

KENT COUNTY WATER AUTHORITY

CROSS-CONNECTION CONTROL PROGRAM

SECTION 1

1.1 POLICY

- 1.1.1 The Kent County Water Authority recognizes its inherent responsibility to provide its customers with water that is safe meeting the regulatory requirements of the Environmental Protection Agency (EPA), RIGL 46-13-22 and Rhode Island Department of Health (RIDOH). In order to assure this, the Kent County Water Authority must protect the public potable water supply from the possibility of contamination from plumbing and service infrastructure not under the Authority's sanitary control. The Kent County Water Authority will take reasonable measures to protect the water distribution system from hazards originating on the premises of its customers by requiring the containment method of backflow prevention of the property owner's internal plumbing or distribution system from the public water system infrastructure of the Kent County Water Authority. An appropriate backflow device shall be installed in every service line directly after the meter outlet valve or in the case of unmetered fire line, directly after the service isolation valve and before any tap for an appliance, appurtenance, device, pump, pressure vessel, apparatus or outlet intended to serve or handle potable water or fire service. Fixture isolation after the containment backflow device shall be per the RI Plumbing Code and fall under the jurisdiction of the appropriate building code official. In all cases cross connections are prohibited. Violation of this policy shall result in immediate discontinuance of the service.

1.2 PURPOSE

- 1.2.1 Protect the public water supply served by the Kent County Water Authority from possible contamination through backflow, backsiphoning or introduction of contaminants from the customer's internal plumbing system.
- 1.2.2 Promote the elimination and/or control of existing cross-connection, actual or potential, between the customer potable water system and non-potable systems. Effectively limit any potential cross connection through the requirement to install a containment backflow device on each service as a condition of receiving public water service.
- 1.2.3 Afford continuing cross-connection control aimed at customer mitigation and prevention of the introduction of contamination or pollution into the public potable water systems through the elimination of cross-connections.

SECTION 2

2.1 AUTHORITY

- 2.1.1 The Federal Safe Drinking Water Act regulates the water purveyor as having primary responsibility for preventing water from unapproved sources, or any other substances from entering the public potable water system. The Rhode Island Department Of Health further clarifies this intent in their Rules & Regulations, which are hereby incorporated by reference and made a part hereof.
- 2.1.2 Rhode Island General Law (RIGL) 46-13-22 et seq. authorizes the RIDOH to adopt consistent statewide regulations governing the content of cross connection plans. RIDOH regulation have adopted the containment approach to backflow prevention aimed at protection of the public water system Suppliers are also authorized to establish a cross-connection control program and to establish the rules, regulations and criterion for the program.
- 2.1.3 Rhode Island State Building Code, Plumbing Code Regulation SBC-3 regulates the property owner or designated agent responsible for safe and sanitary maintenance of the internal plumbing system at all times in all buildings or structures. It is unlawful to make any change in the occupancy of any structure, which will subject the structure to any special provision of the code or may hazard the public health, safety or welfare.
- 2.1.4 Kent County Water Authority Rules and Regulations Cross Connection Regulations have been implemented to comply with RIDOH rules and regulations for containment devices to prevent any potential for contamination by the very nature of not allowing connection in any form, actual or potential, to the plumbing or infrastructure not under the sanitary control of the water supplier or any non-potable or contamination source.

SECTION 3

3.1 RESPONSIBILITY

- 3.1.1 Kent County Water Authority shall take reasonable steps for the protection of the public potable water distribution system from contamination due to the backflow, backsiphonage or return of contaminants through the water service connection. In all cases of new construction, an approved backflow device shall be installed in every service line directly after the meter outlet valve or building isolation valve in the case of unmetered fire line and before any tap for an appliance, appurtenance, device, pump, pressure vessel, apparatus or outlet intended to serve or handle

water. Per RIDOH regulation all existing customers shall have an approved containment backflow device. If, in the judgment of the Kent County Water Authority, an approved backflow device is required on any customer's existing installation or structure, the Authority shall give notice in writing to said customer to cause the installation of an approved backflow prevention device at each service connection.

- 3.1.2 As a condition of service, the property owner shall cause the proper installation of an approved containment backflow device and associated thermal expansion device in any existing premises, new construction; or upon change in occupancy or at the time of meter replacement; or upon written notice by the Authority. The installed device shall be commensurate with the degree of potential hazard, as determined by the Kent County Water Authority and/or at a minimum the requirements in section 7 of this regulation. All such backflow devices shall be positioned immediately after the outlet valve for the meter or service isolation valve on unmetered fire lines.
- 3.1.3 Owners shall, within 15 days of written notification of a deficiency, provide Kent County Water Authority with a corrective action schedule for said remediation work or installation of an approved device or devices: at the customer's own expense. The customer shall take immediate action to remedy any installation that in the opinion of the Kent County Water Authority or local plumbing inspector presents an imminent danger to the public water supply.
 - 3.1.3.1 For single family homes the schedule shall cause the installation to occur no later than 20 business days from initial notification.
 - 3.1.3.2 Installation for commercial properties and /or services 2 inches or greater shall in no case later than 30 business days from initial notification or as negotiated with the Executive Director/Chief Engineer.
 - 3.1.3.3 Per RIDOH regulations, failure refusal or inability on the part of the customer to install said device or correct deficiencies within the schedule above shall constitute grounds for discontinuing water service without further notice until compliance is achieved.
 - 3.1.3.4 Service shall be immediately terminated if access is refused to any location for carrying out cross connection survey or inspection of services deemed to be an imminent hazard.
- 3.1.4 The owner shall take immediate action to remedy installation that in the opinion of the Kent County Water Authority and/or local plumbing/building official having jurisdiction presents an imminent danger to the public water system supply. The owner shall install such approved device and obtain inspection approval by the Kent

County Water Authority and local plumbing official.

SECTION 4

4.1 DEFINITIONS

- 4.1.1 Approved - Accepted by the Kent County Water Authority as meeting all applicable specifications stated or cited in the regulations or as suitable for the proposed use, as determined by Kent County Water Authority.
- 4.1.2 Authority - Kent County Water Authority proper or their designee, 1072 Main Street, West Warwick, Rhode Island.
- 4.1.3 Auxiliary Water Supply - Any water supply, on or available to the premises other than the purveyor's approved public potable water supply.
- 4.1.4 Backflow - The flow of water or other liquids, mixtures or substances, under pressure into the distribution pipes of a potable water supply system from any source other than its intended source.
- 4.1.5 Backflow Preventer - A device or means designed to prevent backflow or backsiphonage. Most commonly categorized as air gap, reduced pressure principle device, testable double check valve assembly, pressure vacuum breaker, atmospheric vacuum breaker, hose bib vacuum breaker, residential dual check, and double check with intermediate atmospheric vent. All devices must be made in the USA and must have been approved by all of the following associations: University of Southern California (FCCCHR, USC), American Water Works Association and American Society of Sanitary Engineers.
 - 4.1.5.1 Air Gap - A physical separation sufficient to prevent backflow between the free-flowing discharge end of the potable water system and any other system. Physically defined as a distance equal to twice the diameter of the supply side pipe diameter, but never less than two (2) inches.
 - 4.1.5.2 Atmospheric Vacuum Breaker - A device that prevents backsiphonage by creating an atmospheric vent when there is either a negative pressure or sub-atmospheric pressure in a water system.
 - 4.1.5.3 Double Check Valve Assembly - An assembly manufactured and designed of two (2) independently operating spring-loaded check valves with tightly closing shut off valves on each side of the check valves. Single check valves coupled together will not be considered.

- 4.1.5.4 Double Check Valves with Intermediate Atmospheric Vent - A device having two (2) spring-loaded check valves separated by an atmospheric vent chamber.
- 4.1.5.5 Hose Bib Vacuum Breaker - A device which is permanently attached to a hose bib and which acts as an atmospheric vacuum breaker.
- 4.1.5.6 Non-Testable Dual Check – An assembly of two (2) spring loaded independently operating check valves without shut off valves.
- 4.1.5.7 Pressure Vacuum Breaker - A device containing two independently operated spring-loaded check valves and an independently operated spring loaded air inlet valve located on the discharge side of the check or checks. Device includes tightly closing shut off valve on each side of the check valves and properly located test cocks for the testing of the check valve(s).
- 4.1.5.8 Reduced Pressure Principle Backflow Preventer - An assembly consisting of two (2) independently operating approved check valves with an automatically operating differential relief valve located between the two (2) check valves, tightly closing shut off valves on each side of the check valves, plus properly located test cocks for the testing of the check valves and the relief valve.
- 4.1.5.9 Testable Dual Check - An assembly of two (2) spring-loaded, independently operating check valves without tightly closing shut off valves and properly located test cocks for the testing of the check valves.
- 4.1.6 Backpressure - A condition in which the owner’s plumbing/infrastructure system pressure is greater than the supplier’s system pressure.
- 4.1.7 Backsiphonage - The flow of water or other liquids, mixtures or substances into the distribution pipes of a potable water supply system from any source other than its intended source caused by the sudden reduction of pressure in the potable water supply system.
- 4.1.8 Containment - A method of backflow prevention which requires a backflow prevention device at the water service entrance directly after the meter effluent valve and before the first tap to any appliance, appurtenance, device, pump, pressure vessel, apparatus or outlet intended to serve or handle water.
- 4.1.9 Contaminant - Any substance that has the potential to impair the quality of the water to a degree that it creates a health risk to the public, leading to poisoning or the spread of disease. It shall be considered in these regulations, any substance added to the potable water system, either directly or indirectly, other than by the Authority.

- 4.1.10 Cross-Connection - Any actual or potential connection between the public water supply and a source of contamination.
- 4.1.11 Customer - Service owner of Kent County Water Authority. See definition of owner below.
- 4.1.12 Deficiency Report – Form letter notification of an inoperative device or non-complying installation.
- 4.1.13 Fixture Isolation - A method of backflow prevention in which a backflow device is installed to correct a cross-connection at an in-plant location. An approved service entrance back flow device must be installed in conjunction with the implementation of fixture isolation.
- 4.1.14 Owner - Any person who has legal title to, or license to operate or habitat in a property upon which a cross-connection inspection is to be made or upon which a cross-connection is present.
- 4.1.15 Person - Any individual, partnership, company, public or Private Corporation, political subdivision or agency of the State, or instrumentality of the United States or any other legal entity.
- 4.1.16 Permit - A document issued by a city, town or local authority, which specifies the use of a backflow preventer.
- 4.1.17 Strainer - Approved device specifically designed for potable water systems to prevent fouling of backflow preventer devices.
- 4.1.18 Sanitary Control - The segregation point in the owners' water system at the outlet to the backflow device and before the first tap for any protected or unprotected branch intended to serve or handle water. Considered by the water purveyor to be the containment point directly after the meter.
- 4.1.19 Service Pipe – The pipeline extending from the main to the building or private connection served.
- 4.1.20 Service Pipe Ownership – The service pipe from the distribution main to/and including, the curb stop is owned and maintained by the Authority. The portion of the service pipe beyond the curb stop is owned, maintained and installed by the owner.

SECTION 5

5.1 ADMINISTRATION

- 5.1.1 The Authority will administer a cross-connection control program, to include the maintenance of necessary records, which fulfill the requirements of the Cross-Connection Regulation approved by the Authority.
- 5.1.2 The Authority will conduct the survey of existing service connections to determine if a device exists meeting the requirements in section 7. At a minimum all governmental, industrial, commercial single and multifamily residential type properties shall be required to install a device. Every owner shall allow their property to be inspected for possible cross-connections by the Authority and shall follow the provisions of the Authority's program along with all Federal and State Laws, or Rules and Regulations enacted by the Rhode Island Department of Health to remedy any discrepancy.
 - 5.1.2.1 As a condition of receiving service every owner shall allow their properties to be inspected for possible cross connection by the Authority and shall follow the provisions of this cross-connection regulation.
- 5.1.3 The Kent County Water Authority requires the public water supply be protected by containment in all water service applications. The owner shall be responsible for water quality beyond the outlet end of the containment device and shall utilize fixture outlet protection for that purpose, as prescribed in the plumbing code.
 - 5.1.3.1 The Kent County Water Authority program does not include fixture control. These are covered under the applicable building codes. Owner shall utilize qualified independent cross-connection control specialist so licensed, to assist in the survey of the owner's facilities and to assist in the selection of proper fixture outlet devices, and the proper installation of said devices. All costs shall be borne by the owner.
- 5.1.4 The Authority will monitor the completion of necessary corrective action and installation of containment backflow devices. All required documentation shall be filled out by the property owner and delivered to the Authority, in its' entirety, within 30 days of completion or the service is subject to termination.

SECTION 6

6.1 REQUIREMENTS OF THE AUTHORITY

- 6.1.1 The Authority will provide review of all new commercial, governmental,

multifamily 4 units or more and industrial service installation design plans, in order to determine the minimum protection level of the backflow preventer and strainer that will be required for containment. The Authority shall perform construction field inspections, as necessary, to ascertain that the device installation has occurred. The local plumbing inspector shall approve the final installation to be in compliance with the State of Rhode Island Building Code. The owner must submit a copy of the approved plumbing permit inspection form to the Authority prior to water service activation.

6.1.1.1 By 2024, all commercial, multifamily residential, and/or industrial users shall be equipped with a containment (isolation) type backflow preventer of a testable type. The Authority shall determine the style and type prior to installation and service activation.

6.1.1.2 In all cases, backflow preventers shall be installed and operational prior to connection to the Kent County Water Authority system. Any plumbing system application with the potential for contamination of the potable water system as determined by the Authority shall be equipped with a RPZ reduced pressure zone style backflow preventer to ensure mechanical isolation and containment from the public water system prior to service connection. Valves shall be located on both sides of the backflow preventer with drain or test plug on the inlet valve to facilitate testing.

6.1.1.3 The owner of an existing commercial/industrial property shall be solely responsible to retrofit said property with a backflow device, approved by the Kent County Water Authority upon written notification by the Authority. The property owner must supply a copy of the approved plumbing permit inspection form and backflow test results to the Kent County Water Authority as part of the installation process.

6.1.2 At a minimum, all new single-family or multifamily 4 units or less residential buildings will be required to install a dual check valve device immediately after the water meter, and in all cases, before the first tap to any outlet or appliance. The owner shall cause to have this device properly installed and replaced every 20-years at no cost to the Kent County Water Authority.

6.1.2.1 Master metered multi-unit residential apartments or condominiums with fire protection fall under the commercial/industrial installation guidelines.

6.1.2.2 In all cases, the owner of an existing property shall be solely responsible to retrofit said property upon written notification by the Authority. The property owner must supply a copy of the approved plumbing permit inspection form to the Kent County Water Authority as part of the installation process. All properties shall be retrofitted by Dec 2024.

- 6.1.2.3 The owner must be aware that installation of a residential backflow assembly results in a potential closed plumbing system within the premises. The property owner shall also be responsible to take actions, as necessary, to ensure all provisions of the plumbing code have been met to provide for thermal expansion within the closed loop system, such as the installation of thermal expansion devices and/or pressure relief valves.
- 6.1.3 All backflow prevention devices shall be installed in an approved location that is not subject to submergence or inundation by surface water, purge water or any other forms that may cause the backflow device from performing. Heated above ground structures designed with blowout panels, exclusively for backflow preventers are preferred, and shall be required at all times unless approved in other locations by the Authority. Pit locations are prohibited for new construction or where a reduced pressure device is required and positive draining at all times for the maximum purge flow of the devices cannot be achieved. All cost for retro fitting are borne by the owner and must be completed by the timeline identified by the Authority. The owner is responsible for providing a design that will adequately support the needs of the project.
- 6.1.4 All existing pits, used to house backflow preventers, shall be reviewed by the Authority and local plumbing official, to determine if sufficient drainage is available to prevent submergence. All pits must be properly retrofitted to a design that will not adversely affect the proper operations of the backflow preventer and assure containment will not be compromised due to flooding. Relocation to an aboveground housing shall be required, based on site conditions and hazardous conditions of the service. All costs for retrofit are to be borne by the owner and must be completed in accordance with the timeline identified by the Authority.
- 6.1.5 All residential, commercial, and industrial hose bibs shall be of a design, which incorporates a built-in tamper proof vacuum breaker feature as manufactured by the hose bib maker. All hose bib fixtures shall be American made. This requirement is applicable to all interior and exterior hose bib applications. Existing properties shall be retrofitted with non-removable hose bib vacuum breaker assemblies specifically designed to adapt to the existing hose bib configuration.
- 6.1.6 At a minimum all commercial or residential lawn sprinkler/irrigation systems shall be provided with an appropriate backflow device, installed at the point where the system connects to the water supply, as required by the plumbing code. Where chemicals are introduced into the system, the potable water supply shall be protected against backflow by a reduced pressure principle backflow preventer. All devices shall be in a location that is always free draining and will not become submerged.
- 6.1.7 The Authority shall not allow any cross-connection to remain. In all instances, an

approved backflow device must be installed to protect the potable water system. The owner shall have the device tested annually to ensure satisfactory operation. Backflow test results shall be provided to the Authority as a condition of continued service.

- 6.1.8 The Authority shall inform the owner in writing of any compliance deficiency. In the event that owner fails to take corrective action to remedy all noted deficiencies within the specified timelines, the Authority will inform the owner in writing that the water service to the owner's premises will be terminated. The Authority may at its discretion allow additional time for the correction of the deficiencies for extenuating circumstances which may prevent the owner from being able to comply within the specified timeline for compliance. A time extension may be granted by the Authority for justifiable causes as determined by the Authority, but in no event to exceed forty five (45) days.

6.2 REQUIREMENTS OF THE OWNER

- 6.2.1 In accordance with the requirements of the Rhode Island State Plumbing Code which is hereby incorporated by reference and made a part of hereof, the owner or the owner's designated agent shall be responsible to maintain the plumbing system in order that no hazard to life, health or property is created and not to allow any change in occupancy or use, which such change will result in any hazard to the public health, safety or welfare. To this end the owner shall be responsible for the elimination of all cross-connections within the property.
- 6.2.2 The owner, after having been informed by a Deficiency Report from the Authority, shall install, maintain, test, or cause to have tested on an annual basis, any and all backflow prevention devices on the owner's premises at his or her expense.
- 6.2.3 The owner shall immediately correct any malfunction of a backflow preventer, which is revealed during the periodic testing. The backflow preventor shall be retested and repaired until a passing test is obtained.
- 6.2.4 The owner shall inform the Authority of any proposed plumbing modifications that may result in a cross-connection or any existing cross-connections of which the owner may be aware.
- 6.2.5 The owner shall not install a bypass around any backflow preventer or strainer unless there is a backflow preventer and strainer of the same type on the bypass or an alternate design has been approved by the Authority. On combined fire and domestic systems the owner may opt to not include the domestic branch in the bypass design at their own risk of not being with domestic supply for the duration of the period the bypass is in use. Any bypass must be approved in advance by the Authority and will be locked out and sealed by the Authority. Owners who cannot

cease operation for testing of the device(s) must supply additional devices necessary to allow testing to take place.

- 6.2.6 The owner shall install the backflow preventer and strainer in a manner approved by the Authority and in compliance with the State of Rhode Island Plumbing Code.
- 6.2.7 The owner shall install only backflow preventers and strainers approved by the Authority.
- 6.2.8 Any owner having a private well or other private water source shall not cross-connect it to any plumbing or infrastructure receiving service from the Authority's public water system. The owner shall be required to install a containment backflow preventer at the service entrance if a private water source is maintained although not cross- connected to the Authority's system.
- 6.2.9 The owner shall be responsible for the payment of all fees associated with annual or semi-annual device testing, retesting in the case that the device fails to operate correctly, and all inspections for non-compliance with Kent County Water Authority's or plumbing code requirements.

SECTION 7

7.1 DEGREE OF HAZARD

- 7.1.1 The Authority reiterates the threat to the public water system arising from cross-connections. All industrial, commercial or multifamily residential with fire service and/or in the judgment of the Authority represent potential threats shall be classified as high hazard and will require the installation of approved reduced pressure principle backflow prevention devices.
- 7.1.2 All single family or multifamily less than 4 units residential applications shall require the installation of a residential dual check valve assembly. Multifamily units greater than 4 units without fire protection shall at a minimum install a testable double check device.

SECTION 8

8.1 EXISTING IN-USE BACKFLOW PREVENTION DEVICES

- 8.1.1 Any existing backflow preventer will be allowed by the Authority to continue in service unless, as determined by the Authority, the degree of hazard is such as to supersede the effectiveness of the present backflow preventer or may result in an

unreasonable risk to the public health. In the case of a residential installation converting to a business establishment, any existing backflow preventer must be upgraded to a reduced pressure principle device, or a reduced pressure principle device must be installed in the event that no backflow device was present in that the degree of hazard would increase.

- 8.1.2 Testing of existing backflow preventer is required prior to final acceptance for use and annually thereafter.

SECTION 9

9.1 PERIODIC TESTING

- 9.1.1 Reduced pressure principle backflow devices, testable double check valves and strainer shall be tested and inspected at least annually. Non-testable residential devices shall be replaced on a 20-year cycle and/or correspond with the occurrence programmed for meter change out.
- 9.1.2 All strainers shall be cleaned annually or if circumstances dictate more frequently to ensure all precautions against backflow preventer fouling.
- 9.1.3 Annual and periodic testing shall be performed by a certified tester only. All annual and periodic testing, if not performed by the Authority, shall be performed by certified testers employed by the owner. The owner shall be responsible for the payment of all costs associated with the testing.
- 9.1.4 All testing conducted by the Authority shall be conducted during the Authority's regular business hours. Upon review of an owner's written request, the Authority may approve conducting the testing during other than normal business hours, subject to special needs or circumstances that would not permit testing during normal business hours. The owner shall be responsible for any and all additional charges associated with after-hours testing. Testing conducted by a private testing company may be conducted at any time convenient to the property owner's needs.
- 9.1.5 Any containment backflow device, which fails during a test, shall be immediately repaired or replaced. The device in question shall be retested upon completion of repairs to ensure correct operation at owner expense. High hazard situations shall not be allowed to continue unprotected operations if the backflow preventer fails the test and cannot be repaired immediately. In other high hazard situations, a compliance date of not more than thirty (30) days after the test date will be established and will be determined by the Authority. In all cases, the owner shall be responsible for maintaining appropriate spare parts, repair tools, and/or a replacement device as necessary.

9.1.5.1 In all cases the property owner is responsible for maintaining spare parts and/or replacing the device as necessary that no extended loss in service will occur.

9.1.6 Backflow prevention devices shall be tested more frequently than specified above. In cases where there is a history of test failures the Authority may require additional testing at the owner's expense.

SECTION 10

10.1 RECORDS AND REPORTS

10.1.1 Records - The Authority will initiate and maintain the following documentation:

10.1.2 Master files on customer cross-connection tests and/or inspections.

10.1.3 Master files on cross-connection application requirements.

10.1.4 Copies of permit applications, permits and backflow device requirements.

SECTION 11

11.1 FEES The Authority will bill the owner for all applicable fees, labor and material costs in conjunction with the following services. All fees will be billed at the rates posted in the current fee schedules. Bills are due and payable within thirty (30) days of rendering. Failure to pay all billed costs by the due date will subject the service to immediate termination.

Testing fees

Retesting fees

Fees for second inspections

Charges for after-hour inspections or tests

SECTION 12

12.1 ENFORCEMENT

Water service shall be terminated to any customer or property owner who fails to complete any corrective action deemed necessary upon due notice or refuses access for the inspection of the service connection by a representative of the public water system. No more than 45 days shall be allowed for correction of a low-level hazard and 10 days for a moderate or high-level hazard unless an extension is granted by the public water supplier. Service shall be terminated immediately if access is refused to any location for the inspection of the service connection or infrastructure not under the sanitary control of the public water system or if an immediate hazard is posed.

12.1.1 Water service shall be terminated immediately upon identification of an incidence of backflow or cross connection contamination. As a condition of service, the customer and/or property owner shall assume all liability and hold harmless the Kent

County Water Authority for any and all claims resultant from a backflow or cross connection incident.

- 12.1.2 Kent County Water Authority will follow the response procedures outlined in its Emergency Response Plan upon notification or identification of backflow or cross connection incident. As a condition of receiving service, the customer and/or property owner shall be responsible for all costs associated with the response and remediation of a contamination event.