

City of Sumter Back flow & Cross Connection Policy Manual

SECTION 1 - PURPOSE

1. To protect the City of Sumter from the backflow or back-siphoning of pollutants or contaminants that may be present within its customer's water distribution system.
2. To eliminate or control existing cross connections between its customers' potable and nonpotable water systems.
3. To prevent the contamination or pollution of City of Sumters water system by establishing an ongoing maintenance program for cross connections.

SECTION 2 - AUTHORITY

South Carolina State Primary Drinking Water Regulations disseminated pursuant to Section 44-55-30 through 44-55-60 of the 1976 South Carolina Code of Laws, Regulation 61-58.7(F) requires that the water purveyor has the primary responsibility for preventing water from unapproved sources, or any other substances, from entering the public potable water system.

SECTION 3 – REGULATION

State Regulation 61-58.7(F) requires that all public water systems initiate and maintain a viable cross connection control program. The program shall consist of:

1. Locating and eliminating unprotected cross connections
2. Maintaining records pertaining to the location of existing backflow prevention assemblies, type, and size of each assembly and test results (when applicable). No person shall install, permit to be installed or maintain any cross connection between a public water system and any other non-public water system, sewer, or a line from any container or liquids or other substances, unless an approved backflow prevention device or assembly is installed between the public water system and the source of contamination.

SECTION 4 – DEFINITIONS

Approved means accepted by the City of Sumter as meeting the applicable specification stated or cited in this manual or as suitable for the proposed use.

Auxiliary Water Supply means any water supply on or available to the premises other than the City of Sumter approved water supply. Auxiliary water supplies may include water from any natural source such as a well, spring, river, stream, etc.

Backflow means the undesirable reversal of the intended direction of flow in a potable water distribution system as a result of cross connection.

Backpressure means any elevation of pressure in the downstream piping system (caused by a pump, elevated tank or piping, steam and/or air pressure) above the water supply pressure at the point which would cause, or influence, a reversal of the normal direction of flow.

Back-siphonage means the flow of water or other liquid, mixtures, or substances into the potable water system from any source other than its intended source.

Back-siphonage is caused by the reduction of pressure in the potable water system.

Backflow Prevention Assembly or Device means an assembly designed and approved to prevent backflow. Types of backflow prevention assemblies include:

(1) **Air gap:** The unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet conveying water to a tank, plumbing fixture, receptor, and/or the flood rim of the receptacle. The air gap shall be at least twice the diameter of the water supply outlet above the flood rim of the receptacle, and never less than one inch.

(2) **Reduced Pressure Principle Assembly (RP):** An assembly consisting of two independently acting spring assisted check valves with a hydraulically operating differential relief valve between the check valves and beneath the first check valve. The unit shall have properly located resilient seated test cocks, and resilient seated or ball type shut off valves at each end of the assembly. The assembly shall be readily accessible for in-line testing and maintenance in a location that is never subject to possible flooding. RP devices are approved for high hazard category cross connections. The assembly shall require approval of SCDHEC and City of Sumter.

(3) **Double Check Valve Assembly (DCVA):** An assembly of two independently operating spring assisted check valves with properly located resilient seated test cocks and resilient seated or ball type shut off valves at each end of the assembly. This device shall be readily accessible for in-line testing and maintenance. This assembly is approved for low hazard category cross connections and shall require approval of SCDHEC and the City of Sumter.

(4) **Double Detector Check Assembly:** A specially designed and approved main line double check valve assembly with a small by-pass line that includes a double check valve assembly and a meter to detect leakage or unauthorized use of water on fire lines.

(5) **Pressure Vacuum Breaker (PVB):** An assembly of one spring loaded check valve, air inlet valve, ball type shut off valves at each end and two test cocks. This assembly is approved only for back siphonage. The assembly must be installed 12" above any downstream piping or outlets, or flood level rim. PVB devices are approved for high hazard category cross connections.

(6) **Residential Dual Check:** An assembly of two independently operating spring assisted check valves. This assembly is not equipped with shut off valves or test cocks. This assembly is used for selectively approved low hazard category cross connections. (Residential only)

Certified Tester means any person possessing a current SCDHEC tester certification and approved testing equipment.

Contamination means an impairment of the potable water quality by physical, chemical, biological, or radiological substance or matter which creates an actual hazard to public health through poisoning or through the spread of disease. City of Sumter Back flow & Cross Connection Policy Manual

Cross Connection means any actual or potential connection or physical arrangement between a public water supply and any other source or system through which it is possible to introduce into the potable water system any waste or liquid substance of unknown or unsafe quality other than the intended potable water with which the system is supplied. Bypass arrangements, jumper connections, removable sections, swivel or changeover devices, and other temporary or permanent devices through which or because of which backflow can or may occur are considered to be cross connections.

Customer means any person or premises that receives potable water from the City of Sumter.

Hazard or Degree of Hazard means the determination of the potential risk to public health, and adverse effects upon the potable water system. This risk is defined below in two categories:

(1) High Hazard/Health Hazard: An existing or potential threat to the public water supply of a physical or toxic nature that result in a danger to public health.

(2) Low Hazard/Non-Health Hazard: A hazard that does not constitute a threat to health, but may cause an actual or potential threat to the physical properties of the water and cause a nuisance or be aesthetically objectionable.

Flood Level Rim means the level from which liquid in plumbing fixtures, appliances, or vats could overflow to the floor, when all drain and overflow openings built into the equipment are obstructed.

Industrial Fluids means all types of process and used waters that may be chemically, biologically or otherwise contaminated that would be a health hazard if introduced into the potable water supply.

Potable Water means water from any source which meets the state and federal drinking water standards and which has been approved for human consumption.

Remote High Hazard Fire System means a fire system that has an isolated section with an antifreeze system or other chemical injection system.

Residential Lawn Irrigation (Low Hazard) means any irrigation system on a piece of property that has no commercial activity associated with the property and no chemical injection system.

Used Water means any water supplied by the City that has passed the water service connection.

Water Purveyor means the owner or operator of a public or private potable water supply.

Water Service Connection means the point where the public potable water system and the customer's water distribution system connect.

SECTION 5 – RESPONSIBILITIES

1. The responsibilities of the City of Sumter cross-connection control program are:

A. To prevent contamination to the public water system from the introduction of contaminants or pollutants through a service connection. This responsibility begins at the source and includes the entire water supply distribution system and ends at the user water service connections. If, in the judgment of City of Sumter an approved backflow prevention assembly is required for the safety of the water system, the City of Sumter will give notice in writing to the customer to have installed an approved backflow prevention assembly at the property line of their premises. The customer will be required to install such approved assembly at their expense; and failure, refusal, or inability on the part of the customer to install, have tested (as required), and maintained said assembly(s) may constitute grounds for discontinuing water service to the premises until such requirements have been satisfactorily met.

B. To effect and enforce policies, regulations, and rules necessary to carry out designated responsibilities.

C. To make inspections and determinations of the degree of hazard facilities present to the City of Sumter water system.

D. To make and maintain all necessary records in accordance with this policy.

E. To maintain a list of SCDHEC approved cross-connection prevention assemblies for use in the City of Sumter.

2. The responsibilities of water consumers to the cross-connection program are as follows:

A. The water user has the primary responsibility to keep contaminants out of the water system. This responsibility begins at the user water service connection and includes any and all water distribution piping on the premises. If a cross-connection or a potential for a cross connection exists, the water user, at the water user's expense, will be required to install, test (as required), and maintain approved backflow prevention device as required by the City of Sumter backflow prevention policy.

B. The customer should contact the City of Sumter prior to purchasing or installing a backflow prevention assembly.

C. In the event of accidental cross-connection to the City of Sumter supply system, the user shall immediately notify the Public Services and must confine further spread of pollution or contamination within the user's premises.

3. The responsibility of the installer of cross-connection prevention assemblies:

A. To make sure that each assembly is working properly. The assembly must be tested by a certified tester (as required) when installed prior to the system being placed into service.

SECTION 6 - REQUIREMENTS

1. No water service connection to any premises shall be installed or maintained by the City of Sumter unless the water supply is protected as required by state law and regulations and the cross connection control policy. Service of water to any premise may be discontinued by the City of Sumter if a backflow prevention assembly required by this cross connection control manual is not installed, tested, and maintained according to requirements, or if it is found that a backflow prevention assembly has been removed, by-passed, or if an unprotected cross-connection exists on the premises.
2. The customer's system should be open for inspection at all reasonable times to authorized representatives of SCDHEC and the City of Sumter to determine where cross-connection or other structural or sanitary hazards, including violations of the regulation, exist. When such a condition becomes known, the City of Sumter may deny or immediately discontinue water service to the premises.
3. When required, an approved backflow prevention assembly will be installed on each service line to a customer's water system at or near the property line.
4. In the case of premises having an internal cross-connections that cannot be permanently corrected and controlled, intricate plumbing and piping arrangements, or where entry to all portions of the premises is not readily accessible for inspection purposes, making it impractical or impossible to ascertain whether or not hazardous cross-connections exist. The City of Sumter distribution system shall be protected against backflow from the premises by installing an approved backflow prevention assembly in the service line.
5. Any backflow prevention assembly required herein will be a model and size approved by the SCDHEC.

SECTION 7 - DEGREE OF HAZARD

The type of protective assembly required will depend upon the degree of the hazard that exists as follows:

1. In the case of any premises where there is any material hazardous to health that is handled in such fashion as to create an actual or potential hazard to the city's water system, the City of Sumter will be protected by an approved air-gap separation or an approved reduced-pressure principle backflow prevention assembly. Examples of premises where these conditions will exist include sewage treatment plants, sewage pumping stations, chemical manufacturing plants, hospitals, mortuaries, and plating plants.
2. In the case of any premises where there is water or a substance that would be objectionable but not hazardous to health if introduced into the City of Sumter water system, the City of Sumter will be protected by an approved double-check valve assembly.

SECTION 8 - INSTALLATION

New Connections

1. When the application and purchase is made for the water service, the customer will provide information regarding the use of the water at the new connection. The City of Sumter will evaluate the new service to determine the type of backflow prevention assembly required (if any).
2. The customer will be notified of the backflow prevention assembly requirements.
3. The applicant will have the backflow prevention assembly and its enclosure installed according to all the City of Sumter requirements found in this Cross Connection Control Policy Manual.

Existing Service Connections

1. Existing service connections will be evaluated by the City of Sumter to determine the type of backflow prevention assembly required (if any).
2. The customer will be notified of the backflow prevention assembly requirements, including an installation deadline.
4. The customer will have the backflow prevention assembly completely installed according to all City of Sumter requirements found in the manual of cross connection control. All City of Sumter and SCDHEC and manufacturers' installation requirements will be met.
5. The customer will have all new devices tested (if required) and results sent to City of Sumter Public Services.

SECTION 9 - INSTALLATION REQUIREMENTS

Hazard Applications

1. High Hazard/Health Hazard connections require reduced pressure principle assemblies, pressure vacuum breakers (for back-siphonage hazards only), or an air gap for prevention of backflow.
2. Low Hazard/Non-health Hazard connections require double check valve assemblies or double detector valve assemblies for prevention of backflow.

Location

Installation of the assemblies will usually be in a box approximately one foot down stream of water meter. The City of Sumter will review each site and make a recommendation for the location of the assembly.

RP and DCVA Installation Requirements

1. The assembly must appear on SCDHEC list of approved backflow prevention assemblies.
2. No by-pass is permitted around the assembly unless there is an equal backflow prevention assembly in the by-pass. Customers with situations that prohibit shutting off the water service to test or repair the assembly should install a backflow prevention assembly in parallel or install a separate parallel duplicate service line with proper backflow protection.

3. All manufacturers' installation requirements will be consulted and followed including hot water and high pressure applications.
4. All backflow prevention assemblies will be installed in an enclosure or building on the customer's property to prevent damage from freezing, traffic or vandalism, and will be readily accessible for testing and maintenance. City of Sumter Back flow & Cross Connection Policy Manual

Additional Requirements for RPs

1. Conditions may exist where periodic pressure fluctuations cause the relief valve of the assembly to discharge to the point of becoming a nuisance. In this event, the customer should install an additional check valve prior to the assembly.
2. Relief valve drain piping must meet approved air gap requirements. The air gap distance requirement is equal to two (2) times the relief valve diameter or 1-inch, whichever is greater. The piping will be sized to exceed the discharge rate of the relief valve.
3. The relief valve will never become submerged.
4. Underground installations of reduced pressure principle backflow assemblies are discouraged. Underground installations are only permitted in exceptional circumstances on a case by case basis and only where an adequately sized gravity drain can be installed.

Fire Suppression/Fire Sprinkler Systems

Each private fire protection system will be evaluated by site and/or plan survey for degree of hazard. Backflow prevention assemblies commensurate with the degree of hazard will be required on all connections to the City of Sumter.

High Hazard/Health Hazard Category:

Systems that are considered to be in the High Hazard/Health Hazard Category include, but are not limited to: antifreeze systems, foam injection systems and systems supplied from or connected to lakes, ponds, streams, or any other source other than the City of Sumter system. High hazard category fire protection systems will require a Reduced Pressure assembly or Air Gap on any connection to the City of Sumter as close as possible to the service connection and the property line.

A remote high hazard fire system is a fire system that has an isolated section with an antifreeze system or other chemical injection system. It is acceptable to protect this type of fire system with a Reduced Pressure assembly at the site of the chemical addition or at the water connection.

Low Hazard/Health Hazard Category:

Systems that are considered to be in the Low Hazard/Health Hazard Category of fire protection systems will include simple wet or dry fire sprinkler systems. A Double Detector Check Assembly is required on any connection to the City of Sumter as close as possible to the service connection and the property line.

In isolated cases the backflow prevention assembly must be installed inside the building. A Double Check Valve assembly will be installed on the riser piping immediately above the floor. This must be included on the building drawings and approved in writing.

Removal of Assembly

No backflow prevention assembly will be removed, by-passed, or downgraded without prior written approval of the City of Sumter.

SECTION 10 - TESTING REQUIREMENTS

Residential Lawn Irrigation Systems

Low Hazard/Health Hazard: The City of Sumter requires all customers who operate low hazard residential lawn irrigation systems to install as a minimum a double check valve assembly for backflow prevention. This assembly is the customer's responsibility and must be installed immediately behind the service connection (water meter) to the City of Sumter. This assembly must be tested upon installation and annually at the customers expense.

Testing of Assemblies

All existing approved backflow assemblies are required to be tested annually or as deemed necessary to comply with City of Sumter or Department of Health and Environmental Control (DHEC) requirements. Customers with backflow assemblies will be sent a notification letter by the City of Sumter prior to the testing is due to be completed. The due date for the test is set by the calendar month. Upon notification the customer is responsible for getting the device tested utilizing a certified tester. The certified tester is required to test the device by the end of month due and mail the City of Sumter approved test report indicating compliance within 7 days of the actual date the device is tested. If at the end of the month, if City of Sumter has not received the completed test report indicating compliance a final notification letter will be sent to the customer requiring the device be tested within 10 calendar days or the device will be considered non-compliant.

Test Failures

If tested device fail, the required tests indicating compliance and cannot be repaired immediately the tester will return a copy of the failed test report to City of Sumter the same day of the failed test with an explanation of the test failure and the repair needed. Failing assemblies must be satisfactorily repaired and completely retested within 10 business days of the date of the test failure. If during this time the City of Sumter determines the potable water supply is in danger of a potential backflow or cross connection as the result of the failed backflow assembly the water service will be disconnected immediately. After the assembly is repaired, the assembly will be retested and the completed test report indicating compliance will be returned to the City of Sumter.

Testing Non-Compliance

Customers with backflow assemblies will be considered non-compliant when:

1. Completed test reports indicating compliance are not received by the end of second notice period.
2. Failing assemblies not satisfactorily repaired, retested, and in compliance within 10 business days of the original date of the test failure.

Failure to comply with the testing, repairing, and/or retesting, requirements as stipulated within this section may result in the following options:

1. Assemblies located at the property line or meter: The City of Sumter will utilize the services of a SCDHEC certified contract backflow tester to test the device, and if necessary, make proper repairs to the device. The non-compliant customer will assume all the City of Sumter's cost associated with the testing, repairing, and/or retesting of the device along with a one-hundred-dollar administrative fee to recover the costs involved in the handling, administration, and billing of the test. These costs will be added to the customer's water bill.

SECTION 11 - NON-COMPLIANCE/ENFORCEMENT

Enforcement Procedure

Termination of water service/Reconnect fees a. Service of water to any premises may be discontinued by the City of Sumter for the following reasons:

- (1) If a backflow prevention assembly that is required by law, rules, or regulations is not installed, tested, and maintained.
- (2) If it is found that a backflow prevention device has been removed or by-passed.
- (3) If unprotected cross connection exists on the premises and there is inadequate backflow protection at the service connections.

Water service will not be restored until such conditions and defects are corrected.

The customer will be responsible for all applicable reconnection fees and charges. The City of Sumter will not be liable for damages, losses, or claims arising from discontinuance of water service.

John W. Finick 1/2/2025
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