

**TOWN OF WASHINGTON
COMMUNITY WATERWORKS
CROSS CONNECTION CONTROL ORDINANCE**

1. Introduction

A cross-connection is defined as “Any physical arrangement whereby a public water supply is connected, directly or indirectly, with any other water supply system, sewer, drain, conduit, pool, storage reservoir, plumbing fixture or other device which contains, or may be capable of, imparting contamination to the public water supply as the result of changeable devices and other temporary or permanent devices through which, or because of which, backflow could occur are considered to be cross connections.” Consequently, either cross-connections or the change of backflow must be eliminated to prevent degrading the high quality of water that water purveyors strive to maintain.

The Safe Drinking Water Act mandates that all the public water systems have a Cross-Connection Control Program. In compliance with this mandate, the following is the Town of Washington’s policy regarding Cross Connection and Backflow Prevention.

2.0 Overview

2.1 Purpose

- A. Preventing backflow of pollution or contamination into the waterworks from a consumer's water supply system by installing an appropriate backflow prevention device or by backflow prevention by separation at the service connection. Containment has the highest priority.
- B. Preventing backflow of pollution or contamination into the consumer's water supply system by informing the owner of the shared responsibility for water quality and providing assistance where requested in determining the degree of hazard and recommending appropriate backflow prevention devices or separations at each point-of-use beyond the service connection which may be a health or pollution hazard. Informing owners of the need for isolation beyond the service connection will be a continuing effort.
- C. Preventing backflow of pollution or contamination into the waterworks and into the consumer's water supply system, where it is not intricate or complex, by application of point-of-use isolation in lieu of containment. The alternative of isolation in lieu of containment will be evaluated at each premises where containment is required.

2.2 Causes of Backflow

The causes of backflow cannot usually be eliminated completely, since backflow is often initiated by accidents or unexpected circumstances. However, some causes of backflow can be partially controlled by good design and informed maintenance. Listed below are the

major causes of backflow as outlined under the two types of backflow – backsiphonage and backpressure.

A. Backsiphonage

Backsiphonage is caused by reduced or negative pressure being created in the supply piping. The principal causes of backsiphonage are:

- (1) Line repair or break which is lower than a service point. This will allow negative pressures to be created by water trying to flow to a lower point in the system.
- (2) Undersized piping: If water is withdrawn from a pipe at a very high velocity, the pressure in the pipe is reduced and the pressure differential created can cause water to flow into the pipe from a contaminated source.
- (3) Lowered pressure in water main due to high water withdrawal rate such as fire fighting, water main flushing, or water main breaks.
- (4) Reduced supply main pressure on the suction side of a booster pump.

B. Backpressure

Backpressure may cause backflow to occur where a potable water system is connected to a non-potable system of piping, and the pressure in the non-potable system exceeds that in the potable system. The principal causes of backpressure are:

- (1) Booster pump systems designed without backflow prevention devices.
- (2) Potable water connections to boilers and other pressure systems without backflow prevention devices.
- (3) Connections with another system that may, at times, have a higher pressure.
- (4) Water stored in tanks or plumbing systems which, by virtue of their elevation, would create head sufficient to cause backflow if pressure were lowered in the public system.

3.0 Responsibility

3.1 Cross-Connection Control Program

The responsibilities of the Town of Washington’s Cross-Connection Control Program in accord with the Commonwealth of Virginia / State Board of Health Waterworks Regulations are as follows:

- A. It is the responsibility of the purveyor to establish or cause to be established and operate a Cross Connection and Backflow Prevention Program consistent with the extent of the system and the type of consumer served. A representative of the Town of Washington shall administer and enforce this program under the supervision of the Mayor.

- B. Certified plans for fire service connections and extensive lawn or irrigation systems served by waterworks and other facilities requiring approved backflow prevention devices, shall be submitted to the water purveyor prior to construction. The water purveyor shall review the plans and advise if the plans are approved or unapproved. If unapproved, the designer and the purveyor shall consult with the Virginia Department of Health for a determination of what will be approved. The revised design shall be resubmitted for additional reviews. Only after final approval by the water purveyor, will it be permissible to proceed with the final construction. All plans should be submitted to the purveyor with sufficient copies for the purveyor to forward an approved copy to the Virginia Department of Health.

New Premises

1. All building permit applications shall be reviewed and approved by the Town of Washington for cross connection control requirements prior to issuance of a building permit.
 2. Required devices or separations shall be operational prior to issuance of a certificate to occupy. A qualified firm, contracted by the Town of Washington, will perform the initial testing of devices or verification of separations.
 3. A follow up inspection of all premises except residential will be performed by a qualified firm within 30 days of occupancy.
- C. It shall be the duty of the purveyor to have thorough inspections and operational tests made annually of backflow prevention devices or low pressure cut-off devices which are required and installed. Where storage facilities are provided, it is suggested that at least one sample per month be tested to verify that the water remains of satisfactory bacteriological quality. Copies of results of these inspections and tests shall be kept on file and made available to the Virginia Department of Health. The devices shall be repaired, overhauled, or replaced when needed. Nothing in this section shall prevent the purveyor from installing and operating approved devices or making repairs.
- D. The water purveyor may deny or discontinue the water service to a consumer if the required backflow prevention device is not installed. If it is found that the device(s) has been removed or bypassed, or if a cross-connection exists on the premises, or if the pressure in the waterworks is lowered below 10 psi gauge, the purveyor shall take positive action to insure that the waterworks is adequately protected at all times. Water service to such premises shall not be restored until the deficiencies have been corrected or eliminated in accordance with these regulations and to the satisfaction of the purveyor.

3.2 Customers

The customer's responsibility starts at the point of delivery from the public potable water system and includes all of his water systems. The customer, at his own expense, shall install, operate, test, and maintain approved backflow prevention devices as directed by the

Town of Washington. The customer shall maintain accurate records of tests and repairs made to backflow prevention devices and provide the Town with copies of such records. The records shall be on forms approved or provided by the Town. In the event of accidental pollution or contamination of the public or consumer's potable water system due to backflow on or from the customer's premises, the owner shall promptly take steps to confine further spread of pollution or contamination within the customer's premises, and shall immediately notify the Town of Washington.

3.3 Backflow Prevention Device Installers

The installer's responsibility is to make proper installation of backflow prevention devices in accordance with the manufacturer's installation instructions and any additional instructions approved by the Town of Washington.

The installer is also responsible to make sure a device is working properly when it is installed, and is required to furnish the following information to the Town of Washington immediately after a reduced pressure principle backflow preventer (RP), double check valve assembly (DCVA) or pressure vacuum breaker (PVB) is installed:

- A. Service address where device is located
- B. Owner
- C. Description of device's location and size
- D. Date of installation
- E. Type of device
- F. Manufacturer
- G. Model number
- H. Serial number

All RP, DCVA, and PVB are required to be tested following installation by a Certified Backflow Prevention Device Technician, as defined in Section 5.

4.0 **Definitions**

Air Gap Separation – A physical separation between the free-flowing discharge end of a potable water supply and an open or nonpressure receiving vessel. An approved air-gap separation shall be a distance of at least two (2) times the diameter of the supply pipe measured vertically above the top rim of the vessel – with a minimum distance of one (1) inch.

Approved – Accepted by the Town of Washington as meeting an applicable specification of the Town of Washington and accepted by the Virginia Department of Health in accordance with Title 32.1, Chapter 6, Article 2 of the Code of Virginia entitled "Public Water Supply".

Auxiliary Water Supply – Any water supply on or available to the premises other than the purveyor's approved public potable water supply. These auxiliary waters may include

water from a private non-potable water supply or any natural source(s) such as a well, spring, river, stream, harbor, etc. or “used waters” or “industrial fluids”. These waters may be contaminated or they may be objectionable, and constitute an unacceptable water source over which the water purveyor does not have sanitary control.

Backflow – The flow of water or other liquids, mixtures, or substances under pressure into the distribution pipes of a potable water supply system from any source or sources other than its intended source.

Backflow Prevention Device – Any effective device, method of construction used to prevent backflow into a potable water system. The type of device used should be based on the degree of hazard, either existing or potential.

Backflow Prevention Device – Approved – A device that has met the requirements of one or more of the following standards:

- (1) AWWA-C-506 Reduced Pressure Principle and Double Check Valves (RP & DCVA)
- (2) ASSE-1001 Atmospheric Vacuum Breakers (AVB)
- (3) ASSE-1011 Hose Bib Vacuum Breakers (HBVB)
- (4) ASSE-1013 Reduced Pressure Principle Device (RP)
- (5) ASSE-1015 Double Check Valve Assembly (DCVA)
- (6) ASSE-1020 Pressure Vacuum Breakers (PVB)
- (7) ASSE-1024 Dual Check Backflow Preventer – residential use only (DCBP)
- (8) USE-FCCC University of Southern California Foundation for Cross-Connection Control & Hydraulic Research

Backpressure – Any elevation of pressure in the downstream piping system (by pump, elevation of piping, or steam and/or air pressure) above the supply pressure at the point of consideration which would cause, or tend to cause, a reversal of the normal flow.

Backsiphonage – A form of backflow due to a reduction in system pressure which causes a negative or sub-atmospheric pressure to exist at a site in the water system.

Certified Backflow Prevention Device Technician – A person who has proven his competency to the satisfaction of the Town of Washington’s Cross-Connection Control Personnel. The technician who is certified to make competent tests or to repair, overhaul and make reports on backflow prevention devices, shall be conversant with applicable laws, rules and regulations. The technician shall have attended and successfully completed a certification program for Backflow Prevention acceptable to the Town of Washington. The technician will be required to provide the Town of Washington with a copy of his/her certificate.

Contamination – An impairment of the quality of the potable water by any solid, liquid, or gaseous compounds or mixtures to a degree which would create an imminent danger to the public health, or would create an unacceptable taste, odor, or color to the potable water.

Cross Connection – Any physical connection or arrangement of piping or fixtures between two otherwise separate piping systems, one of which contains potable water and the other non-potable water or industrial fluids of questionable safety, through which, or because of which, backflow or backsiphonage may occur into the potable water system. A water service connection between a public potable water distribution system and a customer's water distribution system which is cross-connected to a contaminated fixture, industrial fluid system or with potentially one type of cross-connection. Other types of cross-connections include connectors such as swing connections, removable sections, four-way plug valves, spools, dummy sections of pipe, swivel or change-over devices, sliding multiport tube, solid connections, etc.

Double Check Valve Assembly (DCVA) – An assembly composed of two single, independently acting, check valves, including tightly closing shut-off valves located at each end of the assembly. A valve that is “drip-tight” in the normal direction of flow when the inlet pressure is one (1) psi and the outlet pressure is zero (0). The check valve shall permit no leakage in a direction reverse to the normal flow. The closure element (e.g., clapper) shall be internally weighted or otherwise internally loaded to promote rapid and positive closure and suitable connections for testing the watertightness of each check valve.

Dual Check Valve Assembly (DCVA) – An assembly composed of two single, independently acting check valves, particularly suited for installations immediately downstream from residential water meters where potential pollutants from residences could enter the water mains, or on service lines to self-draining yard hydrants (ASSE approval required).

Hazard, Degree of – A qualification of what potential and actual harm may result from cross-connections within a water-using facility. The word “severe” as used to qualify “Health Hazard” means a hazard to the health of the user that could reasonably be expected to result in significant morbidity or death. Establishing the degree of hazard is directly related to the type and toxicity of contaminants that could feasibly enter the public water supply system and is determined by the Town of Washington.

Hazard, Health – Any condition, device, or practice in a water system or its operation that creates, or may create, a danger to the health and well-being of users.

Hazard, Pollution – A condition through which an aesthetically objectionable or degrading material, not dangerous to health, may enter the public water system or a potable consumer's water system.

Hazard, System – A condition posing an actual or potential threat of damage to physical properties of the public water system or a potable consumer's water system.

Industrial Piping System, Consumer's – Any system used by the consumer for transmission of, or to, store any fluid, solid or gaseous substance other than an approved water supply. Such a system would include all pipes, conduits, tanks, receptacles, fixtures,

equipment and appurtenances to produce, convey or store substances which are, or may be, polluted or contaminated.

Point of Delivery/Service Connection – The point at which the Consumer's Potable System is connected to the Public Potable System.

Point of Use – The point(s) where water is being taken from the Consumer's Potable System.

Reduced Pressure Principle Backflow Preventer (RP) – A device, containing within its structure, a minimum of two independently acting approved check valves, together with an automatically operating pressure differential relief valve located between the two check valves. The first check valve reduces the supply pressure a predetermined amount so that during normal flow, and at cessation of normal flow, the pressure between the check valves shall be less than the supply pressure. In case of leakage of either check valve, the differential relief valve, by discharging to atmosphere, shall operate to maintain the pressure between the check valves less than the supply pressure. The unit shall include tightly closing shut-off valves located at each end of the device. Each device shall be fitted with properly located test cocks. (RP, RPP and RPZ are all acceptable abbreviations for this device.)

Vacuum Breaker, Atmospheric Type (AVB) – An approved device consisting of a check valve and an air inlet to relieve a vacuum. It shall effectively shut off the reverse flow of water when a negative pressure exists on the supply side of the device.

Vacuum Breaker, Pressure Type (PVB) – A pressure vacuum breaker is similar to an atmospheric vacuum, except that the checking unit "poppet valve" is activated by a spring. This type of vacuum breaker does not require a negative pressure to react and can be used on a pressure side of a valve.

Water Purveyor – The owner or operator of the public potable water system supplying an approved water supply to the public. The utility shall be one that is operating under a valid permit from the Virginia Department of Health. As used herein, the terms water purveyor and the Town of Washington may be used simultaneously.

Water System, Consumer's Potable – That portion of the privately owned potable water system lying between the point of delivery and point of use. This system will include all pipes, conduits, tanks, receptacles, fixtures, equipment and appurtenances used to produce, convey, store or use potable water.

Water System, Public Potable – Any publicly or privately owned water system operated as a public utility under a valid health permit to supply water for domestic purposes. This system will include all sources, facilities and appurtenances between the source and the point of delivery such as valves, pumps, pipes, conduits, tanks, receptacles, fixtures, equipment and appurtenances used to produce, convey, treat or store a potable water for public consumption or use.

Water, Used – Any water supplied by a water purveyor from a public potable water system to a customer’s water system after it has passed through the point of delivery.

5.0 Cross-Connection Hazards and Required Protection

5.1 Facilities

A. **Type of Backflow Protection Required** – An approved backflow prevention device of the type designated, shall be installed on each water service connection to the following types of facilities. This list is presented as a guideline and should not be construed as being complete.

Abbreviations used are as follows:

AG	Air Gap Separation
AVB	Atmospheric Vacuum Breaker
DCVA	Double Check Valve Assembly
PVB	Pressure Vacuum Breaker
RP	Reduced Pressure Principle Backflow Preventer

B. Type of Facility	Minimum Typical Protection
1) Buildings over three stories	RP
2) Car wash with recycling system and/or adductor	RP
3) Dentist office	RP
4) Exterminating companies (pesticides)	PVB
5) Film laboratory	RP
6) Food or beverage plant.....	DCVA
7) Hospital, clinics, medical building.....	RP
8) Irrigation system	PVB
9) Laboratory	RP
10) Laundry or dry cleaning plant.....	RP
11) Machine tool plant (health or system hazard)	RP
12) Machine tool plant (pollution hazard).....	DCVA
13) Metal processing plant (health or system hazard)	RP
14) Metal processing plant (pollution hazard).....	DCVA
15) Nursing home	RP
16) Petroleum storage yard (health or system hazard).....	RP
17) Petroleum storage yard (pollution hazard)	DCVA
18) Pharmaceutical or cosmetic plant	RP
19) Power plant	RP
20) Restaurants (health or system hazard).....	RP
21) Restaurants (pollution hazard).....	DCVA
22) School (health or system hazard).....	RP
23) School (pollution hazard)	DCVA

- 24) Sewage pumping station..... PVB
- 25) Sewage treatment plant RP
- 26) Swimming pools with piped fill line..... AG
- 27) Veterinary establishment..... RP

Vacuum breakers (Vacuum Relief Valves) designed to prevent collapse or implosion of a steam-heated pressure vessel when being cooled, are not acceptable devices for protection against backflow in potable water lines.

Single check valves will not be accepted as a means to protect the potability of drinking water, and therefore may only be used to prevent backflow which would effect the functioning of a plumbing system, such as to prevent recirculation of potable hot water. Where single check valves are improperly used, they will be required to be replaced by an appropriate approved backflow prevention device.

- C. In addition to, and including, those types of facilities listed above, an approved backflow prevention device of the type designated shall be installed on each domestic water service connection to any premises containing the following real or potential hazards:

Situation	Minimum Typical Protection
(1) Premises having an auxiliary water system not connected to public water system	RP
(2) Premises having a water storage Tank, reservoir, pond, or similar appurtenance	RP
(3) Premises having a steam boiler, cooling system, or hot water heating system where chemical water conditioners are used.....	RP
(4) Premises having submerged inlets to equipment	RP
(5) Premises having self-draining yard hydrants, fountains, hose boxes or similar devices presenting a health or system hazard (i.e. chemical storage plants, tank farms, bulk storage yards)	RP

(6) Premises having self-draining yard hydrants, fountains, hose boxes or similar devices presenting a pollution hazard (i.e. parks, play fields, cemeteries).....DCVA

(7) Other specified by the Public Utilities Department

Any device, equipment or situation not covered by this Cross-Connection Policy where water is connected or used, which may constitute a potential health hazard, will be handled at the discretion of the water purveyor or his authorized agent.

5.2 Parallel Installation

All backflow prevention devices with test clocks are required to be tested with a minimum frequency of once per year. Testing requires a water shutdown, usually lasting five (5) to twenty (20) minutes. For facilities that require an uninterrupted supply of water, and when it is not possible to provide water service from two separate meters, provisions shall be made for a “parallel installation” of backflow prevention devices.

Multi-story buildings, which have a number of flushometer toilets, should be equipped with parallel devices. Experience has shown if the water is to be shut off to this type of building, flushometers may have to be manually reset.

During testing, one device is left on while the other is being tested. Usually the two devices are sized one device size smaller than the service line, e.g. one 2-inch device or two 1 ½-inch devices, one 8-inch device or two 6-inch devices.

The Town of Washington will not accept an unprotected bypass around a backflow preventer when the device is in need of testing, repair, or replacement.

5.3 Exterminating Companies

All tanks, tank trucks, and spraying apparatus used to convey pesticides in an exterminating process are required to use only designated-protected potable water fill locations. Filling with potable water at unspecified locations or private residences is prohibited. All filling locations will consist of overhead piping arrangements with correctly installed pressure vacuum breakers. If for any reason an overhead piping arrangement cannot be used, a reduced pressure zone backflow preventer must be installed on the fill line. All filling locations must be approved by the Town of Washington.

5.4 Fire Systems

Type of backflow protection required – An approved backflow prevention device, of the type designated, shall be installed on each fire protection service to any premises where the fire protection system contains any of the following components, unless the Town of Washington determines that no regular or potential health, pollution, or system hazard to

the public water system exists. Fire systems may be divided into six (6) general classes. The following are typical:

Class	Minimum Typical Protection
<u>Class 1</u> – A closed automatic fire system without pumper connection; A system having 20 heads or less.....	NONE
<u>Class 2</u> – A closed automatic fire system with pumper connection	DCVA
<u>Class 3</u> – A closed automatic fire system with pumper connection and an auxiliary water supply on, or available, to the premises; or an auxiliary water supply which will be located within 1,700 feet of the pumper connection.....	RP
<u>Class 4</u> – A closed automatic fire system with a closed pressure tank supply (this class may have a jockey pump interconnected with the public water supply and/or an air compressor connection).....	RP
<u>Class 5</u> – A closed automatic sprinkler system interconnected with an auxiliary water supply.....	RP
<u>Class 6</u> – A fire system used for the combined purposes of supplying the automatic sprinklers, hose lines, fire hydrants and standpipes and of being used for industrial purposes.	
<u>Self-draining fire hydrants on premises presenting a health or system hazard</u> (i.e. chemical plant, petroleum storage plant, bulk storage yard, stock yard, sewage plant or similar facilities where ground seepage of toxic materials may occur	
	RP
<u>Self-draining fire hydrants on premises presenting a pollution hazard</u> (i.e. apartment house, office complex, fabricating plant, or similar facility where ground seepage of pollution, but not toxic, materials may occur	
	DCVA

5.5 Other Cross-Connection Hazards

- A. **Fixture Inlets or Valved Outlets** – Fixture inlets or valved outlets with hose attachments, which may constitute a cross-connection, shall be protected by the proper approved vacuum breaker (AVB, HBVB, etc.) installed at least six (6) inches above the highest point of usage and located on the discharge side of the last valve. Fixtures with integral vacuum breakers manufactured as a unit may be installed in accordance with their approved requirements.
- B. **Air Condition Cooling Tower** – Potable water inlet shall have an air gap separation of twice the inside diameter of the inlet line or a minimum of two inches above the flood level rim. In a case where the cooling unit is completely enclosed, then an RP device must be installed.
- C. **Aspirators and Ejectors** – Aspirators and ejectors shall have an AVB or PVB, depending upon the degree of hazard, on the faucet from which these devices are attached or operated.
- D. **Booster Pumps** – All booster pumps shall be provided with a low pressure cut-off unless other acceptable provisions are made to prevent the creation of low or negative pressures in the piping system.
- E. **Private Wells** – Shall not be interconnected to any Town of Washington public water supply system.
- F. **Portable Spray and Cleaning Equipment** – Any portable pressure spray or cleaning units that have the capability of connection to any potable water supply and do not contain a built-in approved air gap, should be fitted with a reduced pressure backflow device or double check valve assembly depending on the degree of hazard.
- G. **Uses of Water from Fire Hydrants or Meter Setters** – The unmetered use of water from any fire hydrant or meter setter by other than authorized personnel is prohibited. The department may permit the use of water from a fire hydrant for construction, provided the applicant applies for and adheres to backflow requirements on hydrant permits.

NOTE: Any device, equipment, or situation not covered by this cross-connection policy, which may constitute a potential health hazard, will be examined for appropriate treatment by the Town of Washington.

6.0 Testing of Backflow Preventers

It shall be the duty of the customer/user at any premises where reduced pressure backflow prevention devices (RP), double check valve assemblies (DCVA), and pressure vacuum breakers (PVB) are installed to have thorough inspections and operational tests made at least once a year or more often in those instances where inspections indicate a need. These inspections and tests shall be at the expense of the water user and be performed by the device manufacturer's representative, or by a certified device technician. The Town of Washington will notify the customer or user when tests are required and supply the necessary test forms and instructions.

6.1 Frequency

Due to changes in models or components of equipment, methods of manufacturing and additions to plants, buildings, etc., water use requirements undergo continual change. As a result, new cross-connections may be installed and existing protection may be bypassed, removed, or otherwise ineffective; therefore, an annual detailed inspection of the customer's premises is required.

6.2 Proposed Constructions

All new construction plans and specifications shall be reviewed by the Town of Washington to determine the degree of possible cross-connections hazard. At this time, backflow prevention requirements in accordance with this policy will be made.

6.3 New and Existing Facilities

In order to determine the degree of hazard to the public potable water system, a survey will be made of the consumer's presently installed system. This survey needs not be confined to establishing the water uses on the premises, the existence of cross-connections, and the availability of auxiliary or used water supplies. On site inspections are made of new and existing facilities and should any devices or plumbing changes be required, a follow-up inspection will be made of the same facilities at a later date.

7.0 Customer Notification

1. A Representative for the Town of Washington will notify the consumer's water supply system owner in writing as to the required location of any device or separation; type of device or separation, including applicable University of Southern California Foundation for Cross-Connection Control and Hydraulic Research (USC), American Society of Sanitary Engineering (ASSE), and American Water Works Association (AWWA) approvals or standards; installation requirements; and the deadline for completing the installation - usually 15 days.
2. If the consumer's water supply system owner fails to install any required device or separation within the deadline or fails to complete testing, inspecting or overhauling as

required, a Notice of Violation shall be prepared in accordance with IV.B. of the Ordinance and shall include a notification of termination of water service unless compliance is obtained within 30 days.

8.0. References

The following references provide additional details regarding backflow regulatory requirements and compliance measures.

- A. Safe Drinking Water Act, Public Law 93-523, December 16, 1974.
- B. Cross-Connection Control Manual, U.S. Environmental Protection Agency, Washington, D.C., 1973.
- C. Waterworks Regulations, Commonwealth of Virginia/State Board of Health, February 1, 1982.
- D. Section P-1505.0 Protection of Potable Water Supply, The BOCA Basic/National Plumbing Code, 1984.

9.0 ENACTMENT

ENACTED AND ORDAINED THIS 12th day of April 2006 This Community Waterworks Cross Connection Control Ordinance and Community Cross Connection Program shall become effective upon passage.

MAYOR: Eugene Leggett
The Honorable Eugene Leggett

DATE: April 12 2006

ATTEST: Laurel J. Doherty
Clerk of the Town Council

TABLE OF CONTENTS

Section		Page
I.	Administration.....	1
II.	Purpose.....	1
III.	Procedures	
	A. General.....	2
	B. Assessment by Interviews.....	2
	C. Assessment by Questionnaires.....	3
	D. Consumer Notification.....	4
	E. New Premises.....	4
	F. Existing Premises.....	5
	G. Premises with Residential Containment Devices.....	5
	H. Premises with Individual Water Supplies.....	5
	I. Premises with Booster or Fire Pumps.....	5
	J. Backflow Prevention Device Testers.....	6
	K. Point-of-Use Isolation Protection.....	6
IV.	Records	
	A. Locations of Devices and Types.....	7
	B. Inspections/Questionnaires.....	8
	C. Testing and Monitoring.....	9
V.	Notification	
	A. Inspections of new and existing facilities.....	10
	B. Testing Due.....	10
	C. Test Results.....	10
	D. Device or Means Required.....	11
	E. Violations.....	11

TABLE OF CONTENTS (cont.)

Section		Page
	F. Termination or Denial of Service.....	11
VI.	Reporting Contamination or Suspected Contamination.....	11
VII.	Device Selection Guidelines.....	12
VIII.	Examples.....	12
IX.	Device Selection.....	14
X.	Device Testability/Serviceability.....	14
XI.	Backflow Prevention Device Tester List.....	15
XII.	Thermal Expansion	15
XIII.	References	16

APPENDIX

- A. Isolation Device Application Table
- B. Questionnaire Forms
- C. Interview Report Form

**TOWN OF WASHINGTON
COMMUNITY WATERWORKS
CROSS CONNECTION CONTROL PROGRAM**

I. Administration

The Safe Drinking Water Act mandates that all the public water systems to have a Cross-Connection Control Program. In compliance with this mandate, the following is the Town of Washington's policy regarding Cross Connection and Backflow Prevention.

A Representative for the Town of Washington shall administer and enforce this program under the supervision of the Mayor.

II. Purpose

- A. Preventing backflow of pollution or contamination into the waterworks from a consumer's water supply system by installing an appropriate backflow prevention device or by backflow prevention by separation at the service connection. Containment has the highest priority.

- B. Preventing backflow of pollution or contamination into the consumer's water supply system by informing the owner of the shared responsibility for water quality and providing assistance where requested in determining the degree of hazard and recommending appropriate backflow prevention devices or separations at each point-of-use beyond the service connection which may be a health or pollution hazard. Informing owners of the need for isolation beyond the service connection will be a continuing effort.

- C. Preventing backflow of pollution or contamination into the waterworks and into the consumer's water supply system, where it is not intricate or complex, by application of point-of-use isolation in lieu of containment. The alternative of isolation in lieu of containment will be evaluated at each premise where containment is required.

III. Procedures

A. General

1. Each consumer's water supply system will be accessed at least annually for cross connection hazards. Assessment may be performed by voluntary inspections, interviews, or questionnaires. Interviews may be conducted on site or by phone.
2. A Representative of the Town of Washington will arrange to have trained personnel conduct an on site interview with the owner or owner's representative of each consumer's water supply system identified in Section IV. A. of the Program.
3. A Representative of the Town of Washington will arrange to have a questionnaire sent to each remaining consumer's water supply system owner or have the questionnaire completed by phone interview, including residential.
4. A Representative of the Town of Washington will route all new plans for service connections to serve fire service connections and lawn sprinkler or irrigation systems and will route backflow prevention recommendations beyond the service connection through the Local Building Official.
5. The Local Building Official will coordinate cross connection control requirements at new premises, premises where usage has changed, premises where booster or fire pumps are used, and all others where plumbing modifications occur, with a Representative of the Town of Washington.
6. A Representative of the Town of Washington will review and track the cross connection control operational verification reports and notify the consumer's water supply system owner in writing as to any testing, inspecting, and overhauling requirements 60 days prior to their annual due date.
7. Enforcement action recommendations will be submitted by a representative of the Town of Washington to the Mayor for approval.

B. Assessment by Interviews

1. Interviews will follow a prepared questionnaire used to assess the need for cross connection control by containment.
2. A qualified firm will be contracted by the Town of Washington as needed to conduct cross connection control and backflow prevention on-site interviews with each consumer's water supply system owner or representative. During these interviews, each installed device or separation will be inspected for

appropriateness, proper installation, and general appearance. Point-of-use isolation protection will be discussed with the owner. A report will be filed with the Town of Washington with violations noted and/or recommendations for repair, replacement of existing devices or separations and/or installation of additional devices.

3. Available information about the premises to be surveyed will be gathered prior to the interview.
4. The reasons for cross connection control and backflow prevention will be explained to the consumer's water supply system owner or representative.
5. Water uses after it enters the premises will be questioned.
6. Plans for future expansion and possible additional protection requirements will be discussed.
7. An inspection of the premises will be requested to determine if point-of-use isolation should be installed for the protection of the consumer's water supply system users or considered for substitution for containment.
8. All information will be recorded on the prepared questionnaire. This will include water uses, assessment of degrees of hazard and diagrams.
9. The results of the interview with recommendations for containment devices, separations and point-of-use isolation will be submitted to the Town of Washington for approval. Recommendations for isolation devices or separation in lieu of containment will also be submitted to the Local Building Official.
10. For those facilities where phone interviews will be conducted by the qualified firm contracted by the Town, they will be conducted at least annually. A cross connection control questionnaire will be completed to reaffirm the degree of hazard and to assess the facility for new hazards. During these interviews, each installed device or separation will be evaluated for appropriateness, proper installation, and general appearance. Point-of-use isolation protection will be discussed with the owner. A report will be filed with the Town with violations noted and/or recommendations for repair, replacement of existing devices, or separations and/or installation of additional devices.

C. Assessment by Questionnaires

1. Annual questionnaires will be sent to each consumer's water supply system owner except those premises where on-site or phone interviews are being conducted.

2. The results of the annual questionnaires will be reviewed by a Representative of the Town of Washington. Based on the response to the questionnaires, cross connection control interviews will be scheduled and appropriate devices or separations required to provide containment and/or point-of-use isolation where appropriate. No response to the questionnaire will prompt an on-site interview. Refusal of access for inspection or provision of pertinent information shall prompt the requirement to install a high hazard containment device.
3. Questionnaires can be repeated annually at the discretion of the Town after an initial interview at premises, where devices or separations are installed and the results of the initial interview are not expected to change. These premises would be where the plumbing is not intricate or complex and not expected to be modified and no unexpected change in use of the premises would occur without the Town of Washington being notified.

D. Consumer Notification

1. A Representative for the Town of Washington will notify the consumer's water supply system owner in writing as to the required location of any device or separation; type of device or separation, including applicable University of Southern California Foundation for Cross-Connection Control and Hydraulic Research (USC), American Society of Sanitary Engineering (ASSE), and American Water Works Association (AWWA) approvals or standards; installation requirements; and the deadline for completing the installation - usually 15 days.
2. If the consumer's water supply system owner fails to install any required device or separation within the deadline or fails to complete testing, inspecting or overhauling as required, a Notice of Violation shall be prepared and shall include a notification of termination of water service unless compliance is obtained within 30 days.

E. New Premises

1. All building permit applications shall be reviewed and approved by the Local Building Official for cross connection control requirements prior to issuance of a building permit.
2. Required devices or separations shall be operational prior to issuance of a certificate to occupy. The qualified firm, contracted by the Town of Washington, will perform the initial testing of devices or verification of separations.
3. A follow-up inspection of all premises except residential will be performed within 30 days of occupancy.

F. Existing Premises

1. All owners or representatives of existing premises will be interviewed and owners notified in writing of any backflow prevention requirements.
2. All remaining owners will initially be interviewed or mailed questionnaires.

G. Premises With Residential Containment Devices

1. Residential containment devices, such as those devices consisting of dual, independent check valves (ASSE # 1024), shall be tested, overhauled and/or replaced on a schedule consistent with the manufacturer's recommendations.
2. Annual assessment by questionnaires shall be conducted and results reviewed as noted above.

H. Premises With Individual Water Supplies

1. Premises requesting a new service connection or reconnection to the waterworks must be assessed by an on-site interview for cross connection hazards and the appropriate separation installed, inspected, and operational prior to making the service connection.
2. Premises with individual water supplies, i.e., an auxiliary water system, may, upon approval of the Town, maintain the water supply on the premises if a separation from the consumer's water supply system is provided and maintained and access is granted for inspections. A written request must be made and the Local Building Official concurs.
3. Annual assessments will be made to verify the maintenance of the separation. If an interview is denied, then the customer will be notified in accordance with Section V. E. of the Program.

I. Premises With Booster or Fire Pumps

1. Premises having booster pumps or fire pumps connected to the waterworks shall have the pumps equipped with a pressure sensing device to shut off or regulate the flow from the booster pump when the pressure in the waterworks drops to a minimum pressure as determined by hydraulic analysis, not to be less than 10 psi gauge at the service connection.
2. Annual assessments will be made to verify the maintenance of the pressure sensing device. If an interview is denied, then the customer will be notified in accordance with Section V. E. of the Program.

J. Backflow Prevention Device Testers

1. The tester is responsible for making competent inspections and for repairing or overhauling backflow prevention devices and making reports of such repair to the consumer's water supply system owner on forms approved by the Town of Washington.
2. The tester shall include the list of materials or replacement parts used and insure that parts used in the repair of the backflow prevention device meet the manufacturer's recommendations and the University of Southern California, Foundation for Cross Connection Control and Hydraulic Research (USC).
3. The tester shall not change the design or operational characteristics of a device during repair or maintenance without prior written approval of the consumer's water supply system owner and the Town of Washington.
4. The tester shall be equipped with and be competent in the use of all the necessary tools, gauges, manometers, and other equipment necessary to properly test, repair, and maintain backflow prevention devices.

K. Point-of-use Isolation Protection

1. Any premises, residential, commercial, or industrial, where all actual or potential cross connections can be easily correctable at each point-of-use and where the consumer's water supply system is not intricate or complex, point-of-use isolation protection by application of appropriate backflow prevention devices or separations may be used in lieu of installing a containment device at the service connection if the following conditions are met:
 - a. The method of protection provided shall be, in the judgment of the Town of Washington, the method which best provides protection; and
 - b. The consumer's water supply system owner grants access for inspections; and makes a request in writing for point-of-use isolation protection; and
 - c. The Local Building Official concurs.
2. Devices installed under this section shall be selected from the Isolation Device Application table in Appendix A.

IV. Records

A. Locations of Devices and Types

An up-to-date listing of all customers shall be maintained by the Town of Washington. The list will contain,

- ◆ Owner of premises
- ◆ Tenant
- ◆ Name of premises
- ◆ Service address
- ◆ Phone number
- ◆ Contact person
- ◆ Number of service connections
- ◆ Annual assessment by: Interview or mailed questionnaire

An up-to-date listing of consumer's water supply system owners who have cross connection control devices (including pressure sensing devices) or separations (including separations from auxiliary or non-potable water systems and air gaps) installed shall be maintained by the Town of Washington. The list will contain:

- ◆ Owner of premises
- ◆ Tenant
- ◆ Name of premises
- ◆ Service address
- ◆ Phone number
- ◆ Contact person
- ◆ Location of device or separation
- ◆ Device manufacturer
- ◆ Device model number
- ◆ Device serial number
- ◆ Device size
- ◆ Device ASSE number
- ◆ Cross connection or pressure sensing device tested: annually, semi annually, or quarterly
- ◆ Pressure sensing device manufacturer
- ◆ Pressure sensing device model number
- ◆ Pressure sensing device serial number
- ◆ Pressure sensing device pressure set point
- ◆ Type of separation
 - Air gap
 - Physical disconnection
- ◆ Separation verified: annually, semiannually, or quarterly
- ◆ Type of protection
 - Containment
 - Containment and isolation

- Isolation in lieu of containment
- ◆ Access will be: granted, denied, or not necessary

B. Inspections / Questionnaires

Questionnaires shall be maintained by the Town of Washington for 10 years. The questionnaire will contain:

- ◆ Owner and address of residence
- ◆ Occupant, if different from owner
- ◆ Phone number
- ◆ Brief explanation of the program
- ◆ Brief explanation of causes of backflow and control measures
- ◆ Some likely cross connections:
 - A garden hose with its outlet submerged
 - Kitchen sink spray hose with its spray head submerged
 - Hand-held shower massager with its head submerged
 - Garden hose used as an aspirator to spray soap or garden chemicals
 - Spring, hot-tub, cistern, or swimming pool connected to the house plumbing system
 - Water softeners improperly connected
- ◆ Specific questions which will include but not be limited to:
 - Individual wells, springs or cisterns on the property
 - Pressure booster pumps
 - Water storage tanks
 - Water treatment systems
 - Outside hose bibs used in conjunction with:
 - > Chemical sprayers
 - > Jet spray washers
 - > Swimming pools, hot tubs, saunas, etc.
 - > Lawn sprinkler or irrigation systems
 - Photographic developing
 - Utility sinks with hoses extending below sink rim
 - Animal watering troughs
- ◆ Existing cross connection control devices:
 - Working properly
 - Leaking, noisy
 - Any modifications or repairs made
 - Date of last test
 - Any problems with hot water tank relief valve or faucet washers not lasting very long

Also, included with the questionnaire should be:

- ◆ Educational material
- ◆ Who to contact for further information
- ◆ Who to contact if contamination is ever suspected
- ◆ A deadline to respond to the questionnaire

See Appendix B for the Questionnaire forms (residential & commercial).

Cross connection control interview reports shall be maintained by the Town of Washington for 10 years. The report will contain:

- ◆ Inventory information as noted in Section IV. A. above
- ◆ An assessment of:
 - degree of hazard
 - appropriateness of device or separation
 - installation acceptable
 - general condition of device or separation
 - repair/replacement recommendations
 - new/additional device or separation recommendations
 - any indication of thermal expansion problems

See Appendix C for the Interview Report form.

C. Testing and Monitoring

Cross connection control testing reports shall be maintained by the Town of Washington for 10 years. The report will contain:

- ◆ Inventory information as noted in Section IV. A. above
- ◆ Line pressure
- ◆ Results of testing
- ◆ Test method used
- ◆ Date and signature of device tester

If repairs were made, the test report will contain:

- ◆ List of parts replaced
- ◆ Replacement parts used
- ◆ Probable cause of test failure
- ◆ Preventative measures taken

See Appendix D for the Testing Report form.

Residential containment device (ASSE #1024) overhaul or replacement reports shall be maintained by the Town of Washington for 10 years. The report will contain:

- ♦ Inventory information as noted in Section IV. A. above
- ♦ Overhaul/replacement action
- ♦ Date of action

V. Notification

A. Inspections of new and existing facilities

Due to changes in models or components of equipment, methods of manufacturing and additions to plants, buildings, etc., water use requirements undergo continual change. As a result, new cross-connections may be installed and existing protection may be bypassed, removed, or otherwise ineffective; therefore, an annual assessment will be made by the Town of Washington. If an interview is denied, then the customer will be notified in accordance with Section V. E. of the Program.

In order to determine the degree of hazard to the public potable water system, a survey will be made of the consumer's presently installed system. This survey need not be confined to establishing the water uses on the premises, the existence of cross-connections, and the availability of auxiliary or used water supplies. On-site inspections are made of new and existing facilities and should any devices or plumbing changes be required, a follow-up inspection will be made of the same facilities at a later date.

B. Testing Due

It shall be the duty of the customer/user at any premises where reduced pressure backflow prevention devices (RP), double check valve assemblies (DCVA), and pressure vacuum breakers (PVB) are installed to have thorough inspections and operational tests made at least once a year or more often in those instances where inspections indicate a need. These inspections and tests shall be at the expense of the water user and be performed by the device manufacturer's representative, or by a certified device technician. The Town of Washington will notify the customer or user when tests are required and supply the necessary test forms and instructions.

C. Test Results

Test results must be submitted to the Town of Washington within ten days following the completion of inspections and operational tests. All results shall be reviewed by the Town. Any deficiencies will be noted and the customer notified.

D. Device or Means Required

All new construction plans and specifications shall be reviewed by the Town of Washington to determine the degree of possible cross-connections hazard. At this time, backflow prevention requirements in accordance with this policy will be made. A Representative of the Town will notify the consumer's water supply system owner in writing as to the required location of any device or separation; type of device or separation, including applicable University of Southern California Foundation for Cross-Connection Control and Hydraulic Research (USC), American Society of Sanitary Engineering (ASSE), and American Water Works Association (AWWA) approvals or standards; installation requirements; and the deadline for completing the installation - usually 15 days.

E. Violations

If the consumer's water supply system owner refuses to participate in the interview process, a Notice of Violation shall be prepared and shall include a notification of termination of water service unless an interview is granted within 15 days.

If the consumer's water supply system owner fails to install any required device or separation within the deadline or fails to complete testing, inspecting, or overhauling as required, a Notice of Violation shall be prepared and shall include a notification of termination of water service unless compliance is obtained within 30 days.

F. Termination or Denial of Service

If the consumer's water supply system owner fails to comply with a Notice of Violation within 30 days following issuance, water service will be terminated. Water service to such premises shall not be restored until the deficiencies have been corrected or eliminated in accordance with these regulations and to the satisfaction of the Town of Washington.

VI. Reporting Contamination or Suspected Contamination.

The consumer's water supply system owner, Local Building Official, device tester or any other person should report contamination or the suspicion of contamination to any one or all of the following:

Laura Dodd, Town Administrator
Town of Washington
540-675-3128

Environmental Systems Service, Ltd.
540-825-6660

Virginia Department of Health
Office of Water Programs
Culpeper Field Office
540-829-7340

The Town of Washington will be responsible for investigating reports of contamination or suspected contamination and will be responsible for notifying the Virginia Department of Health, Office of Water Programs, Culpeper Field Office at 540-829-7340. A written report will be submitted by the 10th day of the month following the month during which backflow occurred addressing the incident, its causes, affects, and preventative or control measures required or taken.

VII. Device Selection Guidelines

- A. Virginia Cross Connection Control Association – Recommended Best Practice
- B. International Plumbing Code and its Commentary
- C. EPA Cross-Connection Control Manual
- D. Virginia Waterworks Regulations
- E. AWWA M-14 Cross Connection Control Manual
- F. University of Southern California, foundation for Cross-Connection Control and Hydraulic Research

See Appendix A for the Isolation Device Application table.

VIII. Examples

Examples of various types of facilities, probable degree of hazard, and type of containment device required are listed below. All containment devices shall comply with AWWA Standards and be approved for containment by USC. In high hazard situations subject to backpressure, backflow prevention by separation should be the method of choice wherever practical.

- 1. Hospitals, mortuaries, clinics, veterinary establishments, dental offices, nursing homes, and medical buildings: High hazard, Reduced Pressure Principle Device (RPZ) ASSE #1013
- 2. Laboratories: High hazard, Reduced Pressure Principle Device (RPZ) ASSE #1013
- 3. Piers, docks, waterfront facilities: High hazard, Reduced Pressure Principle Device (RPZ) ASSE #1013

4. Sewage treatment plants, sewage pumping stations, or storm water pumping stations: High hazard, Reduced Pressure Principle Device (RPZ) ASSE #1013
5. Food and beverage processing plants: Generally, a moderate hazard, Double Gate-Double Check Valve Assembly (DG-DC) ASSE #1015; Use of toxics, etc., in processing: High hazard, Reduced Pressure Principle Device (RPZ) ASSE #1013
6. Chemical plants, dyeing plants and pharmaceutical plants: High hazard, Reduced Pressure Principle Device (RPZ) ASSE #1013
7. Metal plating industries: High hazard, Reduced Pressure Principle Device (RPZ) ASSE #1013
8. Petroleum processing or storage plants: High hazard, Reduced Pressure Principle Device (RPZ) ASSE #1013
9. Radioactive materials processing plants or nuclear reactors: High hazard, Reduced Pressure Principle Device (RPZ) ASSE #1013
10. Car washes and laundries: High hazard, Reduced Pressure Principle Device (RPZ) ASSE #1013
11. Lawn sprinkler systems, irrigation systems: High hazard, Reduced Pressure Principle Device (RPZ) ASSE #1013 or Atmospheric Vacuum Breakers (AVB) ASSE #1001 or Pressure Vacuum Breaker (PVB) ASSE #1020, see Appendix A, depending on method of backflow and pressure or flow conditions
12. Fire service systems: See Section IV C of the Program
13. Slaughter houses and poultry processing plants: High hazard, Reduced Pressure Principle Device (RPZ) ASSE #1013
14. Farms where the water is used for other than household purposes: High hazard, Reduced Pressure Principle Device (RPZ) ASSE #1013
15. Commercial greenhouses and nurseries: High hazard, Reduced Pressure Principle Device (RPZ) ASSE #1013
16. Health clubs with swimming pools, therapeutic baths, hot tubs or saunas: High hazard, Reduced Pressure Principle Device (RPZ) ASSE #1013
17. Paper and paper products plants and printing plants: High hazard, Reduced Pressure Principle Device (RPZ) ASSE #1013

18. Pesticide or exterminating companies and their vehicles with storage or mixing tanks: High hazard, Reduced Pressure Principle Device (RPZ) ASSE #1013 at service connection and on vehicles
19. Schools or colleges with laboratory facilities: High hazard, Reduced Pressure Principle Device (RPZ) ASSE #1013
20. High-rise buildings (4 or more stories): Unless otherwise covered, Moderate hazard, Double Gate—Double Check Valve Assembly (DG—DC) ASSE #1015
21. Multi-use commercial, office, or warehouse facilities: Unless otherwise covered, Moderate hazard, Double Gate-Double Check Valve Assembly (DG - DC) ASSE #1015

IX. Device Selection

Device selection shall depend on the degree of hazard that exists or may exist. Backflow prevention by separation gives the highest degree of protection and shall be used whenever practical to do so in high hazard situations subject to backpressure. See Appendix A for the Isolation Device Application table.

X. Device Testability/Serviceability

1. Containment or isolation devices used within the consumer's water supply system that are capable of being tested and repaired in-line include the Reduced Pressure Principle Device (RPZ), Double Gate - Double Check Valve Assembly (DG-DC) & Pressure Vacuum Breaker (PVB).
2. Residential Dual Checks without an intermediate atmospheric vent and Boiler Dual Checks with an intermediate atmospheric vent are testable but most of these ASSE approved devices must be removed for testing. Some can be overhauled in-line.
3. Generally, a visual inspection is the only means to inspect most Hose Bibb Vacuum Breakers (HBVBs) since they cannot be removed if installed in accordance with the manufacturer's instructions. Some manufacturers do provide wall hydrant type HBVB with removable vacuum breakers that can be easily removed for inspection and replacement.
4. Pipe connected Atmospheric Vacuum Breakers (AVBs) can be inspected by removing the top cover.
5. Air gaps and physical disconnection require only a visual inspection.

XI. Backflow Prevention Device Tester List

See Appendix E.

XII. Thermal Expansion

Normally, as water is heated and expands it would back up in the service line into the main if no usage was occurring. Installation of backflow prevention devices or certain plumbing appurtenances (pressure reducing valves) at the service connection or within the consumer's water supply system prevent thermally expanded water from flowing from the premises into the distribution system. When the water heater is operating, water is expanding and pressure is increasing, thermal expansion in a closed plumbing system under no flow conditions may cause the emergency temperature and pressure relief valve to open and close frequently and may reduce the life of plumbing fixtures and piping.

The temperature and pressure (T & P) relief valve is an emergency relief valve, not an operating control valve. If the T & P relief valve is used frequently, its useful life will be shortened and it could cease to function.

Thermal expansion can cause damaging stress and strain to water heaters, solenoid valves, o-rings, float valves, pump seals, and plumbing fixtures or fittings.

Generally, 80 psi for a short period of time is the maximum pressure under no flow conditions most fixtures, appliances, or appurtenances should be subjected to.

Where thermal expansion is a problem, the following devices could be installed:

1. A bladder or diaphragm type expansion tank;
2. an auxiliary pressure relief valve;
3. an anti-siphon ball cock with auxiliary relief valve into the toilet tank set at no more than 80 psi.

Installation should be in strict accordance with the manufacturer's instructions, the Uniform Statewide Building Code and the National Sanitation Foundation.

Customers will be advised of the potential for thermal expansion prior to or during installation of a backflow prevention device. Solutions to thermal expansion will be at the discretion of the consumer's water supply system owner and at the expense of the consumer's water supply system owner.

XIII. References

The following references provide additional details regarding backflow regulatory requirements and compliance measures.

- A. Safe Drinking Water Act, Public Law 93-523, December 16, 1974.
- B. Cross-Connection Control Manual, U.S. Environmental Protection Agency, Washington, D.C., 1973.
- C. Waterworks Regulations, Commonwealth of Virginia/State Board of Health, November 15, 1995.
- D. Section P-1505.0 Protection of Potable Water Supply, The BOCA Basic/National Plumbing Code, 1984.

APPENDIX A

Isolation Device Application

Degree of hazard	Method of backflow	Pressure or flow conditions	Device	ASSE #
High	BP or BS	Continuous	RPZ	1013 & 1047
	BS only	Noncontinuous	Pipe applied AVB	1001 & 1035
		Noncontinuous	Hose bibb AVB	1011 & 1052
		Noncontinuous	Wall Hydrant w/AVB	1019
		Continuous	PVB	1020 & 1056
Moderate	BP or BS	Continuous	DG-DC	1015 & 1048
Low	BS only		Dual Check:	
		Continuous	w/o vent	1024 & 1032
		Continuous	w/vent	1012

NOTES:

- Degree of Hazard - See *Table 2.10 — Determination of Degree of Hazard in the Waterworks Regulations*.
- BS means backflow by backsiphonage.
- BP means backflow by backpressure or superior pressure.
- Continuous means operating under continuous flow or pressure. This condition usually applies to devices installed inline and may have valves downstream of the device.
- Noncontinuous means operating intermittently not to exceed 12 hours under continuous pressure or flow in a 24-hour period. This condition usually applies to devices which are connected to hose bibbs, hydrants, or faucets which are open to the atmosphere. Valves should not be located downstream of the device.
- RPZ means a reduced pressure principal backflow prevention assembly.
- Pipe applied AVB means an atmospheric vacuum breaker permanently installed in the plumbing or on faucets.
- Hose bibb AVB means a hose bibb type atmospheric vacuum breaker with a single or with dual checks and a vent.
- Wall hydrant w/AVB means a through-the-wall, frostproof self-draining type wall hydrant with AVB attached or built in.
- PVB means a pressure vacuum breaker.
- Spill resistant AVB have the same ASSE # as standard, pipe applied AVB.
- Spill resistant PVB have ASSE # 1056.
- DG-DC means a double gate-double check valve assembly.
- Dual Check without a vent means a device composed of two independently acting check valves ("residential dual check" and "beverage dispenser dual check").
- Double check with a vent means a device composed of two independently acting check valves with an intermediate atmospheric vent ("boiler dual check").

INFORMATION:

- Yard hydrants which are frostproof and drain the water in the barrel through an underground weephole are subject to contamination and are prohibited.
- Some wall hydrants will not drain if the hose is left connected.

Remember, that application of point-of-use isolation protection beyond the service connection is beyond the jurisdiction of the VDH. The owner should be advised to consult with his Local Building Official. Written correspondence addressing cross connection control should be copied to the Local Building Official.

APPENDIX B

CROSS CONNECTION CONTROL PROGRAM

Name of Water System: Town of Washington

Address: P.O. Box 7

Washington, VA 22747

Date: February 24, 2006

PURPOSE:

It is the purpose of this cross-connection control and backflow prevention plan to establish an on-going and continuous program consistent with the extent of the system and the type of consumer served.

RESPONSIBLE CHARGE:

The following shall be responsible for the inspection of the waterworks for cross-connection and backflow prevention control:

Town of Washington
Ms. Laura Dodd, Town Administrator
P.O. Box 7
Washington, VA 22747

RECORD KEEPING:

All records of questionnaires and health hazards found and corrected shall be kept at the Town of Washington. These records will be kept for at least ten (10) years and are available on request.

CROSS CONNECTION AND BACKFLOW PREVENTION PLAN:

1. Every year, a questionnaire will be filled out and signed by each consumer in the water system.
2. All new occupants in the service area will be required to fill out and sign the questionnaire within 30 days.
3. All questionnaires will be reviewed by the person in responsible charge. Any hazards identified by this review will require corrective action by the consumer.
4. The following items and activities will not be allowed in the system without special inspection and approval:
 - A. Photo developing.
 - B. Hose Bib Connectors.
 - C. Hoses connected to outside faucets without vacuum breakers.
5. All other aspects of the program will be administered in strict compliance with Section 6.00 Commonwealth of Virginia Waterworks Regulations 1982.

NOTICE/QUESTIONNAIRE

Name of Water System: Town of Washington

Consumer Signature: _____
Please return form by: _____

Date: _____

Section 6.00, Commonwealth of Virginia Waterworks Regulations, states that the water purveyor shall establish a program of cross-connection and backflow prevention control consistent with the extent of the system and type of consumer served. Each waterworks owner must establish this program to prevent contamination of the potable water system.

How does contamination occur? Contamination may occur under back siphonage and backpressure conditions whereby contaminants are siphoned or forced respectively, back into the potable water systems.

Back siphonage of contaminants may occur when there is a pressure drop creating a suction or partial vacuum in the system. This may occur during a line break or high usage in fire fighting situations.

Backpressure may occur when there are pumps or boilers on the water system, which produce pressures higher than water system pressures.

In the home, the following are places to be protected against backflow.

PLEASE INDICATE "YES" OR "NO" IN THE BLANK WHETHER YOU HAVE THE FOLLOWING ITEMS CONNECTED TO THE PUBLIC DRINKING WATER SYSTEM.

- A. Hose bib connectors where booster pumps or water operated aspirators are used (EXAMPLE: car pressure washer, booster pump, etc.).
B. Water Softeners/Water Filters.
C. Frost-proof yard or house hydrants.
D. Underground lawn sprinklers.
E. A connection to unapproved sources such as springs, individual wells, cisterns, etc.
F. Photo developing sinks.
G. Hose bibs at laundry tubs.
H. Hand-held shower heads.
I. Non-potable water, auxiliary water systems.
J. Swimming Pools
K. Others

APPENDIX C

INTERVIEW REPORT

Owner of premises: _____

Tenant: _____

Name of premises:

Service address:

Phone number: _____

Contact person: _____

Number of service connections: _____

Annual assessment by: Interview _____ Mailed questionnaire _____

cross connection control devices (including pressure sensing devices) or separations
(including separations from auxiliary or non-potable water systems and air gaps)

The list will contain:

Location of device or separation: _____

Device

Manufacturer: _____ Model number: _____

Serial number: _____ Size: _____

ASSE number: _____

Cross connection or pressure sensing device tested (annually) (semi annually) (quarterly)

Pressure sensing device

Manufacturer: _____ Model number: _____

Serial number: _____ Set point: _____

- ◆ Type of separation
 - Air gap
 - Physical disconnection
- ◆ Separation verified (annually) (semiannually) (quarterly)
- ◆ Type of protection
 - Containment
 - Containment and isolation
 - Isolation in lieu of containment
- ◆ Access (granted) (denied) (not necessary)

- ◆ An assessment of:
 - degree of hazard
 - appropriateness of device or separation
 - installation acceptable
 - general condition of device or separation
 - repair/replacement recommendations
 - new/additional device or separation recommendations
 - any indication of thermal expansion problems