TOWN OF
VIENNA
since 1890

CROSS-CONNECTION CONTROL AND BACKFLOW PREVENTION PROGRAM MANUAL

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TOWN OF VIENNA, DEPARTMENT OF PUBLIC WORKS
127 Center Street South, Vienna, VA 22180

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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 cross-connection control and backflow prevention program be established and enforced for each waterworks by the purveyor of the waterworks. Also, Section 35.626-l(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 the Town of Vienna 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 the Town of Vienna is responsible for managing and administering the Town of Vienna 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, which is the *Building Authority* having jurisdiction responsible for enforcing cross-connection control requirements per the Virginia Construction Code.

D. Purpose

The purpose of this Program is:

- To protect the Town of Vienna 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 has 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 the Town of Vienna.

- 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 the Town of Vienna, Fairfax County and the customers of the Town of Vienna.

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 aide 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 the Town of Vienna's supply pressure pushes water from the building, house, or private plumbing system back into the Town of Vienna potable water 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 the Town of Vienna's supply piping which creates a suction effect drawing water out of a building, house,

or other private plumbing system back into the Town of Vienna potable water 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 by the general manager of the Town of Vienna 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, 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 the Town of Vienna.

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 owner, tenant, consumer, manager or person in control 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 *purveyor*.

HAZARD(OUS): Any condition, connection, device, or practice which, in the judgment of the *purveyor*, 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 the Town of Vienna 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, and the Town of Vienna.

PURVEYOR: The owner and operator responsible for the safety and maintenance of the *public water distribution system*.

RESTRICTED WATER SERVICE: A reduced-water-flow service lateral requested by the *customer* and installed by the Town of Vienna. 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 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 the Town of Vienna 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 the Town of Vienna, Fairfax County, *Customers*, and the Virginia Department of Health.

A. Town of Vienna

The Town of Vienna is responsible for providing reliable high-quality *potable water* to the Town of Vienna. the Town of Vienna 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 the Town of Vienna 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. The Town of Vienna exercises this responsibility and authority in the following ways:

- The Town of Vienna determines what facilities pose a potential *contamination* threat to the *public water distribution system* and ensures proper protection measures are in place.

- The Town of Vienna monitors the requirements for *backflow* prevention by conducting thorough surveys, *inspections* and operational testing of *backflow prevention assemblies*.

- In the event of a *backflow* of *pollution* or *contamination* into the waterworks, the Town of Vienna promptly takes or causes corrective action to confine or eliminate the potential *hazard*.

- The Town of Vienna may terminate water service if required test reports are not received, a *cross-connection* 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 the Town of Vienna.

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 the Town of Vienna, under the authority of the Virginia Department of Health Waterworks Regulations. Fairfax County Land Development Services, under the authority of, and in cooperation with the Town of Vienna, enforces and administrates the Cross-Connection and Backflow Prevention Program requirements, for the Town of Vienna *customers* within Fairfax County and the Town of Vienna. 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.

- Reviewing all site, subdivision and building plans, issuing all applicable site and building permits, and requiring *backflow preventers* where required.

- Conducting 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 the Town of Vienna 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 in the following ways:

- Reviewing Shop Drawings for water-based fire suppression system.

- Issuing, or confirming the issuance of applicable permits, related to the installation, operation, and monitoring of a water-based fire suppression system.

- Inspecting and approving water-based fire suppression systems prior to occupancy, and conducting periodic maintenance *inspections*, as required by the Virginia Statewide Fire Prevention Code.

D. Customers (Property Owners, Owner Agents, Property Managers, and Tenants)

The *customer*'s responsibility begins at the meter *service connection* from the *public water distribution system* and includes the entire private water distribution system beyond the meter *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 meter *service connection*.

- The *customer* will accommodate reasonable entry by the Town of Vienna 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 inspection approved for the installation or replacement of *backflow preventers* and is further required to promptly correct deficiencies identified by the Town of Vienna 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 have installed, maintain, have tested, or ensure the submittal of proper test reports to Fairfax County, will constitute a violation and may lead to further action including additional fees and termination of service.

E. 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 Policy

A. Service Line Protection Policy

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 the Town of Vienna 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 Policy

To protect the Town of Vienna *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 in lieu of *Service line protection.*

The Town of Vienna 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 preventor* 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. Policies for 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 the Town of Vienna.

B. Like-for-Like Replacement Policy

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 will meet the requirements of the current Virginia Construction Code in effect at the time of replacement.

C. Maintenance Bypass and Secondary Supply Policy

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 Policy

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

The Town of Vienna 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 the Town of Vienna, 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 the Town of Vienna 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 Town of Vienna *public water distribution system*.

- Facilities having internal *cross-connections* that, in the judgement of the Town of Vienna, 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 correct violations as directed.

- Other facilities identified by the Town of Vienna 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 Town of Vienna *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, the Town of Vienna 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 Town of Vienna Fire Hydrant Use Permit Procedures, General Conditions, and Agreement.

  Hydrant meters are supplied with dual check valves (3-inch meters) and vacuum breakers (⅝-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, only *sanitary yard hydrants* are authorized to be directly connected to the *service line*. Additionally, an approved hose connection vacuum breaker is required to be installed at the threaded outlet. See **Appendix C.**

  When yard hydrants are used in conjunction with a demolition project, a Town of Vienna 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*.

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, American Society of Sanitation Engineers standard (ASSE), equipment or system served, and the physical location (i.e., floor and room number/name) of each assembly and device.

- A Label or identification of each assembly and device on the riser diagram and the plan views.

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 suppression 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 plumbing permit, 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 plumbing permit. 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 E**.

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- **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 E**.

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 12 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 the *purveyor* of the *public water distribution system*. 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, 2022, 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, 2022, 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 Town of Vienna.

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 F**.

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 the Town of Vienna 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.farfaxcounty.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, to 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 the Town of Vienna, 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 the Town of Vienna, 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 the Town of Vienna.

The Town of Vienna 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 the Town of Vienna.

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

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

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 H)

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 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 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 the Town of Vienna.

This notice is automatically copied via email to the Town of Vienna to begin punitive action proceedings which may include termination of water service.

Step 4 Notice of Water Disconnect (Appendix J)

This notice is sent by the Town of Vienna 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 Initiation of Termination of Water Service

If all previous attempts to notify the property owner, owner's agent, tenant or billing contact fail to resolve deficiencies and violations the Town of Vienna may elect to 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 on-site visits, the Town of Vienna will begin termination of water service proceedings at their discretion. Prior to the termination of water service that impacts a water-based fire suppression system, the Office of the Fire Marshal will be notified.

If termination of water service occurs, access to the facility or property will be barred through 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 termination 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 6 Re-connection of Water Service

If water service is necessary to conduct backflow prevention assembly testing and/or corrective work, the Town of Vienna will return 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, or the Town of Vienna determines the work remaining will be completed within an acceptable timeframe, the Town of Vienna will return full water service to the *customer* and the building official having jurisdiction will remove the *placard* baring entrance. The Town of Vienna 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. The Town of Vienna 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 the Town of Vienna or its *authorized agent*, for any property not currently having a cross-connection record, when a property changes Group as defined by the Virginia Construction Code, occupancy or ownership status, when deemed necessary by a cross-connection *inspector*, or when requested by the Town of Vienna.

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 potentially or known *hazardous cross-connections*, equipment, or processes as identified by the hazardous industry list in **Appendix A** or as required by the Town of Vienna. The schedule and frequency for conducting periodic *inspections* will be establish by the Town of Vienna.

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 the *purveyor* for any further action deemed necessary.

C. Backflow Incident Response

the Town of Vienna 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 the Town of Vienna by calling the Town of Vienna Customer Service Department 703-698-5613, TTY 711.

XII. Reference Documents and Resources

The provisions of the Town of Vienna 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 Virginia Construction Code
- The Town of Vienna Rules and Regulations
- Code of Fairfax County
- The Town of Vienna Schedule of Fees, Rates, and Charges
- American Society of Sanitation Engineers
- The University of Florida Training, Research and Education for Environmental Occupations (UF TREEO)

APPENDICIES SECTION

Appendix A: Virginia Department of Health and the Town of Vienna 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 Purveyor	
	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, tans, 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	
Unspecified (USBC)	U - Assembly	
	U - Education/Daycare	
	U - Fire Only	
	U - Grocery Store/Market	
	U - Mercantile	
	U - Miscellaneous	
	U - Nail Salon w Pedicure Chairs	
	U - Office Space	
	U - Pharmacy	
	U - Restaurant/Bar/Pub	
	U - Storage	
	U - Utility	

Appendix C: Approved Yard Hydrants

TOWN OF
VIENNA
since 1890

TOWN OF VIENNA, DEPARTMENT OF PUBLIC WORKS
127 Center Street South, Vienna, VA 22180
www.viennava.gov

Notice for Approved Sanitary Yard Hydrants

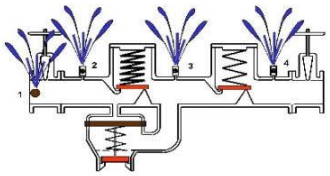
Fairfax Water requires all yard hydrants to be sanitary type with an approved hose connection vacuum breaker installed at the threaded outlet. Pictured are several types of approved sanitary yard hydrants.

All yard hydrants used during demolition will be sanitary type with an approved hose connection vacuum breaker installed at the threaded outlet.

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

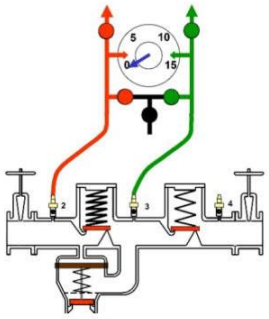
Reduced Pressure Principle Type Backflow Preventer Testing Procedures

Notify Customer / Check the Area



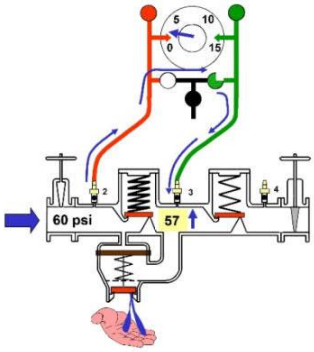
Flush Test Cocks & Prepare for Test

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

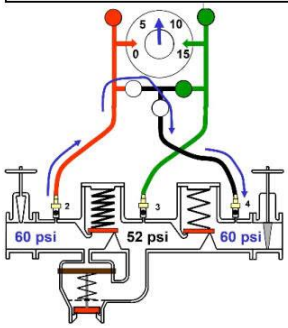
4. Attach High Pressure Hose to TC-2
5. Attach Low Pressure Hose to TC-3
6. Open Test Cock 3
7. Open Low Bleed Valve
8. Open Test Cock 2
9. Open High Bleed Valve
10. Close High Bleed Valve
11. Close Low Bleed Valve
12. Close Outlet Shutoff Valve
13. If steady, Check Valve #1 is tight



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

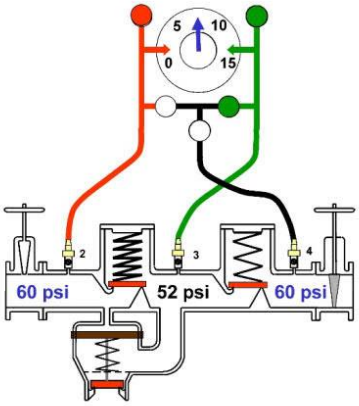
(If RV never opens, see page 2)



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

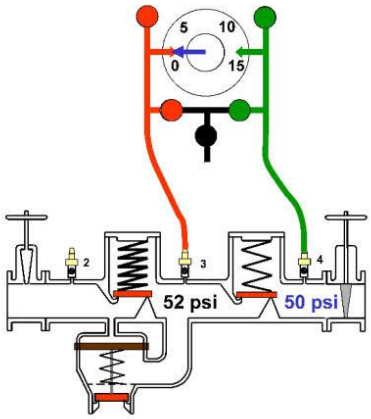
24. Open then close Low Bleed Valve
25. Record Value on Gauge as the Differential Pressure Across Check Valve #1

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

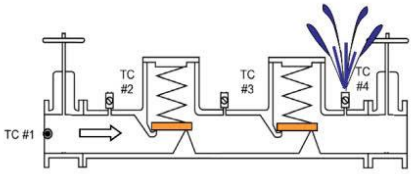
28. Close Vent Control
29. Close Test Cocks 3 and 4
30. Remove Vent Hose From Test Cock 4
31. Move Low Hose to Test Cock 4
32. Move High Hose to Test Cock 3
33. Open Test Cock 4
34. Open Low Bleed
35. Open Test Cock 3
36. Open High Bleed
37. Close High Bleed
38. Close Low Bleed
39. Record Value on Gauge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

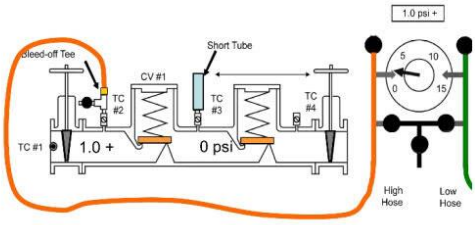
Double Check Valve Type Backflow Preventer Testing Procedures

Notify Customer / Check the Area



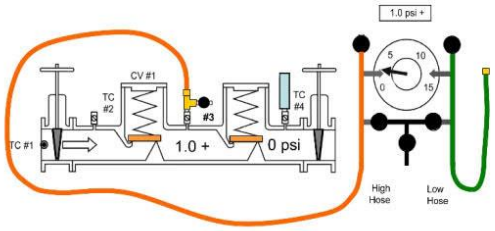
Flush Test Cocks & Prepare for Test

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

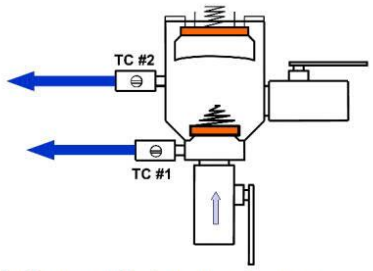
15. Close Test Cocks 2 and 3
16. Disconnect High Pressure Hose
17. Open Inlet Shut-off Valve
18. Move Short Clear Hose to TC-4
19. Move Bleed-off Tee to Test Cock 3
20. Attach High Pressure Hose to Bleed-off Tee
21. Open Test Cock 3
22. Open High Bleed Valve
23. Close High Bleed Valve
24. Close Inlet 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

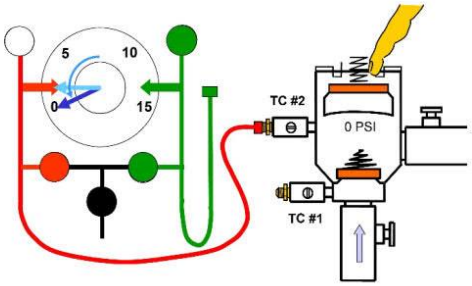
Pressure Vacuum Breaker Type Backflow Preventer Testing Procedures

Notify Customer / Check the Area



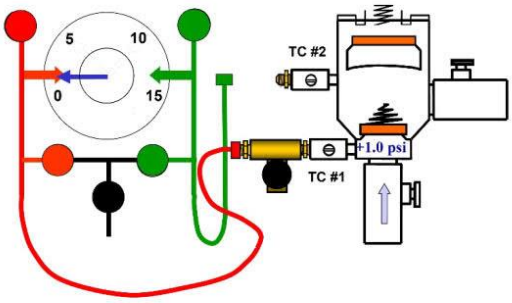
Flush Test Cocks & Prepare for Test

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

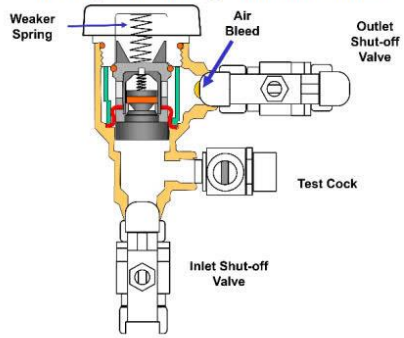
14. Install Bleed-Off Tee on Test Cock 1
15. Close High Bleed
16. Close Test Cock 2
17. Disconnect High Hose
18. Position Center of Test Gauge and End of Low Pressure Hose level with Test Cock 2
19. Open Inlet Shut-Off Valve
20. Connect High Hose to Bleed-Off Tee
21. Open Test Cock 1
22. Open High Bleed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

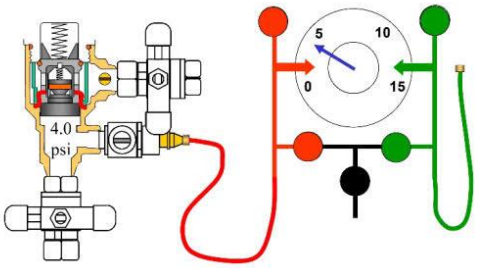
Spill Resistant Vacuum Breaker Backflow Preventer Testing Procedures

Notify Customer / Check the Area



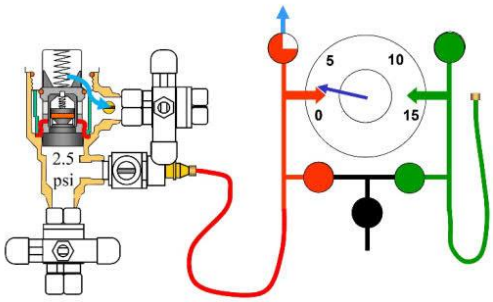
Flush Test Cocks & Prepare for Test

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 G: Example Notice of Backflow Prevention Assembly Testing Due

County of Fairfax, Virginia

Land Development Services, Cross Connections Department

Notice of Backflow Assembly Testing

Permit Number:		Month Due:	
Business Name:			
Map Grid:			
Building Name:			
Property Address:			
Suite Number:			
Primary Contact:	NAME	PHONE	
	E-MAIL		

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. 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 and a fillable Backflow Assembly Test Report, necessary to complete this testing and submission, can be found online at ***www.fairfaxcounty.gov*** *. Enter the word "Backflow" in the search window to be directed to these resources.*

If you wish to receive a pre-filled "Backflow Assembly Test Report", listing the backflow assemblies we have on record as being installed at this property, please email your request to ***LDSCrossConnectionProgram@fairfaxcounty.gov*** ***. Please include the Permit Number indicated above in the subject line of your email.***

LDS Inspections Branch Contact: 703.631.5101 (Option 1), TTY 711

Appendix H: Example Corrective Work Order

County of Fairfax, Virginia

Land Development Services, Cross Connections Department

Corrective Work Order

Permit Number:		Site Survey Date:	
Inspection No:			
Business Name:			
Map Grid:			
Building Name:			
Property Address:			
Suite Number:			
Primary Contact:	NAME	PHONE	
	E-MAIL		

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. 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:	**Unprotected - Cross Connection**
Code Reference:	***VPC15 608.6 Cross connections shall be prohibited, except where approved backflow prevention assemblies, backflow prevention devices, or other means or methods are installed to protect the potable water supply.***
Location:	One (1) Cooling Tower, located in the Penthouse Mechanical Room
Correction:	Install an ASSE 1013 Reduced Pressure Backflow Prevention Assembly on the supply line serving the Cooling Tower

Deficiency:	**Potable Water Required**
Code Reference:	***VPC15 602.2 Only potable water shall be supplied to plumbing fixtures that provide water for drinking, bathing, culinary purposes, or for the processing of food, medical or pharmaceutical products. Unless otherwise provided in the code, potable water shall be supplied to all plumbing fixtures.***
Location:	One (1) Eye Wash Station in the Penthouse Mechanical Room
Correction:	Disconnect the Eye Wash Supply Line from the Cooling Tower Supply, and reconnect to a Potable Water Source.

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)***

Appendix I: Example Notice of Non Compliance

County of Fairfax, Virginia

Land Development Services, Cross Connections Department

Notice of Non Compliance

Permit Number:		Date of Non Compliance:	
Inspection No:			
Business Name:		Corrective Work Order Sent:	
Map Grid:			
Building Name:			
Property Address:			
Suite Number:			
Primary Contact:	NAME	PHONE	
	E-MAIL		

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. 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

Brian's Electronic Signature

Brian Foley, Building Official

CC: Fairfax Water

Appendix J: Example Notice of Water Disconnect

Subject Line: NOTICE OF WATER DISCONNECT (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 in the subject line above. This requires your immediate attention.

This will be the final notification before we, at the Town of Vienna, begin initiating our procedures to terminate your water service.

Fairfax County has sent several notices, via email, 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.

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. A valid contact must include the responsible party's name, phone number, and email address. Delays in delivery or non-receipt of repair notices, due to invalid contact information, will not grant a delay in achieving compliance.

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

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 pm weekdays.

Main Number: 703.631.5101, TTY 711
Email: LDSCrossConnectionProgram@fairfaxcounty.gov

DO NOT REPLY TO THIS EMAIL. Replies will not be received

GRAPHIC STANDARDS AND DETAILS SECTION

GSD – 1: Backflow Preventer Examples

Backflow Prevention Device and Assembly Examples

Atmospheric Vacuum Breaker

Pipe Applied

Deck Mounted

High Hazard Device

NOT **Designed for Continous Pressure**

ASSE 1001 AVB

Atmospheric Hose Connection Vacuum Breakers

Outdoor Use

Indoor Use

High Hazard Device

NOT **Designed for Continous Pressure**

ASSE 1011 AVB

Wall Hydrant with Built-In Atmospheric Vacuum Breaker

High Hazard Device

NOT **Designed for Continous Pressure**

ASSE 1019 AVB

Laboratory Faucet Backflow Preventer

608.13.6

ASSE 1035

Atmospheric Hose Connection Backflow Preventer

High Hazard Device - ***NOT*** **Designed for Continous Pressure**

ASSE 1052 AVB

Wall Mounted Fixture with Built-In Atmospheric Vacuum Breaker (Meets ASSE 1001)

Leaking at the Vacuum Breaker is an indication of damage due to Overpressure. It MUST be Repaired or Replaced

Pressure Bleeding Device / Water Wasting Tee

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.

Backflow Prevention Device and Assembly Examples

Backflow Preventer for Carbonated Beverage Dispensers

Copper Tubing *CANNOT* be Installed Downstream

Device Only (Line Applied)

Device with Strainer

Low Hazard Device - Designed for Continuous Pressure

ASSE 1022

Dual Check Valve Type Backflow Preventer

Low Hazard Device - Designed for Continuous Pressure

ASSE 1024

Backflow Preventer with Intermediate Vent

Boiler Protection with *NO* Chemicals Added

Low Hazard Device - Designed for Continous Pressure

ASSE 1012

Back Flow Device Line Applied

High Hazard Device

ASSE A112.18.3

Freezeproof Yard Hydrant

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.

Anti-Siphon Pressure Vacuum Breaker Assembly

High Hazard Assembly - Requires Annual Testing

ASSE 1020 (Testable) PVB

Spill Resistant Anti-Siphon Vacuum Breaker Assembly

High Hazard Assembly - Requires Annual Testing

ASSE 1056 (Testable) SVB

Reduced Pressure Principle Assembly (RP)

High Hazard Assembly - Requires Annual Testing

ASSE 1013 (Testable) RP

Double Check Valve Assembly

Low Hazard Assembly - Requires Annual Testing

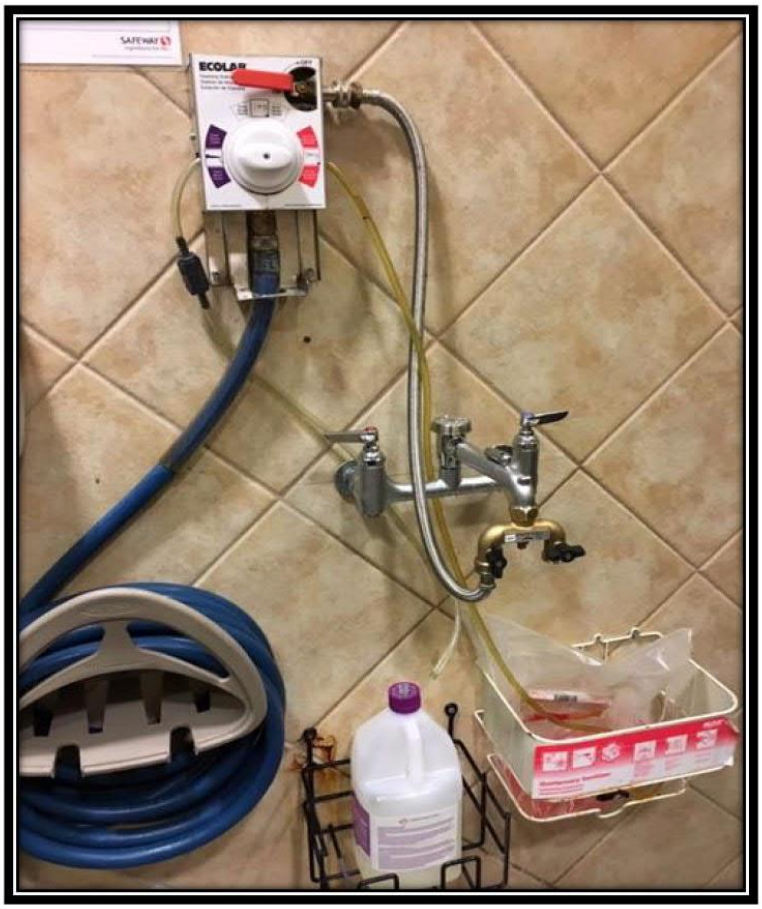
ASSE 1015 (Testable) DC

GSD – 2 Pressure Bleeding Device Installation

Correct Use of a Pressure Bleeding Device

Hose with Spray Nozzle

Chemical Dispenser

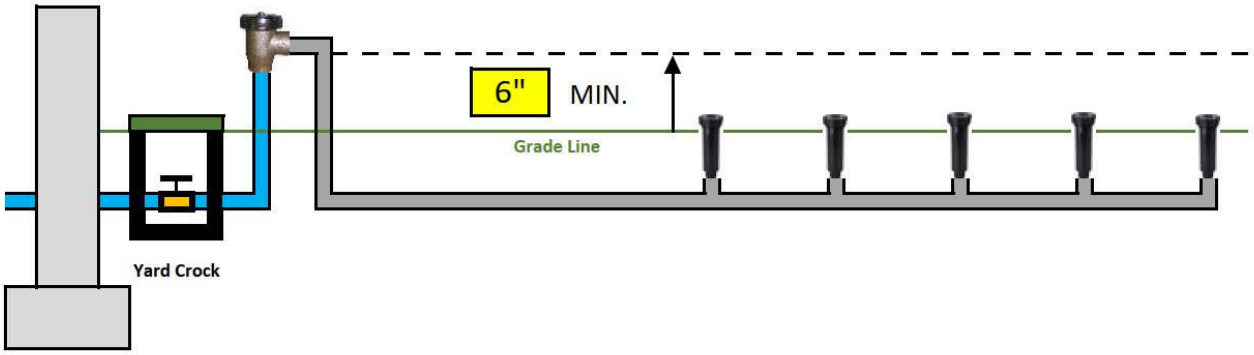


GSD – 3 Lawn Irrigation Installation

Graphic Standard Lawn Irrigation

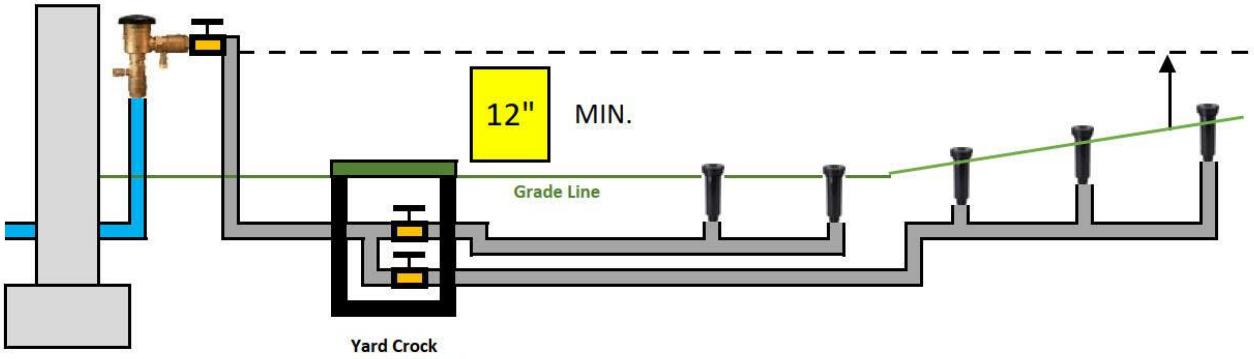
ASSE 1001 AVB

Atmospheric Type Vacuum Breakers ***Must*** be Installed at least 6" above the ***Highest*** Sprinkler Head, and cannot have a Shut-off Valve downstream of the Device.



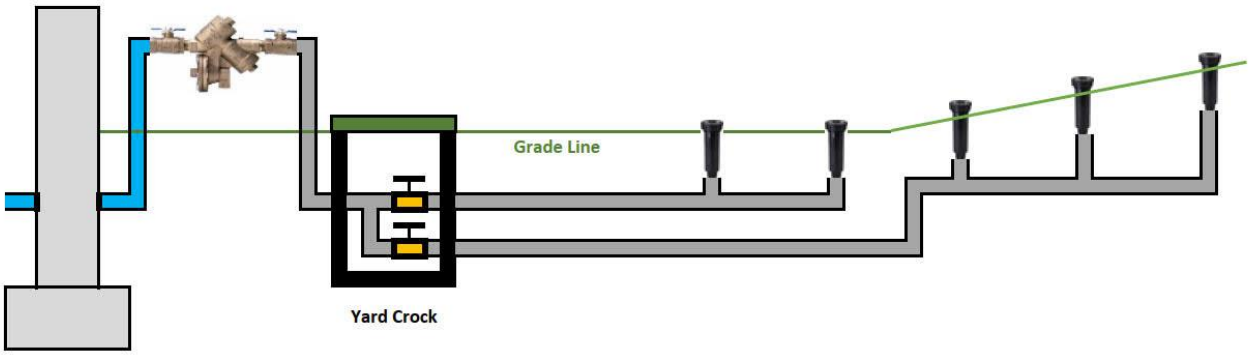
ASSE 1020 PVB

Pressure Type Backflow Assemblies ***Must*** be Installed at least 12" above the ***Highest*** Sprinkler Head according to ***Manufacture Requirements***. This Assembly also requires Annual Testing.



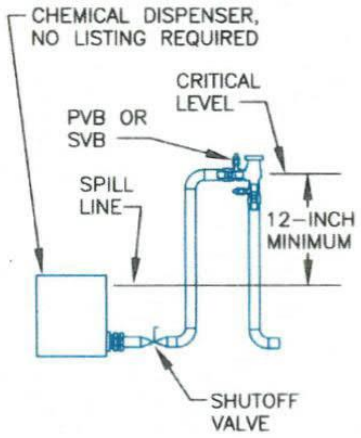
ASSE 1013 RP

Reduced Pressure Principle Type Backflow Assemblies ***Must*** be installed with unions for removal of the Assembly, or protected from freezing by some other means. This Assembly requires Annual Testing.



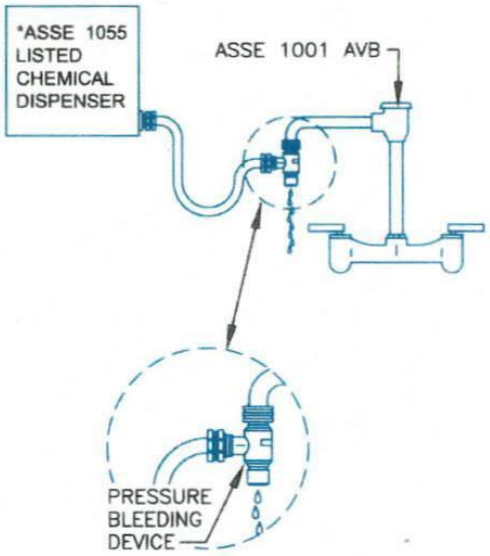
GSD – 4 Chemical Dispenser Installation

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

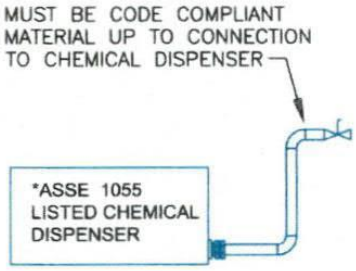


- MUST NOT BE SUBJECTED TO BACK PRESSURE
- IF SUBJECTED TO BACK PRESSURE, AN RPZ IS REQUIRED

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)



* INTEGRAL MEANS OF BACKFLOW PROTECTION LISTED TO ASSE 1055

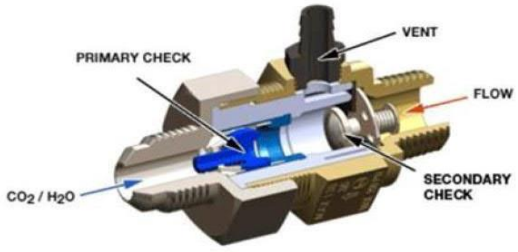
AHJ = AUTHORITY HAVING JURISDICTION
ASSE 1001 AVB = ATMOSPHERIC VACUUM BREAKER
ASSE 1020 PVB = PRESSURE VACUUM BREAKER
ASSE 1013 RPZ = REDUCED–PRESSURE PRINCIPLE
ASSE 1056 SVB = SPILL–PROOF VACUUM BREAKER

FAIRFAX COUNTY	Typical Chemical Dispenser Installations

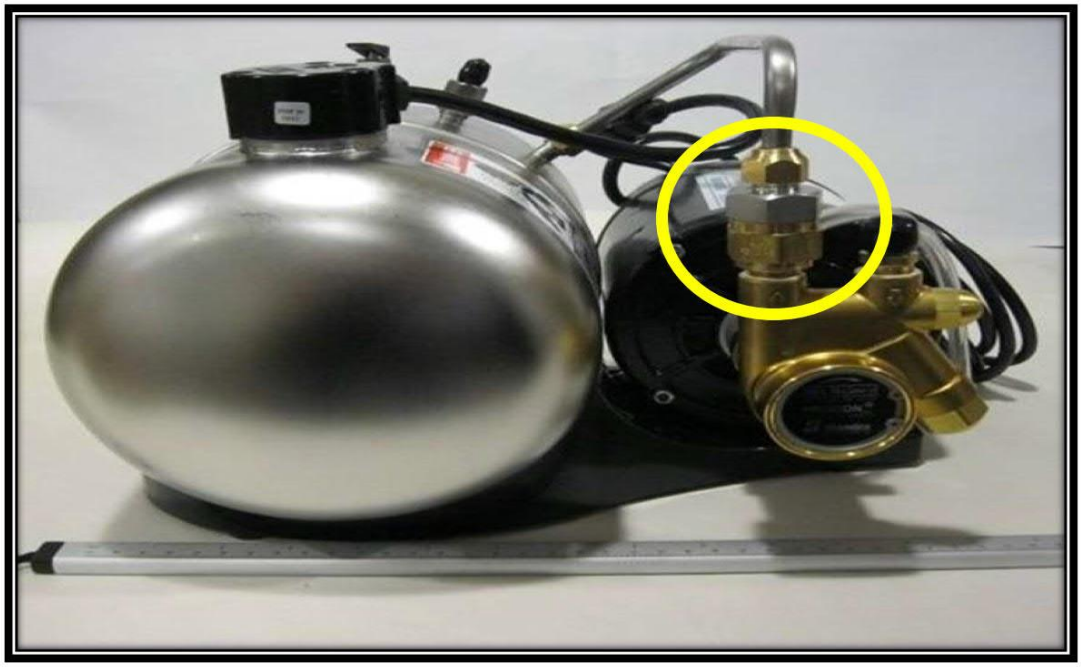
GSD – 5 Carbonated Beverage Dispenser

Backflow Prevention for Carbonated Beverage Dispensers

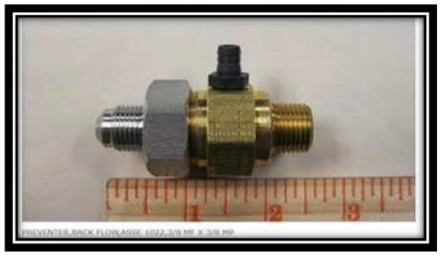
How It Works



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.



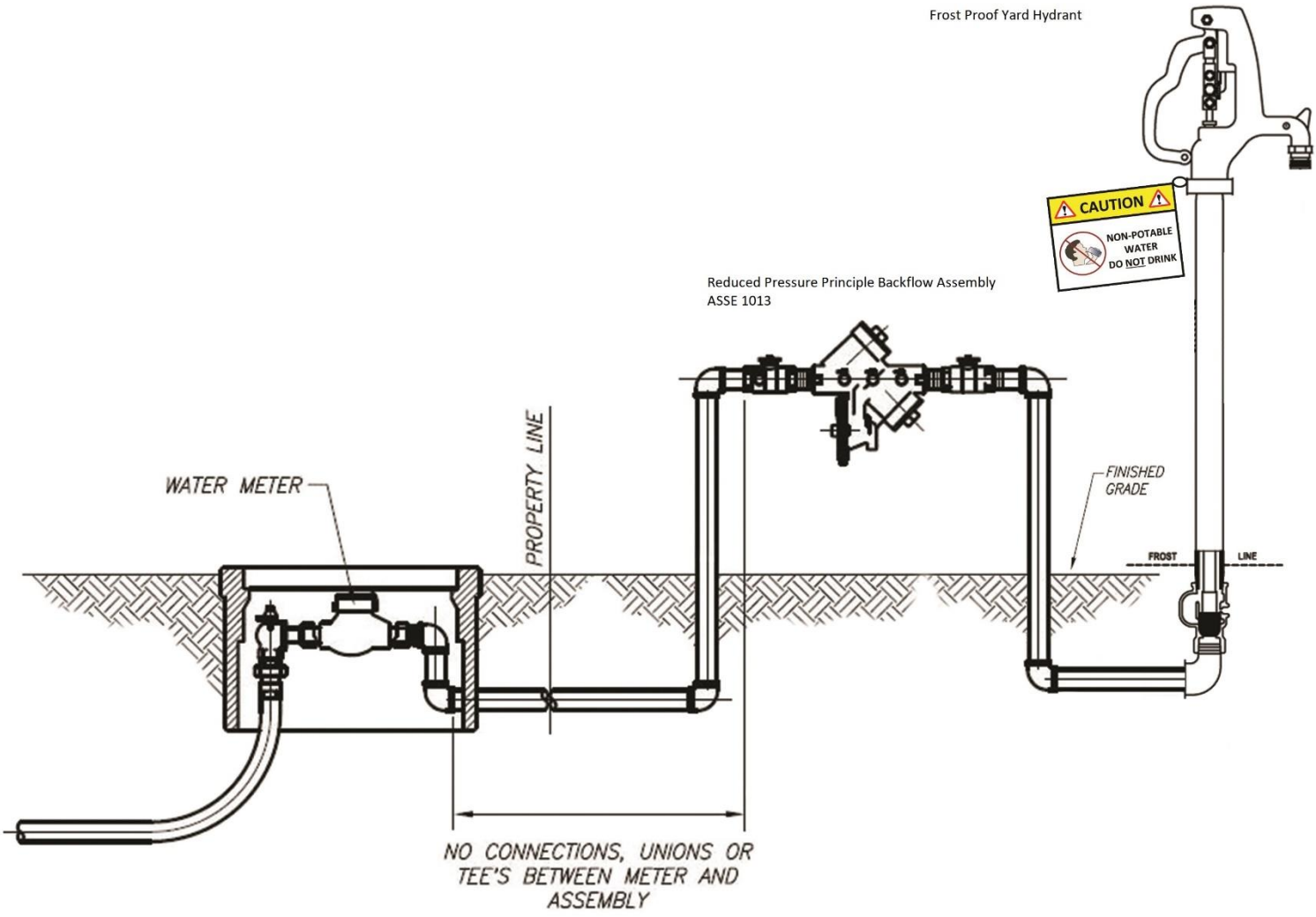
Built-In Duel Check Valve
Meets ASSE 1022

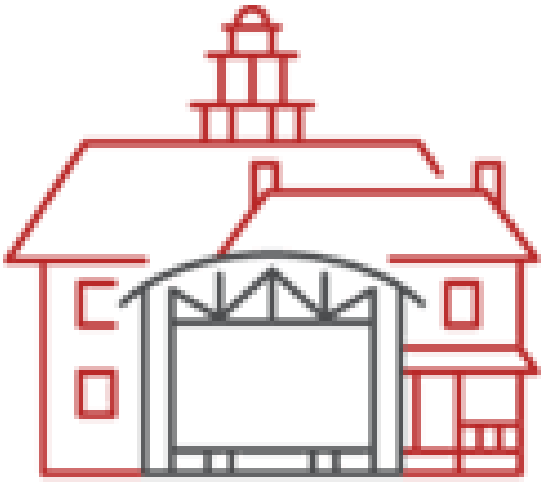


If, the Carbonator Unit does not have a Built-In Device, an ASSE 1022 Backflow Preventer for Carbonated Beverage Machines ***MUST*** be installed on all Supply Lines carrying Carbonated Liquid to the Dispenser. ***No Copper, Brass, or Bronze Fittings or Tubing may be installed on the downstream side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

GSD – 6 Code Compliant Non-Potable Sign

GSD – 7 Frost-Proof Yard Hydrant Installation Requirement





TOWN OF

VIENNA

since 1890