal Regulations (CFR) Subpart Q, Appendix B, in addition to any language required by the executive director.

(B) For fluoride SCL violations, the notice must contain the mandatory federal contaminant-specific language contained in 40 CFR §141.208, in addition to any language required by the executive director.

(C) For failure to perform any 3 months of raw surface water monitoring or request bin classification from the executive director, the notice must contain the mandatory federal contaminant specific language contained in 40 CFR §141.211(d)(1) and (2) [40 CFR §141.211(d)(2)], respectively, in addition to any language required by the executive director.

(D) The notice must describe the population at risk, especially subpopulations particularly vulnerable if exposed to the given contaminant.

(4) The notice must state what actions the water system is taking to correct the violation or situation, and when the water system expects to return to compliance.

For groundwater systems with significant deficiencies, the notice must contain the executive director-approved plan and schedule for correction of the significant deficiency, including interim measures, progress to date, and any interim measures completed.

(5) The notice must state whether alternative drinking water sources should be used, and what other actions consumers should take, including when they should seek medical help, if known.

(6) Each notice must contain the name, business address and telephone number at which consumers may contact the owner, operator, or designee of the public water system for additional information concerning the notice.

(7) Where appropriate, the notice must be multilingual. The multilingual notice must explain the importance of the notice or provide a telephone number or address where consumers may contact the system to obtain a translated copy of the notice or assistance in the appropriate language.

(8) The notice shall include a statement to encourage the notice recipient to distribute the public notice to the other persons served.

(9) Systems with variances or exemptions must notify in accordance with 40 CFR §141.205(b).

(10) Systems must notify customers at sampled taps of the results of any required lead or copper analyses and certify completion of the notification to the executive director.

(e) Notice to new billing units. The owner or operator of a community water system must give a copy of the most recent public notice for any outstanding violation of any MCL, or any treatment technique requirement, or any variance or exemption schedule to all new billing units or new hookups prior to or at the time service begins. The owner or operator of a noncommunity water system must continuously post the public notice in conspicuous locations in order to inform new consumers of any continuing violation, variance or exemption, or other situation requiring a public notice for as long as the violation, variance, exemption, or other situation persists.

(f) Proof of public notification. A copy of any public notice required under this section must be submitted to the executive director within ten days of its distribution as proof of public notification. The copies must be mailed to the Water Supply Division, MC 155, Texas Commission on Environmental Quality, P.O. Box 13087, Austin, Texas

78711-3087. Each proof of public notification must be accompanied with a signed Certificate of Delivery.

(g) Notice to consecutive systems. A public water system that is required to notify its customers must also provide a copy of the notification to the owner or operator of any public water systems that purchase or otherwise receive water from it in the same manner in which they inform their customers. Each public water system that is affected by the subject of the notification is responsible for notification to its own customers.

(h) Notices given by the executive director. The executive director may give the notice required by this section on behalf of the owner and operator of the public water system following the requirements of this section. The owner or operator of the public water system remains responsible for ensuring that the requirements of this section are met.

(i) If a public water system has a violation in a portion of the distribution system that is physically or hydraulically isolated from other parts of the distribution system, the executive director may allow the system to limit distribution of the public notice to only persons served by that portion of the system which is out of compliance. Permission by the executive director for limiting distribution of the notice must be granted in writing.

SUBCHAPTER H: CONSUMER CONFIDENCE REPORTS

§290.275

Statutory Authority

The amendment is adopted under Texas Water Code (TWC), §5.013, which establishes the general jurisdiction of the commission; TWC, §5.102, which establishes the commission's general authority to perform any act necessary to carry out its jurisdiction; TWC, §5.103, which establishes the commission's authority to adopt any rules necessary to carry out its powers and duties; TWC, §5.105, which establishes the commission's authority to set policy by rule; Texas Health and Safety Code (THSC), §341.031(a), which establishes the commission's authority to adopt and enforce rules to implement the federal Safe Drinking Water Act (42 United States Code, §§300f *et seq.*); THSC, §341.0315, which requires public drinking water systems to comply with commission rules adopted to ensure the supply of safe drinking water.

The amendment implements the federal Ground Water Rule, which implements the federal Safe Drinking Water Act.

§290.275. Appendices A - D.

The following appendices are integral components of the subchapter.

(1) Appendix A--Converting MCL Compliance Values for Consumer

Confidence Reports.

Figure: 30 TAC §290.275(1)

[Figure: 30 TAC §290.275(1)]

Appendix A--Converting Maximum Contaminant Level Compliance Values for Consumer Confidence Reports (CCR)				
Key				
AL =	Action Level			
MCL =	Maximum Contaminant Level			
MCLG =	Maximum Contaminant Level Goal			
MFL =	million fibers per liter			
mrem/year =	millirems per year (a measure of radiation absorbed by the body)			
n/a =	<u>Not Applicable</u>			
NTU =	Nephelometric Turbidity Units			
pCi/L =	picocuries per liter (a measure of radioactivity)			
ppm =	parts per million, or milligrams per liter (mg/L)			
ppb =	parts per billion, or micrograms per liter (µg/L)			
ppt =	parts per trillion, or nanograms per liter			
ppq =	parts per quadrillion, or picograms per liter			
TT =	Treatment Technique			
Contaminant	MCL in compliance units (mg/L)	multiply by...	MCL in CCR units	MCLG in CCR units
Microbiological Contaminants				
1. Total Coliform Bacteria			For systems that collect 40 or more samples per month - Presence of coliform bacteria in more than 5% of monthly samples. For systems that collect fewer than 40 samples per month - Presence of coliform bacteria in more than 1 sample	0

			per month.	
2. Fecal coliform and <i>E. coli</i>			A routine sample and a repeat sample are total coliform positive, and one is also fecal coliform or <i>E. coli</i> positive. <u>An uncorrected <i>E. coli</i>-positive sample at the raw groundwater source is a TT for the Ground Water Rule (GWR).</u>	0
3. Fecal indicators (enterococci or coliphage)			<u>TT. An uncorrected fecal indicator-positive sample at the raw groundwater source is a TT for the GWR.</u>	n/a
4. Total organic carbon			TT (ppm)	n/a
5. Turbidity			TT (NTU)	n/a
Radioactive Contaminants				
6. Beta/photon emitters	4 mrem/yr		4 mrem/yr	0
7. Alpha emitters	15 pCi/L		15 pCi/L	0
8. Combined radium	5 pCi/L		5 pCi/L	0
9. Uranium	30 µg/L		30 µg/L	0
Inorganic Contaminants				
10. Antimony	.006	1000	6 ppb	6
11. Arsenic	.010	1000	10 ppb	n/a
12. Asbestos	7 MFL		7 MFL	7
13. Barium	2		2 ppm	2
14. Beryllium	.004	1000	4 ppb	4
15. Bromate	.010	1000	10 ppb	0
16. Cadmium	.005	1000	5 ppb	5
17. Chloramines	MRDL=4		MRDL=4 ppm	4
18. Chlorine	MRDL=4		MRDL=4 ppm	4
19. Chlorine Dioxide	MRDL=.8	1000	MRDL=800 ppb	800
20. Chlorite	1.0		1 ppm	0.8
21. Chromium	.1	1000	100 ppb	100
22. Copper	AL=1.3		AL=1.3 ppm	1.3
23. Cyanide	.2	1000	200 ppb	200
24. Fluoride	4		4 ppm	4
25. Lead	AL=.015	1000	AL=15 ppb	0

26. Mercury (inorganic)	.002	1000	2 ppb	2
27. Nitrate (as Nitrogen)	10		10 ppm	10
28. Nitrite (as Nitrogen)	1		1 ppm	1
29. Selenium	.05	1000	50 ppb	50
30. Thallium	.002	1000	2 ppb	0.5
Synthetic Organic Contaminants including Pesticides and Herbicides				
31. 2,4-D	.07	1000	70 ppb	70
32. 2,4,5-TP (Silvex)	.05	1000	50 ppb	50
33. Acrylamide			TT	0
34. Alachlor	.002	1000	2 ppb	0
35. Atrazine	.003	1000	3 ppb	3
36. Benzo(a)pyrene (PAH)	.0002	1,000,000	200 ppt	0
37. Carbofuran	.04	1000	40 ppb	40
38. Chlordane	.002	1000	2 ppb	0
39. Dalapon	.2	1000	200 ppb	200
40. Di(2-ethylhexyl) adipate	.4	1000	400 ppb	400
41. Di(2-ethylhexyl) phthalate	.006	1000	6 ppb	0
42. Dibromochloropropane	.0002	1,000,000	200 ppt	0
43. Dinoseb	.007	1000	7 ppb	7
44. Diquat	.02	1000	20 ppb	20
45. Dioxin (2,3,7,8-TCDD)	.00000003	1,000,000,000	30 ppq	0
46. Endothall	.1	1000	100 ppb	100
47. Endrin	.002	1000	2 ppb	2
48. Epichlorohydrin			TT	0
49. Ethylene dibromide	.00005	1,000,000	50 ppt	0
50. Glyphosate	.7	1000	700 ppb	700
51. Heptachlor	.0004	1,000,000	400 ppt	0
52. Heptachlor epoxide	.0002	1,000,000	200 ppt	0
53. Hexachlorobenzene	.001	1000	1 ppb	0
54. Hexachloro-cyclopentadiene	.05	1000	50 ppb	50
55. Lindane	.0002	1,000,000	200 ppt	200
56. Methoxychlor	.04	1000	40 ppb	40
57. Oxamyl (Vydate)	.2	1000	200 ppb	200
58. PCBs (Polychlorinated biphenyls)	.0005	1,000,000	500 ppt	0
59. Pentachlorophenol	.001	1000	1 ppb	0
60. Picloram	.5	1000	500 ppb	500

61. Simazine	.004	1000	4 ppb	4
62. Toxaphene	.003	1000	3 ppb	0
Volatile Organic Contaminants				
63. Benzene	.005	1000	5 ppb	0
64. Carbon tetrachloride	.005	1000	5 ppb	0
65. Chlorobenzene	.1	1000	100 ppb	100
66. o-Dichlorobenzene	.6	1000	600 ppb	600
67. p-Dichlorobenzene	.075	1000	75 ppb	75
68. 1,2-Dichloroethane	.005	1000	5 ppb	0
69. 1,1-Dichloroethylene	.007	1000	7 ppb	7
70. cis-1,2-Dichloroethylene	.07	1000	70 ppb	70
71. trans-1,2-Dichloroethylene	.1	1000	100 ppb	100
72. Dichloromethane	.005	1000	5 ppb	0
73. 1,2-Dichloropropane	.005	1000	5 ppb	0
74. Ethylbenzene	.7	1000	700 ppb	700
75. Haloacetic acids	0.060	1000	60 ppb	n/a
76. Styrene	.1	1000	100 ppb	100
77. Tetrachloroethylene	.005	1000	5 ppb	0
78. 1,2,4-Trichlorobenzene	.07	1000	70 ppb	70
79. 1,1,1-Trichloroethane	.2	1000	200 ppb	200
80. 1,1,2-Trichloroethane	.005	1000	5 ppb	3
81. Trichloroethylene	.005	1000	5 ppb	0
82. TTHMs (Total trihalomethanes)	.10	1000	100 ppb	n/a
83. Toluene	1		1 ppm	1
84. Vinyl Chloride	.002	1000	2 ppb	0
85. Xylenes	10		10 ppm	10

(2) Appendix B--Sources of Regulated Contaminants.

Figure: 30 TAC §290.275(2)

[Figure: 30 TAC §290.275(2)]

Appendix B--Sources of Regulated Contaminants	
Key	
AL =	Action Level

MCL =	Maximum Contaminant Level		
MCLG =	Maximum Contaminant Level Goal		
MFL =	million fibers per liter		
mrem/year =	millirems per year (a measure of radiation absorbed by the body)		
n/a =	Not Applicable		
NTU =	Nephelometric Turbidity Units		
pCi/L =	picocuries per liter (a measure of radioactivity)		
ppm =	parts per million, or milligrams per liter (mg/L)		
ppb =	parts per billion, or micrograms per liter (µg/L)		
ppt =	parts per trillion, or nanograms per liter		
ppq =	parts per quadrillion, or picograms per liter		
TT =	Treatment Technique		
Contaminant (units)	MCLG	MCL	Major sources in drinking water
Microbiological Contaminants			
1. Total Coliform Bacteria	0	For systems that collect 40 or more samples per month - Presence of coliform bacteria in more than 5% of monthly samples. For systems that collect fewer than 40 samples per month - Presence of coliform bacteria in more than 1 sample per month.	Naturally present in the environment.
2. Fecal coliform and <i>E. coli</i>	0	A routine sample and a repeat sample are total coliform positive, and one is also fecal coliform or <i>E. coli</i> positive. <u>An uncorrected <i>E. coli</i>-positive sample at the raw groundwater source is a TT for the Ground Water Rule (GWR).</u>	Human and animal fecal waste.
3. Fecal indicators (enterococci or coliphage)	n/a	TT. <u>An uncorrected fecal indicator-positive sample at the raw groundwater source is a TT for the</u>	Human and animal fecal waste.

		<u>GWR.</u>	
4. Total organic carbon (ppm)	n/a	TT	Naturally present in the environment.
5. Turbidity	n/a	TT	Soil runoff.
Radioactive Contaminants			
6. Beta/photon emitters (mrem/yr)	0	4	Decay of natural and man-made deposits.
7. Alpha emitters (pCi/L)	0	15	Erosion of natural deposits.
8. Combined radium (µg/L)	0	5	Erosion of natural deposits.
Inorganic Contaminants			
9. Uranium (µg/L)	0	30	Erosion of natural deposits.
10. Antimony (ppb)	6	6	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder.
11. Arsenic (ppb)	n/a	10	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes.
12. Asbestos (MFL)	7	7	Decay of asbestos cement water mains; Erosion of natural deposits.
13. Barium (ppm)	2	2	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits.
14. Beryllium (ppb)	4	4	Discharge from metal refineries and coal-burning factories; Discharge from electrical, aerospace, and defense industries.
15. Bromate (ppb)	0	10	By-product of drinking water disinfection.
16. Cadmium (ppb)	5	5	Corrosion of galvanized pipes; Erosion of natural deposits; Discharge from metal refineries; runoff from waste batteries and paints.
17. Chloramines (ppm)	MRDLG=4	MRDL=4	Water additive used to control microbes.
18. Chlorine (ppm)	MRDLG=4	MRDL=4	Water additive used to control microbes.
19. Chlorine Dioxide (ppb)	800	800	Water additive used to control microbes.
20. Chlorite (ppm)	1.0	1.0	By-product of drinking water disinfection.

21. Chromium (ppb)	100	100	Discharge from steel and pulp mills; Erosion of natural deposits.
22. Copper (ppm)	1.3	AL=1.3	Corrosion of household plumbing systems; Erosion of natural deposits.
23. Cyanide (ppb)	200	200	Discharge from steel/metal factories; Discharge from plastic and fertilizer factories.
24. Fluoride (ppm)	4	4	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories.
25. Lead (ppb)	0	AL=15	Corrosion of household plumbing systems; Erosion of natural deposits.
26. Mercury (inorganic) (ppb)	2	2	Erosion of natural deposits; Discharge from refineries and factories; Runoff from landfills; Runoff from cropland.
27. Nitrate (as Nitrogen) (ppm)	10	10	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits.
28. Nitrite (as Nitrogen) (ppm)	1	1	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits.
29. Selenium (ppb)	50	50	Discharge from petroleum and metal refineries; Erosion of natural deposits; Discharge from mines.
30. Thallium (ppb)	0.5	2	Leaching from ore-processing sites; Discharge from electronics, glass, and drug factories.
Synthetic Organic Contaminants including Pesticides and Herbicides			
31. 2,4-D (ppb)	70	70	Runoff from herbicide used on row crops.
32. 2,4,5-TP (Silvex) (ppb)	50	50	Residue of banned herbicide.
33. Acrylamide	0	TT	Added to water during sewage/wastewater treatment.
34. Alachlor (ppb)	0	2	Runoff from herbicide used on row crops.
35. Atrazine (ppb)	3	3	Runoff from herbicide used on

			row crops.
36. Benzo(a)pyrene (PAH) (nanograms/L)	0	200	Leaching from linings of water storage tanks and distribution lines.
37. Carbofuran (ppb)	40	40	Leaching of soil fumigant used on rice and alfalfa.
38. Chlordane (ppb)	0	2	Residue of banned termiticide.
39. Dalapon (ppb)	200	200	Runoff from herbicide used on rights of way.
40. Di(2-ethylhexyl) adipate (ppb)	400	400	Discharge from chemical factories.
41. Di(2-ethylhexyl)phthalate (ppb)	0	6	Discharge from rubber and chemical factories.
42. Dibromochloropropane (ppt)	0	200	Runoff/leaching from soil fumigant used on soybeans, cotton, pineapples, and orchards.
43. Dinoseb (ppb)	7	7	Runoff from herbicide used on soybeans and vegetables.
44. Diquat (ppb)	20	20	Runoff from herbicide use.
45. Dioxin (2,3,7,8-TCDD) (ppq)	0	30	Emissions from waste incineration and other combustion; Discharge from chemical factories.
46. Endothall (ppb)	100	100	Runoff from herbicide use.
47. Endrin (ppb)	2	2	Residue of banned insecticide.
48. Epichlorohydrin	0	TT	Discharge from industrial chemical factories; An impurity of some water treatment chemicals.
49. Ethylene dibromide (ppt)	0	50	Discharge from petroleum refineries.
50. Glyphosate (ppb)	700	700	Runoff from herbicide use.
51. Heptachlor (ppt)	0	400	Residue of banned termiticide.
52. Heptachlor epoxide (ppt)	0	200	Breakdown of heptachlor.
53. Hexachlorobenzene (ppb)	0	1	Discharge from metal refineries and agricultural chemical factories.
54. Hexachlorocyclopentadiene (ppb)	50	50	Discharge from chemical factories.
55. Lindane (ppt)	200	200	Runoff/leaching from insecticide used on cattle, lumber, gardens.
56. Methoxychlor (ppb)	40	40	Runoff/leaching from insecticide used on fruits, vegetables, alfalfa,

			livestock.
57. Oxamyl (Vydate) (ppb)	200	200	Runoff/leaching from insecticide used on apples, potatoes, and tomatoes.
58. PCBs (Polychlorinated biphenyls) (ppt)	0	500	Runoff from landfills; Discharge of waste chemicals.
59. Pentachlorophenol (ppb)	0	1	Discharge from wood preserving factories.
60. Picloram (ppb)	500	500	Herbicide runoff.
61. Simazine (ppb)	4	4	Herbicide runoff.
62. Toxaphene (ppb)	0	3	Runoff/leaching from insecticide used on cotton and cattle.
Volatile Organic Compounds			
63. Benzene (ppb)	0	5	Discharge from factories; Leaching from gas storage tanks and landfills.
64. Carbon tetrachloride (ppb)	0	5	Discharge from chemical plants and other industrial activities.
65. Chlorobenzene (ppb)	100	100	Discharge from chemical and agricultural chemical factories.
66. o-Dichlorobenzene (ppb)	600	600	Discharge from industrial chemical factories.
67. p-Dichlorobenzene (ppb)	75	75	Discharge from industrial chemical factories.
68. 1,2-Dichloroethane (ppb)	0	5	Discharge from industrial chemical factories.
69. 1,1-Dichloroethylene (ppb)	7	7	Discharge from industrial chemical factories.
70. cis-1,2-Dichloroethylene (ppb)	70	70	Discharge from industrial chemical factories.
71. trans-1,2-Dichloroethylene (ppb)	100	100	Discharge from industrial chemical factories.
72. Dichloromethane (ppb)	0	5	Discharge from pharmaceutical and chemical factories.
73. 1,2-Dichloropropane (ppb)	0	5	Discharge from industrial chemical factories.
74. Ethylbenzene (ppb)	700	700	Discharge from petroleum refineries.
75. Haloacetic acids (HAA) (ppb)	n/a	60	By-product of drinking water disinfection.
76. Styrene (ppb)	100	100	Discharge from rubber and plastic factories; Leaching from landfills.
77. Tetrachloroethylene (ppb)	0	5	Leaching from PVC pipes;

			Discharge from factories and dry cleaners.
78. 1,2,4-Trichlorobenzene (ppb)	70	70	Discharge from textile-finishing factories.
79. 1,1,1-Trichloroethane (ppb)	200	200	Discharge from metal degreasing sites and other factories.
80. 1,1,2-Trichloroethane (ppb)	3	5	Discharge from industrial chemical factories.
81. Trichloroethylene (ppb)	0	5	Discharge from metal degreasing sites and other factories.
82. TTHMs (Total trihalomethanes) (ppb)	n/a	80	By-product of drinking water disinfection.
83. Toluene (ppm)	1	1	Discharge from petroleum factories.
84. Vinyl Chloride (ppb)	0	2	Leaching from PVC piping; Discharge from plastics factories.
85. Xylenes (ppm)	10	10	Discharge from petroleum factories; Discharge from chemical factories.

(3) Appendix C-Health Effects Language.

Figure: 30 TAC §290.275(3) (No change to the figure as it currently exists in TAC.)

(4) Appendix D--Unregulated Contaminants.

Figure: 30 TAC §290.275(4) (No change to the figure as it currently exists in TAC.)