



CROSS-CONNECTION CONTROL AND BACKFLOW PREVENTION PROGRAM MANUAL

JUNE 1, 2021

FAIRFAX COUNTY WATER AUTHORITY
8570 Executive Park Avenue, Fairfax, Virginia 22031

This Page is Intentionally Blank

Table of Contents

I. INTRODUCTION AND PURPOSE.....	1
A. MISSION STATEMENT	1
B. INTRODUCTION	1
C. ADMINISTRATION	1
D. PURPOSE	2
E. CAUSES OF BACKFLOW	2
F. DEFINITIONS.....	3
II. OVERVIEW OF RESPONSIBILITIES	6
A. FAIRFAX WATER.....	6
B. FAIRFAX COUNTY LAND DEVELOPMENT SERVICES	7
C. FAIRFAX COUNTY OFFICE OF THE FIRE MARSHAL	7
D. CITY OF FALLS CHURCH BUILDING SAFETY DIVISION.....	8
E. CITY OF FAIRFAX FIRE DEPARTMENT AND CODE ADMINISTRATION	8
F. WHOLESALE CUSTOMERS.....	9
G. CUSTOMERS (PROPERTY OWNERS, OWNER AGENTS, TENANTS, CONSUMERS, AND RESPONSIBLE PARTIES)	9
H. VIRGINIA DEPARTMENT OF HEALTH.....	10
III. SERVICE LINE PROTECTION VS POINT-OF-CONNECTION STANDARD.....	11
A. SERVICE LINE PROTECTION STANDARD	11
B. POINT-OF-CONNECTION PROTECTION STANDARD	11
IV. SPECIAL CONDITIONS.....	13
A. REQUIRED RETROFITTING OF SERVICE LINE PROTECTION	13
B. LIKE-FOR-LIKE REPLACEMENT STANDARD	13
C. MAINTENANCE BYPASS AND SECONDARY SUPPLY STANDARD	13
D. INDIVIDUAL PROTECTION AND ISOLATION STANDARD	13
V. BACKFLOW PROTECTION FOR HAZARDOUS INDUSTRIES AND OTHER CONNECTIONS....	14
A. FACILITIES REQUIRING A SERVICE LINE BACKFLOW PREVENTER	14
B. OTHER CROSS-CONNECTION HAZARDS	14
VI. PLAN REVIEW, PERMIT, AND FINAL INSPECTION REQUIREMENTS	16
A. PLAN REVIEW REQUIREMENTS	16
B. PERMIT REQUIREMENTS	17
C. INSPECTION REQUIREMENTS.....	18
VII. BACKFLOW PREVENTER ACCESS AND CLEARANCE REQUIREMENTS.....	19
A. BACKFLOW PREVENTION DEVICES.....	19
B. BACKFLOW PREVENTION ASSEMBLIES.....	19
VIII. BACKFLOW PREVENTION ASSEMBLY TESTING REQUIREMENTS AND PROCEDURES	20
A. BACKFLOW PREVENTION ASSEMBLY TESTING REQUIREMENTS	20

B.	CERTIFICATION REQUIREMENTS FOR BACKFLOW TESTING	20
C.	STANDARDS FOR FIELD TESTING BACKFLOW PREVENTION ASSEMBLIES.....	20
D.	BACKFLOW PREVENTION ASSEMBLY TEST REPORT REQUIREMENTS	20
E.	COMPLETING AND SUBMITTING A TEST REPORT	21
IX.	CERTIFICATION OF BACKFLOW PREVENTION CONTRACTORS	23
A.	BACKFLOW PREVENTION INSTALLATION CONTRACTORS.....	23
B.	BACKFLOW PREVENTION REPAIR CONTRACTORS.....	23
C.	BACKFLOW PREVENTION TESTING CONTRACTORS	23
X.	ENFORCEMENT AUTHORITY, RESPONSIBILITIES, AND PROCEDURES.....	25
A.	AUTHORIZED AGENTS.....	25
B.	RESPONSIBILITIES OF PROPERTY OWNERS, OWNER AGENTS, AND TENANTS.....	25
C.	NOTIFICATION AND ESCALATION PROCEDURE.....	26
XI.	SITE SURVEYS, PERIODIC INSPECTIONS, AND INCIDENT RESPONSE.....	29
A.	SITE SURVEYS	29
B.	PERIODIC INSPECTIONS	29
C.	BACKFLOW INCIDENT RESPONSE.....	30
XII.	REFERENCE DOCUMENTS AND RESOURCES	31

APPENDICIES SECTION

APPENDIX A:	VIRGINIA DEPARTMENT OF HEALTH AND FAIRFAX WATER HAZARDOUS INDUSTRY LIST.....	35
APPENDIX B:	WELL ABANDONMENT PROCEDURE AND LAWN IRRIGATION WELL PROCEDURE	39
APPENDIX C:	APPROVED YARD HYDRANTS	41
APPENDIX D:	DEMOLITION LETTER REQUESTS.....	42
APPENDIX E:	EXAMPLE OF BACKFLOW PREVENTION ASSEMBLIES AND DEVICES SCHEDULE FOR PLAN REVIEW SUBMISSION.....	43
APPENDIX F:	LAWN IRRIGATION SYSTEMS AND RESTRICTED WATER SERVICES.....	44
APPENDIX G:	UF TREEO BACKFLOW PREVENTION ASSEMBLY TEST PROCEDURES	45
APPENDIX H:	EXAMPLE NOTICE OF BACKFLOW PREVENTION ASSEMBLY TESTING DUE.....	50
APPENDIX I:	EXAMPLE CORRECTIVE WORK ORDER.....	51
APPENDIX J:	EXAMPLE NOTICE OF NON COMPLIANCE	52
APPENDIX K:	EXAMPLE NOTICE OF DISCONNECTION OF WATER SERVICE.....	53
APPENDIX L:	EXAMPLE FINAL NOTICE OF DISCONNECTION OF WATER SERVICE.....	54

GRAPHIC STANDARDS AND DETAILS SECTION

GSD – 1	Backflow Preventer Examples	57
GSD – 2	Pressure Bleeding Device Installation	59
GSD – 3	Lawn Irrigation Installation.....	60
GSD – 4	Chemical Dispenser Installation	61
GSD – 5	Carbonated Beverage Dispenser	62
GSD – 6	Code Compliant Non-Potable Sign	63
GSD – 7	Frost-Proof Yard Hydrant Installation Requirement	64
GSD – 8	Sanitary Yard Hydrant Installation Requirement	65

I. Introduction and Purpose

A. Mission Statement

To protect the safety of the public water distribution system through an effective, efficient, and proactive cross-connection control and backflow prevention program.

B. Introduction

In 1974, the Virginia Department of Health Waterworks Regulations were adopted to conform with the Federal "Safe Drinking Water Act," PL 93-523 (as amended) and Federal Regulation 40 CFR Part 141. The latest revision to the Waterworks Regulations were effective August 22, 2003. 12 VAC5-590 of the Waterworks Regulations sets guidelines requiring that a cross-connection control and backflow prevention program be established and enforced for each waterworks by the purveyor of the waterworks. Also, Section 35.626-1(b), "Program Elements of a Public Water System Supervision Program" from the Federal Register, Volume 41, No 13, Page 2914 mentions a cross-connection control program as one of the elements appropriate for carrying out waterworks system supervision.

The Virginia Department of Health mandates and gives authority to Fairfax Water to establish and operate a cross-connection control and backflow prevention program consistent with the extent of the system and the type of customer served.

A cross-connection is defined as any physical connection, link, or arrangement between two piping systems, one of which contains potable water and the other either liquid of unknown or questionable quality or steam, gas, or chemical, whereby there exists the possibility for flow from one system to the other, with the direction of flow depending on the pressure differential between the two systems. Backflow is defined as the undesirable reversal of the normal flow of water or other substances into the public water distribution system. Therefore, all cross-connections or potentials for backflow must be contained or isolated to prevent degrading the high quality of water that waterworks purveyors strive to maintain.

C. Administration

The Cross-Connection Control Program Coordinator designated by Fairfax Water is responsible for managing and administering the Fairfax Water Cross-Connection Control and Backflow Prevention Program (Program). This is accomplished through creation and implementation of this joint program which is administered and enforced with the cooperation of Fairfax County Land Development Services, the city of Fairfax Code Administration and Fire Department, and the city of Falls Church Building Safety Division, who are responsible for enforcing cross-connection control requirements per the Virginia Construction Code.

D. Purpose

The purpose of this Program is:

- To protect the Fairfax Water public water distribution system from the potential of contamination or pollution.
- To coordinate enforcement of Virginia Department of Health Waterworks Regulations.
- To establish a priority of containment through use of service line protection for locations having systems, equipment, or processes identified by Virginia Department of Health Waterworks Regulations as hazardous.
- To coordinate enforcement of the Virginia Construction Code requirements for point-of-connection protection as well as cross-connection requirements within the service area of Fairfax Water.
- To provide standards, procedures, rules, regulations, and guidelines for the identification and containment of cross-connections and backflow risks in accordance with the Virginia Department of Health and the Virginia Construction Code.
- To provide clarification of the roles and responsibilities of Fairfax Water, Fairfax County, city of Fairfax, city of Falls Church, and the customers of Fairfax Water.

E. Causes of Backflow

The specific cause, manner, or timing of a backflow event cannot be predicted, as it is often initiated by an unexpected or accidental circumstance. However, in most cases, the potential risk of a backflow event can be eliminated or mitigated through the installation of backflow preventers, maintenance conducted by certified professional contractors, and monitoring by trained personnel.

The two chief conditions which initiate a backflow event are backpressure and backsiphonage. The potential for, either or both, of these conditions within a water distribution system will aid in determining the appropriate level of protection required to safeguard against backflow.

- **Backpressure** is caused when a building, house, or other private plumbing system with greater pressure than Fairfax Water's supply pressure pushes water from the building, house, or private plumbing system back into the Fairfax Water public water distribution system. This can occur in a pressurized system with booster pumps, chemical feed pumps, boilers, elevated storage tanks, or recirculating systems.
- **Backsiphonage** is caused by reduced or negative pressure in Fairfax Water's supply piping which creates a suction effect drawing water out of a building, house, or other

private plumbing system back into the Fairfax Water public water distribution system. Real examples that could lead to decreased supply pressure include opening or closing a valve, flushing a fire hydrant, or a water main break.

F. Definitions

The following words, terms, and phrases used in this program manual, when italicized, will have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

AUTHORIZED AGENT: A person or organization identified, but not directly employed by Fairfax Water, to conduct on-site *inspections* and enforce the requirements and regulations of this program.

AUTHORIZED VENDOR: A contracting company or individual that is *certified* to conduct work related to cross-connection control and backflow prevention and appears on the Fairfax County “authorized vendor” list.

AUXILIARY WATER SYSTEM: Any water source or system other than the *public water distribution system* that may be available on a property or in a structure, including but not limited to, back-up private wells, water reclamation systems, water reuse systems, and rainwater harvesting systems.

BACKFLOW: The undesirable reversal of the normal flow of water or other substances into the *public water distribution system*.

BACKFLOW PREVENTER: A *backflow prevention assembly*, *backflow prevention device*, or *backflow prevention method* designed to prevent *backflow* into a *potable water* system.

BACKFLOW PREVENTION ASSEMBLY: A *backflow preventer* which has inlet and outlet shutoff valves, internal check valves, testing ports, and is required to be tested for proper operation in accordance with the Virginia Construction Code.

BACKFLOW PREVENTION DEVICE: A *backflow preventer* which has internal check valves or a means to vent to atmosphere and does not have testing ports or a requirement for testing in accordance with the Virginia Construction Code.

BACKFLOW PREVENTION METHOD: A condition where *backflow* is prevented by an indirect connection or air-gap which eliminates the potential for backpressure or backsiphonage to the *public water distribution system*.

BUILDING AUTHORITY: The authority having jurisdiction under the Virginia Construction Code to approve construction plans, construction permits, inspections, and occupancy of a facility or property.

CERTIFIED: A person or company having the appropriate licensing, certification, experience, and training to complete the work required, as prescribed by the commonwealth of Virginia and Fairfax Water.

CONTAMINATION: An impairment of the quality of the *potable water* that creates a *hazard* to the public health.

CROSS-CONNECTION: Any physical connection, link, or arrangement between two piping systems, one of which contains *potable water* and the other either liquid of unknown or questionable quality or steam, gas, or chemical, whereby there exists the possibility for flow from one system to the other, with the direction of flow depending on the pressure differential between the two systems.

CUSTOMER: The property owner, owner agent, tenant, consumer, or person identified as the responsible party for maintenance of any facility or property with a connection to the *public water distribution system* including, without limitation, any governmental entity or retail customer purchasing water from the Fairfax Water.

HAZARD(OUS): Any condition, connection, device, or practice which, in the judgment of Fairfax Water may create a danger to the health and well-being of the water *customer* or may adversely impact the quality of the water being distributed.

INSPECTION: An in-person assessment, evaluation, or survey of a facility or property to determine or monitor compliance to the Virginia Construction Code, Virginia Department of Health Waterworks Regulations, and the requirements of this program.

INSPECTOR: An individual *certified* by the commonwealth of Virginia and/or authorized by Fairfax Water to conduct *inspections* related to the safety of the *public water distribution system*.

INTRICATE or COMPLEX: Any facilities, systems, equipment, or processes having complicated plumbing systems that are partially obscured, travel through multiple or inaccessible spaces, or are inherently difficult to trace back to a specific connection point to the *potable water* system.

PLACARD: A physical sign posted by the building authority having jurisdiction at the most prominent entrance to a facility or structure which identifies and restricts the conditions for entry due to a safety concern. A placard will only be posted or removed by the building authority.

POINT-OF-CONNECTION PROTECTION: A *backflow preventer* installed on the supply line to each system, piece of equipment, appliance, or outlet which isolates it against *backflow* to other components or outlets of the water distribution system.

POLLUTION: An impairment of the quality of the *potable water* to a degree that does not create a *hazard* to public health but that does adversely and unreasonably affect the aesthetic qualities of such *potable water* for domestic use.

POTABLE WATER: Water that is safe for human consumption and is aesthetically pleasing in accordance with the Safe Drinking Water Act.

PUBLIC WATER DISTRIBUTION SYSTEM: The waterworks within the municipal boundaries of the Fairfax County, city of Fairfax, and the city of Falls Church, which are owned and operated by Fairfax Water.

RESTRICTED WATER SERVICE: A reduced-water-flow service lateral requested by the *customer* and installed by Fairfax Water. Typically for a specific singular use which does not utilize the sanitary drainage system and limited to lawn irrigation systems and yard hydrants for watering lawns, shrubs, and associated landscape features.

SANITARY YARD HYDRANT: A yard hydrant specifically designed and labeled as sanitary ASSE 1057-2012, or which does not drain the water contained within the riser into the earth below grade when the fixture is turned off.

SERVICE CONNECTION: The terminal end of a water service from the *public water distribution system* or the point at which the *public water distribution system* connects to a *customer's* private waterline.

SERVICE LINE: The private water supply pipe extending from the public main distribution line or *service connection* into a facility or property. Typically beginning at the street lateral shutoff valve or an external meter connection.

SERVICE LINE PROTECTION: A *backflow preventer* which is installed on the *service line* before the first branch to any System, Equipment, or Appliance.

SITE SURVEY: A comprehensive physical *inspection* of a newly constructed, newly discovered, or remodeled facility or property to document or discover the potential or active *hazards* which may impact the *public water distribution system*.

II. Overview of Responsibilities

It is established that Cross-Connection Control and Backflow Prevention within the service area of Fairfax Water can only be achieved through cooperation and support of multiple municipalities, agencies, professional contractors, and the public. This document provides guidelines to maintain effective *cross-connection* control procedures and outlines the responsibilities of participants in this program. The recognized participants are known to be Fairfax Water, Fairfax County, City of Falls Church, City of Fairfax, *customers*, and the Virginia Department of Health.

A. Fairfax Water

Fairfax Water is responsible for providing reliable high-quality *potable water* to Fairfax County, the city of Falls Church, the city of Fairfax, and several wholesale *customers*. Wholesale municipalities are responsible to create and maintain independent cross-connection control programs and are not the responsibility of Fairfax Water. Fairfax Water is responsible for the water quality and for the construction, maintenance, and operation of the waterworks beginning at the water source and ending at the *service connection*. Therefore, the Virginia Department of Health mandates and gives authority to Fairfax Water to establish and operate a cross-connection control and backflow prevention program consistent with the extent of the system and the type of *customer* served. Fairfax Water exercises this responsibility and authority in the following ways:

- Fairfax Water determines what facilities pose a potential *contamination* threat to the *public water distribution system* and ensures proper protection measures are in place.
- Fairfax Water monitors the requirements for *backflow* prevention by conducting thorough surveys, *inspections* and operational testing of *backflow prevention assemblies*.
- Fairfax Water maintains and keeps all backflow assembly testing records for a period of ten years as required the Virginia Department of Health Waterworks Regulations through periodic reporting and record retention supplied by its authorized agents.
- In the event of a *backflow* of *pollution* or *contamination* into the waterworks, Fairfax Water promptly takes or causes corrective action to confine or eliminate the potential *hazard*.
- Fairfax Water may disconnect water service if required test reports are not received, a *cross-connection* is discovered, an unapproved/unpermitted backflow preventer is discovered, or *backflow* occurs into the *public water distribution system*. Water service will not be restored until the deficiencies have been corrected or eliminated to the satisfaction of Fairfax Water.

B. Fairfax County Land Development Services

Fairfax County Land Development Services is responsible for ensuring that all development within their jurisdiction meets the safety and health standards of the Virginia Construction Code, the Code of Fairfax County, and Fairfax County Ordinances. Fairfax County Land Development Services is responsible to ensure and document the installation of *backflow preventers* as required by the Virginia Construction Code, or as identified by Fairfax Water, under the authority of the Virginia Department of Health Waterworks Regulations. Fairfax County Land Development Services, under the authority of, and in cooperation with Fairfax Water, enforces and administers the Cross-Connection and Backflow Prevention Program requirements, for Fairfax Water *customers* within Fairfax County and the city of Falls Church. Fairfax County Land Development Services exercises these responsibilities and authority in the following ways:

- Enforcement of the Virginia Construction Code for *backflow* prevention requirements during the building phase and after occupancy.
- To review all site, subdivision and building plans and issue all applicable site and building permits and to direct *backflow preventer* installation where required.
- To conduct all required *inspections* of new structures, alterations to existing structures, and periodic *inspections* as required by the Virginia Construction Code and this Program.
- Ensure structures identified as having *hazardous* equipment, systems, or processes are adequately protected, by *backflow prevention devices, assemblies, and methods*, to prevent *contamination or pollution* of the *public water distribution system*.
- Identify, document, notify, and escalate instances of non-compliance through *Inspection*, Corrective Work Orders, and Notices of Non-Compliance to Fairfax Water and its *customers*.

C. Fairfax County Office of the Fire Marshal

The Fairfax County Office of the Fire Marshal, through delegated authority, is responsible for ensuring that all development within their jurisdiction meets the safety and health standards of the Virginia Construction Code, The Code of Fairfax County, The Virginia Statewide Fire Prevention Code, and Fairfax County Ordinances. The Fairfax County Office of the Fire Marshal exercises these responsibilities and authority, that pertain to the Backflow Prevention Program, in the following ways:

- To review shop drawings for water-based fire protection systems.
- To issue, or confirm the issuance of applicable permits, related to the installation, operation, and monitoring of a water-based fire protection system.

- To inspect and approve water-based fire protection systems prior to occupancy, and conduct periodic maintenance *inspections*, as required by the Virginia Statewide Fire Prevention Code.

D. City of Falls Church Building Safety Division

City of Falls Church Building Safety Division is responsible for ensuring that all development in the city of Falls Church meets the safety and health standards of all applicable code such as the Virginia Construction Code and city ordinances. The City of Falls Church Building Safety Division is responsible to ensure and document the installation of *backflow preventers* as required by the Virginia Construction Code, or as identified by Fairfax Water, under the authority of the Virginia Department of Health Waterworks Regulations. The City of Falls Church Building Safety Division exercises this responsibility and authority in the following ways:

- Enforcement of the Virginia Construction Code for *backflow* prevention requirements during the building phase.
- To review all site, subdivision and building plans and issue all applicable site and building permits and to direct *backflow preventer* installation where required.
- To conduct all required *inspections* of new structures, alterations to existing structures, and periodic *inspections* as required by the Virginia Construction Code and this Program.
- Document and Transmit all new testable *backflow preventer* information, by use of the Fairfax County “Backflow Assembly Test Report”, to Fairfax County so it can be categorized and added to the Cross-Connection Control database.

E. City of Fairfax Fire Department and Code Administration

The City of Fairfax Fire Department and Code Administration is responsible for ensuring that all development in the City of Fairfax meets the safety and health standards of all applicable codes such as the Virginia Construction Code, Virginia Statewide Fire Prevention Code and International Fire Code and City ordinances. The City of Fairfax Fire Department and Code Administration is responsible to ensure and document the installation of *backflow preventers* as required by the Virginia Construction Code, or as identified by Fairfax Water, under the authority of the Virginia Department of Health Waterworks Regulations. The City of Fairfax Fire Department and Code Administration, under the authority of Fairfax Water, administers the Cross-Connection and Backflow Prevention Program within the city of Fairfax. The City of Fairfax Fire Department and Code Administration exercises these responsibilities and authority in the following ways:

- Enforcement of the Virginia Construction Code for *backflow* prevention requirements during the building phase and after occupancy.

- To review all site, subdivision and building plans and issue all applicable site and building permits and to direct *backflow preventer* installation where required.
- To conduct all required *inspections* of new structures, alterations to existing structures, and periodic *inspections* as required by the Virginia Construction Code and this Program.
- Ensure structures identified as having *hazardous* equipment, systems, or processes are adequately protected, by *backflow prevention devices, assemblies, and methods*, to prevent *contamination* or *pollution* of the *public water distribution system*.
- Identify, document, notify, and escalate instances of non-compliance through *Inspection*, *Corrective Work Orders*, and *Notices of Non-Compliance* to Fairfax Water and its *customers*.

F. Wholesale Customers

Fairfax Water sells water wholesale to multiple independent water systems. This includes Dulles Airport, Town of Herndon, Loudoun County Sanitation Authority, Virginia American Water: Alexandria, Virginia American Water: Fort Belvoir, Virginia American Water: Prince William, Prince William County Service Authority, and the Town of Vienna.

Each wholesale *customer* is responsible for protecting their *public water distribution system* by operating their own cross-connection control and backflow prevention program.

G. Customers (Property Owners, Owner Agents, Tenants, Consumers, and Responsible Parties)

The *customer's* responsibility begins at the *service connection* from the *public water distribution system* and includes the entire private water distribution system beyond the *service connection*. The *customer*, at the *customer's* own expense, is responsible to install, operate, and maintain all required and approved *backflow preventers* installed beyond the *service connection*.

- The *customer* will accommodate reasonable entry by Fairfax Water personnel or its *authorized agent's*. Access to the facility or property will be during normal business hours, for the purpose of conducting *site surveys* or *inspections*.
- The *customer* is responsible to ensure appropriate permits are issued and final inspections are approved for the installation or replacement of *backflow preventers*.
- The customer is required to promptly correct deficiencies identified by Fairfax Water or its *authorized agents*.

- The *customer* is responsible to ensure the testing of *backflow prevention assemblies* is conducted by a *certified* contractor identified on the [Fairfax County Authorized Vender List for Cross-Connections](#). Testing will be done in accordance with the Virginia Construction Code and in compliance with the requirements of this program. Testing will be conducted at the *customer's* expense.
- Failure, refusal, or inability on the part of the *customer* to install, maintain, test, and ensure the submittal of proper test reports to Fairfax County/the City of Fairfax (depending on the location), will constitute a violation and may lead to further action including additional fees and/or disconnection of water service.

H. Virginia Department of Health

The Virginia Department of Health is responsible for creation, implementation, and enforcement of the Waterworks Regulations and provides technical support, clarification, and guidance in resolving unique situations.

The Virginia Department of Health is responsible to ensure all Virginians have safe drinking water by providing a simple and effective regulatory program for waterworks, adapting to new health concerns in drinking water treatment, and providing a means to improve inadequate waterworks.

III. Service Line Protection vs Point-of-Connection Standard

A. Service Line Protection Standard

In cases where the industry, use, equipment, systems, practices or processes of a business, facility, property or structure create the potential for *contamination* or *pollution* of the *public water distribution system*, the Virginia Department of Health Waterworks Regulations require the installation of a reduced pressure principle *backflow prevention assembly* on the *service line* entering the structure, which separates the *public water distribution system* from the private water distribution system within the structure.

Although, the Virginia Construction Code does not currently mandate *backflow* protection for the *service line*, the requirement to protect the *public water distribution system* from potentially *hazardous* private water distribution systems, by use of *backflow* prevention, has been established by the Virginia Department of Health Waterworks Regulations for many years.

Therefore, the Virginia Department of Health establishes the authority of Fairfax Water to require the installation of specific *backflow prevention assemblies, devices, and/or methods* under the regulations set forth by the Waterworks Regulations.

B. Point-of-Connection Protection Standard

To protect the Fairfax Water *public water distribution system*, it is recognized that *Point-of-Connection protection* practices, as required by the Virginia Construction Code, are in many instances adequate and appropriate. In cases where the *customer's* private water distribution system is not "*intricate or complex*", and where actual or potential *hazards* can be eliminated or reduced at the connection point of the potential source of *contamination*, *Point-of-Connection protection* may be authorized by Fairfax Water, in lieu of *Service line protection*.

Fairfax Water defines "*intricate or complex*" to mean any facilities, systems, equipment, or processes having complicated plumbing systems that are partially obscured, travel through multiple or inaccessible spaces, or are inherently difficult to trace back to a specific connection point to the *potable water* system.

If any portion of a plumbing system is significantly obscured or not adequately labeled making it difficult to determine how a potentially *hazardous* piece of equipment or system is protected by appropriate *backflow* prevention, the *inspector* will require *backflow* protection at the connection point of the equipment or system, and may also require additional labeling of pipes, systems, *backflow preventers*, or access points.

If a *backflow preventer* is installed in a location that is difficult or dangerous to access or significantly obscured from view, the *inspector* may require the relocation of the *backflow preventer* to be more easily accessible for maintenance and/or testing and additional labeling of pipes, systems, *backflow preventers*, or access points.

If, any portion of a plumbing system is significantly obscured or not adequately labeled, making it difficult to determine how or where a potentially *hazardous* piece of equipment or system is connected to the *potable water* supply, the *inspector* will require *service line protection* be installed, and may require additional labeling of pipes, systems, *backflow preventers*, or access points.

IV. Special Conditions

A. Required Retrofitting of Service Line Protection

Installation of a reduced pressure principle *backflow prevention assembly* is mandated by the Virginia Health Department Waterworks Regulation for facilities and properties identified as *hazardous*. Although this requirement is clear, it is recognized that the installation of this *backflow preventer* as *service line protection* for existing facilities or properties may be overly cumbersome or infeasible. Therefore, retroactive enforcement of this mandate will remain at the sole discretion of Fairfax Water.

B. Like-for-Like Replacement Standard

The Virginia Construction Code philosophy of like-for-like replacement for equipment, devices, and materials will not apply to the replacement of *backflow preventers*. Replacements must meet the requirements of the current Virginia Construction Code in effect at the time of replacement.

C. Maintenance Bypass and Secondary Supply Standard

When maintenance bypasses or additional supply lines are installed to any system, equipment, appliance, or outlet, the bypass or additional supply will be protected by a *backflow preventer* which provides an equal or greater level of protection against *backflow* as is provided by the primary supply.

D. Individual Protection and Isolation Standard

Backflow preventers will not be installed or configured to protect multiple systems, pieces of equipment, appliances, or outlets which require a *potable water* supply. Each *cross-connection* will be individually protected and isolated from other components or systems directly connected to the water distribution system.

Exception: A *backflow preventer* may be installed or configured to protect multiple systems, pieces of equipment, appliances, or outlets in circumstances where both of the following conditions apply:

1. All laterals, branches and components beyond the backflow preventer do not require a *potable water* supply, and
2. *Backflow* from one component to another would not be considered *hazardous*.

V. Backflow Protection for Hazardous Industries and Other Connections

A. Facilities Requiring a Service Line Backflow Preventer

Fairfax Water has determined that adequate *backflow* protection can be achieved in many instances under the requirements of the Virginia Construction Code. However, in cases where concerns of potential *contamination* exist, the protection of the *public water distribution system* is paramount, and the requirements of the Virginia Department of Health Waterworks Regulations will have precedence.

To safeguard the *public water distribution system* from potential *contamination*, a reduced pressure principle *backflow prevention assembly* meeting the American Society of Sanitary Engineering (ASSE) Standard 1013 or 1047 will be installed on the *service line*, as directed by Fairfax Water, where one or more of the conditions listed below exist.

- When a facility's use or operation is associated with an industry or activity identified by the Virginia Department of Health and Fairfax Water Hazardous Industry List outlined in **Appendix A**.
- Facilities in which any contaminant or pollutant is connected to the internal private plumbing system in such a manner as to create an actual or potential *hazard* to the Fairfax Water *public water distribution system*.
- Facilities having internal *cross-connections* that, in the judgement of Fairfax Water, contain *intricate or complex* plumbing arrangements which make it impractical to determine whether unprotected *cross-connections* exist.
- Facilities having procedures, prohibitions, or restrictions which make impossible or impractical a complete *site survey* or *inspection*.
- Facilities having repeated history of unprotected *cross-connections* or demonstrating an unwillingness or inability to promptly correct violations as directed.
- Other facilities identified by Fairfax Water when cause can be shown that a potential *cross-connection hazard* exists.

B. Other Cross-Connection Hazards

• Private Wells and Auxiliary Water Systems

In accordance with the Virginia Construction Code, *cross-connections* between a private well or *auxiliary water system* and the Fairfax Water *public water distribution system* are prohibited. Facilities or properties which are supplied by a private well and wish to be connected to the *public water distribution system* are required to

complete either the Well Abandonment Procedure or the Lawn Irrigation Well Procedure outlined in **Appendix B**.

- **Fire Hydrant Meters, Tank Trucks, and Portable Water Tanks**

As a convenience, Fairfax Water allows the use of fire hydrants within their service area when access to the *public water distribution system* through a conventional metered connection is impractical or infeasible. However, the use of a fire hydrant requires specific authorization and the completion of a [Fairfax Water Fire Hydrant Use Permit Procedures, General Conditions, and Agreement](#).

Hydrant meters are supplied with dual check valves (3-inch meters) and vacuum breakers (5/8-inch meters) to help protect against *backflow* events. If a fire hydrant meter is being used to fill a tank truck, portable container, basin, or other reservoir, further protection is required by utilizing an air-gap separation between the hose or fill pipe and the reservoir being filled.

The air-gap must provide a minimum of 6 inches of vertical separation between the hose or fill pipe end and the flood level rim of the reservoir, but will not be less than two times the inside diameter of the hose or fill pipe.

- **Yard Hydrants and Demolition Letters**

Frost proof yard hydrants pose a *backflow* threat to the *public water distribution system* because of the potential for chemical or biological contaminants to *backflow* through the below grade drainage hole or stop-and-waste valve. Yard hydrants of this type must have a *backflow prevention assembly* installed upstream of the hydrant and require a permit, final *inspection*, appropriate testing, and a test report submittal prior to use.

If water is needed at a property for temporary demolition purposes, *sanitary yard hydrants* are strongly encouraged to be used. All yard hydrant must have a non-potable sign and an ASSE 1011 or 1052 hose connection vacuum breaker installed at the threaded outlet. See **Appendix C**.

When yard hydrants are used in conjunction with a demolition project, a Fairfax Water Demolition Letter must be obtained. The procedure for obtaining this letter is outlined in **Appendix D**.

VI. Plan Review, Permit, and Final Inspection Requirements

The Virginia Construction Code requires a permit and final *inspection* for the installation or replacement of a *backflow prevention assembly or device*.

The procedures and requirements outlined in this section are specific to *customers* residing within the municipal boundaries of Fairfax County. The municipalities of the City of Fairfax and the City of Falls Church may have different or additional requirements. It is advised that customers and vendors contact those jurisdictions directly for guidance pertaining to plan review, permitting, and inspection procedures.

- City of Fairfax
Fire Department
Office of Code Administration: Phone: 703-385-7830, TTY 711
Email: codeadministration@fairfaxva.gov
- City of Falls Church
Building Safety Division: Phone: 703-248-5080, TTY 711
Email: permits@fallschurchva.gov

A. Plan Review Requirements

All new installations of *backflow prevention assemblies and devices* related to new construction, remodeling, renovation, or tenant build-out of a commercial property require a plan review. The following information must be included in the construction plans.

- A Schedule of all *backflow prevention assemblies and devices*. The schedule must include, at a minimum plan label, the American Society of Sanitation Engineers standard, equipment or system served, and the physical location (i.e., floor and room number/name) of each assembly and device. **See Appendix E**
- The Plan Label of each assembly or device will appear on the riser diagram and the plan view for each plan submitted.

A plan review with supporting construction documents may not be required for the replacement of a *backflow prevention assembly or device*, an assembly serving a residential lawn irrigation system, or assemblies and devices required to be installed as the result of a Corrective Work Order issued by an *inspector*, specialist or administrator of the Cross-Connection Control Program. However, permission to proceed without the review of construction documents will be determined based on the description of work identified on the permit application.

B. Permit Requirements

In accordance with the Virginia Construction Code, new or replacement installations of *backflow prevention assemblies and devices*, whether in new or existing buildings, require permit application and permit issuance prior to the commencement of work. In emergency or time sensitive situations, the installation may occur prior to receiving a permit, however, the application for permit must be made the following business day. It is the responsibility of the property owner, owner's agent, and/or the contractor to obtain a valid permit prior to requesting an *inspection*.

Excluding temporary removal and re-installation due to annual winterization needs, *backflow prevention assemblies* will not be permanently removed, abandoned, relocated, by-passed, or altered in any manner without prior written approval from a Fairfax County Cross-Connections Program *inspector*.

- A link to the online Permit Application Page of Fairfax County can be found on the Fairfax County website: <https://www.fairfaxcounty.gov/bldgpermits/webpermit.aspx>
- **Commercial properties**, properties serving or intended for public use or access, multi-family structures such as condominiums and apartments, and residential properties greater than three stories in building height such as four-story townhouses require a plumbing permit for the installation of *backflow prevention assemblies* serving any system or equipment connected to the *public water distribution system* in accordance with the provisions of the Virginia Construction Code and the Virginia Department of Health Waterworks Regulations. Construction documents may be required depending on the scope of the installation.
- **Residential properties** serving or intended for private use, and having a building height of three stories or less such as single family dwellings, townhouses, and two-family dwellings require a plumbing permit for the installation of *backflow prevention assemblies* serving any system or equipment connected to the *public water distribution system* in accordance with the provisions of the Virginia Construction Code and the Virginia Department of Health Waterworks Regulations.
- **Water-based fire protection systems** require the installation of a *backflow prevention assembly*. The installation and *inspection* of this *backflow preventer* will require a plumbing permit in addition to any permits required by the Fairfax County fire marshal for the installation of the fire suppression system.
- **Private wells and auxiliary water systems** require a residential or commercial plumbing/gas permit as determined by the properties' Group as defined in the Virginia Construction Code, in addition to any permits required by the Fairfax County Health Department. Laterals from private wells and *auxiliary water systems* will be *inspected* to ensure they are not interconnected with any water distribution system which is also connected to the *public water distribution system*. Further direction can be found in **Appendix B**.

- **Lawn irrigation systems** require a residential or commercial plumbing/gas permit as determined by the properties' Group as defined by the Virginia Construction Code. Lawn irrigation systems require the installation of a *backflow preventer* in accordance with the Virginia Construction Code. It is required that the term **“lawn irrigation system with backflow preventer”** appear in the work description of the permit application. Further direction can be found in **Appendix F**.
- **Restricted water service** connections require a residential or commercial plumbing/gas permit as determined by the properties' Group as defined in the Virginia Construction Code. Because *restricted water service* connections are only installed for the purpose of usage with a lawn irrigation system or yard hydrant it will require the installation of a *backflow preventer* in accordance with the Virginia Construction Code. It is required that the term **“lawn irrigation system with backflow preventer”** or **“yard hydrant with backflow preventer”** appear in the work description of the permit application. Further direction can be found in **Appendix F**.

C. Inspection Requirements

The installation of all *backflow prevention assemblies and devices*, regardless of the configuration, building height, or Group of a property; or the specific system or equipment served by the assembly or device, will require a permit and final *inspection* by Fairfax County.

- Prior to scheduling a final *inspection*, each *backflow prevention assembly* installed, must be tested to ensure proper operation, by an individual *certified* in the testing of *backflow prevention assemblies*. The results indicating proper operation must be recorded on a [Fairfax County Backflow Assembly Test Report](#) and submitted to Fairfax County online at the [Cross-Connections Control and Backflow Prevention Program](#) webpage.
- It is the responsibility of the owner, owner's agent, and/or contractor to ensure test reports are submitted in a timely manner and indicate the specific permit number the *backflow prevention assemblies*.
- It is recommended that the owner, owner's agent, and/or contractor submit test reports at least three business days prior to the need for *inspection* to avoid delays in *inspection* processing.

VII. Backflow Preventer Access and Clearance Requirements

A. Backflow Prevention Devices

Backflow Prevention Devices will be installed with appropriate clearance from obstructions, to ensure access for *inspection*, maintenance, and replacement.

- If concealed by a removable panel, the panel will be large enough to allow a minimum work clearance of 6 inches to all sides of the device. Additionally, the panel will be permanently labeled with the phrase “Backflow Preventer Access.” The lettering will be a minimum of ½ inches in height.

B. Backflow Prevention Assemblies

Backflow prevention assemblies will be installed with appropriate clearance from obstructions, and at an easily accessible height, to ensure access for *inspection*, testing, maintenance, and replacement.

- They will be installed not less than 18 inches above, and not more than 60 inches above a floor, working platform, or grade.
- If concealed by a removable panel, the panel will be large enough to allow a minimum work clearance of 12 inches to test ports and relief ports, and a minimum of 6 inches of piping beyond both the inlet and outlet connections. Additionally, the panel will be permanently labeled with the phrase “backflow preventer access”. The lettering will be a minimum of ½ inches in height.
- The allowable horizontal or vertical orientation of *Backflow Prevention Assemblies* will conform to the [American Society of Sanitation Engineers Backflow Prevention Assembly Orientation Guidelines](#).

VIII. Backflow Prevention Assembly Testing Requirements and Procedures

A. Backflow Prevention Assembly Testing Requirements

In accordance with the Virginia Construction Code, *backflow prevention assemblies* will be tested at installation, immediately after repairs or relocation, and at least annually.

In accordance with the Virginia Department of Health Waterworks Regulations, procedures for annual testing of *backflow prevention assemblies* will be established by Fairfax Water. Testing results will be documented, and the documentation for each test will be retained for a period of 10 years.

B. Certification Requirements for Backflow Testing

Beginning January 1, 2023, persons testing and repairing *backflow prevention assemblies and devices* will be *certified* by a Commonwealth of Virginia tradesman certification program (identified by the Virginia Department of Professional and Occupational Regulation as “Backflow Prevention Device Workers”). Until January 1, 2023, persons testing and repairing *backflow prevention assemblies and devices* will be qualified to perform such work as demonstrated by possessing a certification or license from a local or state agency having legal authority or will possess a certificate of completion of applicable vocational training acceptable to the Fairfax County Water Authority.

C. Standards for Field Testing Backflow Prevention Assemblies

The uniform testing standard for each *Backflow Prevention Assembly* Type will be as prescribed by the University of Florida, Training, Research, and Education for Environmental Occupations (UF TREEO) Test Procedures outlined in **Appendix G**.

Test Gages will be configured and capable to meet the criteria of the UF TREEO testing procedures. Test Gages will be calibrated and certified at least once annually and will not exceed 12 months between calibrations. Certification of test gages will be provided as required or requested by Fairfax Water or its *authorized agents* to establish or verify proper operation.

D. Backflow Prevention Assembly Test Report Requirements

A Fairfax County Backflow Assembly Test Report must be completed and submitted, by a Fairfax County *authorized vendor*, at the following instances.

- At the time of installation
- Immediately after repairs

- Upon relocation
 - At least annually *
- * Each property having a *backflow prevention assembly* is assigned a specific month each year for annual testing. The month assigned is determined based on geographic location and utilizes the Fairfax County Tax Map Grid system. It is required that backflow testing be conducted within the assigned testing month for each property, each year, regardless of when testing occurred in the previous year.

All test reports are to be downloaded and submitted through the [Fairfax County Cross-Connection Control and Backflow Prevention Program Website](#).

The results for each backflow prevention assembly test will be documented using the [Fairfax County Backflow Assembly Test Report](#). The tester or company the tester is employed by is responsible to download, complete, and submit the test report to Fairfax County within 10 business days of the test date. The Web address to download and submit testing is www.fairfaxcounty.gov/landdevelopment/crossconnections.

E. Completing and Submitting a Test Report

It is the responsibility of the contractor, tester, or testing company to ensure backflow assembly test reports are completed and properly submitted in a timely manner. **Test reports submitted with incomplete information or testing conducted by individuals who are not authorized will not be accepted.**

- Backflow prevention assembly testing and test reports must be completed by an individual identified on the Fairfax County *authorized vendor* list.
- Test reports will be submitted to Fairfax County within 10 business days of the test date.
- Backflow Assembly Test Reports must be submitted individually. All *backflow prevention assemblies*, installed at each unique address, should be included on the test report. Do not attach multiple test reports to a single submittal.
- Each test report submitted must contain both Part A and Part B.
- Only test reports indicating a result of "PASSING" for all *backflow prevention assemblies* installed at a given property will be accepted.
- Test Reports indicating the status of a *backflow prevention assembly* as "not in use," "not tested," "not located" or in some other manner not showing a "PASSING" result, will not be accepted.

- *Backflow prevention assemblies* will not be permanently removed, abandoned, placed out of service, relocated, by-passed, or altered in any manner without prior approval from Fairfax County.
- *Backflow prevention assemblies* receiving a result of "FAILED" from Fairfax County, must be corrected, and re-tested to ensure proper operation, prior to submitting a Test Report for a given property.
- *Backflow prevention assemblies* which "FAIL" testing must be repaired or replaced and re-tested within 10 business days of the initial failed test date.

IX. Certification of Backflow Prevention Contractors

A. Backflow Prevention Installation Contractors

Companies or sole proprietor entities, intending to install or replace a *backflow prevention device or assembly*, will be licensed by the Virginia Department of Professional and Occupational Regulations. The license will carry a classification of A, B, or C and will include an endorsement of either Plumbing, Fire Sprinkler, or Irrigation. The endorsement identified on the license will limit the installation of *backflow preventers* to only the systems and equipment allowable under the endorsement.

The installation contractor is required to notify the appropriate *building authority*, and when necessary, submit an application for permit, prior to the commencement of work or as directed by the *building authority*.

The installation contractor is responsible to use approved *backflow preventers* installed in accordance with the Virginia Construction Code, the manufacturer's instructions, and any additional instructions of Fairfax Water, or the *building authority* having jurisdiction.

B. Backflow Prevention Repair Contractors

Repairs to internal or external components of a *backflow prevention assembly* which is greater than 6 inches in service diameter, will be conducted by a company or sole proprietor licensed and endorsed by the commonwealth of Virginia as outlined in Paragraph A above.

Repairs to internal or external components of a *backflow prevention assembly* which is 6 inches or less in service diameter, may be conducted by a licensed installation contractor, as stated above, or an individual *certified* by the Virginia Department of Professional and Occupational Regulation as a "Backflow Prevention Device Worker."

C. Backflow Prevention Testing Contractors

Each individual intending to test a *backflow prevention assembly*, will be *certified* by the Virginia Department of Professional and Occupational Regulation as a "Backflow Prevention Device Worker."

Proof of this certification will be provided to Fairfax County prior to the individual being authorized to test *backflow prevention assemblies* and will be provided thereafter as requested.

A list of all individuals "authorized" to test *backflow prevention assemblies* in Fairfax County will be maintained by Fairfax County and be made available to the public. Testing will only be conducted by individuals identified on the Fairfax County authorized tester list.

Each individual conducting testing is responsible to complete the required Fairfax County testing documentation and submit the testing results to Fairfax County as directed. The tasks of documenting and submitting test reports will not be delegated to the property owner or owner's agent.

X. Enforcement Authority, Responsibilities, and Procedures

Enforcement of this program is conducted under the authority of Fairfax Water, as the owner and purveyor of the *public water distribution system*, in accordance with the Virginia Department of Health Waterworks Regulations. The authority of enforcement is applicable to all facilities and properties served by Fairfax Water.

Fairfax Water delegates the authority to conduct periodic on-site *inspections*, enforce annual backflow prevention assembly testing requirements, manage record keeping, and facilitate document retention by establishing *authorized agents* in cooperation with the *building authority* having jurisdiction.

A. Authorized Agents

Fairfax County Land Development Services is established as the *authorized agent* for enforcement of the program requirements in most municipalities within the boundaries of Fairfax County and the city of Falls Church

The city of Fairfax fire marshal is established as the *authorized agent* for enforcement of the program requirements within the boundaries of the city of Fairfax.

B. Responsibilities of Property Owners, Owner Agents, and Tenants

It is recognized that notification procedures and communication with property owners, owner agents, and tenants is critical to the administration and enforcement of this program and the safety of the *public water distribution system* overall.

The notification and escalation process outlined in paragraph “C” below is designed to improve communication, understanding, and compliance with the requirements of this program, and to inform the person(s) responsible for the maintenance of each facility or property of the need for corrective work due to deficiencies or violations.

The notifications in paragraph “C” below are automated based on when certain requirements are due annually, and in response to deficiencies and violations identified during on-site *inspections*. They are sent via email exclusively unless otherwise indicated.

It is the responsibility of the property owner, owner’s agent, or tenant to ensure valid contact information is provided to Fairfax County. A valid contact must include the responsible party’s name, phone number, and email address. The contact information for a facility or property can be updated online at www.fairfaxcounty.gov/landdevelopment/crossconnections.

It is the responsibility of the property owner, owner’s agent, or tenant to correct identified deficiencies or violations without delay. The time allotted to correct deficiencies or avoid escalation of violations will not be extended due to delays in delivery of notifications.

C. Notification and Escalation Procedure

The procedure outlined in this section is specific to *customers* residing within the municipal boundaries of Fairfax County and the city of Falls Church. This procedure may be different in the municipality of the city of Fairfax. It is advised customers contact them directly for guidance pertaining to notifications and escalation.

- City of Fairfax
Fire Department
Office of Code Administration: Phone: 703-385-7830, TTY 711
Email: codeadministration@fairfaxva.gov

Step 1 Notice of Backflow Prevention Assembly Testing Due (Appendix H)

This notice is sent by the *authorized agent* via email to the *customer* contact(s) on file, for each property or facility required, approximately 60 calendar days prior to the due date for backflow prevention assembly testing. It is required that testing be conducted, and the testing results be submitted, not more than 30 calendar days prior to the due date, and not beyond the due date.

This notice is also sent via postal service to the physical address where each *backflow prevention assembly* is located. However, in some instances, *backflow prevention assemblies* are not located at an address recognized by the postal service and are therefore undeliverable.

Step 2 Corrective Work Order (Appendix I)

This notice is sent by the *authorized agent* via email to the *customer* contact(s) on file, for each property or facility, which has not completed backflow prevention assembly testing as required or is identified as having deficiencies in violation of the Virginia Construction Code or the Virginia Department of Health Waterworks Regulations, resulting in a failed *inspection*. This notice allows 30 business days to complete and provide documentation of corrections to *authorized agent* beginning on the date of violation, not the date of notification.

Step 3 Notice of Non-Compliance (Appendix J)

This notice is sent by the *authorized agent* via email to the *customer* contact(s) on file, for each property or facility, which has not completed and provided documentation of corrections identified on a Corrective Work Order within the allotted timeframe. This notice allows 10 business days to bring identified violations into compliance beginning on the date of non-compliance, not the date of the notification.

This notice may also be sent in lieu of the corrective work order in instances identified during an on-site *inspection*, where a violation constitutes a potentially severe *contamination* risk to the *public water distribution system* as determined by Fairfax Water.

This notice is automatically copied via email to Fairfax Water to begin punitive action proceedings which may include disconnection of water service.

Step 4 Notice of Disconnection of Water Service (Appendix K)

This notice is sent by Fairfax Water via email or postal service to the billing contact on file for any property or facility which has not resolved deficiencies or violations identified by the *authorized agent* within the timeframe allotted by the Notice of Non-Compliance.

Step 5 Final Notice of Disconnection of Water Service (Appendix L)

If all previous attempts to notify the property owner, owner's agent, tenant or billing contact fail to resolve deficiencies and violations, Fairfax Water will elect to either call the party responsible for the maintenance of the property or conduct an in-person visit to the facility or property to obtain a verified contact.

However, if compliance is not achieved, after verified contact through previous notifications and/or calls or on-site visits, Fairfax Water will begin disconnection of water service proceedings by sending, via email or postal service, the party responsible for the maintenance of the property a Final Notice of Disconnection of Water Service. This letter will include the date Fairfax Water will disconnect the water service.

Step 6 Initiation of Disconnection of Water Service

If compliance is not achieved by the Disconnection of Water Service Date, Fairfax Water will initiate the disconnection of water service. Prior to the disconnection of water service that would impact the fire protection systems in a building, the Office of the Fire Marshal shall be notified by Fairfax Water.

If disconnection of water service occurs, access to the facility or property will be barred through a posted *placard* by the *building official* having jurisdiction in accordance with the requirements of the Virginia Construction Code. Only persons conducting corrective work will be granted entry.

If disconnection of water service results in loss of service to a fire suppression system, access to the facility or property will be barred or regulated, by the fire marshal having jurisdiction, in accordance with the requirements of the

Virginia Construction Code. Only persons conducting corrective work or as authorized by the fire marshal will be granted entry.

Step 7 Re-connection of Water Service

If water service is necessary to conduct backflow prevention assembly testing and/or corrective work, Fairfax Water will reconnect water service for a specified timeframe to accommodate this work. This limited use will not allow entry of the public or allow a return to occupancy of the facility or property.

After the required corrective work has been completed and appropriate fees have been paid, or Fairfax Water determines the work remaining will be completed within an acceptable timeframe, Fairfax Water will reconnect water service to the *customer* and the building official having jurisdiction will remove the *placard* barring entrance. Fairfax Water may elect to charge a re-connection fee at their discretion.

XI. Site Surveys, Periodic Inspections, and Incident Response

A. Site Surveys

Water use requirements are continually changing within private water systems. This is due to many factors such as a new business build-out, new equipment or appliance installations, a change of ownership, or a change in use of the facility. Therefore, it is necessary to audit facilities as changes occur or undocumented installations are discovered. Fairfax Water may require a *site survey* of any facility connected to the *public water distribution system*. This survey will include a detailed *inspection* by a cross-connection *inspector* designed to identify water uses of the facility or property, identify the existence of *cross-connections* and the availability of *auxiliary water systems*, and to determine the potential risk a facility, or equipment in use at the facility, poses to the *public water distribution system*.

A *site survey* will be conducted, by a representative of Fairfax Water or its *authorized agent*, for any property not currently having a cross-connection record, when a property changes Group as identified by the Virginia Construction Code, occupancy, or ownership status, when deemed necessary by a cross-connection *inspector*, or when requested by Fairfax Water.

The *site survey* will include a physical *inspection* focused on all equipment, systems, and fixtures directly connected to the *public water distribution system*, as well as all relevant requirements of the Virginia Construction Code and Virginia Department of Health Waterworks Regulations.

B. Periodic Inspections

Periodic *inspections* are required to monitor facilities, which are likely or known to have *cross-connections* and/or processes with the potential to contaminate the *public water distribution system*.

Periodic *inspections* will be conducted for any facility having potential or known *hazardous cross-connections*, equipment, or processes as identified by the hazardous industry list in **Appendix A** or as required by Fairfax Water. The schedule and frequency for conducting periodic *inspections* will be established by Fairfax Water.

The detailed periodic *inspection* is focused on confirming proper *backflow* prevention is installed and unprotected *cross-connections* do not exist. This *inspection* will also confirm, when applicable, that proper maintenance and testing of *backflow prevention assemblies* is being conducted in accordance with the requirements of the Virginia Construction Code. Additionally, the *inspector* will confirm the current contact information for the individual(s) responsible for maintenance of the facility

If deficiencies to either the Virginia Construction Code or the Virginia Department of Health Waterworks Regulations are identified during the *inspection*, the *inspector* will

issue a “Corrective Work Order” detailing the deficiency(s) and the corrective action to be taken by the responsible party representing the facility. The Corrective Work Order will allow not more than 30 business days to make corrections.

If the corrections required by the Corrective Work Order are not completed in the time allotted, the *inspector* will issue a “Notice of Non-Compliance” to the responsible party representing the facility. The Notice of Non-Compliance will allow not more than 10 additional business days to provide proof of completed corrections to Fairfax County. this notice will also be forwarded to Fairfax Water for any further action deemed necessary.

C. Backflow Incident Response

Fairfax Water has prepared an Incident Response Plan to assist and guide its employees in the event of a *backflow* incident. The plan defines proactive measures for staff preparation and training, and reactive measures necessary to significantly lessen the impact or consequence of a *backflow* incident within the *public water distribution system*.

Suspicion of *pollution* or *contamination* should be reported as-soon-as possible to Fairfax Water by calling the Fairfax Water Customer Service Department 703-698-5613, TTY 711.

XII. Reference Documents and Resources

The provisions of the Fairfax Water Cross-Connection Control and Backflow Prevention Program are based upon the authority, requirements, standards, and best practices contained in the following Reference Materials:

- The Federal Safe Drinking Water Act of 1974
- *Waterworks Regulations*, Virginia Department of Health, Part II, Article 3 entitled “Cross-Connection Control and Backflow Prevention in Waterworks” (12 VAC 5-590-580 et seq.)
- The current Virginia Construction Code, *including, but not limited to, applicable sections of the Virginia Plumbing Code*
- Fairfax Water Rules and Regulations
- Code of Fairfax County
- Code of the City of Fairfax
- Code of the City of Falls Church
- American Society of Sanitation Engineers
- The University of Florida Training, Research and Education for Environmental Occupations (UF TREEO)

This Page is Intentionally Blank

APPENDICIES SECTION

This Page is Intentionally Blank

Appendix A: Virginia Department of Health and Fairfax Water Hazardous Industry List

A reduced pressure principle *backflow prevention assembly* meeting the American Society of Sanitary Engineers Standards 1013 or 1047 will be installed at the following facilities:

Use	Sub-Use	Description
Agriculture	Ag – Commercial Farm (crops)	Farm participating in production and public sale of produce
	Ag – Commercial Green Houses	Participates in growing crops, plants and/or produce for sale
	Ag – Commercial Nursery	Participates in growing crops, plants and/or produce for sale
Animal Processing	An – Canneries	
	An – Commercial Farms (Animal)	Farm participating in production and public sale of livestock. This includes poultry houses, chicken houses with automatic proportioning pumps or feeder barrels for supplying water with live virus or other medication, livestock watering troughs with below the rim filling outlet, diluting and mixing of pesticides and insecticides, mixing and spray equipment, greenhouses, dilution of liquid fertilizers, dairies, unprotected hose bibbs.
	An – Dairy/Cold Storage Facility	
	An – Meat/Fish Packing Houses	
	An – Poultry Processing	
	An – Rendering Facility	
	An – Slaughterhouses	
Automotive	Au – Commercial Carwash	Includes drive through and self-service with a wand
	Au – Fueling Station with Carwash	
	Au – Paint/Body Work	
	Au – Repair/Maintenance Garage	Includes any facility that works on automobiles
Commercial (General)	C – Assigned by Fairfax Water	
	C - Building Over Three Stories	All buildings over three stories
	C - Building with Master Meter	Buildings with three stories or less with multiple tenants
	C - Building with Auxiliary Water Service	Buildings that are also receiving water from a well, reuse or any other source other than the public water supply
	C - Commercial Laundries	Laundromats
	C - Dry Cleaners	
	C - Extermination with Chemical Storage	
	C - Hatcheries	
	C - Irrigation Only	
	C - Landscaping with Chemical Storage	
	C - Pesticide with Chemical Storage	

	C - Piers/Docks/Marina's	Commercial industries that operate on the water conducting business associated directly with the water. Includes any location with a port, harbor, dock, pier, marina, mole, jetty, quay, wharf, or any other place where a marine vessel can moor.
Food and Beverage	F - Beverage Processing Plants	Includes soft drink manufacturers
	F - Brewery	
	F - Distillery	
	F - Food Processing Plants	Facilities that engage in largescale food processing for wide distribution
	F - Industrial Pressure Cooking	
	F - Winery/Vineyard	
Health Care	H - Assisted Living with Medical	Includes facilities with unprotected connections to laboratory equipment which may be chemically or bacteriologically contaminated, such as, steam sterilizes, autoclaves, specimen tanks, and pipette washers.
	H - Crematorium	
	H - Dental Treatment/Surgery	All dental offices
	H - Dialysis Center	
	H - Facilities w/Therapeutic Baths	
	H - Hospital	Includes facilities with unprotected connections to laboratory equipment which may be chemically or bacteriologically contaminated, such as, steam sterilizes, autoclaves, specimen tanks, and pipette washers.
	H - Medical Treatment/Surgery	Includes facilities with unprotected connections to laboratory equipment which may be chemically or bacteriologically contaminated, such as, steam sterilizes, autoclaves, specimen tanks, and pipette washers. Does not include: Businesses that do not have medical equipment tied directly into the premise plumbing permanently or temporarily. This would include businesses that engage in psychiatry, psychology, counseling, physical therapy, chiropractic care, acupuncture, massage therapy, etc.
	H - Morgues/Autopsy Facility	
	H - Mortuary	
	H - Nursing Home	A facility that provides residential accommodations with healthcare. Includes convalescent facilities
	H - Trauma Center	Includes facilities with unprotected connections to laboratory equipment which may be chemically or bacteriologically contaminated, such as, steam sterilizes, autoclaves, specimen tanks, and pipette washers.
	H - Urgent Care/Emergency Room	Includes facilities with unprotected connections to laboratory equipment which may be chemically or bacteriologically contaminated, such as, steam

		sterilizes, autoclaves, specimen tanks, and pipette washers.
	H - Veterinary Clinic	
	H - X-Ray/MRI/Radiology Facility	
Industrial Processing	I - Biological Processing Facility	Includes biopharmaceutical processing
	I - Chemical Processing Facility	
	I - Hazardous Waste	Includes landfills, incinerators, disposal, etc.
	I - Medical Gas Processing	
	I - Metal Plating	Facilities involving the use of highly toxic cyanides, heavy metals in solutions (such as copper, cadmium, chrome, nickel, etc.), acids and caustic solutions
	I - Natural Gas/Propane Processing	
	I - Petroleum Processing Facility	
	I - Radioactive Material Processing	
	I - Recycling/Solid Waste	Includes landfills, incinerators, disposal, etc.
Laboratories	L - Biological Lab	
	L - Chemical Lab	
	L - Medical Diagnostic Lab	
	L - Photographic/Film Lab	Facilities that use automatic film processing machines, tanks, vats, and other equipment used in processing film.
	L - Radioactive Material Lab	
	L - Schools/Colleges with Labs	
Manufacturing	M – Aircraft/Machine Production	Includes the following manufacturers: airplanes, jets, helicopters, drones, motors, etc.
	M - Asphalt Plant	
	M - Automotive Plant	Includes the following manufacturers: automobiles, motorcycles, trucks, recreational vehicles, construction equipment, and agricultural equipment.
	M – Computer/Electronic Components Plant	
	M - Concrete Plant	Includes cement manufacturing
	M - Chemical Plant	
	M - Dyeing/Ink Plant	Facilities that use dye vats in which toxic chemicals and dyes are used. Facilities with shrinking, bluing, and dyeing machines directly connected to re-circulating systems.
	M - Fertilizer Plant	
	M - Gas Transmissions/Storage	
	M - Metal Cleaning/Fabrication	Facilities that deal with hazardous chemicals, industrial fluids, metals in solutions, cyanic, cleaning equipment, tanks, vessels, reservoirs, and other hazardous substances that could contaminate the water supply.
	M - Munitions Plant	Includes the following manufacturers: armored vehicle components, torpedoes, warheads or any other kind of aircraft or missile.
	M - Paper Mills/Plants	
	M - Pesticides/Insecticides	

	M - Petroleum Transmission/Storage	
	M - Pharmaceutical Plant	
	M - Printing Plant	Commercial printing (newspapers, magazines)
	M - Rubber Plant	
	M - Sand and Gravel Plant/Quarry	Includes nonmetallic mineral product manufacturing and crushed and broken stone/granite mining and quarrying
	M - Synthetic Material Plant	
Public Utility	P - Nuclear Reactor	
	P - Power Plants	
	P - Public Transportation	Includes bus and train depots, and repair/maintenance facilities
	P - Sewage Pump Station	
	P - Sewage Treatment Plant	
	P - Stormwater Pump Station	
	P - Stormwater Treatment Plant	
	P - Water Treatment/Distribution	
Recreation	R - Golf Course	
	R - Health Club/Pool, Sauna, Hot Tub	Any location containing a swimming pool for public use
	R - Parks/Fields Irrigation Only	
	R - Public Swimming Pool	Any location containing a swimming pool for public use
	R - Spa with Pool, Sauna, or Hot Tub	
Residential Use	RU - Apt/Condo Irrigation Only	
	RU - HOA/COA Irrigation Only	
	RU - SF/TH Irrigation Only	
Restricted	Re - Owned by Federal Government	
	Re - Owned by State Government	
	Re - Secure/Classified Facility	Any structure that requires a security clearance to access
	Re - State School/College/University	

Appendix B: Well Abandonment Procedure and Lawn Irrigation Well Procedure



FAIRFAX COUNTY WATER AUTHORITY
8570 Executive Park Avenue
Fairfax, Virginia 22031-2218
www.fairfaxwater.org

Notice for New Tap Requests: Well Abandonment Procedure

You have inquired about connecting to the Fairfax Water distribution system. Please note, all work for a new tap must be permitted by the appropriate Building Authority.

To connect a new tap to the Fairfax Water distribution system and obtain a water meter, permit applicants are required to follow the steps below in order:

1. Request a new tap from Fairfax Water and pay any applicable fees.
2. Apply for a plumbing permit from the proper jurisdiction.
Fairfax County - 703-222-0801, TTY 711,
www.fairfaxcounty.gov/fido/
City of Fairfax - 703-385-7830, TTY 711,
www.fairfaxva.gov/government/code-administration/new-construction-remodeling/building-permits
City of Falls Church - 703-248-5004, TTY 711,
www.fallschurchva.gov/370/Licenses-Permits
3. List on the Plumbing Permit work description – *Well Abandonment and New Service Lateral Connection*.
4. Notify Fairfax County Health Department of well-abandonment at 703-246-2201, TTY 711,
www.fairfaxcounty.gov/health/fairfax-county-health-department
5. Pass final plumbing inspection and Health Department review.
6. Provide a copy of the plumbing permit highlighting that you have “passed” the final inspection as well as the Health Department Review conducted on the well.
Email: newservices@fairfaxwater.org
7. Request a water meter from Fairfax Water
8. Fairfax Water installs a new water meter

Mail or drop off:
Fairfax Water
8570 Executive Park Avenue
Fairfax, VA 22031

Thank you,

New Services Department
703-698-2080, TTY 711
newservices@fairfaxwater.org



FAIRFAX COUNTY WATER AUTHORITY

8570 Executive Park Avenue

Fairfax, Virginia 22031-2218

www.fairfaxwater.org

Notice for New Tap Requests: Lawn Irrigation Well Procedure

You have inquired about connecting to the Fairfax Water distribution system. Please note, all work for a new tap must be permitted by the appropriate Building Authority.

To connect a new tap to the Fairfax Water distribution system and obtain a water meter, permit applicants are required to follow the steps below in order:

1. Request a new tap from Fairfax Water and pay any applicable fees.
2. Apply for a plumbing permit from the proper jurisdiction.
Fairfax County - 703-222-0801, TTY 711,
www.fairfaxcounty.gov/fido/
City of Fairfax - 703-385-7830, TTY 711,
www.fairfaxva.gov/government/code-administration/new-construction-remodeling/building-permits
City of Falls Church - 703-248-5004, TTY 711,
www.fallschurchva.gov/370/Licenses-Permits
3. List on the Plumbing Permit work description – *Well Reclassification and Disconnect. Install New Service Lateral Connection.*
4. Notify Fairfax County Health Department of well-abandonment at 703-246-2201, TTY 711,
www.fairfaxcounty.gov/health/fairfax-county-health-department
5. Email pictures of capped well piping, and new public water connection inside the house to
newservices@fairfaxwater.org
6. Pass final plumbing inspection
7. Provide a copy of the plumbing permit highlighting that you have “passed” the final inspection.
Email: newservices@fairfaxwater.org
Mail or drop off:
Fairfax Water
8570 Executive Park Avenue
Fairfax, VA 22031
8. Request a water meter from Fairfax Water
9. Fairfax Water installs a new water meter

Thank you,

New Services Department

703-698-2080, TTY 711

newservices@fairfaxwater.org

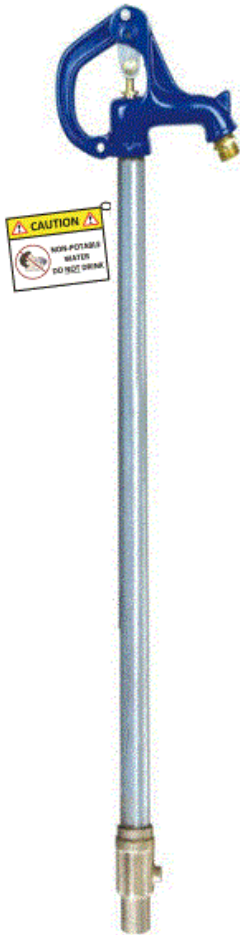
Appendix C: Approved Yard Hydrants



FAIRFAX COUNTY WATER AUTHORITY
8570 Executive Park Avenue
Fairfax, Virginia 22031-2218
www.fairfaxwater.org

Notice for Yard Hydrant Installation

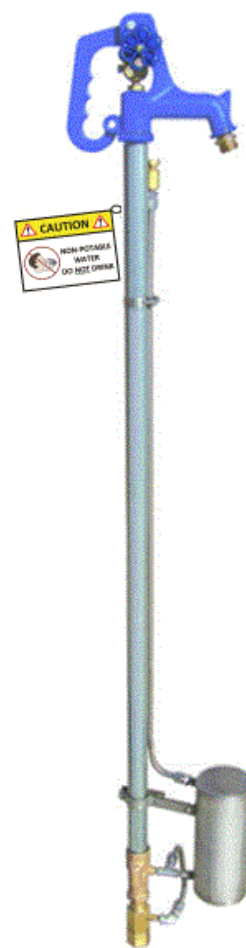
Fairfax Water and the Virginia Plumbing Code, 608.8 and 608.15.4.2, require all yard hydrants to have a non-potable sign and an ASSE 1011 or 1052 AVB installed at the threaded hose outlet.



Frost-Proof Yard Hydrant



Sanitary Yard Hydrant
ASSE – 1057-2012



Sanitary Yard Hydrant
ASSE – 1057-2012

Appendix D: Demolition Letter Requests



FAIRFAX COUNTY WATER AUTHORITY
8570 Executive Park Avenue
Fairfax, Virginia 22031-2218
www.fairfaxwater.org

Notice for Demolition Letter Requests

Demolition Letter – No Water Serving the Property

All customers who wish to request a demolition letter and want their water service capped should send an email to newservices@fairfaxwater.org

The following information will need to be included:

- Name
- Phone number
- Property address of property to be demolished
- Earliest date to have meter pulled
- Mailing address to send the final bill (if applicable)

Demolition Letter – Water Serving the Property

Water Service Requirement

If water is needed at a property for temporary demolition purposes, *sanitary yard hydrants* are strongly encouraged to be used. All yard hydrant must have a non-potable sign and an ASSE 1011 or 1052 hose connection vacuum breaker installed at the threaded hose outlet.

All customers who wish to request a demolition letter and need water serving the property should send an email to newservices@fairfaxwater.org

The following information will need to be included:

- Name
- Phone number
- Property address of property to be demolished
- Picture of the Sanitary Yard Hydrant
- Request meter and water service at property

Thank you,

New Services Department
703-698-2080, TTY 711
newservices@fairfaxwater.org

Appendix E: Example of Backflow Prevention Assemblies and Devices Schedule for Plan Review Submission

BACKFLOW PREVENTER SCHEDULE				
LABEL	LOCATION OF PREVENTER	EQUIPMENT SERVED	PREVENTER TYPE	STANDARD
BFP1	2nd Floor Break Room	Coffee Brewer	Dual Check	ASSE 1024
BFP1	3rd Floor Break Room	Coffee Brewer	Dual Check	ASSE 1024
BFP1	1st Floor Café	Coffee Brewer	Dual Check	ASSE 1024
BFP1	1st Floor Café	Espresso Machine	Dual Check	ASSE 1024
BFP1	1st Floor Café	Juice Dispenser	Dual Check	ASSE 1024
BFP2	1st Floor Café	Carbonated Beverage Dispenser	Dual Check	ASSE 1022
BFP3	1st Floor Janitor Closet	Chemical / Soap Dispenser	RP Assembly	ASSE 1013
BFP3	2nd Floor Janitor Closet	Chemical / Soap Dispenser	RP Assembly	ASSE 1013
BFP3	3rd Floor Janitor Closet	Chemical / Soap Dispenser	RP Assembly	ASSE 1013
BFP3	Penthouse Mechanical RM	Boiler - 1	RP Assembly	ASSE 1013
BFP3	Penthouse Mechanical RM	Boiler - 2	RP Assembly	ASSE 1013
BFP3	Penthouse Mechanical RM	Cooling Tower	RP Assembly	ASSE 1013
BFP3	Penthouse Mechanical RM	Cooling Tower Maint. By-Pass	RP Assembly	ASSE 1013
BFP3	2nd FL Treatment Suite 201	Dental Chair	RP Assembly	ASSE 1013
BFP3	2nd FL Treatment Suite 202	Dental Chair	RP Assembly	ASSE 1013
BFP3	2nd FL Treatment Suite 203	Dental Chair	RP Assembly	ASSE 1013
BFP3	2nd Floor Equipment Room	Vacuum Pump	RP Assembly	ASSE 1013
BFP3	Sprinkler Valve Room	Lawn Irrigation System	RP Assembly	ASSE 1013
BFP3	Sprinkler Valve Room	Domestic Water Service	RP Assembly	ASSE 1013
BFP4	Sprinkler Valve Room	Fire Sprinkler System	DC Assembly	ASSE 1015

Appendix F: Lawn Irrigation Systems and Restricted Water Services



FAIRFAX COUNTY WATER AUTHORITY

8570 Executive Park Avenue

Fairfax, Virginia 22031-2218

www.fairfaxwater.org

Notice for New Tap Requests: Lawn Irrigation Systems and Restricted Water Services

You have inquired about connecting to the Fairfax Water distribution system to utilize a lawn irrigation system and/or restricted water service. Restricted water service connections are only installed for landscaping purposes with a Lawn Irrigation System or Yard Hydrant. Both require the installation of a backflow preventer in accordance with the Virginia Construction Code.

To connect a new tap to the Fairfax Water distribution system and obtain a water meter, permit applicants are required to follow the steps below in this order

1. Request a new tap from Fairfax Water and pay and applicable fees
2. Apply for a plumbing permit from the proper jurisdiction.
Fairfax County - 703-222-0801, TTY 711,
www.fairfaxcounty.gov/fido/
City of Fairfax - 703-385-7830, TTY 711,
www.fairfaxva.gov/government/code-administration/new-construction-remodeling/building-permits
City of Falls Church - 703-248-5004, TTY 711,
www.fallschurchva.gov/370/Licenses-Permits
3. List on the Work Description of the permit application – *Lawn Irrigation System with Backflow Preventer* or *Frost-Proof Yard Hydrant with Backflow Preventer* or *Sanitary Yard Hydrant*
4. Pass final plumbing inspection
5. Provide a copy of the plumbing permit highlighting that you have “passed” the final inspection and a work description of *Lawn Irrigation System with Backflow Preventer* or *Yard Hydrant with Backflow Preventer*
Email: newservices@fairfaxwater.org
6. Request a water meter from Fairfax Water
7. Fairfax Water installs a new water meter

Mail or drop off:

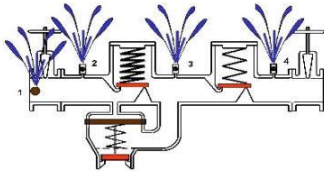
Fairfax Water
8570 Executive Park Avenue
Fairfax, VA 22031

Thank you,
New Services Department
703-698-2080, TTY 711
newservices@fairfaxwater.org

Appendix G: University of Florida, Training, Research, and Education for Environmental Occupations (UF TREEO) Test Procedures

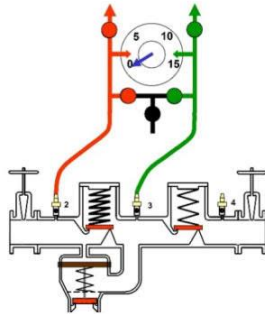
Reduced Pressure Principle Type Backflow Preventer Testing Procedures

Notify Customer / Check the Area



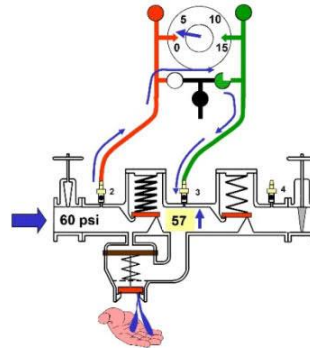
Flush Test Cocks & Prepare for Test

1. Open TC-4, TC-3, TC-2, then TC-1
2. Close TC-1, TC-2, TC-3, then TC-4
3. Close Needle Valves on Test Kit



Test 1 – Observe Check Valve #1

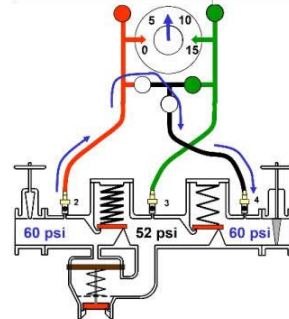
4. Attach High Pressure Hose to TC-2
5. Attach Low Pressure Hose to TC-3
6. Open Test Cock 3
7. Open Low Bleed Valve
8. Open Test Cock 2
9. Open High Bleed Valve
10. Close High Bleed Valve
11. Close Low Bleed Valve
12. Close Outlet Shutoff Valve
13. If steady, Check Valve #1 is tight



Test 2 - Relief Valve Opening Point

14. Open High Control Valve 1-turn
15. Open Low Control Valve ¼ turn & Place Hand Under Vent
16. Record RV Opening Point
17. Close Low Control Valve

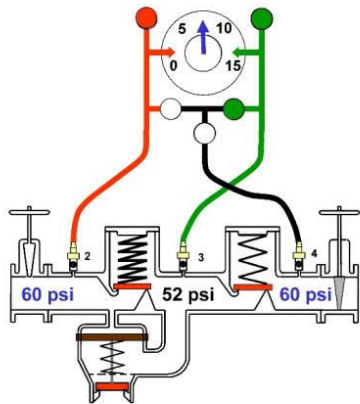
(If RV never opens, see page 2)



Test 3 – Observe Check Valve #2

18. Attach Vent Hose to TC-4
19. Open Test Cock 4
20. Open Low Bleed Valve
21. Close Low Bleed Valve
22. Open Vent Control Valve
23. If gauge is steady and does not drop, Check Valve #2 is tight.

Reduced Pressure Principle Type Backflow Preventer Testing Procedures



Test 4 – Record Check Valve #1

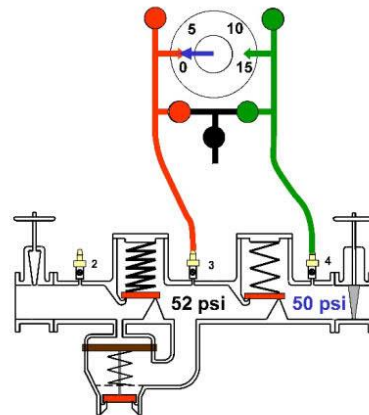
24. Open then close Low Bleed Valve
25. Record Value on Gauge as the Differential Pressure Across Check Valve #1

Optional Test 5 – Outlet Shutoff Valve

26. Close Test Cock 2
27. If Gauge Reading is Steady, Record Outlet Shutoff Valve as Tight

(If Test 2 RV never opens, bypass required):

- i. Attach free hose to TC-1 and TC-4
- ii. Open TC-1, Open TC-4
- iii. Flow through assembly will bypass the check valves allowing a relief valve test. Return to Test 2.



Optional Test 6 – Record Check Valve #2

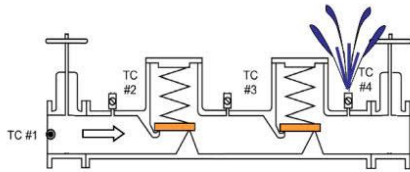
28. Close Vent Control
29. Close Test Cocks 3 and 4
30. Remove Vent Hose From Test Cock 4
31. Move Low Hose to Test Cock 4
32. Move High Hose to Test Cock 3
33. Open Test Cock 4
34. Open Low Bleed
35. Open Test Cock 3
36. Open High Bleed
37. Close High Bleed
38. Close Low Bleed
39. Record Value on Gauge as the Differential Pressure Across CV-2

Pack Up

40. Close all Test Cocks
41. Remove all Equipment
42. Open Needle Valves on Test Kit
43. Open Outlet Shut-off Valve

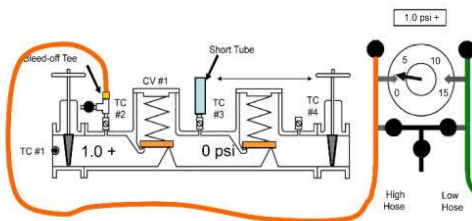
Double Check Valve Type Backflow Preventer Testing Procedures

Notify Customer / Check the Area



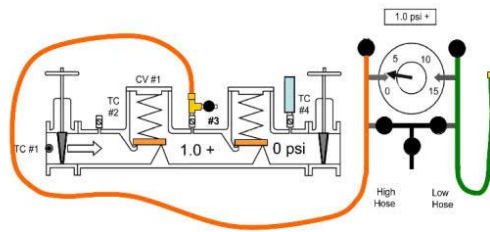
Flush Test Cocks & Prepare for Test

1. Open & Close TC - 1, 2, 3, then 4
2. Close Needle Valves on Test Kit



Test 1 – Test Check Valve #1

3. Install Bleed-Off Tee on Test Cock 2
4. Install Short Clear Hose on TC-3
5. Position Center of Test Gauge and End of Low Pressure Hose level with Top of the Clear Hose
6. Attach High Pressure Hose to Bleed-off Tee
7. Open Test Cock 2
8. Open High Bleed Valve
9. Close High Bleed Valve
10. Close Outlet Shut-off Valve
11. Close Inlet Shut-off Valve
12. Open Test Cock 3
13. When the water stops running out of Test Cock 3, read the gauge
14. Record Value on the Gauge as differential pressure for Check Valve #1



Test 2 – Test Check Valve #2

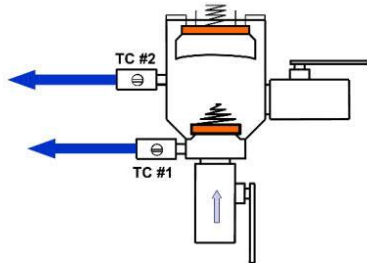
15. Close Test Cocks 2 and 3
16. Disconnect High Pressure Hose
17. Open Inlet Shut-off Valve
18. Move Short Clear Hose to TC-4
19. Move Bleed-off Tee to Test Cock 3
20. Attach High Pressure Hose to Bleed-off Tee
21. Open Test Cock 3
22. Open High Bleed Valve
23. Close High Bleed Valve
24. Close Inlet Shutoff Valve
25. Open Test Cock 4
26. When the water stops running out of Test Cock 4, read the gauge
27. Record Value on the Gauge as differential pressure for Check Valve #2

Pack Up

28. Close all Test Cocks
29. Remove all Equipment
30. Open Needle Valves on Test Kit
31. Open Inlet Shut-off Valve
32. Open Outlet Shut-off Valve

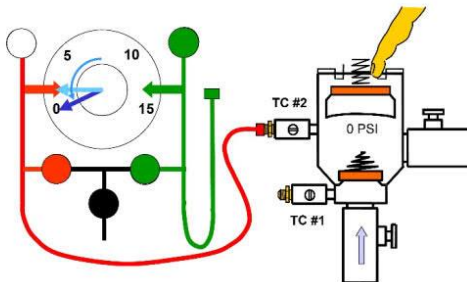
Pressure Vacuum Breaker Type Backflow Preventer Testing Procedures

Notify Customer / Check the Area



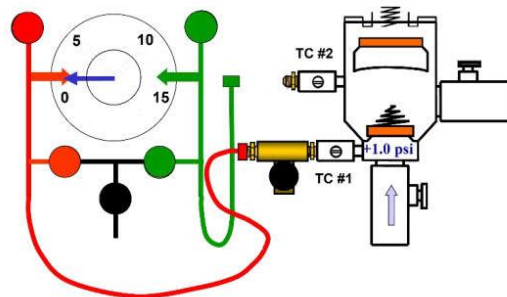
Flush Test Cocks & Prepare for Test

1. Remove the Canopy
2. Open & Close TC-1 then TC-2
3. Close Needle Valves on Test Kit



Test 1 – Air Inlet Valve

4. Position Center of Test Gauge and End of Low Pressure Hose level with Air Inlet Valve
5. Connect High Hose to Test Cock 2
6. Open Test Cock 2
7. Open High Bleed
8. Close High Bleed
9. Close Outlet Shut-off Valve
10. Close Inlet Shut-off Valve
11. Place Finger Lightly on Air Inlet
12. Open High Bleed Valve ¼ turn
13. Pressure Drops. Record Pressure when the Air Inlet Opened.



Test 2 – Check Valve

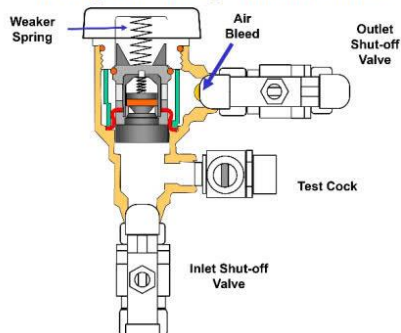
14. Install Bleed-Off Tee on Test Cock 1
15. Close High Bleed
16. Close Test Cock 2
17. Disconnect High Hose
18. Position Center of Test Gauge and End of Low Pressure Hose level with Test Cock 2
19. Open Inlet Shut-Off Valve
20. Connect High Hose to Bleed-Off Tee
21. Open Test Cock 1
22. Open High Bleed Valve
23. Close High Bleed Valve
24. Close Inlet Shut-Off Valve
25. Open Test Cock 2
26. Pressure Drops. When Flow Stops, Record Pressure.

Pack Up

27. Close all Test Cocks
28. Remove all Equipment
29. Replace Canopy
30. Open Needle Valves on Test Kit
31. Open Inlet & Outlet Shut-Off Valves

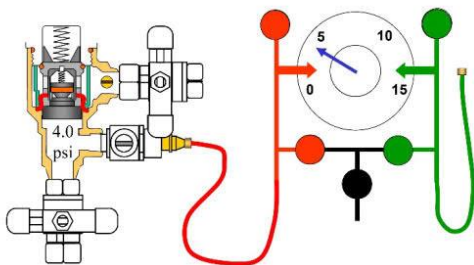
Spill Resistant Vacuum Breaker Backflow Preventer Testing Procedures

Notify Customer / Check the Area



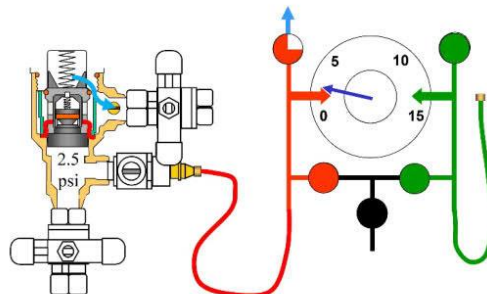
Flush Test Cocks & Prepare for Test

1. Remove the Canopy
2. Flush Test Cock & Bleed Screw
3. Close Needle Valves on Test Kit



Test 1 – Check Valve

4. Position Gauge and End of Low Hose level with Check Valve
5. Attach High Hose to Test Cock
6. Open Test Cock Slowly
7. Open High Bleed Valve
8. Close High Bleed Valve
9. Close Outlet Shut-Off Valve
10. Close Inlet Shut-Off Valve
11. Open and Remove Bleed Screw
12. When Water Stops Running, Record Value on the Gauge as Differential Pressure for Check Valve #1



Test 2 – Air Inlet Valve

13. Replace & Tighten Bleed Screw
14. Place Water on Top
15. Open High Bleed ¼ turn
16. Pressure Drops. Record Pressure when the Air Inlet Opened.

Pack Up

17. Close Test Cock
18. Remove all Equipment
19. Replace Canopy
20. Open Inlet Shut-off Valve
21. Open Outlet Shut-off Valve
22. Open all Needle Valves on Test Kit

Appendix H: Example Notice of Backflow Prevention Assembly Testing Due



County of Fairfax, Virginia
Cross-Connections Program



Notice of Backflow Assembly Testing

Permit No.: 93197513
Property Address:

Month Due:

ADDRESS

Contact Email:
Contact Phone No.: /

Property Name:

Map Grid:

Attention: It is the responsibility of the property owner, tenant, and / or management company to ensure valid contact information is provided to Fairfax County for this property. A valid contact must include the responsible party's name, phone number, and email address. You may update your contact information at www.fairfaxcounty.gov/landdevelopment/crossconnections. The time allotted to complete the work described below will not be extended due to delays in delivery of this notice.

Dear Customer,

This notice is to inform you that the Annual Inspection and Testing of the Backflow Assembly(s), installed at your location, are due. **The Virginia Department of Health Waterworks Regulations and the Virginia Uniform Statewide Building Code require backflow assemblies be inspected and tested, for proper operation, annually.** Fairfax County and Fairfax Water require a record of testing be submitted each year as evidence this work has been completed.

Inspection and testing of these backflow assemblies must be completed and submitted to Fairfax County, before the end of the "Month Due" indicated above. Failure to return the required Backflow Assembly Test Report within the allotted timeframe may result in further action, up to and including, termination of water service. If you feel you are receiving this notice in error, please contact the Land Development Service Inspections Branch immediately at the phone number provided below. **Please have your Permit Number available when making inquiries. (Shown Above)**

A list of Backflow Prevention Device Testers, a pre-populated Backflow Assembly Test Report searchable by address, or a fillable Backflow Assembly Test Report, necessary to complete this testing and submission, can be found online at www.fairfaxcounty.gov/landdevelopment/crossconnections.

Land Development Services, Inspections Branch

12055 Government Center Parkway, Suite 307

Fairfax, VA 22035-5500

LDSCrossConnectionProgram@fairfaxcounty.gov

Phone: 703-631-5101, TTY: 711

www.fairfaxcounty.gov/landdevelopment/crossconnections



Appendix I: Example Corrective Work Order

Corrective Work Order

Site Survey Date:

Permit Number:

Inspection No:

Property Name:

Map Grid:

Building Name:

Property Address:

Suite Number:

Primary Contact :

Attention: It is the responsibility of the property owner, tenant, and / or management company to ensure valid contact information is provided to Fairfax County for this property. A valid contact must include the responsible party's name, phone number, and email address. You may update your contact information at www.fairfaxcounty.gov/landdevelopment/crossconnections. The time allotted to complete the work described below will not be extended due to delays in delivery of this notice.

Dear Customer,

This notice is to inform you that one or more violations of the **Virginia Department of Health Waterworks Regulations, Virginia Uniform Statewide Building Code, or the Fairfax County Cross-Connection Control Program** have been identified at the address indicated above. The deficiency(s) and required corrections are outlined below.

Deficiency: BACKFLOW ASMBLY TESTNG REQUIRD

Code Reference: VPC2015 312.10.2 Testable Backflow Assemblies shall be tested at time of install, immediately after repairs or relocation, and at least annually.

Location: Both Backflow Assemblies located in Garage Storage Area

Correction: 2 backflow assemblies require immediate testing as there is no record of testing being conducted since 2013. Testing results will need to be submitted within the time allotted.

Documentation must be submitted to Fairfax County, **within 30 Business Days of the Site Survey Date indicated above**, as evidence the required correction(s) have been completed. Failure to complete and submit documentation of the correction(s) in the required timeframe may result in further action, up to and including, termination of water service. If you feel you are receiving this notice in error, or you have questions regarding this, please contact the Cross Connections Inspector identified below, or the LDS Inspections Branch immediately. **Please have your Permit Number available when making inquiries. (Shown Above)**

Inspector Name :

Inspector Phone :

Inspector Email :

LDS Inspections Branch Contact: 703.631.5101, TTY 711

*****Please do not reply to this email, Replies will not be received*****

Appendix J: Example Notice of Non Compliance

Notice of Non-Compliance

Date of Non Compliance :

Corrective Work Order Sent :

Permit Number :

Inspection No :

Property Name :

Map Grid :

Building Name :

Property Address :

Suite Number :

Primary Contact:

Attention: It is the responsibility of the property owner, tenant, and / or management company to ensure valid contact information is provided to Fairfax County for this property. A valid contact must include the responsible party's name, phone number, and email address. You may update your contact information at www.fairfaxcounty.gov/landdevelopment/crossconnections. The time allotted to complete the work described below will not be extended due to delays in delivery of this notice.

Dear Customer,

This notice is to inform you that the timeframe allotted to complete corrections and provide documentation, showing compliance to the **Corrective Work Order** previously sent, has expired. This matter requires your immediate attention.

Pursuant to Article 3 of the Virginia Department of Health Waterworks Regulations and the Virginia Uniform Statewide Building Code. You were notified in writing of the requirement for testing of backflow assemblies and/or deficiencies identified during the Site Survey of the property identified above. You were further advised these deficiencies required correction, and a submission of documentation showing evidence of compliance.

As of this date we have received no indication these deficiencies have been corrected. We therefore must notify you that unless documentation is received, showing the completion of these corrections, within the next **10 Business Days**, this matter will be escalated. **The Fairfax County Building Official, under Chapter 65, Section 65-1-3 of the Code of the County of Fairfax, may elect to order the Termination of your Water Service, until all deficiencies have been corrected.**

Your promptness in resolving this matter is appreciated. If further assistance is needed, please contact the Cross Connections Inspector, or the LDS Inspections Branch indicated below. **Please have your Permit Number available when making inquiries. (Shown Above)**

Inspector Name :

Inspector Phone :

Inspector Email :

LDS Inspections Branch Contact: 703.631.5101 Option 1, TTY 711

*****Please do not reply to this email, Replies will not be received*****

Appendix K: Example Notice of Disconnection of Water Service



<p>Name of Customer 8560 Arlington Boulevard Fairfax, Virginia 22031</p>
--

8560 Arlington Boulevard
Fairfax, Virginia 22031

NOTICE OF DISCONNECTION OF WATER SERVICE

(Property Address and
Cross-Connections Permit Number)

Recipient Name,

You are receiving this notice in response to an outstanding violation(s) of the Virginia Construction Code, and/or the Virginia Department of Health Waterworks Regulations, which remain unresolved at the property address identified above. This requires your immediate attention to ensure that your plumbing system does not contaminate the public water system.

Fairfax County has sent two email notifications to the contact on record as the party responsible for the maintenance of this property. However, as of this date, they have no indication the violation(s) have been corrected. The time allotted to complete repairs and provide required documentation has expired.

Fairfax Water is now initiating the final steps before you receive your Final Notice and the date that Fairfax Water will disconnect your water service for noncompliance.

It is the responsibility of the property owner, owner's agent, tenant, and/or management company to ensure valid contact information is provided to Fairfax County for this property. Delays in delivery or non-receipt of repair notices, due to invalid contact information, will not grant a delay in achieving compliance.

Please Contact Fairfax County Immediately

If you feel you are receiving this notice in error, or you have questions regarding violations or previous notices, please contact the Fairfax County Cross-Connections Program Staff between the hours of 9:00 am and 4:00 pm weekdays.

Main Number: 703.631.5101, TTY 711

Email: LDSCrossConnectionProgram@fairfaxcounty.gov

**You may update the contact information for this property at
www.fairfaxcounty.gov/landdevelopment/crossconnections.**

Fairfax Water appreciates your immediate action to keep our public water system safe.

Appendix L: Example Final Notice of Disconnection of Water Service



<p>Name of Customer 8560 Arlington Boulevard Fairfax, Virginia 22031</p>
--

8560 Arlington Boulevard
Fairfax, Virginia 22031

FINAL NOTICE

NOTICE OF DISCONNECTION OF WATER SERVICE

(Property Address and
Cross-Connections Permit Number)

Water Disconnect Date: _____
Recipient Name,

You are receiving this notice in response to an outstanding violation(s) of the Virginia Construction Code, and/or the Virginia Department of Health Waterworks Regulations, which remain unresolved at the property address identified above. This requires your immediate attention to ensure that your plumbing system does not contaminate the public water system.

Fairfax County has sent two email notifications to the contact on record as the party responsible for the maintenance of this property. Additionally, Fairfax Water has sent a Notice of Disconnection of Water Service and called the contact on record or made a site visit to the property in violation. However, as of this date, we have no indication the violation(s) have been corrected. The time allotted to complete repairs and provide required documentation has expired.

This is the final notification before Fairfax Water disconnects your water service on the date shown above.

It is the responsibility of the property owner, owner's agent, tenant, and/or management company to ensure valid contact information is provided to Fairfax County for this property. Delays in delivery or non-receipt of repair notices, due to invalid contact information, will not grant a delay in achieving compliance.

Please Contact Fairfax County Immediately

If you feel you are receiving this notice in error, or you have questions regarding violations or previous notices, please contact the Fairfax County Cross-Connections Program Staff between the hours of 9:00 am and 4:00 pm weekdays.

Main Number: 703.631.5101, TTY 711

Email: LDSCrossConnectionProgram@fairfaxcounty.gov

**You may update the contact information for this property at
www.fairfaxcounty.gov/landdevelopment/crossconnections.**

Fairfax Water appreciates your immediate action to keep our public water system safe.

GRAPHIC STANDARDS AND DETAILS SECTION

This Page is Intentionally Blank

GSD – 1 Backflow Preventer Examples

Backflow Prevention Device and Assembly Examples

<p>Atmospheric Vacuum Breaker Pipe Applied</p>  <p>High Hazard Device NOT Designed for Continuous Pressure ASSE 1001 AVB</p>	<p>Atmospheric Vacuum Breaker Deck Mounted</p>  <p>High Hazard Device NOT Designed for Continuous Pressure ASSE 1001 AVB</p>	<p>Atmospheric Hose Connection Vacuum Breakers Outdoor Use</p>  <p>High Hazard Device NOT Designed for Continuous Pressure ASSE 1011 AVB</p>	<p>Atmospheric Hose Connection Vacuum Breakers Indoor Use</p>  <p>High Hazard Device NOT Designed for Continuous Pressure ASSE 1011 AVB</p>
<p>Wall Hydrant with Built-In Atmospheric Vacuum Breaker</p>  <p>High Hazard Device NOT Designed for Continuous Pressure ASSE 1019 AVB</p>	<p>Laboratory Faucet Backflow Preventer</p>  <p>608.13.6 ASSE 1035</p>	<p>Atmospheric Hose Connection Backflow Preventer</p>  <p>High Hazard Device - NOT Designed for Continuous Pressure ASSE 1052 AVB</p>	
<p>Wall Mounted Fixture with Built-In Atmospheric Vacuum Breaker (Meets ASSE 1001) <i>Leaking at the Vacuum Breaker is an indication of damage due to Overpressure. It MUST be Repaired or Replaced</i></p> <p>Pressure Bleeding Device / Water Wasting Tee</p> <div></div> <div></div>			
<p>Devices, which meet the standard(s), ASSE 1001, 1011, 1019, 1035, & 1052 are HIGH HAZARD DEVICES, however, they are NOT designed for Continuous Pressure Applications. Water Control Valves, such as, Valved Wye's and Splitters, Spray Nozzles that attach to Hoses, or Chemical Mixing Dispensers, CANNOT be connected downstream from these types of Backflow Devices.</p>			

Backflow Prevention Device and Assembly Examples

<p>Backflow Preventer for Carbonated Beverage Dispensers</p> <p>Copper Tubing <u>CANNOT</u> be Installed Downstream</p>		<p>Dual Check Valve Type Backflow Preventer</p>	
<p>Device Only (Line Applied)</p> 	<p>Device with Strainer</p> 		
<p>Low Hazard Device - Designed for Continuous Pressure</p> <p>ASSE 1022</p>		<p>Low Hazard Device - Designed for Continuous Pressure</p> <p>ASSE 1024</p>	
<p>Backflow Preventer with Intermediate Vent</p> <p>Boiler Protection with <u>NO</u> Chemicals Added</p>		<p>Back Flow Device Line Applied</p>	
			
<p>Low Hazard Device - Designed for Continuous Pressure</p> <p>ASSE 1012</p>		<p>High Hazard Device</p> <p>ASME A112.18.3</p>	
		<p>Freezeproof Yard Hydrant</p> 	
		<p>Non-Sanitary Type requires protection upstream from the Hydrant with an ASSE 1013 or 1020, and an ASSE 1011 at the Fixture Treads. "Nonpotable" Sign Required.</p>	
<p>Anti-Siphon Pressure Vacuum Breaker Assembly</p> 		<p>Spill Resistant Anti-Siphon Vacuum Breaker Assembly</p> 	
<p>High Hazard Assembly - Requires Annual Testing</p> <p>ASSE 1020 (Testable) PVB</p>		<p>High Hazard Assembly - Requires Annual Testing</p> <p>ASSE 1056 (Testable) SVB</p>	
<p>Reduced Pressure Principle Assembly (RP)</p> 		<p>Double Check Valve Assembly</p> 	
<p>High Hazard Assembly - Requires Annual Testing</p> <p>ASSE 1013 (Testable) RP</p>		<p>Low Hazard Assembly - Requires Annual Testing</p> <p>ASSE 1015 (Testable) DC</p>	

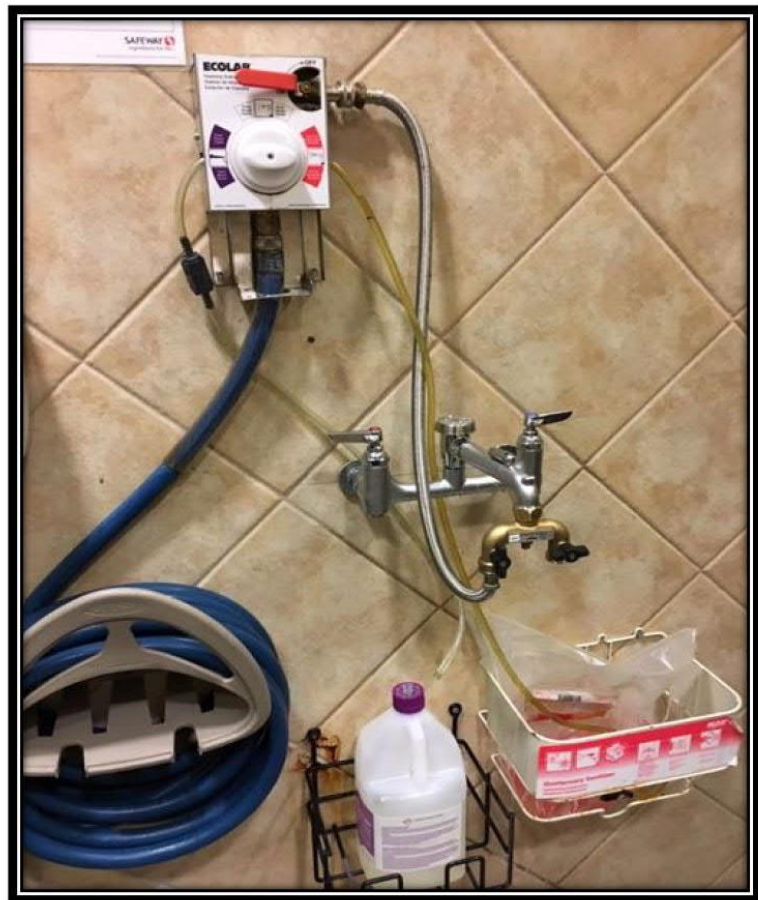
GSD – 2 Pressure Bleeding Device Installation

Correct Use of a Pressure Bleeding Device

Hose with Spray Nozzle

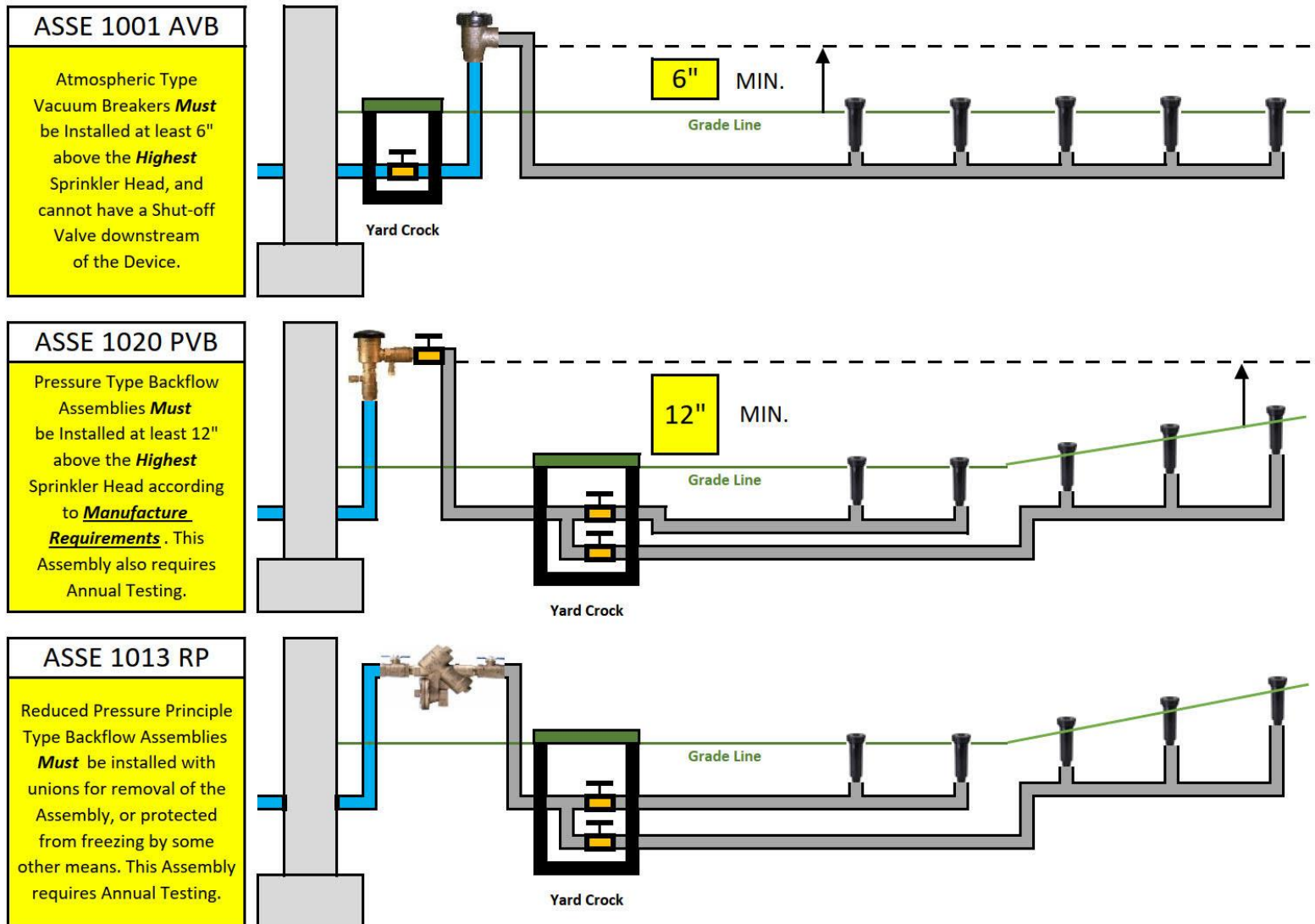


Chemical Dispenser



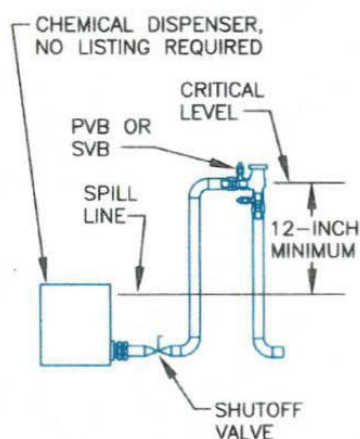
GSD – 3 Lawn Irrigation Installation

Graphic Standard Lawn Irrigation



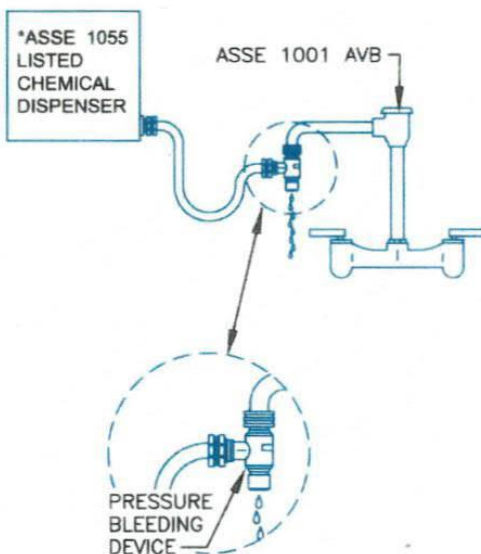
GSD – 4 Chemical Dispenser Installation

1. DIRECT CONNECTION TO POTABLE WATER SYSTEM WITH A SVB OR PVB



- MUST NOT BE SUBJECTED TO BACK PRESSURE
- IF SUBJECTED TO BACK PRESSURE, AN RPZ IS REQUIRED

2. CONNECTION TO MOP SINK FAUCET WITH PRESSURE BLEEDING DEVICE (WHERE PERMITTED BY THE AHJ)



3. DIRECT CONNECTION TO POTABLE WATER SYSTEM WITH ASSE 1055* CHEMICAL DISPENSER (WHERE PERMITTED BY THE AHJ)

MUST BE CODE COMPLIANT MATERIAL UP TO CONNECTION TO CHEMICAL DISPENSER

*ASSE 1055 LISTED CHEMICAL DISPENSER

* INTEGRAL MEANS OF BACKFLOW PROTECTION LISTED TO ASSE 1055

AHJ = AUTHORITY HAVING JURISDICTION
 ASSE 1001 AVB = ATMOSPHERIC VACUUM BREAKER
 ASSE 1020 PVB = PRESSURE VACUUM BREAKER
 ASSE 1013 RPZ = REDUCED-PRESSURE PRINCIPLE
 ASSE 1056 SVB = SPILL-PROOF VACUUM BREAKER

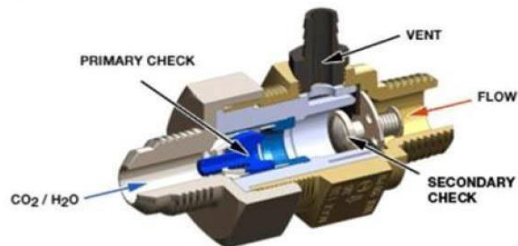
FAIRFAX COUNTY

Typical Chemical Dispenser Installations

GSD – 5 Carbonated Beverage Dispenser

Backflow Prevention for Carbonated Beverage Dispensers

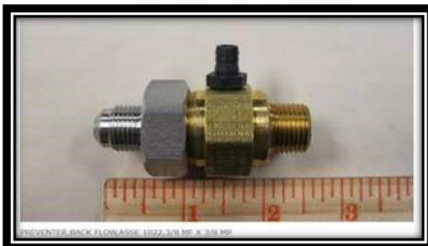
How It Works



1. Normal forward flow of H₂O has both check valves open and the vent closed.
2. Normal backpressure of CO₂/H₂O has both check valves and vent closed.
3. Either check valve leaking causes pressure to rise between check valves and the vent will open.
4. Requires a minimum torque of 30 ft-lbs at center joint to function properly.
5. Any leakage from vent indicates a fouled check valve.



Built-In Dual Check Valve Meets ASSE 1022



If, the Carbonator Unit does not have a Built-In Device, an ASSE 1022 Backflow Preventer for Carbonated Beverage Machines **MUST** be installed on all Supply Lines carrying Carbonated Liquid to the Dispenser. ***No Copper, Brass, or Bronze Fittings or Tubing may be installed on the downstream side of the Backflow Device.***



GSD – 6 Code Compliant Non-Potable Sign



GSD – 7 Frost-Proof Yard Hydrant Installation Requirement



FAIRFAX COUNTY WATER AUTHORITY

8570 Executive Park Avenue

Fairfax, Virginia 22031-2218

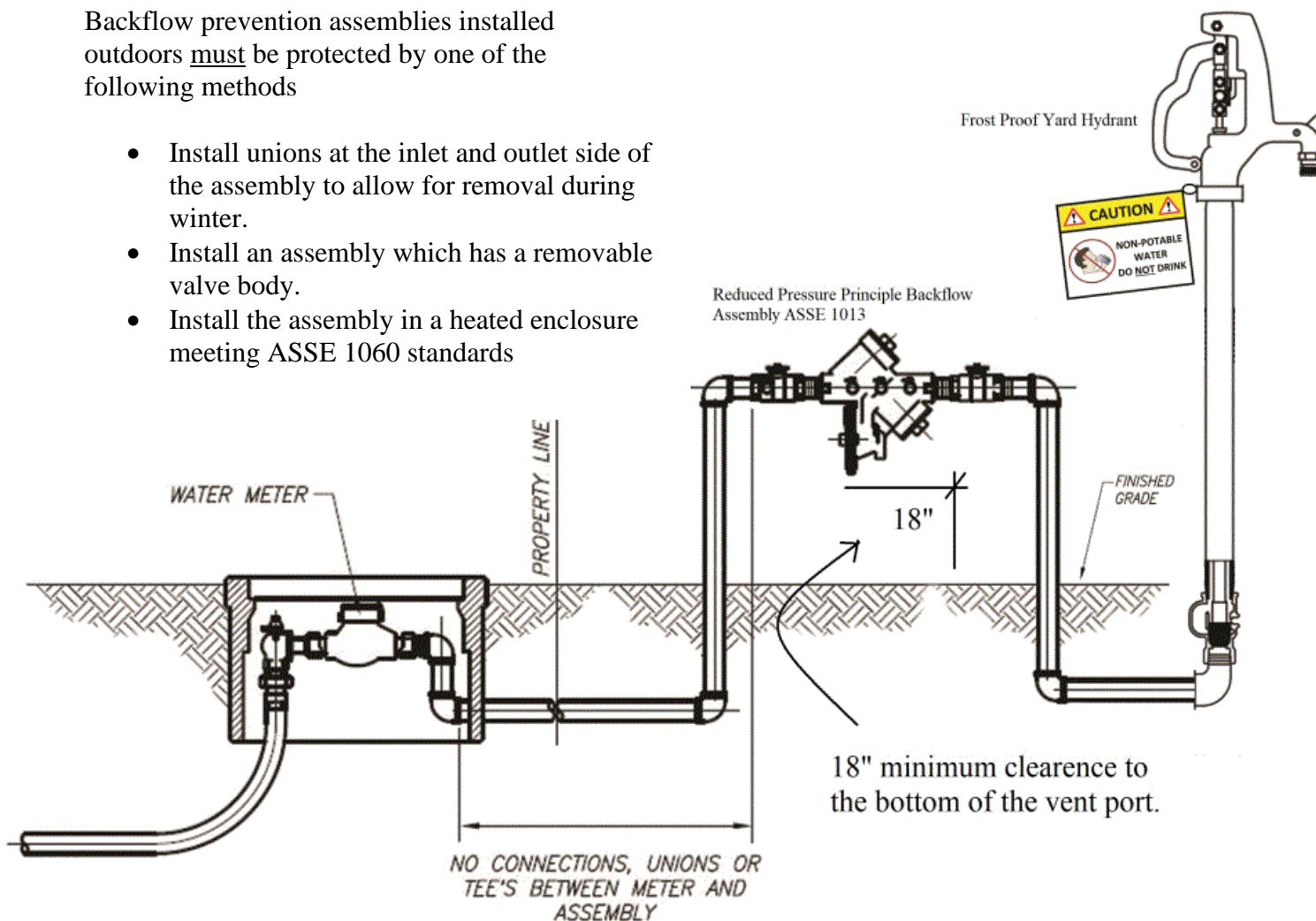
www.fairfaxwater.org

Notice for Frost-Proof Yard Hydrant Installation

Fairfax Water and the Virginia Plumbing Code, 608, 608.8 and 608.15.4.2, require all frost-proof yard hydrants to have an RP ASSE 1013 installed upstream of the yard hydrant, a non-potable sign and an ASSE 1011 or 1052 AVB installed at the threaded outlet.

Backflow prevention assemblies installed outdoors must be protected by one of the following methods

- Install unions at the inlet and outlet side of the assembly to allow for removal during winter.
- Install an assembly which has a removable valve body.
- Install the assembly in a heated enclosure meeting ASSE 1060 standards



GSD – 8 Sanitary Yard Hydrant Installation Requirement



FAIRFAX COUNTY WATER AUTHORITY

8570 Executive Park Avenue

Fairfax, Virginia 22031-2218

www.fairfaxwater.org

Notice for Sanitary Yard Hydrant Installation ASSE 1057-2012

Fairfax Water and the Virginia Plumbing Code, 608.8 and 608.15.4.2, require all yard hydrants to have a non-potable sign and an ASSE 1011 or 1052 AVB installed at the threaded outlet.

