Section 24-615. No refund or rebate.

No person shall be entitled to a refund or rebate of any portion of any water charges paid, because of nonuse of water occasioned by absence, discontinuance of service or any other reason.

ARTICLE VII. CROSS-CONNECTION CONTROL AND BACKFLOW PREVENTION

Section 24-700. Purpose.

The purpose of this article is to eliminate cross-connections and protect the public health. This article provides for establishment and enforcement of a program of cross-connection control and backflow prevention program (the Program) in accordance with the Commonwealth of Virginia, State Board of Health, Waterworks Regulations 1991, as amended. This article is directed at total cross-connection control through service line protection (containment) and point of use protection or area confinement protection (isolation).

Section 24-701. Authority.

The authority for this chapter is found in Commonwealth of Virginia, Department of Health "Waterworks Regulations" Part II; Article 3, "Cross-Connection Control and Backflow Prevention in Waterworks"; Uniform Statewide Building Code, Volume I; and Uniform Statewide Building Code, Volume II, Note 1.

Section 24-702. Administration.

(a) The town manager or his or her designated deputy shall administer and enforce the provisions of this article.

(b) The town manager shall cause inspections to be made of properties served by the waterworks where cross-connection with the waterworks is deemed possible. The method of determining potential cross-connection with the waterworks and the administrative procedures shall be established by the town manager in a cross-connection control and backflow prevention program approved by the Commonwealth of Virginia, Department of Health, Division of Water Supply Engineering; and the town manager is authorized to prepare, implement, and amend the program.

(c) The responsibility to carry out the program lies with the building official. The program shall be carried out in accordance with the Uniform Statewide Building Code and the Commonwealth of Virginia, State Board of Health, "Waterworks Regulations" and shall be a continuing program.

Section 24-703. Enforcement.

(a) The building official shall have the right to enter at any reasonable time premises served by a connection to the waterworks for the purpose of inspecting, observing, sampling and testing the water supply system or systems for a cross-connection. Upon request, the water

supply system owner or occupants of property served shall furnish to the building official pertinent information regarding the water supply system or systems on such property. The refusal of such information or refusal of access, when requested, shall be deemed evidence of the presence of a cross-connection.

(b) The building official shall take positive action to ensure that the waterworks is adequately protected at all times. If a cross-connection exists or backflow occurs into a water supply system or if the pressure in the waterworks is lowered below ten psi gauge, water service to the water supply system shall be denied or discontinued upon continuation of any violation beyond the time provided in the notice of violation given pursuant to this section. Water service shall not be restored until the deficiencies have been corrected or eliminated to the satisfaction of the building official.

(c) Any water supply system owner found to be in violation of any provision of this article shall be served a written notice of violation sent certified mail to the water supply system owner's last known address, stating the nature of the violation, indicating corrective action required, and providing a reasonable time, not to exceed thirty days from the date of receipt of the notice of violation to bring the water supply system into compliance with this article.

(d) Any owner of properties served by a connection to the waterworks, or any water supply system owner, found guilty of violating any of the provisions of this article, or any written order of the building official. in pursuance thereof, shall be deemed guilty of a Class 3 misdemeanor and upon conviction thereof shall be punished by a fine of not more than five hundred dollars for each violation. Each day upon which a violation of the provisions of this article shall occur shall be deemed a separate and additional violation for the purposes of this article.

Section 24-704. Definitions.

The following terms, phrases, or words, for this article, shall carry these respective meanings:

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

A.S.S.E. American Society of Sanitary Engineers.

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

Backflow. The flow of water or other liquids, mixtures, or substances into the distribution piping of a waterworks from any source or sources other than its intended source.

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

Consumer. A person who drinks water from a waterworks.

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

Containment. Preventing backflow into a waterworks from a consumer's water system by installing an appropriate backflow prevention device at the service connection.

Contaminant. Any objectionable or hazardous physical, chemical, biological, or radiological substance or matter in water.

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

Degree of hazard. The level of health hazard, as derived from an evaluation of the potential risk to health and the adverse effect upon the waterworks.

Distribution main. A water main the primary purpose of which is to provide treated water to service connections.

Division of Water Supply Engineering. The Commonwealth of Virginia, Virginia Department of Health, Office of Water Programs, Division of Water Supply Engineering, or any successor agency of the Commonwealth of Virginia.

Domestic use or usage. Normal family or household use, including drinking, laundering, bathing, cooking, heating, cleaning and flushing toilets.

Double gate-double check valve assembly. An approved assembly composed of two single independently acting check valves including tightly closing shutoff valves located at each end of the assembly and petcocks and test gauges for testing the water tightness of each check valve.

Entry point. The place where water from the source is delivered to the distribution system.

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

Isolation. Installing an appropriate backflow prevention device on the plumbing fixture at the source of the potential contamination, to isolate the fixture from the contamination. Isolation of an area or zone within a premises water supply confines the potential source of contamination to a specific area or zone.

Maximum contaminant level. The maximum permissible level of a contaminant in water which is delivered to the free flowing outlet of the ultimate user of a waterworks, except in the cases of turbidity and volatile organic contaminants, where the maximum permissible level is measured at each entry point to the distribution system. Contaminants added to the water under circumstances controlled by the user, except those resulting from corrosion of piping and plumbing caused by water quality, are excluded from this definition. Maximum contaminant levels may be either "primary" (PMCL) meaning based on health considerations or "secondary" (SMCL) meaning based on aesthetic considerations.

Plumbing fixture. A receptacle or device which is either permanently or temporarily connected to the water distribution system of the premises, and demands a supply of water therefrom; or discharges used water, waste materials, or sewage either directly or indirectly to the drainage system of the premises; or requires both a water supply connection and a discharge to the drainage system of the premises.

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

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

Premises. A piece of real estate; house, or building, and its surrounding land.

Process fluids. Any kind of fluid or solution which may be chemically, biologically, or otherwise contaminated or polluted which would constitute a health, pollutional, or system hazard if introduced into the waterworks. This term includes, but is not limited to:

(1) Polluted or contaminated water;

(2) Process waters;

(3) Used water, originating from the waterworks which may have deteriorated in sanitary quality;

(4) Cooling waters;

(5) Contaminated natural waters taken from wells, lakes, streams, or irrigation systems;

(6) Chemicals in solution or suspension; and

(7) Oils, gases, acids, alkalis, and other liquid and gaseous fluid used in industrial or other processes, or for fire fighting purposes.

Pure water or potable water. Water fit for human consumption and domestic use which is sanitary and normally free of minerals, organic substances, and toxic agents in excess of reasonable amounts for domestic usage in the area served and normally adequate in quantity and quality for the minimum health requirements of the persons served.

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

Service connection. The point of delivery of water to a customer's building service line as follows:

(1) If a meter is installed, the service connection is the downstream side of the meter;

(2) If a meter is not installed, the service connection is the point of connection to the waterworks;

(3) When the water purveyor is also the building owner, the service connection is the entry point to the building.

System hazard. A condition posing actual, or threatened damage to the physical properties of the waterworks or a consumer's water supply system.

Water supply. The water that shall have been taken into a waterworks from all wells, streams springs, lakes, and other bodies of surface water (natural or impounded), and the tributaries thereto, and all impounded groundwater, but the term "water supply" shall not include any waters above the point of intake of such waterworks.

Water supply system. The water service pipe, water distributing pipes, and necessary connecting pipes, fittings, control valves, and all appurtenances in or adjacent to the building or premises.

Waterworks. A system that serves piped water for drinking or domestic use to: (1) the public; (2) at least fifteen connections; or (3) to an average of twenty-five individuals for at least sixty days of the calendar year. The term "waterworks" shall include all structures, equipment, and appurtenances used in the storage, collection, purification, treatment, and distribution of pure water except the piping and fixtures inside the building where such water is delivered.

Waterworks owner or water purveyor. An individual, group of individuals, partnership, firm, association, institution, corporation, government entity, or the federal government which supplies or proposes to supply water to any person within this Commonwealth from or by means of any waterworks.

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

Section 24-705. General requirements.

(a) Effective cross connection control requires the cooperation of the water purveyor, the town, the building official, the water supply system owner, and the backflow prevention device tester.

(b) This program shall be carried out in accordance with the Uniform Statewide Building Code and the Commonwealth of Virginia, State Board of Health, Waterworks Regulations (1991), and shall be a continuing program.

(c) The water purveyor has full responsibility for water quality and for the construction, maintenance and operation of the waterworks beginning at the water source and ending at the downstream end of the service connection.

(d) The water purveyor shall not install or maintain a water service connection to a water supply system where cross connections may exist unless such cross connections are abated or controlled to the satisfaction of the town manager, using the standards in this article.

(e) The water purveyor shall not install or allow any connection which would allow water from an auxiliary water system to enter a waterworks, either directly or through a water supply system, unless the auxiliary water system and the method of connection and use of such system have been approved by the Division of Water Supply Engineering, Office of Water Programs, Virginia Department of Health.

(f) The town manager shall have thorough inspections and operational tests made at least annually of backflow prevention devices or low pressure cutoff devices which are required and installed. Copies of results of these inspections and tests shall be kept on file and made available to the Division of Water Supply Engineering. The devices shall be repaired, overhauled, or replaced by the water supply system owner as directed by the town manager, as outlined in the program. Nothing in this section shall prevent the water purveyor from installing and operating approved devices or making repairs.

(g) The water purveyor shall review certified plans for fire service connections and lawn or irrigation systems served by the waterworks and advise to the town manager if the plans are acceptable. If unacceptable, the designer and the town manager shall consult with the Division of Water Supply Engineering for a determination of what will be acceptable. The revised design shall be resubmitted for additional reviews. Only after final approval by the town manager will it be permissible to proceed with the final construction.

(h) In the event of backflow of pollution or contamination into the waterworks, the town manager shall promptly take or cause corrective action to confine and eliminate the pollution or contamination. The town manager shall immediately notify the Division of Water Supply Engineering when backflow occurs.

(i) The town manager shall take positive action to insure that the waterworks is adequately protected at all times. If a cross connection exists or backflow occurs into a water supply system or if the pressure in the waterworks is lowered below ten psi gauge, the town manager may discontinue the water service to the water supply system and water service shall not be restored until the deficiencies have been corrected or eliminated to the satisfaction of the town manager, using the standards of this article.

(j) At premises where, in the view of the town manager, using the standards of this article, the complexity of the plumbing system would best be surveyed by commercial, industrial or institutional personnel experienced in such processes and having successfully completed a course recognized by the American Water Works Association, the Virginia Department of Health, or the Virginia Cross Connection Control Association for testing backflow prevention devices, those personnel may, upon approval of the town manager and of the Division of Water Supply Engineering, carry out the requirement of the Cross Connection Control Program pertaining to cross connection surveys, cross connection inspections, and device testing, repair

and maintenance, in addition to the requirements of the water supply system owner and backflow prevention device tester. The building official shall review the records of surveys, inspections, tests, repairs and maintenance.

Section 24-706. Building official.

(a) The building official's responsibility generally begins at the downstream end of the service connection and carries throughout the entire length of the water supply system in accordance with the Uniform Statewide Building Code. This article requires the building official to enter, survey, and inspect all premises as directed by the town manager, in order to carry out the program.

(b) The building official shall review building plans and inspect new plumbing as it is installed. Where the review of building plans or the inspection of a water supply system suggests or detects an actual or potential cross connection, the building official shall insure that such cross connections are either eliminated or abated with approved backflow prevention devices as outlined in the program.

Section 24-707. Water supply system owner.

(a) The water supply system owner has the responsibility of preventing pollutants and contaminants from entering the potable water supply system(s) or the waterworks. The water supply system owner's responsibility starts at the point of delivery (downstream end of service connection) and includes all of his or her water supply systems.

(b) The water supply system owner, at his or her own expense unless otherwise directed by the town manager shall install, operate, test and maintain approved backflow prevention devices installed at the service connection, and shall install, operate, test, and maintain approved backflow prevention devices in his or her water supply system as directed by the building official as outlined in the program.

(c) The water supply system owner shall maintain accurate records of tests and repairs made to backflow prevention devices and provide the building official with copies of such records on request. The records shall be on forms approved by the town manager, as outlined in the program and shall include the list of materials or replacement parts used. Following any repair, overhaul, repiping or relocation of a device, the water supply system owner shall have it tested to insure that it is in good operating condition and will prevent backflow. Tests, maintenance and repairs of backflow prevention devices shall be made by a backflow prevention device tester acceptable to the town manager, as outlined in the program.

(d) In the event of pollution or contamination of the waterworks or a water supply system due to backflow into the water supply system, the water supply system owner shall promptly take steps to confine further spread of the pollution or contamination within the system and shall notify the water purveyor of the condition. The water supply system owner shall take appropriate measures to free his or her water supply systems of any pollutants or contaminants.

Section 24-708. Backflow prevention device tester.

(a) The water supply system owner shall serve as his or her own backflow prevention device tester. The backflow prevention device tester is responsible for making competent inspections and for repairing or overhauling backflow prevention devices and making reports of such repair to the water supply system owner on forms approved by the town manager, as outlined in the program. The tester shall include the list of materials or replacement parts used and insure that original manufactured parts are used in the repair of or replacement of parts in a backflow prevention device. The tester shall not change the design or operational characteristics of a device during repair or maintenance without prior written approval of the water supply system owner, water purveyor, and building official.

(b) The tester shall be equipped with and be competent in the use of all necessary tools, gauges, manometers, and other equipment necessary to properly test, repair and maintain backflow prevention devices.

Section 24-709. Containment and isolation policy.

(a) An approved backflow prevention device shall be installed at each service connection to a water supply system, where, in the judgment of the town manager, using standards of this article, a health, pollutional, or system hazard to the waterworks exists. All new or replacement outside hose bib connections shall be the automatic draining, frost proof wall hydrant type (A.S.S.E. 1019).

(b) All potable water openings or outlets shall be protected against backflow, where, in the judgment of the town manager, using standards of this article, a health, pollutional, or system hazard to the waterworks exists.

(c) The required method of protection provided, containment or isolation, shall be in the best judgment of the town-manager, using standards of this article, the method which best provides protection against health, pollution, or system hazards.

(d) When, as a matter of practicality, the backflow prevention device cannot be installed at the service connection, the device may be located downstream of the service connection but prior to any unprotected takeoffs.

(e) A backflow prevention device shall be installed at each service connection to a water supply system serving the premises or shall be installed where the plumbing fixture connects to the premises water supply system, as appropriate, where the following conditions exist:

(1) Premises on which any substance is handled in such a manner as to create an actual or potential hazard to a waterworks, including premises having sources or systems containing process fluids or waters originating from a waterworks which are no longer under the control of the water purveyor;

(2) Premises having internal cross connections that, in the judgment of the town manager, using standards of this article, may not easily be correctable or intricate plumbing arrangements which render it impractical to determine whether or not cross connections exist;

(3) Premises where, because of security requirements or other prohibitions or restrictions, it is impossible or impractical to make a complete cross connection survey;

(4) Premises having a repeated history of cross connections being established or re-established;

(5) Other premises specified by the town manager where cause can be shown that a potential cross connection hazard not enumerated above exists. Examples may include multi-use commercial, office, warehouse, or other premises where the degree of hazard is subject to change without knowledge of the town manager.

(f) A backflow prevention device shall be installed at fire protection system connections to the premises' water supply system or to the waterworks in accordance with the following:

(1) Additives or nonpotable source: where systems have chemical additives, antifreeze or are connected to a nonpotable secondary water supply, the potable water supply shall be protected by a reduced pressure principle backflow preventer. Where chemical additives or antifreeze are added to only a portion of an automatic fire sprinkler or standpipe system, the reduced pressure principle backflow preventer shall be permitted to be so located to isolate that portion of the system. (A.S.S.E. 1013).

(2) Fire department connection (siamese connections): where systems have fire department connections, the potable water supply shall be protected by a double gate-double check valve assembly or double detector check valve assembly. (A.S.S.E. 1015).

(3) Piping not approved for water distribution: where systems are installed with piping, joints and connections not approved for water distribution systems, the potable water supply shall be protected by a double gate-double check valve assembly or double detector check valve assembly. (A.S.S.E. 1015).

(4) Piping approved for water distribution where systems are installed with piping, joints and connections approved for water distribution systems, isolation of the water supply shall not be required where the premises water supply system design provides freely flowing potable water through the fire protection system and the potable water is not allowed to stagnate or deteriorate in water quality.

(g) Premises having booster pumps connected to the waterworks shall be equipped with a low pressure regulating or cutoff device to shut off the booster pump when the pressure in the waterworks drops to a minimum of ten psi gauge.

(h) An approved backflow prevention device shall be installed at each service connection to a water supply system serving, but not necessarily limited to, the following types of facilities:

(1) Hospitals, mortuaries, clinics, veterinary establishments, nursing homes, and medical buildings;

(2) Laboratories;

(3) Piers, docks, waterfront facilities;

(4) Sewage treatment plants, sewage pumping stations, or storm water pumping stations;

(5) Food and beverage processing plants;

(6) Chemical plants, dyeing plants, and pharmaceutical plants;

(7) Metal plating industries;

(8) Petroleum processing or storage plants;

(9) Radioactive materials processing plants or nuclear reactors;

(10) Car washes and laundries;

(11) Lawn sprinkler systems, irrigation systems;

(12) Fire service systems;

(13) Slaughter houses and poultry processing plants;

(14) Farms where the water is used for other than household purposes;

(15) Commercial greenhouses and nurseries;

(16) Health clubs with swimming pools, therapeutic baths, hot tubs, or saunas;

(17) Paper and paper products plants and printing plants;

(18) Pesticide or exterminating companies and their vehicles with storage or mixing tanks;

(19) Schools or colleges with laboratory facilities;

(20) High-rise buildings with four or more stories;

(21) Others specified by the town manager or Division of Water Supply Engineering when reasonable cause can be shown for a potential backflow or cross connection hazard.

Section 24-710. Type of protection required.

(a) The type of protection required shall depend on the degree of hazard which exists or may exist and on the method of potential backflow. Backflow occurs either by back pressure or by back siphonage.

(b) The degree of hazard, either high, moderate, or low, is based on the nature of the contaminant; the potential of the health hazard; the probability of the backflow occurrence; and the effect on waterworks structures, equipment, and appurtenances used in the storage, collection, purification, treatment, and distribution of pure water. The following table shall be used as a guide to determine the degree of hazard for any situation:

DETERMINATION OF DEGREE OF HAZARD

Premises with one or more of the following conditions shall be rated at the corresponding degree of hazard.

High hazard:

(1) The contaminant would be toxic, poisonous, noxious or unhealthy.

(2) A health hazard would exist.

(3) A high probability exists of a backflow occurrence either by back pressure or by back siphonage.

(4) The contaminant would disrupt the service of piped water for drinking or domestic use.

(5) Examples-sewage, used water, nonpotable water, auxiliary water systems, toxic, or hazardous chemicals, and the like.

Moderate hazard:

(1) The contaminant would only degrade the quality of the water aesthetically or impair the usefulness of the water.

(2) A health hazard would not exist.

(3) A moderate probability exists of a backflow occurrence either by pressure or by back siphonage.

(4) The contaminant would not seriously disrupt service of piped water for drinking or domestic use.

(5) Examples-food stuff, nontoxic chemicals, nonhazardous chemicals, and the like.

Low hazard:

(1) The contaminant would only degrade the quality of the water aesthetically.

(2) A health hazard would not exist.

(3) A low probability exists of the occurrence of backflow primarily by back siphonage.

(4) Examples-food stuff, nontoxic chemicals, nonhazardous chemicals, and the like.

(c) There follows the type backflow and cross-connection protection required:

(1) Air gaps give the highest degree or protection and shall be used whenever practical to do so in high hazard situations subject to back pressure.

(2) An air gap separation and a reduced pressure principle backflow prevention device will protect against back pres. sure when operating properly. (A.S.S.E. 1013).

(3) Vacuum breakers will not protect against back pressure, but will protect against back, siphonage when operating properly. Vacuum breakers may be used in high hazard situations subject to back siphonage. These include atmospheric type (A.S.S.E. 1001), pressure type (A.S.S.E. 1020), hose bib type (A.S.S.E. 1011), and wall hydrant type (A.S.S.E. 1019) vacuum breakers.

(4) Backflow prevention devices consisting of dual independent check valves with or without an intermediate atmospheric vent shall only be used in low hazard situations. (A.S.S.E. 1012 and 1024).

(5) Barometric loops are not acceptable.

(6) An interchangeable connection or change over device is not acceptable.

(7) Reduced pressure principle type backflow preventers shall not be installed in pits or areas subject to flooding. (A.S.S.E. 1015). Devices consisting of dual independent check valves with an intermediate atmospheric vent (A.S.S.E. 1012) shall not be installed in pits or areas subject to flooding.

(d) Double-gate check valve assembly devices (A.S.S.E. 1015) shall not be used in high hazard situations.

Section 24-711. Backflow prevention devices.

(a) Any backflow prevention device shall be of the approved type and shall comply with the Uniform Statewide Building Code.

(b) Any backflow prevention device shall be installed in a manner approved by the building official and in accordance with the Uniform Statewide Building Code.

(c) Existing backflow prevention devices approved by the town manager and the Division of Water Supply Engineering prior to the effective date of this article shall, except for inspection, testing, and maintenance requirements, be excluded from the requirements of subparagraphs (a) and (b) of this section and if the town manager and the Division of Water Supply Engineering are assured that the devices will protect the waterworks.

Section 24-712. Maintenance and inspection requirements.

(a) It shall be the responsibility of water supply system owner to maintain all backflow prevention devices within the building or on the premises in good working order and to make no piping or other arrangements for the purpose of bypassing backflow prevention devices.

(b) Periodic testing and inspection schedules shall be established by the town manager, as outlined in the program for all backflow prevention devices and the interval between testing and inspections and overhauls of each device shall be established in accordance with the age and condition of the device. Inspection and testing intervals shall not exceed one year, and overhaul intervals shall not exceed five years. The testing procedures shall be in accordance with the manufacturer's instructions.