
**AUGUSTA COUNTY SERVICE AUTHORITY
OPERATING PROCEDURES AND POLICY MANUAL**

Approved by: Board of Directors
Effective Date: February 20, 2020

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Rules and Regulations: Cross Connection Control and Backflow Prevention in the
Waterworks System of the Augusta County Service Authority

ADMINISTRATION

The Executive Director of the Augusta County Service Authority shall administer and enforce this policy.

I. PURPOSE

The purpose of these Rules and Regulations is to eliminate and/or control cross connections to protect the public potable water supply provided by the waterworks of the Augusta County Service Authority. These Rules and Regulations provide for establishment and authorization for a policy of cross connection control and backflow prevention, and the enforcement of the same, in accordance with the Commonwealth of Virginia, State Board of Health, Waterworks Regulations. THESE RULES AND REGULATIONS ARE DIRECTED AT TOTAL CROSS CONNECTION CONTROL THROUGH SERVICE LINE PROTECTION (CONTAINMENT). THIS POLICY APPLIES TO ALL CUSTOMERS CONNECTED TO THE ACSA WATER SYSTEM.

II. AUTHORITY

The provisions of these Rules and Regulations and the program they authorize and direct are based upon the authority and requirements of:

- a) The Federal Safe Drinking Water Act of 1974
- b) §§ 15.2-5100, et seq., Code of Virginia (1950, as amended)
- c) Waterworks Regulations, Virginia Department of Health, entitled "Cross Connection Control and Backflow Prevention in Waterworks." (12 VAC §§ 5-590-580 through 5-590-630)
- d) §§ 32.1-12 & 32.1-170, Code of Virginia (1950, as amended)
- e) Virginia Plumbing Code, current adopted version in use by Augusta County Building Official
- f) The Code of Augusta County, Virginia, Chapter 24, Article II, §§ 24-11 & 24-12, and Article III, § 24-21

III. DEFINITIONS

- 1) ACSA
The term "ACSA" refers to the Augusta County Service Authority.
- 2) Air-Gap Separation
The term "air-gap separation" shall mean a physical separation between the free flowing discharge end of a water supply pipeline and an open or non-pressure receiving vessel. An "approved air-gap separation" shall be at least double the inside diameter of the supply pipe measured vertically above the overflow rim of the receiving vessel - in no case less than 1 inch (2.54 cm) and shall meet the requirements of the Virginia Plumbing Code.
- 3) Approved
The term "approved" as herein used in reference to a water supply shall mean a water supply that has been approved by the Virginia Department of Health, Office of Drinking Water. The term "approved" as herein used in reference to air-gap separation, a pressure vacuum breaker, a double check valve assembly, a double check detector assembly, a reduced pressure principle assembly, a reduced pressure principle detector assembly, or other backflow prevention assemblies or methods shall mean an approval by the ACSA or the Building Code Official as appropriate.

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- 4) Assembly
The term "assembly" is the entire backflow prevention component including not only the mechanism but also the shut-off valves and the test ports.
- 5) Backflow
The term "backflow" shall mean the undesirable reversal of flow of water or mixtures of water and other liquids, gases, or other substances into the distribution pipes of the potable supply of water from any source or sources.
- 6) Backflow Prevention Assembly - Approved
The term "approved backflow prevention assembly" shall mean an assembly used for containment purposes that has been investigated and approved by the ACSA and has been shown to meet the design and performance standards of the American Society of Sanitary Engineers (ASSE), the American Water Works Association (AWWA), and the Foundation for Cross Connection Control and Hydraulic Research (FCCC&HR) of the University of Southern California. The assembly, including all replacement parts, shall meet the requirements of National Science Foundation and American National Standards Institute Standard 61 (NSF/ANSI 61).
- 7) Backflow Prevention Assembly - Unapproved
The term "unapproved backflow prevention assembly" shall mean an assembly that has been investigated by the ACSA and has been determined to be unacceptable for installation within the ACSA water system.
- 8) Backflow Prevention Assembly Tester - Certified
The term "certified backflow prevention assembly tester" shall mean a person that is a Virginia certified tester by the Virginia Commonwealth Department of Professional and Occupational Regulation (DPOR). Each person who is certified to make competent tests, or to repair, overhaul, and make reports on a backflow prevention assembly shall be knowledgeable of applicable laws, rules, and regulations.
- 9) Back-Pressure Backflow
"Back-Pressure backflow" shall mean any elevation 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 a reversal of the normal direction of flow through the backflow prevention assembly.
- 10) Back-Siphonage Backflow
"Back-siphonage backflow" shall mean a reversal of the normal direction of flow in the pipeline due to a negative pressure (vacuum) being created in the supply line with the backflow source subject to atmospheric pressure.
- 11) Building Code Official
"Building Code Official" shall mean the administrator for building and construction codes and permits for Augusta County, VA.

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12) Check Valve - Approved

The term "approved check valve" shall mean a check valve that is drip-tight in the normal direction of flow when the inlet pressure is at least one (1) psi and the outlet pressure is zero. The check valve shall permit no leakage in a direction reverse to the normal flow. The closure element (e.g., clapper, poppet, or other design) shall be internally loaded to promote rapid and positive closure. An approved check valve is only one component of an approved backflow prevention assembly - i.e., pressure vacuum breaker, double check valve assembly, or reduced pressure principle assembly.

13) Consumer/Customer

The term "consumer/customer" shall mean any person, firm, or corporation using or receiving water from the ACSA water system.

14) Consumer's Water System

The term "consumer's water system" shall include any water system located on the consumer's premises, whether supplied by public potable water or an auxiliary water supply. The system may be either a potable water system or an industrial piping system.

15) Consumer's Potable Water System

The term "consumer's potable water system" shall mean 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 convey, store, or use potable water.

16) Containment

The term "containment" shall mean preventing the impairment of the potable water supply by installing an approved backflow prevention assembly at the service connection and/or point of use.

17) Contamination

The term "contamination" shall mean an impairment of the quality of water which creates an actual hazard to the public health through poisoning or through the spread of disease by sewage, industrial fluids, or waste.

18) Cross Connection

A "cross connection" shall mean any unprotected actual or potential connection or piping arrangement between a public or a consumer's potable water system and any other source or system through which it is possible to introduce into any part of the potable system any used water, industrial fluid, gas, or substance other than the intended potable water with which the system is supplied. By-pass arrangements, jumper connections, removable sections, swivel or change-over devices, and other temporary or permanent devices through which or because of which "backflow" can or may occur are considered to be cross connections.

19) Cross Connection Control Administrator (CCCA)

The CCCA is an ACSA employee who oversees an annual testing program on backflow prevention assemblies in the ACSA water system. The CCCA maintains records of all backflow prevention assemblies in the ACSA water system.

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20) Cross Connection - Point Of

The term "point of cross connection" shall mean the specific point or location in a public or a consumer's potable water system where a cross connection exists.

21) Director

The term "director" shall mean the Executive Director of the ACSA, or his assigned representative.

22) Division

The term "Division" means the Commonwealth of Virginia, Virginia Department of Health, Office of Drinking Water or any successor thereto.

23) Double Check Valve Assembly

The term "double check valve assembly" shall mean an assembly composed of two (2) independently acting, approved check valves, including tightly closing shut-off valves attached at each end of the assembly and fitted with properly located test cocks. This assembly shall only be used to protect against a non-health hazard (i.e., pollution).

24) Double Check-Detector Assembly

The term "double check-detector assembly" shall mean a specially designed assembly composed of a line-size approved double check valve assembly with a specific bypass water meter and a meter-sized approved double check valve assembly. The meter shall register accurately for only very low rates of flow and shall show a registration for all rates of flow. This assembly shall only be used to protect against a non-health hazard (i.e., pollution).

25) Hazard - Degree Of

The term "degree of hazard" shall be derived from the evaluation of conditions within a system which can be classified as either a "pollutant" (non-health) or a "contamination" (health) hazard.

26) Hazard - Health or (High Hazard)

The term "health hazard or high hazard" shall mean an actual or potential threat of contamination of a physical or toxic nature to the public potable water system or the consumer's potable water system to such a degree that there would be a danger to health.

27) Hazard - Non-Health or (Low Hazard)

The term "non-health hazard or low hazard" shall mean an actual or potential threat to the physical properties of the public or the consumer's potable water system, or of a contamination which would have a protracted effect on the quality of the potable water system. A non-health hazard is one that, if introduced into the public water supply system could be a nuisance to water customers, but would not adversely affect human health.

28) Hazard - Plumbing

The term "plumbing hazard" shall mean an internal or plumbing type cross connection in a consumer's potable water system that may be either a pollutant or a contamination type hazard. This includes but is not limited to cross connections to toilets, sinks, lavatories, wash trays, domestic washing machines, and lawn irrigation systems. Plumbing type cross connections can be located in many types of structures including homes, apartment houses, hotels, and commercial or industrial establishments. Such a connection, if permitted to exist, must be properly protected by an appropriate type of backflow prevention assembly and/or method.

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29) Hazard - System

The term "system hazard" shall mean an actual or potential threat or severe danger to the physical properties of the public or the consumer's potable water system or of a pollutant or contaminant which would have a protracted effect on the quality of the potable water in the system.

30) Industrial Process Fluids

The term "industrial process fluids" shall mean any fluid or solution which may be chemically, biologically, or otherwise contaminated or polluted in a form or concentration such as would constitute a health, system, pollution, or plumbing hazard if introduced into an approved water supply. Such fluids may include, but are not limited to process waters, chemicals in fluid form, acids and alkalis, oils, gases, contaminated natural waters (i.e., wells, streams, rivers, irrigation canals or systems).

31) Isolation

"Isolation" is the act of confining a localized hazard by a private individual or company within a plumbing or distribution system by installing a backflow prevention device/assembly. Isolation units are not subject to the maintenance and inspection requirements of this policy.

34) Laboratory - Approved Testing

Containment Assemblies:

Reference to an "approved testing laboratory" shall mean the Foundation for Cross Connection Control and Hydraulic Research of the University of Southern California or another laboratory having the equivalent facilities for both the laboratory and field evaluation of the assemblies approved by the American Society of Sanitary Engineers (ASSE).

35) Maximum Contaminant Level

"Maximum Contaminant Level" means the maximum permissible level of a contaminant in water delivered to the free flowing outlet of the ultimate user of the ACSA's public water system, except in cases of turbidity and VOC's (see Definition) where the maximum permissible level is measured at the point (or points) of entry 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.

36) Plumbing Fixture

"Plumbing Fixture" means 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 there from; 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.

37) Pollution

The term "pollution" shall mean an impairment of the quality of the water to a degree which does not create an actual hazard to the public health but which does adversely and unreasonably affect the aesthetic qualities of such waters for domestic use.

38) Potable Water

The term "potable water" shall mean water from any source which has been investigated by the Division and which has been approved for human consumption.

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39) Private Water System Owner

The term "private water system owner" means the owner of record of real property and improvements including a private water supply system connected to the public potable water system.

40) Public Potable Water System

The term "public potable water system" shall mean any publicly or privately owned water system operated as a public utility, under a current 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 potable water for public consumption or use.

41) Reduced Pressure Principle Backflow Prevention Assembly

The term "reduced pressure principle backflow prevention assembly" shall mean an assembly containing two (2) independently acting, approved check valves, together with a hydraulically operating, mechanically independent, pressure differential relief valve located between the check valves and at the same time below the first check valve. The unit shall include properly located resilient seated test cocks and tightly closing resilient seated shutoff valves at each end of the assembly.

42) Reduced Pressure Principle - Detector Assembly

The term "reduced pressure principle-detector assembly" shall mean a specially designed assembly composed of a line-size approved reduced pressure principle backflow prevention assembly with a specific bypass water meter and a meter-sized approved reduced pressure principle backflow prevention assembly. The meter shall register accurately for only very low rates of flow. This assembly shall be used to protect against health hazard (i.e., contaminant).

43) Service Connection

The term "service connection" shall mean the terminal end of a service connection from the public potable water system, i.e., where the ACSA loses jurisdiction and sanitary control over the water at its point of delivery to the consumer's water system.

44) Vacuum Breaker - Atmospheric Type

The term "atmospheric vacuum breaker" (also known as the "non-pressure type vacuum breaker") shall mean an assembly containing a float-check, a check seat, and an air inlet port. The flow of water into the body causes the float to close the air inlet port. When the flow of water stops the float falls and forms a check valve against back-siphonage and at the same time opens the air inlet port to allow air to enter and satisfy the vacuum. A shut-off valve immediately upstream may be an integral part of the assembly. An atmospheric vacuum breaker is designed to protect against a non-health hazard (i.e., pollutant) under a back-siphonage condition only.

45) Vacuum Breaker - Pressure Type

The term "pressure vacuum breaker" shall mean an assembly containing an independently operating internally loaded check valve and an independently operating loaded air inlet valve located on the discharge side of the check valve. The assembly is to be equipped with properly located resilient seated test cocks and tightly resilient seated shut-off valves attached at each end of the assembly.

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- 46) VOC.
“VOC” means volatile synthetic organic chemical, which is defined as one family of man-made organic compounds generally characterized by low molecular weight and rapid vaporization at relatively low temperatures or pressures.
- 47) Water Purveyor
The term "water purveyor" shall mean the owner or operator of a public potable water system, providing an approved water supply to the public. The ACSA is a water purveyor as used herein.
- 48) Water Supply – Approved
The term "approved water supply" shall mean any public potable water supply which has been investigated and approved by the Division. The system must be operating under a valid health permit. In determining what constitutes an approved water supply, the Division has reserved the final judgment as to whether it's safe and potable.
- 49) Water Supply - Auxiliary
The term "auxiliary water supply" shall mean 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 another purveyor's public potable water supply or any natural source such as a well, spring, river, stream, etc., "used water", or industrial fluids. These waters may be polluted, contaminated, or objectionable and constitute an unacceptable water source over which the water purveyor does not have sanitary control.
- 50) Water Supply -Unapproved
The term "unapproved water supply" shall mean a water supply which has not been approved for human consumption by the Division.
- 51) Water - Used
The term "used water" shall mean any water supplied by a water purveyor from a public potable water system to a consumer's water system after it has passed through the point of delivery (meter) and is no longer under the control of the water purveyor.
- 52) Waterworks
"Waterworks" means a system that serves piped water for drinking or domestic use to (1) the public, (2) at least 15 connections, or (3) an average of 25 individuals for at least 60 days out of the 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 on the customer's side of the water meter.

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IV. RESPONSIBILITIES

A. General

Effective cross connection control and backflow prevention requires the cooperation of the ACSA, the County Building Code Official, the consumer, the Virginia Department of Health, Office of Drinking Water, and the Backflow Prevention Device Tester. This policy shall be carried out in accordance with the Virginia Plumbing Code, and the Water Regulations of the Virginia State Board of Health (State Waterworks Regulations). **The object of this policy shall be containment, as herein defined, i.e., preventing backflow into the ACSA's waterworks from a consumer's water system, by requiring the installation, testing, and maintenance of an appropriate backflow prevention assembly at the service connection.**

B. Virginia Department of Health

The Virginia Department of Health, Office of Drinking Water, (referred to as the "Division") has the responsibility for promulgating and enforcing laws, rules, regulations, and policies to be followed in carrying out an effective Cross Connection Control Program.

The Department of Health also has the primary responsibility of ensuring that the water purveyor operates the public potable water system free of actual or potential sanitary hazards, including unprotected cross connections. They have the further responsibility of ensuring that the water purveyor provides an approved water supply at the service connection to the consumer's water system and, further, that the purveyor requires the installation, testing, and maintenance of an approved backflow prevention assembly on the service connection when required.

C. Augusta County Service Authority

- 1) The ACSA will not install, maintain or continue 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 Director or his designated agent.
- 2) The ACSA shall not install or allow any connection which would allow water from an auxiliary water system to enter the 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 Director and the Division.
- 3) The Director shall have thorough inspections and operational tests made at least annually of backflow prevention assemblies which are required and installed in accordance with these Rules and Regulations unless otherwise noted in this policy. The CCCA shall ensure compliance through administration of the program, ensuring that all tests for containment units are completed by a certified individual, and collection of all test results. Copies of these inspections and test results shall be kept on file in accordance with this policy and made available to the Division. The devices shall be repaired, overhauled, or replaced by the private water system owner as directed by the Director as outlined in this policy.

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- 4) Backflow preventer test results, regardless of a pass or fail, shall be provided to the Augusta County Service Authority within 7 days of testing.
- 5) The Director or his designated agent shall review plans for fire service connections and lawn or irrigation systems served by the waterworks and provide approval or disapproval to the Building Code Official. Only after final approval by the Building Code Official will it be permissible to proceed with the final construction. All plans should be submitted to the Building Code Official with sufficient copies to forward a copy of the plans to the ACSA.
- 6) In the event of backflow of pollution or contamination into the waterworks, the Director shall promptly take or cause to be taken corrective action to confine or eliminate the contamination, including the discontinuance of water service. The Director shall immediately notify the Division when backflow occurs.
- 7) The Director shall take positive action to ensure that the waterworks is adequately protected. If a cross connection exists or backflow occurs into a water supply system or if the pressure in the waterworks is lowered below 20 psi, the Director may discontinue water service to the private water system owner.

D. Building Code Official

The Building Code Officials of Augusta County have the responsibility to not only review building plans and inspect plumbing as it is installed; but, they have the explicit responsibility of preventing cross connections from being designed and built into the structures within its jurisdiction. Where the review of building plans suggests or detects the potential for cross connections being made an integral part of the plumbing system, the Building Code Official has the responsibility under the Virginia Plumbing Code, for requiring that such cross connection practices be either eliminated or provided with backflow prevention equipment approved by the Virginia Plumbing Code. It is also the responsibility of the building inspection department to submit to the ACSA detailed plans and specifications for the internal plumbing of all commercial and industrial facilities for review.

All commercial permit applications shall be reviewed and approved by the CCCA for the containment backflow prevention assembly in accordance with the following:

- 1) Required type of containment protection will be included on site plans prior to issuance of building permit.
- 2) Building Permit application will be stamped – CCC Approved.
- 3) Contractor shall contact the CCCA to resolve installation problems.
- 4) Changes in the use of a building shall be reviewed as a new building.

The Building Code Official's responsibility begins at the point of service (downstream of the first installed backflow prevention assembly) and carries throughout the entire length of the customer's water system. The Building Code Official should inquire about the intended use of water at any point where it is suspected that a cross connection might be made or where one is actually called

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for by the plans. When such is discovered it should be mandatory that a suitable, approved backflow prevention assembly approved by the Virginia Plumbing Code be required by the plans and be properly installed. The primary protection assembly for containment purposes only shall have approval from the ACSA.

If the backflow prevention requirements of either the Building Code Official or the ACSA are not met, no Certificate of Occupancy shall be issued until full compliance is achieved.

E. Private Water System Owner

- 1) The private water system owner has the responsibility of preventing pollutants and contaminants from entering the consumer's potable water system(s) or the waterworks. The private water system owner's responsibility starts at the point of delivery (downstream end of service connection) and includes all private water system plumbing.
- 2) The private water system owner, at their own expense unless otherwise directed by the Director, shall install, operate, test and maintain approved backflow prevention assemblies installed at the service connection (containment), and shall install, operate, test, and maintain approved backflow prevention assemblies in their private water system (isolation) as determined by the private water system owner.
- 3) The private water system owner shall maintain accurate records of tests and repairs made to containment backflow prevention assemblies and provide the ACSA with copies of such records upon completion of the testing or maintenance. The records shall contain the information required by the ACSA as outlined in Section V of this policy and shall include the list of materials or replacement parts used. Following any repair, overhaul, re-piping or relocation of a device, the private water system owner shall have it tested to ensure that it is in good operating condition and will prevent backflow. Tests, maintenance, and repairs of backflow prevention devices shall be made by a certified backflow prevention assembly tester.
- 4) In the event of pollution or contamination of the waterworks or a water supply system due to backflow from the private water system, the private water system owner shall promptly take steps to confine further spread of the pollution or contamination within the system and shall notify the ACSA at 540-245-5670 of the condition. The private water system owner shall take appropriate measures to free his water supply system(s) of any pollutants or contaminants.

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F. Reporting Contamination or Suspected Contamination

The supply system owner, ACSA, device tester, or any other person should report contamination or the suspicion of contamination to any one or all of the following:

- CCCA, Augusta County Service Authority - 540-245-5670
- Executive Director, Augusta County Service Authority - 540-245-5670
- Chief Building Inspector - 540-245-5717
- District Engineer, Virginia Department of Health - 540-463-7136
- County Health Department - 540-332-7830

The ACSA will be responsible for investigating reports and will be responsible for notifying the Virginia Department of Health, Office of Drinking Water, Lexington Field Office.

G. Backflow Prevention Assembly Tester

- 1) The certified backflow prevention assembly tester is responsible for field tests, inspections, repairs, and overhauling backflow assemblies. The certified backflow prevention assembly tester shall also report to the private water system owner and ACSA on forms containing the information required by the ACSA as outlined in Section V of this policy regarding all tests/modifications. The tester shall list materials or replacement parts used and ensure 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 private water system owner and the ACSA. Repairs may be made with non OEM parts as long as manufacturer's recommendations are adhered to.
- 2) The tester shall be equipped with and be competent in the use of all the necessary tools to properly test, repair, and maintain backflow prevention devices.

V. RECORD KEEPING

A. An up-to-date listing of private water system owners who have cross connection control devices (including air gaps) shall be maintained by the ACSA. The list will contain:

- | | |
|----------------------|---------------------------|
| 1) owner of premises | 7) location of device |
| 2) occupant | 8) contact person |
| 3) name of premises | 9) manufacturer of device |
| 4) service address | 10) device model number |
| 5) account number | 11) device serial number |
| 6) phone number | 12) device size |

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- B. Cross connection control inspection reports shall be maintained by the ACSA for 10 years. The report will contain:
- 1) inventory information as noted in Section V.A.
 - 2) an assessment of:
 - a) appropriateness of device
 - b) installation
 - 3) repair/replacement recommendations
 - 4) any indication of thermal expansion problems
- C. Cross connection control testing reports shall be maintained by the ACSA for 10 years. The report will contain:
- 1) inventory information as noted in Section V.A.
 - 2) line pressure
 - 3) results of testing
 - 4) test method used
 - 5) date and signature and DPOR license number of backflow prevention assembly tester
- If repairs were made, the test report will contain:
- 1) which parts replaced
 - 2) probable cause of test failure
 - 3) preventive measures taken
- D. Surveys will be done by the CCCA when notified of change of use or possible cross connections at existing locations. Surveys shall be maintained by the ACSA for 10 years and will contain:
- 1) owner and address
 - 2) occupant if different from owner – phone number
 - 3) specific questions regarding the property’s use which will determine whether backflow prevention is required
 - 4) If existing cross connection control devices are found then they are tested as described in this policy.
 - 5) Also included with the survey should be:
 - educational material
 - who to contact for further information
 - who to contact if contamination is ever suspected

Once the survey is complete, if backflow prevention is required, then a notice is sent out as discussed in Section XIII.

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VI. RIGHT OF ENTRY

Authorized representative(s) of the ACSA and/or the Building Code Official shall be provided with access, upon presentation of proper credentials and identification, at any reasonable time, premises served by a connection to the waterworks for the purpose of inspection, observing, sampling, and testing the water supply system or systems for a cross connection. Upon request, the private water system owner or occupants of property served shall furnish to the authorized representative(s) 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 and shall constitute good cause for corrective action procedures under Section XIV.

VII. CONTAINMENT/ISOLATION POLICY

A. Protection

- 1) An approved backflow prevention assembly shall be installed at each service connection to a water supply system (containment), where, in the judgment of the Director, a health, a pollutant, or system hazard to the waterworks exists.
- 2) All potable water openings, outlets, plumbing fixtures, or plumbing appliances shall be protected against backflow (isolation), where, in the judgment of the Building Code Official, a health, a pollutant, or system hazard to the private water system exists.

B. Method

- 1) A backflow prevention assembly shall be installed at each service connection (containment) to the water supply system serving the premises identified in Section IX, according to the degree of hazard present.
- 2) At premises not identified in Section IX, the required method of protection provided, containment and/or isolation, (isolation of a fixture or of an area or zone), shall be, in the best judgment of the Director and/or Building Code Official, the method which best provides protection of health, pollution, or system hazards.
- 3) In accordance with the Plumbing Code, all new or replacement outside hose bibb connections shall be the automatic draining, frost proof wall hydrant style and equipped with an atmospheric vacuum breaker.
- 4) For all facilities requiring protection in accordance with Section IX.B., new or replacement freeze proof yard hydrants shall not be permitted unless they are protected upstream by a reduced pressure principle assembly (RPPA). Sanitary hydrants are permitted; this applies to all new construction.

C. Special Conditions

- 1) When, as a matter of practicality, the backflow prevention assembly cannot be installed at the service connection, the assembly may be located downstream of the service connection but prior to any unprotected plumbing connections.

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- 2) No person shall fill special use tanks or tankers containing pesticides, fertilizers, other toxic chemicals or their residues from the public water system except at a location equipped with an approved air gap or an approved reduced pressure principle backflow prevention assembly properly installed on the public water supply. This condition will also apply to special use tanks used for the purpose of transporting potable water.
- 3) When it is not possible to interrupt water service, provisions shall be made for a "parallel installation" of backflow prevention assemblies. The ACSA will not allow an unprotected bypass around a backflow preventer when the assembly is in need of testing, repair, or replacement.

A Backflow Prevention Assembly shall be Installed at each Service Connection to a Water Supply System Serving the Premises 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 (this shall include premises having sources or systems containing process fluids or waters originating from a waterworks which are no longer under the control of the water purveyor).
- 2) Premises having internal cross connections that, in the judgment of the Director and/or Building Code Official, may not easily be correctable or intricate plumbing arrangements which make 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/inspection.
- 4) Premises having a repeated history of cross connections being established or re-established.
- 5) Other premises specified by the Director 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 Director.

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VIII. ELIMINATION OF CROSS CONNECTIONS: DEGREE OF HAZARD

When cross connections are found to exist, the owner, his agent, occupant, or tenant will be notified in writing to disconnect the same within the time limit established by the ACSA. Degree of protection required and maximum time allowed for compliance will be based upon the potential degree of hazard to the public water supply system. Compliance periods begin with receipt of written notice from the ACSA. The maximum time limits are as follows:

- A. Cross connections with private wells or other unapproved auxiliary supplies of water - immediate disconnection of unapproved source.
- B. All facilities which pose a health hazard to the potable water system must have a containment assembly in the form of a reduced pressure principle assembly within 30 days.
- C. All industrial and commercial facilities not identified as a "health hazard" shall be considered non-health hazard facilities. All non-health hazard facilities must install, as a minimum containment assembly, a double check valve assembly within 60 days if deemed necessary.
- D. If, in the judgment of the ACSA, an imminent health hazard exists, water service to the building or premises where a cross connection exists may be terminated unless an air gap is immediately provided, or the cross connection is immediately eliminated.

IX. TYPE OF PROTECTION REQUIRED

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. The degree of hazard, either high 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.

Section A below shall be used as a guide to determine the degree of hazard for any situation.

- 1) Air gaps give the highest degree of 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 assembly may be used in high hazard situations and will protect against back-pressure when operating properly.
- 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 only. These include atmospheric type, pressure type, hose bibb types and wall hydrant type vacuum breakers.

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- 4) Backflow prevention devices consisting of dual independent check valves with an intermediate atmospheric vent or without an intermediate atmospheric vent shall only be used in low hazard situations.
- 5) Barometric loops are not acceptable.
- 6) Public/private sources with an interchangeable connection or change over device is not acceptable.
- 7) Reduced pressure principle type backflow preventers and devices consisting of dual independent check valves with an intermediate atmospheric vent shall not be installed in pits or areas subject to flooding. Reduced pressure principle assemblies must be installed in a horizontal position. Reduced pressure principle assemblies being installed vertically must be approved by ACSA prior to installation. Double check valve assemblies may be installed in a vertical position with prior approval from the ACSA provided the flow of water is in an upward direction.
- 8) Double check valve assemblies shall not be used in high hazard situations.
- 9) Water mains served by the ACSA but not maintained by the ACSA should be considered cross connections, with degree of hazard to be determined by the Director. Minimum protection by a double check valve assembly (DCVA) shall be required.

A. 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, non-potable water, auxiliary water systems, toxic hazardous chemicals, etc.

➤ **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. The contaminant would not disrupt service of piped water.
5. Examples - Food stuff, nontoxic chemicals, nonhazardous chemicals, etc.

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B. FACILITIES REQUIRING PROTECTION

Approved backflow prevention assemblies shall be installed on the service connection to any premises that the ACSA has identified as having a potential for backflow.

The following types of facilities or services have been identified by the ACSA as having a potential for backflow of non-potable water into the public water supply system. Therefore, an approved backflow prevention assembly will be required on all such services according to the degree of hazard present. Other types of facilities or services not listed below may also be required to install approved backflow prevention assemblies if determined necessary by the ACSA. As a minimum requirement, all commercial services will be required to have proper backflow prevention.

1. Aircraft and Missile Plants
2. Automotive Services Stations, Dealerships, etc.
3. Automotive Plants
4. Auxiliary Water Systems
5. Bakeries
6. Beauty shops/Barber shops
7. Beverage and food processing plants
8. Breweries
9. Buildings - Hotels, public and private buildings, or other structures having unprotected cross connections with 4 or more stories
10. Canneries, packing houses, and rendering plants
11. Chemical plants - Manufacturing, processing, compounding or treatment
12. Chemically contaminated water systems
13. Commercial car-wash facilities
14. Commercial greenhouses and nurseries
15. Commercial sales establishments (department stores, malls, etc.)
16. Concrete/asphalt plants
17. Dairies and cold storage plants
18. Dye works
19. Farms where water is used for other than household purposes
20. Film laboratories
21. Fire service systems
22. Health clubs with swimming pools, therapeutic baths, hot tubs or saunas
23. Hospitals, medical buildings, sanitariums, morgues, mortuaries, autopsy facilities, nursing and convalescent homes, medical clinics, dental offices, and veterinary hospitals
24. Laboratories
25. Laundries
26. Lawn and ornamental irrigation systems
27. Metal manufacturing, cleaning, processing, and fabricating plants
28. Oil and gas production, storage or transmission properties
29. Paper and paper products plants
30. Pest control

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31. Pharmaceutical plants
32. Plating plants
33. Power plants
34. Radioactive materials or substances - plants or facilities handling
35. Restaurants
36. Restricted, classified, or other closed facilities
37. Rubber plants (natural or synthetic)
38. Sand and gravel plants
39. Schools and colleges with laboratory facilities
40. Sewage and storm drain facilities
41. Solar heating systems – with heat exchangers
42. Geothermal solar systems
43. Swimming pools
44. Waterfront facilities and industries
45. Mobile water tanks

C. FIRE PROTECTION SYSTEMS

A backflow prevention assembly shall be installed at fire protection system connections to the location's water supply system or to the waterworks in accordance with the following:

- 1) Additives or nonpotable source: Where systems or fire truck tanks have chemical additives or antifreeze or where systems can be connected to a nonpotable secondary water supply, the potable water supply shall be protected by a reduced pressure principle detector 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 detector backflow preventer shall be permitted to be so located to isolate that portion of the system.
- 2) Fire department connection (Siamese connections): Where systems have fire department connections, the supply system or waterworks, whichever is appropriate, shall be protected by a double check detector assembly.
- 3) Piping or storage tanks not approved for water distribution: Where systems are installed with piping, joints, connections, or storage tanks not approved for water distribution systems, the water supply system or waterworks, whichever is appropriate, shall be protected by a reduced pressure detector assembly.
- 4) Piping approved for water distribution: Where systems are installed with piping, joints, and connections approved for water distribution systems, protection of the water supply system or waterworks shall not be required where the location's 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.

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- 5) Premises having booster pumps connected to the waterworks shall be equipped with a low pressure regulating or cut-off device to shut off the booster pump when the pressure in the waterworks drops to a minimum of 20 psi.

- 6) All existing approved backflow prevention assemblies installed on fire sprinkler systems shall be allowed to remain on the premises, as long as they are being properly maintained, tested, and repaired as required by these Rules and Regulations. If, however, the existing assembly must be replaced (once it can no longer be repaired) an approved double detector check assembly or reduced pressure principle detector assembly shall be installed. In the event of proven water theft through an unmetered source, the consumer shall be required to install an approved double check assembly or reduced pressure principle assembly and a fire meter and vault in accordance with ACSA Design and Construction Standards.

X. ASSEMBLY TESTABILITY/SERVICEABILITY

- A. Backflow prevention assemblies shall be installed so that they can be tested and/or repaired while still inline.

- B. Backflow prevention assemblies shall be retested when:
 - 1) Assembly needs to be replaced due to failure or damage.
 - 2) Assembly is repaired and/or undergoes routine inspection.
 - 3) Assembly is relocated.

In no case shall the time period for retesting exceed:

- 1) Health Hazard or High Hazard Facilities – 5 days
- 2) Non-Health Hazard or Low Hazard Facilities – 10 days

The time period for retesting may be extended only upon written consent of the Authority CCCA.

Notices shall be sent out to customers notifying them of the required annual testing. Failure to perform the required annual testing will be treated as grounds for invoking corrective action pursuant to the procedures set forth in Section XIV.

XI. MAINTENANCE AND INSPECTION REQUIREMENTS

- A. It shall be the responsibility of private water system owners to maintain all backflow prevention devices/assemblies 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/assemblies.

- B. Testing and inspection schedules shall be established by the Director as outlined in this policy for all backflow prevention assemblies. The interval between testing and inspections and overhauls of each assembly shall be established in accordance with the age and condition of the assembly and the assembly manufacturer's recommendations. Inspection and testing intervals shall not exceed 1 year. The testing procedures shall be in accordance with the

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assembly manufacturer's instructions. Overhaul intervals shall be in accordance with the assembly manufacturer's recommendations.

- C. A backflow preventer that will not be in use for an extended period of time may be recorded as inactive and relieved of its annual testing requirements upon verification with the ACSA Customer Service Department that the account is turned off and that the supply valve has been turned off as determined by the CCCA. Before the water service can be turned on the backflow preventer must pass inspection and the test report provided to the ACSA per this policy.
- D. Any time that repairs to backflow prevention assemblies are deemed necessary, whether through required testing or routine inspection by the owner or by the ACSA, these repairs must be completed within a specified time in accordance with the degree of hazard. In no case shall this time period exceed:
 - 1) Health Hazard Facilities - 14 days
 - 2) Non-Health Hazard Facilities - 21 days

The time period for repairs may be extended only upon written consent of the Authority CCCA.

- E. Any customer or certified tester that fails to submit required ACSA records or submits any record to the ACSA which is knowingly false or incomplete in any material respect shall be subject to corrective action pursuant to the procedures set forth in Section XIV.

XII. BACKFLOW PREVENTION ASSEMBLIES

- A. Any backflow prevention assembly shall be of the approved type and shall comply with the Virginia Plumbing Code.
- B. Any backflow prevention assembly shall be installed in a manner approved by the Director or his designated agent, the assembly manufacturer, and in accordance with the Virginia Plumbing Code.
- C. Existing backflow prevention assemblies approved by the ACSA and the Division prior to the initial adoption of these Rules and Regulations shall, except for inspection, testing, and maintenance requirements, be excluded from the requirements of XII A. and XII B. if the ACSA and the Division are assured that the assemblies will protect the waterworks.

XIII. ENFORCEMENT

The Director shall be responsible for the protection of the public potable water distribution system from contamination or pollution due to backflow of contaminants or pollutants through the water service connection. If, in the judgment of the Director, an approved backflow assembly is required at the ACSA's water service connection to any customer's location, the Director shall give written notice to the owner of the property at the last known address as shown on the County tax records, to install an approved

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backflow prevention assembly at each service connection to the customer's location. The owner shall install such approved assembly or assemblies, at the owner's expense, within the time period allowed under Section XVI(A)(10). Failure, refusal, or inability on the part of the owner to install such assembly or assemblies and associated testing records within the required compliance period shall constitute grounds for invoking the corrective action procedures under Section XIV until such assembly or assemblies have been properly installed to the Director's satisfaction. (The Code of Augusta County, Virginia, Chapter 24, Article II, 24-11, 24-12, 24-21)

XIV. CORRECTIVE ACTION

- A. Failure to comply with any provision contained in these Rules and Regulations, or of any written order of the Director, shall constitute grounds for invoking the corrective action procedures below until full compliance is achieved. The following corrective action procedures are designed to provide fair, consistent and equitable action to resolve any issue of noncompliance or violation.

1. Notice of Non-Compliance

The ACSA shall issue a written "Notice of Non-Compliance" to a Consumer/Customer and, if applicable, the owner of the subject property, in the event that the ACSA determines in its sole discretion that a Consumer's Water System is noncompliant with any provision contained in these Rules and Regulations, or of any written order of the Director, including but not limited to (i) failure to correct to the full satisfaction of the ACSA a Cross Connection identified in a Consumer's Water System; (ii) failure to install an approved Backflow Prevention Assembly in a proper manner by an assigned date; (iii) removal or by-pass of a required Backflow Prevention Assembly without the approval of the ACSA; or (iv) failure to provide a passing test report for a Backflow Prevention Assembly by a required date. The Notice of Non-Compliance shall at a minimum include identification of the specific issue of noncompliance, explanation of the action required to be taken by the Consumer/Customer and, if applicable the owner of the subject property, to bring the Consumer's Water System into compliance, and a deadline for achieving compliance. The Notice of Non-Compliance shall be mailed by first-class U.S. mail to the Consumer/Customer's mailing address on record with the ACSA and, if applicable, the mailing address on record with the ACSA of the owner of the subject property. Only one (1) Notice of Non-Compliance will be issued for a specific issue of noncompliance.

If the specific issue of noncompliance is not corrected to the full satisfaction of the ACSA by the deadline provided in the Notice of Non-Compliance, the ACSA shall issue a Notice of Violation. If the ACSA determines in its sole discretion that a specific issue of noncompliance presents a Health Hazard or High Hazard, the ACSA shall forgo the Notice of Non-Compliance and shall instead issue a Notice of Violation.

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2. Notice of Violation

The ACSA shall issue a written Notice of Violation to a Consumer/Customer and, if applicable, the owner of the subject property, in the event that the ACSA determines in its sole discretion either (i) that a Consumer/Customer and, if applicable, the owner of the subject property, has failed to bring the Consumer's Water System into compliance with these Rules and Regulations, or a written order of the Director, to the full satisfaction of the ACSA by the deadline specified in the Notice of Non-Compliance; or (ii) that a specific issue of noncompliance presents a Health Hazard or High Hazard. The Notice of Violation shall at a minimum include identification of the specific issue of violation including the Degree of Hazard, explanation of the action required to be taken by the Consumer/Customer and, if applicable, the owner of the subject property, to correct the violation, a deadline for correcting the violation, and identification of all violation charges to be imposed if the violation is not corrected by the deadline specified in the Notice of Violation. The Notice of Violation shall be mailed by certified U.S. mail to the Consumer/Customer's mailing address on record with the ACSA, and, if applicable, the mailing address on record with the ACSA of the owner of the subject property.

3. Notice of Violation Charges

The ACSA shall issue a written Notice of Violation Charges to a Consumer/Customer and, if applicable, the owner of the subject property in the event that the ACSA determines in its sole discretion that a Consumer/Customer and, if applicable, the owner of the subject property has failed to correct a violation to the full satisfaction of the ACSA by the deadline specified in the Notice of Violation. The Notice of Violation Charges shall at a minimum include identification of the specific issue of violation including the Degree of Hazard for which each violation charge is imposed, the amount of each violation charge and the total amount of all violation charges imposed by the ACSA, a deadline for payment of the violation charge(s) and the following notice conspicuously set out in 14-point type:

IMPOSITION OF VIOLATION CHARGES DOES NOT RESOLVE THE VIOLATION(S) IDENTIFIED IN THIS NOTICE OF VIOLATION CHARGES. YOU REMAIN REQUIRED TO CORRECT THE VIOLATION(S) TO THE FULL SATISFACTION OF THE ACSA NO LATER THAN _____ (Date) _____. FAILURE TO CORRECT THE VIOLATION TO THE FULL SATISFACTION OF THE ACSA BY _____ (Date) _____ WILL RESULT IN THE IMPOSITION OF ADDITIONAL CHARGES. CONTINUED FAILURE TO CORRECT A VIOLATION DETERMINED BY THE ACSA IN ITS SOLE DISCRETION TO PRESENT A HEALTH HAZARD OR HIGH HAZARD MAY RESULT IN DISCONNECTION OF WATER SERVICES TO THE CONSUMER'S WATER SYSTEM WITH WHICH THE VIOLATION IS OCCURRING.

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The Notice of Violation Charges shall be mailed by certified U.S. mail to the Consumer/Customer's mailing address on record with the ACSA and, if applicable, the mailing address on record with the ACSA of the owner of the subject property. The ACSA may issue subsequent notices of violation charges (not to exceed three (3) subsequent notices of violation charges) if violations are not corrected to the full satisfaction of the ACSA by the date specified in the previous notice of violation charges and additional violation charges may accrue until violations are corrected to the full satisfaction of the ACSA. The number of subsequent, if any, notices of violation charges will be determined in the sole discretion of the ACSA depending upon the nature of the identified violation(s) and the Degree of Hazard of each identified violation. The final notice of violations charges shall be identified as "FINAL Notice of Violation Charges."

Violation Charges:

Failure to correct a violation to the full satisfaction of the ACSA by the deadline specified in the Notice of Violation shall cause the imposition of one or more applicable charges pursuant to the following schedule:

<u>Scope of Violation</u>	<u>Charge</u>
Failure of a Consumer/Customer, and, if applicable, the owner of the subject property to correct by a specified deadline in full satisfaction of the ACSA a violation specified in a Notice of Violation where the violation is determined in the sole discretion of the ACSA to constitute a Non-Health Hazard or Low Hazard.	\$500.00
Failure of a Consumer/Customer, and, if applicable the owner of the subject property to correct by a specified deadline in full satisfaction of the ACSA a violation specified in a Notice of Violation where the violation is determined in the sole discretion of the ACSA to constitute a Health Hazard or High Hazard.	\$1,000.00

Failure of a Consumer/Customer or a Certified Backflow Prevention Assembly Tester or, if applicable, the owner of the subject property to submit any record required by these Rules and Regulations, or the willful submission of falsified reports, records and/or certification will be charged in accordance with the Degree of Hazard derived from the evaluation of the underlying conditions that required installation of a Backflow Prevention Assembly in the first instance (i.e., failure to submit a record or submission of a false record for a Backflow Prevention Assembly for an underlying condition initially evaluated as a Non-Health Hazard or Low Hazard will be charged \$500.00 per violation and failure to submit a record or submission of a false record for a Backflow Prevention Assembly for an underlying condition

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initially evaluated as a Health Hazard or High Hazard will be charged \$1,000.00 per violation.)

4. Notice of Disconnection of Water Services

In the event that a Consumer/Customer and, if applicable, the owner of the subject property, fails to correct to the full satisfaction of the ACSA and/or has failed to pay all accrued violation charges by the date provided in the FINAL Notice of Violation Charges, the ACSA may issue a written Notice of Disconnection of Water Services. The Notice of Disconnection of Water Services shall at a minimum include identification of the specific issue of violation including the applicable Degree of Hazard, the history of issuance of notices as required by this Section XIV, copies of all such notices issued as required by this Section XIV, and identification of the date on which no later than 5:00 p.m. water services for a Consumer Water System will be disconnected by the ACSA. The Notice of Disconnection of Water Services shall also provide the Consumer/Customer and, if applicable, the owner of the subject property with the action(s) required by the ACSA to correct the underlying violation and shall identify the procedure required by the ACSA for the Consumer/Customer and, if applicable, the owner of the subject property to have water services reconnected for the affected Consumer Water System, which procedures at a minimum shall include the imposition of all charges and fees then-applicable to disconnection and reconnection of water services under Policy 5.3 of the ACSA's Operating Procedures and Policy Manual.

The Notice of Disconnection of Water Services shall be mailed by certified U.S. mail to the Consumer/Customer's mailing address on record with the ACSA and, if applicable, to the mailing address on record with the ACSA of the owner of the subject property. In addition, on the business day preceding the date specified in the Notice of Disconnection of Water Services for water services to be disconnected to the affected Consumer Water Service, the ACSA shall deliver a hang tag to the address on record for the affected Consumer Water Service as a final notice that water service will be disconnected on the following business day.

In the event that the Director determines in his/her sole discretion that a Cross-Connection presents an imminent and substantial risk to the Public Potable Water System and to the health and public safety of the citizens of Augusta County, the Director is authorized to forgo all notice requirements of this Section XIV and to order the immediate termination of water services to any Consumer Water System determined by the Director in his/her sole discretion to constitute the source of such imminent and substantial risk to the Public Potable Water System and to the health and public safety of the citizens of Augusta County.

B. Miscellaneous

1. In the event that a Certified Backflow Prevention Assembly Tester knowingly submits falsified records to the ACSA, the ACSA shall take the necessary actions seeking revocation of certification to test backflow prevention assemblies within the potable water system. The

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ACSA shall file a report with DPOR; pursuant to §54.1-1114, §54.1-1134 & §54.1-1135 of the Code of Virginia. Falsification made to records/reports after becoming re-certified may result in ACSA refusal to accept inspection/test reports from the tester.

2. Appeals of any action taken by the ACSA under this Section XIV, including, but not limited to, a finding of non-compliance, issuance of a notice of violation, assessment of violation charges or disconnection of water services, shall first be made in writing to the Executive Director of the ACSA within thirty (30) days of the action from which an appeal is taken. The Executive Director shall issue in writing a determination on the appeal within fifteen (15) days of ACSA's receipt of the written appeal. An appeal of the determination of the Executive Director shall be made to the ACSA's Board of Directors and submitted to the Executive Director within fifteen (15) days of the issuance of the determination by the Executive Director. An appeal to the ACSA's Board of Directors shall be presented at the following regularly-scheduled ACSA Board meeting. Determinations of an appeal by the ACSA Board of Directors shall be in the sole discretion of the ACSA Board of Directors.

XV. THERMAL EXPANSION

Installation of backflow prevention devices or certain plumbing appurtenances at the service connection or within the water supply system will prevent backflow of water from the premises to the distribution system, thereby creating a closed system. Thermal expansion, as caused by a hot water tank or other similar equipment, in a closed plumbing system under no flow conditions may cause emergency temperature and pressure relief valve(s) 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 and fittings. Generally, 80 psi is the maximum acceptable pressure under no flow conditions in most building water distribution systems and most fixtures, appliances or appurtenances. 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 fill valve 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 Virginia Plumbing 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. Thermal expansion installation will be at the expense of the customer.

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XVI. INSTALLATION REQUIREMENTS

A. General

- 1) All backflow prevention assemblies shall be installed in accordance with the specifications furnished by the ACSA and/or the manufacturer's instructions.
- 2) All backflow prevention assemblies shall be installed according to the requirements outlined in the Virginia Plumbing Code.
- 3) All new construction plans and specifications, when required as outlined in the Virginia Plumbing Code and the Virginia Department of Health, shall be made available to the ACSA for review and approval and to determine the degree of hazard.
- 4) Ownership and maintenance of the assembly shall be the responsibility of the customer.
- 5) All double check valve assemblies must be installed in drainable pits wherever below ground installation is necessary.
- 6) Reduced pressure principle assemblies must be installed in which no portion of the assembly can become submerged under any circumstance (pit and/or below grade installations are prohibited).
- 7) The installation of a backflow prevention assembly which is not approved must be replaced with an approved backflow prevention assembly.
- 8) Following installation, all assemblies are required to be tested by a certified backflow prevention assembly tester within working (10) days. The owner is responsible for having a certified backflow prevention assembly tester provide the initial test. The following information shall be provided to ACSA from the initial test in accordance with Section IV - Responsibilities:
 - a) service address where assembly is located
 - b) owner (and address, if different from service address)
 - c) description of assembly's location
 - d) date of installation
 - e) installer (include name, company represented, and installer's license number)
 - f) type of assembly, size of assembly
 - g) manufacturer, model number, serial number
 - h) test results/report
 - i) water service account number
- 9) When it is not possible to interrupt water service, provisions shall be made for a "parallel installation" of backflow prevention assemblies. The ACSA will not allow an unprotected bypass around a backflow preventer when the assembly is in need of testing, repair, or replacement.

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- 10) The consumer shall, upon notification, install the appropriate containment assembly not to exceed the following time frame:
 - 1) Health Hazard – 30 days
 - 2) Non-Health Hazard – 60 days

B. Above Ground Installations

Requirements for above ground installations of Reduced Pressure Principle and Double Check Valve Assemblies are as follows:

- 1) The backflow preventer must be installed a minimum distance of five (5) feet from the meter service. Installations of backflow preventers within the utility right of way will not be approved.
- 2) Reduced pressure principle assemblies must be installed in a horizontal position or as approved by the manufacturer and in a location in which no portion of the assembly can become submerged under any circumstances (minimum of 12 inches from the relief port opening to the surface and/or flood rim). Vertical installations must be approved by the ACSA prior to installation.
- 3) Double check valve assemblies, approved for vertical installation, may be installed in a vertical position provided the flow of water is in an upward direction and the unit is suitable for vertical installation in accordance with manufacturer's documentation.
- 4) Reduced pressure principle backflow preventers must be installed above ground. Double check valve assemblies must be installed above ground wherever a drainable vault cannot be used. Backflow prevention assemblies installed inside the building are preferred. Where this is not possible, outside installations are permitted with prior approval and inspection by the CCCA.
- 5) Backflow preventers installed inside must be minimum distance of twelve (12) inches above the floor, and no higher than four (4) feet above the floor with adequate clearance around the backflow preventer for testing, and/or repair of the backflow prevention assembly. Wherever a reduced pressure principle backflow preventer is installed inside a building, an air-gap separation with a drain line large enough to carry off the discharge of water from the relief valve shall be installed.
- 6) Backflow prevention assemblies installed outside, above ground, must be protected from freezing. The backflow prevention assembly must be installed a minimum distance of twelve (12) inches above the ground, and no higher than four (4) feet above ground. Landscaping is allowed around the backflow preventer, but must not interfere with the required annual testing, repair of the backflow prevention assembly, and/or restrict the air flow of the assembly.

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- 7) Backflow prevention assembly's supports must not interfere with the valves, test cocks, testing, and/or repair of the backflow prevention assembly.
- 8) All piping must be ductile iron, cast iron, brass, galvanized, or steel.
- 9) Before starting installation of a backflow preventer, per Section 01110 of the ACSA Design and Construction Standards, submit shop drawings to the CCCA to insure proper installation of the backflow prevention assembly.