



Town of Jamestown Manual for the Backflow Prevention and Cross Connection Policy

(Adopted by Town Council on March 20, 2007)

Section 1.0 - Objectives of the Policy

The objective of this policy is to protect the public potable water of the Town of Jamestown. This will be accomplished by requiring the use of appropriate backflow protection methods to control cross-connections of private water systems to the public water system. The result will be to minimize or eliminate the risk of contaminants or pollutants entering the public water system from a private water system.

Section 2.0 - Definitions

AIR GAP SEPARATION: The unobstructed vertical distance through the atmosphere between the lowest opening from any pipe or faucet supplying water to a tank, plumbing fixture or other device and the flood level rim of the receptacle. An "approved air-gap separation" shall be at least double the diameter of the supply pipe measured vertically above the overflow rim of the vessel. In no case shall the air gap separation be less than one (1) inch above the overflow rim.

APPROVED: In reference to backflow prevention assemblies or methods, those assemblies or methods which have been accepted by the Director as an effective means or method to prevent backflow.

BACKFLOW: Any flow of water, liquid, gas or other substances, or any combination thereof, into the distribution piping of a potable water system from any source or sources.

BACKFLOW / CROSS CONNECTION INSPECTOR: an empowered delegate of the Director functioning to enforce the policies and requirements set forth by this policy.

BACKFLOW PREVENTION ASSEMBLY: An approved assembly or method used to prevent backflow from occurring into the public potable water system.

BACK-PRESSURE BACKFLOW: Backflow caused by a pump, elevated tank, boiler, or other means that could create pressure greater than the supply pressure.

BACK-SIPHONAGE BACKFLOW: A reversal of the normal direction of flow in the pipeline due to a negative pressure (vacuum) being created in the supply line with the backflow source subject to atmospheric pressure.

CERTIFIED TESTER: A person who has proven his/her competency to test, repair, overhaul and prepare reports on backflow prevention assemblies as evidenced by certification of successful completion of a training program approved by the Director.

CONSUMER/CUSTOMER: The term consumer/customer shall mean the owner or operator of an on-site private water system(s) having a service from the public potable water system.

CONTAINMENT: Prevention of possible contamination from a private water system into a public water system by installing an approved backflow prevention assembly.

CONTAMINATION: The degradation of the quality of water so as to constitute a hazard or impair the usefulness of water.

CROSS-CONNECTION: Any physical connection between the public potable water system and any other source. This includes piping systems, sewer fixtures, containers, or devices whereby water or other liquids, mixtures, or substances may flow into or enter the public potable water system.

DEGREE OF HAZARD: Derived from an evaluation of condition within a system in relation to actual or potential threat of pollution, plumbing, system and health hazards.

DIRECTOR: The Town of Jamestown's Director of the Public Services Department. This individual is the custodian of the public potable water system who administers and enforces the provisions of the backflow prevention program.

DOUBLE CHECK VALVE ASSEMBLY: An assembly composed of two (2) single, independently-acting approved check valves, including tightly closing shut-off valves located at each end of the assembly, and suitable connections for testing the water-tightness of each check valve.

DOUBLE CHECK-DETECTOR CHECK VALVE ASSEMBLY: An assembly composed of an approved double check valve assembly with a bypass water meter and a line-size approved double check valve device. The meter shall register accurately for very low flow rates and shall register all flow rates.

HIGH HAZARD: An actual or potential threat of contamination to the public water system or to a private water system to such a degree or intensity that there is a potential danger to health.

IMMINENT HAZARD: An actual threat of contamination that presents a danger to the public health with consequences of serious illness or death.

MODERATE HAZARD: One that presents foreseeable and significant potential for pollution, nuisance, aesthetically objectionable or other undesirable alterations of the drinking water supply.

POINT OF DELIVERY: The terminal end of a service connection from the public potable water system; the point where water leaves the public water system and enters a private water system.

POTABLE WATER: Water from any source, which has been treated an approved for human consumption by the appropriate agency of the State of North Carolina.

PRIVATE WATER SYSTEM: A system of pipes or other associated facilities and equipment that is not part of the Town's public water system and is used to receive,

transports, or deliver water beyond the Point of Delivery, regardless of the source of water.

REDUCED PRESSURE PRINCIPLE ASSEMBLY [Reduce Pressure Zone RPZ]: An assembly containing within its structure a minimum of two (2) independently acting, approved check valves, together with an automatically operating pressure differential relief valve located between the check valves. The first check valve reduces the supply pressure by a predetermined amount so that during normal flow and at cessation of normal flow, the pressure between the checks shall be less than the supply pressures. In case of leakage of either check valve, the differential relief valve, by discharge to the atmosphere, shall operate to maintain the pressure between the checks less than the supply pressure. The assembly must include properly located test cocks and tightly closing shut-off valves at each end of the assembly.

REDUCED PRESSURE PRINCIPLE-DETECTOR ASSEMBLY: An assembly composed of an approved reduced pressure principle backflow prevention assembly with a bypass water meter and a line-size approved reduced pressure principle devices. The meter shall register accurately for very low flow rates and shall register all flow rates.

WATER SUPPLY (APPROVED): Any public potable water supply, which has been investigated and approved by the appropriate agency of the State of North Carolina. The system must be operating under a valid health permit.

Section 3.0 - Elimination of Cross-Connections

- 1) The public potable water supply of the Town of Jamestown shall be protected against actual or potential cross-connections, backflow and back-siphonage by containing, within the premise of the private property, contamination or pollution that has occurred or may occur because of some undiscovered or unauthorized cross connection on the premises or private property. This will be accomplished by elimination of cross-connections, backflow and back-siphonage or any other source of water or process water used which may jeopardize the safety of the public potable water supply of the Town of Jamestown.
- 2) No private water system may be connected in any manner to the public water system unless the requirements of this policy and other applicable laws have been satisfied.
- 3) Only an approved assembly can be installed to meet the requirements of this policy. The installation of an unapproved backflow prevention assembly must be replaced with an approved backflow prevention assembly by the customer.

Section 4.0 – Hazard Classification

- 1) The type of backflow prevention assembly installed shall depend upon the degree of hazard. If the hazard cannot be determined then a reduced pressure principle assembly shall be installed.
- 2) The customer shall notify the Director within 30 calendar days when the use of property changes so as to re-evaluate the hazard classification of the property.

Section 4.1 - High Hazard Facilities and Methods of Protection

- 1) All high hazard facilities must have an approved reduced pressure principle assembly as a minimum containment device.
- 2) High hazard facilities include, but are not limited to:
 - a) any private water system which may become pressurized to the extent that back pressure may occur;
 - b) any private water system which contains water which has been or is being re-circulated;
 - c) a building with five or more stories above ground level;
 - d) a brewery; car wash; bottling plant; chemical plant; dentist's office; dry cleaning plant; fertilizer plant; film laboratory; fire sprinkler or standpipe system with chemical additives; hospital, clinic, medical building; irrigation system with chemical additives; laboratory; commercial laundry (except self-service laundry); metal processing plant; morgue or mortuary; nursing home; pharmaceutical plant; power plant; swimming pool (including commercial and residential swimming pools, hot tubs and spas); sewage treatment plant; tire manufacturer; veterinary hospital or clinic; restaurants; battery manufacturers; exterminators and lawn care companies; dairies; canneries; dye works; recycling facilities.
 - e) any other facility as determined by the Director to be of high hazard.
- 3) If the Backflow Inspector does not have sufficient access to a private water system to allow an evaluation of the degree of hazard associated with such private water system, then an approved reduced pressure principle assembly must be installed.

Section 4.2 - Moderate Hazard Facilities and Methods of Protection

- 1) All moderate hazard facilities must have a double check valve assembly as a minimum containment device.
- 2) Moderate hazard facilities include, but are not limited to:
 - a) fire sprinkler systems without booster pump facilities or chemical additives;
 - b) connections to tanks, lines and vessels that handle non-toxic substances;
 - c) lawn sprinkler systems without chemical injection or booster pumps;
 - d) all industrial and most commercial facilities not identified as high hazard facilities.
 - e) and any other facility as determined by the Director to be of moderate hazard.

Section 4.3 - Lawn Irrigation Systems

- 1) All existing lawn irrigation systems must have a double check valve assembly as a minimum containment device.
- 2) All proposed lawn irrigation systems will be served through a separate meter and must have a backflow prevention device as specified by the degree of hazard.

Section 4.4 - Fire Systems

- 1) Fire line installation shall meet or exceed current fire codes and standards, North Carolina Building Codes and applicable federal requirements.
- 2) All fire sprinkler systems without booster facilities or chemical additives must have a double check-detector check valve assembly as a minimum containment device.
- 3) All fire sprinkler systems with a booster facility or chemical additives must have a reduced pressure principle-detector assembly as a minimum containment device.
- 4) All assemblies on a fire system, or combination domestic and fire, shall be fire line approved installations with OS & Y type shut-off valves or as approved by the Fire Chief and the Director of Public Services Department.
- 5) Fire line services require a licensed fire sprinkler contractor to install the device. Strainers are not allowed on fire line backflows and meters.

Section 4.5 - Imminent Hazards

- 1) If the Director determines that a customer's private water system constitutes an imminent hazard, said customer shall install a backflow prevention assembly as approved by the Director within twenty-four (24) hours after notice of the Director's determination.
- 2) If the customer fails to take corrective measures within the specified time period, or refuses to install an approved assembly, water service to the customer's private water system may be terminated.
- 3) If the Director is unable to give notice to said customer or his representative after the determination that an imminent hazard exists, despite reasonable efforts to provide said notice, the Director may terminate water service to the private water system until corrective measures are taken.
- 4) The Town shall bear no liability for direct or consequential damages proximately caused by the discontinuance of service pursuant to this section.
- 5) Upon correction of the violation(s) and payment of civil penalties, the water service may be restored upon the Director's approval.

Section 5.0 - Installation and Maintenance of Backflow Prevention Assemblies

- 1) Customer shall apply for necessary permits and pay all fees as required.
- 2) The licensed plumber or contractor must have a valid Town of Jamestown privilege license.
- 3) Ownership, testing and maintenance of the backflow prevention assembly will be the responsibility of the customer. Each assembly required in this policy must be functioning properly at all times.
- 4) All backflow prevention assemblies required by this policy must be installed and maintained on the customer's premises as part of the customer's private water system.
- 5) All backflow prevention assemblies shall be installed in accordance with the manufacturer's instructions and the Town of Jamestown standard detail drawings and specifications. Only backflow prevention devices approved by the Director of Public Services shall be installed.
- 6) Each backflow prevention assembly required under this policy must be accessible to the Town of Jamestown. The installation location of all backflow prevention assemblies shall be in an area that provides a safe working environment for testing and maintenance. This area shall be free of electrical hazards (i.e. heat tape, underground electrical lines, etc...).
- 7) The backflow prevention assembly shall be installed downstream of the water meter within a distance of 100 running feet of pipe. Also, pressure reducing valves shall be installed downstream of all backflow devices. If it is impossible or impractical for the backflow prevention assembly to be installed outdoors near the water meter, it may be installed inside the building with approval from the Backflow Inspector.
- 8) A licensed plumbing or utility contractor must install the backflow prevention assembly. Fire line services require a licensed fire sprinkler contractor to install the device. Strainers are not allowed on fire line backflows and meters.
- 9) When it is not possible to interrupt water service, the customer shall provide for the parallel installation of an approved backflow prevention assembly. The Director will not accept an unprotected bypass around a backflow device while the assembly is being tested, repaired, or replaced.
- 10) Any construction site plans and specifications for proposed developments and structures shall be made available to the Director to determine the degree of hazard and for backflow device approval.
- 11) All backflow prevention devices required for new construction shall be installed and inspected prior to setting of the meter and approval of departmental release of the certificate of occupancy.
- 12) All rubber gaskets shall be replaced as specified by the manufacture; not to exceed a 5-year period.

- 13) When repairs to backflow prevention assemblies are deemed necessary, whether through annual testing or inspection by the owner or by the Town of Jamestown, the repair work must be completed within a time specified in accordance with the degree of hazard as specified in Table 5.0. Failure to comply with this requirement may result in termination of the customer's water service.
- 14) The customer shall immediately make necessary repairs to the backflow prevention assembly upon determination that the device is not functioning properly. Once repairs have been completed, the customer must have an approved certified tester conduct a test showing the assembly is in good working order. Any repairs made shall be with manufacturer-approved parts. All work shall be documented with a copy of the satisfactory test and repair record submitted to the Town of Jamestown Public Services Department.
- 15) The owner and/or occupant in charge of said premise shall maintain a complete written record of the test and/or inspection required by this policy on the premise. Copies of such records shall be submitted to the Town of Jamestown Public Services Department.
- 16) The Director may require the repairs of the backflow prevention assembly within a shorter time period than specified in Table 5.0 if it is determined that conditions pose an imminent hazard to the public water supply system.

Table 5.0 Repairs to Backflow Assembly	
Type of Hazards	Repair Duration
Imminent hazard	Within twenty-four (24) hours
High hazard	Within ten (10) days
All other required repairs	Within twenty (20) days

Section 5.1 - Existing Services Requiring Backflow Protection

- 1) Upon determination that a backflow prevention assembly is required to be installed on a customer's private water system, the customer will be notified in writing of the approved backflow prevention assembly. The customer must install the specified backflow prevention assembly within the time period specified in Table 5.1.
- 2) The Director may require the installation of the backflow prevention assembly within a shorter time period than specified in Table 5.1 if it is determined that conditions pose an imminent hazard to the public potable water system.

Table 5.1 Time Period for Backflow Installation	
Type of Backflow Prevention Assembly	Time Period
Air-gap separation	30 days
Reduced pressure principle assembly (3/4" – 2")	30 days
Double check valve assembly (3/4" – 2")	60 days
Reduced pressure principle assembly (2-1/2" and larger)	60 days
Double check valve assembly (2-1/2" and larger)	60 days
Other approved backflow prevention assembly	30 days

- 3) The customer and contractor must follow the requirements of Section 5.0 - Installation and Maintenance of Backflow Prevention Assemblies.
- 4) Construction plans for installing the backflow prevention assembly shall be submitted to the Town of Jamestown for review and approval. Prior to installation of the backflow prevention assembly, the Backflow Inspector must approve the proposed plans.
- 5) Customer shall apply for permit and pay all fees as required.

Section 6.0 - Testing of Backflow Prevention Assemblies

- 1) At the customer's expense, a certified tester shall conduct testing of backflow prevention assemblies. The Backflow Inspector may be contacted for information regarding the requirements for a certified tester and test kits.
- 2) Tests shall be conducted upon installation and annually thereafter with a record of all testing and repairs retained by the customer. The customer must send a copy of the certified record for each test or repair to the Town of Jamestown Public Services Department within thirty (30) days after the completion of each test or repair. These records must be maintained on forms provided by the Town of Jamestown.

Section 6.1 - Fire Protection Backflow Assembly Testing

- 1) The Fire Chief shall be notified in writing at least 48 hours prior to any test of a fire protection backflow prevention assembly required by this policy.

- 2) The owner and/or occupant in charge of said premise shall maintain a complete written record of the test and/or inspection required by this policy on the premise. Copies of such records shall be submitted to the Town of Jamestown Public Services Department.

Section 7.0 - Approved Assemblies and Material Specifications

- 1) All backflow prevention assemblies shall be approved by the University of Southern California Foundation for Cross Connection Control and Hydraulic Research (U.S.C.F.C.C.H.R.), The American Society of Sanitary Engineering (A.S.S.E.), conform to AWWA C506, and adhere to applicable ANSI and ASTM standards. All assemblies installed on fire lines shall be approved by Factory Mutual System (FM).
- 2) The Town of Jamestown Public Services Department must also approve backflow prevention assemblies and may provide a list of approved assemblies upon request.

Section 8.0 - Right of Entry

- 1) The Director, or his authorized agent, shall have the right to enter any building, structure or premises during normal working hours to perform any duty imposed upon him by this policy. Duties may include sampling and testing water, or inspections and observations of all piping systems connected to the public potable water system. Prior notice of entry will be given unless an imminent hazard has been reported or detected. Refusal to allow entry for these purposes may result in termination of the water service.
- 2) At the request of the Director, the customer shall furnish any pertinent information regarding the piping and chemical storage on such property where cross-connections are deemed possible.

Section 9.0 - Responsibility of Customer

- 1) The customer shall be responsible for the elimination of or protection against all cross-connections on his premises.
- 2) The customer shall maintain backflow prevention assemblies on his premise in good operating condition. The customer shall correct any malfunction of the backflow prevention assembly which is revealed by periodic testing.
- 3) The customer shall be responsible for the payment of all fees for annual testing, re-testing in the case that the assembly fails to operate correctly, and necessary repairs.
- 4) A customer must immediately notify the Town of Jamestown if the customer has reason to believe that backflow has occurred from the customer's private water system to the public water system.
- 5) The owner and/or occupant in charge of said premise shall maintain a complete written record of the test and/or inspection required by this policy on the premise. Copies of such records shall be submitted to the Town of Jamestown Public Services Department.

Section 10.0 - Unapproved Source of Supply

- 1) No person shall connect or cause to be connected any supply of water not approved by the State of North Carolina to the public potable water system.
- 2) Where a connection to a Town of Jamestown water line is made and the property owner continues to have a well or other source of water, it shall be unlawful for the plumbing servicing any building upon such property to be so connected that any water outlet within the building may be served with water from any source other than the Town of Jamestown connection. It shall also be unlawful to have plumbing cross-connections that allow water from the Town of Jamestown public potable water system and the customer's private water system to become intermingled.

Section 11.0 - Violations

- 1) A written notice of violation(s) shall be given to any person who is determined to be in violation of any provision of this policy.
- 2) Such notice shall set forth the violation and the time period within which the violation must be corrected. The violation must be corrected within a reasonable time, as specified in the notice. If the Director determines that the violation is occurring on a customer's private water system and that such violation has created or contributed to the existence of an imminent hazard, the customer may be required to correct the violation immediately.
- 3) Water service may be terminated if the customer fails to correct a violation or to pay any civil penalty or expense assessed under this section. Termination of water service will be without prejudice to the Town of Jamestown's ability to assert any other remedy available to the Town of Jamestown against the customer or any other person responsible for the violation.
- 4) The Town shall bear no liability for direct or consequential damages proximately caused by the discontinuance of service pursuant to this section.
- 5) The violation of any provision of this policy shall subject the violator to a civil penalty. Each subsequent day that a violation listed in Table 11.0 continues shall constitute a separate and distinct offense.

Table 11.0 Civil Penalties	
Violation	Penalty
Unprotected cross-connection involving a private water system that is an imminent hazard.	\$1,000/day
Unprotected cross-connection involving a private water system that is a high hazard.	\$750/day
Unprotected cross-connection involving a private water system that is a moderate hazard.	\$500/day
Unprotected cross-connection for which no other civil penalty is	\$250/day

prescribed.	
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6) Each violation listed in Table 11.1 shall be considered a onetime violation.

Table 11.1 Onetime Civil Penalties	
Violation	Penalty
Falsifying records which are required to be submitted by this policy	The tester may be removed from the approved certified tester list, privilege license revoked and/or \$500 fine
Submitting incomplete records or failing to submit records which are required by this policy	The tester may be removed from the approved certified tester list, privilege license revoked and/or \$250 fine
Failing to test backflow prevention assemblies as required	\$100 fine
Failing to maintain backflow prevention assemblies as required	\$100 fine
Any other violation of the provisions of this ordinance	\$100 fine

7) The Director may increase any civil penalty assessed under this section by \$100 or fifty percent (50%) of the maximum civil penalty associated with the violation, whichever is greater, for a second violation of the same provision within a two year period. The customer’s water service may be terminated after a third violation of the same provision within a two-year period. Any person violating any provision of this policy shall pay to the Town of Jamestown all expenses incurred by the Town in investigating such violation and repairing any damage to the public water system caused in whole or in part by such violation. All such expenses are deemed to be a part of the civil penalty assessed with the violation.

8) The Director may revoke the Town of Jamestown privilege license of any plumber or contractor found to consistently and blatantly violate the requirements of this policy.

Section 12.0 - Right of Appeal

1) Upon notice of the backflow prevention method required, the owner may request a hearing to review the selection process with the Town of Jamestown Public Services Department personnel.

2) If the owner is dissatisfied with the results of this review, a written request for a hearing must be sent to the Director within ten (10) days of the Departmental review. Within ten (10) days, a formal hearing with the Director will be scheduled. A written response will be issued within ten (10) days after the hearing.

- 3) The owner shall thereafter have the right of further appeal to the Town of Jamestown Council.

This policy shall become effective the date of adoption.