TCEQ REGULATORY GUIDANCE
Water Supply Division
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A Public Water System Guide to Customer Service Inspections

In This Guide

Introduction

Before continuous water service for new construction is established, Texas law requires an inspection of the private water-distribution system as a way to ensure that the water is safe to drink. This type of *customer service inspection* is required in Title 30 of the Texas Administrative Code (TAC), Subsection 290.46(j).

All the rules in 30 TAC 290, Subchapter D, are administered by the Texas Commission on Environmental Quality (TCEQ). These rules are contained in the TCEQ publication, *Rules and Regulations for Public Water Systems,* RG-195.

Who Should Read This Guide?

This guide is intended for those who work in a *public water system* (PWS) in Texas—for example, a water district, a water supply corporation, or a city- or investor-owned system. In the text, "you" refers to the PWS and its staff members. The term *public water supplier* is also used to mean public water system.

Members of the general public— customers of such water systems—will also find answers in this guide to many questions they may have about customer service inspections.

Please note that this publication is for general guidance only and does not take the place of the rules and regulations governing customer service inspections.

About Customer Service Inspections

The purpose of a customer service inspection is to identify whether one of two potential sources of contamination exists. One is a *cross connection*—an actual or potential connection between a drinking water supply and a possible source of contamination or pollution. The other potential source of contamination is lead plumbing materials.

When are customer service inspections required?

An inspection *must* occur in the following situations:

- When there is new construction.
- When there is a material improvement, correction, or addition to the private water distribution system (defined as plumbing work that requires a permit and involves a major modification to the private water distribution system). The *private water system* refers to the facilities on the owner's side of the meter. For areas where no permitting system is in place, examples of modifications that require a customer service inspection include remodeling or expansion of household plumbing or water-using devices, customer request for installation of a larger meter, drilling of a private well, or installation of a rainwater harvesting system.
- When the water supplier believes that a cross connection or other potential contamination hazard exists. In such a case, the water supplier must provide written justification to the customer for requiring an inspection by specifically identifying the threat that is believed to exist.

When are customer service inspections not required?

An inspection is *not* required for:

- Existing connections (unless a situation in the previous question applies).
- Temporary connections and connections involving construction.
- Transfer of service.

- Mobile and manufactured homes and recreational vehicles (for exceptions, see "Inspections of RVs and Mobile Homes" on pages 6–8).
- Residential lawn-irrigation systems (when installed by a licensed plumber or a licensed irrigator or when installed by a licensed installer or licensed irrigation technician supervised by a licensed irrigator. Effective January 1, 2010, the installer license will no longer be valid and will be replaced by an irrigation technician license).
- Swimming pools (unless a situation in the previous question applies).

What is identified in a customer service inspection?

Inspectors certify that there are no cross connections and no lead in the pipes and solder. Examples of cross connections include:

- Direct or indirect connections.
- Connections allowing the return of water used for condensing, cooling, or industrial processes back to the public water system. An industrial process, in this context, is defined as any use other than domestic consumption.
- Potential contamination hazards.

Examples of lead plumbing materials include:

- Pipe or pipe fitting that contains more than 8.0 percent lead installed on or after July 1, 1988.
- Solder or flux that contains more than 0.2 percent lead installed on or after July 1, 1988. (Lead joints may be used for repairs to cast iron pipe only.)

Who can perform a customer service inspection?

Customer service inspections must be performed by the following licensed professionals:

- Plumbing inspectors and water supply protection specialists licensed by the Texas State Board of Plumbing Examiners (TSBPE, see "Where to Find More Information").
- Customer service inspectors licensed by the TCEQ. For information on these licensees, call the TCEQ's Operator Certification Section, 512-239-6135.
- To search for licensed customer service inspectors in your area on the TCEQ's Web site, go to <www5.tceq.state.tx.us/oce/olwe/>.

After an inspection, the customer gets a copy of the customer service inspection certificate, and the original must be kept by the water system for 10 years.

What are the public water supplier's options for providing customer service inspections?

The water supplier has several options:

- provide a list of certified inspectors to the customer, who then selects and hires an inspector;
- provide qualified employees to perform the inspections; or
- hire independent, qualified contractors to perform the inspections.

Can the PWS refuse an inspection certification from someone the customer selected?

- Investor-owned utility—no.
- Water supply corporation—yes, if the corporation passes bylaws addressing who can perform inspections.
- Water district or city-owned system—yes, if the district or city passes rules or ordinances addressing who can perform inspections.

How many customer service inspections are required?

Under Texas law—30 TAC 290.46(j)—a customer service inspection is required for each connection before continuous water service can be provided. If a water supplier has additional requirements, an inspection must be authorized by the service provider's governing body—for example, its board of directors. This authorization should be recorded in documents such as a local government code or a tariff.

Controlling Cross Connections and Backflows

A *cross connection* is the point at which a contaminated substance comes in contact with the drinking water system. In checking for such cross connections, the customer service inspector will also determine if there is a need for a *backflow prevention assembly*.

The term *backflow* is used to mean any unwanted flow of used or non-potable water or substance from a domestic, industrial, or institutional piping system into the water distribution system. One of the ways to prevent backflow from occurring at the point of a cross connection is to install a backflow prevention assembly.

What are the potential contamination hazards from cross connections?

Potential threats to a drinking water supply include, but are not limited to:

- chemical plants using a water process;
- hospitals;
- mortuaries;
- medical, dental, and veterinary clinics;
- laboratories;
- marinas; and
- connections with an auxiliary water supply, which could be polluted.

Who can test and repair backflow prevention assemblies in Texas?

Only *backflow prevention assembly testers* who have been licensed by the TCEQ can test and repair assemblies on any domestic, commercial, industrial, or irrigation service in Texas. For information on these licensees, call the TCEQ's Operator Certification Section, 512-239-6135.

Should a backflow prevention assembly be installed if no known hazard exists?

No, there is no need to install a backflow prevention assembly as additional protection if no hazard has been identified. Chapter 290 rules do not require backflow prevention assemblies at all connections.

The TCEQ does not recommend the installation of single-check or dual-check valves at *every* service connection. These devices are not testable, create a closed system, and do not meet the TCEQ's requirements for premises isolation.

What is a closed system? What is thermal expansion?

- A *closed system* is created when an approved backflow prevention assembly or a check valve (not approved for backflow prevention) is installed at a customer's service connection. The backflow prevention assembly or check valve does not allow water to flow backwards from the customer's private water system into the PWS's distribution system.
- *Thermal expansion* is a result of heating water. When water is heated, its density decreases and its volume expands. Backflow prevention assemblies and other one-way valves installed at a customer's service connection eliminate a path for expanded water to flow back to the distribution system, resulting in increased system pressure. This increase in pressure can result in: pressure surges, dripping faucets, chronic or continuous dripping of temperature and pressure-relief valves on hot-water heating tanks, and other mechanical problems with hot-water heating tanks, including distortion and rupture.

A PWS that requires the installation of a backflow prevention assembly at a customer's service connection should take the following steps to ensure the customer is protected from the potential problems associated with thermal expansion:

Immediately notify the customer that a closed system has been created and provide the customer with information explaining the potential problems associated with thermal expansion.

- In areas where a plumbing code has been adopted, provide information to the customer regarding plumbing code requirements for closed systems. Requirements may include installation of a pressure-relief valve.
- In areas where a plumbing code has not been adopted, provide information to the customer regarding thermal expansion tanks and pressure-relief devices which can be installed to mitigate the potential problems associated with thermal expansion.

What is the difference between premises isolation and internal protection?

- *Premises isolation, also referred to as "containment,"* uses a minimum of backflow assemblies to separate the customer from the water main. This strategy prevents the customer from contaminating or polluting the water supply.
- *Internal protection* places backflow devices on all cross-connection hazards located within the customer's residence or facility. In this way, the water supply and other customers are protected from possible contamination.

In some instances, the use of both premises isolation and internal protection practices may be the best way to protect from internal hazards, as well as hazards from other customers. Regardless of whether the PWS requires premises isolation or internal protection (or both), the customer service inspection must include an internal inspection of the residence or facility to determine whether premises isolation is necessary.

When are backflow prevention devices, such as hose bibb vacuum breakers, required?

State-approved plumbing codes, as well as most local plumbing ordinances, **require** *hose bibb*

vacuum breakers on exterior faucets of new dwellings. These devices are **recommended** for existing dwellings.

However, if a cross connection is found at an existing dwelling, an *air gap separation* or a backflow prevention device, such as a hose bibb vacuum breaker, is **required.** The type of device will be determined by the degree of hazard posed by the cross connection.

Inspections of RVs and Mobile Homes

How can a water supplier protect against backflow at a recreational vehicle (RV) park?

When owners of RVs flush and clean the waste from the plumbing system of RVs, a potential threat to the potable water supply may be created. Many RVs are sold today with a "sewer flusher" connection which allows the blackwater tank to be flushed.

Most RVs have two types of waste holding tanks: one holds the waste from the toilet (blackwater tank) and the other holds the waste from the bath tub/shower, wash basin, and kitchen sink (graywater tank).

According to manufacturers of devices used to flush blackwater tanks, these devices address the problem of solids build-up. However, the device allows for the direct connection between the blackwater tank and the public water supply. While most of these devices come with some form of backflow protection, 290.47(i) **prohibits** the connection of a public water supply to a sewer pipe. Since the blackwater tank of an RV holds the same materials as a sewer pipe, devices that allow connection between the public water supply and blackwater tanks are a threat to the potable water distribution systems of the RV park and the public water supplier.

Public water suppliers should:

- perform periodic inspections of RV parks that are within their service area;
- educate managers of RV parks about blackwater tank flushing devices;
- encourage managers of RV parks to inspect every RV that enters their park, especially when the RV owner is connecting the RV to the RV park's potable water distribution system. Managers of RV parks should prohibit the use of "Y Hose Adapters," which enable an RV owner to establish connections from a potable water hose bibb to both the RV's potable water system and sewer flusher connection at the same time.
- at a minimum, require premises isolation at the master meter by the installation of a reduced-pressure-principle backflow prevention assembly at every RV park within their service area.

For those public water systems that include numerous RV parks in their service area, it may be necessary to adopt specific language (and/or requirements) in a backflow prevention ordinance that addresses the unique hazards that may be found at RV parks.

What are the requirements for customer service inspections at mobile home parks?

Water suppliers are *not* required to conduct a customer service inspection for a mobile home entering a mobile home park *unless* a cross connection or potential contamination hazard is suspected. This standard also applies to mobile homes placed on an individual lot.

However, manufactured homes are required to comply with proper plumbing standards under the Manufactured Housing Construction and Safety Standards that are enforced by the Federal Department of Housing and Urban Development. These standards, which became effective on June 15, 1976, prohibit lead and cross connections within the home.

How can a water supplier protect against backflow at a mobile home park?

The public water supplier may protect by either premises isolation or internal protection, although premises isolation at the master meter may be the most practical method of protection (see related section on the difference between the two approaches).

Standards for Lead in Pipes and Solder

The following standards are used to determine if there is an unacceptable amount of lead in the pipes and solder:

- Pipe or pipe fittings that contain more than 8.0 percent lead.
- Solder or flux (used to join surfaces) that contains more than 0.2 percent lead. (Lead joints may be used for repairs to cast iron pipe only.)

What about homes built after July 1, 1988, that do not meet lead plumbing standards?

A public water supplier *must not connect* a home built *after* July 1, 1988, that does not meet the lead plumbing standards listed above. Excessive amounts of lead must be removed before continuous water service can be provided to a home built after July 1, 1988.

What about homes built before July 1, 1988, that do not meet lead plumbing standards?

A public water supplier is allowed to connect a home built *before* July 1, 1988, that does not meet lead plumbing standards.

How many tests for lead solder must be performed on new establishments?

Only one test is required for new establishments to ensure that the solder is no more than 0.2 percent lead. If a field test indicates the presence of lead, a sample of the solder may be collected and submitted to a commercial laboratory for quantification. Based on laboratory confirmation of excessive amounts of lead in the solder, permanent water service should be denied at that location. The TCEQ and the TSBPE should be notified of the incident, and their recommendations regarding proper steps to address the issue should be followed.

What PWS Rules and Tariffs Should Include

All public water systems should maintain a set of rules, regulations, tariffs, or service agreements to explain what services are provided, including customer service inspections.

Should customer service inspections be covered in PWS rules and tariffs?

Yes. Your rules, regulations, tariffs, or service agreements should, at a minimum, cover the following topics:

- cross connections,
- lead plumbing and materials, and
- enforcement.

Who pays for the customer service inspection, and who sets the fee?

If a PWS requires an inspection by its own employees, or if it provides this service as part of its business, the PWS may either:

- charge a fee established by the PWS and approved by its governing body—or established by the TCEQ in the case of an investor-owned utility (IOU); or
- provide the service at no cost and then recoup the expenses through rates.

If a PWS requires the customer to provide the inspection certification, the customer must:

- select a qualified professional to conduct the inspection, and
- pay the professional for the service.

Can an IOU charge an inspection fee if it is not in their approved tariff?

No. Neither an investor-owned utility nor its employees can charge for an inspection if the charge is not in their approved tariff.

Do TCEQ rules require a PWS to adopt a plumbing code?

No. TCEQ rules do not require a PWS to adopt a plumbing code. However, TCEQ rules do require a PWS to 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.

Enforcing Cross-Connection Controls

How does a PWS enforce proper plumbing practices on cross-connection control?

A public water system has two options for enforcing proper plumbing practices to control cross connections:

- adopt rules, tariffs, or service agreements that meet the minimum standards in the state-approved plumbing codes (the Uniform Plumbing Code or the International Plumbing Code, see "Where to Find More Information"); or
- reference sections of the state-approved plumbing codes that address cross-connection control in your plumbing ordinance, regulations, or service agreement.

When can a water supplier deny service to a customer?

To answer this question, you need to know if the customer is establishing new service, or if the customer has an existing account (see related questions in this guide about when customer service inspections are required).

For new customers:

- Water supplier may withhold permanent service until the inspection is completed.

For existing customers:

- *Suspected but not verified cross connection*—water supplier may terminate *with notice* if a customer refuses inspection.
- *Known cross connection and/or contamination* of public water supply—water supplier has a duty to immediately terminate service. Notice is preferable, but not always possible.

Questions Your Customers May Ask

Where should a customer appeal a PWS ruling?

Customers should appeal rulings or enforcement actions to the water supplier's governing body. It differs according to ownership.

The customer should appeal to the city council for city-owned systems, or to the board of directors for district water systems and water supply corporations. If the system is an investor-owned utility, the customer should appeal to the TCEQ's Utilities & Districts Section at 512-239-4691.

Where should a customer report improper plumbing practices?

Customers should report improper plumbing practices or inspections by a licensed plumber to the Texas State Board of Plumbing Examiners (TSBPE) at 1-800-845-6584.

Where to Find More Information

To contact the TCEQ

By phone:

Public Drinking Water Section	512-239-4691
Utilities & Districts Section	512-239-4691
Operator Certification Section	512-239-6135
Publications	512-239-0028

By mail:
Public Drinking Water Section, MC 155
TCEQ
PO Box 13087
Austin TX 78711-3087

On the Web:
<www.tceq.state.tx.us/goto/pws/>
For *Rules and Regulations for Public Water Systems* (RG-195), go to <www.tceq.state.tx.us/goto/publications/rg/195/>.

For information about the TCEQ's Cross-Connection Control Program, go to <www.tceq.state.tx.us/goto/ccc/>.

To contact the TSBPE

By phone: 1-800-845-6584

On the Web:<www.tsbpe.state.tx.us>

To purchase a copy of a state-approved plumbing code:

International Plumbing Code
International Code Council Store
11711 West 85th Street
Lenexa, KS 66214
1-800-786-4452
<www.iccsafe.org>

Uniform Plumbing Code
IAPMO Order Desk
5001 East Philadelphia Street
Ontario, CA 91761
1-800-854-2766
<www.iapmostore.org>

Other Sources of Information about Cross-Connection Control:

American Society of Sanitary Engineering
ASSE International Office
901 Canterbury, Suite A
Westlake, OH 44145
440-835-3040

American Water Works Association
6666 West Quincy Ave.
Denver, CO 80235-3098
1-800-366-0107

Foundation for Cross-Connection Control and Hydraulic Research
University of Southern California
KAP-200 University Park MC-2531
Los Angeles, CA 90089-2531
1-866-545-6340

Information about Lead:

The EPA's publication *Actions You Can Take to Reduce Lead in Drinking Water* is available at: <www.epa.gov/safewater/lead/lead1.html>.