

SECTION XII – CROSS CONNECTION CONTROL/BACKFLOW PREVENTION

In accordance with the Pennsylvania Department of Environmental Protection's Safe Drinking Water Act, Highridge Water Authority (HWA), herein sometimes the "public water supplier", hereby implements a comprehensive control program for the elimination of existing cross-connections and the effective containment of sources of contamination, and prevention of future cross-connections."

12.01 CROSS CONNECTION

- a) A Cross Connection is any physical water connection in which one source has possible contamination (that could result in a health risk should an undesirable reversal of water flow occur and carry a contaminant into the public water system) and the other source is carrying the potable drinking water supplied by HWA.
- b) This reversal of water flow is called backflow and can happen in the following instances:
 - i) Backsiphonage occurs whenever conditions exist that cause negative pressure in a water system such as high withdrawal rate created by high demand, water leak, or use of a hydrant. If a cross connection exists, contaminants can be siphoned into the public water system or throughout a consumer's plumbing system.
 - ii) Backpressure occurs when a pressure higher than that of the public water system is created in the consumer's plumbing system and causes foreign substances (contaminants) to be pushed into the public water system or throughout a user's plumbing system. These higher pressures can be generated by a pump, thermal expansion of a boiler, occasionally elevation, or a reduction of pressure within the public water system.
- c) The following are examples of cross connection contaminants and backflow scenarios:
 - i) Soapy water or cleaning contaminants being back siphoned through a faucet or hose submerged in a bucket or laundry tub;
 - ii) Pool water being back siphoned through a hose submerged in a swimming pool, hot tub, or spa;
 - iii) Fertilizers/pesticides being back siphoned through a garden hose attached to a fertilizer/pesticide sprayer;
 - iv) Bacteria/chemicals/additives in a boiler system being back siphoned into the consumer's plumbing or the public water supply; and
 - v) Unsafe water pumped from a private well applying backpressure and contaminates potable water through an illegal connection between the well and water supplied by Highridge.
- d) Cross Connections Prohibited:

- i) No water service connection shall be installed or maintained to any premises where actual or potential cross connections to the public water supply system or consumer's internal water system may exist, unless such cross connections are abated as required in this Regulation.
- ii) No connection shall be installed or maintained whereby an auxiliary water supply may enter a public or consumer's water system unless such auxiliary water supply, as well as the method of connection and use of such supply has been accepted as an additional source by the public water supplier and approved by D.E.P.
- iii) An approved back-flow prevention device or assembly shall be installed on each service line to a consumer's water system.

12.02 BACKFLOW PREVENTION

An approved backflow prevention system shall be installed and maintained by each consumer to prevent contaminants from entering the public water system and, to prevent cross contamination between units on any property that provides water to multiple units on the consumer's property,

- a) Residential Consumer
Installation of an approved non-testable dual check device for backflow prevention is required in each residential premise or residential unit if multiple units exist on the consumer's property. Since this creates a closed system within the home, the installation of a thermal expansion tank for your hot water tank and a hot water heating system may be necessary. The device shall be located on the consumer's side of the meter, as close as possible to the meter and prior to any other branch connection. The approved backflow preventer for individual residences or residential units is an ASSE 1024.
- b) Commercial/Industrial Consumer
Installation of an approved testable check valve assembly for backflow prevention is required in each commercial and industrial premise or commercial or industrial unit if multiple units on the consumer's property. The approved backflow preventers for in each commercial and industrial premise or commercial or industrial unit are an ASSE 1013 (RPZ) or ASSE 1015 (DCVA). Both are testable and must be installed and tested by a certified backflow prevention specialist with the results sent to the Highridge Water Authority within 10 days of installation and then the test results sent annually thereafter to Highridge Water Authority by the first day of February each year, beginning at least one year after installation. Examples of facilities needing testable preventers include, but are not exclusive to, the following:
 - Restaurants
 - Laboratories
 - Hospitals, mortuaries, nursing homes or clinics, dental offices
 - Sewage treatment plants
 - Food or beverage processing plants
 - Chemical plants
 - Metal plating industries, processing plants

- Vehicle washing facilities
 - Commercial boilers
 - Commercial fire sprinklers
 - Animal clinics
 - Commercial laundries
 - Mobile home parks or RV parks with RV hookups
 - Multiple townhouse, condominium, and apartment unit exceeding 3 living units
 - Schools and colleges
 - Shopping plazas and malls
 - Power plants
 - Buildings with unspecified use
- c) Multi-unit buildings, parks, or premises shall have a testable preventer at its connection point to the public water system, and each unit must have an individual approved backflow preventer to prevent cross-contamination between units.
- d) Regardless of service size, HWA shall determine backflow prevention requirements for all facilities or activities not specified herein.

12.03 DEFINITIONS

1. Approved – Any backflow prevention device/assembly that has been accepted by HWA as suitable for the proposed use.
2. Auxiliary Water System – Any water source or system on the premises of, or available to, the consumer except connections to HWA water system.
3. Backflow – A backsiphonage or backpressure condition that causes a reversal of flow of water from a consumer's water system into the public water or between units within a multi-unit building, park, complex or other premises.
4. Backflow Preventer – Device/assembly that prevents backflow of water or any other substance into HWA's water system , or to any unit within a multi-unit building, park , complex or other premises.
5. Consumer – Owner and/or person in control of any residential, commercial or industrial premises or any unit thereof supplied with water through a connection to the public water system.
6. Consumer's Water System – Any water system located on the consumer's premises supplied or connected to the public water system. A plumbing system within any premises or unit is considered a consumer's water system and begins after the HWA service valve (curb stop).
7. Containment – Cross connection control device/assembly that isolates the consumer's entire facility and/or each unit from contaminating the public water system or any other unit within a multi-unit building, park, complex or other premises in the event of a backflow.
8. Contamination – Degradation of the quality of drinking water that would create an actual health hazard to the public.

9. Double Check Valve Assembly (DCVA) – An assembly composed of two single independently acting check valves, including tightly closing shut-off valves located at each end of the assembly that serves as a back flow preventer for use by commercial/industrial customers.
10. Hot Water Heating Systems – Used in residential premises and do not generate steam. Dual check valves (ASSE 1024) are permissible but must be replaced every 3-5 years.
11. Internal Protection: Internal protection prevents backflow contamination of both the consumer's water system and the public water system. A consumer's water system may be required to provide adequate proof that their internal plumbing system complies with state plumbing code.

Acceptable examples of additional internal safety devices include:

- air gaps built into sink, tub, and basin faucets
- anti-siphon type ballcocks in toilets
- vacuum breakers on hose bibs and sill cocks (ASSE #1052)
- backflow preventers on lawn sprinklers
- backflow preventers (ASSE #1012) on residential supply lines to hot water heating systems or other equipment containing non-potable water and cross connected with potable water of the consumer's water system.
- certain municipalities require backflow protection on swimming pools, hot tubs, spas, residential solar heating systems, and private wells and other auxiliary water supplies.

12. Non-potable water – Water not safe for drinking, personal, culinary, or any other type of domestic use. Many auxiliary water systems contain non- potable water.
13. Potable water – Water that is safe for drinking and domestic use and meets the requirements of DEP.
14. Property – otherwise referred to as a premise. A lot, parcel, or other division of land that is:
 - a) Used for separate dwelling purposes;
 - b) Equipped for the preparation of food;
 - c) Used for a house, building, structure or personal property for human occupancy, employment, recreation or other purpose;
 - d) Used for condominiums, multi-family dwellings, mobile or recreational vehicle (RV) sites, parks, campgrounds, commercial or industrial purposes.
15. Reduced Pressure Zone Assembly (RPZ) – An assembly of two independently acting check valves, between which is located an automatically operated differential relief valve that is designed to prevent backflow. This assembly is one of two units that are required to be used by commercial and industrial customers. This shall be installed horizontally inside a building.
16. Steam Boiler – Generally used in commercial plumbing systems for heating larger buildings and is considered a High Hazard, as defined by the Department of Environmental Protection (DEP) and

requires an RPZ.(ASSE 1013) back flow assembly. Steam boilers are identified by the presence of a clear glass tube on one side of the boiler.

17. Units- A unit is one part of a building or premises that serves one purpose, including, but not limited to, for example, two separate residential uses in one building are two units, as are two commercial uses, or one residential and one commercial use.
18. Water System – The water system shall be considered as made up of two parts: the public water supply system and the consumer’s water system.
 - a) The consumer’s water system shall include all facilities beyond the service connection that are utilized in conveying water from the public distribution system to points of use.
 - b) The public water supply system shall consist of all those facilities under the control of the public water supplier up to the connection point with the private water supplier.

12.04 INSPECTION AND TESTING

All existing water services will be subject by HWA to inspection of premises to determine if the required backflow preventers are present. Backflow prevention devices or assemblies installed prior to this enactment of this policy, which do not comply with current requirements, shall be updated at consumer’s expense. Tests required of consumer containment systems include;

- a) Residential – Visual check and/or test to coincide with meter maintenance and service line inspections. Change out subject to manufacturer’s recommendation.
- b) Commercial/Industrial – RPZ’s and DCVA’s shall be subject to annual testing submitted to HWA on or before February first each year, by certified test provider that is a person with one of the following certifications:

American Society of Sanitary Engineering (ASSE)

Backflow Management, Inc. (BMI)

New England Waterworks Association (NEWWA)

American Water Works Association (AWWA)

12.05 RETROACTIVE INSTALLATION REQUIREMENTS

The provisions of this policy shall apply to all new water consumers and all water consumers currently existing prior to the enactment date of this policy.

12.06 TERMINATIONS

- a) Upon determination that a backflow prevention device/assembly is necessary, HWA will provide water user written notice allowing forty-five days from date of written notice to complete installation. If not completed within the 45-day period, a second notice shall be sent.
- b) The second notice shall inform the water user that if installation of the backflow preventer is not completed within 15 days of the date of second notice, water service will be discontinued without further notice.
- c) The same procedure explained above in (a) and (b) shall be used when consumers are notified that annual testing of the device/assembly is to be completed.

12.07 SURVEYS and INVESTIGATIONS:

- a) Except in case of an emergency, the public water supplier shall notify the consumer at least 24 hours in advance of any investigation of the consumer's premises for the purpose of investigating actual or potential cross-connections.
- b) On request by the public water supplier, the consumer shall furnish information on water use practices within each premise.