



# CROSS CONNECTION CONTROL PROGRAM



**BREWER WATER DEPARTMENT  
CROSS CONNECTION PREVENTION PROGRAM**

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# BREWER WATER DEPARTMENT CROSS CONNECTION PREVENTION PROGRAM

## 1. PURPOSE

Cross-connections between water supplies and non-potable sources of contamination represent one of the most significant threats to health in the water supply industry. This program is therefore designed to maintain the safety and portability of the water in the City of Brewer Department's (Brewer Water) system by preventing the introduction of any foreign liquids, gases and other substances, other than water from the intended sources, to provide protection from actual or potential cross-connections.

## 2. AUTHORITY

This program derives its authority from 10-144A MRSA Chapter 226, as authorized by 22 MRSA Chapter 601, Subchapter 2 2612 (5) and from the State of Maine Internal Plumbing Code.

## 3. DEFINITIONS

- A. Antifreeze compounds: Any liquid, chemical or other material used as an antifreeze or heating-exchange medium. Use of antifreeze compounds is limited to propylene glycol and food-safe glycerin; ethylene glycol (automotive antifreeze) is prohibited.
- B. Approved Source: A source of water utilized by a public water system for distribution to the public for consumption or other purposes and which is approved by the Department Of Health and Human Services for said use following an approved treatment process, if required by the Department.
- C. Backflow: The flow of water or other foreign liquids, gases or other substances or materials of any kind in any form into the distribution system of a public water supply from any other source other than the intended.
- D. Backflow preventer: A device to prevent backflow.
  - 1. Air gap: A physical separation sufficient to prevent backflow between the free-flowing discharge end of the potable water system and any other system.
  - 2. Atmospheric Vacuum Breaker: A device which prevents back-siphonage by creating an atmospheric vent where there is either a negative pressure or sub-atmospheric pressure in a water system.
  - 3. Backflow Preventer with Intermediate Atmospheric Vent: A device having two check valves separated by an atmospheric vent.
  - 4. Double Check Valve: A device having two weight- or spring-loaded, bronze-faced with soft rubber disk check valves, with shut-off valves and test cocks for periodic testing. Referred to as a "testable" device by Brewer Water.



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5. Dual check valve: A device having two spring-loaded independent check valves used primarily in residential and low hazard non-residential situations. Referred to as a “non-testable” device by Brewer Water.
  6. Hose Bib Vacuum Breaker: A device which is permanently attached to a hose bib and which acts as an atmospheric breaker.
  7. Pressure Vacuum Breaker: A device containing a spring-loaded check valve and a spring-loaded atmospheric vent which, opens when pressure approaches atmospheric. It contains valves and fittings which allow the device to be tested.
  8. Reduced Pressure Zone Backflow Preventer (RPZ): An assembly of check valves and a reduced pressure principle which spills water to the atmosphere in the event of the failure of the check valves. It has valves and fittings which allow the device to be tested, and is referred to as a “testable” device by Brewer Water.
  9. Owner: Any individual, tenant, corporation, political body, subdivision, or any other entity who has legal title to operate or habitate in a property upon which a cross connection is or may be present.
- E. Back-siphonage: Backflow resulting from negative or less than atmospheric pressure in the system.
- F. Back-pressure: A condition in which the Customer’s system pressure is greater than the supplier’s system pressure.
- G. Brewer Water Department: Brewer Water.
- H. Containment: A method of backflow prevention which requires a backflow preventer (containment device) at the water service entrance.
- I. Containment device: An approved backflow assembly that may include a strainer as recommended by the manufacturer.
- J. Contaminant: Any Chemical, biological, or radiological substance or matter which is an impairment of the water quality which creates an actual hazard to the public health through poisoning or through the spread of disease by sewage, industrial fluids or waste.
- K. Cross-Connection: A cross-connection is any connection or arrangement, physical or otherwise, between a potable water supply system and any plumbing fixture, tank, or any receptacle, through which it may be possible for non-potable, used, unclean, polluted, contaminated water, and /or other substances to enter into



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any part of such potable water system under any condition. It is not necessary for contamination or backflow to have actually occurred. A cross-connection is simply the connection through which it may be possible for backflow or contamination to occur.

- L. Cross-connection Survey: An inspection conducted by the Brewer Water in order to identify any actual or potential cross-connections, to determine the degree of hazard or potential hazard and appropriate means of backflow prevention, or to confirm compliance with Brewer Water's Cross-Connection Program.
- M. Customer: A person, firm, corporation, or governmental division which has applied for and been granted service, and is responsible for payment of service. One in whom the legal title to real estate is vested, or who is recognized and held responsible by law at the Customer of real property. The Customer is ultimately responsible for installation and maintenance of approved backflow device at the water service entrance.
- N. Department: Maine Department of Health and Human Services.
- O. Domestic service: A water line which supplies potable water for non-fire protection uses such as drinking, bathing and culinary, heating and process water purposes.
- P. Fire Service: A water line which supplies water for fire protection to a fire sprinkler or life safety system.
- Q. Fixture isolation: A method of backflow prevention in which a backflow preventer is located to correct a cross-connection in any in-plant unit rather than at the water service entrance. Fixture isolation alone is not deemed an acceptable method of backflow prevention by Brewer Water within its distribution system.
- R. Industrial Fluids: Any fluid or solution which may be chemically, biologically or otherwise contaminated or polluted in a form or concentration such as would constitute a health, system, pollution, or plumbing hazard if introduced into the water supply. This may include but is not limited to:
  - i. Polluted or contaminated used waters
  - ii. All types of process waters and "used waters" originating from public potable water systems which may deteriorate in sanitary quality
  - iii. Chemicals in fluid form
  - iv. Plating acids and alkali's
  - v. Circulated cooling waters connected to an open cooling tower
  - vi. Cooling waters that are chemically or biologically treated or stabilized
  - vii. Contaminated natural waters such as from wells, springs, streams, rivers, etc. or from irrigation systems or canals
  - viii. Oils, gases, glycerin, paraffin's, caustic, and acid solutions or other liquid/gaseous fluids used in industrial or other processes.



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ix. Solutions used for fire fighting purposes or systems

- S. Plumbing System: All potable water supply and distribution pipes, all plumbing fixtures and traps, all drainage and vent pipes, and all building drains, including their respective joints and connections, devices, receptacles and appurtenances within the property lines of the premises and shall include potable water piping, potable water treating or using equipment, and water heaters.
- T. Potable Water: Approved water, free from impurities present in any amount sufficient to cause disease or harmful physiological effects. Its physical, chemical, bacteriological and radiological quality conforms to the State of Maine Rules Relating to Drinking Water or any regulations pertaining thereto.
- U. Private Water Source: Any source of water which may or may not be approved by the Department, utilized by any customer for consumptive and/or other purposes, and which is not under the immediate control of Brewer Water.
- V. Seasonal Meter Set: A meter which is set for a limited amount of time (such as for the summer) for a specific purpose (such as a swimming pool or fountain)
- W. Water Service Entrance: That point in the Customer's water system beyond the sanitary control of Brewer Water. This will normally be the outlet end of the meter and will always be before any unprotected branch.

#### 4. SCOPE

It is the intent of Brewer Water that all domestic water services—both new and existing—will be equipped to prevent potential backflow or back siphonage through the “containment” approach. This requires the installation of an approved backflow prevention device at the water meter by the Customer at the Customer's expense. Fixture isolation alone is not deemed an acceptable method of backflow prevention by Brewer Water within its distribution system. Installation of an approved backflow device is a condition of domestic service with Brewer Water.

#### 5. ADMINISTRATION

- A. As required by the State of Maine, Brewer Water will operate a cross-connection prevention program, including keeping necessary records, which fulfills the requirements of the Department's Cross-Connections Rules and which is approved by the Department. Modifications to the program may be made from time to time at the Brewer Water's discretion and submitted to the Department for approval after public notice and period for comment.



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- B. An employee of Brewer Water, having properly identified himself, will have free access at reasonable hours to all premises supplied with Brewer Water Department's water to conduct a cross-connection survey to determine backflow prevention needs and whether the needs have been met by the Customer. Access to the property for a cross-connection survey is a condition of service with Brewer Water. Brewer Water will determine the appropriate means of backflow prevention based on its approval program, and the Customer will comply with Brewer Water's recommendations.
- C. Brewer Water generally refers to dual check backflow prevention devices as "residential" or "non-testable" although it recognizes the devices may be installed in non-residential structures and can be tested. Brewer Water generally refers to double check and reduced pressure principle backflow prevention devices as "testable" because testing is required at least annually, and recognizes that the devices may be installed in residential structures.
- D. If Brewer Water determines at any time that an imminent threat to public health exists, service will be terminated immediately and without written warning.
- E. Re-establishment of service before the installation of a backflow preventer may be allowed by Brewer Water after an agreement has been signed between Brewer Water and the Customer indicating the intention of the Customer to comply with the provisions of the agreement.
- F. Brewer Water is not responsible for any cross-connections beyond the meter.
- G. Brewer Water will assure that all domestic services comply with the Cross-Connection Program. A copy of the plumbing system's plan, survey, specifications and/or drawings may be required from a customer.

### **6. BREWER WATER'S RESPONSIBILITY**

- A. Brewer Water will maintain a copy of its current approved Cross-Connection Prevention Program, and will make it available to customers on request.
- B. Installation and Inspection
  - 1. Brewer Water will perform inspections for actual or potential cross-connections. These inspections will be made during normal working hours unless—at the discretion of the Brewer Water—other arrangements are necessary.



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2. Brewer Water will, after the inspection of premises and/or review of plans, or third party inspection reports, notify the Customer by letter of any necessary correction, the method of make the correction, the time allowed for correction, and any additional customer responsibility such as required testing.
3. The recommendation will be based on the hazards observed during the inspection and the current perceive use of the building. An upgrade in backflow prevention to a higher hazard device may be required should new information be received or observed during inspection, or a change in use occur. A downgrade in backflow prevention can only be approved by Brewer Water.
4. The customer will contact Brewer Water as required by notice. Brewer Water will inspect the installation when completed, and recommend corrections if required.
5. Brewer Water will allow a maximum of 30 calendar days from the initial written notification for installation or correction unless the customer can demonstrate good cause for a time extension to Brewer Water's satisfaction (see Sec 6E).

### C. Testing

Brewer Water recognizes that any backflow preventer can fail and any method of protection can be subverted; thus, periodic testing and inspection is necessary. This includes air gap protection.

1. Dual check devices will be checked by the Brewer Water at no charge following installation and when a water meter is changed.
2. The Customer is responsible for the initial test following installation, and will submit required paperwork to Brewer Water for a permit. On testable backflow devices for annual testing of testable devices which is to be not less than once every 12 months unless otherwise specified. Brewer Water will determine the interval between tests, and will so state on the permit application. Brewer Water will maintain a schedule of when tests are due, and will notify customers in writing not less than once a year that a test is required by a specified deadline. The customer will be notified at least six months in advance of the deadline. Test results including the tester's name and certification number are to be reported in writing to the Brewer Water on forms provided. Incorrect or incomplete forms will be returned, and a retest may be required.
3. Regarding backflow preventers which fail during testing, Brewer Water requires that repair parts be ordered within 24 hours and that shipment is by the fastest means possible. Furthermore, any extended delay (more than seven



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{7} days) may require discontinuance of service or other means to ensure protection of the public water system. Certain Class II (high) degree of hazard situations which, in the Brewer Water's determination pose a threat to public safety, will not be allowed to continue unprotected if the backflow preventer fails the test and cannot be immediately repaired. Brewer Water does not perform repairs on backflow preventers; the Customer is responsible for the provision of spare parts and should have a supply on hand.

4. Failure to comply with any of the testing requirements is grounds for discontinuance of service.
  5. Brewer Water reserves the right to have periodic testing, and observe testing as performed by any certified individual. Brewer Water does not perform annual backflow preventer tests while the services of a certified tester are available locally. Brewer Water will make available a list of backflow preventer testers who wish to test for the general public.
  6. Backflow tests and results shall be performed by persons who hold current State of Maine accepted certification for testing of backflow prevention devices.
  7. The Department shall have access to the permits and testing records during sanitary surveys and at other times for review.
- D. Disconnection
1. Brewer Water will issue a initial notice to the Customer by letter of any failure to comply with the provisions—including installation, permitting, testing, and maintenance—in this program, and will allow 30 calendar days for compliance unless another deadline is specified.
  2. Brewer Water will commence disconnection proceedings in the manner specified under Chapter 81 (residential) or Chapter 86 (non-residential) of the Maine Public Utilities Commission regulations.
- E. Extensions
1. Time extensions may be granted to customers in compliance with the following:
    - i. The extension will not result in unreasonable risk to public health within the period of the extension.
    - ii. The Customer is unable to comply with the regulations due to compelling factors, NOT exclusively economic.
    - iii. Approval by the Water Quality/Technical Services Manager, and
    - iv. Endorsement by the Superintendent, City Manager, or the Department if it is deemed necessary.



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2. Extensions of more than 30 days or involving a Class II (high) hazard will be signed by both the Brewer Water and the customer. Brewer Water will provide an agreement form, and failure of the customer to sign the form will render the agreement void.
3. Failure to meet the terms of the agreement by the specified deadline will result in disconnection proceedings.

### **7. CUSTOMER'S RESPONSIBILITIES**

- A. Brewer Water holds the current Customer ultimately responsible for installation and maintenance of the backflow prevention device.
- B. The customer after being notified by a letter from Brewer Water will notify Brewer Water as required by notice of his intent to comply with the Brewer Water's recommendations.
- C. The customer, at his own expense, will install, maintain, and have tested as required an approved backflow preventer on his premises. This is a condition of service with Brewer Water.
- D. The customer will only install backflow preventers approved by Brewer Water and the Department, and in a manner approved by Brewer Water. Non-testable (primarily residential) backflow devices will be installed directly after the water meter when possible and before any unprotected branches. Testable devices (primarily non-residential) will be installed immediately after the water meter when possible and before any unprotected branches.
- E. Customers with seasonal water meter sets must have an approved backflow device in place before the water meter is set. Devices not previously in service will be tested by the Brewer Water for permitting within 10 calendar days of meter installation. Devices previously in service must be tested by a certified tester with the results submitted to Brewer Water on required forms within 10 calendar day of meter installation. Seasonal customers will be required to sign a Temporary Meter Set agreement detailing this requirement.
- F. The customer will comply with Brewer Water's requirements for testing double-checks and reduced pressure zone devices. The tests will be preformed by the specified deadline to Brewer Water on the forms provided.
- G. The customer will correct any malfunction of the backflow preventer which is revealed by periodic testing. Regarding backflow preventers which fail during testing, Brewer Water requires that repair parts be ordered within 24 hours and that shipment is by the fastest means possible. Furthermore, any extended delay (more than seven {7} days) may require discontinuance of service or other means to ensure protection of the public water system. Certain Class II (high) degree



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hazard situations, if determined by Brewer Water to pose a threat to public safety, will not be allowed to continue unprotected if the backflow preventer fails the test and cannot be immediately repaired. The Customer is responsible for the provision of spare parts and should have a supply on hand.

- H. Failure to comply with the testing requirements is grounds for discontinuance of service.
- I. The customer will inform Brewer Water of any new, potential, proposed, or modified cross-connection and also any existing cross-connection which the Customer is aware of but which has not been found by Brewer Water.
- J. The customer will not install a by-pass around any backflow preventer unless there is an approved backflow preventer on the by- pass. Customers who cannot shut down operation for testing must supply the additional devices necessary to allow testing to take place.

### 8. DEGREE OF HAZARD

- A. Brewer Water recognizes the differences in the threat to the public water system arising from different types of connections. These can be classified as follows:
  - i. Class I – Low Degree of Hazard: A pollution hazard, as defined in the Maine State Internal Plumbing Code at 02-395 CMR 4. If backflow were to occur, the resulting health significance would be limited to minor changes in the aesthetic quality such as taste, odor, or color. The foreign substance must be non-toxic and non-bacterial in nature and have no significant health effect.
  - ii. Class 2 – High Degree of Hazard - A contamination hazard, as defined in the Maine State Internal Plumbing Code at 02-395 CMR 4. If backflow were to occur, the resulting effect on the water supply could cause illness or death if consumed by humans. The foreign substance may be toxic to humans either from a chemical, bacteriological or radiological standpoint and the toxicity may result from either long-term or short-term exposure
- B. Example of establishments, their hazard classification, and containment requirements are:

<u>Establishment</u>	<u>Hazard</u>	<u>Containment</u>
Single Family Residential	I	Dual check
Home occupation:		
Office (no chemicals)	I/II	Dual check
Office (chemicals)	II	Double check/RPZ
Beauty shop	II	Double check/RPZ
Animal grooming	II	Double check/RPZ
Food service	II	Double check/RPZ
Dark Room	II	RPZ



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Apt. Building (up to 4 units)	I	Dual check
Apt. Building (5 or more units)	II	Double check
Pools (directly plumbed)	II	Double check/RPZ
Pools (indirectly plumbed)	I/II	Dual/double check
Solar collectors	II	Double check
Commercial food service facility	II	Double check/RPZ
Barber/beauty shops	II	Double check/RPZ
Dry cleaners	II	RPZ
Laundromats without dry cleaning	II	Double check
Laundromats with dry cleaning	II	RPZ
Garage/vehicle and equip. repair	II	RPZ
Gas station (depot type)	I	Dual check
Motels, hotels	II	Double check/RPZ
Office buildings	I/II	Dual/double check
Medical/dental offices	II	Double check/RPZ
Print shop/no development	II	Double check
Print shop/with development	II	RPZ
Florist shop/no plant growth or irrigation	II	Double check
Florist shop/with plant growth or irrigation	II	RPZ
Hospitals	II	RPZ
Veterinary office/kennels	II	RPZ
Mortuaries	II	RPZ
Cemeteries	II	RPZ
Wells	II	RPZ

A State approved backflow prevention device per the requirements of the Current Maine State Internal Plumbing Code 02-395 CMR 4, shall be installed on each domestic water service line to the following types of facilities. The list above is a guideline and should not be construed as being complete. Table 6-2 of Section 6 of the Maine State Internal Plumbing Code specifically lists these devices.

- Dual Check: such as a Watts 7, Hersey BSG, or approved equal
- Double Check: such as a Watts 709S or 007, or approved equal
- RPZ: such as a Watts 909S or 009, Hersey FRP II, or approved equal

**9. MISCELLANEOUS**

- A. Sprinkler policy: Fire services installed after June 30, 1987 having fire department connection(s) must be protected by at least an approved double check such as the Watts 709. Systems containing industrial fluids must be protected with an approved reduced pressure principal device such as the Watts 909. Strainers on fire services are not recommended by Brewer Water.
- B. Wells: Any Customer having a private well or other private water source must have and demonstrate to Brewer Water satisfaction that they are disconnected



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from the alternate source, or a reduced pressure principle backflow device will be required. Permission to cross-connect will be denied by Brewer Water.

- C. Pits: Pit installations are strongly discouraged and those requested after state approval date of this program must meet the Brewer Water's specifications before a permit application will be approved.
- D. Exemptions: Any cross-connection protected against backflow at this time this program goes into effect may continue to that same protection unless;
  - i. The existing program is grossly inadequate.
  - ii. The Department notifies Brewer Water in writing that a change must be made. The exemption will expire when the backflow preventer is replaced, the property changes ownership, or the service is discontinued or otherwise abandoned. The replacement backflow preventer must be that required by the degree of hazard involved.