The Texas Natural Resource Conservation Commission (TNRCC or commission) adopts the amendments to Subchapter D, Rules and Regulations for Public Water Systems, §§290.38, 290.39, 290.41, 290.42, and 290.44 - 290.47; and Subchapter F, Drinking Water Standards Governing Drinking Water Quality and Reporting Requirements for Public Water Supply Systems, §§290.102 - 290.104, 290.106 - 290.115, 290.117 - 290.119, 290.121, and 290.122. Sections 290.38, 290.42, 290.44, 290.46, 290.47, 290.102, 290.110, 290.111, and 290.122 are adopted *with change* to the proposed text as published in the February 1, 2002 issue of the *Texas Register* (27 TexReg 679). Sections 290.39, 290.41, 290.45, 290.103, 290.104, 290.106 - 290.109, 290.112 - 290.115, 290.117 - 290.119, and 290.121 are adopted *without change* to the proposed text and will not be republished.

BACKGROUND AND SUMMARY OF THE FACTUAL BASIS FOR THE ADOPTED RULES

The commission adopted major revisions to Chapter 290 in the September 8, 2000 issue of the *Texas Register* (25 TexReg 8881), to implement state rules conforming to the federal Interim Enhanced Surface Water Treatment Rule (IESWTR) and the Stage I Disinfectant and Disinfection By-Product Rule (Stage 1 DBPR) as required by federal law (Safe Drinking Water Act (SDWA), 42 United States Code (USC), §§300g *et seq.*), and federal regulations under 40 Code of Federal Regulations (CFR) Parts 9, 141, and 142. After adopting these amendments, the commission discovered several minor typographical errors that needed to be corrected. With the current amendments, the commission adopts primarily technical and grammatical corrections to Chapter 290, Subchapters D and F. In addition to these corrections, the commission adopts amendments to incorporate the federal Public Notification Rule (40 CFR Parts 9, 141, 142, and 143; 65 Federal Register (FR) 25981 - 26049, May 4, 2000); incorporate the federal Lead/Copper Minor Revisions Rule (40 CFR Parts 9, 141, and 142; 65 FR 1949

- 2015, January 12, 2000); implement House Bill (HB) 217, Article 2, 77th Legislature, 2001; comply with Opinion JC-0453 issued on January 28, 2002, by the Office of the Attorney General; update references to lab related terminology prompted by HB 2912, §18.02, transferring certification of drinking water laboratories from the Texas Department of Health (TDH) to TNRCC; and adopt language from SDWA, 42 USC, §300g-1(b)(10), allowing two-year extensions to the effective dates for new regulations for maximum contaminant levels (MCLs) and treatment technique (TT) requirements when capital improvements are necessary to comply with the new requirements.

The executive director (ED) has reviewed the public health effects of using treatment techniques other than the control of total organic carbon (TOC) for limiting the formation of disinfection by-products. These alternatives may involve the use of disinfectants such as ozone, ultraviolet light, and chloramine that form fewer regulated disinfection by-products than chlorine, the primary disinfectant used by many public water systems. In the preamble to the proposed rulemaking, published in the February 1, 2002 issue of the *Texas Register* (27 TexReg 679), the commission stated that it might submit a proposal under the "Joint EPA/State Agreement to Pursue Regulatory Innovation" to pursue regulatory innovations designed to protect public health from disinfection by-products and requested comments regarding this idea. The commission received one comment regarding this request and addresses it in the RESPONSE TO COMMENTS portion of this preamble.

SECTION BY SECTION DISCUSSION

The commission has revised some of the proposed rule language for Chapter 290. Additionally, certain rewording is adopted throughout the two affected subchapters. The term "public drinking water

program," which was used in the previous adoption to make clear to the regulated community the group within the commission that accepted their forms, letters, and other correspondence related to public water systems, has been replaced with the term "executive director," to conform to usage in other agency rules and the definitions in 30 TAC Chapter 3, *Definitions*, of the commission's rules. The term "Water Permits and Resource Management Division" has been replaced with "Water Supply Division" to reflect the most recent reorganization of the agency.

Subchapter D, Rules and Regulations for Public Water Systems

Adopted §290.38, Definitions, deletes the reference to "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 and adds the reference to "The Drinking Water Dictionary, prepared by the American Water Works Association" to clarify that technical terms not defined in this chapter or in 40 CFR §141.2 have the meanings listed in "The Drinking Water Dictionary." Additionally, this section is renumbered to incorporate new definitions for "certified laboratory," "customer service line or pipe," "distribution system," "groundwater," "potable water customer service line," "potable water service line," "potable water main," "service line," "wastewater lateral," and "wastewater main." The commission added these definitions in order to clarify what portions of the public water system's distribution system are impacted by the rules related to separation between wastewater and potable water pipe and to conform to current agency terminology. Section 290.38(3) incorporates the jurisdictional change from the TDH to the commission into the definition of "approved laboratory." Section 290.38(8) defines certified laboratory as a laboratory certified by the commission to analyze

water samples to determine their compliance with maximum allowable constituent levels. Section 290.38(10) changes the definition of "connection" back to the original definition and removes the changes suggested in the proposed rule to stay consistent with EPA regulatory intent. Section 290.38(11) clarifies in the definition of "contamination" that the word contamination will be used to indicate the presence of any foreign substance in water which constitutes a hazard to health. Section 290.38(15) defines distribution system as 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. In §290.38(17), the commission deleted the word "title" and replaced it with "chapter" to clarify that the definition of drinking water standards refers to the drinking water standards defined in Subchapter F. Section 290.38(20) defines groundwater as any water that is located beneath the surface of the ground and is not under the direct influence of surface water. In §290.38(21), the commission corrected the misspelling of the word *groundwater*. The definition of "maximum daily demand" in §290.38(28) is modified to account for situations in which mandatory water use restrictions have been put in place related to drought conditions. In §290.38(29), (30), (32), and (33), the commission made grammatical changes and spelled out the acronyms to be consistent with the agency's rulemaking standards. In §290.38(40), the commission changed the definition of "plumbing ordinance" to include the International Plumbing Code and deleted the references to the Southern Standard Plumbing Code and the National Standard Plumbing Code. HB 217, 77th Legislature, 2001, replaced the Southern Standard Plumbing Code and the National Standard Plumbing Code with the International Plumbing Code, therefore, the commission modified the definition of "plumbing ordinance" to comply with this change. Section 290.38(41) defines potable water customer

service line as the sections of potable water pipe between the customer's meter and the customer's point of use. Section 290.38(42) defines potable water service line as 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. Section 290.38(43) defines potable water main as 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. Finally, §290.38(45) clarifies that any report submitted under Chapter 290 must be sent to the Water Supply Division.

Adopted §290.39(d)(1), General Provisions, specifies that plans and specifications prepared under the seal of a professional engineer must have the seal, signature, and dates affixed in accordance with the rules of the Texas Board of Professional Engineers. Subsection (d)(3)(C) includes a mailing address for the submission of planning materials. The adopted rule includes replacement of the term "public drinking water program" with "executive director" for consistency with the commission's style guidelines because the public drinking water program staff represents the ED.

Section 290.39(f) deletes the word "proposed" to clarify that the prospective owner of the system or the person responsible for managing and operating the system must submit a business plan before construction is completed 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.

Section 290.39(h)(2) requires the design engineer or the owner to notify the ED before construction is started rather than when construction is started. Subsection (h)(3) replaces "will" with "shall" to more clearly specify that the engineer or owner is required to notify the ED in writing. This provides a record of the notification.

Section 290.39(j) has been reorganized and the notification requirements for changes to a public water system's physical facilities reworded. Subsection (j) includes the introductory material for the notification requirements for any change in disinfection facilities at a treatment plant treating surface water or groundwater under the direct influence of surface water. Subsection (j)(1) lists the significant material changes for which public water systems shall notify the ED prior to making any of these material changes, improvements, additions, or alterations to an existing public water system. Subsection (j)(1) adds "pressure maintenance facilities" to the list of changes to a system's facilities requiring notification to the ED. Changes requiring written notice to the ED are specified as those changes which result in either an increase or decrease in production, treatment, storage, or pressure maintenance capacity. Paragraph (1) has also been reorganized to contain specific descriptions of conditions requiring notification in subordinate subparagraphs. Paragraph (1)(A) specifies the requirement of notification for changes which result in an increase in the amount of water a system can provide, store, or pressurize. Paragraph (1)(B) has been added and states the requirement for notification for changes in disinfection facilities at surface water treatment plants or plants treating groundwater under the direct influence of surface water. These requirements were previously contained in paragraph (2) of this subsection. Paragraph (1)(C) has been added to specify the requirement for notification for changes to the type of disinfectant used in the distribution system. This requirement

was previously contained in paragraph (3) of this subsection. Existing paragraph (4) of this subsection is reworded and renumbered as paragraph (1)(D), and contains the requirement for notification if changes are planned to the distribution system, if those changes constitute 10% of the distribution system capacity, or 250 connections, whichever is smaller, or if the changes will affect the system's ability to comply with other capacity regulations. Paragraph (1)(E) has been added and contains the requirement that the ED may identify other conditions under which notification is required, which was previously contained in paragraph (5) of this subsection. The material previously contained in paragraphs (2) - (4) is proposed to be deleted and incorporated into paragraph (1), as described previously. Existing paragraph (5) has been renumbered to new paragraph (2).

Section 290.39(j)(2)(B), formerly paragraph (5)(B), is reorganized to clarify the requirements for submittal of plans. The language giving political subdivisions with internal review staff the ability to review certain of their own plans was inadvertently subordinated in the previous adoption; the adopted language corrects that error. Paragraph (2)(B)(i) is added and sets out the requirements for a political entity's internal review staff, previously contained in paragraph (5)(B). Paragraph (2)(B)(ii) is added and contains the requirement that the political entity's professional engineer certify the legality of planned changes; this requirement was previously contained in paragraph (5)(B). Paragraph (2)(B)(iii) is added and contains the requirement, previously in paragraph (5)(B), that certification of the internal review staff be provided with the written notice given to the ED. Paragraph (2)(C) is added to clarify the existing requirement that if plans are submitted to the internal review staff as part of a legal agreement between two political entities, those plans may be approved in that manner, but notification is still required. Paragraph (3) is added to specify that if the planned changes to the distribution system

will cause the certificate of convenience and necessity (CCN) to be changed, a CCN amendment application must be submitted at the same time notice is sent to the ED.

Section 290.39(l)(1) replaces the word "should" with "shall," thus making more enforceable the requirement that any request for an exception to the rules precede submission of engineering plans. This section is also expanded to clarify that an exception request is only required if the public water system is actually seeking an exception to one or more of the regulatory provisions.

Adopted §290.41, Water Sources, ensures consistency of word usage, corrects typographical errors, and provides clarification of rule requirements. In subsection (a), the citation to Subchapter F is made explicit. The requirement contained in §290.41(c)(1)(F), relating to sanitary control easements, is intended to ensure that the area around a well used for public drinking water be protected from potential contamination. The area of protection is recorded in county records. However, the term "sanitary control easement" describes the protected area around a drinking water well. Subparagraph (F) is expanded to provide that political subdivisions which adopt and enforce ordinances or land restrictions that will achieve the goal of protecting a public water source may, with ED approval, substitute those documents for sanitary control easements. Subsection (c)(3) clarifies that the subsequent subparagraphs contain the conditions for placing a new well into service for potable water. Subsection (c)(3) is also made more enforceable by deleting the phrase "special attention must be given to." The first sentence in paragraph (3)(A) is changed to active voice, clearly stating that it is the public water system's responsibility to submit well information. Additionally, the term "to the executive director" is added to clarify that the public water system must submit well information to the ED. Paragraph (3)(C) replaces

the word "will" with "shall" to make the conditions more legally enforceable. In addition, subparagraph (C) reflects that the use of alternate methods of cementing a well may be approved only on a case-by-case basis and that the approval must be in writing. Paragraph (3)(G) replaces the term "the Texas Department of Health approved" with "a certified" in response to the change of authority over lab certification from TDH to the commission as required by HB 2912, §18.02, 77th Legislature, 2001. Additionally, paragraph (3)(G) replaces the term "public drinking water program" with the term "executive director" to clarify that chemical and microbiological tests may be required by the ED, or his designated staff, as defined by 30 TAC §3.2(16).

Section 290.41(d)(2) replaces the term "public drinking water program" with "executive director."

Section 290.41(e)(1) clarifies that the area surrounding a new surface water intake must be kept free of potential drinking water contaminants. Subsection (e)(2)(D) replaces the term "public drinking water program" with "executive director."

Adopted §290.42(b)(5), Water Treatment, is added to this subsection to specify that all plant piping shall be designed and constructed to be thoroughly tight against leakage. Adopted new paragraph (6) clarifies water systems must have sampling taps that will allow them to obtain water samples at the points specified in Subchapters D and F. Subsection (c)(4) specifies the same language as in subsection (b)(5). Subsection (c)(4) clarifies that no cross-connection or interconnection shall be permitted between a conduit carrying potable water and a conduit carrying raw water or water in a prior stage of treatment. Adopted new paragraph (5) includes the same language as subsection (b)(6).

Section 290.42(d)(3) clarifies that any discharge of wastewater shall be according to the appropriate statutes and regulations including those contained in 30 TAC Chapters 305, 309, and 319. Subsection (d)(6)(C) specifies every chemical bulk storage facility and day tank shall have a label that identifies the facility's or tank's contents and a device that indicates the amount of chemical remaining in the facility or tank. Subsection (d)(6)(E), which describes chemical containment requirements to minimize the possibility of leaks and spills, is reworded for clarification and to consider current chemical containment technology. Subparagraph (E)(i) states that the material used to construct the bulk tanks must be compatible with the chemicals being stored and must be resistant to corrosion. Subparagraph (E)(ii) states that except as provided in this clause, adequate containment facilities shall be provided for all liquid storage tanks. This takes into account the situation in which multiple tanks utilize a common containment area. Subparagraph (E)(ii)(I) states that the tank must be large enough to hold the maximum amount of chemical that can be stored. Subclause (II) states that the common containment for multiple containers must be large enough to hold the volume of the largest container. Subclauses (III) and (IV) of subparagraph (E)(ii) are renumbered from subclauses (II) and (III) respectively. Subparagraph (E)(ii)(V) is added to include the allowance that small containers, 35 gallons or less, containing hypochlorite solution for disinfection do not need to be surrounded by a containment facility. Subparagraph (E)(ii)(VI) is added to allow double-walled tank containment when approved by the ED.

Section 290.42(d)(11) specifies that gravity or pressure-type filters shall be provided. Subsection (d)(11)(B) clarifies that filtration facilities shall be designed to operate at filtration rates which assure effective filtration at all times. Subsection (d)(11)(B)(i) deletes the term design and specifies that the design capacity of gravity rapid sand filters shall not exceed a maximum filtration rate of 2.0 gallons

per square foot per minute. Subparagraph (B)(ii) deletes the term design and specifies that high-rate gravity filters shall not exceed a maximum filtration rate of 5.0 gallons per square foot per minute. Subparagraph (B)(iii) clarifies the existing requirement that the design capacity of pressure filters shall not exceed a maximum filtration rate of 2.0 gallons per square foot per minute. Subparagraph (B)(iv) specifies that any surface water treatment plant that provides less than 7.5 million gallons per day (gpd) must be able to meet either the maximum daily demand or the minimum required 0.6 gallons per minute per connection, whichever is larger, with all filters on line. Subparagraph (B)(iv) also deletes a sentence specifying the design capacity of filtration facilities. Subparagraph (B)(v) specifies that any surface water treatment plant that provides, or is being designed to provide, 7.5 million gpd or more must be able to meet either the maximum daily demand or the minimum required 0.6 gallons per minute per connection, whichever is larger, with the largest filter off line. Subparagraph (B)(v) also deletes a sentence specifying the design capacity of filtration facilities. Subparagraph (B)(vi) is added to incorporate the need for systems using pressure filters to meet capacity while one filter is being backwashed.

Section 290.42(e)(4) is reworded to the language that existed in the 1997 adoption of the rules, prior to the previous adoption, based on extensive comments from stakeholders that the language adopted in 2000 inadvertently conflicted with other regulations regarding risk management and fire protection. With a future rulemaking, specific comments will be invited from stakeholders on all of the language related to chlorine gas safety. The existing language in paragraph (4) is deleted and replaced with new language specifying that systems that use chlorine must ensure that the risks associated with its use are limited. Specifically, paragraph (4)(A) requires that when chlorine gas is used, a full-face

self-contained breathing apparatus or supplied air respirator that meets Occupational Safety and Health Administration (OSHA) standards for construction and operation, and a small bottle of fresh ammonia solution (or approved equivalent) for testing for chlorine leakage shall be readily accessible outside the chlorination room and immediately available to the operator in the event of an emergency. Paragraph (4)(B) specifies that housing for gas chlorination equipment and cylinders of chlorine shall be in separate buildings or separate rooms with impervious walls or partitions separating all mechanical and electrical equipment from the chlorine facilities. Adopted amendments also specify that housing shall be located above ground level as a measure of safety, and that equipment and cylinders may be installed on the outside of the buildings when protected from adverse weather conditions and vandals. Paragraph (4)(C) specifies that adequate ventilation, which includes both high-level and floor-level screened vents, shall be provided for all enclosures in which gas chlorine is being stored or fed. Paragraph (4)(C) also clarifies that enclosures containing more than one operating 150-pound cylinder of chlorine shall also provide forced air ventilation which includes: screened and louvered floor-level and high-level vents; a fan which is located at and draws air in through the top vent and discharges to the outside atmosphere through the floor-level vent; and a fan switch located outside the enclosure. The adopted rule specifies that as an alternative, systems may install negative pressure ventilation as long as the facilities also have gas containment and treatment as prescribed by the current Uniform Fire Code (UFC). Paragraphs (5) and (6) are deleted, and paragraphs (7) and (8) are renumbered.

Adopted §290.44, Water Distribution, incorporates requirements in 30 TAC Chapter 317, Design Criteria for Sewerage Systems, regarding separation distances between sewer lines and water lines. Portions of §317.2 (relating to Sewage Collection System) are incorporated into this section. This section also corrects typographical errors and clarifies rule requirements. Section 290.44(c) corrects

grammatical errors and also clarifies the mandatory requirements of minimum water line sizes for domestic flows, and that larger pipe sizes shall be used when the engineer deems necessary to ensure the safe delivery of water.

Section 290.44(d)(4) specifies that service connections include residential, commercial or industrial connections. Paragraph (4) also clarifies that a water system that furnishes service only to itself or its employees is exempt from this requirement. Subsection (d)(6) corrects grammatical errors that specify that dead ends shall be located and arranged in such a way that the ends can be connected to provide circulation.

Section 290.44(e)(6) incorporates provisions previously contained in Chapter 317. Paragraphs (1) - (5) of subsection (e) are renumbered. Existing language in paragraph (1) is incorporated into subsection (e) and a sentence is added to clarify the location of waterlines by specifying that new mains, service lines, or laterals are those that are installed where no main, service line, or lateral previously existed; or where existing mains, service lines, or laterals are replaced with pipes of different size or material. Existing paragraphs (2) - (9) are renumbered as paragraphs (1) - (8) of subsection (e). Renumbered paragraph (2) changes the phrase “collection line or force main” to “mains or laterals” to update current terminology. Renumbered paragraph (4)(A)(i) adds the term “lateral” and deletes the terms “line” and “force” to clarify which wastewater lines are affected. The qualifying phrase “licensed in the State of Texas” is added to clarify the requirements for a licensed professional engineer. Paragraph (4)(A)(ii) replaces the term “line” with “wastewater main or lateral” to clarify which wastewater lines are affected. Paragraph (4)(A)(iii) replaces the term “line” with “wastewater main or lateral” to clarify

which wastewater lines are affected. In paragraph (4)(B), clauses (i) - (vi) replace the term "line" with "wastewater main or lateral" to clarify which wastewater lines are affected. Clauses (iii) and (v) update cross-references to §290.44(e)(4)(B)(vi). In clause (iii), subclauses (II) and (III) replace the term "line" with "wastewater main or lateral" to clarify which wastewater lines are affected. Clause (vi) recommends brown coloring be used to identify pressure rated wastewater lines during construction. Renumbered paragraph (5) clarifies that pressure class pipe for waterlines shall be "at least" 150 pounds per square inch (psi). In response to a comment suggesting that since the commission has added a definition for service line, "service line" should be added to renumbered §290.44(e)(6), the commission has changed the rule language in §290.44(e)(6) to read: "Fire hydrants shall not be installed within nine feet vertically or horizontally of any wastewater main, wastewater lateral or wastewater service line regardless of construction." Renumbered paragraph (6) corrects grammatical errors and replaces the phrase "sanitary sewer line" with "wastewater main or lateral." Renumbered paragraph (7) corrects grammatical errors and clarifies that the affected lines are potable or raw water lines. Additionally, the commission added new language to renumbered paragraph (7) to clarify that suction mains to pumping equipment cannot cross wastewater laterals or wastewater service lines and new language that does not allow raw water supply lines to be installed within five feet of wastewater laterals or wastewater service lines. The commission made this change as the result of a comment.

Adopted §290.45, Minimum Water System Capacity Requirements, incorporates revised wording and clarifies rule requirements. Subsection (d)(2)(B)(iii) and (iv) replace the phrase "2.0 gallons per minute per connection" with "three times the maximum demand" because the noncommunity water systems regulated under this subsection are defined as only one connection, regardless of size, making it

necessary to clarify that the system must be able to provide water to all of their consumers based on the flow rate of the system rather than the number of connections. Subsection (g) replaces the word "exceptions" with the phrase "alternative capacity requirement" throughout. Stakeholders have provided comments that the wording change is needed to make it more clear to funding agencies that meeting special capacity provisions approved by the ED constitutes compliance with the regulations. Subsection (g)(1)(F) clarifies and makes explicit the previously implicit requirement that the public water system submit documentation with any alternative capacity requirement request showing that its level of service will remain equivalent to the level of service provided under the minimum capacity requirements of this section. Subsection (g)(2) incorporates the phrase "alternative capacity requirement" to replace the word "exceptions" and makes it clear that the conditions set out in the subordinate subparagraphs and clauses applies to any minimum pressure maintenance facilities, rather than merely elevated storage. In paragraph (2)(A)(iii), the word "should" is replaced with "shall" to make the regulation more enforceable. Subsection (g)(3) clarifies that the compliance investigator may revoke any alternative capacity requirement, and if the alternative capacity requirement is revoked, the system must meet the minimum capacity requirement.

Adopted §290.46, Minimum Acceptable Operating Practices for Public Drinking Water Systems, corrects grammatical or typographical errors to provide consistency with other regulations, and to clarify requirements. Subsection (b) replaces "approved" lab with "certified" lab. Subsection (c) specifies that samples for chemical analysis are submitted to the ED. Likewise, adopted amendments clarify that the ED will provide a list of certified labs. Subsection (d) deletes the word "acceptable" because the term "acceptable" is subject to interpretation and is not defined in the rule. Subsection

(d)(1) replaces the word “facilities” with “equipment” for more specificity in the application of the rules. Subsection (d)(2) replaces the phrase “in the far reaches of” with the word “throughout” to more clearly specify where the disinfectant residuals must be maintained.

Section 290.46(e) refers to public water system operators as being “trained and licensed” rather than “certified” throughout, to correspond to new wording in the operator certification requirements of 30 TAC Chapter 30, *Occupational Licenses and Registrations*. The exemption from these requirements for nontransient, noncommunity systems is moved from subsection (e) to paragraph (7) of subsection (e). Subsection(e)(1) states the requirement that systems with 1,000 connections or less must have a single operator meeting the requirements. The requirements previously contained in subsection (e)(1)(A) - (E) are moved to the rewritten subordinate paragraphs and subparagraphs. Subsection (e)(2) states the requirement that systems with more than 1,000 connections must employ two operators at the license level given in the paragraphs which follow. Subsection (e)(3) is reorganized to more clearly describe the conditions under which a public water system must employ an operator with a given class of license. Paragraph (3)(A) contains the requirement, previously contained in paragraph (1), that a public water system using only purchased water or groundwater must employ a single Class “D” or higher operator. Paragraph (3)(B) clarifies that a system with 250 or more connections must employ a Class “C” operator, if the system uses only groundwater or purchased water. Paragraph (3)(C) clarifies that a system with 250 or more connections must employ a Class “C” Groundwater or higher operator if the system uses only groundwater. Subparagraph (C) is slightly expanded to address the current technology used for treatment of groundwater that is under direct potential of contamination from surface water. Paragraph (3)(D) expands the requirements for operator levels at systems treating

groundwater under the direct influence of surface water (GUI). Subparagraph (D)(i) contains the requirement that GUI systems using cartridge filters employ an operator with either a Class “C” or higher surface water license or a Class “C” or higher groundwater license with the addition of a four-hour Monitoring and Reporting Course. Subparagraph (D)(ii) contains the requirement that GUI systems using coagulant addition and direct filtration must employ an operator with either a Class “C” or higher surface water license or a Class “C” or higher groundwater license with the addition of a 40-hour Surface Water Production Course. Subparagraph (D)(iii) contains the requirement that GUI systems using complete surface water treatments comply with the following subparagraph. Subparagraph (D)(iv) contains the requirement that a GUI system either have an operator with a Class “C” or higher license at the plant when it is running or have automatic shutdowns and alarms. Paragraph (3)(E) sets out the required license levels for operators if a system uses surface water. Paragraph (4) states the requirements that beginning January 1, 2004, treatment facilities at all systems using chlorine dioxide must be under the direct supervision of a licensed operator that has completed additional training. The adopted language specifies that public water systems using chlorine dioxide must place those facilities under the direct supervision of a licensed operator who has a Class "C" or higher license and has completed an approved water laboratory course. Paragraph (5) contains the requirement that systems employ a certified operator to inspect any water treatment facilities prior to those facilities being placed into production. Paragraph (6) contains the requirement, previously given under paragraph (5), that a system ensure that operators have training in the use of water treatment chemicals to ensure the safety of these workers. Paragraph (7) is added to contain the exemption for transient noncommunity public water systems that do not use surface water systems, previously contained in paragraph (1).

In §290.46(f)(3)(A), the requirements for record retention for chemical use and water produced are expanded to provide clarification, and to give appropriate requirements to very small systems serving fewer than 750 people, or 250 connections. In subparagraph (A)(i), the words "each day" are deleted. Subclause (I) of clause (i) is added to contain the requirements previously implicit in clause (i), that systems that treat surface water or GUI shall record chemical use daily. Subclause (II) of clause (i) is added to require systems that serve 750 people or more, or 250 connections or more, shall record chemical use daily. Subclause (III) of clause (i) is added to require systems that serve fewer than 250 connections and use only groundwater or purchased water shall record the amount of chemicals used in a week. Under subparagraph (A)(ii), the phrase "each day" is deleted and the volume of water used is clarified in the subclauses. Subclause (I) of clause (ii) is added to contain the requirements, previously implicit in clause (i), that systems that treat surface water or GUI must record the volume of water treated daily. Subclause (II) of clause (ii) is added to require systems that serve 750 people or more, or 250 connections or more, shall record the volume of water treated daily. Subclause (III) of clause (ii) is added to require systems that serve fewer than 250 connections, fewer than 750 people, and use only groundwater or purchased water record the amount of water treated each week.

Section 290.46(f)(3)(B) is expanded to include the requirement for retention of disinfectant residual monitoring results for three years in adopted new clause (iii). Existing clauses (iii) - (v) are renumbered and adopted as (iv) - (vi). Paragraph (3)(D) is reworded to introduce the records which must be maintained as specified in the subsequent clauses. Clause (i) of subparagraph (D) is added to state that the results of microbial analysis must be maintained. Clause (ii) of subparagraph (D) is added to require retention of the results of tank inspections for five years. Subsection (f)(4) replaces the term

"Water Permitting and Resource Management Division" with the term "Water Supply Division" to reflect recent changes within the agency.

Adopted §290.46(j) adds the word "either" to the first sentence of the rule language to clarify that there are two options given in the sentence. Section 290.46(j)(4) adds the word "or" to the third sentence to make the sentence easier to read. Additionally, this subsection deletes the reference to cities, towns, and villages of less than 5,000 persons but in a change from the proposed rule language published in the February 1, 2002 issue of the *Texas Register* (27 TexReg 679) the commission added the following language to this section to comply with Opinion JC-0453 issued by the Attorney General on January 28, 2002, "which have passed an ordinance adopting one of the plumbing codes recognized by TSBPE." HB 217, Article 2, 77th Legislature, 2001, removed the language that exempted municipalities with a population of less than 5,000 from having licensed plumbing inspectors perform plumbing inspections of all new plumbing and alterations or additions to existing plumbing within the municipal limits. HB 217 did not, however, require these cities to hire a plumbing inspector. In Opinion JC-0453, issued on January 28, 2002, the Office of the Attorney General addressed the issue raised by HB 217 and concluded that a city with a population under 5,000 is not required to adopt a plumbing code, but may do so, and if such a city adopts a plumbing code under the plumbing licensing law then the city must hire or contract with a plumbing inspector. Additionally, the Plumbing Examiners Board is currently following that interpretation and advising cities to do the same.

In adopted §290.46, the commission clarified the rule language by changing the phrase “used by the system must be provided” to “ must be used by the system.” Additionally, subsection (s)(1) explicitly cites §290.42.

Adopted §290.47, Appendices, corrects a typographical error contained in the figure in subsection (f) (Appendix F). The figure contained in §290.47(g), Appendix G, corresponds with §290.46(p)(2) requirements that the public water system submit the name and license level of all the operators it employs. The figure contained in §290.47(i), Appendix I, adds dental clinics to the list of facilities that must be isolated.

In §290.47(h), Appendix H, corrects an incorrect cross-reference in the figure titled “Special Precautions Flowchart” contained in §290.47(h). The correction is made to the erroneous reference to §290.46(s) so that the flowchart correctly references §290.46(q).

In §290.47(i), Appendix I, under the Internal Protection hearing, changes “Required Assembly” to “Recommended Assembly” because while the commission has the authority to require premises isolation at the meter, the commission does not have the authority, nor do most water systems, to mandate that a property owner have all these internal devices installed beyond the meter. A system's recourse, if internal isolation is inadequate, is to have a premises isolation assembly installed at the meter to provide protection from backflow or siphonage.

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

The title of Subchapter F deletes the word "supply" in reference to public water systems. The adopted new title is "Drinking Water Standards Governing Drinking Water Quality and Reporting Requirements for Public Water Systems."

Adopted, §290.102, General Applicability, includes provisions of the SDWA contained in 42 USC, §300g-l(b)(10) that allow for two-year extensions to new MCLs or TT requirements for systems that must make capital investments to meet the new requirements. Subsection (b) simplifies the requirements for variances and exemptions. Subsection (c) references the authorizing federal legislation and sets out the starting date as January 1, 2002, and contains the specific requirements for approval of an extension. Subsection (c)(1) states the conditions under which the two-year extension may be granted. The specific conditions are: subsection (c)(1)(A), that no acute violations be associated with the MCL or TT requirement that the extension is granted for; subsection (c)(1)(B), that the extension not result in an unreasonable risk to public health; subsection (c)(1)(C), that only systems in existence prior to promulgation of a given MCL or TT may apply for an extension; subsection (c)(1)(D), that the ED determine that the capital improvements described by the system are needed if the system is to comply with the given MCL or TT; subsection (c)(1)(E), that the ED finds the system's schedule for bringing the system into compliance acceptable; and subsection (c)(1)(F), that the EPA has not already incorporated a two-year extension into the effective date for the new MCL or TT. Subsection (c)(2) requires that a request for an extension be made in writing by the owner of the water system. Subsection (c)(3) contains the authority for the ED to address similar types or classes of extension

without requiring a written request from each of the systems contained in that type or class. Adopted new subsection (d) allows any person to file a motion to overturn the ED's decision to grant or deny a variance, exemption, or extension under this section. The commission has made minor wording changes to subsection (d) from the proposal to clarify the procedures for filing a motion to overturn. Adopted new subsection (e) allows the ED to approve the schedule and method used when collecting chemical and microbiological samples required by this chapter. Existing subsection (c) is relettered as (f).

Adopted §290.103, Definitions, adds the definition of the "N,N-diethyl-p-phenylenediamine," or "DPD," method of analysis under §290.103(6) and adds a definition of the "entry point sampling site." Definitions (7) - (9) and (11) - (21) are renumbered to maintain correct alphabetical sequence.

Adopted §290.104, Summary of Maximum Contaminant Levels, Maximum Residual Disinfectant Levels, Treatment Techniques, and Action Levels, corrects three typographical errors. In subsection (b), the MCL for nitrate replaces the incorrect value of 10.0 mg/L to 10 mg/L because the test accuracy is only required to 10 milligrams and not to tenths of a milligram. The MCL for nitrite replaces the incorrect value of 1.0 mg/L to 1 mg/L because test results are only required to be accurate to milligrams and not tenths of a milligram. The MCL for combined nitrite and nitrate replaces the incorrect value of 10.0 mg/L to 10 mg/L because test results are only required to be accurate to milligrams and not to tenths of a milligram.

Adopted §290.106, Inorganic Contaminants, corrects several typographic errors and uses consistent terminology. The acronym "IOC" replaces the words "inorganic contaminants" throughout the section after the first reference in subsection (a). Adopted changes to the figure in §290.106(b), change the MCL for nitrate from the incorrect value of 10.0 mg/L to the correct value of 10 mg/L because test results are only required to be accurate to milligrams and not to tenths of a milligram. The MCL for nitrite changes the incorrect value of 1.0 mg/L to the correct value of 1 mg/L. The MCL for combined nitrite and nitrate changes the incorrect value of 10.0 mg/L to the correct value of 10 mg/L because test results are only required to be accurate to milligrams and not to tenths of a milligram. The term "entry point" replaces the words "point of entry" throughout the section for consistency with other rules, other sections of this rule, and guidance documents. Section 290.106(f)(2) corrects a typographical error and ensures consistency with the federal requirements. Subsection (f)(2) includes the clarification that compliance may be based on a single sample for nitrite, nitrate, or combined nitrite and nitrate, but that if a confirmation sample is collected, the results of both samples shall be averaged. Subparagraphs (A) - (C) of paragraph (2) are deleted to remove the ability of systems to average quarterly nitrite, nitrate, or combined nitrate and nitrite results, which is inconsistent with federal requirements and which was included in the previous rule adoption as a result of a typographical error. Subsection (f)(3) corrects a typographical error and ensures consistency with the federal requirements for inorganic contaminants other than nitrate or nitrite. Paragraph (3)(A) clarifies that the use of a single sample for compliance determination is limited to those cases in which a system is sampling annually or less frequently and a confirmation sample is not collected, consistent with the federal requirements. Paragraph (3)(B) clarifies the requirement that when a confirmation sample is collected, its results will be averaged with the results of the initial sample when determining compliance. Paragraph (3)(D) includes the federal

requirement that compliance for these contaminants be based on the running annual average of quarterly samples at each entry point, which was erroneously omitted in the previous adoption. Paragraph (3)(E) contains the federal requirement that when a single sample will cause an annual average to exceed a given MCL, the system be immediately out of compliance, which was erroneously omitted in the previous adoption.

Adopted §290.107, Organic Contaminants, clarifies rule requirements and uses consistent terminology. The term "entry point" replaces the words "point of entry" and the abbreviation "mg/L" corrects the grammatical error in the abbreviation "mg/l" throughout the section for consistency with other rules, other sections of this rule, and guidance documents. Subsection (b)(3) replaces ppm to the equivalent value in mg/L which is the standard used for drinking water. Subsection (c) replaces "pursuant to" with "under" to simplify rule language. Subsection (d) replaces "TDH Bureau of Laboratories" with "executive director" to reflect the transfer of responsibility for certifying labs from TDH to TNRCC. Subsection (e) clarifies reporting requirements for organic contaminants. This subsection clarifies that under the contract between TNRCC and the lab that performs the analysis, sample results are submitted to TNRCC, the water system must send in sample results within ten days upon request of the ED. The amendments also include the address to which sample results should be submitted. In subsection (g) the term "public drinking water program" is replaced by "executive director," and deletes the phrase referring to the title of the section to comply with formatting requirements. Subsection (h) replaces "best available technology" to the acronym "BAT" and corrects the address of where copies are to be mailed to reflect the new name of the Water Supply Division.

Adopted §290.108, Radiological Sampling and Analytical Requirements, revises the title to "Radionuclides Other Than Radon." Subsection (a) deletes the applicability to noncommunity, nontransient public water systems because the requirements of this section only apply to community water systems. Subsection (c)(3) makes explicit the sampling location requirements for radionuclides other than radon. Subsection (d) transfers responsibility for lab certification to the commission from TDH for consistency with the requirements of HB 2912, §18.02. Subsection (e) clarifies reporting requirements for radiological contaminants. This section clarifies that according to the contract between TNRCC and the lab that performs the analysis, sample results are submitted to TNRCC, the water system must send in sample results within ten days upon request of the ED. The adopted amendments also include the address to which sample results should be submitted. In subsection (g) the term "executive director" replaces "public drinking water program."

Adopted §290.109, Microbial Contaminants, clarifies rule requirements and uses consistent terminology. The term "executive director" replaces "public drinking water program" throughout the section. Subsection (e) clarifies reporting requirements for microbial contaminants. This subsection clarifies that under the contract between TNRCC and the lab that performs the analysis, sample results are submitted to TNRCC, however the water system must send in sample results within ten days upon request of the ED. The adopted amendments also include the address to which sample results should be submitted.

Adopted §290.110, Disinfectant Residuals, clarifies rule requirements, corrects typographical errors, and uses consistent terminology. Subsection (b) corrects a typographical error by replacing the word

"concentration" with "level." Subsection (b)(5)(B) makes it clear that all community and nontransient noncommunity water systems must comply with the applicability requirements for the maximum residual disinfectant levels (MRDLs) starting January 1, 2004. Subsection (c)(5) is reworded for clarity. Paragraph (5)(A) is reworded to make it clear that public water systems using only groundwater or purchased water sources and providing water to fewer than 250 connections and fewer than 750 people, must measure the disinfectant residual once a week. In the proposed rule, there was a grammatical error that has been corrected in this adopted rule. The commission has replaced the word "which" with "that" and the word "must" was moved from before the bracketed language to after the word "daily." In addition, the word "or" was replaced with "and" to maintain consistency with the requirements of the subsequent paragraph. In the proposed rule, paragraph (5)(B) was amended and reworded to clarify that public water systems using only groundwater or purchased water sources and providing water to 250 connections or 750 people, or more, must measure the disinfectant residual once a day. However, TXU Business Services commented on behalf of TXU Generation Company and TXU Mining Company LP (TXU) that the proposed language in subparagraph (A) conflicts with the proposed language in subparagraph (B) and does not meet the intent expressed in the preamble. TXU suggested language to be used to rectify the inconsistency TXU cites and while the commission declines to change the rule language to match what TXU suggested, the commission did change the rule language to read as follows: "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." New paragraph (5)(C) clarifies that public water systems that use surface water sources or groundwater under the direct influence of surface water, must measure the disinfectant residual once daily, regardless of how many

customers they serve. Paragraph (5)(D) clarifies that each time a public water system takes a bacteriological sample, it must also measure and record the disinfectant residual. Subsection (e) and paragraph (1) of subsection (e) replace the term "public drinking water program" with "executive director." In subsection (e)(2), the term "TNRCC" is replaced with the term "commission." Additionally in paragraph (2), the Surface Water Monthly Operating Report submittal form number is corrected from 01020 to 0102C. Subsection (e)(3) states the reference to the Chlorine Dioxide Monthly Operating Report and specifies that the correct form number be included. Subsection (f)(4) updates the citation to subsection (c)(3)(C) to the cited material's new location, §290.110(c)(2)(B)(iii). Subsection (f)(9) meets the federal rule requirement that if a public water system's failure to monitor makes it impossible to determine compliance with the MRDL in the distribution system, then the system has committed a violation for the entire year covered by the annual average. Subsection (g) replaces the term "public drinking water program" with "executive director."

Adopted §290.111, Turbidity, corrects typographical errors, uses consistent language, and clarifies rule requirements. Subsection (b)(1)(A)(ii) corrects a typographical error by replacing the word "or" with "of." Subsection (d)(1) replaces the reference to general nephelometric turbidity methods with the more specific reference to the standard method which sets out the acceptable analytical methods. Subsection (e)(1) makes the regulation comply with federal rules that require a public water system to notify the ED if the turbidity level in the treated water exceeds 1.0 nephelometric turbidity units (NTU) and replaces the term "public drinking water program" with "executive director." In subsection (e)(2), the term "TNRCC" is replaced with "commission" and the Surface Water Monthly Operating Report submittal form number is corrected from 01020 to 0102C. The correct form number for the Filter

Profile Report for Individual Filters (10276) is added to subsection (e)(3). The correct form number for the Filter Assessment Report for Individual Filters (10277) is added to subsection (e)(4). The correct form number for the Request for Compliance CPE (10278) is added to subsection (e)(5). The term "public drinking water program" is replaced with "executive director" in subsection (g)(1) - (3). In subsection (g)(1) the words, "and the water system customers of the acute violation" were moved after the words, "executive director" to clarify that the public water system must notify both the ED and the water system customers of the acute violation by the next business day. Additionally, the citation to boil water notices is corrected from §290.46(s)(4) to §290.46(q). In the proposed rule, this citation was erroneously cited as §290.46(q)(3).

Adopted §290.112, Total Organic Carbon (TOC), clarifies rule requirements, corrects typographical errors, and uses consistent terminology. Subsection (b)(3) and subparagraph (B) of paragraph (3) are reworded to replace the term "public drinking water program" with "executive director." Subparagraph (B) corrects a typographical error. In subsection (c)(1), the phrase "between one and eight hours after" replaces "within one hour of" to be consistent with the intent that the water taken for use as the finished water sample most clearly represent the source water quality at the time the source water sample was taken after treatment. Subsection (e)(2) corrects the reference to the form name and number. Subsection (e)(3)(F) is deleted because it was erroneously included in the previous rule. Paragraph (3)(G) is renumbered because of the deletion of paragraph (3)(F). Subsection (g)(1) replaces the term "public drinking water program" with "executive director."

Adopted §290.113, Disinfection By-products (TTHM and HAA5), inserts the term "executive director" and clarifies rule requirements. Subsection (a)(2) clarifies that all community and nontransient, noncommunity water systems must comply with the requirements of this section effective January 1, 2004. In subsection (d) the term "executive director" replaces "TDH Bureau of Laboratories" in response to the change of authority over lab certification contained in HB 2912. Subsection (e) clarifies reporting requirements for trihalomethanes and haloacetic acids (group of five). Subsection (e) clarifies that under the contract between TNRCC and the lab that performs the analysis, sample results are submitted to TNRCC, however the water system must send in sample results within ten days upon request of the ED. The adopted amendments also include the address to which sample results should be submitted. Subsection (f)(7) meets the federal rule requirement that if a public water system's failure to monitor makes it impossible to determine compliance with the MCL in the distribution system, then the system has committed a violation for the entire year covered by the annual average. In subsection (g) and paragraph (1) of subsection (g) the term "executive director" replaces "public drinking water program."

Adopted §290.114, Disinfection By-products Other than TTHM and HAA5, revises the title to "Other Disinfection By-products (Chlorite and Bromate)." Revisions have been made in this section to insert the term "executive director" where appropriate and to clarify rule requirements. In subsection (a)(3)(C), the term "executive director" replaces "TDH Bureau of Laboratories" in response to the change of authority over lab certification contained in HB 2912. Subsection (a)(4) clarifies reporting requirements for chlorite. Paragraph (4)(A) corrects the form number, specifies that the form must be submitted by the tenth day of the month following the end of the reporting period, and deletes the

address for submission of data, which has been moved to paragraph (4)(C). Paragraph (4)(B) provides the specific citation for analyses covered by the reporting requirements. Paragraph (4)(C) includes the address for submission of data, previously contained in paragraph (4)(A). In subsection (a)(6) and subparagraph (A) of subsection (a)(6), the term "executive director" replaces "public drinking water program." Subsection (b)(4) clarifies that under the contract between TNRCC and the lab that performs the analysis, sample results are submitted to TNRCC, however the water system must send in sample results within ten days upon request of the ED. The adopted amendments also include the address to which sample results should be submitted. Existing paragraphs (4) and (5) are renumbered to paragraphs (5) and (6) respectively, to maintain correct numbering after the addition of new paragraph (4). Additionally, in paragraph (6), the term "executive director" replaces "public drinking water program."

Adopted §290.115, Transition Rule for Disinfection By-products, revises the title by adding "(TTHM)" to the title, so the new title is "Transition Rule for Disinfection By-products (TTHM)." Throughout this section, the adopted amendments insert the term "executive director" and clarify rule requirements. In subsection (c)(2) - (6), the term "executive director" replaces "public drinking water program." Also, paragraph (4) deletes the requirement to send reports of analyses within 30 days of receipt of the results because this requirement is no longer necessary. In paragraph (7), the term "executive director" replaces "TDH Bureau of Laboratories" in response to the change of authority over lab certification resulting from HB 2912. Paragraph (8) is added to clarify that under the contract between TNRCC and the lab that performs the analysis, sample results are submitted to TNRCC, however the water system

must send in sample results within ten days upon request of the ED. The adopted amendments also include the address to which sample results should be submitted.

Adopted §290.117, Regulation of Lead and Copper, amended for consistency, corrects grammatical errors, and incorporates provisions of the federal Lead/Copper Minor Revisions Rule, (65 FR 1949 - 2015, January 12, 2000). Subsection (a)(2)(B) deletes the word "satisfactorily" to simplify enforcement procedures. Subsection (a)(3) clarifies the calculation of a ninetieth percentile when only five compliance samples are collected during a sampling period and replaces the incorrect abbreviation "mg/l" with grammatically correct "mg/L."

In §290.117(b), the word "sample" is added to clarify the applicability of site selection and amends the word "materials" to make a grammatical correction. Paragraph (1) replaces the term "entry point" for "point-of-entry" for consistency. An additional sentence accurately reflects that public water systems must submit a sample site plan for agency approval before starting to sample for lead and copper. Paragraph (2) makes a grammatical correction to the word "materials," and replaces the word "sample" with "sampling" to correct a grammatical inconsistency. The term "executive director" replaces "public drinking water program." This subsection also eliminates a reference to deleted Table 2. Additionally, this subsection clarifies the reference to procedures required by 40 CFR §141.86 and replaces the word "sample" with the word "sampling" to correct a grammatical inconsistency in two places. The word "information" replaces "correspondence" and the term "sampling site selection document" replaces "materials survey document" to maintain a consistent title for the same document. Paragraph (3) is added to clarify the requirement that a system must collect a specified number of

samples even if none of the sites meet the preferred specifications of 40 CFR §141.86. Paragraph (3) clarifies the term "representative site."

Section §290.117(c)(1) adds the term "one quart" to clarify the sampling requirement volume stated as "one liter." This subsection adds a sentence about kitchen tap to provide directive to systems as to which part of the house is preferred for sampling compliance for consistency with 40 CFR §141.86. The word "sample" is added for clarification in the last sentence. Paragraph (2) removes a clause forbidding a water system to challenge the accuracy of sampling results based on errors in sample collection for consistency with 40 CFR §141.86. Paragraph (3) adds the word "sampling" in two places to clarify the sampling site. Paragraph (5) corrects a grammatical error and makes the redundant term "systems" singular and adds the requirement of at least two sets of initial samples instead of one set for consistency with the requirements of 40 CFR §141.86. Additionally, this paragraph adds the word "initial" to clarify what samples the section is referring to. Finally, this paragraph deletes the phrase "each of" for grammatical simplification and adds language to allow for grants of sampling waivers. Paragraph (8) deletes the obsolete date references for initial monitoring during the first eight years of the rule implementation along with the corresponding obsolete Table 2. A procedural statement replaces this language for bringing new systems into the sampling schedule.

Section 290.117(d) corrects a reference to §290.117(a)(3). Section 290.117(e)(4) adds required federal language from 40 CFR §141.86(d)(4)(v), allowing for accelerated reduced monitoring. This allows a system to advance to triennial monitoring one year faster if the ninetieth percentile levels for lead and copper meet federal guidelines. The language regarding public education requirements and the

requirement to complete a full round of sampling during a reduced round if an exceedance is calculated at the reduced sampling level is proposed to be deleted because it is redundant. Subsection (e)(5) replaces outdated language with the federal language from 40 CFR §141.86(d)(4)(v) for an accelerated reduced monitoring. A new subsection (f) is adopted to incorporate new federal language from 40 CFR §141.86(q) regarding invalidation of certain lead and copper tap samples. Existing subsection (f) is relettered as subsection (h).

Adopted new §290.117(g) directly incorporates language from 40 CFR §141.86(g) allowing for waivers to systems meeting lead-free and copper-free plumbing criteria that have completed one round of lead and copper tap sampling without exceeding 0.005 mg/L lead or 0.650 mg/L copper at the ninetieth percentile. Lead and copper sampling for such systems will only be required every nine years. The requirements previously contained in subsection (g) are contained in subsection (i).

Section 290.117(h) contains requirements previously contained in subsection (f). Subsection (h)(1)(B) clarifies compliance sampling time constraints for samples to be processed. Additionally, subsection (h)(1)(B) adds the term “monitoring and reporting” for grammatical clarification. Subparagraphs (D) and (F) of paragraph (1) correct all references to Table 2 because the tables have been renumbered. Paragraph (1)(F) replaces the term “biweekly” with “every two weeks.” Additionally, this paragraph clarifies the size ranges for rule applicability in subparagraphs (H) - (J) of paragraph (1). Paragraph (1)(J) adds stipulations regarding a large system’s lead and copper values and water quality parameter data before a large system may advance to triennial reporting for water quality parameter reports. Paragraph (1)(M) is added to reflect federal rule guidelines in 40 CFR §141.86 for entry points for

water quality parameter reporting. Paragraph (1)(N) incorporates federal rule requirements of 40 CFR §141.87(e)(4) for large water systems which stipulate that excursions from approved water quality parameters crucial to corrosion control will require that the system return to quarterly monitoring of water quality parameters for at least one year. Paragraph (1)(O) incorporates federal requirements of 40 CFR §141.87(d), which outlines the procedure for granting a reporting waiver for water quality parameters in small and medium water systems. Paragraph (1)(P) incorporates the requirement that water quality parameter ranges must be set by the public water system or EPA, with state approval. Paragraph (1)(Q) incorporates the federal rule requirements in 40 CFR §141.86, that water systems operate their corrosion control treatment within approved water quality parameters ranges at all times.

Adopted amendments to §290.117(h)(2)(A) eliminate redundant requirements for source water testing under the federal lead/copper rule by using the lead and copper values obtained through the normally scheduled inorganic SDWA compliance sampling. Paragraph (2) also incorporates the federal definition of a large water system with optimized corrosion control from 40 CFR §141.81(b)(3). The language in paragraph (2)(E) supports the elimination of redundant source water sampling requirements for lead and copper. Paragraph (2)(F) incorporates federal language from 40 CFR §141.81(b)(3)(iii) requiring a water system to notify the state prior to making any changes to the corrosion control treatment.

Section 290.117(i) contains the requirements previously contained in §290.117(g). The material formerly contained in §290.117(i) is moved to §290.117(k) and changed to incorporate new federal provisions. In the title, the term “requirements” replaces “procedures” for accuracy. The phrase “at

the ninetieth percentile tap sample" replaces "based on first draw tap water sampling" for consistency with federal requirements. The word "as" is removed for grammatical clarification. The phrase "and according to" replaces "in accordance with" to correct the grammar. The word "stated" is removed for grammatical clarification. The last sentence clarifies the requirements and reference to §290.117(i) and incorporates the reporting requirements of 40 CFR §141.85(c)(8). Section 290.117(i)(2) clarifies the size of the water system described in the requirements of paragraph (2). Paragraph (2)(A) adds the word "water" for clarification and adds language allowing delivery by separate mailing. In subparagraphs (A) - (D) of paragraph (2), the first word in each sentence is no longer capitalized for grammatical accuracy. The existing language in subparagraph (E) is moved to new subparagraph (H) and incorporates federal language from 40 CFR §141.86(c)(8) allowing certain systems to eliminate the requirements of §290.117(i)(2)(D). Paragraph (2)(F) incorporates federal language of 40 CFR §141.86(c)(8) that allows certain systems to forego the requirements of §290.117(i)(2)(B) - (D). Paragraph (2)(G) incorporates federal language from 40 CFR §141.86(c)(8) allowing systems without lead service lines to eliminate language in the federal Public Education Materials pertaining to lead service lines. Subparagraph (G) uniformly incorporates the requirements of the federal language found in 40 CFR §141.85(a) and requires that public education documents be written in language that can be "easily understood." Paragraph (2)(H) contains the statement moved from §290.117(i)(2)(E). In §290.117(i)(3), a citation reference is replaced with the new CFR citation. In compliance with the federal language of 40 CFR §141.85(c)(4), a sentence is added to paragraph (3)(B) to allow for Internet postings where applicable. Paragraph (3)(C) contains federal language from 40 CFR §141.85(a)(2) allowing nontransient, noncommunity systems to alter public education language as applicable. Some of the contents of subparagraph (C) are moved to a new subparagraph (D) for continuity.

Section 290.117(j) contains the existing requirements contained in subsection (h) relating to corrosion control. The existing material contained in §290.117(j) is moved to subsection (l). Subsection (j)(1) incorporates new federal language of 40 CFR §141.82(g) outlining water quality parameter monitoring compliance periods. Subparagraphs (A) - (C) of paragraph (1) incorporate the designated methods for calculating daily water quality parameters values from 40 CFR §141.82(g). Subsection (j)(2) provides guidelines for large water systems that exceed the lead or copper action level during a reduced monitoring period since all the deadlines covered in the first part of paragraph (2) have elapsed. Subsection (j)(3) includes new federal language from 40 CFR §141.81(b)(3)(v) for medium and small systems if they exceed the lead or copper action level during a reduced monitoring period. The term "executive director" replaces "Public Drinking Water program" and "state" in subsection (j)(4).

Section 290.117(k) contains the existing requirements contained in §290.117(i) relating to lead service line replacement. The existing subsection (k) is relettered as subsection (m). Subsection (k)(1) replaces the term "in first-draw" with "during follow up," and incorporates new federal language from 40 CFR §141.84(b) regarding when lead service line replacement must begin. Subsection (k)(2), is deleted. Paragraph (3) is renumbered as paragraph (2) and incorporates new federal requirements of 40 CFR §141.84(d)(1), relating to notification for residents served by lead service lines scheduled for replacement.

Section 290.117(l) is added to contain the requirements previously contained in §290.117(j), relating to analytical and sample preservation methods. The term "or the commission" is added to the list of agencies who may certify labs for consistency with HB 2912 which transfers lab certification from TDH

to the commission. Subsection (l)(2) adds the requirements for the laboratory's maximum detection limits, as contained in 40 CFR §141.89(a)(1)(iii). Subsection (l)(5) maintains general consistency with federal requirements by deleting language requiring the commission to supply laboratory submission forms. Subsection (l)(6) is deleted to remove the requirement for the commission to supply the water system with lead and copper sampling bottles.

Section 290.117(m) is added to contain the requirements previously contained in §290.117(k), relating to reporting and recordkeeping requirements. Section 290.117(m)(1)(A) adds a deadline for submitting water quality parameters reports to the ED for consistency with 40 CFR §141.90(a)(1). Paragraph (l)(B) replaces the term "TDH" with the word "approved" in order to comply with HB 2912. New language provides for cases of delinquent water system accounts at the laboratory. New language also provides for the time lag between sample submission to the laboratory and when the data is released to the agency. The last sentence of paragraph (1)(B) is moved to paragraph (1)(G). In paragraph (1)(E), the reference to subsection (i) is changed to (k). In paragraph (1)(F), the reference to subsection (g) is changed to (i). Paragraph (1)(G) adds new federal language from 40 CFR §141.90(a)(1)(ii) related to sample sites used in subsequent sampling rounds. A sentence from paragraph (l)(B) is transferred here. New federal language from 40 CFR §141.90(a)(1)(ii) regarding site invalidation is added to paragraph (l)(G) and the last sentence is deleted.

Adopted §290.118, Secondary Constituent Levels, is amended for consistency and clarification. Subsection (c) is reworded to clarify that all public water systems must measure secondary constituents and replaces the term "point of entry" with "entry point," throughout.

Adopted §290.119, Analytical Procedures, replaces in subsection (a) the term "TDH Bureau of Laboratories" with "executive director" in response to the change of authority over lab certification resulting from HB 2912. Subsection (b)(8) adds the method for total organic carbon analysis to the list of methods.

Adopted §290.121, Monitoring Plans, replaces in subsection (c)(1) and (2) the term "public drinking water program" with "executive director." Subsection (c)(3) clarifies that every public water system must have developed a monitoring plan by January 1, 2004, but that they only need to submit it to the commission when requested to do so. Subsection (c)(4) replaces the term "public drinking water program" with "executive director" and the word "the" is omitted.

Adopted §290.122, Public Notification, incorporates the requirements of the federal Public Notice Rule (40 CFR Parts 9, 141, and 142), reorganizes for clarity, and corrects various typographical errors. The section provides a new subsection (d) that will contain general notification requirements that apply to all levels of notification. Subsection (a) adds a citation to new subsection (d) containing general requirements, and deletes language that is now contained in subsection (d). The citation to the nitrate and nitrite MCLs in subsection (a)(1)(C) is corrected. Subsection (a)(l)(E) is added to include requiring public notice in the event of a waterborne disease outbreak in accordance with federal requirements. The material previously contained in subparagraph (E) is relettered as subparagraph (F). The material currently contained in subsection (a)(2) is moved to subsection (d). The material currently contained in paragraph (3) is renumbered to paragraph (2). New subsection (a)(2) includes the word "initial" to differentiate between ongoing and initial notification requirements and reorganized into subparagraphs.

These subparagraphs include the federal requirement that acute notice be given within 24 hours. New paragraph (2)(A) includes the requirement for boil water notices and to add the citation to §290.46(s) relating to special precautions. The material previously contained in subparagraphs (A), (B), and (C) is relettered as subparagraphs (B), (C), and (D), respectively. Paragraphs (4) and (5) of subsection (a) are renumbered as paragraphs (3) and (4), respectively. Subsection (a)(5) is added to require submission of copies of notification documents to the ED within ten days of distribution.

Section 290.122(b) clarifies the conditions for which non-acute notification is required to include MRDLs and variance and exemption violations. The material related to general requirements for notice are moved to subsection (d) and a reference to subsection (d) is added. Subsection (b)(1) initiates the list of violations that require non-acute notifications and the material previously contained in paragraph (l) is moved to subsection (d). Subsection (b)(l)(A) includes the requirement for notification in the event of a violation of an MCL, MRDL, or TT with non-acute potential health effects, and the material previously contained in subparagraph (A) is moved to subsection (d). Subsection (b)(1)(B) includes the requirement for notification if a system fails to comply with the requirements of a variance, exemption or extension, and the material currently contained in subparagraph (B) is moved to subsection (d). Subsection (b)(1)(C) sets out the requirement for notification for other circumstances deemed to have a non-acute health effect, and the material currently in subparagraph (C) is moved to subsection (d). Subsection (b)(2) is reworded to clarify that non-acute notice is required for all conditions listed in the subsection, and to conform with the federal requirement that non-acute notice be given within 30 days of the occurrence.

Adopted §290.122(c) changes the word "which" to "who" in the first sentence to clarify that it is the owner or operator who fails to monitor, not the system, and includes a citation to subsection (d), containing general requirements for notices. Subsection (c)(1) contains the list of circumstances under which systems must give other notice and the material currently contained in paragraph (l) is moved to subsection (d). In response to a comment that noted that the wrong word was contained in the proposed rule in §290.122(c)(1)(A), the commission has changed the word "chloride" to "fluoride." Additionally, the material currently contained in subparagraph (A) is moved to subsection (d). Subsection (c)(1)(B) includes the need for notice in case of failure to perform required monitoring or reporting and the material currently contained in subparagraph (B) is moved to subsection (d). Subsection (c)(1)(C) includes the need for notice in case of noncompliance with analytical or procedural requirements and the material currently contained in subparagraph (C) is moved to subsection (d). New subsection (c)(1)(D) sets out the requirement for notification for systems operating under a variance or exemption. Subsection (c)(3)(A) allows repeat notification to be given using the Consumer Confidence Report and requires repeat notice to be issued every 12 months, in accordance with federal requirements.

Adopted new §290.122(d) adds the general requirements for all notices. Subsection (d)(1) contains the requirement that the notice be given in clear and readily understandable language, that it not be in small type, and that it not be designed in a manner that will frustrate the intent of the notice. Subsection (d)(2) contains the requirement that the notice state the time an event occurred, if notice is given for a specific event. Subsection (d)(3) contains the requirement that notices describe potential adverse health effects. Subsection (d)(3)(A) requires and cites the mandatory notification language contained in 40

CFR §141.32. Subsection (d)(3)(B) requires that the notice describe the population at risk. Subsection (d)(4) contains the requirement that the notice include a description of the system's actions to correct any violations. Subsection (d)(5) contains the requirement that the notice describe what actions citizens should take, such as obtaining other potable water or seeking medical help. Subsection (d)(6) contains the requirement that the notice contain a phone number for additional information. Subsection (d)(7) contains the requirement that, where appropriate, the notice be multilingual. In response to a comment, the commission has added a new paragraph (8) to subsection (d) that reads: "The notice shall include a statement to encourage the notice recipient to distribute the public notice to the other persons served." Subsection (e) is relettered to contain the material currently contained in subsection (d). Subsection (f) is relettered to contain the material currently contained in subsection (e) and is reworded to clarify that a copy of any notification must be sent to the ED within ten days of the notification.

FINAL REGULATORY IMPACT ANALYSIS DETERMINATION

The commission reviewed the adopted rulemaking in light of the regulatory analysis requirements of Texas Government Code, §2001.0225, and determined that the rulemaking is not subject to §2001.0225 because it does not meet the definition of a "major environmental rule" as defined in the act. 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. The intent of the rules is primarily to make technical and grammatical corrections to Subchapters D and F; therefore, this rulemaking does not meet the definition of a "major environmental rule." Furthermore, the rulemaking does not meet any of the

four applicability requirements listed in §2001.0225(a). Specifically, the adopted rules do not exceed a federal standard, exceed an express requirement of state law, nor exceed a requirement of a delegation agreement. The adopted rules were not developed solely under the general powers of the agency, but were specifically developed under Texas Health and Safety Code (THSC), §341.031(a), which allows the commission to adopt and enforce rules to implement the SDWA. The purpose of the adopted rules is to make state rules conform to federal IESWTR and the Stage 1 DBPR as required by federal law, and the regulations under 40 CFR Parts 9, 141, and 142. In addition to these corrections, the commission adopts revisions to incorporate the federal Public Notification Rule (65 FR 25981, May 4, 2000), incorporates the federal Lead/Copper Minor Revisions Rule (65 FR 1949, January 12, 2000), and adopts language from SDWA, 42 USC, §300g-1(b)(10), allowing two-year extensions to the effective dates for new regulations for MCLs and TT requirements when capital improvements are necessary to comply with the rule revisions.

TAKINGS IMPACT ASSESSMENT

The commission evaluated these adopted rules and performed a final assessment of whether they constitute a takings under Texas Government Code, Chapter 2007. The purpose of this rulemaking is to make state rules conform to federal IESWTR and the Stage 1 DBPR as required by federal law (SDWA) and the regulations under 40 CFR Parts 9, 141, and 142 by correcting technical and grammatical errors. In addition to these corrections, the commission adopts revisions to incorporate the federal Public Notification Rule (65 FR 25981 - 26049, May 4, 2000), incorporates the federal Lead/Copper Minor Revisions Rule (65 FR 1949 - 2015, January 12, 2000), and adopts language from SDWA, 42 USC, §300g-1(b)(10), allowing two-year extensions to the effective dates for new

regulations for MCLs and TT requirements when capital improvements are necessary to comply with the rule revisions. The adopted rules also implement HB 217 and HB 2912, §18.02, 77th Legislature, 2001. Promulgation and enforcement of these rules will constitute neither a statutory nor a constitutional taking of private real property. There are no burdens imposed on private real property under this rulemaking because the adopted rules neither relate to, nor have any impact on the use or enjoyment of private real property, and there is no reduction in value of the property as a result of this rulemaking.

CONSISTENCY WITH THE COASTAL MANAGEMENT PROGRAM

The commission reviewed the adopted rulemaking and found that the rules are neither identified in Coastal Coordination Act Implementation Rules, 31 TAC §505.11, relating to Actions and Rules Subject to the Texas Coastal Management Program, nor will they affect any action or authorization identified in §505.11. Therefore, the adopted rules are not subject to the Coastal Management Program.

HEARING AND COMMENTERS

A public hearing was held on February 19, 2002, at 10:00 a.m. In Room 2210, Building F, at 12100 Park 35 Circle, Austin. One individual provided oral comments at the hearing. The following provided oral comments and/or written comments during the comment period: BAC-FLO Unlimited (BAC-FLO); City of Austin (Austin); City of College Station (College Station); City of Fort Worth (Forth Worth); East Texas Irrigation Association (ETIA); Trinity River Authority of Texas (TRA);

TXU Business Services on behalf of TXU Generation Company and TXU Mining Company LP (TXU); and thirty-two individuals.

All the commenters suggested changes to the proposal as stated in the RESPONSE TO COMMENTS section of the preamble; regarding the commission's proposed language in §290.46(f)(3)(A)(i)(III) and (ii)(III), TXU commented that it supports the changes to recordkeeping requirements for small public water systems. While many of the commenters recommended changes to the proposed rules, no commenter expressly opposed this rulemaking.

RESPONSE TO COMMENTS

General

BAC-FLO commented that, "…the backflow protection on irrigation systems are generally not tested periodically and not maintained in a working condition due to the lack of enforcement." BAC-FLO recommended mandating periodic testing of backflow prevention assemblies as required in national guidelines and plumbing codes. Additionally, ETIA and 32 individuals commented that "periodic backflow assembly testing requirements . . . should be enacted to protect the public drinking water supply."

Response

No change has been made as a result of this comment. The commission agrees in part with this comment but has determined that this suggestion is beyond the stated scope of this rulemaking. The commission also determined that if it made this recommended change, it would have a

significant impact on those regulated by this chapter as well as on individuals with landscape irrigation systems who are not now required to have this testing performed. Because the suggested language was not included in the rule proposal published in the February 1, 2002 issue of the *Texas Register* (27 TexReg 679), the potentially affected individuals would be denied the opportunity to comment on this change. This comment may have merit and will be considered for inclusion when this section is next opened for revision.

EITA and 32 individuals further commented that sales of backflow assemblies should be limited to individuals or companies that are properly licensed to install or repair these devices, like plumbers, irrigators, and backflow assembly testers.

Response

No change has been made as a result of this comment. The commission determined that it does not have legislative authority and jurisdiction to restrict the in-state sales of backflow assemblies to only licensed plumbers, irrigators and backflow assembly testers.

Subchapter D, Rules and Regulations for Public Water Systems

Regarding proposed §290.44(e)(6), College Station commented that because the commission has added a definition for "service line" to the proposed rule, §290.44(e)(6) should be rewritten to change the word "or" between "main" and "lateral" to a comma and to include the words "or service line" after the word "lateral."

Response

The commission agrees with this comment, however declines to change the rule language as suggested by College Station. Instead, the commission revised the rule language in §290.44(e)(6) to read: "Fire hydrants shall not be installed within nine feet vertically or horizontally of any wastewater main, wastewater lateral or wastewater service line regardless of construction."

Regarding §290.44(e)(7), College Station commented that because the commission added a definition for "service line" to the proposed rule, §290.44(e)(7) should be rewritten to include the words "or service lines" after the word "laterals" at the end of the first sentence and the words "or service" between the words "lateral" and "line" at the end of the second sentence.

Response

The commission agrees with this comment and while the commission declines to use the language suggested by the commenter, the commission has added new language to paragraph (7) to clarify that suction mains to pumping equipment cannot cross wastewater laterals or wastewater service lines and new language that does not allow raw water supply lines to be installed within five feet of wastewater laterals or wastewater service lines.

Regarding §290.45(e), TRA requested that the commission add a new paragraph (4) stating, "For wholesalers the preferred method of delivery to ground storage tanks is through an Air Gap."

Response

The commission does not agree that §290.45(e) should be modified to incorporate the suggested language. The suggested language would establish a recommended practice rather than a minimum design standard and, consequently, would be essentially unenforceable. Furthermore, the commission has not determined that the proposal is a universally appropriate recommendation. Both the supplier and the purchaser are public water systems that must meet minimum regulatory standards for design, operation, and maintenance and, consequently, the supply connection between the two systems should pose no immediate threat to either of them. Some other means of backflow prevention may be appropriate in some cases where water from different sources is blended within the storage tank. For example, the wholesaler may prefer to provide backflow prevention if the water being delivered is used to reduce an elevated fluoride level in the water produced by the purchaser's wells. However, even in these cases, the maintenance of an air gap is not the only available method of protecting against backflow. No change was made in response to this comment.

Regarding §290.46(f)(3)(A)(i)(III) and (ii)(III), TXU commented that it supports the changes to recordkeeping requirements for small public water systems.

Response

The commission appreciates the comments offered in support of the proposed regulatory changes and is adopting §290.46(f)(3)(A)(i)(III) and (ii)(III) as proposed.

Regarding §290.46(s)(2)(B)(i), TRA requested that between the words "standards" and the word "shall" the commission add the words ", if used," to this subparagraph. Regarding §290.46(s)(2)(B)(ii), TRA requested that between the word "with" and the word "secondary" the commission add the words "primary or" to this subparagraph.

Response

The current rule requires benchtop turbidimeters with primary standards to be calibrated at least once every 90 days and secondary standards to be restandardized each time the turbidimeter is calibrated with primary standards, only if the plant is using secondary standards. If a plant does not use secondary standards, the requirement does not apply. This comment may have merit and will be considered for inclusion when this section is next opened for revision. No change was made as a result of this comment.

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

Regarding §290.110(c)(5)(A) and (B), TXU commented that the proposed language in subparagraph (A) conflicts with the proposed language in subparagraph (B) and does not meet the intent expressed in the preamble. TXU suggests the language be changed to the following in §290.110(c)(5)(B): "Public water systems that use groundwater or purchased water sources only and serve 250 or more connections or 750 or more people daily, must monitor the disinfectant residual at least once per day…."

Response

The commission agrees with TXU's comment and has changed the rule language in §290.110(c)(5)(B) to read: "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."

Regarding §290.112, Fort Worth commented that if a system is using a disinfection process such as ozonation or ultraviolet light, the system should get credit, and should be exempt from meeting the TOC reduction. Forth Worth also commented that a system should also be exempt from regulations concerning enhanced coagulation if the THMs measured are below MCL. Finally, Fort Worth commented that these suggested provisions would avoid unnecessary chemical costs.

Response

The suggested changes are inconsistent with EPA regulations. The federal Stage 1 Disinfectants and Disinfection By-products Rule was based on analysis of conventional systems, including the use of chlorine as a disinfectant. However, the federal rule does not allow systems that use unconventional disinfectants or coagulants to be exempt from the TOC reduction requirements, so no rule change is made in response to these comments.

Regarding §290.122(c)(1)(A), Austin commented that the proposed rule states "that notification will be required for 'exceedance of the SCL for chloride.'" The commenter asks if the commission actually meant "fluoride" and not "chloride."

Response

The commission agrees with this comment and in §290.122(c)(1)(A) has changed the word "chloride" to "fluoride."

Regarding §290.122(d), Fort Worth commented that "in accordance with federal regulations, paragraph 141.205, a content of the public notice for violations includes: 'A statement to encourage the notice recipient to distribute the public notice to other persons served, using the standard language under paragraph (d)(3) of this section.'" Fort Worth stated that this statement did not appear to be included in the proposed rules.

Response

The commission agrees with this comment and has added a new paragraph (8) to §290.122(d): "The notice shall include a statement to encourage the notice recipient to distribute the public notice to the other persons served."

SUBCHAPTER D: RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS

§§290.38, 290.39, 290.41, 290.42, 290.44 - 290.47

STATUTORY AUTHORITY

The amendments are adopted under Texas Water Code (TWC), §5.103, which provides the commission the authority to adopt and enforce rules necessary to carry out its powers and duties under the laws of this state; and under THSC, §341.031, which allows the commission to adopt rules to implement the SDWA, 42 USC, §§300f *et seq*.

§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) **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.

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

(3) **Approved laboratory** -- A laboratory certified and approved by the commission to analyze water samples to determine their compliance with maximum allowable constituent levels.

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

(5) **ASTM standards** -- The standards of the American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19102.

(6) **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.

(7) **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.

(8) **Certified laboratory** -- A laboratory certified by the commission to analyze water samples to determine their compliance with maximum allowable constituent levels.

(9) **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.

(10) **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.

(11) **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.

(12) **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.

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

(15) **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.

(16) **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.

(17) **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 Supply Systems).

(18) **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.

(19) **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.

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

(21) **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.

(22) **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.

(23) **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.

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

(25) **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.

(26) **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.

(27) **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.

(28) **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.

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

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

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

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

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

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

(35) **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.

(36) **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.

(37) **psi** -- Pounds per square inch.

(38) **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.

(39) **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.

(40) **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.

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

(42) **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.

(43) **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.

(44) **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.

(45) **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 Natural Resource Conservation Commission, Water Supply Division, MC 155, P.O. Box 13087, Austin, Texas 78711-3087.

(46) **Public health engineering practices** -- Requirements in these sections or guidelines promulgated by the executive director.

(47) **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.

(48) **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.

(49) **Sanitary survey** -- 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.

(50) **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.

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

(52) **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.

(53) **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.

(54) **Uniform Fire Code** -- The standards of the International Conference of Building Officials, 5360 Workman Mill Road, Whittier, California, 90601-2298.

(55) **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.

(56) **Wastewater main** -- Any pipe or constructed conveyance which receives flow from one or more wastewater laterals.

§290.39. General Provisions.

(a) Authority for requirements. The Texas Health and Safety Code, Chapter 341, Subchapter C prescribes the duties of the commission relating to the regulation and control of public drinking water systems in the State. These statutes require 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 Health and Safety Code §341.035(d). The statutes also require 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.

(b) Reason for these sections and minimum criteria. These sections have 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 a 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 one-half mile of the corporate boundaries of a district, or other political subdivision providing the same service; or within one-half 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.

(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 these sections 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 should be submitted to the Texas Natural Resource Conservation Commission, 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 wellsite 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 transferrable. The bond shall be retained by the owner and transferred when a change in ownership occurs.

(4) Copies of each fully executed sanitary control easement shall be provided to the executive director prior to placing the well into service. Each original easement document must be

recorded in the deed records at the county courthouse. See §290.47(c) of this title (relating to Appendices) for 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 Texas Water Code, §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 Texas Water Code, §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 Texas Health & Safety Code, Chapter 361 or 382 or Texas Water Code, 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.

(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 (relating to Minimum Water System Capacity Requirements); and

(E) any other material changes specified by the executive director.

(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 must include 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 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 these regulations 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 these sections 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.

(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 (relating to Definitions).

(n) The commission may require the owner or operator of a public drinking water supply system that was constructed without the approval required by Texas Health & Safety Code, §341.035, that has a history of noncompliance with Texas Health and Safety Code, 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. 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. The form of the financial assurance will be as specified in Chapter 37, Subchapter O of this title (relating to Financial Assurance for Public Drinking Water Systems and Utilities), and will be as specified by the executive director.

(3) 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 (relating to Financial Assurance for Public Drinking Water Systems and Utilities), and released only with the approval of the executive director.

§290.41. Water Sources.

(a) Water quality. The quality of water to be supplied must meet the quality criteria prescribed by the commission's drinking water standards contained in Subchapter F of this chapter (relating to the Drinking Water Standards Governing Drinking Water Quality and Reporting Requirements for Public Water Supply Systems).

(b) Water quantity. Sources of supply, both ground and surface, shall have a safe yield capable of supplying the maximum daily demands of the distribution system during extended periods of peak usage and critical hydrologic conditions. The pipe lines and pumping capacities to treatment plants or distribution systems shall be adequate for such water delivery. Minimum capacities required are specified in §290.45 of this title (relating to Minimum Water System Capacity Requirements).

(c) Groundwater sources and development.

(1) Groundwater sources shall be located so that there will be no danger of pollution from flooding or from insanitary surroundings, such as privies, sewage, sewage treatment plants, livestock and animal pens, solid waste disposal sites or underground petroleum and chemical storage tanks and liquid transmission pipelines, or abandoned and improperly sealed wells.

(A) No well site which is within 50 feet of a tile or concrete sanitary sewer, sewerage appurtenance, septic tank, storm sewer, or cemetery; or which is within 150 feet of a septic tank perforated drainfield, areas irrigated by low dosage, low angle spray on-site sewage facilities, absorption bed, evapotranspiration bed, improperly constructed water well or underground petroleum and chemical storage tank or liquid transmission pipeline will be acceptable for use as a public drinking water supply. Sanitary or storm sewers constructed of ductile iron or PVC pipe meeting AWWA standards, having a minimum working pressure of 150 psi or greater, and equipped with pressure type joints may be located at distances of less than 50 feet from a proposed well site but in no case shall the distance be less than ten feet.

(B) No well site shall be located within 500 feet of a sewage treatment plant or within 300 feet of a sewage wet well, sewage pumping station or a drainage ditch which contains industrial waste discharges or the wastes from sewage treatment systems.

(C) No water wells shall be located within 500 feet of animal feed lots, solid waste disposal sites, lands on which sewage plant or septic tank sludge is applied, or lands irrigated by sewage plant effluent.

(D) Livestock in pastures shall not be allowed within 50 feet of water supply wells.

(E) All known abandoned or inoperative wells (unused wells that have not been plugged) within one quarter mile of a proposed wellsite shall be reported to the Commission along with existing or potential pollution hazards. These reports are required for community and nontransient, noncommunity ground water sources. Examples of existing or potential pollution hazards which may affect ground water quality include, but are not limited to: landfill and dump sites, animal feedlots, military facilities, industrial facilities, wood-treatment facilities, liquid petroleum and petrochemical production, storage, and transmission facilities, Class 1, 2, 3, and 4 injection wells, and pesticide storage and mixing facilities. This information must be submitted prior to construction or as required by the executive director.

(F) A sanitary control easement covering that portion of the land within 150-feet of the well location shall be secured from all property owners and recorded in the deed records at the county courthouse. The easement shall provide that none of the pollution hazards covered in subparagraphs (A) - (E) of this paragraph, or any facilities that might create a danger of pollution to the water to be produced from the well will be located thereon. For the purpose of this easement, an improperly constructed water well is one which fails to meet the surface and subsurface construction standards for public water supply wells. Residential type wells within the easement must be constructed to public water well standards. Copies of the recorded easements shall be included with plans and specifications submitted for review. With the approval of the executive director, political subdivisions which have adopted and enforce equivalent ordinances or land use restrictions may substitute these documents for sanitary control easements.

(2) The premises, materials, tools, and drilling equipment shall be maintained so as to minimize contamination of the underground water during drilling operation.

(A) Water used in any drilling operation shall be of safe sanitary quality. Water used in the mixing of drilling fluids or mud shall contain a chlorine residual of at least 0.5 mg/l.

(B) The slush pit shall be constructed and maintained so as to minimize contamination of the drilling mud.

(C) No temporary toilet facilities shall be maintained within 150 feet of the well being constructed unless they are of a sealed, leakproof type.

(3) The construction, disinfection, protection, and testing of a well to be used as a public water supply source must meet the following conditions.

(A) Before placing the well into service, a public water system shall furnish a copy of the well completion data, which includes the following items: the Driller's Log (geological log and material setting report); a cementing certificate; the results of a 36-hour pump test; the results of the microbiological and chemical analyses required by subparagraphs (F) and (G) of this paragraph; a copy of the Sanitary Control Easement; and an original or legible copy of a United States Geological Survey 7.5-minute topographic quadrangle showing the accurate well location to the executive director.

All the documents listed in this paragraph must be approved by the executive director before final approval is granted for the use of the well.

(B) The casing material used in the construction of wells for public use shall be new carbon steel, high-strength low-alloy steel, stainless steel or plastic. The material shall conform to AWWA standards. The casing shall extend a minimum of 18 inches above the elevation of the finished floor of the pump room or natural ground surface and a minimum of one inch above the sealing block or pump motor foundation block when provided. The casing shall extend at least to the depth of the shallowest water formation to be developed and deeper, if necessary, in order to eliminate all undesirable water-bearing strata. Well construction materials containing more than 8.0% lead are prohibited.

(C) The space between the casing and drill hole shall be sealed by using enough cement under pressure to completely fill and seal the annular space between the casing and the drill hole. The well casing shall be cemented in this manner from the top of the shallowest formation to be developed to the earth's surface. The driller shall utilize a pressure cementation method in accordance with the AWWA Standard for Water Wells (A100-97), Appendix C: Section C.3 (Positive Displacement Exterior Method); Section C.4 (Interior Method Without Plug); Section C.5 (Positive Placement, Interior Method, Drillable Plug); Section C.6 (Placement Through Float Shoe Attached to Bottom of Casing). Cementation methods other than those listed in this subparagraph may be used on a site-specific basis with the prior written approval of the executive director. A cement bonding log, as

well as any other documentation deemed necessary, may be required by the executive director to assure complete sealing of the annular space.

(D) When a gravel packed well is constructed, all gravel shall be of selected and graded quality and shall be thoroughly disinfected with a 50 mg/l chlorine solution as it is added to the well cavity.

(E) Safeguards shall be taken to prevent possible contamination of the water or damage by trespassers following the completion of the well and prior to installation of permanent pumping equipment.

(F) Upon well completion, or after an existing well has been reworked, the well shall be disinfected in accordance with current AWWA standards for well disinfection except that the disinfectant shall remain in the well for at least six hours.

(i) Before placing the well in service, the water containing the disinfectant shall be flushed from the well and then samples of water shall be collected and submitted for microbiological analysis until three successive daily raw water samples are free of coliform organisms. The analysis of these samples must be conducted by a laboratory approved by the Texas Department of Health.

(ii) Appropriate facilities for treatment of the water shall be provided where a satisfactory microbiological record cannot be established after repeated disinfection. The extent of water treatment required will be determined on the basis of geological data, well construction features, nearby sources of contamination and, perhaps, on the basis of quantitative microbiological analyses.

(G) A complete physical and chemical analysis of the water produced from a new well shall be made after 36 hours of continuous pumping at the design withdrawal rate. Shorter pump test periods can be accepted for large capacity wells producing from areas of known groundwater production and quality so as to prevent wasting of water. Samples must be submitted to a certified laboratory for chemical analyses. Tentative approval may be given on the basis of tests performed by in-plant or private laboratories but final acceptance by the commission shall be on the basis of results from the certified laboratory. Appropriate treatment shall be provided if the analyses reveal that the water from the well fails to meet the water quality criteria as prescribed by the drinking water standards. These criteria include turbidity, color and threshold odor limitations, and excessive hydrogen sulfide, carbon dioxide or other constituents or minerals which make the water undesirable or unsuited for domestic use. Additional chemical and microbiological tests may be required after the executive director conducts a vulnerability assessment of the well.

(H) Below ground-level pump rooms and pump pits will not be allowed in connection with water supply installations.

(I) The well site shall be fine graded so that the site is free from depressions, reverse grades or areas too rough for proper ground maintenance so as to ensure that surface water will drain away from the well. In all cases, arrangements shall be made to convey well pump drainage, packing gland leakage, and floor drainage away from the wellhead. Suitable drain pipes located at the outer edge of the concrete floor shall be provided to collect this water and prevent its ponding or collecting around the wellhead. This waste water shall be disposed of in a manner that will not cause any nuisance from mosquito breeding or stagnation. Drains shall not be directly connected to storm or sanitary sewers.

(J) In all cases, a concrete sealing block extending at least three feet from the well casing in all directions, with a minimum thickness of six inches and sloped to drain away at not less than 0.25 inches per foot shall be provided around the wellhead.

(K) Wellheads and pump bases shall be sealed by a gasket or sealing compound and properly vented to prevent the possibility of contaminating the well water. A well casing vent shall be provided with an opening that is covered with 16-mesh or finer corrosion-resistant screen, facing downward, elevated and located so as to minimize the drawing of contaminants into the well. Wellheads and well vents shall be at least two feet above the highest known watermark or 100-year flood elevation, if available, or adequately protected from possible flood damage by levees.

(L) If a well blow-off line is provided, its discharge shall terminate in a downward direction and at a point which will not be submerged by flood waters.

(M) A suitable sampling cock shall be provided on the discharge pipe of each well pump prior to any treatment.

(N) Flow measuring devices shall be provided for each well to measure production yields and provide for the accumulation of water production data. These devices shall be located to facilitate daily reading.

(O) All completed well units shall be protected by intruder-resistant fences, the gates of which are provided with locks or shall be enclosed in locked, ventilated well houses to exclude possible contamination or damage to the facilities by trespassers. The gates or wellhouses shall be locked during periods of darkness and when the plant is unattended.

(P) An all-weather access road shall be provided to each well site.

(Q) If an air release device is provided on the discharge piping, it shall be installed in such a manner as to preclude the possibility of submergence or possible entrance of contaminants. In this respect, all openings to the atmosphere shall be covered with 16-mesh or finer, corrosion-resistant screening material or an acceptable equivalent.

(4) Pitless well units may be desirable in areas subject to vandalism or extended periods of subfreezing weather.

(A) Pitless units shall be shop fabricated from the point of connection with the well casing to the unit cap or cover, be threaded or welded to the well casing, be of watertight construction throughout and be of materials and weight at least equivalent and compatible to the casing. The units must have a field connection to the lateral discharge from the pitless unit of threaded, flanged or mechanical joint connection. Each unit must terminate at least 18 inches above the concrete sealing block and at least two feet above the highest known water mark or 100-year flood elevation, whichever is higher.

(B) The design of the pitless unit shall make provisions for an access to disinfect the well, a properly designed casing vent, a cover at the upper terminal of the well that will prevent the entrance of contamination, a sealed entrance connection for electrical cable, and at least one check valve within the well casing. The unit shall have an inside diameter as great as that of the well casing up to and including casing diameters of 12 inches.

(C) If the connection to the casing is by field weld, the shop-assembled unit must be designed specifically for field welding to the casing. The only field welding permitted will be that needed to connect a pitless unit to the well casing.

(D) Completed pitless well unit installations must be provided with above ground level raw water sampling cocks, concrete sealing blocks and flow measuring devices.

(E) The well casing and pitless unit must be properly sealed and cemented in accordance with paragraph (3)(C) of this subsection.

(d) Springs and other water sources.

(1) Springs and other similar sources of flowing artesian water shall be protected from potential contaminant sources in accordance with the requirements of subsection (c)(1) of this section.

(2) Before placing the spring or similar source into service, completion data similar to that required by subsection (c)(3)(A) of this section must be submitted to the executive director for review and approval to the Texas Natural Resource Conservation Commission, Water Supply Division, MC 153, P.O. Box 13087, Austin, Texas 78711-3987.

(3) Springs and similar sources shall be constructed in a manner which will preclude the entrance of surface water and debris.

(A) The site shall be fine graded so that it is free from depressions, reverse grades or areas too rough for proper ground maintenance in order to ensure that surface water will drain away from the source.

(B) The spring or similar source shall be encased in an open-bottomed, watertight basin which intercepts the flowing water below the surface of the ground. The basin shall extend at least 18 inches above ground level. The top of the basin shall also be at least two feet above the highest known watermark or 100-year flood elevation, if available, or adequately protected from possible flood damage by levees.

(C) In all cases, a concrete sealing block shall be provided which extends at least three feet from the encasement in all directions. The sealing block shall be at least six inches thick and be sloped to drain away from the encasement at not less than 0.25 inches per foot.

(D) The top of the encasement shall be provided with a sloped, watertight roof which prevents the ponding of water and precludes the entrance of animals, insects, and other sources of contamination.

(E) The roof of the encasement shall be provided with a hatch that is not less than 30 inches in diameter. The hatch shall have a raised curbing at least four inches in height with a lockable cover that overlaps the curbing at least two inches in a downward direction. Where necessary, a gasket shall be used to make a positive seal when the hatch is closed. All hatches shall remain locked except during inspections and maintenance.

(F) The encasement shall be provided with a gooseneck vent or roof ventilator which is equipped with approved screens to prevent entry of animals, birds, insects and heavy air contaminants. Screens shall be fabricated of corrosion-resistant material and shall be 16-mesh or finer. Screens shall be securely clamped in place with stainless or galvanized bands or wires.

(G) The encasement shall be provided with an overflow which is designed to prevent the entry of animals, birds, insects, and debris. The discharge opening of the overflow shall be above the surface of the ground and shall not be subject to submergence.

(4) Springs and similar sources must be provided with the appurtenances required by subsection (c)(3)(M) - (P) of this section.

(e) Surface water sources and development.

(1) To determine the degree of pollution from all sources within the watershed, an evaluation shall be made of the surface water source in the area of diversion and its tributary streams. The area where surface water sources are diverted for drinking water use shall be evaluated and protected from sources of contamination.

(A) Where surface water sources are subject to continuous or intermittent contamination by municipal, agricultural, or industrial wastes and/or treated effluent, the adverse effects of the contamination on the quality of the raw water reaching the treatment plant shall be determined by site evaluations and laboratory procedures.

(B) The disposal of all liquid or solid wastes from any source on the watershed must be in conformity with applicable regulations and state statutes.

(C) Shore installations, marinas, boats and all habitations on the watershed shall be provided with satisfactory sewage disposal facilities. Septic tanks and soil absorption fields, tile or concrete sanitary sewers, sewer manholes, or other approved toilet facilities shall not be located in an area within 75 feet horizontally from the lake water surface at the uncontrolled spillway elevation of the lake or 75 feet horizontally from the 50-year flood elevation, whichever is lower.

(D) Disposal of wastes from boats or any other watercraft shall be in accordance with the Texas Water Code, §§321.1 - 321.18.

(E) Pesticides or herbicides which are used within the watershed shall be applied in strict accordance with the product label restrictions.

(F) Before approval of a new surface water source, the system shall provide the executive director with information regarding specific water quality parameters of the potential source water. These parameters are pH, total coliform, Eserichia coli, turbidity, alkalinity, hardness, bromide, total organic carbon, temperature, color, taste and odor, regulated volatile organic compounds, regulated synthetic organic compounds, regulated inorganic compounds, and possible sources of contamination. If data on the incidence of Giardia cysts and Cryptosporidium oocysts has been collected, the information shall be provided to the executive director. This data shall be provided to the executive director as part of the approval process for a new surface water source.

(2) Intakes shall be located and constructed in a manner which will secure raw water of the best quality available from the source.

(A) Intakes shall not be located in areas subject to excessive siltation or in areas subject to receiving immediate runoff from wooded sloughs or swamps.

(B) Raw water intakes shall not be located within 1,000 feet of boat launching ramps, marinas, docks or floating fishing piers which are accessible by the public.

(C) A restricted zone of 200 feet radius from the raw water intake works shall be established and all recreational activities and trespassing shall be prohibited in this area. Regulations governing this zone shall be in the city ordinances or the rules and regulations promulgated by a water district or similar regulatory agency. The restricted zone shall be designated with signs recounting

these restrictions. The signs shall be maintained in plain view of the public and shall be visible from all parts of the restricted area. In addition, special buoys may be required as deemed necessary by the executive director. Provisions shall be made for the strict enforcement of such ordinances or regulations.

(D) Commission staff shall make an on-site evaluation of any proposed raw water intake location. The evaluation must be requested prior to final design and must be supported by preliminary design drawings. Once the final intake location has been selected, the executive director shall be furnished with an original or legible copy of a United States Geological Survey 7.5-minute topographic quadrangle showing the accurate intake location.

(E) Intakes shall be located and constructed in a manner which will allow raw water to be taken from a variety of depths and which will permit withdrawal of water when reservoir levels are very low. Fixed level intakes are acceptable if water quality data is available to establish that the effect on raw water quality will be minimal.

(F) Water intake works shall be provided with screens or grates to minimize the amount of debris entering the plant.

(3) The water treatment plant and all pumping units shall be located in well-drained areas not subject to flooding and away from seepage areas or where the underground water table is near the surface.

(A) Water treatment plants shall not be located within 500 feet of a sewage treatment plant or lands irrigated with sewage effluent. A minimum distance of 150 feet must be maintained between any septic tank drainfield line and any underground treatment or storage unit. Any sanitary sewers located within 50 feet of any underground treatment or storage units shall be constructed of ductile iron or PVC pipe with a minimum pressure rating of 150 psi and have watertight joints.

(B) Plant site selection shall also take into consideration the need for disposition of all plant wastes in accordance with all applicable regulations and state statutes including both liquid and solid waste or by-product material from operation and/or maintenance.

(C) The water treatment plant and all appurtenances thereof shall be enclosed by an intruder-resistant fence. The gates shall be locked during periods of darkness and when the plant is unattended. A locked building in the fence line may satisfy this requirement or serve as a gate.

(D) An all weather road shall be provided to the treatment plant and to the raw water pump station.

§290.42. Water Treatment.

(a) Capacity. Based on current acceptable design standards, the total capacity of the public water system's production and treatment facilities must always be greater than its anticipated maximum

daily demand.

(b) Groundwater.

(1) Disinfection facilities shall be provided for all groundwater supplies for the purpose of microbiological control and distribution protection and shall be in conformity with applicable disinfection requirements in subsection (e) of this section.

(2) Treatment facilities shall be provided for ground water if the water does not meet the drinking water standards. The facilities provided shall be in conformance with established and proven methods.

(A) Filters provided for turbidity and microbiological quality control shall be preceded by coagulant addition and shall conform to the requirements of subsection (d)(10) of this section. Filtration rates for iron and manganese removal, regardless of the media or type of filter, shall be based on a maximum rate of five gallons per square foot per minute.

(B) The removal of iron and manganese may not be required if it can be demonstrated that these metals can be sequestered so that the discoloration problems they cause do not exist in the distribution system.

(C) All processes involving exposure of the water to atmospheric contamination shall provide for subsequent disinfection of the water ahead of ground storage tanks. Likewise, all exposure of water to atmospheric contamination shall be accomplished in a manner such that insects, birds, and other foreign materials will be excluded from the water. Aerators and all other such openings shall be screened with 16-mesh or finer corrosion-resistant screen.

(3) Any proposed change in the extent of water treatment required will be determined on the basis of geological data, well construction features, nearby sources of contamination, and on qualitative and quantitative microbiological and chemical analyses.

(4) Appropriate laboratory facilities shall be provided for controls as well as to check the effectiveness of disinfection or any other treatment processes employed.

(5) All plant piping shall be constructed to minimize leakage.

(6) All groundwater systems shall provide sampling taps for raw water, treated water, and at a point representing water entering the distribution system at every entry point.

(c) Springs and other water sources.

(1) Water obtained from springs, infiltration galleries, wells in fissured areas, wells in carbonate rock formations, or wells that do not penetrate an impermeable strata or any other source subject to surface or near surface contamination of recent origin shall be evaluated for the provision of treatment facilities. Minimum treatment shall consist of coagulation with direct filtration and adequate disinfection. In all cases, the treatment process shall be designed to achieve at least a 3-log removal or inactivation of Giardia cysts and a 4-log removal or inactivation of viruses before the water is supplied to any consumer. Effective January 1, 2002, the treatment process shall also be designed to provide a 2-log removal of Cryptosporidium oocysts. Treatment facilities constructed after October 1, 2000 shall be designed to achieve at least a 2-log removal of Cryptosporidium oocysts. The executive director may require additional levels of treatment in cases of poor source water quality.

(A) Filters provided for turbidity and microbiological quality control shall conform to the requirements of subsection (d)(11) of this section.

(B) All processes involving exposure of the water to atmospheric contamination shall provide for subsequent disinfection of the water ahead of ground storage tanks. Likewise, all exposure of water to atmospheric contamination shall be accomplished in a manner such that insects, birds, and other foreign materials will be excluded from the water. Aerators and all other such openings shall be screened with 16-mesh or finer corrosion-resistant screen.

(2) Any proposed change in the extent of water treatment required will be determined on the basis of geological data, well construction features, nearby sources of contamination, and qualitative and quantitative microbiological and chemical analyses.

(3) Appropriate laboratory facilities shall be provided for controls as well as for checking the effectiveness of disinfection or any other treatment processes employed.

(4) All plant piping shall be constructed to minimize leakage. No cross-connection or interconnection shall be permitted to exist between a conduit carrying potable water and another conduit carrying raw water or water in a prior stage of treatment.

(5) All systems using springs and other water sources shall provide sampling taps for raw water, treated water, and at a point representing water entering the distribution system at every entry point.

(d) Surface water.

(1) All water secured from surface sources shall be given complete treatment at a plant which provides facilities for pretreatment disinfection, taste and odor control, continuous coagulation, sedimentation, filtration, covered clearwell storage and terminal disinfection of the water with chlorine or suitable chlorine compounds. In all cases, the treatment process shall be designed to achieve at least a 3-log removal or inactivation of Giardia cysts and a 4-log removal or inactivation of viruses before

the water is supplied to any consumer. Effective January 1, 2002, the treatment process shall also be designed to achieve at least a 2-log removal of Cryptosporidium oocysts. Treatment facilities constructed after October 1, 2000 shall be designed to achieve at least a 2-log removal of Cryptosporidium oocysts. The executive director may require additional levels of treatment in cases of poor source water quality.

(2) All plant piping shall be constructed so as to be thoroughly tight against leakage. No cross-connection or interconnection shall be permitted to exist in a filtration plant between a conduit carrying filtered or post-chlorinated water and another conduit carrying raw water or water in any prior stage of treatment.

(A) Vacuum breakers must be provided on each hose bibb within the plant facility.

(B) No conduit or basin containing raw water or any water in a prior stage of treatment shall be located directly above, or be permitted to have a single common partition wall with another conduit or basin containing finished water.

(C) Make-up water supply lines to chemical feeder solution mixing chambers shall be provided with an air gap or other acceptable backflow prevention device.

(D) Filters shall be located so that common walls will not exist between them and aerators, mixing and sedimentation basins or clear wells. This rule is not strictly applicable, however, to partitions open to view and readily accessible for inspection and repair.

(E) Filter-to-waste connections, if included, shall be provided with an air gap connection to waste.

(3) Return of the decanted water or sludge to the raw water shall be adequately controlled so that there will be a minimum of interference with the treatment process. Any discharge of wastewater shall be in accordance with all applicable state and federal statutes and regulations including Chapter 305 of this title (relating to Consolidated Permits), Chapter 309 of this title (relating to Domestic Wastewater Effluent Limitation and Plant Siting), and Chapter 319 of this title (relating to General Regulations Incorporated into Permits).

(4) Reservoirs for pretreatment or selective quality control shall be provided where complete treatment facilities fail to operate satisfactorily at times of maximum turbidities or other abnormal raw water quality conditions exist. Recreational activities at such reservoirs shall be prohibited.

(5) Flow measuring devices shall be provided to measure the raw water supplied to the plant, the recycled decant water, the treated water used to backwash the filters, and the treated water discharged from the plant. Additional metering devices shall be provided as appropriate to monitor the flow rate through specific treatment processes. Metering devices shall be located to facilitate use and to assist in the determination of chemical dosages, the accumulation of water production data, and the operation of plant facilities.

(6) Chemical storage facilities shall be designed to ensure a reliable supply of chemicals to the feeders, minimize the possibility and impact of accidental spills, and facilitate good housekeeping.

(A) Bulk storage facilities at the plant shall be adequate to store at least 15 days supply of chemicals at design capacity. However, the executive director may require a larger stock of chemicals based on local resupply ability.

(B) Day tanks shall be provided to minimize the possibility of severely overfeeding liquid chemicals. Day tanks will not be required if adequate process control instrumentation and procedures are employed to prevent chemical overfeed incidents.

(C) Every chemical bulk storage facility and day tank shall have a label that identifies the facility's or tank's contents and a device that indicates the amount of chemical remaining in the facility or tank.

(D) Dry chemicals shall be stored off the floor in a dry room that is located above ground and protected against flooding or wetting from floors, walls, and ceilings.

(E) Bulk storage facilities and day tanks must be designed to minimize the possibility of leaks and spills.

(i) The materials used to construct bulk storage and day tanks must be compatible with the chemicals being stored and resistant to corrosion.

(ii) Except as provided in this clause, adequate containment facilities shall be provided for all liquid chemical storage tanks.

(I) Containment facilities for a single container or for multiple, interconnected containers must be large enough to hold the maximum amount of chemical that can be stored with a minimum freeboard of six vertical inches or to hold 110% of the total volume of the container(s), whichever is less.

(II) Common containment for multiple containers that are not interconnected must be large enough to hold the volume of the largest container with a minimum freeboard of six vertical inches or to hold 110% of the total volume of the container(s), whichever is less.

(III) The materials used to construct containment structures must be compatible with the chemicals stored in the tanks.

(IV) Incompatible chemicals shall not be stored within the same containment structure.

(V) No containment facilities are required for hypochlorite solution containers that have a capacity of 35 gallons or less.

(VI) On a site-specific basis, the executive director may approve the use of double-walled tanks in lieu of separate containment facilities.

(F) Chemical transfer pumps and control systems must be designed to minimize the possibility of leaks and spills.

(G) Piping, pumps, and valves used for chemical storage and transfer must be compatible with the chemical being fed.

(7) Chemical feed and metering facilities shall be designed so that chemicals shall be applied in a manner which will maximize reliability, facilitate maintenance, and ensure optimal finished water quality.

(A) Each chemical feeder shall have a standby or reserve unit. Common standby feeders are permissible, but, generally, more than one standby feeder must be provided due to the incompatibility of chemicals or the state in which they are being fed (solid, liquid or gas).

(B) Chemical feed equipment shall be sized to provide proper dosage under all operating conditions.

(i) Devices designed for determining the chemical feed rate shall be provided for all chemical feeders.

(ii) The capacity of the chemical feeders shall be such that accurate control of the dosage can be achieved at the full range of feed rates expected to occur at the facility.

(iii) Chemical feeders shall be provided with tanks for chemical dissolution when applicable.

(C) Chemical feeders, valves, and piping must be compatible with the chemical being fed.

(D) Chemical feed systems shall be designed to minimize the possibility of leaks and spills and provide protection against backpressure and siphoning.

(E) If enclosed feed lines are used, they shall be designed and installed so as to prevent clogging and be easily maintained.

(F) Dry chemical feeders shall be located in a separate room that is provided with facilities for dust control.

(G) Coagulant feed systems shall be designed so that coagulants are applied to the water prior to or within the mixing basins or chambers so as to permit their complete mixing with the water.

(i) Coagulant feed points shall be located downstream of the raw water sampling tap.

(ii) Coagulants shall be applied continuously during treatment plant operation.

(H) Chlorine feed units, ammonia feed units, and storage facilities shall be separated by solid, sealed walls.

(I) Chemical application points shall be provided to achieve acceptable finished water quality, adequate taste and odor control, corrosion control and disinfection.

(8) Flash mixing equipment shall be provided.

(A) Plants with a design capacity greater than 3.0 million gallons per day must provide at least one hydraulic mixing unit or at least two sets of mechanical flash mixing equipment designed to operate in parallel. Public water systems with other surface water treatment plants, interconnections with other systems, or wells that can meet the system's average daily demand are exempt from the requirement for redundant mechanical flash mixing equipment.

(B) Flash mixing equipment shall have sufficient flexibility to ensure adequate dispersion and mixing of coagulants and other chemicals under varying raw water characteristics and raw water flow rates.

(9) Flocculation equipment shall be provided.

(A) Plants with a design capacity greater than 3.0 million gallons per day must provide at least two sets of flocculation equipment which are designed to operate in parallel. Public water systems with other surface water treatment plants, interconnections with other systems, or wells that can meet the system's average daily demand are exempt from the requirement for redundant flocculation equipment.

(B) Flocculation facilities shall be designed to provide adequate time and mixing intensity to produce a settleable floc under varying raw water characteristics and raw water flow rates.

(i) Flocculation facilities for straight-flow and up-flow sedimentation basins shall provide a minimum theoretical detention time of at least 20 minutes when operated at their design capacity. Flocculation facilities constructed prior to October 1, 2000 are exempt from this requirement if the settled water turbidity of each sedimentation basin remains below 10.0 NTU and the treatment plant meets with turbidity requirements of §290.111 of this title (relating to Turbidity).

(ii) The mixing intensity in multiple-stage flocculators shall decrease as the coagulated water passes from one stage to the next.

(C) Coagulated water or water from flocculators shall flow to sedimentation basins in such a manner as to prevent destruction of floc. Piping, flumes and troughs shall be designed to provide a flow velocity of 0.5 to 1.5 feet per second. Gates, ports and valves shall be designed at a maximum flow velocity of 4.0 feet per second in the transfer of water between units.

(10) Clarification facilities shall be provided.

(A) Plants with a design capacity greater than 3.0 million gallons per day must provide at least two sedimentation basins or clarification units which are designed to operate in parallel. Public water systems with other surface water treatment plants, interconnections with other systems, or wells that can meet the system's average daily demand are exempt from the requirement for redundant sedimentation basins or clarification units.

(B) The inlet and outlet of clarification facilities shall be designed to prevent short-circuiting of flow or the destruction of floc.

(C) Clarification facilities shall be designed to remove flocculated particles effectively.

(i) When operated at their design capacity, basins for straight-flow or up-flow sedimentation of coagulated waters shall provide either a theoretical detention time of at least six hours in the flocculation and sedimentation chambers or a maximum surface overflow rate of 0.6 gallons per minute per square foot of surface area in the sedimentation chamber.

(ii) When operated at their design capacity, basins for straight-flow or up-flow sedimentation of softened waters shall provide either a theoretical detention time of at least 4.5 hours in the flocculation and sedimentation chambers or a maximum surface overflow rate of 1.0 gallon per minute per square foot of surface area in the sedimentation chamber.

(iii) When operated at their design capacity, sludge-blanket and solids-recirculation clarifiers shall provide either a theoretical detention time of at least two hours in the flocculation and sedimentation chambers or a maximum surface overflow rate of 1.0 gallons per minute per square foot in the settling chamber.

(iv) A side wall water depth of at least 12 feet shall be provided in clarification basins that are not equipped with mechanical sludge removal facilities.

(v) The effective length of a straight-flow sedimentation basin shall be at least twice its effective width.

(D) Clarification facilities shall be designed to prevent the accumulation of settled solids.

(i) At treatment plants with a single clarification basin, facilities shall be provided to drain the basin within six hours. In the event that the plant site topography is such that gravity draining cannot be realized, a permanently installed electric powered pump station shall be provided to dewater the basin. Public water systems with other potable water sources that can meet the system's average daily demand are exempt from this requirement.

(ii) Facilities for sludge removal shall be provided by mechanical means or by hopper-bottomed basins with valves capable of complete draining of the units.

(11) Gravity or pressure type filters shall be provided.

(A) The use of pressure filters shall be limited to installations with a treatment capacity of less than 0.50 million gallons per day.

(B) Filtration facilities shall be designed to operate at filtration rates which assure effective filtration at all times.

(i) The design capacity of gravity rapid sand filters shall not exceed a maximum filtration rate of 2.0 gallons per square foot per minute. At the beginning of filter runs for declining rate filters, a maximum filtration rate of 3.0 gallons per square foot per minute is allowed.

(ii) Where high-rate gravity filters are used, the design capacity shall not exceed a maximum filtration rate of 5.0 gallons per square foot per minute. At the beginning of filter runs for declining rate filters, a maximum filtration rate of 6.5 gallons per square foot per minute is allowed.

(iii) The design capacity of pressure filters shall not exceed a maximum filtration rate of 2.0 gallons per square foot per minute with the largest filter off-line.

(iv) Except as provided in clause (vi) of this subparagraph, any surface water treatment plant that provides, or is being designed to provide, less than 7.5 million gallons per day must be able to meet either the maximum daily demand or the minimum required 0.6 gallons per minute per connection, whichever is larger, with all filters on-line.

(v) Any surface water treatment plant that provides, or is being designed to provide, 7.5 million gallons per day or more must be able to meet either the maximum daily demand or the minimum required 0.6 gallons per minute per connection, whichever is larger, with the largest filter off-line.

(vi) Any surface water treatment plant that uses pressure filters must be able to meet either the maximum daily demand or the minimum required 0.6 gallons per minute per connection, whichever is larger, with the largest filter off-line.

(C) The depth and condition of the media and support material shall be sufficient to provide effective filtration.

(i) The filtering material shall conform to AWWA standards and be free from clay, dirt, organic matter and other impurities.

(ii) The grain size distribution of the filtering material shall be as prescribed by AWWA standards.

(iii) The depth of filter sand, anthracite, granular activated carbon, or other filtering materials shall be 24 inches or greater and provide an L/d ratio of at least 1,000.

(I) Rapid sand filters typically contain a minimum of eight inches of fine sand with an effective size of 0.35 to 0.45 mm, eight inches of medium sand with an effective size of 0.45 to 0.55 mm, and eight inches of coarse sand with an effective size of 0.55 to 0.65 mm. The uniformity coefficient of each size range should not exceed 1.6.

(II) High-rate dual media filters typically contain a minimum of twelve inches of sand with an effective size of 0.45 to 0.55 mm and twenty-four inches of anthracite with an effective size of 0.9 to 1.1 mm. The uniformity coefficient of each material should not exceed 1.6.

(III) High-rate multi-media filters typically contain a minimum of three inches of garnet media with an effective size of 0.2 to 0.3 mm, nine inches of sand with an effective size of 0.5 to 0.6 mm, and twenty-four inches of anthracite with an effective size of 0.9 to 1.1 mm. The uniformity coefficient of each size range should not exceed 1.6.

(IV) High-rate mono-media anthracite or granular activated carbon filters typically contain a minimum of 48 inches of anthracite or granular activated carbon with an effective size of 1.0 to 1.2 mm. The uniformity coefficient of each size range should not exceed 1.6.

(iv) Under the filtering material, at least 12 inches of support gravel shall be placed varying in size from 1/16 inch to 2.5 inches. The gravel may be arranged in three to five layers such that each layer contains material about twice the size of the material above it. Other support material may be approved on an individual basis.

(D) The filter shall be provided with facilities to regulate the filtration rate.

(i) With the exception of declining rate filters, each filter unit shall be equipped with a manually adjustable rate-of-flow controller with rate-of-flow indication or flow control valves with indicators.

(ii) Each declining rate filter shall be equipped with a rate-of-flow limiting device or an adjustable flow control valve with a rate-of-flow indicator.

(iii) The effluent line of each filter installed after January 1, 1996, must be equipped with a slow opening valve or another means of automatically preventing flow surges when the filter begins operation.

(E) The filters shall be provided with facilities to monitor the performance of the filter. Monitoring devices shall be designed to provide the ability to measure and record turbidity as required by §290.111 of this title (relating to Turbidity).

(i) Each filter shall be equipped with a sampling tap so that the effluent turbidity of the filter can be individually monitored.

(ii) Each filter with a capacity of 1.0 million gallons per day or more shall be equipped with an on-line turbidimeter.

(iii) Each filter operated by a public water system that serves at least 10,000 people shall be equipped with an on-line turbidimeter and recorder which will allow the operator to determine the turbidity at 15-minute intervals.

(iv) Each filter installed after October 1, 2000 shall be equipped with an on-line turbidimeter and recorder which will allow the operator to determine the turbidity at 15-minute intervals.

(v) Each filter unit shall be equipped with a device to indicate loss of head through the filter. In lieu of loss-of-head indicators, declining rate filter units may be equipped with rate-of-flow indicators.

(F) Filters shall be designed to ensure adequate cleaning during the backwash cycle.

(i) Only filtered water shall be used to backwash the filters. This water may be supplied by elevated wash water tanks, by the effluent of other filters, or by pumps which take suction from the clearwell and are provided for backwashing filters only. For installations having a treatment capacity no greater than 150,000 gallons per day, water for backwashing may be secured directly from the distribution system if proper controls and rate-of-flow limiters are provided.

(ii) The rate of filter backwashing shall be regulated by a rate-of-flow controller or flow control valve.

(iii) The rate of flow of backwash water shall not be less than 20 inches vertical rise per minute (12.5 gpm/sq. ft.) and usually not more than 35 inches vertical rise per minute (21.8 gpm/sq. ft.).

(iv) The backwash facilities shall be capable of expanding the filtering bed during the backwash cycle.

(I) For facilities equipped with air scour, the backwash facilities shall be capable of expanding the filtering bed at least 15% during the backwash cycle.

(II) For mixed-media filters without air scour, the backwash facilities shall be capable of expanding the filtering bed at least 25% during the backwash cycle.

(III) For mono-media sand filters without air scour, the backwash facilities shall be capable of expanding the filtering bed at least 40% during the backwash cycle.

(v) The filter freeboard in inches shall exceed the wash rate in inches of vertical rise per minute.

(vi) When used, surface filter wash systems shall be installed with an atmospheric vacuum breaker or a reduced pressure principle backflow assembly in the supply line. If an atmospheric vacuum breaker is used it shall be installed in a section of the supply line through which all the water passes and which is located above the overflow level of the filter.

(vii) Gravity filters installed after January 1, 1996 shall be equipped with air scour backwash or surface wash facilities.

(G) Each filter installed after October 1, 2000 shall be equipped with facilities that allow the filter to be completely drained without removing other filters from service.

(12) Pipe galleries shall provide ample working room, good lighting and good drainage provided by sloping floors, gutters ad sumps. Adequate ventilation to prevent condensation and to provide humidity control is also required.

(13) The identification of influent, effluent, waste backwash, and chemical feed lines shall be accomplished by the use of labels or various colors of paint. Where labels are used, they shall be placed along the pipe at no greater than five foot intervals. Color coding must be by solid color or banding. If bands are used, they shall be placed along the pipe at no greater than five foot intervals.

(A) A plant that is built or repainted after October 1, 2000 must use the following color code. The color code to be used in labeling pipes is as follows:

Figure: 30 TAC §290.42(d)(13)(A) (No change.)

(B) A plant that was repainted before October 1, 2000 may use an alternate color code. The alternate color code must provide clear visual distinction between process streams.

(C) The system must maintain clear, current documentation of its color code in a location easily accessed by all personnel.

(14) All surface water treatment plants shall provide sampling taps for raw, settled, individual filter effluent, and clearwell discharge. Additional sampling taps shall be provided as appropriate to monitor specific treatment processes.

(15) An adequately equipped laboratory shall be available locally so that daily microbiological and chemical tests can be conducted.

(A) For plants serving 25,000 persons or more, the local laboratory used to conduct the required daily microbiological analyses must be certified by the Texas Department of Health to conduct coliform analyses.

(B) For plants serving populations of less than 25,000, the facilities for making microbiological tests may be omitted if the required microbiological samples can be submitted to one of the Texas Department of Health's certified laboratories on a timely basis.

(C) All surface water treatment plants shall be provided with equipment for making at least the following determinations:

(i) pH;

(ii) temperature;

(iii) disinfectant residual;

(iv) alkalinity;

(v) turbidity;

(vi) jar tests for determining the optimum coagulant dose; and

(vii) other tests deemed necessary to monitor specific water quality problems or to evaluate specific water treatment processes.

(D) An amperometric titrator with platinum-platinum electrodes shall be provided at all surface water treatment plants that use chlorine dioxide.

(E) Each surface water treatment plant that uses sludge-blanket clarifiers shall be equipped with facilities to monitor the depth of the sludge blanket.

(F) Each surface water treatment plant that uses solids-recirculation clarifiers shall be equipped with facilities to monitor the solids concentration in the slurry.

(G) Effective January 1, 2002, each surface water treatment plant shall be provided with a computer and software for recording performance data, maintaining records and submitting reports to the executive director.

(e) Disinfection.

(1) All water obtained from surface sources or groundwater sources that are under the direct influence of surface water must be disinfected in a manner consistent with the requirements of §290.110 of this title (relating to Disinfectant Residuals).

(2) All groundwater must be disinfected prior to distribution. The point of application must be ahead of the water storage tank(s) if storage is provided prior to distribution. Permission to use alternate disinfectant application points must be obtained in writing from the executive director.

(3) Disinfection equipment shall be selected and installed so that continuous and effective disinfection can be secured under all conditions.

(A) Disinfection equipment shall have a capacity at least 50% greater than the highest expected dosage to be applied at any time. It shall be capable of satisfactory operation under every prevailing hydraulic condition.

(B) Automatic proportioning of the disinfectant dosage to the flow rate of the water being treated shall be provided at plants where the treatment rate varies automatically, and at all plants where the treatment rate varies more than 50% above or below the average flow. Manual control shall be permissible at surface water treatment plants or plants treating groundwater under the direct influence of surface water only if an operator is always on hand to make adjustments promptly.

(C) All disinfecting equipment in surface water treatment plants shall include at least one functional standby unit of each capacity for ensuring uninterrupted operation. Common standby units are permissible, but, generally, more than one standby unit must be provided because of the differences in feed rates or the physical state in which the disinfectants are being fed (solid, liquid, or gas).

(D) Facilities shall be provided for determining the amount of disinfectant used daily as well as the amount of disinfectant remaining for use.

(E) When used, solutions of calcium hypochlorite shall be prepared in a separate mixing tank and allowed to settle so that only a clear supernatant liquid is transferred to the hypochlorinator container.

(F) Provisions shall be made for both pretreatment disinfection and post-disinfection in all surface water treatment plants. Additional application points shall be installed if they are required to adequately control the quality of the treated water.

(G) The use of disinfectants other than chlorine will be considered on a case-by-case basis under the exception guidelines of §290.39(l) of this title (relating to General Provisions).

(4) Systems that use chlorine gas must ensure that the risks associated with its use are limited as follows:

(A) When chlorine gas is used, a full-face self-contained breathing apparatus or supplied air respirator that meets Occupational Safety and Health Administration (OSHA) standards for construction and operation, and a small bottle of fresh ammonia solution (or approved equal) for testing

for chlorine leakage shall be readily accessible outside the chlorinator room and immediately available to the operator in the event of an emergency.

(B) Housing for gas chlorination equipment and cylinders of chlorine shall be in separate buildings or separate rooms with impervious walls or partitions separating all mechanical and electrical equipment from the chlorine facilities. Housing shall be located above ground level as a measure of safety. Equipment and cylinders may be installed on the outside of the buildings when protected from adverse weather conditions and vandalism.

(C) Adequate ventilation, which includes both high level and floor level screened vents, shall be provided for all enclosures in which gas chlorine is being stored or fed. Enclosures containing more than one operating 150-pound cylinder of chlorine shall also provide forced air ventilation which includes: screened and louvered floor level and high level vents; a fan which is located at and draws air in through the top vent and discharges to the outside atmosphere through the floor level vent; and a fan switch located outside the enclosure. Alternately, systems may install negative pressure ventilation as long as the facilities also have gas containment and treatment as prescribed by the current Uniform Fire Code (UFC).

(5) Hypochlorination solution containers and pumps must be housed in a secure enclosure to protect them from adverse weather conditions and vandalism. The solution container top must be completely covered to prevent the entrance of dust, insects, and other contaminants.

(6) Where anhydrous ammonia feed equipment is utilized, it must be housed in a separate enclosure equipped with both high and low level ventilation to the outside atmosphere. The enclosure must be provided with forced air ventilation which includes: screened and louvered floor level and high level vents; a fan which is located at and draws air in through the floor vent and discharges through the top vent; and a fan switch located outside the enclosure. Alternately, systems may install negative pressure ventilation as long as the facilities also have gas containment and treatment as prescribed by the current Uniform Fire Code (UFC).

(f) Other treatment processes. The adjustment of fluoride ion content, special treatment for iron and manganese reduction, special methods for taste and odor control, demineralization, corrosion control processes, and other proposals covering other treatment processes will be considered on an individual basis, pursuant to §290.39(l) of this title (relating to General Provisions). Package-type treatment systems and their components shall be subject to all applicable design criteria in this section. Where innovative/alternate treatment systems are proposed, the licensed professional engineer must provide pilot test data or data collected at similar full-scale operations demonstrating that the system will produce water that meets the requirements of Subchapter F of this title (relating to Drinking Water Standards Governing Drinking Water Quality and Reporting Requirements for Public Drinking Water Supply Systems). Pilot test data must be representative of the actual operating conditions which can be expected over the course of the year. The executive director may require proof of a one-year manufacturers performance warrantee or guarantee assuring that the plant will produce treated water which meets minimum state and federal standards for drinking water quality.

(g) Sanitary facilities for water works installations. Toilet and hand washing facilities provided in accordance with established standards of good public health engineering practices shall be available at all installations requiring frequent visits by operating personnel.

(h) Permits for waste discharges. Permits for discharging wastes from water treatment processes shall be obtained from the agency, if necessary.

(i) Treatment chemicals and media. All chemicals and any additional or replacement process media used in treatment of water supplied by public water systems must conform to American National Standards Institute/National Sanitation Foundation (ANSI/NSF) Standard 60 for direct additives and ANSI/NSF Standard 61 for indirect additives. Conformance with these standards must be obtained by certification of the product by an organization accredited by ANSI.

(j) Safety.

(1) Safety equipment for all chemicals used in water treatment shall meet applicable standards established by the Occupational Safety and Health Administration (OSHA) or the Texas Hazard Communications Act, Health and Safety Code, Title 5, Chapter 502.

(2) Systems must comply with United States Environmental Protection Agency (EPA) requirements for Risk Management Plans.

(k) Plant operations manual. A thorough plant operations manual must be compiled and kept up to date for operator review and reference. This manual should be of sufficient detail to provide the operator with routine maintenance and repair procedures as well as provide telephone numbers of water system personnel, system officials, andlocal/state/federal agencies to be contacted in the event of an emergency.

§290.44. Water Distribution.

(a) Design and standards. All potable water distribution systems including pump stations, mains, and both ground and elevated storage tanks, shall be designed, installed and constructed in accordance with current American Water Works Association (AWWA) standards with reference to materials to be used and construction procedures to be followed. In the absence of AWWA standards, commission review may be based upon the standards of the American Society for Testing and Materials (ASTM), commercial and other recognized standards utilized by licensed professional engineers.

(1) All newly installed pipes and related products must conform to American National Standards Institute/National Sanitation Foundation (ANSI/NSF) Standard 61 and must be certified by an organization accredited by ANSI.

(2) All plastic pipe for use in public water systems must also bear the National Sanitation Foundation Seal of Approval (NSF-pw) and have an ASTM design pressure rating of at least 150 psi or a standard dimension ratio of 26 or less.

(3) No pipe which has been used for any purpose other than the conveyance of drinking water shall be accepted or relocated for use in any public drinking water supply.

(4) Water transmission and distribution lines must be installed in accordance with the manufacturer's instructions. However, the top of the water line must be located below the frost line and in no case shall the top of the water line be less than 24 inches below ground surface.

(5) The hydrostatic leakage rate shall not exceed the amount allowed or recommended by AWWA formulas.

(b) Lead ban. The following provisions apply to the use of lead in plumbing.

(1) The use of pipes and pipe fittings that contain more than 8.0% lead or solders and flux that contains more than 0.2% lead is prohibited in the following circumstances:

(A) For installation or repair of any public water supply, and

(B) 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.

(2) This requirement will be waived for lead joints that are necessary for repairs to cast iron pipe.

(c) Minimum water line sizes. The minimum water line sizes are for domestic flows only and do not consider fire flows. Larger pipe sizes shall be used when the licensed professional engineer deems it necessary. It should be noted that the required sizes are based strictly on the number of customers to be served and not on the distances between connections or differences in elevation or the type of pipe. No new water line under two inches in diameter will be allowed to be installed in a public water system distribution system. These minimum line sizes do not apply to individual customer service lines.

Figure: 30 TAC §290.44(c) (No change.)

Maximum Number of Connections	Minimum Line Size (inches)
10	2
25	2.5
50	3

100	4
150	5
250	6
>250	8 and larger

(d) Minimum pressure requirement. The system must be designed to maintain a minimum pressure of 35 psi at all points within the distribution network at flow rates of at least 1.5 gallons per minute per connection. When the system is intended to provide fire fighting capability, it must also be designed to maintain a minimum pressure of 20 psi under combined fire and drinking water flow conditions.

(1) Air release devices shall be installed in the distribution system at all points where topography or other factors may create air locks in the lines. Air release devices shall be installed in such a manner as to preclude the possibility of submergence or possible entrance of contaminants. In this respect, all openings to the atmosphere shall be covered with 16-mesh or finer, corrosion-resistant screening material or an acceptable equivalent.

(2) When service is to be provided to more than one pressure plane or when distribution system conditions and demands are such that low pressures develop, the method of providing increased pressure shall be by means of booster pumps taking suction from storage tanks. If an exception to this requirement is desired, the designing engineer must furnish for the executive

director's review all planning material for booster pumps taking suction from other than a storage tank. The planning material must contain a full description of the supply to the point of suction, maximum demands on this part of the system, location of pressure recorders, safety controls and other pertinent information. Where booster pumps are installed to take suction directly from the distribution system, a minimum residual pressure of 20 pounds per square inch (psi) must be maintained on the suction line at all times. Such installations must be equipped with automatic pressure cut-off devices so that the pumping units become inoperative at a suction pressure of less than 20 psi. In addition, a continuous pressure recording device may be required at a predetermined suspected critical pressure point on the suction line in order to record the hydraulic conditions in the line at all times. If such a record indicates critical minimum pressures (less than 20 psi), adequate storage facilities must be installed with the booster pumps taking suction from the storage facility. Fire pumps used to maintain pressure on automatic sprinkler systems only for fire protection purposes are not considered as in-line booster pumps.

(3) Service connections that require booster pumps taking suction from the public water system lines must be equipped with automatic pressure cut-off devices so that the pumping units become inoperative at a suction pressure of less than 20 psi. Where these types of installations are necessary, the preferred method of pressure maintenance consists of an air gapped connection with a storage tank and subsequent repressurization facilities.

(4) Each community public water system shall provide accurate metering devices at each residential, commercial, or industrial service connection for the accumulation of water usage data.

A water system that furnishes the services or commodity only to itself or its employees when that service or commodity is not resold to or used by others is exempt from this requirement.

(5) The system shall be provided with sufficient valves and blowoffs so that necessary repairs can be made without undue interruption of service over any considerable area and for flushing the system when required. The engineering report shall establish criteria for this design.

(6) The system shall be designed to afford effective circulation of water with a minimum of dead ends. All dead-end mains shall be provided with acceptable flush valves and discharge piping. All dead-end lines less than two inches in diameter will not require flush valves if they end at a customer service. Where dead ends are necessary as a stage in the growth of the system, they shall be located and arranged to ultimately connect the ends to provide circulation.

(e) Location of waterlines. The following rules apply to installations of waterlines, wastewater mains or laterals, and other conveyances/appurtenances identified as potential sources of contamination. Furthermore, all ratings specified shall be defined by ASTM or AWWA standards unless stated otherwise. New mains, service lines, or laterals are those that are installed where no main, service line, or lateral previously existed, or where existing mains, service lines, or laterals are replaced with pipes of different size or material.

(1) When new potable water distribution lines are constructed, they shall be installed no closer than nine feet in all directions to wastewater collection facilities. All separation distances shall be measured from the outside surface of each of the respective pieces.

(2) Potable water distribution lines and wastewater mains or laterals that form parallel utility lines shall be installed in separate trenches.

(3) No physical connection shall be made between a drinking water supply and a sewer line. Any appurtenance shall be designed and constructed so as to prevent any possibility of sewage entering the drinking water system.

(4) Where the nine foot separation distance cannot be achieved, the following criteria shall apply:

(A) New Waterline Installation - Parallel Lines.

(i) Where a new potable waterline parallels an existing, non-pressure or pressure rated wastewater main or lateral and the licensed professional engineer licensed in the State of Texas is able to determine that the existing wastewater main or lateral is not leaking, the new potable waterline shall be located at least two feet above the existing wastewater main or lateral, measured vertically, and at least four feet away, measured horizontally, from the existing wastewater main or

lateral. Every effort shall be exerted not to disturb the bedding and backfill of the existing wastewater main or lateral.

(ii) Where a new potable waterline parallels an existing pressure rated wastewater main or lateral and it cannot be determined by the licensed professional engineer if the existing line is leaking, the existing wastewater main or lateral shall be replaced with at least 150 psi pressure rated pipe. The new potable waterline shall be located at least two feet above the new wastewater line, measured vertically, and at least four feet away, measured horizontally, from the replaced wastewater main or lateral.

(iii) Where a new potable waterline parallels a new wastewater main, the wastewater main or lateral shall be constructed of at least 150 psi pressure rated pipe. The new potable waterline shall be located at least two feet above the wastewater main or lateral, measured vertically, and at least four feet away, measured horizontally, from the wastewater main or lateral.

(B) New Waterline Installation - Crossing Lines.

(i) Where a new potable waterline crosses an existing, non-pressure rated wastewater main or lateral, one segment of the waterline pipe shall be centered over the wastewater main or lateral such that the joints of the waterline pipe are equidistant and at least nine feet horizontally from the centerline of the wastewater main or lateral. The potable waterline shall be at least two feet above the wastewater main or lateral. Whenever possible, the crossing shall be centered

between the joints of the wastewater main or lateral. If the existing wastewater main or lateral is disturbed or shows signs of leaking, it shall be replaced for at least nine feet in both directions (18 feet total) with at least 150 psi pressure rated pipe.

(ii) Where a new potable waterline crosses an existing, pressure rated wastewater main or lateral, one segment of the waterline pipe shall be centered over the wastewater main or lateral such that the joints of the waterline pipe are equidistant and at least nine feet horizontally from the centerline of the wastewater main or lateral. The potable waterline shall be at least six inches above the wastewater main or lateral. Whenever possible, the crossing shall be centered between the joints of the wastewater main or lateral. If the existing wastewater main or lateral shows signs of leaking, it shall be replaced for at least nine feet in both directions (18 feet total) with at least 150 psi pressure rated pipe.

(iii) Where a new potable waterline crosses a new, non-pressure rated wastewater main or lateral and the standard pipe segment length of the wastewater main or lateral is at least 18 feet, one segment of the waterline pipe shall be centered over the wastewater main or lateral such that the joints of the waterline pipe are equidistant and at least nine feet horizontally from the centerline of the wastewater main or lateral. The potable waterline shall be at least two feet above the wastewater main or lateral. Whenever possible, the crossing shall be centered between the joints of the wastewater main or lateral. The wastewater pipe shall have a minimum pipe stiffness of 115 psi at 5.0% deflection. The wastewater main or lateral shall be embedded in cement stabilized sand (see

§290.44(e)(4)(B)(vi) of this title) for the total length of one pipe segment plus 12 inches beyond the joint on each end.

(iv) Where a new potable waterline crosses a new, non-pressure rated wastewater main or lateral and a standard length of the wastewater pipe is less than 18 feet in length, the potable water pipe segment shall be centered over the wastewater line. The materials and method of installation shall conform with one of the following options:

(I) Within nine feet horizontally of either side of the waterline, the wastewater pipe and joints shall be constructed with pipe material having a minimum pressure rating of at least 150 psi. An absolute minimum vertical separation distance of two feet shall be provided. The wastewater main or lateral shall be located below the waterline.

(II) All sections of wastewater main or lateral within nine feet horizontally of the waterline shall be encased in an 18 foot (or longer) section of pipe. Flexible encasing pipe shall have a minimum pipe stiffness of 115 psi at 5.0% deflection. The encasing pipe shall be centered on the waterline and shall be at least two nominal pipe diameters larger than the wastewater main or lateral. The space around the carrier pipe shall be supported at five-foot (or less) intervals with spacers or be filled to the springline with washed sand. Each end of the casing shall be sealed with water tight non-shrink cement grout or a manufactured water tight seal. An absolute minimum separation distance of six inches between the encasement pipe and the waterline shall be provided. The wastewater line shall be located below the waterline.

(III) When a new waterline crosses under a wastewater main or lateral, the waterline shall be encased as described for wastewater mains or laterals in subclause (II) of this clause or constructed of ductile iron or steel pipe with mechanical or welded joints as appropriate. An absolute minimum separation distance of one foot between the water line and the wastewater main or lateral shall be provided. Both the waterline and wastewater main or lateral must pass a pressure and leakage test as specified in AWWA C600 standards.

(v) Where a new potable waterline crosses a new, pressure rated wastewater main or lateral, one segment of the waterline pipe shall be centered over the wastewater line such that the joints of the waterline pipe are equidistant and at least nine feet horizontally from the centerline of the wastewater main or lateral. The potable waterline shall be at least six inches above the wastewater main or lateral. Whenever possible, the crossing shall be centered between the joints of the wastewater main or lateral. The wastewater pipe shall have a minimum pressure rating of at least 150 psi. The wastewater main or lateral shall be embedded in cement stabilized sand (see clause (vi) of this subparagraph) for the total length of one pipe segment plus 12 inches beyond the joint on each end.

(vi) Where cement stabilized sand bedding is required, the cement stabilized sand shall have a minimum of 10% cement per cubic yard of cement stabilized sand mixture, based on loose dry weight volume (at least 2.5 bags of cement per cubic yard of mixture). The cement stabilized sand bedding shall be a minimum of six inches above and four inches below the wastewater main or lateral. The use of brown coloring in cement stabilized sand for wastewater main or lateral

bedding is recommended for the identification of pressure rated wastewater mains during future construction.

(5) Waterline and Wastewater Main or Lateral Manhole or Cleanout Separation. The separation distance from a potable waterline to a wastewater main or lateral manhole or cleanout shall be a minimum of nine feet. Where the nine-foot separation distance cannot be achieved, the potable waterline shall be encased in a joint of at least 150 psi pressure class pipe at least 18 feet long and two nominal sizes larger than the new conveyance. The space around the carrier pipe shall be supported at five feet intervals with spacers or be filled to the spring line with washed sand. The encasement pipe shall be centered on the crossing and both ends sealed with cement grout or manufactured sealant.

(6) Location of Fire Hydrants. Fire hydrants shall not be installed within nine feet vertically or horizontally of any wastewater main, wastewater lateral or wastewater service line regardless of construction.

(7) Location of Potable or Raw Water Supply or Suction Lines. Suction mains to pumping equipment shall not cross wastewater mains, wastewater laterals or wastewater service lines. Raw water supply lines shall not be installed within five feet of any tile or concrete wastewater main, wastewater lateral, or wastewater service line.

(8) Proximity of Septic Tank Drainfields. Waterlines shall not be installed closer than ten feet to septic tank drainfields.

(f) Sanitary precautions and disinfection. Sanitary precautions, flushing, disinfection procedures and microbiological sampling as prescribed in AWWA standards for disinfecting water mains shall be followed in laying waterlines.

(1) Pipe shall not be laid in water or placed where it can be flooded with water or sewage during its storage or installation.

(2) Special precautions must be taken when water lines are laid under any flowing or intermittent stream or semipermanent body of water such as marsh, bay or estuary. In these cases, the water main shall be installed in a separate watertight pipe encasement and valves must be provided on each side of the crossing with facilities to allow the underwater portion of the system to be isolated and tested to determine that there are no leaks in the underwater line. Alternately, and with the permission of the executive director, the watertight pipe encasement may be omitted.

(3) New mains shall be thoroughly disinfected in accordance with AWWA Standard C651 and then flushed and sampled before being placed in service. Samples shall be collected for microbiological analysis to check the effectiveness of the disinfection procedure. Sampling shall be repeated if contamination persists. A minimum of one sample for each 1,000 feet of completed water line will be required or at the next available sampling point beyond 1,000 feet as designated by the design engineer.

(g) Interconnections.

(1) Each proposal for a direct connection between public drinking water systems under separate administrative authority will be considered on an individual basis.

(A) Documents covering the responsibility for sanitary control shall accompany the submitted planning material.

(B) Each water supply shall be of a safe, potable quality.

(2) Where an interconnection between systems is proposed to provide a second source of supply for one or both systems, the system being utilized as a second source of supply must be capable of supplying a minimum of 0.35 gallons per minute per connection for the total number of connections in the combined distribution systems.

(h) Backflow, siphonage.

(1) No water connection from any public drinking water supply system shall be allowed to any residence or establishment where an actual or potential contamination hazard exists unless the public water facilities are protected from contamination.

(A) At any residence or establishment where an actual or potential contamination hazard exists, additional protection shall be required at the meter in the form of an air

gap or backflow prevention assembly. The type of backflow prevention assembly required shall be determined by the specific potential hazard identified in §290.47(i) of this title (relating to Appendices).

(B) At any residence or establishment where an actual or potential contamination hazard exists and an adequate internal cross-connection control program is in effect, backflow protection at the water service entrance or meter is not required.

(i) An adequate internal cross-connection control program shall include an annual inspection and testing by a certified backflow prevention assembly tester on all backflow prevention assemblies used for health hazard protection.

(ii) Copies of all such inspection and test reports must be obtained and kept on file by the water purveyor.

(iii) It will be the responsibility of the water purveyor to ensure that these requirements are met.

(2) No water connection from any public drinking water supply system shall be allowed to any condensing, cooling or industrial process or any other system of nonpotable usage over which the public water supply system officials do not have sanitary control, unless the said connection is made in accordance with the requirements of paragraph (1) of this subsection. Water from such systems cannot be returned to the potable water supply.

(3) Overhead bulk water dispensing stations must be provided with an air gap between the filling outlet hose and the receiving tank to protect against back siphonage and cross-contamination.

(4) All backflow prevention assemblies that are required according to this section and associated table §290.47(i) of this title shall be tested upon installation by a recognized backflow prevention assembly tester and certified to be operating within specifications. Backflow prevention assemblies which are installed to provide protection against health hazards must also be tested and certified to be operating within specifications at least annually by a recognized backflow prevention assembly tester.

(A) Recognized backflow prevention assembly testers shall have completed a executive director approved course on cross-connection control and backflow prevention assembly testing, pass an examination administered by the TNRCC or its designated agent and hold current professional certification as a backflow prevention assembly tester.

(i) Backflow prevention assembly testers are qualified to test and repair assemblies on any domestic, commercial, industrial, or irrigation service.

(ii) Backflow prevention assembly testers may test and repair assemblies on firelines only if they are permanently employed by an Approved Fireline Contractor. The State Fire Marshall's office requires that any person performing maintenance on firelines must be employed by an Approved Fireline Contractor.

(B) Gauges used in the testing of backflow prevention assemblies shall be tested for accuracy annually in accordance with the University of Southern California's Manual of Cross-Connection Control or the American Water Works Association Recommended Practice for Backflow Prevention and Cross-Connection Control (Manual M14). Public water systems shall require testers to include test gauge serial numbers on "Test and Maintenance" report forms andensure testers have gauges tested for accuracy.

(C) A Test Report must be completed by the recognized backflow prevention assembly tester for each assembly tested. The signed and dated original must be submitted to the public water supplier for record keeping purposes. Any form which varies from the format specified in Appendix F of this title (relating to Backflow Prevention Assembly Test and Maintenance Report) must be approved by the executive director prior to being placed in use.

(5) The use of a backflow prevention assembly at the service connection shall be considered as additional backflow protection and shall not negate the use of backflow protection on internal hazards as outlined and enforced by local plumbing codes.

(6) At any residence or establishment where there is no actual or potential contamination hazard, a backflow prevention assembly is not required.

(i) Water hauling. When drinking water is distributed by tank truck or trailer, it must be accomplished in the following manner:

(1) Water shall be obtained from an approved source.

(2) The equipment used to haul the water must be approved by the executive director and must be constructed as follows:

(A) The tank truck or trailer shall be used for transporting drinking water only and shall be labeled "Drinking Water." Tanks which have been used previously for purposes other than transporting potable liquids shall not be used for hauling drinking water.

(B) The tank shall be watertight and of an approved material which is impervious and easily cleaned and disinfected. Any paint or coating and any plastic or fiberglass materials used as contact surfaces must be approved by the United States Environmental Protection Agency, the United States Food and Drug Administration, or the National Sanitation Foundation. Effective January 1, 1993, any newly installed surfaces shall conform to ANSI/NSF Standard 61 and must be certified by an organization accredited by ANSI.

(C) The tank shall have a manhole and a manhole cover which overlaps the raised manhole opening by a minimum of two inches and terminates in a downward direction. The cover shall fit firmly on the manhole opening and shall be kept locked.

(D) The tank shall have a vent which is faced downward and located to minimize the possibility of drawing contaminants into the stored water. The vent must be screened with 16-mesh or finer corrosion-resistant material.

(E) Connections for filling and emptying the tank shall be properly protected to prevent the possible entrance of contamination. These openings must be provided with caps and keeper chains.

(F) A drain shall be provided which will completely empty the tank for cleaning or repairs.

(G) When a pump is used to transfer the water from the tank, the pump shall be permanently mounted with a permanent connection to the tank. The discharge side of the pump shall be properly protected between uses by a protective cap and keeper chain.

(H) Hoses used for the transfer of drinking water to and from the tank shall be used only for that purpose and labeled for drinking water only. The hoses shall conform to ANSI/NSF Standard 61 and must be certified by an entity recognized by the commission. Hoses and related appurtenances must be cleaned and disinfected on a regular basis during prolonged use or before start-up during intermittent use. Hoses must be properly stored between uses and must be provided with caps and keeper chains or have the ends connected together.

(I) The tank shall be disinfected monthly and at any time that contamination is suspected.

(J) At least one sample per month from each tank shall be collected and submitted for microbiological analysis to one of the commission's approved laboratories for each month of operation.

(K) A minimum free chlorine residual of 0.5 mg/l or, if chloramines are used as the primary disinfectant, a chloramine residual of 1.0 mg/l (measured as total chlorine) shall be maintained in the water being hauled. Chlorine or chlorine containing compounds may be added on a "batch" basis to maintain the required residual.

(L) Operational records detailing the amount of water hauled, purchases, microbiological sampling results, chlorine residual readings, dates of disinfection and source of water shall be maintained.

§290.45. Minimum Water System Capacity Requirements.

(a) General Provisions. The following requirements are to be used in evaluating both the total capacities for public water systems and the capacities at individual pump stations and pressure planes. The capacities listed below are minimum requirements only. Additional supply, storage, service pumping, and pressure maintenance facilities will be required by the commission if a normal operating

pressure of 35 psi cannot be maintained throughout the system, or if the system's maximum daily demand exceeds its total production and treatment capacity. Additional capacities will also be required if the system is unable to maintain a minimum pressure of 20 psi during fire fighting, line flushing and other unusual conditions. In all sections governing quantity requirements, total storage capacity does not include pressure tank capacity.

(b) Community Water Systems.

(1) Groundwater supply requirements are as follows:

(A) If fewer than 50 connections without ground storage, the system must have the following:

(i) a well capacity of 1.5 gallons per minute per connection; and

(ii) a pressure tank capacity of 50 gallons per connection.

(B) If fewer than 50 connections with ground storage, the system must have the following:

(i) a well capacity of 0.6 gallon per minute per connection;

(ii) a total storage capacity of 200 gallons per connection;

(iii) two or more service pumps having a total capacity of 2.0 gallons per minute per connection; and

(iv) a pressure tank capacity of 20 gallons per connection.

(C) For 50 to 250 connections, the system must meet the following requirements:

(i) A well capacity of 0.6 gallon per minute per connection must be provided.

(ii) A total storage capacity of 200 gallons per connection must be provided.

(iii) Each pump station or pressure plane shall have two or more pumps having a total capacity of 2.0 gallons per minute per connection. For systems which provide an elevated storage capacity of 200 gallons per connection, two service pumps with a minimum combined capacity of 0.6 gallons per minute per connection are required at each pump station or pressure plane. If only wells and elevated storage are provided, service pumps are not required.

(iv) An elevated storage capacity of 100 gallons per connection or a pressure tank capacity of 20 gallons per connection must be provided.

(D) For more than 250 connections, the system must meet the following requirements:

(i) Two or more wells having a total capacity of 0.6 gallons per minute per connection must be provided. Where an interconnection is provided with another acceptable water system capable of supplying at least 0.35 gallons per minute for each connection in the combined system under emergency conditions, an additional well will not be required as long as the 0.6 gallons per minute per connection requirement is met for each system on an individual basis. Each water system must still meet the storage and pressure maintenance requirements on an individual basis unless the interconnection is permanently open; in this case, the systems' capacities will be rated as though a single system existed.

(ii) A total storage capacity of 200 gallons per connection must be provided.

(iii) Each pump station or pressure plane shall have two or more pumps that have a total capacity of 2.0 gallons per minute per connection or that have a total capacity of at least 1,000 gallons per minute and the ability to meet peak hourly demands with the largest pump out of service, whichever is less. For systems which provide an elevated storage capacity of 200 gallons

per connection, two service pumps with a minimum combined capacity of 0.6 gallons per minute per connection are required at each pump station or pressure plane. If only wells and elevated storage are provided, service pumps are not required.

(iv) An elevated storage capacity of 100 gallons per connection or a pressure tank capacity of 20 gallons per connection must be provided. If pressure tanks are used, a maximum capacity of 30,000 gallons is sufficient for up to 2,500 connections. An elevated storage capacity of 100 gallons per connection is required for systems with more than 2,500 connections. Alternate methods of pressure maintenance may be proposed and will be approved if the criteria contained in §290.45(g)(2) of this chapter are met.

(v) Emergency power is required for systems which serve more than 250 connections and do not meet the elevated storage requirement. Sufficient emergency power must be provided to deliver a minimum of 0.35 gallons per minute per connection to the distribution system in the event of the loss of normal power supply. Alternately, an emergency interconnection can be provided with another public water system that has emergency power and is able to supply at least 0.35 gallons per minute for each connection in the combined system. Emergency power facilities in systems serving 1,000 connections or greater must be serviced and maintained in accordance with level 2 maintenance requirements contained in the current NFPA 110 standards. Although not required, compliance with NFPA 110 standards is highly recommended for systems serving less than 1,000 connections. Logs of all emergency power use and maintenance must be maintained and kept on file

for a period of not less than three years. These records must be made available, upon request, for commission review.

(E) Mobile home parks with a density of 8 or more units per acre and apartment complexes which supply fewer than 100 connections without ground storage must have the following:

(i) a well capacity of 1.0 gallon per minute per connection; and

(ii) a pressure tank capacity of 50 gallons per connection with a maximum of 2,500 gallons required.

(F) Mobile home parks and apartment complexes which supply 100 connections or greater, or fewer than 100 connections and utilize ground storage must meet the following requirements:

(i) A well capacity of 0.6 gallons per minute per connection must be provided. Systems with 250 or more connections must have either two wells or an approved interconnection which is capable of supplying at least 0.35 gallons per minute for each connection in the combined system.

(ii) A total storage of 200 gallons per connection must be provided.

(iii) At least two service pumps with a total capacity of 2.0 gallons per minute per connection must be provided.

(iv) A pressure tank capacity of 20 gallons per connection must be provided.

(2) All surface water supplies must provide the following:

(A) a raw water pump capacity of 0.6 gallon per minute per connection with the largest pump out of service.

(B) a treatment plant capacity of 0.6 gallon per minute per connection under normal rated design flow.

(C) transfer pumps (where applicable) with a capacity of 0.6 gallon per minute per connection with the largest pump out of service.

(D) a covered clearwell storage capacity at the treatment plant of 50 gallons per connection or, for systems serving more than 250 connections, 5.0% of daily plant capacity.

(E) a total storage capacity of 200 gallons per connection.

(F) a service pump capacity that provides each pump station or pressure plane with two or more pumps that have a total capacity of 2.0 gallons per minute per connection or that have a total capacity of at least 1,000 gallons per minute and the ability to meet peak hourly demands with the largest pump out of service, whichever is less. For systems which provide an elevated storage capacity of 200 gallons per connection, two service pumps with a minimum combined capacity of 0.6 gallons per minute per connection are required at each pump station or pressure plane.

(G) An elevated storage capacity of 100 gallons per connection or a pressure tank capacity of 20 gallons per connection must be provided. If pressure tanks are used, a maximum capacity of 30,000 gallons is sufficient for systems of up to 2,500 connections. An elevated storage capacity of 100 gallons per connection is required for systems with more than 2,500 connections. Alternate methods of pressure maintenance may be proposed and will be approved if the criteria contained in §290.45(g)(2) of this chapter are met.

(H) Emergency power is required for systems which serve more than 250 connections and do not meet the elevated storage requirement. Sufficient emergency power must be provided to deliver a minimum of 0.35 gallons per minute per connection to the distribution system in the event of the loss of normal power supply. Alternately, an emergency interconnection can be provided with another public water system that has emergency power and is able to supply at least 0.35 gallons per minute for each connection in the combined system. Emergency power facilities in systems serving 1,000 connections or greater must be serviced and maintained in accordance with level 2 maintenance requirements contained in the current NFPA 110 standards. Although not required,

compliance with NFPA 110 standards is highly recommended for systems serving less than 1,000 connections. Logs of all emergency power use and maintenance must be maintained and kept on file for a period of not less than three years. These records must be made available, upon request, for commission review.

(c) Noncommunity water systems serving transient accommodation units. The following water quantity requirements apply to noncommunity water systems serving accommodation units such as hotel rooms, motel rooms, travel trailer spaces, campsites and similar accommodations.

(1) Ground water supply requirements are as follows:

(A) If fewer than 100 accommodation units without ground storage, the system must have the following:

(i) a well capacity of 1.0 gallon per minute per unit; and

(ii) a pressure tank capacity of 10 gallons per unit with a minimum of 220 gallons.

(B) For systems serving fewer than 100 accommodation units with ground storage or serving 100 or more accommodation units, the system must have the following:

(i) a well capacity of 0.6 gallons per minute per unit;

(ii) a ground storage capacity of 35 gallons per unit;

(iii) two or more service pumps which have a total capacity of 1.0 gallon per minute per unit; and

(iv) a pressure tank capacity of 10 gallons per unit.

(2) All surface water supplies, regardless of size, must have the following:

(A) a raw water pump capacity of 0.6 gallons per minute per unit with the largest pump out of service;

(B) a treatment plant capacity of 0.6 gallons per minute per unit;

(C) a transfer pump capacity (where applicable) of 0.6 gallons per minute per unit with the largest pump out of service;

(D) a ground storage capacity of 35 gallons per unit with a minimum of 1,000 gallons as clearwell capacity;

(E) two or more service pumps with a total capacity of 1.0 gallon per minute per unit; and

(F) a pressure tank capacity of 10 gallons per unit with a minimum requirement of 220 gallons.

(d) Noncommunity water systems serving other than transient accommodation units.

(1) The following table is applicable to paragraphs (2) and (3) of this subsection and shall be used to determine the maximum daily demand for the various types of facilities listed:

(2) Groundwater supply requirements are as follows.

(A) If fewer than 300 persons per day are served, the system must have the following:

(i) a well capacity which can supply the maximum daily demand of the system during the hours of operation; and

(ii) a minimum pressure tank capacity of 220 gallons with additional capacity, if necessary, based on a sanitary survey conducted by the commission.

(B) If 300 or more persons per day are served, the system must have the following:

(i) a well capacity which can supply the maximum daily demand;

(ii) a ground storage capacity which is equal to 50% of the maximum daily demand;

(iii) if the maximum daily demand is less than 15 gpm, at least one service pump with a capacity of three times the maximum daily demand must be provided;

(iv) if the maximum daily demand is 15 gpm or more, at least two service pumps with a total capacity of three times the maximum daily demand; and

(v) a minimum pressure tank capacity of 220 gallons with additional capacity, if necessary, based on a sanitary survey conducted by the executive director.

(3) Each surface water supply or groundwater supply that is under the direct influence of surface water, regardless of size, shall meet the following requirements:

(A) a raw water pump capacity which can meet the maximum daily demand of the system with the largest pump out of service;

(B) a treatment plant capacity which can meet the system's maximum daily demand;

(C) a transfer pump capacity (where applicable) sufficient to meet the maximum daily demand with the largest pump out of service;

(D) a clearwell capacity which is equal to 50% of the maximum daily demand;

(E) two or more service pumps with a total capacity of three times the maximum daily demand; and

(F) a minimum pressure tank capacity of 220 gallons with additional capacity, if necessary, based on a sanitary survey conducted by the commission.

(e) Water wholesalers. The following additional requirements apply to systems which supply wholesale treated water to other public water supplies.

(1) All wholesalers must provide enough production, treatment and service pumping capacity to meet or exceed the combined maximum daily commitments specified in their various contractual obligations.

(2) For systems supplying both retail and wholesale connections, the commission's production, treatment and service pumping capacity requirements for the system's wholesale connections are in addition to the commission's requirements for the system's retail connections.

(3) Emergency power is required for each portion of the system which supplies more than 250 connections under direct pressure and does not provide an elevated storage capacity of at least 100 gallons per connection. If emergency power is required, it must be sufficient to deliver 20% of the minimum required service pump capacity in the event of the loss of normal power supply. When the wholesaler provides water through an air gap into the purchaser's storage facilities it will be the purchaser's responsibility to meet all minimum water system capacity requirements including emergency power.

(f) Purchased water systems. The following requirements apply only to systems which purchase treated water to meet all or part of their production, storage, service pump, or pressure maintenance capacity requirements.

(1) The water purchase contract shall be available to the commission in order that production, storage, service pump, or pressure maintenance capacity may be properly evaluated. For purposes of this section, a contract may be defined as a signed written document of specific terms agreeable to the water purchaser and the water wholesaler, or in its absence, a memorandum or letter of understanding between the water purchaser and the water wholesaler.

(2) The contract shall authorize the purchase of enough water to meet the monthly or annual needs of the purchaser.

(3) The contract shall also establish the maximum rate at which water may be drafted on a daily and hourly basis. In the absence of specific maximum daily or maximum hourly rates in the contract, a uniform purchase rate for the contract period will be used.

(4) The maximum authorized daily purchase rate specified in the contract plus the actual production capacity of the system shall be at least 0.6 gallons per minute per connection.

(5) For systems which purchase water under direct pressure, the maximum hourly purchase authorized by the contract plus the actual service pump capacity of the system must be at least 2.0 gallons per minute per connection or provide at least 1,000 gallons per minute and be able to meet peak hourly demands, whichever is less.

(6) All other minimum capacity requirements specified in this section shall apply.

(g) Alternative capacity requirements. Public water systems may request approval to meet alternative capacity requirements in lieu of the minimum capacity requirements specified in this section. Any water system requesting to use an alternative capacity requirement must demonstrate to the satisfaction of the executive director that approving the request will not compromise the public health or

result in a degradation of service or water quality as specified in §290.39(l) of this title (relating to General Provisions).

(1) Alternative capacity requirement for public water systems may be granted upon request to and approval by the executive director. The request to use an alternative capacity requirement must include:

(A) Provision of a detailed inventory of the major production, pressurization, and storage facilities utilized by the system.

(B) Provision of records kept by the water system that document the daily production of the system. The period reviewed shall not be less than three years. The applicant may not use a calculated peak daily demand.

(C) The executive director may also require data acquired during the last drought period in the region.

(D) The peak demand days over the study period must utilize data on the number of active connections to determine the actual demand per connection experienced.

(E) Description of any unusual demands on the system such as fire flows or major main breaks that will invalidate unusual peak demands experienced in the study period.

(F) Any other relevant data needed to determine that the proposed alternative capacity requirement will provide a level of service that is equivalent to the level of service provided by the minimum capacity requirements contained in this section.

(2) Although elevated storage is the preferred method of pressure maintenance for systems of over 2500 connections, it is recognized that local conditions may dictate the use of alternate methods utilizing hydropneumatic tanks and on-site emergency power equipment. Alternative capacity requirements to the elevated storage requirements may be obtained based on request to and approval by the executive director. Special conditions apply to systems using an alternative capacity requirement to meet minimum pressure maintenance requirements.

(A) The system must submit documentation sufficient to assure that the alternate method of pressure maintenance is capable of providing a safe and uninterrupted supply of water under pressure to the distribution system during all demand conditions.

(i) A signed and sealed statement by a licensed professional engineer must be provided which certifies that the pressure maintenance facilities are sized, designed and capable of providing a minimum pressure of at least 35 psi at all points within the distribution network at flow rates of 1.5 gpm per connection or greater. In addition, the engineer must certify that the emergency power facilities are capable of providing the greater of the average daily demand or 0.35 gpm per connection while maintaining distribution pressures of at least 35 psi, and that emergency power

facilities powering production and treatment facilities are capable of supplying at least 0.35 gpm per connection to storage.

(ii) The system's licensed professional engineer must conduct a hydraulic analysis of the system under peak conditions. This must include an analysis of the time lag between the loss of the normal power supply and the commencement of emergency power as well as the minimum pressure that will be maintained within the distribution system during this time lag. In no case shall this minimum pressure within the distribution system be less than 20 psi. The results of this analysis must be submitted to the commission for review.

(iii) For existing systems, the system's licensed professional engineer must provide continuous pressure chart recordings of distribution pressures maintained during past power failures, if available. The period reviewed shall not be less than three years.

(B) Emergency power facilities must be maintained and provided with necessary appurtenances to assure immediate and dependable operation in case of normal power interruption.

(i) The facilities must be serviced and maintained in accordance with level 2 maintenance requirements contained in the current NFPA 110 standards and the manufacturers recommendations.

(ii) The switching gear must be capable of bringing the emergency power generating equipment on line during a power interruption such that the pressure in the distribution network does not fall below 20 psi at any time.

(iii) The minimum on-site fuel storage capacity shall be determined by the fuel demand of the emergency power facilities and the frequency of fuel delivery. An amount of fuel equal to that required to operate the facilities under-load for a period of at least 8 hours must always be maintained on site.

(iv) Residential rated mufflers or other means of effective noise suppression must be provided on each emergency power motor.

(C) Battery powered or uninterrupted power supply pressure monitors and chart recorders which are configured to activate immediately upon loss of normal power must be provided for pressure maintenance facilities. These records must be kept for a minimum of three years and made available for review by the commission. Records must include chart recordings of all power interruptions including interruptions due to periodic emergency power "under-load" testing and maintenance.

(D) An emergency response plan must be submitted detailing procedures to be followed and individuals to be contacted in the event of loss of normal power supply.

(3) Any alternative capacity requirement granted under this subsection shall be subject to review at the time of each routine sanitary survey of the system. Failure to demonstrate satisfactory survey findings may result in revocation of the alternative capacity requirement. If permission to use an alternative capacity requirement is revoked, the public water system must meet the applicable minimum capacity requirements of this section.

§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 these sections 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. 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 Supply 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 a certified laboratory. (A list of the certified laboratories can be obtained by contacting 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 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 (7) of this subsection, all public water systems must be operated continuously under the direct supervision of an adequately trained and appropriately licensed water works operator.

(1) Systems serving no more than 1,000 connections must employ at least one operator meeting the applicable requirements of paragraph (3) of this subsection.

(2) Systems that serve more than 1,000 connections must employ at least two operators who meet the applicable requirements of paragraph (3) of this subsection.

(3) The production, treatment, and distribution facilities of all public water systems 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.

(A) Systems serving fewer than 250 connections must employ an operator with a Class “D” or higher license if they only use groundwater or purchased treated water.

(B) Systems that serve 250 or more connections must employ an operator with a Class “C” or higher license if they only use purchased treated water.

(C) Systems that serve 250 or more connections must employ an operator with a Class "C" or higher Groundwater license if they use groundwater and do not treat groundwater that is under the direct influence of surface water or surface water.

(D) Systems that treat groundwater that is under the direct influence of surface water and do not treat surface water must meet the following requirements related to the direct supervision of their facilities:

(i) Systems which utilize cartridge filters must employ an operator who has a Class "C" or higher Surface water license or has a Class "C" or higher Groundwater license and has completed a four-hour training course on monitoring and reporting requirements.

(ii) Systems which utilize coagulant addition and direct filtration must employ an operator who has a Class "C" or higher Surface Water license or has a Class "C" or higher Groundwater license and has completed a 40-hour Surface Water Production course.

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

(iv) 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.

(E) Systems that treat surface water must meet the following requirements related to the supervision of their facilities.

(i) Beginning January 1, 2003, systems that treat surface water must employ at least one operator who holds a Class “B” or higher surface water license. Until January 1, 2003, these systems must employ at least one operator who holds a Class “B” or higher surface water license or who holds a Class “C” or higher Surface water license and has completed an approved 20-hour water laboratory course.

(ii) 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.

(iii) 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.

(4) Beginning January 1, 2004, the treatment facilities at all systems using chlorine dioxide must be under the direct supervision of a licensed operator who has completed additional training. Unless a higher level of certification is required by paragraph (3) of this subsection, public water systems using chlorine dioxide must place those facilities under the direct supervision of a licensed operator who has a Class "C" or higher license and has completed an approved water laboratory course.

(5) 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.

(6) 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.

(7) 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.

(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.

(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; and

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

(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 turbidity monitoring results and exception reports for individual filters as required by §290.111 of this title (relating to Turbidity);

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

(vi) the records of backflow prevention device programs.

(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; and

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

(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; and

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

(E) The following records shall be retained for at least 10 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 10 years after completion of the survey involved; and

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

(F) 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 any monthly or quarterly reports required by the executive director.

(A) The reports must be submitted to the Texas Natural Resource Conservation Commission, 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 certified water works operator.

(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 AWWA requirements and water samples must be submitted to a laboratory approved by the Texas Department of Health. 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 one-half 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 (relating to Customer Service Inspection Certificate) 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.

(B) Customer service inspectors who have completed a commission approved course, passed an examination administered by the TNRCC or its designated agent and hold current professional certification or endorsement 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 Definitions).

(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 Texas State Board of Plumbing Examiners (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 or more frequently 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 (relating to Disinfectant Residuals).

(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 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.

(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 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 Water Rates). 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 (relating to Appendices).

(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 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 (relating to Appendices). 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 pursuant to 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.

(s) Testing equipment. Accurate testing equipment or some other means of monitoring the effectiveness of any chemical treatment 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 shall be calibrated at least once every 12 months.

(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 manufacturers specifications at least once each day.

(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 online 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) Disinfectant residual analyzers shall be properly calibrated.

(i) The accuracy of manual disinfectant residual analyzers shall be verified at least once every 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.

(iii) The calibration of continuous disinfectant residual analyzers shall be checked at least once 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.

(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 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 installed in a securely mounted conduit in compliance with a local or national electrical code.

§290.47. Appendices.

(a) Appendix A. Recognition as a Superior or Approved Public Water System.

Figure: 30 TAC §290.47(a) (No change from proposal.)

(b) Appendix B. Sample Service Agreement.

Figure: 30 TAC §290.47(b) (No change from proposal.)

(c) Appendix C. Sample Sanitary Control Easement Document for a Public Water Well.

Figure: 30 TAC §290.47(c) (No change from proposal.)

(d) Appendix D. Customer Service Inspection Certification.

Figure: 30 TAC §290.47(d) (No change from proposal.)

(e) Appendix E. Boil Water Notification.

Figure: 30 TAC §290.47 (e) (No change from proposal.)

(f) Appendix F. Sample Backflow Prevention Assembly Test and Maintenance Report.

Figure: 30 TAC §290.47(f)

The following form must be completed for each assembly tested. A signed and dated original must be submitted to the public water supplier for record keeping purposes:

BACKFLOW PREVENTION ASSEMBLY TEST AND MAINTENANCE REPORT

NAME OF PWS: _____

PWS I.D.: #_____

MAILING ADDRESS: _____

CONTACT PERSON: _____

LOCATION OF SERVICE: _____

The backflow prevention assembly detailed below has been tested and maintained as required by TNRCC regulations and is certified to be operating within acceptable parameters.

TYPE OF ASSEMBLY

Reduced Pressure Principle	Reduced Pressure Principle-Detector
Double Check Valve	Double Check-Detector
Pressure Vacuum Breaker	Spill-Resistant Pressure Vacuum Breaker

Manufacturer_____ Size _____

Model Number_____ Located At _____

Serial Number_____

Is the assembly installed in accordance with manufacturer recommendations and/or local codes? ____

	Reduced Pressure Principle Assembly			Pressure Vacuum Breaker	
	Double Check Valve Assembly			Air Inlet	Check Valve
	1st Check	2nd Check	Relief Valve		
Initial Test	Held at _____ psid Closed Tight ☐ Leaked ☐	Held at _____ psid Closed Tight ☐ Leaked ☐	Opened at ____ psid Did not open ☐	Opened at _____psid Did not open ☐	Held at ____ psid Leaked ☐
Repairs and Materials Used					
Test After Repair	Held at _____ psid Closed Tight ☐	Held at _____ psid Closed Tight ☐	Opened at ____ psid	Opened at _____ psid	Held at ____ psid

Test gauge used: Make/Model_____ SN:_____ Calibration Date:_____

Remarks:_____

The above is certified to be true at the time of testing.

Firm Name _____ Certified Tester _____

Firm Address _____ Cert. Tester No. _____ Date_____

Firm Phone #_____

* TEST RECORDS MUST BE KEPT FOR AT LEAST THREE YEARS

** USE ONLY MANUFACTURER'S REPLACEMENT PARTS

(g) Appendix G. Operator and/or Employment Notice.

Figure: 30 TAC §290.47(g)

Section 290.46(p)(2), Data on water system ownership and management, requires the owner of a public water system to annually provide the executive director with a list of all the water works operators and operating companies that the public water system employs. The following form may be used to facilitate compliance with this requirement. This notice should be submitted to the Texas Natural Resource Conservation Commission, Water Supply Division, MC-155, P.O. Box 13087, Austin, Texas 78711-3087 or provided to the executive director during on-site inspections.

Operator and/or Employment Notice Form

Name of Operator or Operating Company	For Operators		For Companies
	License No.	Class of License	Registration No.
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

_____ _____

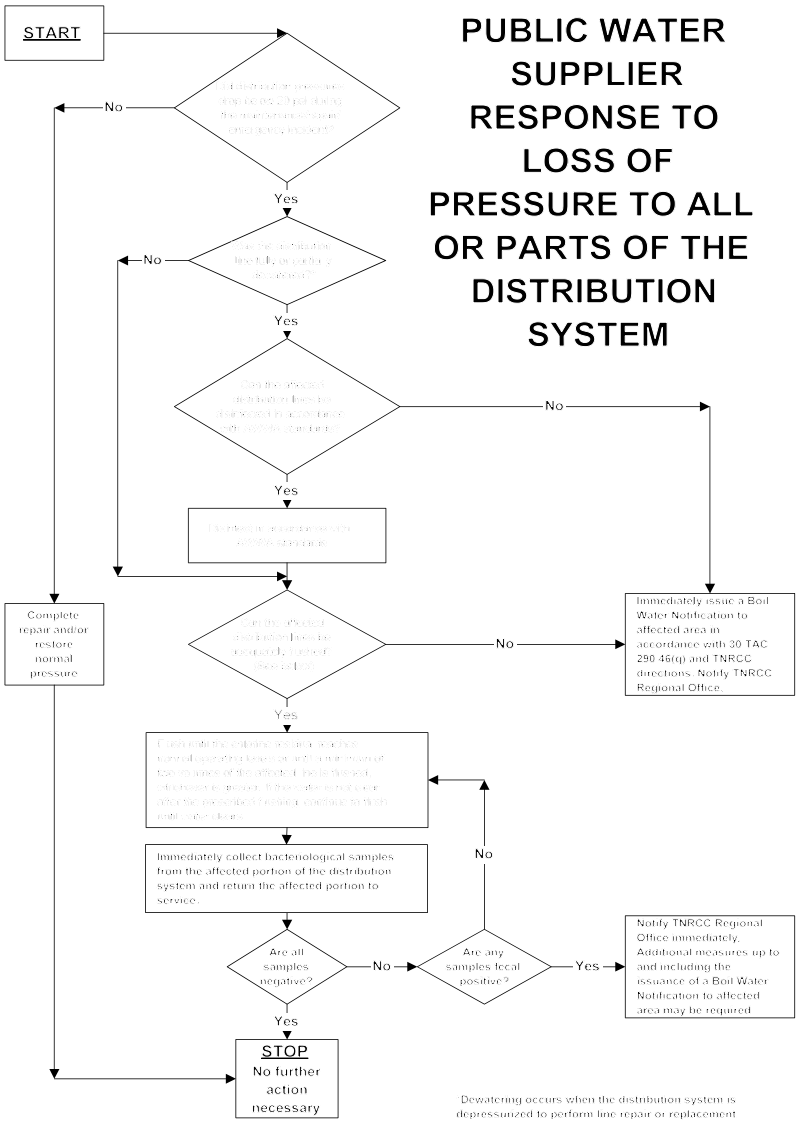
Signature of Water System Owner or Responsible Official Date

_____ _____

Name of Water System Owner or Responsible Official Title of Owner or Responsible Official

(h) Appendix H. Special Precautions.

Figure: 30 TAC §290.47(h)



(i) Appendix I. Assessment of Hazard and Selection of Assemblies.

Figure: 30 TAC §290.47(i)

The following table lists many common hazards. It is not an all-inclusive list of the hazards which may be found connected to public water systems.

Premises Isolation - Description of Premises	Assessment of Hazard	Required Assembly
Aircraft and missile plants	Health	RPBA or AG
Animal feedlots	Health	RPBA or AG
Automotive plants	Health	RPBA or AG
Breweries	Health	RPBA or AG
Canneries, packing houses and rendering plants	Health	RPBA or AG
Commercial car wash facilities	Health	RPBA or AG
Commercial laundries	Health	RPBA or AG
Cold storage facilities	Health	RPBA or AG
Connection to sewer pipe	Health	AG
Dairies	Health	RPBA or AG
Docks and dockside facilities	Health	RPBA or AG
Dye works	Health	RPBA or AG
Food and beverage processing plants	Health	RPBA or AG
Hospitals, morgues, mortuaries, medical clinics, dental clinics, autopsy facilities, sanitariums, and medical labs	Health	RPBA or AG
Metal manufacturing, cleaning, processing, and fabrication plants	Health	RPBA or AG
Microchip fabrication facilities	Health	RPBA or AG
Paper and paper products plants	Health	RPBA or AG
Petroleum processing or storage facilities	Health	RPBA or AG
Photo and film processing labs	Health	RPBA or AG
Plants using radioactive material	Health	RPBA or AG
Plating or chemical plants	Health	RPBA or AG

Pleasure-boat marinas	Health	RPBA or AG
Reclaimed water systems	Health	RPBA or AG
Restricted, classified or other closed facilities	Health	RPBA or AG
Rubber plants	Health	RPBA or AG
Sewage lift stations	Health	RPBA or AG
Sewage treatment plants	Health	RPBA or AG
Slaughter houses	Health	RPBA or AG
Steam plants	Health	RPBA or AG
Tall buildings or elevation differences where the highest outlet is 80 feet or more above the meter	Nonhealth	DCVA

Internal Protection - Description of Cross Connection	Assessment of Hazard	Recommended Assembly
Aspirators	Nonhealth†	AVB
Aspirator (medical)	Health	AVB or PVB
Autoclaves	Health	RPBA
Autopsy and mortuary equipment	Health	AVB or PVB
Bedpan washers	Health	AVB or PVB
Connection to industrial fluid systems	Health	RPBA
Connection to plating tanks	Health	RPBA
Connection to salt-water cooling systems	Health	RPBA
Connection to sewer pipe	Health	AG
Cooling towers with chemical additives	Health	AG
Cuspidors	Health	AVB or PVB
Degreasing equipment	Nonhealth†	DCVA
Domestic space-heating boiler	Nonhealth†	RPBA
Dye vats or machines	Health	RPBA
Fire-fighting system (toxic liquid foam concentrates)	Health	RPBA

Flexible shower heads	Nonhealth†	AVB or PVB
Heating equipment		
Commercial	Nonhealth†	RPBA
Domestic	Nonhealth†	DCVA
Hose bibbs	Nonhealth†	AVB
Irrigation systems		
with chemical additives	Health	RPBA
without chemical additives	Nonhealth†	DCVA, AVB,or PVB
Kitchen equipment - Commercial	Nonhealth†	AVB
Lab bench equipment	Health or Nonhealth†	AVB or PVB
Ornamental fountains	Health	AVB or PVB
Swimming pools		
Private	Nonhealth†	PVB or AG
Public	Nonhealth†	RPBA or AG
Sewage pump	Health	AG
Sewage ejectors	Health	AG
Shampoo basins	Nonhealth†	AVB
Specimen tanks	Health	AVB or PVB
Steam generators	Nonhealth†	RPBA
Steam tables	Nonhealth†	AVB
Sterilizers	Health	RPBA
Tank vats or other vessels containing toxic		
substances	Health	RPBA
Trap primers	Health	AG
Vending machines	Nonhealth†	RPBA or PVB
Watering troughs	Health	AG or PVB

NOTE: AG = air gap; AVB = atmospheric vacuum breaker; DCVA = double check valve backflow prevention assembly; PVB = pressure vacuum breaker; RPBA = reduced-pressure principle backflow prevention assembly.

*AVBs and PVBs may be used to isolate health hazards under certain conditions, that is, backsiphonage situations. Additional area of premises isolation may be required.

†Where a greater hazards exists (due to toxicity or other potential health impact) additional area protection with RPBAs is required.

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

§§290.102 - 290.104, 290.106 - 290.115, 290.117 - 290.119, 290.121, 290.122

STATUTORY AUTHORITY

The amendments are adopted under the Texas Water Code (TWC), §5.103, which provides the commission the authority to adopt and enforce rules necessary to carry out its powers and duties under the laws of this state; TWC, §5.122, which allows the commission to delegate uncontested matters to the executive director; and under THSC, §341.031, which allows the commission to adopt rules to implement the SDWA, 42 USC, §§300f *et seq*.

§290.102. General Applicability.

(a) General Applicability. This subchapter shall apply to all public water systems as described in each section, unless the system:

(1) consists only of distribution and storage facilities (and does not have any production and treatment facilities);

(2) obtains all of its water from, but is not owned or operated by, a public water system to which such standards apply;

(3) does not sell water to any person;

(4) is not a carrier which conveys passengers in interstate commerce; and

(5) is subject to plumbing restrictions and inspections by the public water system which provides the water.

(b) Variances and exemptions. Variances and exemptions may be granted at the discretion of the executive director according to the Safety Drinking Water Act (SDWA), 42 United States Code (USC), §300g-4 and §300g-5, and according to National Primary Drinking Water Regulations, Subpart K, 40 CFR §§142.301 - 142.313. The executive director may not approve variances or exemptions from:

(1) the maximum contaminant level (MCL) for total coliforms, nitrate, nitrite, or total nitrate and nitrite;

(2) the maximum residual disinfection level (MRDL) for chlorine dioxide; or

(3) the treatment technique requirements for filtration and disinfection.

(c) Extensions. An extension to the compliance deadline for an MCL or treatment technique that becomes effective on or after January 1, 2002 may be granted at the discretion of the executive director in accordance with the SDWA, 42 USC, §300g-1(b)(10).

(1) The executive director may extend the effective date of an MCL or treatment technique for up to two years if all of the following conditions apply:

(A) there are no acute violations associated with the new MCL or treatment technique for which the extension is being granted;

(B) the executive director determines that granting the extension will not result in an unreasonable risk to public health;

(C) the extension is granted only to public water systems that were in operation on the date that the MCL or treatment technique was promulgated by the EPA;

(D) the executive director determines that capital improvements are needed to comply with the new MCL or treatment technique;

(E) the executive director approves a schedule identifying the capital improvements necessary to bring the system into compliance with the new MCL or treatment technique; and

(F) the EPA has not already incorporated a two-year extension into the effective date for the new MCL or treatment technique requirement.

(2) An application for an extension must be submitted to the executive director in writing by the owner or responsible party of the water system. The request must include a statement identifying the new MCL or treatment technique which is not being met and a general long range plan for meeting the new requirement.

(3) The executive director may issue an extension covering a group or class of systems with a common MCL or treatment technique which is not met without individual applications.

(d) Any person may file a motion to overturn the executive director's decision to grant or deny a variance, exemption, or extension under this section according to the procedures set out in §50.139 of this title (relating to Motion to Overturn Executive Director's Decision).

(e) Monitoring Schedule. All monitoring required by this chapter shall be conducted in a manner and on a schedule approved by the executive director in concurrence with the requirements of the administrator of the EPA.

(f) Modified Monitoring. When a public water system supplies water to one or more other public water systems, the executive director may modify the monitoring requirements imposed by this chapter to the extent that the interconnection of the systems justifies treating them as a single system for

monitoring purposes. Any modified monitoring shall be conducted pursuant to a schedule specified by the executive director in concurrence with the requirements of the administrator of the EPA.

§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) **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.

(2) **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.

(3) **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.

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

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

(6) **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.

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

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

(9) **Entry point to the distribution system** -- 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.

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

(11) **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.

(12) **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.

(13) **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.

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

(15) **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.

(16) **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.

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

(18) **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 m^{-1}) by its concentration of dissolved organic carbon (DOC) (in mg/L).

(19) **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.

(20) **Total trihalomethanes (TTHM)** – The sum of the chloroform, dibromochloromethane, bromodichloromethane, and bromoform concentrations in milligrams per liter, rounded to two significant figures after summing.

(21) **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.

§290.104. Summary of Maximum Contaminant Levels, Maximum Residual Disinfectant Levels, Treatment Techniques, and Action Levels.

(a) Summary table purpose. The maximum contaminant levels (MCLs), maximum residual disinfectant levels (MRDLs), treatment techniques, and action levels are presented in this section as a reference source. Only the regulatory concentrations are shown in these tables. Compliance requirements are given in the specific section for each chemical.

(b) Maximum contaminant levels for inorganic compounds. The MCLs for inorganic contaminants listed in this subsection apply to public water systems as provided in §290.106 of this title (relating to Inorganic Contaminants).

Figure: 30 TAC §290.104(b)

Contaminant	MCL (mg/L)
Antimony	0.006
Arsenic	0.05
Asbestos	7 million fibers/liter (longer than 10μm)
Barium	2.0
Beryllium	0.004
Cadmium	0.005
Chromium	0.1

Cyanide	0.2 (as free Cyanide)
Fluoride	4.0
Mercury	0.002
Nitrate	10 (as Nitrogen)
Nitrite	1 (as Nitrogen)
Nitrate & Nitrite (Total)	10 (as Nitrogen)
Selenium	0.05
Thallium	0.002

(c) Maximum contaminant levels (MCLs) for organic compounds. The following maximum contaminant levels for synthetic organic contaminants and volatile organic contaminants apply to public water systems as provided in §290.107 of this title (relating to Organic Contaminants).

(1) The following are the maximum contaminant levels for synthetic organic contaminants.

Figure: 30 TAC §290.104(c)(1) (No change from proposal.)

(2) The following are the maximum contaminant levels for volatile organic contaminants.

Figure: 30 TAC §290.104(c)(2) (No change from proposal.)

(d) Maximum contaminant levels for radiological contaminants. Maximum contaminant levels for radiological contaminants apply to public water systems as provided in §290.108 of this title (relating to Radiological Sampling and Analytical Requirements). The maximum contaminant levels for beta particle and photon radioactivity from man-made radionuclides in drinking water are as follows.

(1) The maximum contaminant level for combined radium-226 and radium-228 is 5 pCi/l.

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

(3) The average annual concentration of beta particle and photon radioactivity from man-made radionuclides in drinking water shall not produce an annual dose equivalent to the total body or any internal organ greater than four millirem (mrem)/year.

(4) If two or more radionuclides other than tritium or strontium-90 are present, the sum of their annual dose equivalent to the total body or to any organ shall not exceed four mrem/year. Average annual concentrations of tritium or strontium-90 assumed to produce a total body or organ dose of four mrem/year are as follows:

Figure: 30 TAC §290.104(d)(4) (No change from proposal.)

(e) Microbial contaminants. The MCL for microbial or bacteriological contaminants applies to public water systems as provided in §290.109 of this title (relating to Microbial Contaminants). The MCL for microbiological contaminants is based on the presence or absence of total coliform bacteria in a sample.

(f) Minimum and MRDLs. Minimum and MRDLs apply to public water systems as provided in §290.110 of this title (relating to Disinfectant Residuals).

(1) The minimum residual disinfectant concentration in the water entering the distribution system is 0.2 mg/L free chlorine or 0.5 mg/L chloramine.

(2) The minimum residual disinfectant concentration in the water within the distribution system is 0.2 mg/L free chlorine or 0.5 mg/L chloramine.

(3) The maximum residual disinfectant level of chlorine dioxide in the water entering the distribution system is 0.8 mg/L.

(4) The maximum residual disinfectant level of free chlorine or chloramine in the water within the distribution system is 4.0 mg/L based on a running annual average.

(g) Turbidity. Systems must meet the turbidity treatment technique requirements as provided in §290.111 of this title (relating to Turbidity).

(1) Until January 1, 2002, the turbidity level of the combined filter effluent must never exceed 5.0 NTU and the turbidity level of the combined filter effluent must be 0.5 NTU or less in at least 95% of the samples tested each month.

(2) Effective January 1, 2002 the turbidity level of the combined filter effluent must never exceed 1.0 NTU and 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.

(3) Systems are subject to individual filter turbidity provisions of §290.111 of this title.

(h) Disinfection by-product precursors. The treatment technique requirements for disinfection by-product precursors apply to water systems as provided in §290.112 of this title (relating to Total Organic Carbon (TOC)).

(i) Disinfection by-products (TTHM and HAA5). The MCLs for TTHM and HAA5 apply to water systems as provided in §290.113 of this title (relating to Disinfection By-products (TTHM and HAA5)). The MCLs for TTHM and HAA5 are:

(1) the MCL for TTHM is 0.080 milligrams/liter; and

(2) the MCL for HAA5 is 0.060 milligrams/liter.

(j) Disinfection by-products other than TTHM and HAA5. The maximum contaminant levels for chlorite and bromate apply to water systems as provided in §290.114 of this title (relating to Disinfection By-products Other than TTHM and HAA5). The MCLs for chlorite and bromate are as follows:

(1) the MCL for chlorite is 1.0 mg/L; and

(2) the MCL for bromate is 0.010 mg/L.

(k) Lead and copper action levels. The action levels for lead and copper apply to water systems as provided in §290.117 of this title (relating to Regulation of Lead and Copper). Action levels for lead and copper are as follows:

(1) the action level for lead is 0.015 mg/l; and

(2) the action level for copper is 1.3 mg/l.

§290.106. Inorganic Contaminants.

(a) Applicability. All public water systems are subject to the requirements of this section.

(1) Community and nontransient non-community systems shall comply with the requirements of this section regarding monitoring, reporting, and maximum contaminant levels (MCLs) for all inorganic contaminants (IOCs) listed in this section.

(2) Transient non-community systems shall comply with the requirements of this section regarding monitoring, reporting, and MCL for nitrate and nitrite.

(3) For purposes of this section, systems using groundwater under the direct influence of surface water shall meet the inorganic sampling requirements given for surface water systems.

(b) Maximum contaminant levels for IOCS. The MCLs for IOCs listed in the following table apply to community and nontransient, non-community water systems. The MCLs for nitrate, nitrite, and total nitrate and nitrite also apply to transient non-community water systems.

Figure: 30 TAC §290.106(b)

Contaminant	MCL (mg/L)
Antimony	0.006
Arsenic	0.05
Asbestos	7 million fibers/liter (longer than 10μm)
Barium	2.0
Beryllium	0.004

Cadmium	0.005
Chromium	0.1
Cyanide	0.2 (as free Cyanide)
Fluoride	4.0
Mercury	0.002
Nitrate	10 (as Nitrogen)
Nitrite	1 (as Nitrogen)
Nitrate & Nitrite (Total)	10 (as Nitrogen)
Selenium	0.05
Thallium	0.002

(c) Monitoring requirements for IOCs. Public water systems shall monitor for IOCs at the locations specified by the executive director. All monitoring conducted pursuant to the requirements of this section must be conducted at sites designated in the public water system's monitoring plan. Each public water system shall monitor at the time designated during each compliance period.

(1) Monitoring locations for IOCs except asbestos, antimony, arsenic, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nitrate, nitrite, selenium, and thallium shall be monitored at each entry point to the distribution system.

(A) If a system draws water from more than one source and the sources are combined before distribution, the system must sample at an entry point that is representative of all

sources and during periods of normal operating conditions when water is representative of all sources being used.

(B) Systems shall take all subsequent samples at the same entry point to the distribution system unless the executive director determines that conditions make another entry point more representative of the source or treatment plant being monitored.

(C) The executive director may approve the use of composite samples.

(i) Compositing must be done in the laboratory or in the field by persons designated by the executive director.

(ii) Compositing shall be allowed only at groundwater entry points to the distribution system.

(iii) Compositing shall be allowed only within a single system. Samples from different systems shall not be included in a composite sample.

(iv) No more than five individual samples shall be included in a composite sample.

(v) The maximum number of individual samples allowed in a composite sample shall not exceed the number obtained by dividing the MCL for the contaminant by the detection limit of the analytical method and rounding the quotient to the next lowest integer. Detection limits for each analytical method are as listed in 40 CFR §141.23(a)(4)(i).

(vi) If the concentration in the composite sample is greater than or equal to the proportional contribution of the MCL (e.g., 20% of MCL when five points are composited) for any inorganic chemical, then a follow-up sample must be collected from each sampling point included in the composite sample.

(I) Follow-up samples must be collected within 14 days of receipt of the composite sample results.

(II) If duplicates of the original sample taken from each entry point to the distribution system used in the composite are available, the system may use these instead of resampling. The duplicates must be analyzed within 14 days of the composite.

(III) The follow-up or duplicate samples must be analyzed for the contaminant(s) which were excessive in the composite sample.

(2) Monitoring locations for asbestos. Asbestos shall be monitored at locations where asbestos contamination is most likely to occur.

(A) A system vulnerable to asbestos contamination due solely to source water shall sample at the entry point to the distribution system.

(B) A system vulnerable to asbestos contamination due solely to corrosion of asbestos-cement pipe shall sample at a tap served by asbestos-cement pipe, under conditions where asbestos contamination is most likely to occur.

(C) A system vulnerable to asbestos contamination due both to its source water supply and corrosion of asbestos-cement pipe shall sample at a tap served by asbestos-cement pipe, under conditions where asbestos contamination is most likely to occur.

(D) The executive director may require additional sampling locations based on the size, length, age, and location of asbestos-cement pipe in the distribution system. The system must provide information regarding the size, length, age, and location of asbestos-cement pipe in the distribution system to the executive director upon request.

(3) Monitoring frequency for IOCs except asbestos, nitrate, and nitrite. Community and nontransient non-community public water systems shall monitor for antimony, arsenic, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, selenium, and thallium at the following frequency.

(A) A public water system shall routinely monitor for antimony, arsenic, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, selenium, and thallium.

(i) Each groundwater source shall be sampled once every three years at the entry point to the distribution system.

(ii) Each surface water source shall be sampled annually at the entry point to the distribution system.

(iii) Each of the sampling frequencies listed in paragraph (3) of this subsection constitute one round of sampling for groundwater and surface water systems, respectively.

(B) The executive director may reduce the monitoring frequency for a system that has completed a minimum of three rounds of sampling by granting a waiver to the routine monitoring frequency for antimony, arsenic, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, selenium, and thallium.

(i) Systems that use a new water source are not eligible for a waiver until three rounds of sampling from the new source have been completed.

(ii) To be considered for a waiver, systems shall demonstrate that all previous analytical results were less than the MCL. At least one sample shall have been taken since January 1, 1990.

(iii) In determining the appropriate reduced monitoring frequency, the executive director shall consider:

(I) the reported contaminant concentrations from all previous samples;

(II) the degree of variation in reported concentrations; and

(III) other factors which may affect contaminant concentrations such as changes in groundwater pumping rates, changes in the system's configuration, changes in the system's operating procedures, or changes in the flow or characteristics of a reservoir or stream used as the water source.

(iv) If the executive director grants a waiver, it shall be made in writing and shall set forth the basis for the determination. The determination may be initiated by the executive director. The executive director shall review and, where appropriate, revise the waiver of monitoring frequency when other data relevant to the system becomes available.

(v) The term during which the waiver is effective shall not exceed one compliance cycle (i.e., nine years).

(vi) A system must take a minimum of one sample during each compliance cycle while the waiver is effective.

(C) The executive director may increase the monitoring frequency for public water systems with sources that exceed the MCL for antimony, arsenic, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, selenium, or thallium.

(i) Systems shall sample quarterly beginning in the next quarter after the violation occurs.

(ii) After the initiation of quarterly monitoring, the executive director may return a system to the routine monitoring frequency if monitoring shows that the system is reliably and consistently below the MCL.

(I) The executive director shall not decrease the quarterly sampling requirement until a groundwater system has taken a minimum of two quarterly samples.

(II) The executive director shall not decrease the quarterly sampling requirement until a surface water system has taken a minimum of four quarterly samples.

(4) Asbestos monitoring frequency. Community and nontransient non-community water systems shall monitor for asbestos at the following frequency.

(A) A public water system shall routinely monitor for asbestos once during the first three years of each compliance cycle.

(B) The executive director may waive the routine monitoring frequency requirements for asbestos.

(i) When determining if a waiver should be granted, the executive director shall consider:

(I) the potential for asbestos contamination of the water source;

(II) the use of asbestos-cement pipe for finished water distribution; and

(III) the corrosivity of the water.

(ii) If the executive director grants a waiver, it shall be made in writing and shall set forth the basis for the determination. The determination may be initiated by the executive director. The executive director shall review and, where appropriate, revise the waiver of monitoring frequency when other data relevant to the system becomes available.

(iii) The term during which the waiver is effective shall not exceed one compliance cycle (i.e., nine years).

(C) The executive director may increase the monitoring frequency for asbestos.

(i) A system which exceeds the MCL for asbestos shall sample quarterly beginning in the next quarter after the violation occurs.

(ii) After the initiation of quarterly sampling, the executive director may return a system to the routine monitoring frequency if monitoring shows that the system is reliably and consistently below the MCL.

(I) The executive director shall not decrease the quarterly sampling requirement until a groundwater system has taken a minimum of two quarterly samples.

(II) The executive director shall not decrease the quarterly sampling requirement until a surface (or combined surface water and groundwater) water system has taken a minimum of four quarterly samples.

(5) Nitrate monitoring frequency. All public water systems shall monitor for nitrate at the following frequency.

(A) All public water systems shall routinely monitor for nitrate.

(i) All public water systems shall annually sample each ground water source at the entry point to the distribution system.

(ii) A community or non-transient non-community water system shall sample each surface water source quarterly at the entry point to the distribution system.

(iii) A transient non-community water system shall sample each surface water source annually at the entry point to the distribution system.

(B) The executive director may reduce the monitoring frequency for community or non-transient, non-community water systems using surface water sources by granting a waiver to the routine monitoring frequency.

(i) To be considered for a waiver, a system shall demonstrate that the nitrate concentration in each sample collected during the previous four consecutive quarters was less than 50% of the nitrate MCL.

(ii) If the executive director grants a waiver, it shall be made in writing and shall set forth the basis for the determination. The determination may be initiated by the executive director. The executive director shall review and, where appropriate, revise the waiver of monitoring frequency when other data relevant to the system becomes available.

(iii) A system that receives a waiver to the routine nitrate monitoring frequency must sample annually for nitrate. The annual sample must be collected in the quarter that previously resulted in the highest nitrate concentration.

(iv) A system that is sampling annually shall return to routine quarterly monitoring if the nitrate concentration in any sample is equal to or greater than 50% of the nitrate MCL.

(C) The executive director may increase the nitrate monitoring frequency for community or non-transient, non-community water systems using groundwater sources.

(i) A system that is sampling annually shall begin quarterly nitrate sampling if the nitrate concentration in any sample is equal to or greater than 50% of the nitrate MCL. Quarterly sampling must begin the first quarter after the elevated nitrate level was detected.

(ii) After the initiation of quarterly sampling, the executive director may return a system to the routine annual nitrate monitoring frequency if quarterly sampling shows that the system is reliably and consistently below the nitrate MCL for a minimum of four consecutive quarters.

(6) Nitrite monitoring frequency. All public water systems shall monitor for nitrite at the following frequency.

(A) All public water systems shall routinely take one nitrite sample during the first three years of each compliance cycle.

(B) The executive director may reduce the monitoring frequency for nitrite by granting a waiver to the routine monitoring frequency.

(i) To be considered for a waiver, a system shall demonstrate that the nitrite concentration in the initial sample was less than 50% of the nitrite MCL.

(ii) If the executive director grants a waiver, it shall be made in writing and shall set forth the basis for the determination. The determination may be initiated by the executive director. The executive director shall review and, where appropriate, revise the waiver of monitoring frequency when other data relevant to the system becomes available.

(iii) A system that receives a waiver to the routine nitrite monitoring frequency must sample at a frequency specified by the executive director.

(C) The executive director may increase the monitoring frequency for nitrite.

(i) A system shall sample quarterly for at least one year following any sample in which the nitrite concentration is greater than or equal to 50% of the MCL.

(ii) The executive director may allow a system to return to the routine monitoring frequency after determining the system is reliably and consistently less than the MCL.

(7) Confirmation sampling. The executive director may require a public water system to confirm the results of any individual sample.

(A) If a sample result exceeds the MCL, a public water system shall collect one additional sample to confirm the results of the initial test.

(i) Confirmation samples must be collected at the same entry point to the distribution system as the sample that exceeded the MCL.

(ii) Confirmation samples for IOCs except nitrate and nitrite shall be collected as soon as possible after the system receives the analytical results of the first sample.

(iii) Confirmation samples for nitrate and nitrite shall be collected within 24 hours of the system's receipt of notification of the analytical results of the first sample. Systems unable to comply with the 24-hour sampling requirement must immediately notify the consumers served by the public water system in accordance with subsection (f) of this section. Systems exercising this option must take and analyze a confirmation sample within two weeks of notification of the analytical results of the first sample.

(B) The executive director may require a confirmation sample for any sample with questionable results.

(8) The executive director may require more frequent monitoring than specified in paragraphs (3) - (6) of this subsection.

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

(e) Reporting requirements for IOCs. 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 Texas Natural Resource Conservation Commission, Water Supply Division, MC 155, P.O. Box 13087, Austin, Texas 78711-3087.

(f) Compliance determination for IOCs. Compliance with this section shall be determined using the following criteria.

(1) Compliance with the MCL for each IOC shall be based on the analytical results obtained at each individual sampling point.

(2) A public water system that exceeds the levels for nitrate, nitrite, or the sum of nitrate and nitrite specified in subsection (b) of this section commits an acute MCL violation. Compliance shall be based on the results of the single sample. If a confirmation sample is collected, compliance shall be based on the average result of the original and confirmation samples.

(3) A public water system that exceeds the levels of antimony, arsenic, asbestos, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, selenium, or thallium (i.e., any IOC except nitrate and nitrite) specified in subsection (b) of this section commits an MCL violation.

(A) For systems that are sampling annually or less frequently, compliance may be based on the results of a single sample, if a confirmation sample is not collected.

(B) For systems that are sampling annually or less frequently, if a confirmation sample is collected, compliance will be based on the average result of the original and confirmation samples.

(C) For systems that are sampling more frequently than annually, compliance is based on the running annual average for each sampling point.

(D) If a single quarterly sample would cause the running annual average to be exceeded, then the system is immediately out of compliance.

(4) Any result below the method detection limit shall be considered to be zero for the purpose of calculating compliance.

(5) The executive director may exclude the results of obvious sampling errors from the compliance calculations.

(g) Public notice for IOCs. A public water system that violates the requirements of this section must notify the executive director and the system's customers.

(1) A public water system that violates the MCL for nitrate, nitrite, or the sum of nitrate and nitrite shall notify the executive director by the next business day and the water system customers of this acute violation in accordance with the requirements of §290.122(a) of this title (relating to Public Notification).

(2) A public water system that violates the MCL for nitrate, nitrite, or the sum of nitrate and nitrite that is unable to comply with the 24-hour confirmation sampling requirement must immediately notify the consumers served by the public water system in accordance with §290.122(a) of this title.

(3) A public water system that fails to meet the MCL for any of the regulated IOCs except nitrate and nitrite (i.e., antimony, arsenic, asbestos, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, selenium, and thallium) shall 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 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.

(5) If a public water system has a distribution system separable from other parts of the distribution system with no interconnections, the executive director may allow the system to give public notice to only the area served by that portion of the system which is out of compliance.

(h) Best Available Technology (BAT) for IOCs. BAT for treatment of violations of MCLs in subsection (b) of this section are listed in 40 CFR §141.62.

§290.107. Organic Contaminants.

(a) Applicability. All community and nontransient, non-community water systems shall comply with the requirements of this section regarding organic contaminants. For purposes of this section, systems using groundwater under the direct influence of surface water shall meet the organic sampling requirements given for surface water systems.

(b) Maximum contaminant levels (MCLs) for organic contaminants. The concentration of synthetic and volatile organic chemicals shall not exceed the MCLs specified in this section.

(1) The following are MCLs for synthetic organic contaminants (SOCs).

Figure: 30 TAC §290.107(b)(1) (No change from proposal.)

(2) The following are MCLs for volatile organic contaminants (VOCs).

Figure: 30 TAC §290.107(b)(2) (No change from proposal.)

(3) Each public water system must certify annually to the executive director (using third party or manufacturer's certification) that when acrylamide or epichlorohydrin are used in drinking water systems, the combination (or product) of dose and monomer level does not exceed 0.05% dosed at 1.0 mg/L (or equivalent) for acrylamide and 0.01% dosed at 20 mg/L (or equivalent) for epichlorohydrin.

(c) Monitoring requirements for organic contaminants. Public water systems shall monitor for organic contaminants at the locations and frequency in paragraphs (1) and (2) of this subsection. All monitoring conducted under the requirements of this section must be conducted at sites designated in the public water system's monitoring plan. All samples must be taken during periods of normal operation when water representative of all sources used by the system is being used.

(1) SOC monitoring requirements. Monitoring of the SOC contaminants shall be conducted at the frequency and locations given in this paragraph.

(A) SOC monitoring locations. Monitoring of the SOC contaminants shall be conducted at the following locations.

(i) Systems treating only groundwater shall sample for SOCs at every entry point to the distribution system which is representative of each well after treatment. Subsequent

samples must be taken at the same entry point to the distribution system unless a change in conditions makes another entry point to the distribution system more representative of each source or treatment plant. The executive director must approve any change in sampling location.

(ii) Systems using surface water and systems treating groundwater under the direct influence of surface water shall sample for SOCs at points in the distribution system that are representative of each source or at each entry point to the distribution system. Subsequent samples must be taken at the same entry points to the distribution system unless a change in conditions makes another entry point to the distribution system more representative of each source or treatment plant. The executive director must approve any change in sampling location.

(B) SOC monitoring frequency. Monitoring of the SOC contaminants shall be conducted at the following frequency.

(i) Community and nontransient noncommunity water systems shall take four consecutive quarterly samples for each SOC contaminant listed in subsection (b)(1) of this section during each compliance period beginning with the initial compliance period.

(ii) Community and nontransient noncommunity water systems serving more than 3,300 persons that do not detect a contaminant in the initial compliance period may reduce the sampling frequency to a minimum of two consecutive quarterly samples in one year during each repeat compliance period.

(iii) Community and nontransient noncommunity water systems serving 3,300 persons or fewer that do not detect a contaminant in the initial compliance period may reduce the sampling frequency to a minimum of one sample during each repeat compliance period.

(iv) Each public water system shall monitor at the time designated by the executive director within each compliance period.

(C) Increased SOC monitoring. The executive director may change the monitoring frequency for SOCs.

(i) Systems which violate the SOC MCL's of subsection (b)(1) of this section as determined by subsection (f) of this section must monitor quarterly. After a minimum of four quarterly samples shows the system is in compliance and the executive director determines the system is reliably and consistently below the MCL, as determined by the methods specified in subsection (f) of this section, the executive director may allow the system to monitor annually. Systems which monitor annually must monitor during the quarter that previously yielded the highest analytical result.

(ii) The executive director may change the monitoring frequency if an organic SOC contaminant is detected in any sample.

(I) If an organic SOC contaminant is detected in any sample, the system must monitor quarterly at each entry point to the distribution system at which a detection occurs.

(II) After a groundwater system collects a minimum of two consecutive quarterly samples, the executive director may decrease the quarterly monitoring requirement specified in subclause (I) of this clause, if the system is reliably and consistently below the MCL.

(III) After a surface water system or system treating groundwater under the direct influence of surface water collects a minimum of four consecutive quarterly samples, the executive director may decrease the quarterly monitoring requirement specified in subclause (I) of this clause, if the system is reliably and consistently below the MCL.

(IV) After the executive director determines that a system is reliably and consistently below the MCL, the executive director may allow the system to monitor annually. Systems which monitor annually must monitor during the quarter that previously yielded the highest analytical result.

(V) Systems which have three consecutive annual samples with no detection of a contaminant may be granted a waiver at the discretion of the executive director. The executive director will consider the waiver for each compliance period.

(VI) If monitoring results in detection of one or more of certain related contaminants (i.e., heptachlor, and heptachlor epoxide), then subsequent monitoring shall analyze for all related contaminants.

(iii) The executive director may increase the required SOC monitoring frequency, where necessary, to detect variations within the system (e.g., fluctuations in concentration due to seasonal use, changes in water source, etc.).

(iv) The executive director may require a confirmation sample for positive or negative results. If a confirmation sample is required by the executive director, the result must be averaged with the first sampling result and the average used for the compliance determination as specified by subsection (f) of this section. The executive director has discretion to delete results of obvious sampling errors from this calculation.

(D) Waivers for SOC monitoring. The executive director may grant a waiver to reduce the SOC monitoring frequency from the monitoring frequency requirements of subsection (c)(1)(B) of this section, based on previous use of the contaminant within the watershed or zone of influence of the water source. Examples of use of a contaminant include transport, storage, or disposal. If a determination by the executive director reveals no previous use of the contaminant within the watershed or zone of influence, a waiver may be granted. If the executive director cannot determine whether the contaminant has been used in the watershed or if the contaminant has been used previously, then the following factors shall be used to determine whether a waiver is granted:

(i) previous analytical results;

(ii) the proximity of the system to a potential point or non-point source of contamination. Point sources include spills and leaks of chemicals at or near a water treatment facility or at drinking water sources, manufacturing, distribution, or storage facilities, or from hazardous and municipal waste landfills and other waste handling or treatment facilities. Non-point sources include the use of pesticides to control insects, weeds, or pests on agricultural areas, forest lands, home and garden property, or other land application uses;

(iii) the environmental persistence and transport of the pesticide herbicide or contaminant;

(iv) how well the water source is protected against contamination due to such factors as depth of the well, type of soil and the integrity of well construction. Surface water systems must consider watershed vulnerability and protection;

(v) elevated nitrate levels at the water supply source; and

(vi) use of PCBs in equipment used in the production, storage, or distribution of water (i.e., PCBs used in pumps, transformers, etc.).

(E) Compositing for SOC monitoring. The executive director may reduce the total number of samples required from a system for analysis by allowing the use of compositing. Composite samples from a maximum of five entry points to the distribution system are allowed. Compositing of samples must be done in the laboratory and analyzed within 14 days of sample collection.

(i) If, in the composite sample, a detection of one or more SOC contaminants listed in subsection (b)(1) of this section occurs, then a follow-up sample must be taken from each entry point to the distribution system included in the composite and analyzed within 14 days of collection.

(ii) If duplicates of the original SOC sample taken from each entry point to the distribution system used in the composite are available, the executive director may use these duplicates instead of resampling. The duplicate must be analyzed within 14 days of collection and the results reported to the executive director.

(iii) Composting may only be permitted at entry points to the distribution system within a single system.

(F) Initial SOC monitoring. If monitoring data are generally consistent with the requirements of this subsection (c)(1) of this section, then the executive director may allow systems to use that data to satisfy the monitoring requirement for the initial compliance period.

(2) VOC monitoring requirements. Monitoring of the VOC contaminants shall be conducted at the frequency and locations given in this paragraph.

(A) VOC monitoring locations. Monitoring of the VOC contaminants shall be conducted at the following locations.

(i) Systems that use only groundwater shall sample for VOCs at every entry point to the distribution system which is representative of each well after treatment. Subsequent samples must be taken at the same entry point to the distribution system unless a change in conditions makes another entry point to the distribution system more representative of each source or treatment plant. The executive director must approve any change in sampling location.

(ii) Surface water systems, systems using groundwater under the direct influence of surface water, and systems blending groundwater and surface water shall sample for VOCs at points in the distribution system that are representative of each source or at each entry point to the distribution system. Subsequent samples must be taken at the same entry points to the distribution system unless a change in conditions makes another entry point to the distribution system more representative of each source or treatment plant. The executive director must approve any change in sampling location.

(B) VOC monitoring frequency. Monitoring of the VOC contaminants shall be conducted at the following frequency.

(i) Community and nontransient noncommunity water systems shall take four consecutive quarterly samples for each VOC contaminant listed in subsection (b)(2) of this section during each compliance period, beginning with the initial compliance period.

(ii) If the initial monitoring for VOC contaminants has been completed by December 31, 1992, and the system did not detect any VOC contaminant listed in subsection (b)(2) of this section, the system shall take one sample annually beginning with the initial compliance period.

(iii) After a minimum of three years of annual sampling, the executive director may allow groundwater systems with no previous detection of any VOC contaminant listed in subsection (b)(2) of this section to take one sample during each compliance period.

(iv) Each community and nontransient groundwater system which does not detect a VOC contaminant listed in subsection (b)(2) of this section may be granted a waiver from the annual or triannual requirements of subsection (c)(2)(B)(ii) and (iii) of this section after completing the initial monitoring. For the purposes of this section, detection is defined as an analytical result of 0.0005 mg/L or greater. A waiver shall be effective for no more than six years (two compliance periods).

(v) Each public water system shall monitor at the time designated by the executive director within each compliance period.

(C) Increased VOC monitoring. The executive director may change the monitoring frequency for VOCs.

(i) Systems which violate the VOC MCLs of subsection (b)(2) of this section, as determined by subsection (f) of this section, must monitor quarterly. After a minimum of four consecutive quarterly samples that show the system is in compliance as specified in subsection (f) of this section and after the executive director determines that the system is reliably and consistently below the MCL, the executive director may allow the system to monitor annually during the quarter that previously yielded the highest analytical result.

(ii) The executive director may require a confirmation sample for positive or negative results. If a confirmation sample is required by the executive director, the result must be averaged with the first sampling result and the average is used for the compliance determination as specified by subsection (f) of this section. The executive director has discretion to delete results of obvious sampling errors from this calculation.

(iii) If a VOC contaminant listed in subsection (b)(2) of this section is detected at a level exceeding 0.0005 mg/L in any sample, then:

(I) the system must monitor quarterly at each entry point to the distribution system which resulted in a detection;

(II) the executive director may decrease the quarterly monitoring requirement specified in subsection (c)(2)(C)(iii)(I) of this section provided it has determined that the system is reliably and consistently below the maximum contaminant level. In no case shall the executive director make this determination unless a groundwater system takes a minimum of two quarterly samples and a surface water system takes a minimum of four quarterly samples;

(III) If the executive director determines that the system is reliably and consistently below the MCL, the executive director may allow the system to monitor annually. Systems which monitor annually must monitor during the quarter which previously yielded the highest analytical result;

(IV) Systems which have three consecutive annual samples with no detection of a contaminant may be granted a waiver as specified in subsection (c)(2)(D) of this section; and

(V) Groundwater systems which have detected one or more of the following two-carbon organic compounds: trichloroethylene, tetrachloroethylene, 1,2-dichloroethane, 1,1,1-trichloroethane, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, or 1,1-dichloroethylene shall monitor quarterly for vinyl chloride. A vinyl chloride sample shall be taken at each entry point to the distribution system at which one or more of the two-carbon organic compounds was detected. If the result of the first analysis does not detect vinyl chloride, the executive director may reduce the quarterly monitoring frequency for vinyl chloride to one sample during each

compliance period. Surface water systems are required to monitor for vinyl chloride as specified by the executive director.

(iv) The executive director may increase the required VOC monitoring frequency, where necessary, to detect variations within the system (e.g., fluctuations in concentration due to seasonal use, changes in water source, etc.).

(D) Waivers for VOC monitoring. The executive director may grant a waiver after evaluating the previous use (including transport, storage, or disposal) of the contaminant within the watershed or zone of influence of the water sources. If a determination by the executive director reveals no previous use of the contaminant within the watershed or zone of influence, a waiver may be granted. If previous use of the contaminant is unknown or it has been used previously, then the following factors shall be used to determine whether a waiver is granted:

(i) previous analytical results;

(ii) the proximity of the system to a potential point or non-point source of contamination. Point sources include spills and leaks of chemicals at or near a water treatment facility or at drinking water sources manufacturing, distribution, or storage facilities, or from hazardous and municipal waste landfills and other waste handling or treatment facilities;

(iii) the environmental persistence and transport of the contaminants;

(iv) the number of persons served by the public water system and the proximity of a smaller system to a larger system;

(v) how well the water source is protected against contamination (e.g., is it a surface or groundwater system). Groundwater systems must consider factors such as depth of the well, the type of soil, and well construction. Surface water systems must consider watershed protection;

(vi) As a condition of the waiver a groundwater system must take one sample at each entry point to the distribution system during the time the waiver is effective (i.e., one sample during two compliance periods or six years) and update its vulnerability assessment considering the factors listed in this paragraph. Based on this updated vulnerability assessment the executive director must reconfirm that the system is not vulnerable. If the executive director does not make this reconfirmation within three years of the initial determination, then the waiver is invalid and the system is required to sample annually; and

(vii) Community and nontransient surface water systems which do not detect a VOC contaminant listed in subsection (b)(2) of this section may be considered by the executive director for a waiver from the annual sampling requirements of subsection (c)(2)(B)(ii) of this section after completing the initial monitoring. Systems meeting this criteria must be determined by the

executive director to be non-vulnerable based on a vulnerability assessment during each compliance period. Each system receiving a waiver shall sample at the frequency specified by the executive director (if any).

(E) Compositing for VOC monitoring. The executive director may reduce the total number of samples a system must analyze by allowing the use of compositing. Composite samples from a maximum of entry points to the distribution system are allowed. Compositing of samples must be done in the laboratory and analyzed within 14 days of sample collection.

(i) If the VOC concentration in the composite sample is 0.0005 mg/L or greater for any contaminant listed in subsection (b)(2) of this section, then a follow-up sample must be taken and analyzed within 14 days from each entry point to the distribution system included in the composite.

(ii) If duplicates of the original sample taken from each entry point to the distribution system used in the composite are available, the system may use these instead of resampling. The duplicate must be analyzed within 14 days of collection.

(iii) Compositing may only be permitted by the executive director at entry points to the distribution system within a single system.

(iv) Procedures for compositing VOC samples are as stated in 40 CFR §141.24 (f)(14)(iv).

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

(e) Reporting requirements for organic 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 Texas Natural Resource Conservation Commission, Water Supply Division, MC 155, P.O. Box 13087, Austin, Texas 78711-3087.

(f) Compliance determination for organic contaminants. Compliance with the MCLs of subsection (b)(1) and (2) of this section shall be determined based on the analytical results obtained at each entry point to the distribution system.

(1) For systems which are sampling more than once a year, compliance is determined by a running annual average of all samples taken at each entry point to the distribution system. If the annual average at any entry point to the distribution system is greater than the MCL, the system commits an MCL violation. If the initial sample or a subsequent sample would cause the annual

average to be exceeded, then the system is out of compliance immediately. Any samples below the detection limit shall be considered to be zero for purposes of calculating the annual average.

(2) For systems which are sampling once a year or less, compliance is based on a single sample. If the level of a contaminant at any entry point to the distribution system is greater than the MCL, the system commits an MCL violation. If a confirmation sample is required the executive director, the determination of compliance will be based on the average of the two samples.

(3) The executive director has the authority to determine compliance or initiate enforcement action based upon analytical results and other information compiled by their sanctioned representatives and agencies.

(g) Public notification requirements for organic contaminants. A public water system that violates the requirements of this section must notify the executive director and the system's customers. If a public water system has a distribution system separate from other parts of the distribution system with no interconnections, the executive director may allow the system to give public notice to only that portion of the system which is out of compliance.

(1) A system that violates an MCL given in subsection (b) of this section, shall report to the executive director and notify the public as provided under §290.122(b) of this title.

(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 (relating to Public Notification).

(h) Best available technology (BAT) for organic contaminants. BAT for treatment of violations of MCLs in subsection (b) of this section are listed in 40 CFR §141.61. Copies are available for review in the Water Supply Division, Texas Natural Resource Conservation Commission, P. O. Box 13087, Austin, Texas 78711-3087.

§290.108. Radionuclides Other than Radon.

(a) Applicability. All community water systems shall comply with the requirements of this section regarding radiological contaminants. Public water systems treating groundwater under the direct influence of surface water must comply with the radiological requirements for surface water systems.

(b) Maximum contaminant levels (MCLs). The concentration of radiological contaminants in the water entering the distribution system shall not exceed the following maximum contaminant levels.

(1) MCLs for radium-226, radium-228 and gross alpha particle radioactivity for community systems are as follows:

(A) the MCL for combined radium-226 and radium-228 is 5 pCi/l; and

(B) the MCL for gross alpha particle activity (including radium-226 but excluding radon and uranium) is 15 pCi/l.

(2) Maximum contaminant levels for beta particle and photon radioactivity from man-made radionuclides in drinking water in community water systems are as follows:

(A) The average annual concentration of beta particle and photon radioactivity from man-made radionuclides in drinking water shall not produce an annual dose equivalent to the total body or any internal organ greater than four millirem (mrem)/year.

(B) Except for the radionuclides listed in Table A, the concentration of man-made radionuclides causing four mrem total body or organ dose equivalents shall be calculated on the basis of a two-liter-per-day drinking water intake using the 168 hour data listed in "Maximum Permissible Body Burdens and Maximum Permissible Concentration of Radionuclides in Air or Water for Occupational Exposure," NBS Handbook 69 as amended August 1963, U.S. Department of Commerce. If two or more radionuclides are present, the sum of their annual dose equivalent to the total body or to any organ shall not exceed four mrem/year.

Figure: 30 TAC §290.108(b)(2)(B) (No change from proposal.)

(c) Monitoring requirements. Public water systems shall measure the concentration of radiochemicals at locations and frequencies specified in the system's monitoring plan. All samples must be collected during normal operating conditions.

(1) The monitoring frequency requirements for gross alpha particle activity, radium-226 and radium-228 are as follows. Public water systems shall monitor at least once every four years following the procedure required by subsection (f)(1) of this section. At the discretion of the executive director, when an annual record taken in conformance with subsection (f)(1) of this section has established that the average annual concentration is less than one-half the maximum contaminant levels established by subsection (b) of this section, analysis of a single sample may be substituted for the quarterly sampling procedure required by subsection (f)(1) of this section.

(A) More frequent monitoring shall be conducted when required by the executive director in the vicinity of mining or other operations which may contribute alpha particle radioactivity to either surface or groundwater sources of drinking water, or when changes in the distribution system or treatment processing occur which may increase the concentration of radioactivity in the finished water.

(B) A public water system shall monitor in conformance with subsection (c)(1)(A) of this section within one year of the introduction of a new water source for a community water system.

(C) A community water system using two or more sources having different concentrations of radioactivity shall monitor the source of water, in addition to water from a free-flowing tap, when required by the executive director.

(D) Monitoring for compliance with subsection (b) of this section after the initial period need not include radium-228 provided that the average concentration of radium-228 has been assayed at least once using the quarterly sampling procedure required by this subsection.

(E) Public water systems shall conduct annual monitoring of any community water system in which the radium 226 concentration exceeds three pCi/l when required by the executive director.

(2) The monitoring frequency requirements for man-made radioactivity in community water systems are as follows:

(A) Systems using surface water sources and serving more than 100,000 persons and such other community water systems as are designated by the executive director shall be monitored for compliance with the subsection (b) of this section by analysis of four quarterly samples. Compliance with subsection (b) of this section may be assumed without further analysis if the average annual concentration of gross beta particle activity is less than 50 pCi/l and if the average annual concentrations of tritium and strontium-90 are less than those listed in Table A of subsection (b)(2)(B)

of this section, provided that if both radionuclides are present, the sum of their annual dose equivalents to bone marrow shall not exceed four mrem/year.

(i) If the gross beta particle activity exceeds 50 pCi/l, an analysis of the sample must be performed to identify the major radioactive constituents present and the appropriate organ and total body doses shall be calculated to determine compliance with subsection (b) of this section.

(ii) Public water systems shall conduct additional monitoring as required by the executive director to determine the concentration of man-made radioactivity in principal watersheds designated by the executive director.

(iii) At the discretion of the executive director, public water systems utilizing only groundwater may be required to monitor for man-made radioactivity.

(B) After the initial analysis required by subsection (c)(2)(A) of this section, public water systems shall monitor at least every four years following the procedure given in subsection (c)(2)(A) of this section.

(C) A community water system designated by the executive director as utilizing waters contaminated by effluents from nuclear facilities shall initiate quarterly monitoring for gross beta particle and iodine-131 radioactivity and annual monitoring for strontium-90 and tritium.

(i) Quarterly monitoring for gross beta particle activity shall be based on the analysis of monthly samples. If the gross beta particle activity in a sample exceeds 15 pCi/l, the same or an equivalent sample shall be analyzed for strontium-89 and cesium-134. If the gross beta particle activity exceeds 50 pCi/l, an analysis of the sample must be performed to identify the major radioactive constituents present and the appropriate organ and total body doses shall be calculated to determine compliance with subsection (b) of this section.

(ii) For iodine-131, a composite of five consecutive daily samples shall be analyzed once each quarter. When iodine-131 is identified in the finished water more frequent monitoring shall be conducted as required by the executive director.

(iii) Annual monitoring for strontium-90 and tritium shall be conducted by the analysis of four quarterly samples.

(iv) The executive director may allow the substitution of environmental surveillance data taken in conjunction with a nuclear facility for direct monitoring of man-made radioactivity by the public water system where the executive director determines such data is applicable to a particular community water system.

(3) The radiochemicals identified in this section shall be sampled at a sampling site representing the entry point to the distribution system.

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

(e) Reporting requirements. 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 Texas Natural Resource Conservation Commission, Water Supply Division, MC 155, P.O. Box 13087, Austin, Texas 78711-3087.

(f) Compliance determination. Compliance with the requirements of this section shall be determined as follows.

(1) If the average annual MCL for gross alpha particle activity or total radium as set forth in subsection (b) of this section is exceeded, the system has committed a MCL violation. Monitoring at quarterly intervals shall be continued until the annual average concentration no longer exceeds the maximum contaminant level or until a monitoring schedule as a condition to a variance, exemption or enforcement action shall become effective. Compliance with subsection (b) of this section shall be based on the analysis or analyses of four quarterly samples.

(A) A gross alpha particle activity measurement may be substituted for the required radium-226 and radium-228 analysis provided that the measured gross alpha particle activity does not exceed five pCi/l at a confidence level of 95% (1.65 theta where theta is the standard deviation of the net counting rate of the sample).

(B) When the gross alpha particle activity exceeds five pCi/l, the same or an equivalent sample shall be analyzed for radium-226. If the concentration of radium-226 exceeds three pCi/l the same or an equivalent sample shall be analyzed for radium-228.

(2) If the average annual maximum contaminant level for man-made radioactivity set forth in subsection (b) of this section is exceeded, the system has committed a MCL violation. Monitoring at monthly intervals shall be continued until the concentration no longer exceeds the maximum contaminant level or until a monitoring schedule as a condition to a variance, exemption or enforcement action shall become effective.

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

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

(g) Public notification. A public water system that violates the requirements of this subsection must notify the executive director and the system's customers.

(1) A public water system that violates the MCL for gross alpha particle activity or total radium shall give notice to the executive director and notify the public as required by §290.122(b) of this title.

(2) The operator of a community water system that violates the MCL for man-made radioactivity shall give notice to the executive director and to the public as required by §290.122(b) of this title.

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

§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. The MCL for microbial contaminants if based on the presence or absence of total coliform bacteria in a sample.

(1) For a system which collects at least 40 bacteriological samples per month, the MCL is 5.0% total coliform-positive samples, of the samples collected during the month.

(2) For a system which collects fewer than 40 samples/month, the MCL is one total coliform-positive sample, of the samples collected during the month.

(c) Monitoring requirements for microbial contaminants. Public water systems shall collect samples for total coliform and for fecal coliform or *Escherichia coli*. 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 bacteriological samples at active service connections which are representative of water throughout the distribution system. Other sampling sites may be used if located adjacent to service connections.

(B) Public water systems shall monitor for microbial contaminants at locations specified in the system's monitoring plan.

(2) Routine microbial sampling frequency. Public water systems must sample for microbiological contaminants at the following frequency.

(A) Community and noncommunity public water systems must collect routine bacteriological 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 from proposal.)

(B) A public water system which uses surface water or groundwater under the direct influence of surface water must collect 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 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 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 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 (c)(4) of this section, it must collect at least five routine samples during the next month the system provides water to the public.

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

(A) If a routine sample is total coliform-positive, the public water system must collect a set of repeat 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 sample per month must collect no fewer than three repeat samples for each total coliform-positive sample found.

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

(B) The system must collect all repeat samples on the same day, except that 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 total coliform-positive sample was taken, and at least one repeat sample at a tap within five service connections upstream and at least one repeat sample at a tap within five service connections downstream of the original sampling site. If a 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) Sample invalidation. The executive director may invalidate a total coliform-positive sample if one of the following conditions is met.

(A) The executive director may invalidate a sample if the laboratory establishes 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 establishes that the sample was unsuitable for analysis.

(E) If a sample is invalidated, 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 coliforms. The system must continue to resample within 24 hours and have the samples analyzed until it obtains a valid result.

(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 *E. coli* 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 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.

(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 Texas Natural Resource Conservation Commission, Water Supply Division, MC 155, 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 sample is fecal coliform-positive or Escherichia coli -positive; or

(B) A total coliform-positive repeat sample follows a fecal coliform-positive or Escherichia coli -positive routine sample.

(2) A system that collects at least 40 bacteriological 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 Escherichia coli-positive.

(3) A system that collects fewer than 40 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 Escherichia coli -positive.

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

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

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

(7) Samples invalidated by the executive director shall not be included in determining compliance with the MCL for total coliforms.

(8) 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 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 requirements of §290.46(s)(3) of this title (relating to Minimum Acceptable Operating Practices for Public Drinking Water Systems) and §290.122(a) of this title.

(2) 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.

(3) 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.

(4) 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. The disinfection process at a system treating surface water or groundwater under the direct influence of surface water shall meet the treatment technique requirements provided in this section.

(1) The disinfection protocols used by public water systems with surface water sources or groundwater sources that are under the direct influence of surface water must ensure that the total treatment process achieves at least 99.9% (3-log) inactivation or removal of Giardia lamblia cysts and at least 99.99% (4-log) inactivation or removal of viruses before the water is supplied to any consumer. The executive director may require additional levels of treatment in cases of poor source water quality.

(A) The disinfection process at a surface water treatment plant that uses coagulation, flocculation, sedimentation, and filtration facilities shall provide at least a 0.5-log inactivation of Giardia lamblia cysts and a 2-log inactivation of viruses.

(B) The disinfection process at a surface water treatment plant or a plant treating groundwater under the direct influence of surface water that uses microfiltration or ultrafiltration processes shall provide at least a 4-log inactivation of viruses.

(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 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.

(A) Effective January 1, 2002, public water systems that serve at least 10,000 people and use surface water sources or groundwater sources that are under the influence of surface water must comply with the MRDL for chlorine and chloramine.

(B) Effective January 1, 2004, all community water systems and nontransient, noncommunity water systems must comply with the MRDL for chlorine and chloramine.

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

(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.

(2) 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)(2)(B)(i) (No change from proposal.)

(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.

(3) 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.

(4) 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.

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

(2) 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.

(3) The free chlorine 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 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)

(4) 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.

(5) The chlorine dioxide residual must be measured to a minimum accuracy of plus or minus 0.05 mg/L using an amperometric titrator with platinum-platinum electrodes.

(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 at least by the end of the next business day.

(2) Public water systems that use surface water sources or groundwater sources under the direct influence of surface water must submit a Monthly Operating Report for Surface Water Treatment Plants each month. Until January 1, 2001, systems must submit commission Form 0102A. After January 1, 2001, systems must submit commission Form 0102C.

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

(4) Effective January 1, 2004, public water systems that use purchased water or groundwater sources only must submit a Quarterly Distribution Report for Public Water Systems each quarter.

(5) Monthly and quarterly reports required by this section must be submitted to the Texas Natural Resource Conservation Commission, Water Supply Division, P.O. Box 13087, MC 155, 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)(1) or (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)(C) and (c)(2)(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)(4) 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 an 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 from proposal.)

(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.

(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 by the end of the next business day and the customers in accordance with the requirements of §290.122 of this title (relating to Public Notification). 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.

(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)(1) or (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. Turbidity.

(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. A public water system that uses groundwater under the direct influence of surface water must comply with the requirements of this section by 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.

(b) Treatment technique requirements for turbidity. The filtration techniques used by public water systems treating surface water or groundwater under the direct influence of surface water must ensure the system meets the following treatment technique requirements and criteria.

(1) Through December 31, 2001, the treatment process used by public water systems treating surface water or groundwater under the direct influence of surface water must achieve at least a 3-log removal or inactivation of *Giardia lamblia* cysts and a 4-log removal or inactivation of viruses before the water is supplied to any consumer. The executive director may require additional levels of treatment in cases of poor source water quality.

(A) Treatment plants using conventional media filtration must achieve the following turbidity levels.

(i) The turbidity level of the combined filter effluent must never exceed 5.0 NTU.

(ii) The turbidity level of the combined filter effluent must be 0.5 NTU or less in at least 95% of the samples tested each month. The executive director may allow a turbidity level of up to 1.0 NTU in at least 95% of the samples if the system can achieve the required 3-log

removal or inactivation of *Giardia lamblia* cysts and 4-log removal or inactivation of viruses at that higher turbidity level.

(B) Membrane facilities must meet site-specific performance standards approved by the executive director.

(2) Beginning January 1, 2002, the treatment process must achieve at least a 2-log removal of Cryptosporidium oocysts, a 3-log removal or inactivation of Giardia lamblia cysts, and a 4-log removal or inactivation of viruses before the water is supplied to any consumer. The executive director may require additional levels of treatment in cases of poor source water quality.

(A) Treatment plants using conventional media filtration must achieve the following turbidity levels.

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

(ii) 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.

(B) Membrane facilities must meet site-specific performance standards approved by the executive director.

(C) The executive director may extend the compliance date for systems serving fewer than 10,000 people.

(i) The compliance date may not be extended beyond January 1, 2004.

(ii) During any extension that is granted, the turbidity level of the combined filter effluent must meet the requirements of subsection (b)(1) of this section.

(3) The filtration techniques used by public water systems that serve 10,000 people or more and treat surface water or groundwater under the direct influence of surface water must ensure the system meets the following criteria.

(A) Beginning January 1, 2002, the turbidity from each individual filter should not exceed 0.5 NTU at four hours after the individual filter is returned to service after backwash or shut down.

(B) Beginning January 1, 2002, the turbidity from each individual filter should never exceed 1.0 NTU.

(c) Monitoring requirements for turbidity. Public water systems with surface water sources or groundwater sources that are under the direct influence of surface water shall monitor the performance of their filtration facilities.

(1) Public water systems that serve fewer than 500 people must monitor the turbidity of the combined filter effluent at least once each day that the system serves water to the public.

(2) Public water systems that serve 500 people or more must monitor the turbidity of the combined filter effluent at least every four hours that the system serves water to the public.

(3) Beginning January 1, 2002, public water systems that serve 10,000 people or more must continuously monitor the filtered water turbidity at the effluent of each individual filter and record the turbidity value every 15 minutes.

(4) Beginning January 1, 2002, public water systems that serve fewer than 10,000 people and use surface water or groundwater under the direct influence of surface water must measure and record the filtered water turbidity level at the effluent of each individual filter at least once each day that the plant is in operation.

(5) Special monitoring requirements. Beginning January 1, 2002, public water systems which serve 10,000 people or more and fail to meet the turbidity criteria specified in subsection (b)(3) of this section must conduct additional monitoring. The executive director can waive these special monitoring requirements for systems that have a corrective action schedule approved by the executive director.

(A) Each time a filter exceeds either of the filtered water turbidity levels specified in subsection (b)(3) of this section for two consecutive 15-minute readings, the public water system must either identify the cause of the exceedance or complete a Filter Profile Report on the filter within seven days of the exceedance.

(B) Each time a filter exceeds the filtered turbidity level specified in subsection (b)(3)(B) of this section 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 exceedance.

(C) 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 within 90 days of the exceedance.

(d) Analytical requirements for turbidity. All monitoring required by this section 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).

(1) Turbidity must be measured with turbidimeters that use EPA Method 180.1 and Standard Method 2130B or Great Lakes Instruments Method 2.

(2) Monitoring of combined filter effluent may be conducted by either continuously monitoring turbidity levels with an on-line turbidimeter or measuring the turbidity level in grab samples with a benchtop turbidimeter.

(3) Beginning January 1, 2002, systems serving 10,000 or more people must monitor the turbidity of the water produced by individual filters with a continuous, on-line turbidimeter and a continuous recorder.

(A) Continuous individual filter turbidity may be recorded electronically by a SCADA system or on a strip chart. Circular strip charts, if used, must be set to record no more than one day's readings per chart.

(B) If there is a failure in the continuous turbidity monitoring equipment, 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.

(4) Beginning January 1, 2002, systems serving fewer than 10,000 people must monitor the turbidity of the water produced by individual filters by continuously monitoring turbidity

levels with an on-line turbidimeter or measuring the turbidity level in grab samples with a benchtop turbidimeter.

(e) Reporting requirements for turbidity. Public water systems shall properly complete and submit periodic reports to demonstrate compliance with this section.

(1) A public water system that has a turbidity level exceeding 1.0 NTU in the combined filter effluent shall notify the executive director by the next business day.

(2) Public water systems which use surface water sources or groundwater sources under the direct influence of surface water, must submit a Monthly Operating Report for Surface Water Treatment Plants each month. Until January 1, 2001, systems must submit commission Form 0102A. After January 1, 2001, systems must submit commission Form 0102C.

(3) Public water systems that must complete the additional monitoring required by subsection (c)(5)(A) of this section must submit a Filter Profile Report for Individual Filters (commission Form 10276) with their Monthly Operating Report for Surface Water Treatment Plants.

(4) Public water systems that must complete the additional monitoring required by subsection (c)(5)(B) of this section must submit a Filter Assessment Report for Individual Filters (commission Form 10277) with their Monthly Operating Report for Surface Water Treatment Plants.

(5) Public water systems that must complete the additional monitoring required by subsection (c)(5)(C) of this section must submit a Request for Compliance CPE (commission Form 10278) with their Monthly Operating Report for Surface Water Treatment Plants.

(6) Periodic reports required by this section must be submitted to the Texas Natural Resource Conservation Commission, 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.

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

(1) A public water system that fails to conduct the combined filter effluent or individual filter monitoring tests required by this section commits a monitoring violation.

(2) A public water system that fails to report the results of the combined filter effluent or individual filter monitoring tests required by this section commits a reporting violation.

(3) Beginning on January 1, 2002, a public water system that serves 10,000 or more people and fails to submit the reports required by subsection (e)(3) - (5) of this section commits a reporting violation.

(4) A public water system that has a turbidity level exceeding 5.0 NTU in the combined filter effluent commits an acute treatment technique violation.

(5) Until December 31, 2001, a public water system that violates the requirements of subsection (b)(1)(A)(ii) of this section commits a treatment technique violation.

(6) Beginning January 1, 2002, a public water system that violates the requirements of subsection (b)(2)(A) of this section commits a treatment technique violation.

(7) Beginning January 1, 2002, a system that fails to correct the performance-limiting factors identified in a CPE conducted pursuant to the requirements of subsection (c)(5)(C) of this section commits a violation.

(g) Public notification for turbidity. 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 has a turbidity level exceeding 5.0 NTU in the combined filter effluent shall notify the executive director and the water system customers of the acute violation by the next business day 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 fails to meet the treatment technique requirements of subsection (b)(1) or (2) of this section shall 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.

(3) 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.

§290.112. Total Organic Carbon (TOC).

(a) Applicability. All community and nontransient, noncommunity public water systems that treat surface water or groundwater under the direct influence of surface water and use sedimentation or clarification facilities as part of the treatment process must meet the provisions of this section.

(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 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 mg/L) for the specified source water TOC.

Figure: 30 TAC §290.112(b)(1) (No change from proposal.)

(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 $CaCO_3$), calculated quarterly as a running annual average; and the TTHM and 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 SUVA, prior to any treatment, measured monthly, is less than or equal to 2.0 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 (b)(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 at a time representative of normal operating conditions and influent water quality.

(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. 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. 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.

(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 Texas Natural Resource Conservation Commission, 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.

(2) Public water systems must submit a Monthly Operational Report for Total Organic Carbon Control each month.

(A) Systems treating surface water or groundwater under the direct influence of surface water and serving 10,000 or more people must comply with these reporting requirements starting January 1, 2001.

(B) Systems treating surface water or groundwater under the direct influence of surface water must and serving less than 10,000 people must comply with these reporting requirements starting January 1, 2003.

(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 (relating to Disinfection By-products (TTHM and HAA5)).

(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 (relating to Disinfection By-products (TTHM and HAA5)), 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 - treated water TOC/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 subsection (f)(3)(C) of this section) 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 subsection (f)(3)(C) of this section) when calculating compliance under the provisions of this section.

(iii) In any month that a softening system lowers alkalinity below 60 mg/L (as $CaCO_3$), a monthly removal ratio value of 1.0 may be assigned (in lieu of the value calculated in subsection (f)(3)(C) of this section) 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 $CaCO_3$) a monthly value of 1.0 may be assigned (in lieu of the value calculated in subsection (f)(3)(C) of this section) 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.

(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.

§290.113. Disinfection By-products (TTHM and HAA5).

(a) Applicability for TTHM and HAA5. All community and nontransient, noncommunity water systems shall comply with the requirements of this section.

(1) Effective January 1, 2002, community and nontransient, noncommunity public water systems that serve at least 10,000 people and use surface water sources or groundwater sources that are under the direct influence of surface water must comply with the maximum contaminant levels (MCLs) for total trihalomethanes (TTHM) and haloacetic acids (five) (HAA5).

(2) Effective January 1, 2004, all community and nontransient, noncommunity public water systems must comply with the MCL for TTHM and HAA5.

(3) Until January 1, 2004, public water systems using groundwater as a supply source and serving at least 10,000 people will be regulated in accordance with §290.115 of this title (relating to Transition Rule for Disinfection By-products).

(4) Until January 1, 2002, public water systems using surface water sources or groundwater sources that are under the direct influence of surface water must comply with the requirements of §290.115 of this title (relating to Transition Rule for Disinfection By-products).

(b) Maximum contaminant level for TTHM and HAA5. The running annual average concentration of total trihalomethanes (TTHM) and haloacetic acids (five) (HAA5) shall not exceed the maximum contaminant levels.

(1) The MCL for TTHM is 0.080 milligrams/liter.

(2) The MCL for HAA5 is 0.060 milligrams/liter.

(c) Monitoring requirements for TTHM and HAA5. Systems must take all TTHM and HAA5 samples during normal operating conditions. Monitoring shall be performed at locations and frequency specified in the system's monitoring plan.

(1) The minimum number of samples required to be taken shall be based on the number of treatment plants used by the system, except that multiple wells drawing raw water from a single aquifer shall be considered as one treatment plant for determining the minimum number of samples.

(2) All samples taken within one sampling period shall be collected within a 24-hour period.

(3) Systems must routinely sample at the frequency and locations given in the following table entitled "Routine Monitoring Frequency and Locations for TTHM and HAA5."

Figure: 30 TAC §290.113(c)(3) (No change from proposal.)

(4) The executive director may reduce the monitoring frequency for TTHM and HAA5 as indicated in the following table entitled "Reduced Monitoring Frequency and Locations for TTHM and HAA5."

Figure: 30 TAC §290.113(c)(4) (No change from proposal.)

(A) The executive director may not reduce the routine monitoring requirements for TTHM and HAA5 until a system has completed one year of routine monitoring in accordance with the provisions of paragraph (3) of this subsection.

(B) A system that is on reduced monitoring and collects quarterly samples for TTHM and HAA5 may remain on reduced monitoring as long as the running annual average of quarterly averages for TTHM and HAA5 is no greater than 0.060 mg/L and 0.045 mg/L, respectively.

(C) A system that is on a reduced monitoring and monitors no more frequently than once each year may remain on reduced monitoring as long as TTHM and HAA5 concentrations are no greater than 0.060 mg/L and 0.045 mg/L, respectively.

(5) The executive director may require a system to return to the routine monitoring frequency described in paragraph (3) of this subsection.

(A) A system that does not meet the requirements of paragraph (4)(B) or (C) of this subsection must return to routine monitoring in the quarter immediately following the quarter in which the results exceed 0.060 mg/L or 0.045 mg/L for TTHMs and HAA5, respectively.

(B) A system that is on reduced monitoring and makes any significant change to its source of water or treatment program shall return to routine monitoring in the quarter immediately following the quarter when the change was made.

(C) If a system is returned to routine monitoring, routine monitoring shall continue for at least one year before a reduction in monitoring frequency may be considered.

(d) Analytical requirements for TTHM and HAA5. Analytical procedures required by this section shall be performed in accordance with §290.119 of this title (relating to Analytical Procedures). Testing for TTHM and HAA5 shall be performed at a laboratory certified by the executive director.

(e) Reporting requirements for TTHM and HAA5. 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 Texas Natural Resource Conservation Commission, Water Supply Division, MC 155, P.O. Box 13087, Austin, Texas 78711-3087.

(f) Compliance determination for TTHM and HAA5. Compliance with the provisions of this section shall be determined as follows.

(1) A system that fails to monitor in accordance with 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 public water system that fails to report the results of the monitoring tests required by subsection (e) of this section commits a reporting violation.

(3) Compliance with the MCLs for TTHM and HAA5 shall be based on the running annual average of all samples collected during the preceding 12 months.

(A) A public water system that samples for TTHM and HAA5 each quarter must calculate the running annual average of the quarterly averages.

(B) A public water system that samples for TTHM and HAA5 no more frequently than once each year must calculate the annual average of all samples collected during the year.

(C) All samples collected at the sampling sites designated in the public water system's shall be used to compute the quarterly and annual averages unless the analytical results are invalidated by the executive director for technical reasons.

(4) A public water system violates the MCL for TTHM if the running annual average for TTHM exceeds the MCL specified in subsection (b)(1) of this section.

(5) A public water system violates the MCL for HAA5 if the running annual average for HAA5 exceeds the MCL specified in subsection (b)(2) of this section.

(6) If a public water system is routinely sampling in accordance with the requirements of subsection (c)(3) of this section and an individual sample or quarterly average will cause the system to exceed the MCL for TTHM or HAA5, the system is in violation of the respective MCL at the end of that quarter.

(7) If a public water system's failure to monitor makes it impossible to determine compliance with the MCL for TTHM or HAA5, the system commits an MCL violation for the entire period covered by the annual average.

(g) Public Notification Requirements for TTHM and HAA5. 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 violates an MCL given in subsection (b)(1) or (2) of this section shall report to 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 subsection (c) of this section must notify its customers of the violation in accordance with the requirements of §290.122(c) of this title.

§290.114. Other Disinfection By-products (Chlorite and Bromate).

(a) Chlorite. All community and nontransient noncommunity public water systems that use chlorine dioxide must comply with the requirements of this subsection.

(1) Maximum contaminant level (MCL) for chlorite. The chlorite concentration in the water in the distribution system shall not exceed an MCL of 1.0 mg/L.

(2) Monitoring requirements for chlorite. Public water systems shall measure the chlorite concentration at locations and intervals specified in the system's monitoring plan. All samples must be collected during normal operating conditions.

(A) Each plant using chlorine dioxide must monitor the chlorite concentration in the water entering the distribution system at least once each day. The monitoring frequency at the entry point to the distribution system may not be reduced.

(B) Each plant using chlorine dioxide must monitor the chlorite concentration in the water within the distribution system at each of the following three locations: at a location near the first customer of a plant using chlorine dioxide; at a location representative of the average residence time in the distribution system; and at a location reflecting maximum residence time in the distribution system. The group of three samples must be collected on the same day and is called a "three-sample set."

(i) Each system must collect at least one three-sample set each month.

(ii) If the chlorite concentration entering the distribution system exceeds 1.0 mg/L, the system must collect a three-sample set within 24 hours.

(iii) The frequency of chlorite monitoring in the distribution system may be reduced to one three-sample set per quarter if none of the entry point or distribution system samples tested during the preceding 12 months contained a chlorite concentration above 1.0 mg/L. A system must revert to the monthly monitoring frequency if the chlorite concentration exceeds 1.0 mg/L in any sample.

(iv) Public water systems that serve fewer than 10,000 people are exempt from the requirements of subsection (a) of this section until January 1, 2004 if the public water system signs and complies with the requirements set forth by the executive director in a bilateral agreement.

(v) Public water systems that serve at least 10,000 people are exempt from the requirements of subsection (a) of this section until January 1, 2002 if the public water system signs and complies with the requirements set forth by the executive director in a bilateral agreement.

(3) Analytical requirements for chlorite. Analytical procedures required by this section shall be performed in accordance with the requirements of §290.119 of this title (relating to Analytical Procedures).

(A) The chlorite concentration of the water entering the distribution system must be analyzed at a facility approved by the executive director. The analysis must have a minimum accuracy of 0.05 mg/L and use one of the following methods:

(i) amperometric titration using a unit with platinum-platinum electrodes; or

(ii) ion chromatography.

(B) Before January 1, 2002, systems using chlorine dioxide in accordance with a bilateral compliance agreement with the executive director must have the chlorite concentration of the water within the distribution system analyzed using ion chromatography at a facility approved by the executive director.

(C) Beginning January 1, 2002, the chlorite concentration of the water within the distribution system must be analyzed using ion chromatography at a facility certified by the executive director.

(4) Reporting requirements for chlorite. Public water systems that are subject to the provisions of this subsection must provide the executive director with the results of any test, measurement, or analysis required by this section.

(A) Systems using chlorine dioxide must submit a Chlorine Dioxide Monthly Operating Report (commission Form 0690) by the tenth day of the month following the end of the reporting period.

(B) Upon the request of the executive director, systems shall provide the executive director with a copy of the results of any chlorite test, measurement, or analysis required by §290.114(a)(2)(B) of this title within ten days following receipt of the results of such test, measurement, or analysis.

(C) Reports and analytical results must be mailed to the Texas Natural Resource Conservation Commission, Water Supply Division, MC 155, P.O. Box 13087, Austin, Texas 78711-3087.

(5) Compliance determination for chlorite. Compliance with the requirements of this subsection shall be based on the following criteria.

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

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

(C) A public water system commits an MCL violation if the arithmetic average of any three-sample set collected in the distribution system exceeds the MCL for chlorite.

(6) Public notification requirements for chlorite. A public water system that violates the requirements of this subsection must notify the executive director and the system's customers.

(A) A public water system that violates the MCL for chlorite 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 (relating to Public Notification).

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

(b) Bromate. Community and nontransient, noncommunity public water systems that use ozone must comply with the requirements of this subsection beginning on January 1, 2002.

(1) Maximum contaminant level for bromate. The concentration of bromate at the entry point to the distribution system shall not exceed an MCL of 0.010 mg/L.

(2) Monitoring requirements for bromate. Each plant using ozone must measure the bromate concentration in the water entering the distribution system at least once each month. The monitoring frequency at the entry point to the distribution system may not be reduced. Samples shall be collected when the ozonation system is operating under normal conditions and at locations and intervals specified in the system's monitoring plan.

(3) Analytical requirements for bromate. Analytical procedures required by this section shall be performed in accordance with §290.119 of this title (relating to Analytical Procedures). Testing for bromate shall be performed at a laboratory certified by the TDH Bureau of Laboratories.

(4) Reporting requirements for bromate. 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 Texas Natural Resource Conservation Commission, Water Supply Division, MC 155, P.O. Box 13087, Austin, Texas 78711-3087.

(5) Compliance determination for bromate. Compliance with the requirements of this subsection shall be determined using the following criteria.

(A) A system that fails to monitor in accordance with this section commits a monitoring violation. Failure to monitor will be treated as a violation for the entire period covered by the annual average.

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

(C) A public water system violates the MCL for bromate if, at the end of any quarter, the running annual average of monthly averages, computed quarterly, exceeds the maximum contaminant level specified in paragraph (1) of this subsection.

(6) Public notification requirements for bromate. A public water system that violates the requirements of this subsection must notify the water system's customers and the executive director.

(A) A public water system that violates the MCL for bromate shall notify the customers in accordance with the requirements of §290.122(b) of this title (relating to Public Notification).

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

§290.115. Transition Rule for Disinfection By-products (TTHM).

(a) Applicability. All community and non-transient noncommunity public water systems that serve at least 10,000 people must comply with the requirements of this section.

(1) A public water system that uses groundwater sources and serves at least 10,000 people shall comply with this section until January 1, 2004.

(2) A public water system that uses surface water sources or groundwater sources that are under the direct influence of surface water and serves at least 10,000 people shall comply with this section until January 1, 2002.

(b) The maximum contaminant level (MCL) for total trihalomethanes shall be 0.10 milligrams/liter. The MCL shall apply only to those systems which serve a population of 10,000 or more individuals.

(c) Sampling and analytical requirements for TTHM:

(1) For the purpose of this section, the minimum number of samples required to be taken shall be based on the number of treatment plants used by the system, except that multiple wells drawing raw water from a single aquifer shall be considered as one treatment plant for determining the

minimum number of samples. All samples taken within one sampling period shall be collected within a 24-hour period.

(2) For all community water systems utilizing surface water sources in whole or in part, and for all water systems utilizing only groundwater sources that have not been determined to qualify for the reduced monitoring requirements of paragraph (4) of this subsection, analyses for total trihalomethanes shall be performed on at least four samples of water per quarter from each treatment plant used by the system. At least 25% of the samples shall be taken at locations within the distribution system reflecting the maximum residence time of the water in the system. The remaining 75% shall be taken at representative locations in the distribution system, taking into account number of persons served, different sources of water, and different treatment methods employed. The results of all analyses per quarter shall be arithmetically averaged and reported to the executive director within 30 days of the system's receipt of such results. All samples collected shall be used in computing the average, unless the analytical results are invalidated for technical reasons.

(3) Upon the written request of a community water system, the monitoring frequency required by paragraph (2) of this subsection may be reduced by the executive director to a minimum of one sample analyzed for TTHMs per quarter taken at a point in the distribution system reflecting the maximum residence time of the water in the system, upon a written determination by the executive director that the data from at least one year of monitoring in accordance with paragraph (2) of this subsection and local conditions demonstrate that total trihalomethane concentrations will be consistently below the maximum contaminant level.

(A) If at any time during which the reduced monitoring frequency prescribed under this paragraph applies, the results from any analysis exceed 0.10 milligrams/liter of TTHMs and such results are confirmed by at least one check sample taken promptly after such results are obtained, or if the system makes any significant change to its source of water or treatment program, the system shall immediately begin monitoring in accordance with the requirements of paragraph (2) of this subsection.

(B) If a system is required to begin monitoring in accordance with paragraph (2) of this subsection, such monitoring shall continue for at least one year before a reduction in monitoring frequency may be considered.

(4) Upon the written request to the executive director, a community water system utilizing only groundwater sources may seek to have the monitoring frequency reduced to a minimum of one sample for maximum TTHM potential per year taken at a point in the distribution system reflecting maximum residence time of the water in the system. The system shall submit to the executive director the results of at least one sample analyzed for maximum TTHM potential taken at a point in the distribution system reflecting the maximum residence time of the water in the system. The system's monitoring frequency may only be reduced upon a written determination by the executive director that, based upon the data submitted by the system, the system has a maximum TTHM potential of less than 0.10 milligrams/liter and that, based upon an assessment of the local conditions of the system, the system is not likely to approach or exceed the maximum contaminant level for TTHM's. All samples collected shall be used for determining whether the system must comply with the monitoring

requirements of paragraph (2) of this subsection, unless the analytical results are invalidated for technical reasons.

(A) If at any time during which the reduced monitoring frequency prescribed under this paragraph is in effect, the result from any analysis taken by the system for the maximum TTHM potential is equal to or greater than 0.10 milligrams/liter, and such results are confirmed by at least one check sample taken promptly after such results are received, the system shall begin immediately to monitor in accordance with the requirements of paragraph (2) of this subsection.

(B) If it becomes necessary to begin monitoring in accordance with paragraph (2) of this subsection, such monitoring shall continue for at least one year before the monitoring frequency may be reduced.

(C) In the event of any significant change to the system's raw water or treatment program, the system shall immediately analyze an additional sample for maximum TTHM potential taken at a point in the distribution system reflecting the maximum residence time of the water in the system for the purpose of determining whether the system must comply with the monitoring requirement of paragraph (2) of this subsection.

(5) Compliance with the MCL of 0.10 mg/L or TTHMs shall be determined based on a running annual average of quarterly samples collected by the system as prescribed in paragraph (2) of this subsection. If the average of samples covering any 12-month period exceeds the maximum

contaminant level, the public water system shall report to the executive director within 30 days and notify the public as required under §290.122(b) of this title (relating to Public Notification). Monitoring after public notification shall be at a frequency designated by the executive director and shall continue until a monitoring schedule as a condition of a variance, exemption, or enforcement action shall become effective.

(6) Before a community water system makes any significant modification to its existing treatment process for the purpose of achieving compliance with this subsection, the system must submit and obtain approval from the executive director of a detailed plan setting forth its proposed modifications and those safeguards that it will implement to ensure that the bacteriological quality of the drinking water served by such system will not be adversely affected by such modifications.

(7) All analyses for determining compliance with the provisions of this section shall be performed in accordance with §290.119 of this title (relating to Analytical Procedures) at a laboratory certified by the executive director.

(8) 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 Texas Natural Resource Conservation Commission, Water Supply Division, MC 155, P.O. Box 13087, Austin, Texas 78711-3087.

§290.117. Regulation of Lead and Copper.

(a) General requirements.

(1) Applicability -- The requirements of this section apply to community and nontransient noncommunity water systems. New water systems will be required to meet the requirements of this section when notified by the executive director.

(2) Compliance -- The water system is not in compliance if it fails to meet any reporting, monitoring, public education, or other requirement in this section relating to the regulation of lead and/or copper.

(A) All applicable water systems shall determine compliance based on monitoring and reporting requirements for lead and copper established in this section or contained in 40 Code of Federal Regulations (CFR) §§141.85, 141.86, 141.87, 141.88, or 141.90.

(B) Failure to conduct or report any requirements of this section shall constitute a monitoring, reporting or treatment technique violation and shall be a violation of these standards.

(3) Action levels for lead and copper are 0.015 mg/L and 1.3 mg/L respectively. The action levels are exceeded if the concentration of lead and/or copper in more than 10% of the first draw tap water samples collected during any monitoring period is greater that 0.015 mg/L for lead or 1.3 mg/L for copper. If collecting only five samples, the average of the two highest samples shall be used to determine compliance with the action level.

(b) Sample Site Selection and Materials Survey.

(1) By the applicable date for commencement of tap sample monitoring, each system shall complete a materials survey of its distribution system to identify a pool of tap sampling sites that meet the requirements of this section. All first draw tap samples are to be collected from this pool of sites. Sampling sites may not include faucets that have point-of-use or entry point treatment devices. After completing sample site selection, the system will submit the Lead and Copper Sample Site Selection form to the executive director for approval.

(2) Information for conducting a materials survey and selecting sampling sites are provided to each system by the executive director before initial tap sampling is initiated. Procedural requirements set forth in 40 CFR §141.86 will be followed for sampling site selection activities except that reporting of tap sampling sites to the executive director shall be conducted using the materials survey and sampling site selection forms supplied by the executive director. Supplemental explanatory information from the system will be considered as part of the sampling site selection document.

Systems must make a good faith effort to conduct a thorough and complete materials survey and submit a valid sample site selection form before initial tap sampling may be conducted.

(3) A system that does not have enough Tier 1, 2, or 3 sites, as set forth in 40 CFR §141.86, must use other representative sites to complete its sampling pool. A representative site is one that uses plumbing materials commonly found at other sites to which the system provides water.

(c) Tap sampling.

(1) A first draw tap sample means a one liter or one quart sample of tap water collected from a cold water, frequently used interior tap, after the water has been standing in the plumbing for at least six hours and is collected without first flushing the tap. The kitchen cold water faucet is the preferred sampling tap at residential sites. It is recommended that the water not be allowed to stand in the plumbing for more than 18 hours prior to a sample collection.

(2) A sample collection may be conducted by either water system personnel or the residents. If the resident is allowed to collect samples for lead and copper monitoring, the water system must provide written instructions for sample collection procedures.

(3) A water system shall collect each tap sample from the same sampling site from which it collected a previous sample. If this is not possible, the water system shall provide a written explanation to the executive director. The water system must select an alternate sampling site from the

system's sampling pool which meets similar criteria and is within reasonable proximity to the original sampling site.

(4) Monitoring approved by the executive director and conducted by systems in addition to the minimum requirements of this section shall be considered by the executive director in making any determination of compliance.

(5) The system shall collect at least two sets of initial tap samples during two consecutive six-month monitoring periods, unless granted a monitoring waiver.

(6) The minimum number of sample sites required for initial monitoring are listed in Table Number 1, as well as the number of sites required of each system conducting reduced monitoring.

Figure: 30 TAC §290.117(c)(6) (No change from proposal.)

(7) Initial tap sampling shall be conducted only after the executive director has determined that a system has successfully completed a materials survey and has obtained approval of its sample site selection form which is required to be submitted by subsection (b)(2) of this section.

(8) A new community or nontransient noncommunity water system begins the first six-month initial monitoring period in the year following a new water system's assignment of a Public Water System identification number.

Figure: 30 TAC §290.117(c)(8) (No change.)

(d) Computing 90th Percentile Lead and Copper Levels - Determination of 90th percentile levels shall be obtained by ranking the results of lead and copper samples collected during a monitoring period in ascending order (lowest concentration equal sample Number 1; highest concentration equal sample Numbers 10, 20, 30, 40, 50, etc), up to the total number of samples collected. The number of samples collected during the monitoring period shall be multiplied by 0.9 and the concentration of lead and copper in the numbered sample yielded by this calculation is the 90th percentile sample contaminant level. The system is in compliance with the lead and/or copper action levels if the 90th percentile sample contaminant level is equal to or less than the action levels specified in subsection (a)(3) of this section. For water systems serving fewer than 101 people, the 90th percentile level is computed by taking the average of the highest two sample results.

(e) Reduced tap monitoring.

(1) The executive director shall notify each water system that it is eligible for reduced monitoring of first draw tap samples if it is in compliance with the 90th percentile lead and copper action levels after completion of two six-month periods of initial tap sampling.

(2) Reduced monitoring shall be conducted annually during June, July, August, or September by collecting one set of samples from the appropriate number of reduced monitoring sites, after notification.

(3) The number of reduced monitoring sites required for each system are found in Table Number 1 located in subsection (c)(6) of this section, if not otherwise specified by the executive director.

(4) Any system that the 90th percentile lead level is greater than 0.005 mg/L and/or the 90th percentile copper level is greater than 0.65 mg/L during either of the two initial six-month monitoring periods must conduct two annual rounds of reduced monitoring the two calendar years following the completion of initial tap sampling.

(5) Any system that demonstrates during the two initial six-month monitoring periods that the 90th percentile lead level is less than or equal to 0.005 mg/L and the 90th percentile copper level is less than or equal to 0.65 mg/L shall have the required frequency of sampling reduced to once every three years and at the reduced number of sampling sites shown in subsection (c)(6) of this title, Table Number 1.

(f) Invalidation of lead or copper tap samples.

(1) A sample invalidated under this subsection does not count toward determining lead or copper 90th percentile levels or toward meeting the minimum number of tap sample requirements.

(2) The executive director may invalidate a lead or copper tap sample if one of the following conditions is met.

(A) The laboratory establishes that an analytical error has occurred or that an analytical method requirement has been violated.

(B) The executive director determines that the sample was taken from an inappropriate site.

(C) The sample was damaged in transit.

(D) The executive director determines that the sample was subject to tampering.

(3) The water system must provide written documentation to the executive director for samples the water system believes should be invalidated.

(4) The water system must collect replacement samples for any samples invalidated under this section. Any such replacement samples must be collected as soon as possible, but no later than ten days after receiving notification of sample invalidation from the executive director.

(g) Monitoring waivers for small water systems.

(1) Small water system monitoring waivers approved by the executive director prior to January 1, 2002, shall remain in effect subject to the provisions of paragraph (2)(E) of this subsection.

(2) Any water system serving a population of less than 501 people that meets the criteria of subparagraphs (A) and (B) of this paragraph may apply to the executive director to reduce the frequency of monitoring for lead and copper to once every nine years.

(A) The water system must demonstrate on the lead/copper sampling site selection form that its distribution system and the service lines and all drinking water supply plumbing, including plumbing conveying drinking water within all residences and buildings connected to the system, are free of lead-containing materials and/or copper-containing materials to demonstrate the risk from lead and/or copper exposure is negligible throughout the water system.

(B) The water system must have completed at least one six-month series of initial tap water monitoring for lead and copper and have demonstrated that its 90th percentile lead level does not exceed 0.005 mg/L and the 90th percentile copper level does not exceed 0.65 mg/L.

(C) The executive director shall provide the water system with a waiver application setting forth the basis and conditions of the waiver after meeting the requirements of subparagraphs (A) and (B) of this paragraph.

(D) The executive director shall not issue any “partial waivers” for lead and copper monitoring.

(E) If a water system with a waiver adds a new source of water, changes any water treatment or no longer meets the requirements of subparagraph (A) of this paragraph, the water system must notify the executive director in writing within 60 days of the change. The executive director has the authority to add or modify the monitoring waiver conditions, if modifications are necessary to address changes that have occurred since approving the original waiver application.

(h) Monitoring requirements for water quality parameters (WQP's) and source water.

(1) Water quality parameters.

(A) All large water systems (serving populations greater than 50,000) are required to conduct water quality parameters (WQP) monitoring beginning with the initial period of first draw tap samples and continuing until corrosion control is optimized.

(B) All medium and small water systems (serving populations of 3,301 to 50,000 and less than 3,301, respectively) that exceed the lead or copper action level shall conduct WQP monitoring beginning in the first calendar quarter following the calendar quarter in which the commission officially notified the water system of its exceedance status and shall continue monitoring and reporting as long as the water system exceeds the lead or copper action level.

(C) WQP monitoring shall be conducted quarterly for the following parameters: pH; alkalinity; calcium; conductivity; water temperature; orthophosphate (when an inhibitor containing a phosphate compound is used); and silica (when an inhibitor containing a silicate compound is used). Temperature and pH must be measured at the sampling site at the same time of sample collection.

(D) Large water systems must conduct WQP monitoring at all entry points and at the number of distribution sites specified in subsection (c)(8) of this title, Table Number 2. Small and medium water systems that are required to conduct WQP monitoring must monitor at all entry points and at the required number of distribution sites as shown in subsection (c)(8) of this section, Table Number 2.

Figure: 30 TAC §290.117(h)(1)(D)

Table No. 2

SYSTEM SIZE (# of people served)	INITIAL WQP DISTRIBUTION SITES	REDUCED WQP DISTRIBUTION SITES	NO. OF SITES FOR WQP MONITORING
> 100,000	**25**	**10**	**25**
10,001 - 100,000	**10**	**7**	**10**
3,301 - 10,000	**3**	**3**	**3**
501 - 3,300	**2**	**2**	**2**
101 - 500	**1**	**1**	**1**
< 101	**1**	**1**	**1**

(E) WQP distribution sites (exclusive of entry points) may be sites normally used for bacteriological monitoring and samples need not be collected inside the home. These sites shall be representative of water quality throughout the distribution system.

(F) After corrosion control treatment is installed, water quality parameters shall be measured at the initial number of distribution sites as indicated in subsection (c)(8) of this section, Table Number 2 quarterly and also at entry points biweekly (every two weeks).

(G) WQP monitoring after corrosion control treatment is installed shall be conducted for the following parameters: pH; alkalinity; orthophosphate (when an inhibitor containing a phosphate compound is used); silica (when an inhibitor containing a silicate compound is used); and calcium (when calcium carbonate stabilization is used as part of the treatment). These parameters must be measured at all entry points and initial distribution sites.

(H) Any large water system that maintains the range of values for WQP's reflecting optimum corrosion control as approved by the executive director for one-year may collect quarterly distribution samples at the reduced number of distribution sites indicated in subsection (c)(8) of this section, Table Number 2. WQP samples shall continue to be measured at entry points on a biweekly basis and results submitted to the executive director.

(I) Any large water system that reflects optimal corrosion control treatment during three consecutive years may reduce the frequency at which it collects distribution samples for applicable WQP's to annually.

(J) Any large water system that reflects optimal corrosion control treatment during three consecutive years of annual WQP distribution monitoring may reduce the frequency at which it collects the number of WQP distribution samples for applicable WQP's to once every three years. Additionally, the last two consecutive tap sample monitoring periods must have a 90th percentile lead value of less than or equal to 0.005 mg/L and a 90th percentile copper value of less than or equal to 0.65 mg/L. The water system must also have maintained the range of values for WQP's reflecting optimal corrosion control as specified in that system's state approved corrosion control study.

(K) Water quality parameter testing must be conducted at a laboratory that uses the methods described in 40 CFR §141.89, and it is the responsibility of the water system to collect, submit and report these values. If a water system fails to meet the WQP values or ranges specified by the executive director, it is out of compliance with this section. WQP values may be confirmed by the

system in accordance with 40 CFR §141.82(g). The state requires that the values be reported, but is not responsible for supplying sample bottles and testing services to the water system.

(L) Any water system subject to the reduced monitoring frequency that fails to operate within the approved range of WQP values shall resume distribution sampling in accordance with the number and frequency requirements in subparagraph (F) of this paragraph.

(M) A water system conducting WQP monitoring may limit entry point sampling to each official entry point as designated in the database for SDWA compliance sampling. The water system must monitor WQP's at all entry points regardless of whether corrosion control treatment is required at all entry points or not. The water system must inform the executive director of the identity of treated and non-treated entry points and their seasonal use, if any, and demonstrate that the WQP's represent water quality and treatment conditions throughout the system.

(N) Any large water system subject to reduced monitoring frequency (which has completed installation of approved corrosion control treatment as proposed in the system's corrosion control study) that fails to operate at or above the minimum range of values the system proposed for more than nine days in a six-month period shall resume distribution WQP sampling in accordance with the number and frequency requirements in subsection (h) of this section. The system may resume distribution WQP sampling at the reduced number of sites as specified in subsection (h) of this section after completing two consecutive six-month periods of distribution WQP sampling at the original frequency and then may follow the subparagraphs (H) and (J) of this paragraph.

(O) Large water systems shall monitor applicable WQP's every calendar quarter beginning after installation of corrosion control treatment approved by the executive director. Small and medium water systems shall monitor WQP's every calendar quarter while the system is in exceedance status. The executive director will issue a reporting waiver to small and medium systems for WQP's after the system completes two follow up rounds of tap sampling without exceeding either the lead or copper action level. The water system will continue to collect and record certain crucial parameters that will be available for inspection. If a small or medium water system exceeds the lead or copper action level during a reduced tap monitoring round (summer monitoring), the system shall conduct WQP monitoring until the exceedance status is resolved.

(P) The commission will not designate WQP ranges for any large water system that did not exceed 0.005 mg/L at the 90th percentile for lead during either initial tap sampling round. The commission will not designate WQP ranges for any small or medium water system that never exceeded the lead or copper action level at the 90th percentile during either initial tap sampling round or any reduced monitoring tap sampling round. Systems that must conduct WQP monitoring shall submit proposed WQP ranges for the executive director's approval.

(Q) Using WQP's proposed by the water system or its representatives, the commission will issue an approval letter if the corrosion control study and treatment proposed meet the requirements of this rule. Water systems will operate within the approved WQP ranges at all times and will conduct lead and copper tap sampling under the requirements in subsection (c) of this section and WQP reporting in this paragraph.

(2) Entry point water sampling.

(A) Entry point water sampling for lead and copper shall be conducted by systems that exceed the lead or copper action levels to determine the lead or copper content of source water. This requirement can be satisfied by normally scheduled inorganic chemical sampling in compliance with the monitoring under the SDWA. Entry point water samples shall be collected using sample location, number of samples, and collection methods as specified in §290.106 of this title (relating to Inorganic Contaminants). A large water system is deemed to have optimized corrosion control if it submits results of tap water monitoring conducted according to the requirements in subsection (c) of this section and results of source water monitoring conducted according to requirements in §290.108 of this title (relating to Inorganic Chemical Monitoring and Analytical Requirements). The results must demonstrate for two consecutive six-month monitoring periods that lead at the 90th percentile is less than or equal to 0.005 mg/L. If acceptable entry point water data is not available for large systems, the water lead level at the entry point shall be considered zero mg/L for purposes of determining whether a corrosion control study is required.

(B) The executive director shall complete an evaluation of all entry point water sample results, along with the corrosion control study, to determine if source water treatment is necessary. If source water treatment is deemed necessary by the executive director, the system must install it in accordance with the scheduling requirements specified in 40 CFR §141.83(a).

(C) Any system that installs entry point water treatment shall collect an additional round of source water samples as described in subparagraph (A) of this paragraph during two consecutive six-month periods within 36 months after source water treatment begins.

(D) The monitoring frequency for lead and copper in source water, after the executive director determines that source water treatment is not required, or after the executive director has specified the maximum permissible source water levels for lead and copper, shall be in accordance with inorganic chemical monitoring practices and procedures as stated in §290.106 of this title (relating to Inorganic Contaminants).

(E) Reduced source water monitoring procedures as specified in 40 CFR §141.88(e) for lead and copper will be followed by the executive director.

(F) All water systems shall notify the executive director in writing of any proposed change in treatment or the addition or deletion of a source of water. The executive director may require any such system to conduct additional monitoring or to take other action the executive director deems appropriate to ensure that such systems maintain minimal levels of corrosion in the distribution system.

(i) Public education requirements.

(1) A water system that exceeds the lead action level at the 90th percentile tap sample shall deliver to the public the public education materials listed in 40 CFR §141.85(a), and according to the requirements in paragraph (2) of this subsection shall provide copies of the public education materials to the executive director within ten days after the delivery of the materials to the public.

(2) A community water system serving 3,301 or more people shall, within 60 days of notification by the commission:

(A) insert notices in each customer's water utility bill or by separate mailing, if approved in writing by the executive director, that includes the information in 40 CFR §141.85(a), and print the following alert on the water bill itself, or on a bill insert, in large print: "SOME HOMES IN THIS COMMUNITY HAVE ELEVATED LEAD LEVELS IN THEIR DRINKING WATER. LEAD CAN POSE A SIGNIFICANT RISK TO YOUR HEALTH. PLEASE READ THE ENCLOSED NOTICE FOR FURTHER INFORMATION.";

(B) submit the required information in 40 CFR §141.85(a) to the editorial departments of the major local daily or weekly newspaper circulated throughout the system;

(C) deliver pamphlets or brochures that contain the public education materials as specified in 40 CFR §141.85(a)(2) and (4) to city or county health departments, to public schools or local school boards, Women, Infants and Children (WIC) or Head Start Programs when available,

public and private hospitals or clinics, pediatricians, family planning clinics, and local welfare agencies, within their service area;

(D) submit the public service announcement in 40 CFR §141.85(b) to at least five radio or television stations broadcasting to the area served by the water system;

(E) a community water system serving 501 to 3,300 people may omit the task contained in subparagraph (D) of this paragraph;

(F) a community water system serving 500 or fewer people may omit the tasks contained in subparagraphs (B) - (D) of this paragraph;

(G) all community water systems must repeat the public education requirements at least once during each calendar year for as long as the system exceeds the lead action level; and

(H) if no lead service lines exist anywhere in the water system service area, all community water systems may delete information pertaining to lead service lines, and any additional information presented by a water system in the public education material shall be consistent with the information in 40 CFR §141.85(a) and be written in easily understood language.

(3) A nontransient noncommunity water system must within 60 days of notification by the executive director deliver the public education materials in 40 CFR §141.85(a)(2) as follows:

(A) post informational posters on lead in drinking water in a public place or common area in each of the buildings served by the system;

(B) distribute informational pamphlets and/or brochures on lead in drinking water to each person served by the water system. The commission may allow the water system to utilize electronic transmission in lieu of or combined with printed materials as long as it achieves at least the same coverage;

(C) a water system may delete or modify language relating only to community water systems that is not relevant to its particular facility; and

(D) a water system must repeat the tasks in subparagraphs (A) and (B) of this paragraph at least once during each calendar year for as long as the water system exceeds the lead action level.

(4) A water system may discontinue delivery of public education materials if the system has met the lead action level during the most recent six-month monitoring period. Such a system shall recommence public education in accordance with this section if it subsequently exceeds the lead action level during any monitoring period.

(5) A water system that fails to meet the lead action level as stated in subsection (a)(3) of this section shall make available to any customer who requests it, information as to how and where water samples may be submitted for lead and copper analysis.

(j) Corrosion control.

(1) All applicable water systems shall install and operate optimal corrosion control treatment, which means the corrosion control treatment that minimizes lead and copper concentrations at users' taps while insuring that the treatment does not cause the system to violate any other drinking water standard. All large water systems that exceeded 0.005 mg/L lead at the 90th percentile during initial monitoring or any system that exceeded the lead or copper action level at the 90th percentile during any tap monitoring sampling round and that has installed corrosion control treatment with approved WQP ranges, must operate and maintain optimal corrosion control within those ranges. Compliance periods for this paragraph are two six-month periods, January 1 to June 30, and July 1 to December 31. A water system is out of compliance with this subsection for a six-month period if the water system has WQP excursions for any approved range for more than nine consecutive days. An excursion occurs whenever the daily value for one or more WQPs's measured at a sampling location is below the minimum value or outside the range approved by the executive director. The executive director has the discretion to delete results of obvious sampling errors from this calculation. Daily values are calculated as follows:

(A) water systems that collect more than one WQP measurement in one day must record the daily value as an average of all WQP values collected during the day regardless of whether the measurements are collected through continuous monitoring, grab sampling, or a combination of both;

(B) on days when only one measurement for the WQP is collected at the sampling location, the daily value shall be the result of that measurement; and

(C) on days when no measurement is collected for the WQP at the sampling location, the daily value last calculated on the most recent day shall serve as the daily value.

(2) Large water systems (serving greater than 50,000 people) are required to conduct corrosion control studies unless they can demonstrate that corrosion control is already optimized to the satisfaction of the executive director. If required to conduct a corrosion control study, a large water system must complete it by July 1, 1994, and the executive director shall designate optimal corrosion control treatment and parameters by January 1, 1995. The water system shall install corrosion control treatment by January 1, 1997. Large water systems that exceed lead and/or copper action levels must conduct a demonstration study as described in paragraph (4)(B) of this subsection. If a large water system exceeds either the lead or copper action level during a reduced tap sampling monitoring round, it will adhere to the schedule specified in the paragraph for medium systems, with time periods for completing each step being triggered by the date the executive director notifies the water system that it has exceeded an action level.

(3) Small and medium water systems (serving fewer than 3,301 or serving between 3,301 and 50,000 people, respectively) are deemed to have optimized corrosion control if the water system meets the lead and copper action levels during each of two consecutive six-month monitoring periods. These systems will be required to conduct a desk-top corrosion control study to optimize corrosion control if at anytime the 90th percentile action level for lead and/or copper is exceeded. The study must be conducted and submitted within 18 months after exceedance notification by the executive director for medium-sized water systems and within 24 months after exceedance notification for small water systems. If a small or medium water system exceeds either the lead or copper action level during a reduced tap sampling monitoring round, it will adhere to the schedule specified in the paragraph for small and medium systems, with time periods for completing each step being triggered by the date the executive director notifies the system that it has exceeded an action level.

(4) Performance for corrosion control studies.

(A) Any public water system performing a corrosion control study shall evaluate the effectiveness of each of the following treatments (or combinations of treatments) to identify the optimal control treatment:

(i) alkalinity and pH adjustments;

(ii) calcium hardness adjustment; and

(iii) addition of phosphate or silicate corrosion inhibitor.

(B) The water system shall conduct this evaluation using either pipe rig/loop tests, metal coupon tests, partial systems tests (demonstration study), or analyses based on treatments in documented analogous systems (desk-top study). Analogous system means a system of similar size, water chemistry, and distribution system configuration.

(C) The water system shall measure the parameters listed in subsection (h)(1)(C) of this section.

(D) On the basis of the evaluation stated in paragraph (4)(A) and (B) of this subsection, the water system shall recommend to the executive director, in writing, the treatment option that constitutes optimum corrosion control or treatment along with sufficient documentation as required by the executive director to establish the validity of the evaluation procedure. Operational WQP ranges shall be proposed to the executive director where applicable.

(E) The executive director will, within six months after submittal of the corrosion control study by the water system, review the study and designate optimal corrosion control treatment and parameters.

(F) The water system shall install optimal corrosion control treatment within 24 months after the executive director designates optimal corrosion control treatment and notifies the water system.

(G) Large water systems that install corrosion control treatment shall conduct first-draw lead and copper tap sample monitoring as an initial monitoring during each of two consecutive six-month periods by January 1, 1998. Small and medium water systems shall complete the above stated monitoring within 36 months after the executive director designates optimal corrosion control treatment. Small and medium water systems are deemed to have optimized corrosion control if action levels for lead and copper are not exceeded in two rounds of subsequent tap sample monitoring. Large water systems are deemed to have optimized corrosion control if they have demonstrated through first-draw tap monitoring conducted after treatment installation and water quality parameter sampling conducted in compliance with standards set by the executive director for optimum corrosion control that they are operating within executive director-designated parameters.

(H) Any system that has installed corrosion control treatment and demonstrates optimal corrosion control and operates in compliance with the executive director-designated optimal water quality parameters, may conduct reduced tap sampling as described in subsection (e) of this section, when written permission is granted by the executive director after the executive director has evaluated all pertinent data. Systems that do not meet the action levels for lead and copper after installing corrosion control treatment must continue to operate in accordance with WQP requirements established by the executive director and follow procedures specified in subsection (e)(4) of this section.

(I) The executive director may modify, upon his own initiative or in response to a water system request or a request from interested parties, his designated corrosion control treatment or parameters. The request and executive director response pursuant to modification shall be in writing.

(5) Optimization of corrosion control.

(A) Any water system may be deemed by the executive director to have optimized corrosion control treatment if the system demonstrates, to the satisfaction of the executive director, that it has conducted activities equivalent to the corrosion control steps listed in paragraph (4) of this subsection.

(B) Any large water system is deemed to have optimized corrosion control if it submits results of lead and copper tap water monitoring and entry point water monitoring in accordance with this section which demonstrates for two consecutive six-month monitoring periods that the 90th percentile tap sample lead level is less than 0.005 mg/L.

(k) Lead service line replacement. For the purposes of this subsection, the term “service line” refers to both the potable water service line and the potable water customer service line.

(1) Systems that fail to meet the lead action level during follow-up tap sampling after installing corrosion control and/or source water treatment shall meet the requirements in 40 CFR

§141.84 and begin to replace annually at least 7% of the lead service lines known to be present in its distribution systems.

(2) The water system shall replace the entire service line (up to the building inlet) unless it demonstrates to the satisfaction of the executive director in writing that it controls less than the entire service line. The written statement must indicate that the water system has none of the following forms of control over the service line: municipal ordinances; public service contracts or applicable legal authority; authority to set standards for construction; repair or maintenance; or ownership. In such a case, the water system shall replace that portion of the lead service line that it controls and notify the owner that it will also replace the building owner's portion of the line. The system is not required to bear the cost of replacing the building owner's portion of the line.

(3) At least 45 days prior to commencing replacement of a lead service line, the water system shall notify all the residents of the building served by that service line that they may experience a temporary increase of lead levels in their drinking water. The water system will also provide information on measures the residents can take to minimize their exposure to lead.

(4) Lead service line means a service line which is made all or in part of lead and connects the water main to the building inlet including any lead pigtail, gooseneck, or other fitting which is connected to such line.

(5) The system may cease replacing lead service lines whenever subsequent 90th percentile first-draw-tap sampling in two consecutive monitoring periods is less than the lead action level. Lead service line replacement shall immediately resume if first-draw-tap samples exceed the 90th percentile lead action/level.

(l) Analytical and sample preservation methods.

(1) Analysis for lead and copper shall be conducted using methods stated in 40 CFR §141.89, in laboratories certified by the executive director. Analysis for pH, conductivity, calcium, alkalinity, or the phosphate, silica, and temperature may be conducted in any laboratory utilizing EPA methods prescribed in 40 CFR §141.89.

(2) The Practical Quantitation Limits (PQL) and the Method Detection Limits (MDL) shall be as stated in 40 CFR §141.89. The laboratory certified for the analysis of lead and copper tap samples must achieve the MDL of 0.001 mg/L for lead if composted entry point water samples are analyzed for lead.

(3) The executive director has the authority to allow the use of previously collected monitoring data if the data were collected in accordance with 40 CFR §141.89.

(4) All lead levels measured between the PQL and the MDL must be reported as measured, and all lead levels measured below the MDL must be reported as zero.

(5) First-draw-tap samples must be received in the laboratory within 14 days after the collection date.

(m) Reporting and recordkeeping requirements.

(1) Reporting requirements.

(A) Report all results of WQP analyses including the location/address of each distribution system sampling point. This report must include each WQP specified in subsection (h) of this section, as well as all sample results from entry points to the distribution system. Water Quality Parameter Reports should be submitted to the executive director no later than ten days after the end of each calendar quarter.

(B) Where applicable, the first-draw-tap monitoring shall be reported within ten days following the end of each monitoring period as specified by the executive director. (Analysis results from the approved laboratory are normally provided simultaneously to the water system and the executive director.) The results of first-draw-tap sampling shall be reported to the water system by the approved laboratory if the system's billing account is not delinquent. The executive director shall provide the water system with official notification of the results and the water system's calculated 90th percentile as the data is made available from the approved laboratory.

(C) As part of the site selection form, each water system shall justify the selection of sites other than Tier 1 sampling sites as defined on the site selection form and, if lead service lines are present, why the water system was not able to locate a sufficient number to make up at least 50% of its required number of sampling sites, should this condition arise.

(D) Where applicable, the water system must certify that source water treatment has been installed as recommended by the executive director and that installation was done in accordance with the specified time requirements.

(E) Where applicable, the water system must certify that lead service lines have been replaced in accordance with directives of the executive director and in accordance with time schedules specified in subsection (k) of this section.

(F) Where applicable, the water system must provide copies of public education materials and certification that distribution of said materials is being conducted in accordance with subsection (i) of this section.

(G) A water system must collect tap samples from the same sampling sites selected during the initial monitoring period for all subsequent sampling periods. If a water system changes a sampling site for any reason allowed in this rule, the water system must provide the executive director with a written explanation showing which sampling site will be abandoned and the sampling site that replaces the abandoned sampling site. The water system's report shall include an explanation

as to why a sampling site was changed from the previous round of sampling, if applicable. If a water system discovers that a sample has been collected at an inappropriate sampling site, the water system may request in writing that the sample be invalidated. The executive director may invalidate the sample and allow for recollection. If a water system has no sampling sites available that meet the first draw criteria specified in subsection (c) of this section they shall proceed in accordance with 40 CFR §141.90(a)(2).

(H) Corrosion control treatment data shall be reported as required by the executive director for water systems that:

(i) have demonstrated optimum corrosion control;

(ii) are required to specify optimum corrosion control treatment (as part of the corrosion control study);

(iii) install corrosion control treatment as designated by the executive director; and

(iv) are required to evaluate effectiveness of corrosion control treatments.

(2) Recordkeeping requirements. Records of all sampling site data, sample submission forms, analysis results, reports, surveys, letters, evaluations, schedules, executive director recommendations, requirements or determinations, and any other information deemed appropriate by the water system shall be retained by the water system for a minimum of 12 years. These records include, but are not limited to, the following items:

(A) tap water monitoring results including the location of each site and date of collection;

(B) certification of the volume and validity of first-draw-tap sample criteria via a copy of the laboratory analysis request form;

(C) where residents collected the sample, certification that the water system informed the resident of proper sampling procedures;

(D) the analytical results for lead and copper concentrations (provided to each water system by the executive director) at each tap sample site; and

(E) designation of any substitute site not used in previous monitoring periods.

§290.118. Secondary Constituent Levels.

(a) Applicability for secondary constituents. The requirements for secondary constituents apply to all public water systems. Water that does not meet the secondary constituent levels may not be used for public drinking water without written approval from the executive director. When drinking water that does not meet the secondary constituent levels is accepted for use by the executive director, such acceptance is valid only until such time as water of acceptable chemical quality can be made available at reasonable cost to the area(s) in question.

(b) Secondary constituent levels. The maximum secondary constituent levels are as follows.

Figure: 30 TAC §290.118(b) (No change from proposal.)

(c) Monitoring frequency for secondary constituents. All public water systems shall monitor for secondary constituents at the following frequency.

(1) Each groundwater source shall be sampled once every three years at the entry point to the distribution system.

(2) Each surface water source shall be sampled annually at the entry point to the distribution system.

(3) Each of the sampling frequencies listed in paragraph (3) of this subsection constitute one round of sampling for groundwater and surface water systems, respectively.

(d) Analytical requirements for secondary constituents. All analyses for determining compliance with the provisions of this subsection shall be conducted in accordance with §290.119 of this title (relating to Analytical Procedures) at a facility certified by the Texas Department of Health Bureau of Laboratories.

(e) Reporting requirements for secondary constituents. 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 to be made by this section within ten days following receipt of results of such test, measurement, or analysis.

(f) Compliance determination for secondary constituents. Compliance with the requirements of this subsection shall be based on the following criteria:

(1) A public water system that fails to conduct the monitoring tests required by this subsection commits a monitoring violation;

(2) A public water system that fails to report the results of the monitoring tests required by this subsection commits a reporting violation; and

(3) A public water system that exceeds the secondary constituent levels in subsection (b) of this section commits a secondary constituents level violation.

(g) Public notification for secondary constituents. Public notification must be consistent with the requirements of §290.122 of this title (relating to Public Notification).

(1) Community and nontransient, noncommunity water systems that exceed the secondary maximum constituent level for fluoride but are below the maximum contaminant level listed in §290.106 of this title (relating to Inorganic Contaminants) must notify the public. The notice must be made annually by including it with the water bill or by separate mailing to all customers. The form and content of the notice shall be as prescribed by the executive director.

(2) If a system exceeds the secondary constituent levels, notice must be given to new customers and in the annual consumer confidence report.

§290.119. Analytical Procedures.

(a) Acceptable laboratories. Samples collected to determine compliance with the requirements of this subchapter shall be analyzed at certified or approved laboratories.

(1) Samples used to determine compliance with the maximum contaminant levels, and action level requirements of this subchapter must be analyzed by a laboratory certified by the executive director. These samples include:

(A) compliance samples for SOCs;

(B) compliance samples for VOCs;

(C) compliance samples for inorganic contaminants;

(D) compliance samples for radiological contaminants;

(E) compliance samples for microbial contaminants;

(F) compliance samples for TTHM;

(G) compliance samples for 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 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 by-product precursor treatment technique requirements, including alkalinity, total organic carbon, 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 Natural Resource Conservation Commission, 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 141.22(a) for turbidity analyses;

(3) section 141.23(f) 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(b) for disinfection by-product analyses;

(7) section 141.131(c) for disinfectant analyses;

(8) section 141.131(d) for alkalinity analyses, total 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.

§290.121. Monitoring Plans.

(a) Applicability. All public water systems shall maintain an up-to-date chemical and microbiological monitoring plan. Monitoring plans are subject to the review and approval of the executive director. A copy of the monitoring plan must be maintained at each water treatment plant and at a central location.

(b) Monitoring plan requirements. The monitoring plan shall identify all sampling locations, describe the sampling frequency, and specify the analytical procedures and laboratories that the public water system will use to comply with the monitoring requirements of this subchapter.

(1) Monitoring locations. The monitoring plan shall include information on the location of all required sampling points in the system. Required sampling locations for regulated chemicals are provided in §290.106 of this title (relating to Inorganic Contaminants), §290.107 of this

title (relating to Organic Contaminants), §290.108 of this title (relating to Radiological Sampling and Analytical Requirements), §290.109 of this title (relating to Microbial Contaminants), §290.110 of this title (relating to Disinfectant Residuals), §290.111 of this title (relating to Turbidity), §290.112 of this title (relating to Total Organic Carbon (TOC)), §290.113 of this title (relating to Disinfection By-products (TTHM and HAA5), §290.114 of this title (relating to Disinfection By-products other than TTHM and HAA5), §290.115 of this title (relating to Transition Rule for Disinfection By-products), §290.117 of this title (relating to Regulation of Lead and Copper), and §290.118 of this title (relating to Secondary Constituent Levels).

(A) The location of each sampling site at a treatment plant or pump station must be designated on a plant schematic. The plant schematic must show all water pumps, flow meters, unit processes, chemical feed points, and chemical monitoring points.

(B) Each entry point to the distribution system shall be identified in the monitoring plan as follows:

(i) a written description of the physical location of each entry point to the distribution system shall be provided; or

(ii) the location of each entry point shall be indicated clearly on a distribution system or treatment plant schematic.

(C) The address of each sampling site in the distribution system shall be included in the monitoring plan or the location of each distribution system sampling site shall be designated on a distribution system schematic. The distribution system schematic shall clearly indicate the following:

(i) the location of all pump stations in the distribution system;

(ii) the location of all ground and elevated storage tanks in the distribution system; and

(iii) the location of all chemical feed points in the distribution system.

(D) The system must revise its monitoring plan if changes to a plant or distribution system require changes to the sampling locations.

(2) Monitoring frequency. The monitoring plan must include a written description of sampling frequency and schedule.

(A) The monitoring plan must include a list of all routine samples required on a daily, weekly, monthly, quarterly, and annual basis and identify the sampling location where the samples will be collected.

(B) The system must maintain a current record of the sampling schedule.

(3) The monitoring plan must identify the analytical procedures that will be used to perform each of the required analyses.

(4) The monitoring plan must identify all laboratory facilities that may be used to analyze samples required by this chapter.

(5) The monitoring plan shall include a written description of the methods used to calculate compliance with all MCLs, MRDLs, and treatment techniques that apply to the system.

(c) Reporting requirements. All public water systems shall maintain a copy of the current monitoring plan at each treatment plant and at a central location. The water system must update the monitoring plan when the water system's sampling requirements or protocols change.

(1) Public water systems that treat surface water or groundwater under the direct influence of surface water and serve at least 10,000 people must submit a copy of the monitoring plan to the executive director by January 1, 2001.

(2) Public water systems that treat surface water or groundwater under the direct influence of surface water and serve fewer than 10,000 must submit a copy of the monitoring plan to the executive director by January 1, 2003.

(3) Public water systems that treat groundwater that is not under the direct influence of surface water or purchase treated water from a wholesaler must develop a monitoring plan by January 1, 2004, and submit a copy of the monitoring plan to the executive director upon request.

(4) All water systems must provide the executive director with any revisions to the plan upon request.

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

(1) A public water system that fails to submit an administratively complete monitoring plan by the required date or fails to submit updates to a plan upon request commits a reporting violation.

(2) A public water system that fails to maintain an up-to-date monitoring plan commits a monitoring violation.

(e) Public notification. A system that commits a violation described in §290.122(d) of this title (relating to Public Notification) shall notify its customers of the violation in the next consumer confidence report that is issued by the system.

§290.122. Public Notification.

(a) Public notification requirements for acute violations. The owner or operator of a public water system must notify persons served by their system of any MCL or treatment technique violation 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) Violations 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) A treated water turbidity level above 5.0 NTU in the combined filter effluent of a treatment plant that is treating surface water or groundwater under the direct influence of surface water;

(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; and

(F) Other violations deemed by the executive director to pose an acute risk to human health.

(2) The initial acute public notice 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 is identified. The initial public notice for an acute violation 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(s) 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 hand delivery or by continuous posting in conspicuous places within the area served by the system.

(D) The owner or operator of a noncommunity water system shall issue the notice violation by hand delivery or by continuously posting the notice in conspicuous places within the area served by the water system.

(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. If the owner or operator of a noncommunity water system issued the initial notice by hand delivery, notice by hand 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. 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); or

(C) other violations deemed appropriate by the executive director that pose a non-acute risk to human health.

(2) The initial public notice for any violation 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 publish the notice in a daily newspaper of general circulation in the area served by the system. If the area served by the public water system is not served by a daily newspaper of general circulation, the notice shall be published in a weekly newspaper of general circulation serving the area. If the area is not served by either a daily or weekly newspaper of general circulation, notice shall instead be issued by hand delivery or by continuous posting in conspicuous places within the area served by the system.

(B) The owner or operator of a noncommunity water system shall issue the notice by hand delivery or by continuously posting the notice in conspicuous places within the area served by the system.

(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) 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 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 continuously posting the notice, the posting must continue for as long as the violation exists. If the owner or operator of a noncommunity water system issued the initial notice by hand delivery, notice by hand 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, variances, exemptions. The owner or operator of a public water system who fails to perform monitoring required by these standards, 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 SCL for flouride;

(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; and

(D) operating under a variance or exemption granted under §290.102(b) 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 publish the notice in a daily newspaper of general circulation in the area served by the system. If the area served by the public water system is not served by a daily newspaper of general circulation, the notice shall instead be published in a weekly newspaper of general circulation serving the area. If the area is not served by a either a daily or weekly newspaper of general circulation, notice shall instead be given by hand delivery or by continuous posting in conspicuous places within the area served by the system.

(B) The owner or operator of a noncommunity water system shall issue the notice by hand delivery or by continuously posting the notice in conspicuous places within the area served by the system.

(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. If the owner or operator of a noncommunity water system issued the initial notice by hand delivery, notice by hand 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.

(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 or situation that lead to the notification. The notice must not contain very small print, unduly technical language, or other items that frustrate the purpose of the notice.

(2) If the notice is required for a specific event, it must state when the event occurred.

(3) For notices required under subsection (a) or (b) of this subsection, the notice must describe potential adverse health effects.

(A) For MCL, MRDL, or treatment technique requirements, the notice must contain the mandatory federal contaminant-specific language contained in 40 CFR §141.32, in addition to any language required by the executive director.

(B) 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.

(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 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.

(8) The notice shall include a statement to encourage the notice recipient to distribute the public notice to the other persons served.

(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.

(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 Texas Natural Resource Conservation Commission, Water Supply Division, MC 155, P.O. Box 13087, Austin, Texas 78711-3087.