

## **R. CROSS-CONNECTION CONTROL AND BACKFLOW PREVENTION PROGRAM**

### **1. Purpose**

1. To protect the public potable water supply served by the Rockbridge County Public Service Authority from the possibility of contamination or pollution by isolating, within its customers' internal distribution system, such contaminants or pollutants that could backflow or back-siphon into the public water system.
2. To promote the elimination or control of existing cross-connections, actual or potential, between its customers in-plant potable water system, and non-potable systems.
3. To provide for the maintenance of a continuing program of cross-connection control that will effectively prevent the contamination or pollution of all potable water systems by cross-connection.

### **2. Authority**

1. The Federal Safe Drinking Water Act of 1974, and the statutes of the Commonwealth of Virginia, the water purveyor has the primary responsibility for preventing water from unapproved sources, or any other substances, from entering the public potable water system.
2. Rules and Regulations of the Rockbridge County Public Service Authority, as amended.

### **3. Responsibility**

1. The Executive Director of the Public Service Authority shall be responsible for the protection of the public potable water distribution system from contamination where pollution due to the backflow or back-siphonage of contaminants or pollutants through the water service connection. If, in the judgment of the Executive Director, unapproved backflow devices required at the Authority's water service connection to any customers premises, the executive director or his/her delegated agent, shall give notice in writing to said customer to install an approved backflow prevention device at each service connection to his premises. The customer shall, within 90 days shall install such approved device, or devices, at his own expense, and failure or refusal, or inability on the part of the customer to install sent advice or devices within ninety (90) days, shall constitute a ground for discontinuing water service to the premises until such device or devices have been properly installed.
2. In the event of the backflow of pollution or contamination into the waterworks, the Authority shall promptly take or cause corrective action to confine and eliminate the pollution or contamination. The Authority shall report to the appropriate Commonwealth of Virginia, Department of Health, Office of Water Programs Field Office expeditiously (usually by telephone) when backflow occurs, and shall submit a written report by the 10<sup>th</sup> day of the month following the month during which backflow occurred addressing the incident, its causes, effects, and preventative or control measures required or taken.

### **4. Definitions**

1. Approved—Accepted by the Executive Director as meeting and applicable specification stated or cited in this regulation, or as suitable for the proposed use.
2. Authority—The Rockbridge County Public Service Authority.

3. **Auxiliary Water Supply**—Any water supply, on or available to, the premises other than the purveyors approved public potable water supply.
4. **Backflow**—The reverse flow of non-potable water or other liquids, mixtures, or substance of questionable quality into the waterworks.
5. **Backflow Preventer**—A device or means designed to prevent backflow or backsiphonage. Most commonly categorized as air gap, reduced pressure principle device, double check valve assembly, pressure vacuum breaker, atmospheric vacuum breaker, hose bib vacuum breaker, residential dual check, double check with intermediate atmospheric event, and barometric loop.
  - a. **Air Gap**—A physical separation sufficient to prevent backflow between the free-flowing discharge and of the potable water system and any other system. Physically defined as a distance equal to twice the diameter of the supply side pipe diameter but never less than one (1) inch.
  - b. **Atmospheric Vacuum Breaker**—A device that prevents backsiphonage by creating an atmospheric vent when there is either a negative pressure or subatmospheric pressure in a water system.
  - c. **Barometric Loop**—The fabricated piping arrangement rising at least thirty five (35) feet at its topmost point above the highest fixture it supplies. It is utilized in water supplies systems to protect against backsiphonage.
  - d. **Double Check Valve Assembly**—An assembly of two (2) independently operating spring loaded check valves with tightly closing shutoff valves on each side of the check valves, plus properly located test cocks for the testing of each check valve.
  - e. **Double Check Valve with Intermediate Atmospheric Vent**—A device having two (2) spring loaded check valves separated by an atmospheric vent chamber.
  - f. **Hose Bib Vacuum Breaker**—A device that is permanently attached to a hose bib and that acts as an atmospheric vacuum breaker.
  - g. **Pressure Vacuum Breaker**—the device containing one or two independently operated spring loaded check valves and an independently operated spring loaded air inlet valve located on the discharge side of the check or checks. The device includes tightly closing shut-off valves on each side of the check valves and properly located test cocks for the testing of the check valve(s).
  - h. **Reduced Pressure Principle Backflow Preventer**—An assembly consisting of two (2) independently operating approved check valves with an automatically operating differential relief valve located between the two (2) check valves, tightly closing shut-off valves on each side of the check valves plus properly located test cocks for the testing of the check valves and the relief valve.
  - i. **Residential Dual Check**—An assembly of two (2) spring loaded, independently operating check valves without tightly closing shut-off valves and test cocks. Generally employed immediately downstream of the water meter to act as a containment device.
6. **Backpressure**—A condition in which the owner's system pressure is greater than the supplier's system pressure.

7. Backsiphonage—The flow of water or other liquids, mixtures or substances into the distribution pipes of a potable water supply system from any source other than its intended source caused by the sudden reduction of pressure in the potable water supply system.
8. Board—The Commonwealth of Virginia’s State Board of Health.
9. Containment—A method of backflow prevention that requires a backflow prevention preventer at the water service entrance.
10. Contaminant—A substance that will impair the quality of the water to a degree that it creates a serious health hazard to the public leading to poisoning or the spread of disease.
11. Cross-Connection—Any actual or potential connection between the public water supply and a source of contamination or pollution.
12. Executive Director of the Authority—The Executive Director, or his/her delegated representative in charge of the Authority is invested with the authority and responsibility for the implementation of a cross-connection control program and for the enforcement of the provision of the Policy.
13. Fixture Isolation—A method of backflow prevention in which a backflow preventer is located to correct a cross connection at an in-plant location rather than at a water service entrance.
14. Owner—any person who has legal title to, or license to operate or inhabit, a property upon which a cross-connection inspection is to be made or upon which a cross-connection is present.
15. Person—any individual, partnership, company, public or private corporation, political subdivision or agency or instrumentality of the United States or any other legal entity.
16. Permit—A document issued by the Authority that allows the use of a backflow preventer.
17. Pollutant—A foreign substance that, if permitted to get into the public water system, will degrade its quality so as to constitute a moderate hazard, or impair the usefulness or quality of the water to a degree that does not create an actual hazard to public health but that does adversely and unreasonably affect such water for domestic use.
18. Water Service Entrance—That point in the Owner’s water system beyond the sanitary control of the Authority; generally considered to be the outlet end of the water meter and always before any unprotected branch.

## **5. Administration**

1. The Authority will operate a cross-connection control program, to include the keeping of necessary records that fulfill the requirements of the Board’s Cross-Connection Regulations and is approved by the Board.
2. The Owner shall allow his/her property to be inspected for possible cross-connections and shall follow the provisions of the Authority’s program and the Board’s Regulations if a cross-connection is permitted.
3. If the Authority requires that the public supply be protected by containment, the Owner’s responsibility for cross connection control and backflow prevention begins at the outlet end of the water meter.

Owner may utilize public health officials or personnel from the Authority, or their delegated representatives, to assist in the survey of his/her facilities and to assist him/her in the selection of proper fixture outlet devices, and the proper installation of these devices.

## **6. Requirements**

### 1. Authority

a. On new installations, the Authority will provide on-site evaluation and/or inspection of plans to determine the types of backflow prevention, if any, that will be required other than a double check valve assembly. The owner is responsible for the installation and testing. Testing will be done at installation and annually thereafter by a State Board Certified backflow tester. Tester will test backflow devices and submit a report to the Authority and, if possible, notify the Authority Inspector at the time of testing.

b. For premises existing prior to the start of this program, the Authority will perform evaluations and inspections of plans and/or premises and inform the owner by letter of any corrective action deemed necessary, the method of achieving the correction, and the time allowed for the correction to be made. Ordinarily, ninety (90) days will be allowed; however, this time period may be shortened depending upon the degree of hazard involved and the history of the device(s) in question.

c. The Authority will not allow any cross-connection to remain unless it is protected by an approved backflow preventer for which a permit has been issued and that will be regularly tested to ensure satisfactory operation.

d. The Authority shall inform the Owner by letter, of any failure to comply, by the time of the first re-inspection. The Authority will allow an additional fifteen (15) days for the correction. In the event the Owner fails to comply with the necessary correction by the time of the second re-inspection, the Authority will inform the Owner by letter that the water service to the Owner's premises will be terminated within a period not to exceed five (5) days. In the event that the Owner informs the Authority of extenuating circumstances as to why the correction has not been made, a time extension may be granted by the Authority but in no case will exceed an additional thirty (30) days.

e. If the Authority determines at any time that a serious threat to the public health exists, the water service will be terminated immediately.

f. The Authority shall have on file a list of Private Contractors who are certified backflow device testers. All charges for these tests will be paid by the Owner of the building or property.

g. The Authority will begin initial premise inspections to determine the nature of existing or potential hazards, following the approval of this program by the Board, during the calendar year 2011. Initial focus will be on high hazard industries and commercial premises.

### 2. Owner

a. The Owner shall be responsible for the elimination or protection of all cross-connections on his premises.

- b. The Owner, after having been informed by a letter from the Authority, shall at his expense, install, maintain, and test, or have tested, any and all backflow preventers on his premises.
- c. The Owner shall correct any malfunction of the backflow preventer that is revealed by annual testing.
- d. The Owner shall inform the Authority of any proposed or modified cross-connections and also any existing cross-connections of which the Owner is aware but has not been found by the Authority.
- e. The Owner shall not install a bypass around any backflow preventer unless there is a backflow preventer of the same type on the bypass. Owner who cannot shut down operation for testing of the devices(s) must supply additional devices necessary to allow testing to take place.
- f. The Owner shall install only backflow preventers approved by the Authority.
- g. In the event the Owner installs plumbing to provide potable water for domestic purposes that is on the Authority's side of the backflow preventer, such plumbing must have its own backflow preventer installed.
- h. The Owner shall be responsible for the payment of all fees for annual or semi-annual device testing, retesting in the case that the device fails to operate correctly, and second re-inspections due to non-compliance with Authority requirements.

## **7. Degree of Hazard**

The Authority recognizes the threat to the public water system arising from cross-connections. All threats will be classified by degree of hazard and will require the installation of approved reduced pressure principle backflow prevention devices or double check valves.

## **8. Existing in-Use Backflow Prevention Devices**

Any existing backflow preventer shall be allowed by the Authority to continue in service unless the degree of hazard is such as to supersede the effectiveness of the present backflow preventer, or result in an unreasonable risk to the public health. Where the degree of hazard has increased, as in the case of a residential installation converting to a business establishment, any pressure principle device, or a reduced pressure principle device, must be installed in the event that no backflow device was present.

## **9. Testing**

1. Reduced pressure principle backflow devices shall be tested and inspected annually.
2. Annual testing shall be performed by a State Certified Tester or his delegated representative. This testing will be done at the Owner's expense.
3. Any backflow preventer that fails during the annual test will be repaired or replaced. When repairs are necessary, upon completion of the repair the device will be re-tested at Owner's expense to ensure correct operation. High hazard situations will not be allowed to continue unprotected if the backflow preventer fails the test and cannot be repaired immediately. In other situations, a compliance date of not more than thirty (30) days after the test date will be established. The Owner is responsible for spare parts, repair tools or a replacement device. Parallel installation of two (2) devices is an effective means of the Owner ensuring that

uninterrupted water service during testing or repair of devices and is strongly recommended when the Owner desires such continuity.

4. Backflow prevention devices will be tested more frequently than specified in 1. above in cases where there is a history of test failures and the Authority feels that, due to the degree of hazard involved, additional testing is warranted. Cost of the additional tests will be borne by the Owner.

## **10. Records and Reports**

### 1. Records

The Authority will initiate and maintain the following:

1. Master files on customer cross-connection tests and/or inspections.
2. Master files on cross-connection permits.
3. Copies of permits and permit applications.
4. Copies of lists and summaries supplied to the Board.

### 2. Reports

The Authority will submit the following to the Board:

1. Initial listing of low hazard cross-connections.
2. Initial listing of high hazard cross-connections.
3. Annual update lists of items 1 and 2 above.
4. Annual summary of cross-connection inspections.

## **Addendum**

### Strainers

The Authority strongly recommends that all new retrofit installations of reduced pressure principle devices and double check valve backflow preventers include the installation of strainers located immediately upstream of the backflow device. The installation of strainers will preclude the fouling of backflow devices due to both foreseen and unforeseen circumstances occurring to the water supply system such as water main repairs, water main breaks, fires, periodic cleaning and flushing of mains, etc. These occurrences may “stir up” debris within the water main that will cause fouling of backflow devices installed without the benefit of strainers.