

A new City Code Title 19: Public Works, Chapter 196 – Cross Connection Control is hereby created deriving from the City of Yuma Utility Regulations Article III – Backflow Prevention Regulations and shall read as follows:

Chapter 196

Cross-Connection Control

§ 196-01 Definitions.

(A) For the purposes of this chapter, the following definitions shall apply unless the context clearly indicates or requires a different meaning.

Approved. Accepted by the Department as either meeting an applicable specification stated or cited in this Chapter, or suitable for the proposed use.

Auxiliary Water Supply. Any water supply on, or available to, premises other than the potable water supplied by the City of Yuma. These auxiliary waters may include, but shall not be limited to, water from another purveyor's public potable water supply or any natural sources such as a well, spring, river, stream, canal, harbor, or treated effluent, waste waters, or industrial fluids. These waters may be polluted or contaminated or may be objectionable and constitute an unacceptable water source, over which the Department does not have sanitary control.

Backflow. The undesirable reversal of flow ~~in~~ into the public potable water supply system caused by either backpressure or backsiphonage.

Backpressure. Any elevation of pressure in a customer's water supply system, above the pressure of the public potable water supply system, which could cause water or other liquids, mixtures, or substances from a customer's water supply system to flow into the distribution system of the public potable water supply.

Backsiphonage. A reversal of the normal flow of water caused by a reduction of pressure in the public potable water supply system, which could cause water or other liquids, mixtures, or substances from a customer's water supply system to flow into the distribution system of the public potable water supply.

Backflow Preventer. An approved assembly or means designed to prevent the reversal of the normal flow of water caused by either backpressure or backsiphonage.

Certified Tester. An individual certified and approved by an agency recognized by the Arizona Department of Environmental Quality (ADEQ) and the Department to conduct testing on backflow prevention assemblies.

City. The City of Yuma, Arizona.

Contamination. An impairment in the quality of potable water, either by sewage, industrial fluids, waste liquids, compounds, or other materials or fluids, to a degree which creates an actual hazard to the public health by poisoning or through the spread of disease.

Cross-connection. Any actual or potential connection or other arrangement of piping or fixtures, between a piping system containing potable water and a piping system containing non-potable water, waste fluids, industrial fluids, or other fluids of questionable safety for human consumption, through which, or because of which, backflow may occur into the public potable water supply system. Cross-connections include any temporary connections, such as swing connections, removable sections, four-way plug valves, spools, dummy sections of pipe, swivel or changeover devices or sliding multi-port tubes, hose connections, or any other temporary or permanent devices, through which, or because of which, backflow can or may occur.

Customer Water Supply System. The water distribution facilities within a customer's premises commencing at the discharge point of the service connection.

Department. The City of Yuma, Utilities Department.

Distribution System. The network of conduits used to deliver potable water from the source facilities to the customer's water supply system.

Hazard Potential. Evaluation of the potential risks to public health and the adverse effects of a hazard upon the public potable water supply system by a customer's water supply system. Hazards are categorized as either high or low. When determining the hazard potential, water system hydraulics are always considered. Such considerations include whether indirect or direct cross-connections are present, as well as potential cross-connections.

High Hazard. An impairment of a potable water supply by the introduction or admission of any foreign substance(s) that, if exposed or introduced into the potable water supply, could constitute a serious health hazard to include illness, the spread of disease, death, or have a high probability of causing such effects.

Industrial Fluid System. Any system containing a fluid or solution which is chemically, biologically, or otherwise contaminated or polluted in a form or concentration, such that would constitute a health, system, pollution, or plumbing hazard if introduced into the public potable water supply system. This may include, but shall not be limited to: polluted or contaminated waters; all types of process waters, waste waters and used waters originating from the public potable water supply system which may have deteriorated in sanitary quality; chemicals in fluid form; plating acids and alkalis; circulating cooling waters connected to an open cooling tower and/or cooling towers that are chemically or biologically treated or stabilized with toxic substances; contaminated natural waters such as from wells, springs, streams, rivers, bays, harbors, seas, irrigation canals or systems; or oils, gases, glycerin, paraffins, caustic or acidic solutions, or other

liquid and gaseous fluids used in industrial or other purposes; or for fire-fighting purposes.

Low Hazard. An impairment of a potable water supply by the introduction or admission of any foreign substance or substances that tends to degrade water quality, so as to constitute a nuisance or be otherwise objectionable (i.e. affecting the taste, color, or odor of the water) without presenting a health hazard.

Non-potable Water. Water which is not safe for human consumption, or which is of questionable quality for human consumption.

Pollution. The presence of any foreign substance (organic, inorganic, or biological) in water which tends to degrade its quality or impair its usefulness to a degree which does not create an actual hazard to the public health, but which does adversely and unreasonably affect such water for domestic use.

Potable Water. Any water which is safe for human consumption pursuant to the standards set by the Arizona Department of Environmental Quality.

Public Potable Water Supply System. The source facilities and the distribution system under control of the City of Yuma to the point where a customer's water supply system commences. A customer's water supply system commences at the discharge point of the service connection.

Service Connection. The terminal end of a service line from the public potable water supply system at its point of delivery to the customer's water supply system where the Department loses jurisdiction and sanitary control over the water. If a meter is installed between the customer's water supply system and the public potable water supply system, the service connection shall be the discharge-end of the meter. For a non-metered supply line, such as a fire line, the service connection shall be the user's property line. Service connections shall also include a water connection from a fire hydrant and any other temporary or emergency water connections to the public potable water supply system.

Source Facilities. All components and facilities utilized in the production, treatment, storage, and delivery of potable water to the distribution system of the public potable water supply system.

Used Water. Any water supplied by the Department, from the public potable water supply system to a customer's water supply system, after it has passed through the service connection and is no longer under the sanitary control of the Department.

§ 196-02 Purpose and application.

(A) The purpose of this chapter is:

- (1) To protect the public potable water supply of the City of Yuma from the possibility of contamination or pollution by preventing the backflow of contaminants and pollutants into the public potable water supply system;
- (2) To promote the elimination or control of existing cross-connections, actual or potential, within a customer's internal potable water supply system, plumbing fixtures, or industrial piping systems;
- (3) To provide for a continuing program of cross-connection control which will prevent the contamination or pollution of the public potable water supply system.
- (4) To implement the requirements of AAC R18-4-215 requiring public water systems to protect against backflow, and to this end, this chapter shall be construed, and applied, consistent with the requirements of AAC R18-4-215.

§ 196-03 Backflow Prevention Required.

- (A) The minimum level of backflow protection which shall be provided to protect the public potable water supply system shall be that which is recommended by the Manual of Cross-Connection Control, ~~8th Edition, June 1988~~ Tenth Edition, USC-FCCCHR, October 2009 (and no future editions), which is incorporated herein by reference and on file in the office of the City Clerk.
- (B) An approved backflow prevention method shall be utilized or installed at every service connection to a customer's water supply system when the Department determines the potable water supplied by the public potable water supply system may be subject to contamination, pollution, or other deterioration in sanitary quality, by conditions within the customer's water supply system.
- (C) The backflow prevention method to be utilized or installed shall be determined by the Department. The method required by the Department shall be sufficient to protect against the potential degree of hazard, as determined by the Department, to the public potable water supply system from the customer's water supply system.

§ 196-04 Hazard Potential.

- (A) The degree of hazard potential to the public potable water supply system from a customer's water supply system shall be determined using the following hazard factors:
- (1) *Health.* Any condition, device, or practice which, in the judgement of the Department, may create a danger to the health and well-being of the potable water consumers.

- (2) *Plumbing.* A plumbing type of cross-connection that is not properly protected by an approved backflow prevention method.
- (3) *Pollution.* An actual or potential threat to the physical facilities of the public potable water supply system or to the potable water supply which, although not dangerous to health, would constitute a nuisance or be aesthetically objectionable, or could cause damage to the system or its appurtenances.
- (4) *System.* An actual or potential threat which may cause severe damage to the physical facilities of the public potable water supply system, or which may cause a protracted effect on the quality of the potable water in the system.

§ 196-05 Backflow Prevention Methods; Approved List.

- (A) A backflow prevention method shall be any assembly or other means designed to prevent backflow. The following are the recognized backflow prevention methods which the Department may require under Section 3.3 or Section 3.4 of these regulations.
 - (1) *Air gap:* The unobstructed vertical distance through the free atmosphere between the lowest opening of any pipe or faucet supplying potable water to a tank, plumbing fixture, or other device and the flood level rim of said tank, plumbing fixture, or other device. An approved air gap shall be at least double the diameter of the supply pipe or faucet and in no case, **be** less than one (1) inch.
 - (2) *Reduced pressure principle assembly (hereinafter “RP”):* An assembly containing two 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 assembly shall include properly located test cocks and tightly closing shut-off valves at each end of the assembly.
 - (3) *Double check valve assembly (hereinafter “DC”):* An assembly composed of two independently acting approved check valves, including tightly closing shut-off valves located at each end of the assembly and properly located test cocks.
 - (4) *Pressure vacuum breaker assembly (hereinafter “PVB”):* 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 shall be equipped with properly located test cocks and tightly closing shut-off valves located at each end of the assembly.
 - (5) *Spill resistant vacuum breaker assembly (hereinafter “SVB”):* An assembly containing an independently operating, internally loaded check valve and an independently operating, loaded air-inlet valve located on the intake side of the check valve. The assembly shall be equipped with properly located test cocks and tightly closing shut-off valves located at each end of the assembly.

- (B) A backflow prevention method may be approved by the Department if it has received the approval of the Foundation for Cross-Connection Control and Hydraulic Research of the University of Southern California.
- (C) The Department shall maintain a list of approved backflow prevention assemblies, by type and manufacturer. The list shall be furnished to any customer required to install a backflow prevention assembly.

§ 196-06 Backflow Prevention Method Required for Specified Activities.

- (A) When any of the following activities are conducted on premises served by the public potable water supply system, a potential hazard to the public potable water supply shall be presumed and a backflow prevention method, of the type specified for that activity herein, must be utilized or installed at the service connection for that premise:

- (1) Aircraft and missile plant: RP
- (2) Animal clinics and animal grooming shops: RP
- (3) Any premises where a cross-connection is maintained: RP
- (4) Automotive repair with a steam cleaner, acid cleaning equipment, or solvent facilities: RP
- (5) Auxiliary water systems: RP
- (6) Bottling plants, beverage or chemical: RP
- (7) Breweries: RP
- (8) Buildings with house pumps and/or potable water storage tanks: DC
- (9) Buildings with landscape fountains, ponds, or baptismal tanks: RP or Air Gap
- (10) Buildings with sewage ejectors: RP or Air Gap
- (11) Buildings with commercial dishwashers, food processing and/or preparation equipment, carbonation equipment, or other food service processes: RP
- (12) Canneries, packing houses, and reduction plants: RP
- (13) Car-wash facilities: RP
- (14) Cooling towers, boilers, chillers, and other heating and cooling systems utilizing potable water:
RP
- (15) Chemical plants: RP
- (16) Chemically treated potable or non-potable water systems: RP
- (17) Civil works (government owned or operated facilities not open for inspection by the Department): RP
- (18) Commercial laundries: RP
- (19) Dairies and cold storage plants: RP
- (20) Dye works: RP
- (21) Film processing laboratories, facilities, or equipment: RP
- (22) Fire systems – as classified by the AWWA Manual 14:
 - (a) Class 1, Class 2: DC
 - (b) Class 3, all systems: DC
 - (c) Classes 4, 5, and 6, all systems: RP

- (23) Fire systems – where backflow protection is required on the industrial/domestic service connection that is located on the same premises, both service connections will have adequate backflow protection for the highest degree of hazard affecting either system.
- (24) Food processing plants: RP
- (25) High schools and colleges: RP
- (26) Holding tank disposal stations: RP
- (27) Hospitals and mortuaries (major complexes): RP
- (28) Medical and dental buildings, sanitariums, rest and convalescent homes engaged in the diagnosis, care, or treatment of human illness: **RP**
- (29) Irrigation systems (not to include single family residences used solely for residential purposes unless otherwise identified as having a cross-connection or backflow ~~problem~~ **issue**): **PVB or SVB**
 - (a) Premises where non-potable water is used for irrigation: RP
 - (b) Premises using potable water with non-potable water piping: RP
 - (c) Premises having a system served by more than one (1) service connection (looped system): RP
 - (d) Premises where chemigation is practiced: RP
- (30) Laboratories using toxic materials: RP
- (31) Manufacturing, processing, and fabricating plants: RP
- (32) Mobile home parks (served by master meter): **RP**
- (33) Motion picture studios: RP
- (34) Multiple services – interconnected: **RP**
- (35) Multi-storied buildings (**low hazard**): DC
- (36) Multi-storied buildings (**high hazard**): **RP**
- (37) Multi-family – Three (3) dwelling units or more per service connection (**low hazard**): DC
- (38) Multi-family – Three (3) dwelling units or more per service connection (**high hazard**): RP
- (39) Office buildings (**low hazard**): DC
- (40) Office buildings (**high hazard**): **RP**
- (41) Oil and gas production facilities: RP
- (42) Paper and paper production facilities: RP
- (43) Plating plants: RP
- (44) Portable insecticide and herbicide spray tanks: RP or Air Gap
- (45) Power plants: RP
- (46) Radioactive materials processing facilities: RP
- (47) Restricted, classified, or other closed facilities: RP
- (48) Rubber plants: RP
- (49) Sand and gravel plants: RP
- (50) Sewage and storm drainage facilities: RP
- (51) Shopping centers **and strip malls; retail and industrial shell buildings** (served by master meter): RP
- (52) Public swimming pools with self-levelers or automatic fillers: **PVB or SVB**

- (53) Street sweepers, steel wheeled rollers: RP or Air Gap
(54) Water trucks, water tanks, or hydraulic sewer cleaning equipment: RP or Air Gap
(55) Hydrant meters connected to system to be used for irrigation, or any use not included in
No.

54: RP

- (56) Buildings used for commercial mini-warehouses or industrial uses where one (1) service connection supplies more than one (1) tenant or occupant of the buildings: RP
- (B) When two or more of the activities listed above are conducted on the same premises and served by the same service connection, the most restrictive backflow prevention method required for any of the activities conducted on the premises shall be required to be utilized or installed at the service connection. The order of most restrictive to least restrictive backflow prevention method shall be as follows:
- (1) Air Gap (most restrictive)
 - (2) Reduced Pressure Principle Assembly (RP)
 - (3) Double Check Valve Assembly (DC)
 - (4) Pressure Vacuum Breaker Assembly (PVB) (least restrictive)
 - (5) Spill Resistant Vacuum Breaker Assembly (SVB) (variation of a PVB)
- (C) If the Department determines, after performing a cross-connection control survey of the customer's water supply system, that a backflow prevention method less restrictive than that required in § 196-03 of these regulations will provide adequate protection of the public potable water supply system, the Department may, in at its sole discretion, modify the requirements of these regulations § 196-06 for that customer.

§ 196-07 Backflow Assembly Installation Requirements.

- (A) Backflow prevention assemblies shall be installed and maintained by the customer, at the customer's expense, and in compliance with the construction standards and specifications adopted by the City of Yuma, at the each service connection. Assemblies shall also be installed according to the manufacturer's specifications. The customer is responsible for notifying the Department of any installation, repair, relocation, or replacement.
- (B) Assemblies shall be sized equal to or greater than the have a diameter at least equal to the diameter of the service connection or service line piping at the point of installation.
- (C) Assemblies shall be installed as close as practicable to the service connection.
- (D) Assemblies shall be located in an easily accessible location, approved by the Department. A reduced pressure principle assembly and pressure vacuum breaker assembly shall be installed above ground. A double check valve assembly may be installed, at the customer's option, below ground in a vault which meets standard specifications established by the City of Yuma. No assembly shall be installed below ground in a meter box, pit, or vault.

- (E) When a customer desires a continuous water supply, also known as a critical service, two (2) or more backflow prevention assemblies, **of the same type, size, and manufacturer**, shall be installed parallel to one another at the service connection. When backflow prevention assemblies are installed parallel to one another, the sum of the ~~diameters~~ **cross-sectional areas** of the assemblies shall be at least equal to the ~~diameter~~ **cross-sectional areas** of the service connection or **service line piping at the point of installation**. This allows for a continuous water supply while one of the assemblies is shut off for testing. At no other time shall an assembly be out of service.
- (F) **§ 196-07 (C)** of these regulations shall not apply to fire sprinkler systems. Fire system assemblies are addressed in **§ 196-08**.

§ 196-08 Installation of Backflow Prevention Assemblies for Fire Sprinkler Systems.

- (A) All control valves on the backflow device shall be locked in the open position or be tamper switch protected in accordance with the National Fire Protection Association.
- (B) When a backflow prevention assembly is required for a water service connection supplying water only to a fire sprinkler system, the assembly shall be installed ~~at the user connection~~ **on the service line** ~~for the fire sprinkler system~~ in compliance with the standards and specifications adopted by the City of Yuma.
- (C) If the authority enforcing the ~~Uniform Fire Code~~ **International Fire Code** determines that a fire system shall have a continuous water supply which may not be interrupted during testing of the backflow prevention assembly, the customer shall install, at their expense, two (2) backflow prevention assemblies parallel to one another at the service connection. The ~~diameter~~ **cross-sectional area** of each assembly shall be at least equal to the ~~diameter~~ **cross-sectional area** of the service connection.
- (D) When a backflow prevention assembly is required for a building which already contains a fire sprinkler system, the sprinkler system shall be tested and certified by a licensed registrant in the State of Arizona that it will perform within the specification of the National Fire Protection Association and City of Yuma Fire Codes, after installation of the required assembly.

§ 196-09 Inspections, Testing, Maintenance, and Records.

- (A) A customer's water supply system ~~should~~ **shall** be available at all times during business hours for inspection by authorized personnel of the Department. The inspection shall be conducted to determine whether any cross-connections or other hazard potentials exist and to determine compliance with ~~these regulations~~ **this chapter**.
- (B) **The Department shall inspect all new sites, assembly installations, assembly relocations, and assemblies that have been repaired for compliance.**

- (C) The customer shall test and service backflow prevention assemblies at least once per year. If the testing reveals the assembly to be defective or in an unsatisfactory operating condition, the customer shall perform necessary repairs, including replacement or overhaul of the assembly, if necessary, which will return the assembly to a satisfactory operating condition.
- (D) If the Department or customer learns or discovers, during the interim period between tests, that an assembly is defective or in an unsatisfactory operating condition, the customer shall perform any necessary repairs, including replacement or overhaul of the assembly, if necessary, which will return the assembly to satisfactory operating condition.
- (E) The annual testing shall be performed by an individual certified and approved to conduct such testing by an agency recognized by the Department. A list of certified, approved, and recognized individuals will be maintained by the Department and will be available upon request to all persons required to install or maintain a backflow prevention assembly. A tester may be suspended or removed from the list for improper testing, maintenance, reporting, or other improper practices, as determined by the Department.
- (F) The customer shall maintain records, on forms approved by the Department, of the results of all testing, servicing, repairs, overhauls, or replacements of the backflow prevention assembly. A copy of the records shall be submitted to the Department within fourteen (14) days after completion of the activity for which the record is made.

§ 196-10 Retroactive Application; System Retrofit.

- (A) The provisions of these regulations shall apply to all new water customers and all water customers existing prior to the enactment date of these regulations.
- (B) Backflow prevention assemblies installed prior to enactment of these regulations, and which do not comply with the requirements set forth herein, shall be replaced with assemblies which comply with the standards set forth herein.
- (C) All water customers existing prior to the enactment of these regulations shall comply with the standards set forth herein within a period of time as determined by the Department. The maximum time allowed for compliance shall be ~~July 1, 1994~~ **July 1, 2027**.
- (D) A change of ownership, name change, or type of use change shall require a new survey of use. If the survey determines that a backflow prevention assembly is required, installation needs to be completed before granting the change **of use**.
- (E) Fire sprinkler system which will require retrofit prior to ~~July 1, 1994~~ **July 1, 2027**:
 - (1) A fire sprinkler system designed by a pipe schedule which is modified, expanded, or augmented under issuance of a building permit.

- (2) A fire sprinkler system designed by hydraulic calculation which is modified in an area equal to the size of the design area or affecting 10 sprinkler heads.

§ 196-11 Plan Review.

- (A) All backflow prevention assemblies, which will be installed, shall be shown and specified on all required building and engineering plans. City approval of the intended assembly installation is required prior to issuance of any building or engineering permit.
- (B) Plumbing permits for the installation of all backflow prevention assemblies, required by the City, shall be obtained from the City prior to installation.
- (C) Replacement of existing backflow prevention assemblies shall require a plumbing permit.
- (D) Backflow prevention assemblies ~~must~~ shall be installed to meet the ~~construction~~ standard specifications of the City of Yuma, tested by a certified tester, and shown to be operating correctly. A copy of all testing records shall be submitted to the Department within fourteen (14) days ~~of installation~~.

§ 196-12 Fees.

- (A) A monthly service fee may be established by City Council resolution to cover the costs of implementing and enforcing these regulations and, if established, shall be charged to every customer who is required to install a backflow prevention assembly. The fee shall be included in the customer's monthly water bill.
- (B) A fee may be established by the City for any permits issued or ~~testing records submitted to the Department pursuant to the terms of these regulations~~ **testing records submitted to the Department pursuant to the terms of this chapter.**

§ 196-13 Enforcement.

- (A) It shall be unlawful for any person, ~~firm or corporation~~ **company, or organization** to bypass or remove a backflow prevention method without the approval of the Department. Any person, ~~firm or corporation~~ **company, or organization** violating the provisions of this paragraph shall be guilty of a Class 1 misdemeanor and, upon conviction thereof, shall be punished by a fine not to exceed one thousand dollars (\$1,000.00) or by imprisonment for not more than ten (10) days, or by both fine and imprisonment. Each separate day or part thereof, during which any violation of this paragraph occurs or continues, shall be deemed to constitute a separate offense and, upon conviction thereof, shall be punishable as herein provided.
- (B) If the Department discovers that a customer has not installed a required backflow prevention method or that a backflow prevention method has been improperly tested, maintained, bypassed or removed, or that an unprotected cross-connection exists in the customer's water supply system, the water service to that service connection shall

be disconnected if the situation is not remedied within the time specified in the notice sent to the customer as required by this section. The service shall not be restored until the condition is remedied.

(C) Water service to a fire sprinkler shall not be subject to disconnection under this section. If a situation, which could otherwise result in discontinuance of water service in subsection B. above, is not remedied within the time provided in the notice sent to the customer, the customer shall be guilty of a Class 1 misdemeanor and, upon conviction thereof, shall be punished by a fine not to exceed one thousand dollars (\$1,000.00) or by imprisonment for not more than ten (10) days, or by both fine and imprisonment. Each separate day or part thereof, during which any violation of this paragraph occurs or continues, shall be deemed to constitute a separate offence and, upon conviction thereof, shall be punishable as herein provided.

(D) Prior to disconnecting any water services because of a condition set forth in subsection A § 196-13 (B) above, the Department shall ~~send a notice to the customer describing the condition and notifying the customer the condition must be remedied within forty-five (45) days after mailing of the notice by the Department. If such condition is not remedied within said forty-five (45) day period, the Department shall send a second notice, by certified mail, to the customer notifying the customer that water service will be disconnected in fifteen (15) days if the condition is not remedied within such time period.~~ first notify the customer of the non-compliant condition with a courtesy letter describing the condition and the steps needed to address it. The customer shall have forty-five (45) days to remedy the condition to remain in compliance. If the non-compliant condition has not been remedied after forty-five (45) days, the customer will be sent a notice of non-compliance stating that they have fifteen (15) days to remedy the condition. If the condition is still not remedied within the fifteen (15) days, the customer will be sent a notice of violation, through certified mail, or delivered in-person using an acknowledgement receipt, stating that water services will be disconnected within seven (7) days if the condition is not remedied within such time period.

(E) The Department may disconnect, without notice, water service to any customer when the Department discovers that the customer's water supply system is contaminating the public potable water supply.