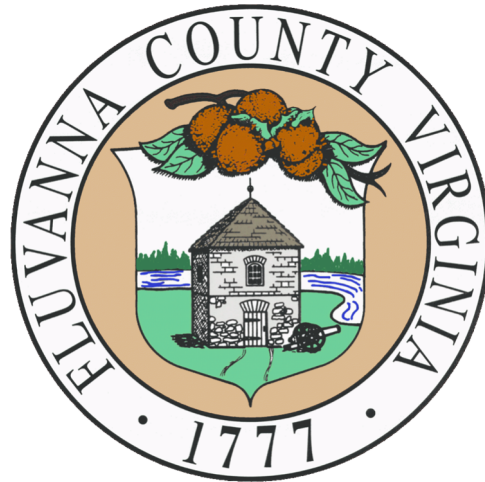


FLUVANNA COUNTY ZION CROSSROADS COMMUNITY WATERWORKS
CROSS-CONNECTION CONTROL AND
BACKFLOW PREVENTION PROGRAM MANUAL



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SECTION 1: INTRODUCTION

The Fluvanna County Zion Crossroads Community Waterworks (FCCCW) consists of 5 miles of water line, a booster station and elevated storage tank, which is operated and maintained by Fluvanna County (County) and its Department of Public Works (PWD) operations staff. Fluvanna County is committed to the enforcement and management of the Cross-Connection Control and Backflow Prevention Program to ensure adequate water quality is maintained in accordance with state and federal regulations. This plan seeks to define the various aspects of the program and provide guidance for its implementation.

SECTION 2: OVERVIEW

2.1 Purpose of the Program

The County establishes this cross connection control program (CCCP) in accordance with Virginia Department of Health (VDH) Waterworks Regulations, see 12 Virginia Administrative Code (VAC) 5-590-10 et. seq. (Waterworks Regulations). The purpose of this CCCP and backflow prevention program is to comply with Virginia Department of Health regulations (12 VAC 5-590-360, 580, 600, 610 and 630) which specifically governs the protection of public water supplies from contamination. This Program seeks to abate or control actual or potential cross connections and protect the public health while establishing standard measures defining acceptable backflow prevention assemblies, backflow elimination methods, and backflow prevention devices (together, BFPs, and each referred to as a BFP) and their installation and maintenance. This Program provides for establishment and enforcement of a program of cross connection control and backflow prevention in accordance with the Waterworks Regulations 2021, or as amended. This Program is directed at:

- A. *Service line containment:*
Prevent the intrusion of contamination into the distribution system via cross-connections and backflow. Abate or control actual or potential cross connections and protect the public health by installation of an appropriate backflow prevention assembly or by installation of a backflow elimination method, at the service connection. See 12 VAC 5-590-580(A).
- B. *Voluntary isolation in lieu of containment:*
Evaluate the alternative of point-of-use isolation protection in lieu of service line containment at each premise where containment is required.
- C. *Public education and assistance:*
Provide a cross connection awareness public education program and provide public assistance where requested.
- D. *Premise owner/occupant awareness:*
Advise those affected that service line containment does not provide protection from cross connections in the internal service plumbing of a building.
- E. *PWD Approval of Cross-connections:*
PWD and VDH must ensure the cross-connections are adequately safeguarded, and no property owner shall install, maintain, or allow a service connection to any premises where cross-connections to a waterworks or a consumer's water system exist, unless the property owner gets PWD and VDH approval as applicable hereunder. See 12 VAC 5-590-580(B).
- F. *PWD Approval of Auxiliary Water System:*
No property owner shall install, maintain, or allow any connection whereby water from an auxiliary water system may enter a waterworks or consumer's water system, unless PWD and VDH approve the auxiliary water system, the method of connection, and use of such system. See 12 VAC 5-590-580(C).
- G. *Maintain Acceptable Working Pressures:*

A goal of the CCCP is to allow the PWD, in accordance with 12VAC5-590-510(C), to maintain acceptable working pressures in the distribution system to reduce the potential for backflow to occur. See 12 VAC 5-590-580(D).

2.2 Authority for Program

The EPA has the authority and responsibility under the Safe Drinking Water Act 42 U.S.C. §300f et seq. (1974), over all public health aspects of the drinking water supply. In Virginia, primacy has been granted to the VDH to regulate public water supplies and the Fluvanna County Code, Chapter 21, Article II, Division 5, Cross-Connection Control; Backflow Prevention, being Sections 21-2-101 through 21-2-111, provides confirmation of this authority.

Fluvanna County Code Chapter 21, Sec. 21-2-102. - State regulations adopted.

The Board of Supervisors hereby adopts by reference the regulations of VDH, 12 VAC 5-590-10 et seq. regarding waterworks including the Waterworks Regulations. Specifically, the Board of Supervisors hereby adopts by reference Section 580, 600, 610 and 630, regarding cross-connection control and backflow prevention in waterworks, of the state Waterworks Regulations, as it may be amended from time to time, or applicable successor provisions. The provisions of this Article II, Division 5, shall apply to the Fork Union Sanitary District as well as to all other County waterworks. (Ord. -22)

Commonwealth of Virginia, Department of Health, Waterworks Regulations, Cross Connection Control and Backflow Prevention in Waterworks requires as a condition for the issuance and continued use of the operation permit for any Waterworks, that the owner of the waterworks establish and enforce a program of cross connection control and backflow prevention. This cross-connection control and backflow prevention program is approved by the VDH as noted by the affixed approval stamp.

2.3 Administration

This program is carried out in accordance with the VDH Waterworks Regulations (12 VAC 5-590-10 et seq.). Fluvanna County Code provides administrative authority and responsibilities for the Fluvanna County cross-connection control and backflow prevention program. The County Administrator, or his designee, is responsible for the implementation of the program and has established this program to be consistent with current regulations. Responsibility for administering this program will be assigned to at least one individual and other staff members as needed, who shall have training and experience in cross-connection control programs.

2.4 Responsibilities

Effective cross connection control and backflow prevention requires the cooperation of the County, the owner(s) of the property served, the Local Building Official, and the certified Backflow Prevention Device Worker. These roles and responsibilities include, but are not limited to, the following:

2.4.1 Fluvanna County (County):

1. PWD has full responsibility for water quality and for the construction, maintenance, and operation of the waterworks beginning at the point of supply and ending at the service connection.

2. PWD shall ensure complete assessments of every consumer's water system and shall determine both the degree of hazard and the appropriateness of existing safeguards to prevent contamination from cross-connections and backflow.
3. PWD shall confirm proper installation of backflow prevention assemblies or backflow elimination methods (i) at the service connection or (ii) downstream of the service connection but before any unprotected takeoffs. VDH approval is also required if so stated in the Waterworks Regulations. PWD shall require annual inspections and operational tests of BFP devices which are installed at or near the service connection.
4. In the event of backflow of pollution or contamination into the waterworks, PWD shall promptly take or cause corrective action to confine and eliminate the pollution or contamination.
5. PWD shall provide a method to discontinue or refuse water service to the consumer to ensure that the waterworks is adequately protected from cross-connections and backflow if any of the following conditions occur:
 - a. the consumer does not install, test and maintain a required backflow prevention assembly or backflow elimination method in accordance with the applicable sections of this chapter;
 - b. the consumer allows a required backflow prevention assembly or backflow elimination method to become inoperable or the consumer removes or bypasses it; or
 - c. the PWD knows an unprotected or inadequately protected cross-connection exists on the premises and determines that there is inadequate backflow prevention at the service connection.
6. In the event of backflow of contaminants into the waterworks, PWD shall promptly take or cause corrective action to confine and eliminate the contamination – normally PWD will notify the property owner of corrective action that must be taken by the property owner. PWD shall report the event to VDH within one (1) business day in the most expeditious manner. PWD shall submit a written report by the 10th day of the month following the month during which backflow occurred addressing the incident, its causes and effects, and safeguards required or other action taken.
7. This CCCP shall not be in conflict with the Uniform Statewide Building Code (USBC) and applicable building code regulations, including 13VAC5-63 or subsequent regulations promulgated by the Board of Housing and Community Development. Property owners must comply with USBC.
8. PWD shall, to the extent of their jurisdiction, provide continuing identification and evaluation of all industrial and commercial users connected to the County owned potable water systems to ensure all required BFP devices have been installed and maintained. This process will be designed to identify all new, modified and existing facilities that require the installation of BFP devices.
9. The Fluvanna County Building Inspection Office (BI) is responsible for review of plans for new and modified facilities and inspection of associated backflow devices in accordance with the Virginia Uniform Statewide Building Code. The BI will route all new plans for service connections and fire service connections, lawn sprinklers or irrigation systems and backflow prevention recommendations beyond the service connection to PWD for review and comment.

10. PWD shall ensure installation of backflow prevention assemblies or backflow elimination methods (i) at the service connection or (ii) downstream of the service connection but before any unprotected takeoffs.
11. The County shall review the cross-connection control and backflow prevention program not less than every five years and update it as necessary to satisfy the requirements of the Waterworks Regulations. The County shall submit updates to the VDH for approval.

2.4.2 Owner/Consumer:

1. PWD requires that each property owner perform routine and as-needed testing, maintenance, and repairs of all backflow prevention assemblies, backflow elimination methods, and backflow prevention devices required and installed pursuant to 12 VAC 5-590-610. 13 VAC 5-63-530, which incorporates the International Property Maintenance Code into the USBC, requires testing of RPZ assemblies, double check valve assemblies, double check detector backflow assemblies, and pressure vacuum breaker assemblies after initial installation, immediately after repairs or relocation, and annually thereafter. Property Owner shall complete and monitor operational tests, or other evaluation procedures as appropriate and as required by PWD, however such shall be completed at least annually, and after installation, relocation, or repairs, for testable backflow prevention assemblies, devices, and methods that provide containment.
2. PWD shall maintain an inventory and records of testing, repairs, and maintenance of all backflow prevention assemblies, backflow elimination methods, and backflow prevention devices required and installed under 12 VAC 5-590-610(C) or (E) and property owners are required to submit any relevant records related thereto to PWD at least annually. Inspections must be in accordance with 12 VAC 5-590-600(E),
3. PWD shall maintain an inventory and records of testing, repairs, and maintenance of all backflow prevention assemblies, backflow elimination methods, and backflow prevention devices required and installed under 12 VAC 5-590-610(C) and (E) and property owners are required to submit any relevant records related thereto to PWD at least annually.
4. PWD shall maintain records related to the CCCP implementation, and any other records VDH requires in accordance with 12 VAC 5-590-550 and property owners are required to submit any relevant records related thereto to PWD at least annually.
5. Pursuant to 12 VAC 5-590-610 and 12 VAC 5-590-630, any plans for a new BFPs or revised plans for any modification to BFPs must be approved by the PWD and the Building Inspector. The property owner's responsibility starts at the water service connection from the public potable water system and includes all of his water systems. The property owner, at his own expense, will install, operate, test and maintain approved BFPs. Installations shall be conducted by a Commonwealth of Virginia certified backflow prevention device worker.
6. The property owner is required to have a Commonwealth of Virginia certified backflow prevention device worker test all BFPs. In addition, the property owner shall submit all required reports to the PWD for review and approval, and to the BI if applicable or otherwise required.

7. Approved BFPs shall be installed at each service connection to a consumer's water system where, based on Virginia Waterworks Regulations, a health, pollution, or system hazard to the waterworks may exist. BFPs will be installed at both new and existing connections where a hazard is known to exist.

SECTION 3: PROCEDURES FOR NEW AND EXISTING FACILITIES

In addition to review by the PWD and by VDH as applicable, all new installations of BFPs will be inspected by the Fluvanna County Building Inspections Office (BI) along with modified facilities identified by the BI. All operational tests of backflow prevention devices which are identified as being required hereunder or under the Waterworks Regulations shall be made annually by a Commonwealth of Virginia certified backflow prevention device worker. During the inspection, existing BFPs will be inspected to determine if they have been altered or the protection afforded by it has been bypassed, or otherwise made ineffective. Devices shall be tested in accordance with the manufacturer's instructions and the Uniform Statewide Building Code and shall be maintained, repaired, overhauled, or replaced by the property Owner at the property owner's sole cost and expense and at no cost to the County. Once repaired or replaced the device must be tested and certified to verify satisfactory operation. Test results will be cross-referenced against a list of installed devices; failure to provide satisfactory test results may lead to termination of service. Property owners are responsible for their BFPs.

Starting January 1, 2023, persons testing and repairing backflow prevention assemblies and backflow prevention devices shall be certified by a Commonwealth of Virginia tradesman certification program (identified by DPOR as backflow prevention device workers). Until January 1, 2023, persons testing and repairing backflow prevention assemblies and backflow prevention devices shall be qualified to perform such work as demonstrated by possessing a certification or license from a local or state agency having legal authority or shall possess a certificate of completion of applicable vocational training acceptable to PWD. See

All new and revised construction plans and specifications for industrial, commercial and institutional facilities shall be reviewed by the BI and PWD to determine the degree of possible cross connection hazard.

Upon review, backflow prevention requirements will be determined in accordance with this program. Final plans and specifications for cross connection control for all new construction shall be submitted for review prior to approval for construction.

Notwithstanding the foregoing, nothing in this policy is intended to limit or shall be read to limit, waive or restrict any review or requirement of the BI, the Department of Community Development or Zoning, the Zoning Administrator, the USBC, the County or any other applicable law, policy, regulation, rule, code or similar requirement of Fluvanna County, the Commonwealth of Virginia or the United States.

3.1 Procedure for New Construction and Associated Plan Review (Recommended Process)

1. Commercial/Industrial entity submits applications and plans to the Fluvanna County Community Development Department (PD) as part of the development review process.
2. Plans are distributed by the PD to all review agencies, including Building Inspections Office (BI) and PWD.

3. All agencies, including PWD, review plans for conformity to jurisdictional codes, including Virginia Department of Health regulations and Fluvanna County Cross Connection and Backflow Prevention Ordinance requirements.
4. During the site plan review process, PWD determines whether the proposed facility warrants BFP device based on regulatory requirements and/or hazard.
5. If a BFP is not required, no further action is warranted. If a BFP is required, applicable comments are generated and forwarded to the developer agent. (Note: Site plans must indicate type, size and location of proposed BFP device).
6. Upon final site plan approval, site is developed, and new facility is constructed.
7. During construction process, the property owner/contractor applies for Building Permit from BI to install a BFP device if required.
8. Building permit application is routed to PWD.
9. BI issues Building Permit and BFP device is installed.
10. The County's BFP Certification Form must be received and approved by PWD from certified backflow prevention device worker. BI will not perform inspection under the County's Building Permit until PWD receives and approves BFP Certification Form.
11. Once BFP Certification Form is received by PWD, PWD will notify the BI so that the BI can proceed with the inspection. BI then verifies that BFP device is installed correctly, and a Certificate of Occupancy (CO) is issued.
12. A Hard copy of BFP Certification Form is filed in an individual facility file.
13. The New BFP is added to the cross-connection database.
14. All cross-connection records are to be maintained for at least 10 years.

3.2 Procedures for Existing Facilities Needing Backflow Prevention Devices (Recommended Process)

This procedure is to be used for existing facilities that may require BFP devices (i.e. all facilities that are not considered new construction).

1. BI receives a building permit for a facility upgrade.
2. Building permit is routed to PWD.
3. PWD reviews the permit application and decides whether a BFP device is required.
4. BI issues Building Permit and BFP device is installed.
5. BFP Certification Form must be received and approved by PWD from certified backflow prevention device worker. BI will not perform inspection under the County's building Permit until PWD receives BFP Certification Form.

6. Once the BFP Certification Form is received by PWD, PWD will notify the BI so that the BI can proceed with inspection. BI then verifies that BFP device is installed correctly.
7. A Hard copy of BFP Certification Form is filed in individual facility files.
8. The New BFP is added to the cross-connection database.
9. All cross-connection records are to be maintained for 10 years.

SECTION 4: FACILITIES REQUIRING BACK FLOW PREVENTION DEVICES AND APPROVED DEVICE TYPES

The State of Virginia Waterworks regulations state that a BFP device shall be installed as required by the 12VAC5-590-610 and all other applicable law. A backflow prevention assembly or backflow elimination method shall be installed where the following condition(s) exist:

1. A substance is handled in such a manner as to create an actual or potential hazard to a waterworks (this shall include premises having sources or systems containing process fluids or waters originating from a waterworks which are no longer under the control of the owner);
2. There exists internal cross-connections that, in the judgment of PWD or VDH, may not be easily correctable or have intricate or complex plumbing arrangements that make it impracticable to determine whether or not cross-connections exist;
3. There are security requirements or other prohibitions or restrictions that prevent the assessment of all potential cross-connections that may impair the quality of the water delivered;
4. There is a repeated history of cross-connections being established or reestablished;
5. There are fire protection systems, lawn sprinkler systems, or irrigation systems; and
6. PWD or VDH can show that a potential cross-connection hazard exists.

Premises having booster pumps or fire pumps connected to the waterworks shall be equipped by the consumer with control devices to prevent a reduction of pump suction line pressure to less than 20 psig.

In addition, a backflow prevention assembly or backflow elimination method shall be installed at consumer water systems serving the following types of facilities, including:

Table 4-1. List of facilities requiring a backflow prevention assembly or backflow elimination method

No.	Facility List
1	Hospitals, mortuaries, clinics, veterinary establishments, nursing homes, medical buildings
2	Laboratories
3	Piers, decks, and waterfront facilities
4	Sewage treatment plants, sewage pumping stations or storm water pumping stations
5	Food and beverage processing plants
6	Chemical plants, dyeing plants and pharmaceutical plants
7	Metal plating industries
8	Petroleum or natural-gas processing or storage plants
9	Radioactive materials processing plants or nuclear reactors
10	Car washes and laundries
11	Buildings with commercial, industrial, or institutional occupants served through a master meter
12	Water loading facilities
13	Slaughter houses and poultry processing plants
14	Farms where the water is used for other than household purposes
15	Commercial greenhouses and nurseries
16	Health clubs with swimming pools, therapeutic baths, hot tubs, or saunas
17	Paper and paper-product plants and printing plants
18	Pesticide or exterminating companies and their vehicles with storage or mixing tanks

No.	Facility List
19	Facilities that blend, store, package, transport, or treat chemicals, and their related vehicles
20	Schools or colleges with laboratory facilities
21	High-rise buildings (four or more stories)
22	Multiuse commercial, office, or warehouse facilities
23	Others specified by PWD or VDH when reasonable cause can be shown for a potential backflow or cross connection hazard which shall include the following: (i) lawn sprinkler systems and irrigation systems with or without backpressure potential; and (ii) fire service systems

All temporary or emergency service connections shall be protected where reasonable cause can be shown for a potential backflow or cross-connection hazard. Backflow prevention assemblies or backflow elimination methods used shall be appropriately certified or approved to match the requirements 12 VAC 5-590-610.

NOTE: All devices shall conform with the applicable American Water Works Association (AWWA), American National Standards Institute (ANSI), and the American Society of Sanitary Engineers (ASSE) standards as set forth by the

The ASSE International Office maintains a list of Seal Authorizations for approved devices. This can be obtained by contacting ASSE at:

ASSE International Office
18927 Hickory Creek Drive, Suite 220Mokena, IL 60448
Phone: 708-995-3019 Website: www.asse-plumbing.org
Email: info@asse-plumbing.org

4.1 Approved Device Types

The devices required shall be of the approved type and shall comply with the Uniform Statewide Building Code, pursuant to the Virginia Waterworks Regulations, with specific reference to 12 VAC 5-590-630 and other applicable law. The backflow prevention assembly or backflow elimination method or device used shall depend on the degree of hazard that exists or may exist, either high or low. The safeguard shall ensure maintenance of the distribution system water quality and its usefulness. The following table shall be used as a guide to determine the degree of hazard for any situation.

Table 4.1 Determination of Degree of Hazard (Table 630.1 from the Waterworks Regulations)

Cross-connections that meet or may meet the following conditions shall be rated at the corresponding degree of hazard.

High Hazard	Low Hazard
The contaminant would be toxic, poisonous, noxious, unhealthy, or of unknown quality.	The contaminant would only degrade the quality of the water aesthetically or impair the usefulness of the water.
A health hazard would exist.	A health hazard would not exist.
The contaminant would disrupt the service of piped water for human consumption.	The contaminant would not disrupt service of piped water for human consumption.
Backflow would be by either backpressure or backsiphonage.	Backflow would occur by backsiphonage.
Examples: lawn irrigation systems, fire sprinkler systems with chemical additives or antifreeze,	Examples: food residuals, coffee machines, non-carbonated beverage dispensers, and residential

sewage, used water, nonpotable water, auxiliary water systems, and mixtures of water and other liquids, gases, or other chemicals.	fire sprinkler systems constructed of materials designed for potable water flow.
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SECTION 5: OTHER CROSS CONNECTION CONCERNS

5.1 Private Wells

Private wells serving individual homes or businesses shall not be interconnected to the County's water system. Auxiliary water systems (e.g. Aqua Virginia) and the method of connection and use of such system shall be approved by PWD and properly protected with BFPs. The County requires that any such system enter into a contract with the County which includes cross connection protection.

5.2 Exterminating Companies

All tanks, tank trucks, and spraying apparatus used to convey pesticides in an exterminating process are required to fill with potable water from a consumer water system properly outfitted with BFPs..

5.3 Rental Water Meters

Any equipment such as tank trucks, which are filled using a rental water meter shall be properly equipped with the necessary BFPs to prevent contamination of the public potable water system from backflow or backsiphonage.

5.4 Fire Systems

Any device, equipment, or situation not covered by this cross-connection program where water is connected or used, which may constitute a potential health hazard will be handled at the discretion of the Director of PWD or his designee (director). Fire Protection systems require the installation of BFPs and must be evaluated by the PWD to determine the type of backflow preventions required. For this reason, the PWD shall review fire system plans prior to installation.

NOTE: Any device, equipment, or situation not covered by this cross-connection program where water is connected or used, which may constitute a potential health hazard will be handled at the discretion of PWD or as required by applicable law.

SECTION 6: NOTIFICATION AND INSPECTION

Every PWD required BFP device must be tested and certified annually at the property owners expense. Inspection and certification are to be conducted by a certified backflow prevention worker (other certifications are NOT acceptable). Starting January 1, 2023, persons testing and repairing backflow prevention assemblies and backflow prevention devices shall be certified by a Commonwealth of Virginia tradesman certification program (identified by DPOR as backflow prevention device workers). Until January 1, 2023, persons testing and repairing backflow prevention assemblies and backflow prevention devices shall be qualified to perform such work as demonstrated by possessing a certification or license from a local or state agency having legal authority or shall possess a certificate of completion of applicable vocational training acceptable to PWD. Following is the PWD procedure for administering certifications. (Appendix B)

6.1 Notification to Customer

6.1.1 Start of Mailings

Before the 25th of each month or thirty-five (35) days before the previous certification *Anniversary Date* a courtesy letter is mailed to the customer. This letter is considered the **First Notice**. With this letter the County enclose a current copy of the County's Backflow Inspection Certification form. This *First Notice* lists the *Anniversary Date* as the *Due Date* for return receipt of the County's Backflow Inspection Certification form noting a passing test and inspection of the installed backflow prevention device. This form certifies that the device is operating in accordance with the manufacturer's specifications. As an example: a *First Notice* mailed January 25 would have a *Due Date* of March 1.

6.1.2 Notices Not Returned

If the County's Backflow Inspection Certification form is not received by the *Due Date* a courtesy phone call is made to the customer to inquire on the status of the inspection certification. A **Second Notice** is mailed to the customer fifteen (15) days after the *Due Date* if the Backflow Inspection Certification form had still not been received. The *Second Notice Due Date* is ten (10) days after the mailing date. As an example: a *Second Notice* mailed March 16 would have a *Due Date* of March 27.

If the County's Backflow Inspection Certification form is not received by the *Second Notice Due Date* courtesy phone call is made to the customer to inquire on the status of the inspection certification. The **Third Notice** is mailed to the customer fifteen (15) days after the *Second Notice Due Date* if the Backflow Inspection Certification form had still not been received. The *Third Notice Disconnect Date* is set at ten (10) days after the mailing date. As an example; a *Third Notice* not received on March 27 would be mailed out April 11 and have a *Disconnect Date* of April 26.

6.1.3 Device Failure

If the County's Backflow Inspection Certification form is received indicating *Device Failure*, a courtesy call is made to determine the customer's situation. Follow up communication is continued until an acceptable certification is received. Device Failure cases are handled on a case by case basis and may result in disconnection from the system. During ongoing communication with the customer, a "grace" period will be allowed to give the customer time to correct the problem so as not to penalize them. The goal is to allow a reasonable amount of time to correct the problem. Customers that are unresponsive to corrective action through verbal communication will be sent a *Disconnection Notice*. Disconnection Notices will detail the

history of County's effort to bring them into compliance along with a specific water "cut-off." If the customer is still unresponsive water will be shut off at the prescribed date (10 days from receipt of letter) and not turned back on until an acceptable certification has been received.

6.2 Inspection of Devices and Reporting Requirements

Upon the completion of testing of device, the certified backflow prevention worker shall submit to PWD the approved form outlining testing results and signify whether the device has *passed* or *failed*. The form shall be completed and include all information including the name of contact, site address, size of device, serial number, location of device and device type. Only the PWD Backflow/Cross-Connection form shall be utilized for testing (Appendix B).

6.3 Violations

Fluvanna County code dictates that violations of the County's cross connection program are a misdemeanor, see Fluvanna County Code Chapter 1-10 and Chapter 21 including, but not limited to Section 21-1-2.

SECTION 7: RECORD KEEPING

7.1 Database Management

PWD shall maintain all records required by the Waterworks Regulations included specifically, but without limitation, the following:

1. PWD shall maintain an inventory and records of testing, repairs, and maintenance of all backflow prevention assemblies, backflow elimination methods, and backflow prevention devices required and installed under 12 VAC 5-590-610(C). In the case of single-family residences subject to 12VAC5-590-610(C)(5), the PWD may determine whether or not to maintain an inventory or records. VDH recommends the PWD follow best practices identified in the AWWA Manual of Water Supply Practices M14 and the EPA Cross Connection Control Manual. I.
2. PWD shall maintain an inventory and records of testing, repairs, and maintenance of all backflow prevention assemblies, backflow elimination methods, and backflow prevention devices required and installed under 12 VAC 5-590-610(C) and (E).
3. PWD shall maintain records related to the CCCP implementation, and any other records VDH requires in accordance with 12 VAC 5-590-550.

PWD uses a Microsoft Excel spreadsheet as a database to maintain an inventory and records of testing, repairs, and maintenance of all backflow prevention devices, backflow prevention assemblies, backflow elimination methods and customer information. The spreadsheet is updated as needed and provides information on all customers with backflow devices and the status of those devices.

Since backflow devices require annual inspection; the spreadsheet uses the *Anniversary Date* of the customer's backflow device annual inspection to establish due dates and mailing times. All Anniversary Dates are rounded back to the 1st of the inspection month. *Due Dates* are rounded forward to the next business day.

The Microsoft Excel spreadsheet contains the following information as a minimum:

- Business Name
- Address
- Contract Person(s)
- Phone Number(s)
- Backflow Device Type, Size, Model & Serial Number
- Location of Device on Site
- Property Owner's Name and Address (often different from resident business)
- Anniversary Date
- Current Status of Inspection Pass or Fail
- Dates of 1st, 2nd, 3rd and Disconnection Notices
- Date of Disconnection
- Date of device inspection

7.2 Record Storage

Upon receipt of the customer's Backflow Inspection Certification form, the form is reviewed for accuracy and the spreadsheet updated. This Microsoft Excel spreadsheet and all hard copy records of passed and failed devices are kept in our central file for ten (10) years or longer if specifically required by the Waterworks Regulations. Spreadsheet and all associated digital information will be maintained by the PWD and never discarded.

SECTION 8: REPORTING AND INCIDENT RESPONSE

Any time an incident occurs involving water contamination because of possible backflow, or a situation is discovered that has the potential for backflow, it will be handled on a case by case basis. Due to the potential impacts of an intentional contamination event and the emergency response that would follow, this section only deals with those incidents where backflow potential exists or is suspected of existing, where backflow has occurred unbeknownst to the facility owner or operator, or due to unintentional contamination of the water system.

If an incident is discovered that has the potential to represent an intentional contamination event, the County will respond to that event according to the Emergency Operations Plan, adopted February 15, 2017, revised February 3, 2021. Following the identification of the event, with the assistance of local law enforcement, the County will conduct a threat evaluation following EPA protocols to determine if the event is “Possible”, “Credible” and “Confirmed”. Once it is determined that the event is not an intentional malicious act, the reporting and incident response shall proceed as suspected backflow violation.

Since each type of incident will be unique, they will be handled on a case by case basis. At a minimum, these steps should be followed to determine the nature of event, the degree of hazard and corrective actions.

1. Locate and investigate the source of contamination or potential contamination. Be sure to obtain all relevant facts and information about the customer, the nature of the business and potential contaminants.
2. Dispatch field operations personnel to conduct water analysis to determine if contamination has occurred and what type of contamination.
3. If contamination is confirmed, determine the extent of the contamination through system sampling and attempt to isolate that portion of the distribution system to minimize the spread of the contaminant.
4. Once confirmation of contamination is received, notify local agencies and state regulatory offices in a timely manner and prepare for public notification, as needed. These agencies include, but are not limited to Virginia Department of Health (VDH), local health officials, County Administration and the County Public Information Officer. In addition, direct notification of impacted high volume or sensitive customers may be required.
5. Establish corrective action plan to clean the contamination from the distribution system and consult VDH and Virginia Department of Environmental Quality prior to action.
6. Regularly update local and state agencies and affected customers.
7. Restore service to isolated customers once all contamination related problems have been corrected.
8. Notify all affected customers, local and state agencies.

If no contamination has occurred, but the potential exists, the customer is screened to determine the type and degree of hazard and added to the database of customers requiring backflow prevention devices. The customer is notified of the requirement and the situation is corrected following the standard procedures.

SECTION 9: CONSUMER EDUCATION

Public awareness is an important part of protecting the County's water system and educating customers of the potential dangers of cross connections.

9.1 Public Education

The cross-connection control and backflow prevention public education requirements shall include:

1. A discussion of the causes of backflow
2. Hazards and health effects of cross connections and backflow
3. Public education materials and methods of delivery
4. Media outlets used, and content of materials used
5. Guidance/resources to identify actual or potential cross connections
6. Safeguards to control or eliminate the hazards at the point-of-use
7. Sources for additional information

9.2 PWD Responsibilities

Accordingly, PWD will incorporate the following:

9.2.1 Building Inspections Office (BI)

The Building Inspections Office is the front line when it comes to cross connection control as it is the building inspector's responsibility to enforce all Virginia Uniform Statewide Building codes. There is also an important educational component to their duties during the construction or retrofit process. During this process BI personnel should make every effort to educate the community and builders as to the dangers of cross connections.

9.2.2 Public Works Department (PWD)

PWD is responsible for protecting the County's public water supply. In effort to keep the public informed a brochure can be included the billing insert.

APPENDIX A: FLUVANNA COUNTY CODE

**APPENDIX A: FLUVANNA COUNTY CODE – Chapter 21, Article II,
Division 5 – Cross-Connection Control; Backflow Prevention**

CHAPTER 21 WATER AND SEWER DISPOSAL

ARTICLE II. WATER

DIVISION 5. CROSS-CONNECTION CONTROL; BACKFLOW PREVENTION

Sec. 21-2-101. Definitions.

The following words, terms and phrases, when used in this division, shall have the meanings ascribed to them in this Division 5, except where the context clearly indicates a different meaning:

Air gap separation means the unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet supplying pure water to a tank, plumbing fixture or other device and the rim of the receptacle.

Approved means accepted by the Director as meeting an applicable specification stated or cited in this Article or other applicable law, or as suitable for the proposed use.

Atmospheric vacuum breaker means a device which prevents backsiphonage by creating an atmospheric vent when there is either a negative pressure or subatmospheric pressure in a water system.

Auxiliary water system means any water system on or available to the premises other than the waterworks. These auxiliary waters may include water from another purveyor's waterworks; or water from a source such as wells, lakes, or streams; or process fluids; or used water. They may be polluted or contaminated or objectionable, or constitute a water source or system over which the water purveyor does not have control.

Backflow means the flow of contaminants, pollutants, process fluids, used water, untreated waters, chemicals, gases, nonpotable waters into any part of a waterworks.

Backflow prevention device means any approved device, method or type of construction intended to prevent backflow into a waterworks.

Backsiphonage means 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.

Barometric Loop means a 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 supply systems to protect against backsiphonage.

Consumer means any person who drinks water from a waterworks

Consumer's water system means any water system located on the consumer's premises, supplied by or in any manner connected to a waterworks.

Contamination means any introduction into pure water of microorganisms, wastes, wastewater, undesirable chemicals or gases.

Cross-connection means any connection or structural arrangement, direct or indirect, to the waterworks whereby backflow can occur.

Degree of hazard means an evaluation of the potential risk to health and the adverse effect upon the waterworks.

Double gate-double check valve assembly means an approved assembly composed of two (2) single, independently acting check valves including tightly closing shutoff valves located at each end of the assembly and petcocks and test gauges for testing the watertightness of each check valve.

Health hazard means any condition, device or practice in a waterworks or its operation that creates, or may create, a danger to the health and well-being of the water consumer.

Interchangeable connection means an arrangement or device that will allow alternate but not simultaneous use of two sources of water.

Owner means any Person who has legal title to, license to operate, or license to inhabit, a property upon which a backflow preventer is required.

Pollution means the presence of any foreign substance (chemical, physical, radiological or biological) in water that tends to degrade its quality so as to constitute an unnecessary risk or impair the usefulness of the water.

Pollution hazard means a condition through which an aesthetically objectionable or degrading material may enter the waterworks or a consumer's water system.

Pressure vacuum breaker: A 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).

Process fluid means any fluid or solution which may be chemically, biologically or otherwise contaminated or polluted which could constitute a health, pollution or system hazard if introduced into the waterworks. This includes, but is not limited to:

- (1) Polluted or contaminated waters;
- (2) Process waters;
- (3) Used waters originating from the waterworks which may have deteriorated in sanitary quality;

-
- (4) Cooling waters;
 - (5) Contaminated natural waters taken from wells, lakes, streams or irrigation systems;
 - (6) Chemicals in solution or suspension; and
 - (7) Oils, gases, acids, alkalis, and other liquid and gaseous fluids used in industrial or other processes, or for firefighting purposes.

Program means this Chapter 21, Article II, Division 5 together with the County's Cross-Connection Control and Backflow Prevention Program Manual.

Pure water or Potable Water means water fit for human consumption that is sanitary and normally free of minerals, organic substances and toxic agents in excess of reasonable amounts and adequate in quantity and quality for the minimum health requirement of the persons served. For State Law reference, see Code of Va., § 32.1-167.

Reduced pressure principal backflow prevention device. A device containing a minimum of two independently acting check valves together with an automatically operated pressure differential relief valve located between the two check valves. During normal flow and at the cessation of normal flow, the pressure between these two checks shall be less than the supply pressure. In case of leakage of either check valve, the differential relief valve, by discharging to the atmosphere, shall operate to maintain the pressure between the check valves at less than the supply pressure. The unit shall include tightly closing shutoff valves located at each end of the device, and each device shall be fitted with properly located test cocks. These devices shall be of the approved type.

Residential Dual Check means an assembly of two 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.

Service connection means the point of delivery of finished water from a waterworks to a consumer's water system, fire protection system, irrigation system, and to all other points where finished water is delivered through the distribution system to a consumer. Generally, the service connection occurs at the water meter, or at the distribution main if no water meter is installed, or in the case of an owner of both the waterworks and the building supplied, the point of entry into the building. Service connections may be permanent, temporary, or emergency.

System hazard means a condition posing an actual, or threat of, damage to the physical properties of the waterworks or a consumer's water system.

Used water means any water supplied by a water purveyor from the waterworks to a consumer's water system after it has passed through the service connection.

Waterworks means system that serves piped water for human consumption to at least 15 service connections or 25 or more individuals for at least 60 days out of the year. All structures, equipment and

appurtenances used in connection with the collection, storage, purification, treatment and distribution of pure water, except the piping and fixtures inside the building where such water is delivered.

Water purveyor. An individual, group of individuals, partnership, firm, association, institution, corporation, municipal corporation, county or authority which supplies water to any person in this county from or by means of any waterworks.

Water service entrance: That point in the owner's water system beyond the sanitary control of the Department; generally considered to be the outlet end of the water meter and always before any unprotected branch.

Waterworks means a system that serves piped water for human consumption to at least 15 service connections or 25 or more individuals for at least 60 days out of the year. "Waterworks" includes all structures, equipment, and appurtenances used in the storage, collection, purification, treatment, and distribution of potable water except the piping and fixtures inside the building where such water is delivered.

History prior Sec. 21-2-2. - Definitions (Comp. 1974, ch. 12; Ord. 11-18-15).

(Ord. ___ - ___-22)

Sec. 21-2-102. State regulations adopted.

The Board of Supervisors hereby adopts by reference the regulations of VDH, 12 VAC 5-590-10 et seq. regarding waterworks including the Waterworks Regulations. Specifically, the Board of Supervisors hereby adopts by reference Section 580, 600, 610 and 630, regarding cross-connection control and backflow prevention in waterworks, of the state Waterworks Regulations, as it may be amended from time to time, or applicable successor provisions. The provisions of this Article II, Division 5, shall apply to the Fork Union Sanitary District as well as to all other County waterworks.

History prior Sec. 21-2-1. - State regulations adopted (Comp. 1974, ch. 12; Ord. 11-18-15).

(Ord. ___ - ___-22)

Sec. 21-2-103. Article supplementary to plumbing codes.

This division is a supplement to the applicable plumbing and other building codes.

History prior Sec. 21-2-7. – Article supplementary to plumbing codes (Comp. 1974, ch. 12).

(Ord. ___ - ___-22)

Sec. 21-2-104. Inspections generally.

It shall be the duty of the County through its Director and County Engineer to cause inspections to be made of properties served by the waterworks where cross-connection with the waterworks is deemed possible. The frequency of inspections and re-inspections, based on potential health hazards involved, shall be established by the County in the cross-connection control and backflow prevention program and as approved by VDH and the Board of Supervisors.

History prior Sec. 21-2-3. - Inspections (Comp. 1974, ch. 12; Ord. 11-18-15).

(Ord. ___ - ___ -22)

Sec. 21-2-105. Right of entry; inspection of property served by County waterworks.

In addition to rights of access under Section 21-2-4, the Director, County Engineer or any authorized representative of the County waterworks (which includes the Fork Union Sanitary District), as applicable, shall have the right to enter at any reasonable time properties served by a connection to the waterworks of the County or the Fork Union Sanitary District, as applicable, for the purpose of (i) inspecting the piping systems for cross-connections, (ii) inspecting structural or sanitary hazards, (iii) inspecting any known violations of this division or corrections related thereto; (iv) determining if violations of this division exist; or (vi) any other proper purpose under this Chapter. Upon request, the owner or occupant of property served shall furnish to the inspection agency pertinent information regarding the piping system or systems on such property. The refusal of such information or refusal of access, when requested, shall be deemed evidence of the presence of an unauthorized cross-connection and an unlawful violation of this Chapter.

History prior Sec. 21-2-4. - Right of entry of district representative; refusal of access or information deemed evidence of cross-connection (Comp. 1974, ch. 12).

(Ord. ___ - ___ -22)

Sec. 21-2-106. Denial or discontinuance of service; protection of waterworks.

No service connection shall be permitted by the County, including the Fork Union Sanitary District, unless the County's water system is protected as required by this division, and other Applicable Laws. Water service to any premises shall be discontinued by the County if the required backflow preventer is not installed, tested, and maintained, or if it is found that the required backflow preventer has been removed, bypassed, or if an unprotected cross connection exists on the premises. Service shall not be restored until such conditions or defects are corrected. The Director or County Engineer may deny or discontinue the water service to a consumer if the required backflow prevention device is not installed by providing for a physical break in the service line until the owner has corrected the condition to the satisfaction of the Director. If it is found that the device has been removed or bypassed or if a cross-connection exists on the premises, or if the pressure in the waterworks is lowered below ten psi gauge, the County Engineer shall take positive action to ensure that the waterworks is adequately protected at all times. Water service to such premises shall not be restored until the deficiencies have been corrected or eliminated in accordance with State Waterworks Regulations and to the satisfaction of the Director and County Engineer.

History prior Sec. 21-2-5. – Denial or discontinuance of service; protection of waterworks (Comp. 1974, ch. 12).

(Ord. ___ - ___ -22)

Sec. 21-2-107. Protection of pure water; unsafe outlets to be labeled.

The potable water made available on the properties served by the waterworks shall be protected from possible contamination or pollution by enforcement of this division and the plumbing codes under Applicable Law. Any water outlet which could be used for domestic purposes and is not supplied by the pure water system shall be labeled as "Water Unsafe for Drinking" in a conspicuous manner.

History prior Sec. 21-2-6. - Protection of pure water; unsafe outlets to be labeled (Comp. 1974, ch. 12; Ord. 11-18-15).

(Ord. ___ - ___ -22)

APPENDIX B: DEVICE CERTIFICATION FORM



Fluvanna County Public Works Department

197 Main Street
P.O. Box 540
Palmyra, VA 22963
Phone:
Fax:

BACKFLOW PREVENTION DEVICE TEST REPORT

Contact: _____ Date: _____ Failed Passed

Phone: _____ Tester Name: _____ Bldg Permit #: _____

Name of Premises: _____

Service Address: _____

Location of Device: _____

Device: _____

Manufacturer Model Size Serial No.

Line Pressure at Time of Test: _____ psi Influent: _____ psi Effluent: _____ psi

Pressure Drop Across First Check Valve: _____ psi Does the device meet the Manufacturer's Specifications? Yes No

Type of Device: Single Check Valve Double Check Valve Other Equipment Differential Pressure Relief Valve

Initial Test: Leaked Closed Tight Opened at _____ psi Reduced Pressure

Describe Repairs: _____

Materials Used: _____

Final Test: Leaked Closed Tight Opened at _____ psi Reduced Pressure

Comments: _____

Name of Tester (print): _____

Tester Company: _____

Tester Certification #: _____ Telephone #: _____

Signature of Tester

Date



Fluvanna County Public Works Department

197 Main Street
P.O. Box 540
Palmyra, VA 22963
Phone:
Fax:

	Check Valve No. 1		Check Valve No. 2		Differential Pressure Relief Valve
Initial Test:	Leaked <input type="checkbox"/>		Leaked <input type="checkbox"/>		Opened at _____ psi <input type="checkbox"/>
	Closed Tight <input type="checkbox"/>		Closed Tight <input type="checkbox"/>		Did not Open <input type="checkbox"/>
Service:	Cleaned <input type="checkbox"/>		Cleaned <input type="checkbox"/>		Cleaned <input type="checkbox"/>
Repair:	Disc <input type="checkbox"/>		Disc <input type="checkbox"/>		Disc, Upper <input type="checkbox"/>
	Spring <input type="checkbox"/>		Spring <input type="checkbox"/>		Disc, Lower <input type="checkbox"/>
	Guide Pin <input type="checkbox"/>		Guide Pin <input type="checkbox"/>		Spring <input type="checkbox"/>
	Retainer <input type="checkbox"/>		Retainer <input type="checkbox"/>		Diaphragm, Large, Upper <input type="checkbox"/>
	Hinge Pin <input type="checkbox"/>		Hinge Pin <input type="checkbox"/>		Diaphragm, Large, Lower <input type="checkbox"/>
	Seat <input type="checkbox"/>		Seat <input type="checkbox"/>		Diaphragm, Small, Upper <input type="checkbox"/>
	Diaphragm <input type="checkbox"/>		Diaphragm <input type="checkbox"/>		Diaphragm, Small, Lower <input type="checkbox"/>
	Other: _____ <input type="checkbox"/>		Other: _____ <input type="checkbox"/>		Spacer, Lower <input type="checkbox"/>
					Other: _____ <input type="checkbox"/>
Final Test:	Closed Tight <input type="checkbox"/>		Closed Tight <input type="checkbox"/>		Opened at _____ psi <input type="checkbox"/>
					Reduced Pressure <input type="checkbox"/>

APPENDIX C: SURVEY FORM



**FLUVANNA COUNTY
PUBLIC WORKS DEPARTMENT
197 MAIN STREET
P. O. BOX 540
PALMYRA, VA 22963**



COMMERCIAL AND INDUSTRIAL SURVEY FORM

Facility name:

Facility contact name: Telephone # (.....).....-

Facility address:

Mailing address:
(If different from above)

PWD account #: Days/Hours of operation

1. What is the nature of the business at this service address?

2. Do you have a backflow prevention device(s)? () Yes / () No / () Unsure

If Yes, what type(s):

Location(s) in the facility:

3. Do you have an irrigation or fire sprinkler system? () Yes / () No / () Unsure

4. Does your operation provide Food Service to customers or employees? () Yes / () No / () Unsure

5. Do you have a grease trap or interceptor? () Yes / () No / () Unsure

If Yes, how many:

Where are they located in relation to your building:.....

6. Do you have an oil/water separator? () Yes / () No / () Unsure

7. Do your business discharge or have the potential to discharge a waste liquid to the sewer system other than from restroom toilets, sinks, showers, and other potable water fixtures?
() Yes / () No / () Unsure

If Yes, describe:

8. What is your Standard Industrial Classification (SIC) Code (if known)?

9. Do you currently treat any of your wastewater onsite? () Yes / () No / () Unsure

If Yes, describe:

10. Additional comments:

I certify that the information provided is true and represents, to the best of my knowledge, full disclosure of the information requested.

Signature Title Date

(Authorized Representative)

APPENDIX D: CUSTOMER INFORMATION SPREADSHEET

Customer information spreadsheet template:

No.	Business Name	Address			Contact Person	Phone Number	Contact Email	Size	Fire Detector Assembly	Type	Model
		Street	City, State	Zip Code							
1											
2											
3											
4											
5											
6											
7											

continued...

Serial No.	Location	Customer Account Number	Customer Name	Customer City, State,	Zip Code	Anniversary Date	Date of 1 st Notice	Date of 2 nd Notice	Date of 3 rd Notice	Date of Disconnect	Pass (P) or Fail (F)

APPENDIX E: STANDARD LETTERS

« Date of 1st Notice »

« Customer Name »
« Customer Address »
« Customer City, State, Zip »

RE: **Backflow Prevention Device Inspection and Certification
ACTION REQUIRED**

Dear Customer:

In an effort to maintain the safety of the Fluvanna County public water system and as required by the Virginia Department of Health Waterworks Regulations, the Fluvanna County Public Works Department (PWD) administers the Cross-Connection Control and Backflow Prevention Program. This program is important to the protection of the public water supply by requiring the installation of backflow prevention devices at certain facilities to prevent potential contaminants from entering the public water system during low pressure or other unusual situations.

Our records indicate that due to the nature of your facility; « *Business Name* », « *Customer Address* », « *Customer City, State, Zip* », the following backflow prevention device has been installed on your plumbing system:

Size(s)	« Size »
Make(s)	« Type »
Model(s)	« Model »
Serial #(s)	« Serial No. »
Location(s)	« Location »

In accordance with this program, these devices must be owner or customer maintained to meet the manufacturer's specifications with testing and certification to be performed by a Virginia State certified backflow Inspector or an annual basis.

Please have your inspector complete the enclosed backflow certification form for each device, certifying that the device(s) meets the manufacturer's specifications. Then return the backflow certification form to this office on or before « *Anniversary Date* ».

Please understand we are required by law to maintain these records as a matter of public health and public safety. The testing and certification date will be electronically tracked and reminder letters sent in future years to prompt continued compliance.

Should you have any questions or need additional information please, do not hesitate to contact us at (434) 591-1925 Monday-Friday 8am - 5pm. Thank you for your assistance and cooperation.

Sincerely,
Signed

Enclosure

CC: « Business Name »
 « Customer Address »
 « Customer City, State, Zip »

FINAL NOTICE – RESPONSE REQUIRED

« Date of 3rd Notice »

« Customer Name »
« Customer Address »
« Customer City, State, Zip »

RE: **Final Notice of Required Prevention Device Inspection and Certification**

Dear Customer:

This final notice is in follow up to our original notice date « *Date of 1st Notice* », and our second notice letter date « *Date of 2nd Notice* ». Our records indicate that the backflow certification form for the backflow assembly listed below, after a second notice was due in our office on « *2nd Notice Due Date* ». As of the date of this letter, that form has not been received.

« **Customer Name** »
« **Customer Address** »
« **Customer City, State, Zip** »

Size(s)	« Size »
Make(s)	« Type »
Model(s)	« Model »
Serial #(s)	« Serial No. »
Location(s)	« Location »

Annually, in accordance with the Virginia Department of Health regulations these devices must be owner or customer maintained to meet the manufacturer’s specifications with testing and certification to be performed by a Virginia State certified backflow prevention device worker. Please understand that to assure the safety of our water system, we must receive the backflow certification form for the device(s) in our office on or before « *Date of Disconnect* ».

Failure to comply will result in disconnections from the Fluvanna County water system after « *Date of Disconnect* ».

Should you have any questions or need additional information please, do not hesitate to contact us at (434) 591-1925 Monday-Friday 8am - 5pm. Thank you for your assistance and cooperation.

Sincerely,
Signed

Enclosure

CC: « Business Name »
 « Customer Address »
 « Customer City, State, Zip »

APPENDIX F: VIRGINIA DEPARTMENT OF HEALTH CROSS CONNECTION REGULATIONS

12VAC5-590-580. General requirements for cross-connection control and backflow prevention.

A. Every owner shall establish and enforce a cross-connection control program (CCCP) in accordance with [12VAC5-590-360](#). The goal of the CCCP is to prevent the intrusion of contamination into the distribution system via cross-connections and backflow. The owner shall document the CCCP activities in a cross-connection control plan and submit the written document to the department for review and approval.

B. No owner shall install, maintain, or allow a service connection to any premises where cross-connections to a waterworks or a consumer's water system exist, unless the owner and department ensure the cross-connections are adequately safeguarded.

C. No owner shall install, maintain, or allow any connection whereby water from an auxiliary water system may enter a waterworks or consumer's water system, unless the owner and department approve the auxiliary water system, the method of connection, and use of such system.

D. The owner, in accordance with [12VAC5-590-510](#) C, shall maintain acceptable working pressures in the distribution system to reduce the potential for backflow to occur.

Statutory Authority

§§ [32.1-12](#) and [32.1-170](#) of the Code of Virginia.

Historical Notes

Derived from VR355-18-006.01 § 2.25, eff. August 1, 1991; amended, Virginia Register Volume 9, Issue 17, eff. June 23, 1993; [Volume 37, Issue 20](#), eff. June 23, 2021.

12VAC5-590-590. (Repealed.)

Historical Notes

Derived from VR355-18-006.02 § 2.26, eff. June 23, 1993; repealed, Virginia Register [Volume 37, Issue 20](#), eff. June 23, 2021.

12VAC5-590-600. Cross-connection control program responsibilities.

A. The owner shall establish and implement a CCCP consistent with the extent of the distribution system and the consumers served by the waterworks. The owner shall review the CCCP and written cross-connection control plan not less than every five years and update it as necessary to satisfy the requirements of this chapter. The owner shall submit updates to the department to obtain approval. The department may review the plan upon request. This program shall include at least one designated individual assigned by the owner. Requirements for this position shall include training and experience in cross-connection control programs.

B. The CCCP shall not be in conflict with the USBC and applicable building code regulations, including [13VAC5-63](#) or subsequent regulations promulgated by the Board of Housing and Community Development.

C. The CCCP shall ensure complete assessments of every consumer's water system and shall determine both the degree of hazard and the appropriateness of existing safeguards to prevent contamination from cross-connections and backflow.

D. The CCCP shall ensure testing, maintenance, and repairs of all backflow prevention assemblies, backflow elimination methods, and backflow prevention devices required and installed pursuant to [12VAC5-590-610](#).

E. [13VAC5-63-530](#), which incorporates the International Property Maintenance Code into the USBC, requires testing of RPZ assemblies, double check valve assemblies, double check detector backflow assemblies, and pressure vacuum breaker assemblies after initial installation, immediately after repairs or relocation, and annually thereafter. The CCCP shall establish procedures for completing and monitoring operational tests, or other evaluation procedures as appropriate, at least annually, and after installation, relocation, or repairs, for testable backflow prevention assemblies, devices, and methods that provide containment. The CCCP may include a public education program to:

1. Prompt consumer self-assessments, increase the awareness of cross-connections, and inform the consumer of the public health hazards of backflow.
2. The public education program, if provided as part of the CCCP, shall include, at a minimum, the following:
 - a. Causes of backflow;
 - b. Hazards and health effects of cross-connections and backflow;
 - c. Resources available to identify actual or potential cross-connections;
 - d. Safeguards to use to eliminate or control the hazards at the point of use; and
 - e. Sources for additional information.

F. The CCCP shall provide a method to discontinue or refuse water service to the consumer to ensure that the waterworks is adequately protected from cross-connections and backflow if any of the following conditions occur:

1. The consumer does not install, test and maintain a required backflow prevention assembly or backflow elimination method in accordance with the applicable sections of this chapter;
2. The consumer allows a required backflow prevention assembly or backflow elimination method to become inoperable or the consumer removes or bypasses it; or
3. The owner knows an unprotected or inadequately protected cross-connection exists on the premises and determines that there is inadequate backflow prevention at the service connection.

G. In the event of backflow of contaminants into the waterworks, the owner shall promptly take or cause corrective action to confine and eliminate the contamination. The owner shall report the event to the department within one business day in the most expeditious manner. The owner shall submit a written report by the 10th day of the month following the month during which backflow occurred addressing the incident, its causes and effects, and safeguards required or other action taken.

H. The owner shall maintain an inventory and records of testing, repairs, and maintenance of all backflow prevention assemblies, backflow elimination methods, and backflow prevention devices required and installed under [12VAC5-590-610](#) C. In the case of single-family residences subject to [12VAC5-590-610](#) C 5, the owner may determine whether or not to maintain an inventory or records. The department recommends the owner follow best practices identified in the AWWA Manual of Water Supply Practices M14 and the EPA Cross-Connection Control Manual.

I. The owner shall maintain an inventory and records of testing, repairs, and maintenance of all backflow prevention assemblies, backflow elimination methods, and backflow prevention devices required and installed under [12VAC5-590-610](#) E.

J. The owner shall maintain records related to the CCCP implementation, and any other records the department requires in accordance with [12VAC5-590-550](#).

Statutory Authority

§§ [32.1-12](#) and [32.1-170](#) of the Code of Virginia.

Historical Notes

Derived from VR355-18-006.03 § 2.27, eff. August 1, 1991; amended, Virginia Register Volume 9, Issue 17, eff. June 23, 1993; [Volume 37, Issue 20](#), eff. June 23, 2021.

12VAC5-590-610. Containment of backflow.

A. The owner shall ensure installation of backflow prevention assemblies or backflow elimination methods (i) at the service connection or (ii) downstream of the service connection but before any unprotected takeoffs.

B. Where the consumer's water system is not intricate or complex and where actual or potential cross-connection hazards can be eliminated or controlled, instead of containment, the owner may allow consumers to use point-of-use isolation protection by application of appropriate backflow prevention assemblies, backflow prevention devices, or backflow elimination methods complying with the USBC.

C. A backflow prevention assembly or backflow elimination method shall be installed where the following conditions exist:

1. A substance is handled in such a manner as to create an actual or potential hazard to a waterworks (this shall include premises having sources or systems containing process fluids or waters originating from a waterworks which are no longer under the control of the owner);
2. There exists internal cross-connections that, in the judgment of the owner or the department, may not be easily correctable or have intricate or complex plumbing arrangements that make it impracticable to determine whether or not cross-connections exist;
3. There are security requirements or other prohibitions or restrictions that prevent the assessment of all potential cross-connections that may impair the quality of the water delivered;
4. There is a repeated history of cross-connections being established or reestablished;
5. There are fire protection systems, lawn sprinkler systems, or irrigation systems;
6. The owner or department can show that a potential cross-connection hazard exists.

D. The owner shall ensure that consumers equip premises having booster pumps or fire pumps connected to the waterworks with control devices to prevent a reduction of pump suction line pressure to less than 20 psig.

E. A backflow prevention assembly or backflow elimination method shall be installed at consumer water systems serving the following types of facilities, including:

1. Hospitals, mortuaries, clinics, veterinary establishments, nursing homes, and medical buildings;
2. Laboratories;
3. Piers, docks, and waterfront facilities;
4. Sewage treatment plants, sewage pumping stations, or storm water pumping stations;
5. Food and beverage processing plants;
6. Chemical plants, dyeing plants, and pharmaceutical plants;
7. Metal plating industries;
8. Petroleum or natural-gas processing or storage plants;
9. Radioactive materials processing plants or nuclear reactors;

10. Car washes and laundries;
11. Buildings with commercial, industrial, or institutional occupants served through a master meter;
12. Water loading facilities;
13. Slaughter houses and poultry processing plants;
14. Farms where the water is used for other than household purposes;
15. Commercial greenhouses and nurseries;
16. Health clubs with swimming pools, therapeutic baths, hot tubs, or saunas;
17. Paper and paper-product plants and printing plants;
18. Pesticide or exterminating companies and their vehicles with storage or mixing tanks;
19. Facilities that blend, store, package, transport, or treat chemicals, and their related vehicles;
20. Schools or colleges with laboratory facilities;
21. Highrise buildings (four or more stories);
22. Multiuse commercial, office or warehouse facilities; and
23. Others specified by the owner or the department when reasonable cause can be shown for a potential backflow or cross-connection hazard.

F. All temporary or emergency service connections shall be protected where reasonable cause can be shown for a potential backflow or cross-connection hazard. Backflow prevention assemblies or backflow elimination methods used shall be appropriately certified or approved to match the requirements of this section.

Statutory Authority

§§ [32.1-12](#) and [32.1-170](#) of the Code of Virginia.

Historical Notes

Derived from VR355-18-006.04 § 2.28, eff. August 1, 1991; amended, Virginia Register Volume 9, Issue 17, eff. June 23, 1993; [Volume 37, Issue 20](#), eff. June 23, 2021.

12VAC5-590-620. (Repealed.)

Historical Notes

Derived from VR355-18-006.05 § 2.29, eff. August 1, 1991; amended, Virginia Register Volume 9, Issue 17, eff. June 23, 1993; repealed, Virginia Register [Volume 37, Issue 20](#), eff. June 23, 2021.

12VAC5-590-630. Backflow prevention assemblies, devices, and backflow elimination methods for containment.

A. Any backflow prevention assembly or backflow elimination method or backflow prevention device shall be of the approved type and shall comply with the USBC.

B. General safeguards

1. The backflow prevention assembly or backflow elimination method or backflow elimination device used shall depend on the degree of hazard that exists or may exist. The safeguard shall ensure maintenance of the distribution system water quality and its usefulness.

2. The degree of hazard, either high or low, is based on (i) the nature of the contaminant; (ii) the potential of the health hazard; (iii) the potential method of backflow (either by backpressure or by backsiphonage); and (iv) the potential effect on waterworks structures, equipment, and appurtenances used in the storage, collection, purification, treatment, and distribution of potable water. Table 630.1 shall be used as a guide to determine the degree of hazard for any situation.

Table 630.1

Determination of Degree of Hazard

Cross-connections that meet or may meet the following conditions shall be rated at the corresponding degree of hazard.

High Hazard	Low Hazard
The contaminant would be toxic, poisonous, noxious, unhealthy, or of unknown quality.	The contaminant would only degrade the quality of the water aesthetically or impair the usefulness of the water.
A health hazard would exist.	A health hazard would not exist.
The contaminant would disrupt the service of piped water for human consumption.	The contaminant would not disrupt service of piped water for human consumption.
Backflow would be by either backpressure or backsiphonage.	Backflow would occur by backsiphonage.
Examples: lawn irrigation systems, fire sprinkler systems with chemical additives or antifreeze, sewage, used water, nonpotable water, auxiliary water systems, and mixtures of water and other liquids, gases, or other chemicals.	Examples: food residuals, coffee machines, non-carbonated beverage dispensers, and residential fire sprinkler systems constructed of materials designed for potable water flow.

3. The USBC and the manufacturer's specifications shall be used to determine the appropriateness of the backflow prevention assembly or backflow prevention device application for containment.

C. Owners shall not allow the installation of backflow prevention devices or backflow prevention assemblies with openings, outlets, or vents that are designed to operate or open during backflow prevention:

1. In areas subject to flooding or in pits;
2. In areas with atmospheric conditions that represent a contamination threat to the potable water supply; and
3. In such a manner as to be able to be bypassed.

D. Starting January 1, 2023, persons testing and repairing backflow prevention assemblies and backflow prevention devices shall be certified by a Commonwealth of Virginia tradesman certification program (identified by DPOR as backflow prevention device workers). Until January 1, 2023, persons testing and repairing backflow prevention assemblies and backflow prevention devices shall be qualified to perform such work as demonstrated by possessing

a certification or license from a local or state agency having legal authority or shall possess a certificate of completion of applicable vocational training acceptable to the owner.

Statutory Authority

§§ [32.1-12](#) and [32.1-170](#) of the Code of Virginia.

Historical Notes

Derived from VR355-18-006.06 § 2.30, eff. August 1, 1991; amended, Virginia Register Volume 9, Issue 17, eff. June 23, 1993; [Volume 31, Issue 1](#), eff. October 10, 2014; [Volume 37, Issue 20](#), eff. June 23, 2021.