The Texas Commission on Environmental Quality (TCEQ, agency, or commission) adopts amendments to §§290.38, 290.45 and 290.46.

Amended §290.45 is adopted without changes to the proposed text as published in the August 16, 2024, issue of the *Texas Register* (49 TexReg 6165) and, therefore, will not be republished. Amended §290.38 and §290.46 are adopted with changes, to the proposed text in response to comment and, therefore, will be republished.

Background and Summary of the Factual Basis for the Adopted Rules

During the 88th Texas Legislature (2023), House Bill (HB) 3810, HB 4559, and Senate Bill (SB) 594 passed and require amendments to 30 Texas Administrative Code (TAC) Chapter 290 to implement the enacted legislation.

This rulemaking reflects changes to Texas Health and Safety Code (THSC), §341.033 enacted in HB 3810, requiring nonindustrial water systems to report to the commission an unplanned condition that has caused the system to issue drinking water advisories or a boil water notice. The adopted rules provide a definition of “nonindustrial water system” and “unplanned condition” and address notification requirements.

This rulemaking reflects changes to Texas Water Code (TWC), §13.1395 enacted in HB 4559, which amended the definition of “affected utility” by changing county population. The amended population maintains the applicability of the counties required to have an Emergency Preparedness Plan (EPP) under TWC, §13.1395 or TWC, §13.1394.

This rulemaking reflects changes to THSC, §341.0315 enacted in SB 594, which requires the commission to establish equivalency values for each meter size used to serve a 'recreational vehicle park', as defined by TWC, §13.087, to determine connection count. The adopted rules establish the equivalency value and establish how public water systems calculate alternatives to connection count for recreational vehicle parks that are metered customers of a public water system and have actual water usage more than 10% below the equivalency value.

Section by Section Discussion

§290.38, Definitions

The commission adopts the amendment to §290.38(3)(B) defining "affected utility," by changing the population from "550,000" to "800,000" in accordance with TWC, §13.1395 as amended by HB 4559. The amended population maintains the applicability of the counties required to have an EPP under TWC, §13.1395 or TWC, §13.1394. Specifically, the amendment maintains TWC, §13.1395 applicability to Fort Bend and Harris counties.

The commission adopts the amendment to §290.38(18), defining "connection," by adding a connection equivalency value as well as the alternative recreational vehicle park connection equivalency for recreational vehicle parks that are retail customers of public water systems. The adopted definition establishes that the number of connections for these recreational vehicle parks is calculated as the number of recreational vehicle or cabin sites divided by eight in accordance with THSC, §341.0315 as amended by SB 594.

The commission adopts the addition of §290.38(76), which defines "Recreational Vehicle" in response to public comment.

§290.45, Minimum Water System Capacity Requirements

The commission adopts new §290.45(j) to establish the process by which a public water system can calculate an alternative recreational vehicle park connection equivalency for recreational vehicle parks that are retail customers of a public water system, to coincide with the amended definition of "connection" in §290.38(18)(B) in accordance with THSC, §341.0315 as amended by SB 594. A table is provided with the Alternative Recreational Vehicle Park Connection Equivalency utilizing significant figures; the calculations are based on source capacity per connection in accordance with TAC §290.45(b) and (c) as well as the definition of maximum daily demand in §290.38.

§290.46, Minimum Acceptable Operating Practices for Public Water Systems

In accordance with THSC, §341.033 as amended by HB 3810, the commission adopts the amendment to §290.46(w) and adds new §290.46(w)(6) to require nonindustrial public water systems to provide the executive director with immediate notification of unplanned conditions resulting in water system outages that result in drinking water advisories or boil water notices and to define "nonindustrial water system" and "unplanned condition" within §290.46(w)(6) to clarify public water system types and situations, respectively.

Final Regulatory Impact Determination

The commission reviewed this 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. A "Major environmental rule" means a rule with a specific intent 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.

First, the rulemaking does not meet the statutory definition of a "Major environmental rule" because its specific intent is not to protect the environment or reduce risks to human health from environmental exposure. The specific intent of the rulemaking is to address unplanned conditions at a nonindustrial public water system that cause an outage or issuance of drinking water advisories or boil water notices; to revise the county population in the definition of affected utility in accordance with TWC, §13.1395(a)(1), which applies to those affected utilities which need to submit emergency preparedness plans to the commission for review and approval; and to meet the legislative requirement for the commission to establish connection equivalency values for each meter size used to serve recreational vehicle parks for use in determining the number of connections served by a public water system.

Second, the rulemaking does not meet the statutory definition of a "Major environmental rule" because the rules will not adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, or the public health and safety of the state or a sector of the state. It is not anticipated that the cost of complying with the rules will be significant with respect to the economy as a whole or with respect to a sector of the economy; therefore, the amendments will not adversely affect in a material way the economy, a sector of the economy, competition, or jobs.

Finally, the rulemaking does not meet any of the four applicability requirements for a "Major environmental rule" listed in Texas Government Code §2001.0225(a). Section §2001.0225 only applies to a major environmental rule, the result of which is to: 1) exceed a standard set by federal law, unless the rule is specifically required by state law; 2) exceed an express requirement of state law, unless the rule is specifically required by federal law; 3) exceed a requirement of a delegation agreement or contract between the state and an agency or representative of the federal government to implement a state and federal program; or 4) adopt a rule solely under the general powers of the agency instead of under a specific state law. This rulemaking does not meet any of the preceding four applicability requirements because this rulemaking: does not exceed any standard set by federal law for public water systems; does not exceed any express requirement of state law; does not exceed a requirement of a delegation agreement or contract between the state and an agency or representative of the federal government; and is not based solely under the general powers of the agency, but under THSC, §341.031 and §341.0315, which allows the commission to adopt and enforce rules related to public drinking water, as well under the general powers of the commission.

The commission invited public comment regarding the Draft Regulatory Impact Analysis Determination during the public comment period. No comments were received regarding the regulatory impact analysis determination.

Takings Impact Assessment

The commission evaluated this rulemaking and performed a preliminary assessment of whether these rules constitute a taking under Texas Government Code, Chapter §2007.

The commission adopts these rules to implement House Bills 3810, 4559 and Senate Bill 594, 88th Texas Legislative Session (2023). HB 3810 amended THSC, §341.033 by requiring nonindustrial public water systems to notify the commission when an unplanned condition caused a public water supply outage or issuance of drinking water advisories or a boil water notice. HB 4559 amended TWC, §13.1394(a)(1) by changing the county population in the definition of "affected utility." An affected utility is required to file an emergency preparedness plan with the executive director for review and approval. SB 594 amended THSC, §341.0315, which requires the commission to adopt rules establishing connection equivalency values for each retail meter size used to serve a recreational vehicle park in calculating connection counts.

The commission's analysis indicates that Texas Government Code, Chapter §2007, does not apply to these rules based upon exceptions to applicability in Texas Government Code, §2007.003(b). The rulemaking is an action that is taken to fulfill obligations mandated under state law for all of the adopted rules. The rulemaking related to emergency preparedness plans is also an action taken in response to a real and substantial threat to public health and safety, that is designed to significantly advance the public health and safety purpose, and that does not impose a greater burden than is necessary to achieve the public health and safety purpose. Texas Government Code, §2007.003(b)(4) and (13).

First, the rulemaking is an action taken to fulfill obligations under state law. The law requires actions by the commission and the regulated community when unplanned conditions at a nonindustrial public water system result in a system outage or issuance of drinking water advisories or boil water notices under THSC, §341.033; the change to the county population in the definition of "affected utility" maintains those affected utilities requirements to submit

emergency preparedness plans to the commission under TWC, §13.1395(a)(1); and state law now requires the commission to promulgate rules to establish connection equivalency values for each meter size used to serve a recreational vehicle park for purposes of public water system connection counts under THSC, §341.0315. Texas Government Code, §2007.003(b)(4).

Second, the adopted rules will ensure the emergency preparedness plans are submitted by affected utilities in appropriate counties designated by the legislature. The adopted rules will significantly advance the public health and safety purpose; and do not impose a greater burden than is necessary to achieve the public health and safety purpose. These rules advance the public health and safety by ensuring appropriate governmental regulation and do so in a way that does not impose a greater burden than is necessary to achieve the public health and safety purpose. Texas Government Code, §2007.003(b)(13).

Further, the commission has determined that promulgation and enforcement of these rules will be neither a statutory nor a constitutional taking of private real property. Specifically, there are no burdens imposed on private real property under the rule because the rules neither relate to, nor have any impact on, the use or enjoyment of private real property, and there will be no reduction in property value as a result of these rules. The rules require compliance with the actions required by nonindustrial public water systems when unplanned conditions result in a system outage or issuance of drinking water advisories or boil water notices; compliance regarding submission by an affected utility to the commission of its emergency preparedness plan, which is meant to ensure public health and safety; and state law requires that connection equivalency values be established for each retail meter size used to serve a recreational vehicle park. Therefore, the rules will not constitute a taking under Texas Government Code, Chapter

§2007.

Consistency with the Coastal Management Program

The commission reviewed the adopted rulemaking and found that the sections proposed for amendments are neither identified in Coastal Coordination Act implementation rules, 31 TAC §505.11(b)(2) or (4), nor will the amendments affect any action or authorization identified in Coastal Coordination Act implementation rules, 31 TAC §505.11(a)(6). Therefore, the adopted rulemaking is not subject to the Texas Coastal Management Program.

The commission invited public comment regarding the consistency with the coastal management program during the public comment period. No comments were received regarding the Coastal Management Program.

Public Comment

The commission held a public hearing on Thursday, September 12, 2024. No oral comments were received at the public hearing. The comment period closed on Tuesday, September 17, 2024. The commission received timely comments on the proposed Chapter 290 rules from Texas Rural Water Association (TRWA).

Response to Comments

Comment 1

TRWA expressed appreciation for being a partner with the commission in the rulemaking process and offered changes to the proposed rule language. TRWA indicated that SB 594 and HB 3810 had been confusing for some public water systems and TRWA believed some of the

language proposing to implement these bills was ambiguous.

Response 1

The Commission acknowledges this comment.

Comment 2

TRWA commented that §290.45(j) did not define "cabin," as used in SB 594 and asked whether "cabin" includes "tiny homes." TRWA provided a suggested definition of "cabin". TRWA commented that the proposed rules also do not define "recreational vehicle (RV)" or "recreational vehicle park (RV Park)," TRWA suggested that the commission adopt the same definitions of RV and RV park as used by the Texas Public Utility Commission.

Response 2

The commission does not agree that §290.45(j) needs to include the definition for "recreational vehicle park" (RV Park) or "cabin" as suggested by TRWA because proposed §290.38(18)(B) references TWC §13.087(a)(3), which defines RV Park, therefore the proposed rules are consistent with statutory definitions. The commission agrees that defining "recreational vehicle" would provide regulatory clarity to the rule and has added a new definition, §290.38(76), based on TWC §13.087(a)(2). The commission does not believe that a definition of "cabin" is necessary because TCEQ rules referring to transient accommodation units do not include a comprehensive list of accommodation units nor do they define specific accommodation units, such as hotel rooms or campsites. Cabins should be considered as "similar accommodations" to the transient accommodation units listed in 30 TAC §290.45(c). If the regulated community continues to express confusion regarding

cabins and tiny homes as described by TRWA, the commission can clarify the issue through regulatory guidance.

Comment 3

The TRWA commented that the proposed changes to §290.46(w)(6) appear broader than what is required by HB 3810. TRWA suggests the commission revise the proposed rule by adding definitions for "do-not-use advisory" and "do-not-consume advisory." TRWA suggests that the reference to §290.47(e) in the proposed rule be replaced with reference to §290.46(q) because §290.47(e) addresses only boil water notices while §290.46(q) addresses special precautions.

Response 3

The commission does not agree that proposed §290.46(w)(6) is broader than HB 3810, however, to improve clarity the commission is revising 290.46(w) to include "do-not-use advisory" and "do-not-consume advisory" to be consistent with the statute. The commission does not agree that the rule should reference §290.46(q) in place of §290.47(e), because the flow diagram referenced by §290.47(e) specifically addresses outages and boil water notices associated with a loss of pressure. Proposed §290.46(w)(6) provides nonindustrial public water systems a framework to determine when they need to submit immediate notification and adequately implements HB 3810.

SUBCHAPTER D: RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS

§§290.38, 290.45, 290.46

Statutory Authority

The rulemaking is adopted under Texas Water Code (TWC) §5.013, which establishes the general jurisdiction of the commission; TWC §5.102, which establishes the commission's general authority to perform any act necessary to carry out its jurisdiction; TWC §5.103 and TWC §5.105, which establish the commission's authority to adopt any rules necessary to carry out its powers and duties; Texas Health and Safety Code (THSC) §341.031, which requires drinking water supplies to meet standards established by the commission; and THSC §341.0315, which requires public drinking water systems to comply with commission standards established to ensure the supply of safe drinking water.

The rulemaking adoption implements legislation enacted by the 88th Texas Legislature in 2023: THSC, §341.033 in House Bill (HB) 3810; TWC, §13.1395(a)(1) in HB 4559; and THSC, §341.0315 in Senate Bill 594.

§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 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 Water Dictionary: A Comprehensive Reference of Water Terminology, prepared by the American Water Works Association.

(1) Accredited laboratory - A laboratory accredited by the executive director to analyze drinking water samples to determine compliance with maximum contaminant levels, action levels, and microbial contaminants in accordance with §290.119 of this title (relating to Analytical Procedures).

(2) Adverse Weather Conditions - Any significant temperature, wind velocity, accumulation of precipitation including drought, or other weather pattern that may trigger the issuance of a national weather service watch, advisory, or warning.

(3) Affected utility –

(A) A retail public utility (§291.3 of this title (relating to Definitions of Terms)), exempt utility (§291.103 of this title (relating to Certificates Not Required)), or provider or conveyor of potable or raw water service that furnishes water service to more than one customer is an affected utility as defined in TWC §13.1394; or

(B) A retail public utility (§291.3 of this title (relating to Definitions of Terms)), exempt utility (§291.103 of this title (relating to Certificates Not Required)), or provider or conveyor of potable or raw water service that furnishes water service to more than one customer is an affected utility, as defined in TWC §13.1395, in a county with a population of:

(i) 3.3 million or more; or

(ii) 800,000 or more adjacent to a county with a population of 3.3 million or more.

(4) 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.

(5) American National Standards Institute (ANSI) standards--The standards of the American National Standards Institute, Inc.

(6) American Society of Mechanical Engineers (ASME) standards--The standards of the ASME.

(7) American Water Works Association (AWWA) standards--The latest edition of the applicable standards as approved and published by the AWWA.

(8) Approved laboratory--A laboratory approved by the executive director to analyze water samples to determine their compliance with treatment technique requirements and maximum or minimum allowable constituent levels in accordance with §290.119 of this title (relating to Analytical Procedures).

(9) ASTM International standards--The standards of ASTM International (formerly known as the American Society for Testing and Materials).

(10) 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.

(11) Bag filter--Pressure-driven separation device that removes particulate matter larger than 1 micrometer using an engineered porous filtration media. They are typically constructed of a non-rigid, fabric filtration media housed in a pressure vessel in which the direction of flow is from the inside of the bag to the outside.

(12) Baseline performance--In reference to a membrane treatment facility, the detailed assessment of observed operational conditions at the time the membrane facility is placed in service for the purpose of tracking changes over time and determining when maintenance or service is required. Examples of parameters where baseline performance data is collected include: net driving pressure, normalized permeate flow, salt rejection, and salt passage.

(13) Cartridge filter--Pressure-driven separation device that removes particulate matter larger than 1 micrometer using an engineered porous filtration media. They are typically

constructed as rigid or semi-rigid, self-supporting filter elements housed in pressure vessels in which flow is from the outside of the cartridge to the inside.

(14) Certified laboratory--A laboratory certified by the commission to analyze water samples to determine their compliance with maximum allowable constituent levels. After June 30, 2008, laboratories must be accredited, not certified, in order to perform sample analyses previously performed by certified laboratories.

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

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

(17) 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.

(18) 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) 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:

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

(ii) 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

(iii) 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.

(B) For a recreational vehicle park, as defined by Texas Water Code, §13.087(a)(3), that is a retail customer of a public water system, the number of connections shall be calculated as:

(i) the number of recreational vehicle sites or cabin sites, whether occupied or not, divided by eight; or

(ii) the number of recreational vehicle sites or cabin sites, whether occupied or not, divided by the alternative recreational vehicle park connection equivalency specified in §290.45(j) of this title (relating to Minimum Water System Capacity Requirements).

(19) 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.

(20) 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.

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

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

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

(24) 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.

(25) 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.

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

(27) 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.

(28) Emergency operations--The operation of an affected utility during an extended power outage at a minimum water pressure of 20 pounds per square inch (psi) or a pressure approved by the executive director as required under TWC §13.1394 and 35 psi as required under TWC §13.1395.

(29) 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.

(30) Extended power outage--A power outage lasting for more than 24 hours.

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

(32) Flux--The throughput of a pressure-driven membrane filtration system expressed as flow per unit of membrane area. For example, gallons per square foot per day or liters per hour per square meter.

(33) Grantee--For purposes of this chapter, any person receiving an ownership interest in a public water system, whether by sale, transfer, descent, probate, or otherwise.

(34) Grantor--For purposes of this chapter, any person who conveys an ownership interest in a public water system, whether by sale, transfer, descent, probate, or otherwise.

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

(36) 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*;

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

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

(37) 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.

(38) 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.

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

(40) Innovative/alternate treatment--Any treatment process that does not have specific design requirements in §290.42(a) - (f) of this title (relating to Water Treatment).

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

(42) International Fire Code (IFC)--The standards of the International Code Council.

(43) 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.

(44) 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.

(45) 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.

(46) Log removal value (LRV)--Removal efficiency for a target organism, particulate, or surrogate expressed as log10 (i.e., log10 (feed concentration) - log10 (filtrate concentration)).

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

(48) 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.

(49) Membrane filtration--A pressure or vacuum driven separation process in which particulate matter larger than one micrometer is rejected by an engineered barrier, primarily through a size-exclusion mechanism, and which has a measurable removal efficiency of a target organism that can be verified through the application of a direct integrity test; includes the following common membrane classifications microfiltration (MF), ultrafiltration

(UF), nanofiltration (NF), and reverse osmosis (RO), as well as any "membrane cartridge filtration" (MCF) device that satisfies this definition.

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

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

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

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

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

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

(56) National Fire Protection Association (NFPA) standards--The standards of the NFPA.

(57) NSF International--The organization and the standards, certifications, and listings developed by NSF International (formerly known as the National Sanitation Foundation) related to drinking water.

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

(59) 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.

(60) 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.

(61) Pass--In reference to a reverse osmosis or nanofiltration membrane system, stages of pressure vessels in series in which the permeate from one stage is further processed in a following stage.

(62) 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.

(63) 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.

(64) 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.

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

(66) 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.

(67) Potable water service line--The section of pipe between the potable water main and 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.

(68) 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.

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

(70) psi--Pounds per square inch.

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

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

(73) 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.

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

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

(76) Recreational Vehicle--A recreational vehicle as defined in Tex. Water Code §13.087(a)(2), which is incorporated by reference as if fully set forth.

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

(78) 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. For an example, see commission Form 20698.

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

(80)

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.

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

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

(84) Stage--In reference to a reverse osmosis or nanofiltration membrane system, a set of pressure vessels installed in parallel.

(85) System--Public water system as defined in this section unless otherwise modified (i.e., distribution system).

(86) 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.

(87) 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.

(88) Vessel--In reference to a reverse osmosis or nanofiltration membrane system, a cylindrical housing unit where membrane modules are placed in a series to form one unit.

(89) 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.

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

(91) Water system--Public water system as defined in this section unless otherwise modified (i.e., distribution system).

§290.45. Minimum Water System Capacity Requirements.

(a) General provisions.

(1) The requirements contained in this section are to be used in evaluating both the total capacities for public water systems and the capacities at individual pump stations and pressure planes which serve portions of the system that are hydraulically separated from, or incapable of being served by, other pump stations or pressure planes. The capacities specified in this section are minimum requirements only and do not include emergency fire flow capacities for systems required to meet requirements contained in §290.46(x) and (y) of this title (relating to Minimum Acceptable Operating Practices for Public Drinking Water Systems).

(2) The executive director will require additional supply, storage, service pumping, and pressure maintenance facilities if a normal operating pressure of 35 pounds per square inch (psi) cannot be maintained throughout the system, or if the system's maximum

daily demand exceeds its total production and treatment capacity. The executive director will also require additional capacities for a system that is unable to maintain a minimum pressure of 20 psi during firefighting, line flushing, other unusual conditions, and systems that are required to provide fire flow as specified in §290.46(x) and (y) of this title.

(3) The executive director may establish additional capacity requirements for a public water system using the method of calculation described in subsection (g)(2) of this section if there are repeated customer complaints regarding inadequate pressure or if the executive director receives a request for a capacity evaluation from customers of the system.

(4) Throughout this section, total storage capacity does not include pressure tank capacity.

(5) The executive director may exclude the capacity of facilities that have been inoperative for the past 120 days and will not be returned to an operative condition within the next 30 days when determining compliance with the requirements of this section.

(6) The capacity of the treatment facilities shall not be less than the required raw water or groundwater production rate or the anticipated maximum daily demand of the system. The production capacity of a reverse osmosis or nanofiltration membrane system shall be the quantity of permeate water after post-treatment that can be delivered to the distribution system. The amount available for customer use must consider:

(A) the quantity of feed water discharged to waste;

(B) the quantity of bypass water used for blending;

(C) the quantity of permeate water used for cleaning and maintenance; and

(D) any other loss of raw water or groundwater available for use due to other processes at the reverse osmosis or nanofiltration facility.

(7) If a public water system that is an affected utility fails to provide a minimum of 20 psi or a pressure approved by the executive director, or 35 psi, as required by TWC §13.1394 and §13.1395 respectively, throughout the distribution system during emergency operations as soon as it is safe and practicable following the occurrence of a natural disaster, a revised emergency preparedness plan or justification regarding pressure drop shall be submitted for review and approval within 180 days of the date normal power is restored. Based on the review of the revised emergency preparedness plan, the executive director may require additional or alternative auxiliary emergency facilities.

(8) A public water system that is an affected utility is required to review its emergency preparedness plan once every three years. An affected utility shall submit a new or revised emergency preparedness plan to the executive director for approval within 90 days after any of the following conditions occur:

(A) An affected utility chooses to implement a different option or options other than those in the most recent approved emergency preparedness plan;

(B) A previously non-affected utility meets the definition of an affected utility;

(C) An affected utility makes a significant change as described in §290.39(j) of this title that affects emergency operations; or

(D) An affected utility makes changes to utility contact or emergency communications information. For these changes, the affected utility must submit only the updated applicable pages of the emergency preparedness plan to the executive director.

(b) Community water systems.

(1) Groundwater supplies must meet the following requirements.

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

(i) a well capacity of 1.5 gallons per minute (gpm) 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 meet the following requirements:

(i) a well capacity of 0.6 gpm 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 gpm 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 gpm per connection;

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

(iii) two or more pumps having a total capacity of 2.0 gpm per connection at each pump station or pressure plane. For systems which provide an elevated storage capacity of 200 gallons per connection, two service pumps with a minimum combined

capacity of 0.6 gpm per connection are required at each pump station or pressure plane. If only wells and elevated storage are provided, service pumps are not required; and

(iv) an elevated storage capacity of 100 gallons per connection or a pressure tank capacity of 20 gallons per connection.

(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 gpm per connection. Where an interconnection is provided with another acceptable water system capable of supplying at least 0.35 gpm for each connection in the combined system under emergency conditions, an additional well will not be required as long as the 0.6 gpm 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;

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

connection, two service pumps with a minimum combined capacity of 0.6 gpm 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. 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 subsection (g)(5) of this section are met; and

(v) emergency power 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 gpm per connection and meet minimum pressure requirements 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 gpm for each connection in the combined system. Emergency power must be maintained as required by §290.46(m)(8) of this title.

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

(i) a well capacity of 1.0 gpm 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 gpm per connection. Systems with 250 or more connections must have either two wells or an approved interconnection which is capable of supplying at least 0.35 gpm for each connection in the combined system;

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

(iii) at least two service pumps with a total capacity of 2.0 gpm per connection; and

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

(2) Surface water supplies must meet the following requirements:

(A) a raw water pump capacity of 0.6 gpm per connection with the largest pump out of service;

(B) a treatment plant capacity of 0.6 gpm per connection under normal rated design flow;

(C) transfer pumps (where applicable) with a capacity of 0.6 gpm 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 gpm per connection or that have a total capacity of at least 1,000 gpm 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 gpm 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. 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 subsection (g)(5) of this section are met; and

(H) emergency power 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 gpm per connection and meet minimum pressure requirements 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 gpm for each connection in the combined system. Emergency power must be maintained as required by §290.46(m)(8) of this title.

(3) Any community public water system that is an affected utility, defined in TWC §13.1394 or §13.1395 shall have an emergency preparedness plan approved by the executive director and must meet the requirements for emergency operations contained in subsection (h) or (i) of this section. This includes any affected utility that provides 100 gallons of elevated storage capacity per connection.

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

(1) Groundwater supplies must meet the following requirements.

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

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

(ii) a pressure tank capacity of ten 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 meet the following requirements:

(i) a well capacity of 0.6 gpm 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 gpm per unit; and

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

(2) Surface water supplies, regardless of size, must meet the following requirements:

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

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

(C) a transfer pump capacity (where applicable) of 0.6 gpm 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 gpm per unit; and

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

(3) A noncommunity public water system that is an affected utility, defined in TWC §13.1394 or §13.1395 shall meet the requirements of subsection (h) or (i) of this section.

(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.

Figure: 30 TAC §290.45(d)(1) (No Change)

It should be noted that this table is used to determine minimum capacities only and that the overriding criteria will be the ability of the system to maintain a minimum pressure of 35 psi under normal operating conditions. Minimum distribution pressure shall not be less than 20 psi at any time.

(2) Groundwater supplies must meet the following requirements.

(A) Subject to the requirements of subparagraph (B) of this paragraph, if fewer than 300 persons per day are served, the system must meet the following requirements:

(i) a well capacity which meets or exceeds 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 executive director.

(B) Systems which serve 300 or more persons per day or serve fewer than 300 persons per day and provide ground storage must meet the following requirements:

(i) a well capacity which meets or exceeds 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;

(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, must meet the following requirements:

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

(B) a treatment plant capacity which meets or exceeds 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 executive director.

(4) A noncommunity public water system that is an affected utility, defined in TWC §13.1394 or §13.1395, shall meet the requirements of subsection (h) or (i) of this section.

(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. If a contract prohibits a purchaser from securing water from sources other than the contracted wholesaler during emergency operations, the wholesaler is responsible for meeting applicable capacity requirements.

(2) For wholesale water suppliers, minimum water system capacity requirements shall be determined by calculating the requirements based upon the number of retail customer service connections of that wholesale water supplier, if any, fire flow capacities, if required by §290.46(x) and (y) of this title and adding that amount to the maximum amount of water obligated or pledged under all wholesale contracts.

(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 and meet minimum pressure requirements 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. For wholesale contracts executed or amended on or after January 1, 2025, the contract must specify if the wholesaler will supply water, pressure, or both water and pressure during emergency operations to comply with TWC §13.1394 or §13.1395.

(4) A wholesaler that is an affected utility, defined in TWC §13.1394 or §13.1395, must meet the requirements specified in subsection (h) or (i) of this section.

(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 must be available to the executive director 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, or a uniform purchase rate in the absence of a specified daily purchase rate, plus the actual production capacity of the system must be at least 0.6 gpm 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 gpm per connection or provide at least 1,000 gpm and be able to meet peak hourly demands, whichever is less.

(6) The purchaser is responsible for meeting all capacity requirements. If additional capacity to meet increased demands cannot be attained from the wholesaler through a new or amended contract, additional capacity must be obtained from water purchase contracts with other entities, new wells, or surface water treatment facilities. However, if the water purchase contract prohibits the purchaser from securing water from sources other than the wholesaler, the wholesaler is responsible for meeting applicable capacity requirements. For wholesale contracts executed or amended on or after January 1, 2025, the contract must specify if the wholesaler will supply water, pressure, or both water and pressure during emergency operations to comply with TWC §13.1394 or §13.1395.

(7) All other minimum capacity requirements specified in this section and §290.46(x) and (y) of this title 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 and comply with the requirements found in §290.46(x) and (y) of this title. Alternative capacity requirements are unavailable for groundwater systems serving fewer than 50 connections

without total storage as specified in subsection (b)(1) of this section or for noncommunity water systems as specified in subsections (c) and (d) of this section.

(1) Alternative capacity requirements 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) a detailed inventory of the major production, pressurization, and storage facilities utilized by the system;

(B) 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) data acquired during the last drought period in the region, if required by the executive director;

(D) the actual number of active connections for each month during the three years of production data;

(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 at least 35 psi in the public water system except during line repair or during firefighting when it cannot be less than 20 psi; and

(G) a copy of all data relied upon for making the proposed determination.

(2) Alternative capacity requirements for existing public water systems must be based upon the maximum daily demand for the system, unless the request is submitted by a licensed professional engineer in accordance with the requirements of paragraph (3) of this subsection. The maximum daily demand must be determined based upon the daily usage data contained in monthly operating reports for the system during a 36 consecutive month period. The 36 consecutive month period must end within 90 days of the date of submission to ensure the data is as current as possible.

(A) Maximum daily demand is the greatest number of gallons, including groundwater, surface water, and purchased water delivered by the system during any single day during the review period. Maximum daily demand excludes unusual demands on the system such as fire flows or major main breaks.

(B) For the purpose of calculating alternative capacity requirements, an equivalency ratio must be established. This equivalency ratio must be calculated by multiplying the maximum daily demand, expressed in gpm per connection, by a fixed safety factor and dividing the result by 0.6 gpm per connection. The safety factor shall be 1.15 unless it is

documented that the existing system capacity is adequate for the next five years. In this case, the safety factor may be reduced to 1.05. The conditions in §291.93(3) of this title (relating to Adequacy of Water Utility Service) concerning the 85% rule shall continue to apply to public water systems that are also retail public utilities.

(C) To calculate the alternative capacity requirements, the equivalency ratio must be multiplied by the appropriate minimum capacity requirements specified in subsection (b) of this section. Standard rounding methods are used to round calculated alternative production capacity requirement values to the nearest one-hundredth.

(3) Alternative capacity requirements which are proposed and submitted by licensed professional engineers for review are subject to the following additional requirements.

(A) A signed and sealed statement by the licensed professional engineer must be provided which certifies that the proposed alternative capacity requirements have been determined in accordance with the requirements of this subsection.

(B) If the system is new or at least 36 consecutive months of data is not available, maximum daily demand may be based upon at least 36 consecutive months of data from a comparable public water system. A licensed professional engineer must certify that the data from another public water system is comparable based on consideration of the following factors: prevailing land use patterns (rural versus urban); number of connections; density of service populations; fire flow obligations; and socio-economic, climatic, geographic, and topographic considerations as well as other factors as may be relevant. The comparable public

water system shall not exhibit any of the conditions listed in paragraph (6)(A) of this subsection.

(4) The executive director shall consider requests for alternative capacity requirements in accordance with the following requirements.

(A) For those requests submitted under the seal of a licensed professional engineer, the executive director must mail written acceptance or denial of the proposed alternative capacity requirements to the public water system within 90 days from the date of submission. If the executive director fails to mail written notification within 90 days, the alternative capacity requirements submitted by a licensed professional engineer automatically become the alternative capacity requirements for the public water system.

(B) If the executive director denies the request:

(i) the executive director shall mail written notice to the public water system identifying the specific reason or reasons for denial and allow 45 days for the public water system to respond to the reason(s) for denial;

(ii) the denial is final if no response from the public water system is received within 45 days of the written notice being mailed; and

(iii) the executive director must mail a final written approval or denial within 60 days from the receipt of any response timely submitted by the public water system.

(5) Although elevated storage is the preferred method of pressure maintenance for systems of over 2,500 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 qualifying for an elevated storage alternative capacity requirement.

(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 20 psi or a pressure approved by the executive director, or 35 psi, as required by TWC §13.1394 and §13.1395, respectively, 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 executive director 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.

(iv) A public water system that is an affected utility, defined in TWC §13.1394 or §13.1395, must conduct the modeling requirements contained in clauses (i) - (iii) of this subparagraph using the requirements specified in subsection (h) or (i) of this section.

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

power interruption. A public water system that is an affected utility, defined in TWC §13.1394 or §13.1395, must meet the requirements specified in subsection (h) or (i) of this section.

(i) The facilities must be serviced and maintained in accordance with Level 2 maintenance requirements contained in the current NFPA 110 Standard and the manufacturers' recommendations if the affected utility serves 1,000 connections or greater, or in accordance with manufacturer's recommendations and as prescribed in §290.46(m)(8) of this title if the affected utility serves fewer than 1,000 connections.

(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 or a pressure approved by the executive director, or 35 psi, as required by TWC §13.1394 and §13.1395, respectively.

(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 emergency power facilities during emergency operations for a period of at least 48 hours must always be maintained on site or made readily available.

(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 executive director. Records must include chart recordings of all power interruptions including interruptions due to periodic emergency power under-load testing and maintenance.

(6) Any alternative capacity requirement granted under this subsection is subject to review and revocation or revision by the executive director. If permission to use an alternative capacity requirement is revoked, the public water system must meet the applicable minimum capacity requirements of this section.

(A) The following conditions, if attributable to the alternative capacity requirements, may constitute grounds for revocation or revision of established alternative capacity requirements or for denial of new requests, if the condition occurred within the last 36 months:

(i) documented pressure below 35 psi at any time not related to line repair, except during firefighting when it cannot be less than 20 psi;

(ii) water outages due to high water usage;

(iii) mandatory water rationing due to high customer demand or overtaxed water production or supply facilities;

(iv) failure to meet a minimum capacity requirement or an established alternative capacity requirement;

(v) changes in water supply conditions or usage patterns which create a potential threat to public health; or

(vi) any other condition where the executive director finds that the alternative capacity requirement has compromised public health or resulted in a degradation of service or water quality.

(B) If the executive director finds any of the conditions specified in subparagraph (A) of this paragraph, the process for revocation or revision of an alternative capacity requirement shall be as follows, unless the executive director finds that failure of the service or other threat to public health and safety is imminent under subparagraph (C) of this paragraph.

(i) The executive director must mail the public drinking water system written notice of the executive director's intent to revoke or revise an alternative capacity requirement identifying the specific reason(s) for the proposed action.

(ii) The public water system has 30 days from the date the written notice is mailed to respond to the proposed action.

(iii) The public water system has 30 days from the date the written notice is mailed to request a meeting with the agency's public drinking water program

personnel to review the proposal. If requested, such a meeting must occur within 45 days of the date the written notice is mailed.

(iv) After considering any response from or after any requested meeting with the public drinking water system, the executive director must mail written notification to the public drinking water system of the executive director's final decision to continue, revoke, or revise an alternative capacity requirement identifying the specific reason(s) for the decision.

(C) If the executive director finds that failure of the service or other threat to public health and safety is imminent, the executive director may issue written notification of the executive director's final decision to revoke or revise an alternative capacity requirement at any time.

(h) Affected utilities as defined in TWC §13.1394. This subsection applies to all affected utilities, as defined in TWC §13.1394, and is in addition to any other requirements pertaining to emergency power found in this chapter.

(1) Affected utilities must provide one or more of the following options to ensure the emergency operation of its water system during an extended power outage at a minimum of 20 psi, or a pressure approved by the executive director, whichever is applicable, and in accordance with the affected utility's approved emergency preparedness plan:

(A) the maintenance of automatically starting auxiliary generators;

(B) the sharing of auxiliary generator capacity with one or more affected utilities, including through participation in a statewide mutual aid program;

(C) the negotiation of leasing and contracting agreements, including emergency mutual aid agreements with other retail public utilities, exempt utilities, or providers, or conveyers of potable water or raw water service, if the agreements provide for coordination with the division of emergency management in the governor's office;

(D) the use of portable generators capable of serving multiple facilities equipped with quick-connect systems;

(E) the use of on-site electrical generation or electrical distribution generation facilities;

(F) hardening of the electric transmission and electric distribution system against damage from natural disasters during an extended power outage;

(G) the maintenance of direct engine or right-angle drives;

(H) designation of the water system as a critical load facility or redundant, isolated or dedicated electrical feeds;

(I) water storage capabilities with sufficient storage to provide water to customers during an extended power outage;

(J) water supplies can be delivered from outside the service area of the affected utility by opening an emergency interconnect or using a water hauler;

(K) affected utility has ability to provide water through artesian flows;

(L) affected utility has ability to open valves between pressure zones to provide redundant interconnectivity between pressure zones;

(M) affected utility will implement emergency water demand rules to maintain emergency operations; or

(N) any other alternative determined by the executive director to be acceptable.

(2) Each affected utility that supplies, provides, or conveys raw surface water shall include in its emergency preparedness plan, under paragraph (1) of this subsection, provisions for demonstrating the capability of each raw water intake pump station, pump station, and pressure facility necessary to provide raw water service to its wholesale customers during emergencies. This does not apply to raw water services that are unnecessary or otherwise subject to interruption or curtailment during emergencies under a contract.

(3) Emergency generators used as part of an approved emergency preparedness plan must be inspected, maintained, tested, and operated in accordance with the manufacturer's specifications and as outlined in 290.46(m)(8) of this title.

(4) An affected utility may adopt and is encouraged to enforce limitations on water use while the utility is providing emergency operations.

(5) As soon as safe and practicable following the occurrence of a natural disaster, an affected utility must operate in accordance with its approved emergency preparedness plan, which may include using elevated storage. An affected utility may meet the requirements of TWC §13.1394 including having a currently approved emergency preparedness plan, in lieu of any other rules regarding elevated storage requirements, provided that, under normal operating conditions, the affected utility continues to meet the pressure requirements of §290.46(r) of this title (related to Minimum Acceptable Operating Practices for Public Drinking Water Systems) and the production, treatment, total storage, and service pump capacity requirements of this subchapter.

(6) An affected utility must maintain on-site, or make readily available during emergency operations, an amount of fuel necessary to operate any required emergency power equipment necessary to maintain emergency operations for at least 48 hours.

(7) Each affected utility must implement its emergency preparedness plan upon approval by the executive director.

(i) Affected utilities as defined by TWC §13.1395. This subsection applies to all affected utilities as defined by TWC §13.1395 and is in addition to any other requirements pertaining to emergency power found in this subchapter.

(1) Affected utilities must provide one of the following options of sufficient power to meet the capacity requirements of paragraph (1) or (2) of this subsection, whichever is applicable, and in accordance with the affected utility's approved emergency preparedness plan:

(A) the maintenance of automatically starting auxiliary generators;

(B) the sharing of auxiliary generator capacity with one or more affected utilities;

(C) the negotiation of leasing and contracting agreements, including emergency mutual aid agreements with other retail public utilities, exempt utilities, or providers, or conveyors of potable or raw water service, if the agreements provide for coordination with the division of emergency management in the governor's office;

(D) the use of portable generators capable of serving multiple facilities equipped with quick-connect systems;

(E) the use of on-site electrical generation or electrical distributed generation facilities;

(F) hardening of the electric transmission and electric distribution system against damage from natural disasters during an extended power outage;

(G) the maintenance of direct engine or right-angle drives; or

(H) any other alternative determined by the executive director to be acceptable.

(2) Each affected utility that supplies, provides, or conveys surface water to wholesale customers shall install and maintain automatically starting auxiliary generators or distributive generation facilities for each raw water intake pump station, water treatment plant, pump station, and pressure facility necessary to provide water to its wholesale customers. This does not apply to raw water services that are unnecessary or otherwise subject to interruption or curtailment during emergencies under a contract.

(3) Emergency generators used as part of an approved emergency preparedness plan must be maintained, tested, and operated in accordance with Level 2 maintenance requirements contained in the current NFPA 110 Standard and the manufacturers specifications if the affected utility serves 1,000 connections or greater, or the manufacturer's specifications and as outlined in §290.46(m)(8) of this title for affected utilities serving fewer than 1,000 connections.

(4) An affected utility may adopt and is encouraged to enforce limitations on water use while the utility is providing emergency operations.

(5) As soon as safe and practicable following the occurrence of a natural disaster, an affected utility must operate in accordance with its approved emergency preparedness plan, which may include using elevated storage. An affected utility may meet the requirements of TWC §13.1395, including having a currently approved emergency preparedness plan, in lieu of any other rules regarding elevated storage requirements, provided that, under normal operating conditions, the affected utility continues to meet the pressure requirements of §290.46(r) of this title and the production, treatment, total storage and service pump capacity requirements of this subchapter.

(6) An affected utility must maintain on-site, or make readily available during emergency operations, an amount of fuel necessary to operate any required emergency power equipment necessary to maintain emergency operations for at least 48 hours.

(7) Each affected utility must implement their emergency preparedness plan upon approval by the executive director.

(j) Alternative recreational vehicle park connection equivalency. If the actual water usage of a recreational vehicle park that is a retail customer of a public water system is less than 90 percent of the average daily demand of 45.0 gallons per day per recreational vehicle site, the public water system may use an alternative recreational vehicle park connection equivalency

calculated using the following figure. The alternative recreational vehicle park connection equivalency will be reviewed during on-site compliance inspections.

Figure: 30 TAC §290.45(j)

Alternative Recreational Vehicle Park Connection Equivalency Values.

Average Daily Demand (gallons per day per recreational vehicle site)	Alternative Recreational Vehicle Park Connection Equivalency[1]
40.6 and higher	8
36.1 to 40.5	8.9
31.6 to 36.0	10.0
27.1 to 31.5	11.4
22.6 to 27.0	13.3
18.1 to 22.5	16.0
13.6 to 18.0	20.0
9.1 to 13.5	26.7
4.6 to 9.0	40.0
0.1 to 4.5	80.0

[1]The calculated connection count for the recreational vehicle park must be at least 1.0.

(1) To determine the alternative recreational vehicle park connection equivalency, the public water system must calculate the recreational vehicle park's actual average daily demand.

(2) For the purposes of this paragraph, the actual average daily demand is determined based upon at least 12 consecutive months of meter readings for the recreational vehicle park, divided by the total number of days in those months. The actual average daily

demand is then divided by the number of recreational vehicle sites and cabin sites within the recreational vehicle park, whether occupied or not.

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

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

(b) Microbiological. Submission of samples for microbiological analysis shall be as required by Subchapter F of this chapter (relating to Drinking Water Standards Governing Drinking Water Quality and Reporting Requirements for Public Water Systems). Microbiological samples may be required by the executive director for monitoring purposes in addition to the

routine samples required by the drinking water standards. These samples shall be submitted to an accredited laboratory. (A list of the accredited laboratories can be obtained by contacting the executive director.) The samples shall be submitted to the executive director in a manner prescribed by the executive director.

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

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

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

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

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

(B) a chloramine residual of 0.5 mg/L (measured as total chlorine) for those systems that distribute chloraminated water.

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

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

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

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

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

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

(D) Effective September 1, 2016, reverse osmosis or nanofiltration membrane systems must have operators that have successfully completed at least one executive director-approved training course or event specific to the operations and maintenance of reverse osmosis or nanofiltration membrane treatment.

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

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

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

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

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

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

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

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

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

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

reporting requirements or who holds a Class "C" or higher surface water license and has completed the Groundwater Production course.

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

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

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

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

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

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

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

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

the public water system must use at least two operators who have completed the Surface Water Production I course and the Surface Water Production II course.

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

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

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

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

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

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

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

(i) the amount of chemicals used:

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

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

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

(ii) the volume of water treated and distributed:

(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 and distributed 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 distributed 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 distributed each week.

(IV) Systems that serve 250 or more connections or serve 750 or more people and also add chemicals or provide pathogen or chemical removal shall maintain a record of the amount of water treated each day.

(V) Systems that serve fewer than 250 connections, serve fewer than 750 people, use only groundwater or purchase treated water, and also add chemicals or provide pathogen or chemical removal shall maintain a record of the amount of water treated each week;

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

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

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

(vi) the maintenance records for water system equipment and facilities. For systems using reverse osmosis or nanofiltration, maintain records of each clean-in-place process including the date, duration, and procedure used for each event;

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

(viii) the owner or manager of a public water system that is operated by a volunteer to meet the requirements of subsection (e) of this section, shall maintain a record of each volunteer operator indicating the name of the volunteer, contact information for the volunteer, and the time period for which the volunteer is responsible for operating the public water system. These requirements apply to full-time and part-time licensed volunteer operators. Part-time licensed volunteer operators are excluded from the requirements of clause (vii) of this subparagraph.

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

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

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

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

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

(v) the records of backflow prevention device programs;

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

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

(viii) except for those specified in subparagraphs (C)(iv) and (E)(i) of this paragraph, the results of all surface water treatment monitoring that are used to demonstrate log inactivation or removal;

(ix) free and total chlorine, monochloramine, ammonia, nitrite, and nitrate monitoring results if chloramines are used in the water system; and

(x) the records of treatment effectiveness monitoring for systems using reverse osmosis or nanofiltration membranes. Treatment effectiveness monitoring includes the parameters for determining when maintenance is required. Examples of parameters to be monitored include conductivity (or total dissolved solids) on each membrane unit, pressure differential across a membrane vessel, flow, flux, and water temperature. At a minimum, systems using reverse osmosis or nanofiltration membranes must monitor the conductivity (or total dissolved solids) of the feed and permeate water once per day.

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

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

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

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

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

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

(i) the results of microbiological analyses;

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

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

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

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

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

(vii) Consumer Confidence Report compliance documentation;

(viii) records of the lowest daily residual disinfectant concentration and records of the date and duration of any failure to maintain the executive

director-approved minimum specified disinfectant residual for a period of more than four hours for groundwater systems providing 4-log treatment;

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

(x) assessment forms, regardless of who conducts the assessment, and documentation of corrective actions completed or documentation of corrective actions required but not yet completed as a result of those assessments and any other available summary documentation of the sanitary defects and corrective actions taken in accordance with §290.109 of this title (relating to Microbial Contaminants) for executive director review;

(xi) seasonal public water systems shall maintain executive director-approved start-up procedures and certification documentation in accordance with §290.109 of this title for executive director review; and

(xii) records of any repeat sample taken that meets the criteria for an extension of the 24-hour period for collecting repeat samples under §290.109 of this title.

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

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

(ii) the results of chemical analyses;

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

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

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

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

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

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

(ix) any Sample Siting Plans required by §290.109(d)(6) of this title and monitoring plans required by §290.121(b) of this title (relating to Monitoring Plans); and

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

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

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

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

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

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

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

(5) All public water systems that are affected utilities under TWC §13.1394 or §13.1395 must maintain the following records for as long as they are applicable to the system:

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

(B) All required operating, inspection, testing, and maintenance records for auxiliary power equipment, and associated components required to be maintained, or actions performed as prescribed in §290.46(m)(8) of this title.

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

(g) Disinfection of new or repaired facilities. Disinfection by or under the direction of water system personnel must be performed when repairs are made to existing facilities and before new facilities are placed into service. Disinfection must be performed in accordance with American Water Works Association (AWWA) requirements and water samples must be submitted to an accredited laboratory. The sample results must indicate that the facility is free of microbiological contamination before it is placed into service. When it is necessary to return repaired mains to service as rapidly as possible, doses may be increased to 500 mg/L and the contact time reduced to 1/2 hour.

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

(i) Plumbing ordinance. Public water systems must adopt an adequate plumbing ordinance, regulations, or service agreement with provisions for proper enforcement to ensure 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 0.25% 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 commission Form 20699 must be approved by the executive director prior to being placed in use.

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

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

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

(2) As potential contaminant hazards are discovered, they shall be promptly eliminated to prevent possible contamination of the water supplied by the public water system. The existence of a health hazard, as identified in §290.47(f) of this title, shall be considered sufficient grounds for immediate termination of water service. Service can be restored only when the health hazard no longer exists, or until the health hazard has been isolated from the public water system in accordance with §290.44(h) of this title (relating to Water Distribution).

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

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

cities, towns, and villages which have passed an ordinance adopting one of the plumbing codes recognized by TSBPE. Such entities may stipulate that the customer service inspection be performed by the plumbing inspector as a part of the more comprehensive plumbing inspection. Where such entities permit customer service inspectors to perform customer service inspections, the customer service inspector shall report any violations immediately to the local entity's plumbing inspection department.

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

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

(m) Maintenance and housekeeping. The maintenance and housekeeping practices used by a public water system shall ensure the good working condition and general appearance of the system's facilities and equipment. The grounds and facilities shall be maintained in a manner so as to minimize the possibility of the harboring of rodents, insects, and other disease vectors, and in such a way as to prevent other conditions that might cause the contamination of the water.

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

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

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

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

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

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

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

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

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

(7) Reverse osmosis or nanofiltration membrane systems shall be cleaned, or replaced, in accordance with the allowable operating conditions of the manufacturer and shall be based on one or more of the following: increased salt passage, increased or decreased pressure differential, and/or change in normalized permeate flow.

(8) Emergency generators must be appropriately tested and maintained monthly under at least 30% load based on the manufacturer's name plate kilowatt (kW) rating for at least 30 minutes, or as recommended by the manufacturer, to ensure functionality during emergency situations.

(A) Emergency generators operated at water systems serving 1,000 connections or greater must be maintained in accordance with Level 2 maintenance requirements contained in the current National Fire Protection Association (NFPA) 110 Standard and manufacturer's recommendation. In addition, the water system must maintain an inventory of operational maintenance items, lubricants, and coolants for critical generator components.

(B) Emergency generators operated at water systems serving fewer than 1,000 connections must be maintained according to clauses (i) - (x) of this subparagraph, supplemented with any additional requirements not listed below as prescribed in the manufacturer's specifications, or Level 2 maintenance requirements contained in NFPA 110 Standard. In addition, the public water system must maintain an inventory of operational maintenance items, lubricants, and coolants for critical generator components.

(i) Prior to monthly generator start-up, inspect and perform any needed maintenance on the generator fuel system.

(I) Document tank levels and inspect fuel tanks for fuel contamination and condensation in the portion of the tank occupied by air. If contamination is suspected, replace or polish the contaminated fuel before use.

(II) Inspect fuel lines and fittings for breaks and degradation. Replace fuel lines if needed.

(III) Inspect fuel filters and water separators for water accumulation, clogging and sediment buildup. Replace fuel filters and separators at the frequency recommended by the manufacturer, or as needed.

(IV) Inspect fuel transfer pumps, float switches and valves, where provided, between holding tanks and the generator to verify that they are operating properly.

(V) Where provided, inspect fuel tank grounding rods, cathodic and generator lightning protection for damage that may render the protection ineffective.

(ii) While the generator is operating under load, inspect the fuel pump to verify that it is operating properly.

(iii) Prior to monthly generator start up, inspect and perform any needed maintenance on the generator lubrication system.

(I) Inspect oil lines and oil reservoirs for adequate oil levels, leaks, breaks and degradation. Change oil at the frequency recommended by the manufacturer.

(II) Grease all bearing components and grease fittings at the frequency recommended by the manufacturer.

(iv) Prior to monthly generator start up, inspect and perform any needed maintenance on the generator coolant system.

(I) Inspect the block heater, coolant lines and coolant reservoirs for adequate coolant levels, leaks, breaks and degradation; replace as needed.

(II) Inspect coolant filters for clogging and sediment buildup. Replace coolant filters at the frequency recommended by the manufacturer, or as needed.

(III) Inspect the radiator, fan system, belts and air intake and filters for obstruction, cracks, breaks, and leaks; replace as needed.

(v) While the generator is operating under load, inspect the exhaust manifold and muffler to verify that they are not obstructed or leaking, are in good working condition and that fumes are directed away from enclosed areas.

(vi) Where a generator is located inside an enclosed structure, a carbon monoxide monitor equipped with automatic alarms and generator shutdowns must be present and operational.

(vii) Prior to monthly generator start up, inspect and perform any needed maintenance on the generator electrical system.

(I) Confirm that all batteries are mounted and properly secured. Inspect battery chargers, wiring and cables for damage, corrosion, connection continuity, and that all contacts are securely tightened onto battery terminals.

(II) Inspect each battery unit for adequate electrolyte levels, charge retention and appropriate discharge voltage.

(viii) While the generator is operating under load, inspect engine starters and alternators to verify that they are operating properly.

(ix) At least once per month, inspect Programmable Logic Controllers (PLC) and Uninterrupted Power Supplies (UPC), where applicable, to ensure that they are water-tight and not subject to floods, are properly ventilated, and that backup power supplies have adequate charge.

(x) At least once per month, inspect switch gears to ensure they are water-tight and in good, working condition.

(9) All critical components as described in the table in §290.47(c) associated to the source, treatment, storage, or other facilities necessary for the continued operations and distribution of water to customers must be protected from adverse weather conditions. Weatherization methods must be maintained in good condition and replaced as needed to ensure adequate protection.

(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 as defined in §290.41(c)(3)(A) of this title (relating to Water Sources) shall be kept on file for as long as the well remains in service.

(o) Filter backwashing at surface water treatment plants. Filters must be backwashed when a loss of head differential of six to ten feet is experienced between the influent and effluent loss of head gauges or when the turbidity level at the effluent of the filter reaches 1.0 nephelometric turbidity unit (NTU).

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

(1) When a public water system changes ownership, a written notice of the transaction must be provided to the executive director. The grantee shall notify the executive director of the change in ownership within 30 days after the effective date of the change in ownership by providing the name of the grantor, the effective date of the change in ownership, the physical and mailing address and phone number of the grantee, the public water system's drinking water supply identification number, and any other information necessary to identify the transaction.

(2) On an annual basis, the owner of a public water system shall provide the executive director with a list of all the operators and operating companies that the public water system uses. The notice shall contain the name, contact information, work status, license number, and license class of each operator and the name and registration number of each operating company. Public water systems may report the list of operators and operating companies to the executive director by utilizing the Texas Commission on Environmental Quality (TCEQ) online "Operator Notice" form. If reporting cannot be accomplished utilizing the TCEQ online "Operator Notice" form, then a public water system may report the list of operators and operating companies on the written "Operator Notice" form to the executive director by mail, email or facsimile. (See §290.47(d) of this title).

(q) Special precautions, protective measures, and boil water notices. Special precautions, protective measures, and boil water notices shall be instituted by the public water system as

specified in this subsection in the event of low distribution pressures (below 20 pounds per square inch (psi)), water outages, microbiological samples found to contain *Escherichia coli* (*E. coli*) (or other approved fecal indicator), failure to maintain adequate disinfectant residuals, elevated finished water turbidity levels, or other conditions which indicate that the potability of the drinking water supply has been compromised. Special precautions, protective measures, and boil water notices are corrective or protective actions which shall be instituted by the public water system to comply with the requirements of this subsection.

(1) A public water system shall issue a boil water notice, special precaution, or protective measure to customers throughout the distribution system or in the affected area(s) of the distribution system as soon as possible, but in no case later than 24 hours after the public water system has met any of the criteria described in subparagraph (A) and (B) of this paragraph.

(A) Situations requiring boil water notices:

(i) The flowchart found in §290.47(e) of this title shall be used to determine if a boil water notice shall be issued by the public water system to customers in the event of a loss of distribution system pressure.

(ii) A public water system shall issue a boil water notice to customers for a violation of the MCL for E. coli (or other approved fecal indicator) as described in §290.109(b)(1) of this title.

(iii) A public water system shall issue a boil water notice to customers if the combined filter effluent turbidity of the finished water, produced by a treatment plant that is treating surface water or groundwater under the direct influence of surface water, is above the turbidity level requirements as described in §290.122(a)(1)(B) of this title.

(iv) A public water system shall issue a boil water notice to customers if the public water system has failed to maintain adequate disinfectant residuals as described in subsection (d) of this section and as described in §290.110 of this title (relating to Disinfectant Residuals) for more than 24 hours.

(v) A public water system shall issue a boil water notice to customers if a waterborne disease outbreak occurs as defined in 40 Code for Federal Regulations §141.2.

(B) Situations requiring special precautions or protective measures may be determined by the public water system or at the discretion of the executive director, as described in paragraph (5) of this subsection.

(2) Boil water notices, special precautions, or protective measures shall be issued to customers by using one or more of the Tier 1 delivery methods as described in §290.122(a)(2) of this title (relating to Public Notification) and shall be issued using the applicable language and format specified by the executive director.

(3) A copy of boil water notice, special precaution, or protective measure issued shall be provided to the executive director electronically, within 24 hours or no later than the next business day after the issuance by the public water system, and a signed Certificate of Delivery shall be provided to the executive director within ten days after issuance by the public water system in accordance with §290.122(f) of this title.

(4) Boil water notices, special precautions, or protective measures shall be multilingual where appropriate, based upon local demographics.

(5) Special precautions, protective measures, and boil water notices may be required at the discretion of the executive director and shall be instituted by the public water system, upon written notification to the public water system, and shall remain in effect until the public water system meets the requirements of subparagraph (C) of this paragraph and paragraph (6) of this subsection.

(A) Circumstances warranting the exercise of such discretion may include:

(i) the public water system has failed to provide any of the required compliance information to the executive director as described in §290.111(h)(2) of this title (relating to Surface Water Treatment) and the failure results in the inability of the executive director to determine compliance as described in §290.111(i) of this title or the existence of a potential or actual health hazard, as described in §290.38 of this title (relating to Definitions); or

(ii) waterborne emergencies for situations that do not meet the definition of waterborne disease outbreak as defined in 40 Code of Federal Regulations §141.2, but that still have the potential to have serious adverse health effects as a result of short-term exposure. These can include, but are not limited to, outbreaks not related to treatment deficiencies, as well as situations that have the potential to cause outbreaks, such as failures or significant interruption in water treatment processes, natural disasters that disrupt the water supply or distribution system, chemical spills, or unexpected loading of possible pathogens into the source water.

(B) The executive director will provide written notification to the public water system in the event a public water system is required to institute special precautions, protective measures, or issue boil water notices to customers at the discretion of the executive director. Upon written notification from the executive director, the public water system shall implement special precautions, protective measures, or issue boil water notices to customers within 24 hours or within the time period specified by the executive director. The executive director may specify, in writing, additional required actions to the requirements described in paragraph (6) of this subsection for a public water system to rescind the notice.

(C) The public water system shall provide any required information to the executive director to document that the public water system has met the rescind requirements for special precautions, protective measures, and boil water notices required at the discretion of the executive director under this paragraph.

(6) Once the boil water notice, special precaution, or protective measure is no longer in effect, the public water system shall notify customers that the notice has been rescinded. A public water system shall not rescind a notice or notify customers that a notice has been rescinded until the public water system has met all the applicable requirements, as described in subparagraph (A) of this paragraph.

(A) Required actions prior to rescinding a boil water notice include:

(i) water distribution system pressures in excess of 20 psi are consistently being maintained throughout the distribution system in accordance with the flowchart found in §290.47(e) of this title (relating to Appendices);

(ii) a minimum of 0.2 mg/L free chlorine residual or 0.5 mg/L chloramine residual (measured as total chlorine) is present and is consistently being maintained in each finished water storage tank and throughout the distribution system as described in subsection (d) of this section;

(iii) finished water entering the distribution system, produced by a treatment plant that is treating surface water or groundwater under the direct influence of surface water, has a turbidity level that is consistently below 1.0 NTU and the affected areas of the distribution system have been thoroughly flushed;

(iv) additional actions may be required by the executive director, in writing, and these additional actions shall be completed and documentation provided to the executive director for approval prior to the public water system rescinding the notice, and

(v) water samples for microbiological analysis, marked as "special" on the laboratory sample submission form, were collected from representative locations throughout the distribution system or in the affected area(s) of the distribution system after the public water system has met all other applicable requirements of this paragraph and the water samples collected for microbiological analysis are found negative for coliform organisms. The water samples described in this subparagraph shall be analyzed at laboratories in accordance with §290.119 of this title (relating to Analytical Procedures).

(B) A public water system shall notify customers that the notice has been rescinded within 24 hours or no later than the next business day, using language and format specified by the executive director once the public water system has met the requirements of this paragraph. The method of delivery of the rescind notice must be in a manner similar to the original notice.

(C) The public water system shall provide a copy of the rescind notice, a copy of the associated microbiological laboratory analysis results, as required by subparagraph (A) of this paragraph, and a signed Certificate of Delivery to the executive director within ten days after the public water system has issued the rescind notice to customers in accordance with §290.122(f) of this title.

(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 firefighting. As soon as safe and practicable following the occurrence of a natural disaster, a public water system that is an affected utility, as defined in TWC §13.1394 or §13.1395, shall maintain a minimum of 20 psi or a pressure approved by the executive director, or 35 psi, respectively, throughout the distribution system during an extended power outage.

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

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

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

(A) pH meters shall be properly calibrated.

(i) Benchtop pH meters shall be calibrated according to manufacturer 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 manufacturer specifications.

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

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

(B) Turbidimeters shall be properly calibrated.

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

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

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

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

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

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

(ii) The accuracy of continuous disinfectant residual analyzers shall be checked at least once every seven days with a chlorine solution of known concentration or by comparing the results from the on-line analyzer with the result of approved benchtop method in accordance with §290.119 of this title.

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

(D) Analyzers used to determine the effectiveness of chloramination in §290.110(c)(5) of this title shall be properly verified in accordance with the manufacturer's recommendations every 90 days. These analyzers include monochloramine, ammonia, nitrite, and nitrate equipment used by the public water system.

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

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

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

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

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

(G) Conductivity (or total dissolved solids) monitors and pressure instruments used for reverse osmosis and nanofiltration membrane systems shall be calibrated at least once every 12 months.

(H) Any temperature monitoring devices used for reverse osmosis and nanofiltration shall be verified and calibrated in accordance with the manufacturer's specifications.

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

(w) Security. All systems shall maintain internal procedures to notify the executive director by methods provided by the executive director immediately upon determining that one of the following events has occurred, if the event may negatively impact the production or delivery of safe and adequate drinking water:

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

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

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

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

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

(6) a nonindustrial water system that experiences an unplanned condition that has caused the system to issue a special precaution under §290.47(e) of this title or issue a do-not-consume advisory, do-not-use advisory, or boil water notice under subsection (q) of this section.

(A) For the purposes of this paragraph, a nonindustrial water system is defined as a public water system which does not exclusively serve industrial connections.

(B) For the purposes of this paragraph unplanned condition is defined as any condition where advance notice to water system customers has not been performed.

(x) Public safety standards. This subsection only applies to a municipality with a population of 1,000,000 or more, with a public utility within its corporate limits; a municipality with a population of more than 36,000 and less than 41,000 located in two counties, one of which is a county with a population of more than 1.8 million; a municipality, including any industrial district within the municipality or its extraterritorial jurisdiction (ETJ), with a population of more than 7,000 and less than 30,000 located in a county with a population of more than 155,000 and less than 180,000; or a municipality, including any industrial district within the municipality or its ETJ, with a population of more than 11,000 and less than 18,000 located in a county with a population of more than 125,000 and less than 230,000.

(1) In this subsection:

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

(B) "Public utility" means any person, corporation, cooperative corporation, affected county, or any combination of these persons or entities, other than a municipal corporation, water supply or sewer service corporation, or a political subdivision of the state, except an affected county, or their lessees, trustees, and receivers, owning or operating for compensation in this state equipment or facilities for the transmission, storage, distribution, sale, or provision of potable water to the public or for the resale of potable water to the public for any use or for the collection, transportation, treatment, or disposal of sewage or other operation of a sewage disposal service for the public, other than equipment or facilities

owned and operated for either purpose by a municipality or other political subdivision of this state or a water supply or sewer service corporation, but does not include any person or corporation not otherwise a public utility that furnishes the services or commodity only to itself or its employees or tenants as an incident of that employee service or tenancy when that service or commodity is not resold to or used by others.

(C) "Residential area" means:

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

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

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

(D) "Industrial district" has the meaning assigned by Texas Local Government Code, §42.044, and includes an area that is designated by the governing body of a municipality as a zoned industrial area.

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

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

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

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

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

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

(y) Fire hydrant flow standards.

(1) In this subsection:

(A) "Municipal utility" means a retail public utility, as defined by Texas Water Code (TWC), §13.002, that is owned by a municipality.

(B) "Residential area" means an area used principally for private residences that is improved with at least 100 single-family homes and has an average density of one home per half acre.

(C) "Utility" includes a "public utility" and "water supply or sewer service corporation" as defined by TWC §13.002.

(2) The governing body of a municipality by ordinance may adopt standards set by the executive director requiring a utility to maintain a minimum sufficient water flow and pressure to fire hydrants in a residential area located in the municipality or the municipality's ETJ. The municipality must submit a signed copy of the ordinance to the executive director within 60 days of the adoption of an ordinance by its governing body.

(3) In addition to a utility's maximum daily demand, the utility must provide, for purposes of emergency fire suppression:

(A) a minimum sufficient water flow of at least 250 gallons per minute for at least two hours; and

(B) a minimum sufficient water pressure of at least 20 psi.

(4) If a municipality adopts standards for a minimum sufficient water flow and pressure to fire hydrants, the municipality must require a utility to maintain at least the minimum sufficient water flow and pressure described by paragraph (3) of this subsection in fire hydrants in a residential area located within the municipality or the municipality's ETJ. If the municipality adopts a fire flow standard exceeding the minimum standards set in paragraph (3) of this subsection, the standard adopted by the municipality must be based on:

(A) the density of connections;

(B) service demands; and

(C) other relevant factors.

(5) If the municipality owns a municipal utility, it may not require another utility located in the municipality or the municipality's ETJ to provide water flow and pressure in a fire

hydrant greater than that provided by the municipal utility as determined by the executive director.

(6) If the municipality does not own a municipal utility, it may not require a utility located in the municipality or the municipality's ETJ to provide a minimum sufficient water flow and pressure greater than the standard established by paragraph (3) of this subsection.

(7) An ordinance under paragraph (2) of this subsection may not require a utility to build, retrofit, or improve infrastructure in existence at the time the ordinance is adopted.

(8) A municipality with a population of less than 1.9 million that adopts standards under paragraph (2) of this subsection or that seeks to use a utility's water for emergency fire suppression shall enter into a written memorandum of understanding with the utility.

(A) The memorandum of understanding must provide for:

(i) the necessary testing of fire hydrants; and

(ii) other relevant issues pertaining to the use of the water and maintenance of the fire hydrants to ensure compliance with this subsection.

(B) The municipality must submit a signed copy of the memorandum of understanding to the executive director within 60 days of the execution of the memorandum of understanding between its governing body and the utility.

(9) A municipality may notify the executive director of a utility's failure to comply with a standard adopted under paragraph (3) of this subsection.

(10) On receiving the notice described by paragraph (9) of this subsection, the executive director shall require a utility in violation of a standard adopted under this subsection to comply within a reasonable time established by the executive director.

(z) Nitrification Action Plan (NAP). Any water system distributing chloraminated water must create a NAP. The system must create a written NAP that:

(1) contains the system-specific plan for monitoring free ammonia, monochloramine, total chlorine, nitrite, and nitrate levels;

(2) contains system-specific action levels of the above monitored chemicals where action must be taken;

(3) contains specific corrective actions to be taken if the action levels are exceeded; and

(4) is maintained as part of the system's monitoring plan in §290.121 of this title.