ARTICLE V WATER SYSTEM

Sec. 102-48 - Water System design, maintenance and hazard reduction procedures.

(a) *Goals.*

(1) The City of Smyrna operates and maintains approximately 240 miles of water distribution lines. The City of Smyrna operates and maintains a distribution system only and buys their water from Cobb County Water System and the Cobb Marietta Water Authority and distributes the water to the Smyrna customer. Currently water treatment and pressure is provided by the CCMWA.

(2) The purpose of this document is to establish construction, maintenance and operations standards that reflect constant growth, changing hydrologic conditions and system age. System goals are to:

- Properly maintain and operate the water distribution system at all times.
- Provide specific construction requirements for system renewal and extension.
- Provide adequate capacity and pressure for all parts of the distribution system.
- Properly administer and enforce backflow prevention throughout the City of Smyrna distribution system.

(b) *Organization.*

(1) The City of Smyrna Water System is comprised of two operating groups: water administration and water distribution. The water administration activities are responsible for the business services of the system, system meter reading and meter system change out.

(2) Water distribution is responsible for system maintenance and engineering. Responsibilities include system design, preventive maintenance, system repair and system replacement. System location and identification is accomplished by GPS methods and flow testing and hydraulic modeling to establish system flows and capacity.

(c) *Operations.*

System operations are conducted by both water distribution and water administration. All calls originated from customers, the general public and other agencies are logged into the City of Smyrna utilities management systems. Once logged the appropriate personnel or division is notified to identify, assess and correct the problem. The City of Smyrna maintains emergency on call staff and on call contracting for all after normal working hour's situations. The City of Smyrna Emergency 911 dispatch center maintains dispatch for after hours on call water distribution staff. Both 911 dispatch and water distribution maintain an emergency contact and call down list for emergency situations.

(d) *Maintenance.*

System maintenance is a collaborative responsibility of both water administration and water distribution.

(1) Water administration performs the following functions:

- All business administration of the city water distribution system.
- Monthly reading of all system meters.
- System meter replacement and calibration annually.
- System odor, taste and color complaint response and testing.
- Ensure monthly operation/monitoring reports are conducted as required by permit.

(2) Water distribution performs the following functions:

- Data, work order and records management for water distribution system.
- New meter installation three-quarter-inch through 2 ½ inches.
- Administer contract for new meter installation three inches through ten inches.
- System repairs to distribution services, mains and hydrants.
- Operation of system valves to ensure proper working condition.
- System mapping annually and updated to include location, size, material type, valve locations, fire hydrants, dead ends, installation date, system flow and pressure.
- Cross connection control program update and implementation.
- System flushing and flow testing.
- System replacement due to age, water quality and system capacity.
- Periodic leak detection to reduce system leakage.

(e) *Distribution system design.*

(1) The city distribution systems shall be designed to the following design standards. Installation of distribution water lines and appurtenances, other than by the city, shall first be submitted by way of construction drawing. Construction drawings shall meet the city design standards in order for approval to be given by the city. Design flow for all new installations shall be a minimum of 1,000 gpm at 35 psi residual. Only after plan approval shall the installations of distribution water lines and appurtenances begin.

(2) Piping shall not be laid on exposed rock or aggregate and all backfill is required to be clean and free of rocks. Bed fill shall be compacted to a minimum of 95 percent standard Proctor. All changes in direction including tees, bends, caps, plugs, hydrants and other fittings are to be thrust blocked to prevent leakage and or separation of joints.

(f) *Flow test.*

(1) Before acceptance by the city, the water and or utility contractor shall have hydrant flow tests performed on all hydrants installed. This test will be conducted in the presence of the city site development inspector. Tests shall be conducted by an approved testing company and shall include flow, GPM, static pressure, pitot reading and hydrant type, year and location. Results shall be submitted to the site inspector in writing when complete.

(g) *Valves.*

(1) All required valves throughout the distribution system are required to be M & H mechanical joint gate valves with wrench nuts. Valves shall be right hand operation only. Valve spacing shall be a maximum of 1,000 ft with valves installed at all intersections where change in direction occurs. Valve boxes are required for each valve including concrete valve pads installed to grade. Valves boxes that occur in roadways will be flush with top of pavement. Valve boxes shall not occur within a curb line.

(h) *Dead ends.*

The installation of water mains shall not cause a dead end. A loop shall be provided at such dead ends with 2 ½-inch PVC 200 psi water line #1120, ASTM D 2241. The line shall be valved with a 2½-inch Ford Gate Valve with wrench nut. The PVC water line shall be wrapped with a continuous No. 6 insulated copper wire and terminate in each valve box to enable access for electronic locating. Fire hydrants shall be located at the dead ends and cul-de-sac's for distribution system flushing.

(i) *Service lines.*

(1) All service lines shall be individual, one service per single-family structure, and a minimum of ¾-inch type K continuous copper tubing. The water main shall be dry or wet tapped. All taps will be at 90 degrees from top center using a tapping saddle and tapped through a corporation stop. Approved manufactures for tapping saddles are JCM, Smith-Blair or Ford. Approved manufactures for curb and corporation stops are AY McDonald or Ford. Top taps shall not be allowed.

(2) The service piping shall terminate with an approved curb stop, flare or compression and be in an approved meter box. Carson Industries are approved meter box manufactures. Meter sizes three-quarter inch through one inch require a model 1419 box w/General Foundries 51712wm lid. Meter sizes 1 ½ inch through 2 ½ inches require model 1730-18 meter box w/lid. Meters three inches and larger shall be installed in meter vaults manufactured by Old Castle and have recessed flush lockable aluminum lids. Meter boxes shall be placed at the R/W line in front of the property served, perpendicular to the street and at finished grade. No meter box shall be located in driveways or roadways. The city shall set all meters after the purchaser makes a request. Meters will only be set in a meter box with an accessible and exposed curb stop. All water use shall be metered including fire lines and sub-metering read by a third party where at all possible. City meters are ARM with leak detection

capability. All meter sets shall include two meter couplings. No customer service shall be attached to a meter without the use of a meter coupling.

(3) The developer, purchaser and or contractor shall be responsible for the final placement of all meter boxes when finish landscape does not exist during placement of meter. Meter shall be centered in meter box and bottom of meter shall be at bottom of meter box elevation.

(j) *Testing for soundness and tightness.*

(1) After water main piping is installed all sections shall be filled, air shall be released from the system through curb stops and hydrants, sit idle for at least 24 hours before the test starts. The pressure shall be brought up to 150 psi by using hydrostatic equipment and maintained for a period of four hours. Any loss of pressure will indicate leakage. When leakage occurs repairs shall be made and the test repeated until 150 psi is maintained for four hours.

(k) *Disinfection.*

(1) *Main repairs.*

If repairs are made under continuous pressure no disinfection is required.

When mains are required to be opened all trenches shall be dewatered. All pipe, fittings and materials used in the repair shall be flushed and swabbed with a five percent hypochlorite solution. System flushing shall occur after repairs are made. The main shall be disinfected if practical using a 500 mg/l dose of sodium hypochlorite with 30 minute contact time. Flushing after disinfection is required until a chlorine residual of less than one mg/l is obtained. Samples must be collected and tested for satisfactory microbiological quality prior to placing line into service.

(2) *New mains.*

Every effort shall be made to prevent the contamination of newly installed water mains. Materials such as dirt, construction debris, animals, rodents, dirty water, etc., shall be kept outside the water main using every effort possible while the main installation is in progress.

All mains shall be flushed completely at a minimum velocity of 2.3 ft/sec. for at least 30 minutes, before the disinfection process is performed. Disinfection of new water mains shall be accomplished by the continuous method only. Sodium hypochlorite at 15 percent available chlorine or calcium hypochlorite at 65 percent available chlorine is approved liquid chlorination methods.

The chlorine dose after injection shall be at 50 mg/l at all sampling points of the water main. Once obtained a minimum contact time of 24 hours is required. After contact time minimum chlorine residual of 25 mg/l shall be obtained at all sampling points. Failure to obtain a minimum of 25 mg/l shall result in a repeat of the chlorination process. The water and or utility contractor shall be responsible for having all chlorination testing performed and shall use a certified laboratory to validate test results. All sampling is required to be

conducted in the presence of the city site development inspector or his designee. The city shall be copied on test report.

After disinfection of a new water main the system shall be flushed to produce a chlorine residual of less than one mg/l. A bacteriological test is now required. The water or utility contractor is responsible for this test, which shall be obtained and tested by the Cobb Marietta Water Authority in the presence of the city site development inspector or his designee. Failure to obtain a negative bacteriological test shall result in a repeat of the chlorination process. The city shall be copied on test report.

All water with a chlorine residual greater than one mg/l shall be disposed of in the following manor:

a. Sanitary sewer system, after notification to the city and waste treatment plant operator.

b. Storm sewer, after de-chlorination or chlorine residual is below one mg/l

c. Land disposal where adequate dilution and travel time will result in a chlorine residual of less than one mg/l.

(l) *Main lines.*

(1) Water distribution system main lines shall be ductile iron pipe class 51. Minimum pipe size shall be eight inches. Fire hydrants shall be installed according to current NFPA standards but shall be spaced no more than 500 feet apart. The city fire marshal may modify hydrant spacing. All hydrants shall be M & H or U.S. three-way, nozzle sizes two, 2 ½-inch NTS and one 4 ½-inch NTS. Hydrant barrel size shall be a minimum of 5.25. New hydrants are required to be painted silver by the manufacturer. Each hydrant shall have an M & H hydrant grate valve installed with complete valve box and concrete valve pad to finish grade. No fire hydrant shall be buried below the hydrants bury line. Anchor couplings and thrust blocking is required on all fire hydrants and hydrant leads.

(m) *Location.*

(1) Water mains shall only be placed in the city right-of-way that is designated as the water and gas zone. Water mains shall be placed between three feet back of curb and nine feet back of curb. Gas mains sharing the water and gas zone shall be placed between nine feet back of curb and 11 feet back of curb. No other utility shall share the water and gas zone other than to cross perpendicularly. Any utility crossing a water main perpendicularly shall be under the water main and shall not be in contact with it.

(2) All water mains shall be buried between a top of pipe depth elevation of four and five feet unless otherwise approved by the city water department.

(n) *Taps.*

All main on main taps shall be approved by the city prior to installation. Wet taps require an M & H MJ tapping sleeve and valve. All cut in taps shall be installed with a mechanical joint tee, valve and two 12-inch MJ sleeves.

(o) *Cross connection control.*

In order to protect the public potable water supply systems against actual or potential cross connections, backflow and back-siphonage all commercial water customers are required to have their backflow and back-siphonage devices tested annually. The city shall notify by mail all commercial water accounts during each November billing period of the requirement for testing. Test reports for each commercial water account are required to be submitted no later than the end of February each year.

Commercial water accounts customers who do not have cross connection control devices shall be required to install the proper device based upon the potential hazard that may exist. All cross connection devices, backflow and back-siphonage devices shall be installed in accordance with the city cross connection control program. Devices required by the city or the cross connection control program that are not installed will result in discontinuance of water service.

Records of all devices, tests and locations shall be kept and recorded annually. All backflow device testers shall be certified as require by the EPD.

(p) *Distribution system flushing.*

(1) All flushing activities shall require a preplan. The plan will include locations, day hours between 7:00 a.m. and 4:00 p.m. or evening hours 9:00 p.m. and 5:00 a.m. and a MUTCD plan.

(2) Preplan main section to be flushed, valves to be used in section and order pipeline will be flushed.

(3) Pipeline flushing shall use the unidirectional method, therefore starting at the supply and working outward.

(4) Minimum flushing velocity is two and one-half feet per second unless circumstances will not permit do not flush a large main supplied by a smaller main.

(5) Prior to flushing, notification is necessary to all customers that will be affected. Pay specific attention to where dialysis equipment may be located, hospitals, restaurants and laundromats.

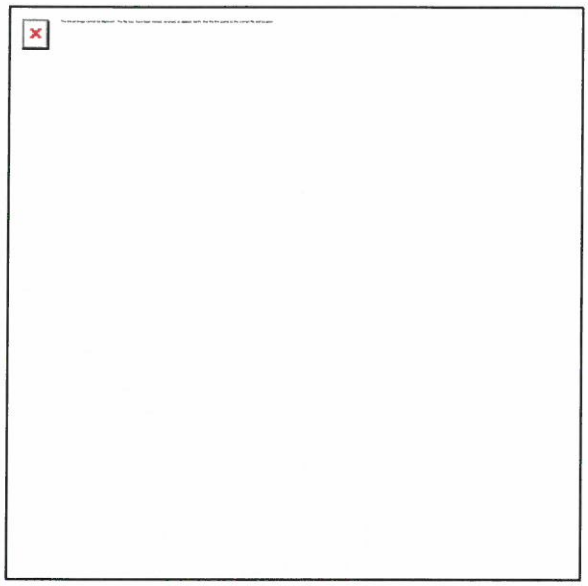
(6) Sections to be flushed shall be isolated from the rest of the system. All valves shall be closed slowly to prevent water hammer.

(7) Open fire hydrants and or blow off valves slowly.

(8) Flushing shall be directed away from traffic, pedestrians and private property.

(9) Hydrant and or blow offs shall be opened fully to stir up sediments inside the water main (usually five to ten minutes) usual line flushing is for at least 30 minutes.

(10) Ensure system pressure in the area does not drop below 20 psi.



1000 LF 8" DIP WITH AN INITIAL 50 MG/L DOSE OF CHLORINE

$$\frac{(.785)(8\text{ in.})2\ \ (1000\text{ ft.})\ (7.48\text{ gal/cu. ft.})}{144\text{ sq. in. / sq. ft.}}$$

= 2610 gal. of water

(.00261 m/gal.) (50 mg/l) (8.43 lbs/gal.)

= 1.1 lbs Chlorine

$$\frac{(1.1\text{ lbs.})\ (100\%)}{(8.43\text{ lbs/gal})\ (5\%)}$$

= 2.6 gals or approx. 3 gals. 5%
Sodium Hypochlorite Solution

Example continued

$$\frac{(1.1\text{ lbs})\ \ (100\%)}{(8.43\text{ lbs./gal})\ (15\ \%)}$$

= .89 gals or approx. 1 gal 15%
Hypochlorite Solution

$$\frac{(1.1\text{ lbs})\ (100\ \%)}{(8.34\text{ lbs/gal})\ (65\ \%)}$$

= .21 gals or approx. .5 gals of 65 %
Calcium Hypochlorite Solution

(11) Records shall be kept for each flushing operation to including appearance and odor of the water flushed.

(12) Collect two water samples for comparison, First sample at about two to three minutes after hydrant was opened and one just before hydrant is closed. These samples check for basic water quality such as iron, chlorine, residual, and turbidity.

(13) After flushing of fire hydrant or blow off valve, close hydrant or blow off valve slowly.

(14) In areas where water may not clear completely, collect water bottle samples to judge when to shut down.

(15) Closing and opening of valves should be marked and erased on a map to ensure all valves are open when complete.

(16) After flushing one section of the pipe, move to the next section to be flushed and repeat the same procedures.

(Ord. of 2-6-84 (83-8), § 1; Ord. of 2-3-92 (92-01); Ord. No. 2015-17 , 8-17-15; Ord. No. 2017-01 , 1-17-17)

Section – 102-49. Administrative orders and penalty.

(a) *Compliance or administrative orders*. When it is found that a user has violated or continues to violate this article, or a permit or an order issued thereunder, the water system may issue an order to the user responsible for the discharge directing that, following a specific time period, water and wastewater service shall be discontinued unless adequate treatment facilities, devices or other related appurtenances have been installed and are properly operated. Orders may also contain such other requirements as might be reasonably necessary and appropriate to address the noncompliance, including the installation of pretreatment technology, additional self-monitoring and management practices.

(b) *Cease and desist orders*. When it is found that a user has violated or continues to violate this article or a permit or order issued thereunder, the department director may issue an order to cease and desist all such violations and direct those persons in noncompliance to:

(1) Comply forthwith; and

(2) Take such appropriate remedial or preventive actions as may be needed to properly address a continuing or threatened violation, including halting operations and terminating the discharge.

(c) It shall be unlawful for any person, user or customer to violate any provisions of this section. In addition to other remedies contained herein, violations shall be subject to the penalties contained in section 1-8. Each day on which noncompliance shall occur or continue shall be deemed a separate and distinct violation.

Section – 102-50. Elevation of wastewater connections, check prior to pouring foundation.

It shall be the obligation of the owner of the building being connected to the city wastewater system to determine the elevation, grades and alignment of sewer lines necessary to serve the building prior to the pouring of the building foundation or footings, and to design and construct the connecting sewer in accordance with the information this obtained. Whenever possible, a building sewer shall be bought to the building at an elevation below the

basement floor. In all buildings in which any building drain is too low to permit gravity flow to the city wastewater system, the wastewater carried by such building drain shall be lifted in accordance with subsection 122-126 (b). Operation and maintenance of such a lifting system shall be the sole responsibility of the property owner.

Section – 102-51. Conditions to determine if building is served by public wastewater system.

The city wastewater system is designed to provide gravity service to the ground level floor of buildings, and above. Basements and below-grade living areas may or may not be served by gravity by the city wastewater system. A building is considered to be "served: by the city wastewater system for purposes set forth in this article whenever sewer service is provided to the ground level floor.

Section – 102-52. Connections of downspouts, drains to wastewater system.

No persons shall make connection of roof downspouts, foundation drains, or other sources of surface runoff or groundwater to a building sewer or building drain which in turn is connected directly or indirectly to the City wastewater system unless such connection is approved for purposes of disposal of polluted surface drainage and for which a discharge permit has been issued.

Section – 102-53. Water and wastewater connections.

(a) *Construction procedures*.
   (1) All water and wastewater connections that might impact public roadways shall be carefully evaluated to identify means available to minimize impacts to existing pavement;
   (2) All road cuts and restorations shall be performed in compliance with applicable provisions of the Development of Standards of City of Smyrna.

(b) *Inspection of connection by City*. The applicant for a building sewer connection permit shall notify the department director when the building sewer is ready for inspection and connection to the county wastewater system. The connection and testing shall be made in the presence of the department director or his representative.

(c) *Guarding excavations*. All excavations for building sewer installations shall be adequately guarded with barricades and lights in compliance with all OSHA and state department of transportation requirements so as to protect the public from hazard.

Streets, sidewalks, parkways and other public property disturbed in the course of the work shall be restored to substantially the same condition as prior to the disturbance in a manner satisfactory to the city.

Section – 102-54. Restoration of disturbed public property.

All water or wastewater construction work conducted on the public right-of-way or any public property by anyone other than department personnel shall be conducted only with proper permission from the department director. All disturbed areas as a result of such construction shall be restored to substantially the same condition as prior to the disturbance. The scheduling of such construction activities shall be as approved by the department director if such scheduling approval is determined to be in the public's best interest.

Section – 102-55. Cross-connection control and backflow prevention.

(a) *Purpose and intent*. The purpose of this section is to protect the city's public potable water supply from actual or possible contamination or pollution by isolating within the customer's internal distribution system or the customer's private water system such contaminants or pollutants which could backflow into the public water system. This section also provides for the maintenance of a continuing program of cross-connection control with the goal of systematically and effectively preventing contamination or pollution of the city's water system by containment.

(b) *Definitions*. In this section:

(1) *Air-gap* means the unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet supplying water to a tank, plumbing fixture, or other device and the flood level (overflow) rim of such vessel. An approved air-gap shall be at least double the diameter of the supply pipe, measured vertically, above the top of the overflow rim of the vessel; and in no case less than one inch.

(2) *Approved* means accepted by the director as meeting applicable specifications stated or cited in this section or as the director, in his or her discretion, finds suitable for the proposed use.

(3) *Approved backflow prevention device* means a device that has been manufactured in full conformance with the standards established by the American Water Works Association entitled "AWWA C506-78 Standards for Reduced Pressure Principle and Double Check Valve Backflow Prevention

Devices," and has met completely the laboratory and field performance specifications of the Foundation for Cross-Connection Control and Hydraulic Research of the University of Southern California established by the publication "Specifications of Backflow Prevention Devices # 69-2" dated March, 1969 or the most current issue of thereof. Any device where approval is required by the fire marshal's office shall be listed for fire protection use as required by the National Fire Protection Association Codes, as may be amended from time to time.

(4) *Approved tester* means a person holding a currently valid certification recognized by the state environmental protection division.

(5) *Auxiliary water supply* means any water supply on or available to the premises other than the city's approved public water supply. These auxiliary waters include, but not limited to, water from another purveyor's public potable water supply or any natural source such as a well, spring, river, stream, harbor, etc., or used wasters or industrial fluids. These auxiliary waters may be contaminated, polluted or constitute an unacceptable water source over which the city does not have sanitary control.

(6) *Backflow* means the reversal of the normal flow of water caused by either back pressure or back-siphonage.

(7) *Backflow preventer or backflow prevention device* means a device, process or means designed to prevent backflow.

(8) *Back pressure* means the flow of water or other liquids, mixtures or substances under pressure into the distribution pipes of a potable water supply system from any source or sources other than the intended source.

(9) *Back-siphonage* means the flow of water or other liquids, mixtures or substances into the distribution system, as a potable water supply system from any source other than its intended source caused by a sudden reduction of pressure in the potable water supply system.

(10) *Check valve* means a valve that is drip-tight in the normal direction of flow when the inlet pressure is at least on psi (pound per square inch) and the outlet pressure is zero, permitting no leakage in a reverse direction to the normal flow. The closure element of the valve is internally loaded to promote rapid, positive closure. Comprises only one component of a backflow prevention assembly.

(11) *City* means City of Smyrna or the City of Smyrna Water System.

(12) *Contamination* means any impairment of the quality of the city's potable water by the introduction or admission of any foreign substance, including but not limited to sewage, industrial fluids or waste liquids, compounds or other materials, to a degree which degrades the quality of the potable water and creates an actual or

potential hazard to the public health through poisoning or through the spread of disease.

(13) *Cross-connection* means any actual or potential physical connection or arrangement of piping or fixtures between two otherwise separate piping systems, one of which contains potable water and the other nonpotable water or industrial fluids of questionable safety, through which, or because of which, backflow may occur into the potable water system. Alternatively, it is a connection or potential connection between any part of a potable water system and any other environment containing other substances in a manner that might allow such substances (such as gasses, liquids, or solids) to enter the potable water system and to affect the water's taste, color or odor. This term includes, but is not limited to, any temporary connections, such as swing connections, removable sections, four-way plug valves, spools, dummy sections of pipe, swivel or changeover devices or sliding multiport tubes.

(14) *Cross-connections, controlled* means a cross-connection that has an approved backflow prevention device properly installed and maintained so that it will continuously afford protection commensurate with the degree of hazard.

(15) *Cross-connection control by containment* means any of the following:

a. *At service connection*: The installation of one approved backflow prevention device at the water service connection to any customer's premises where it is physically and economically infeasible to find and permanently eliminate or control any or all actual or potential cross-connections within the customer's water system.

b. *After service connection*: The installation of an approved backflow prevention device on the service line leading to and suppling all or a portion of a customer's water system where there are actual or potential cross-connections within the customer's premises which cannot be effectively eliminated or controlled at the point of the cross-connection.

(16) *Customer*. Any owner of premises receiving city water system service or any end-user thereof, including any and all persons, natural or artificial including any individual firm, association or trust and any municipal or private corporation organized or existing under the laws of this or any other state or country.

(17) *Department* means the City of Smyrna Water System.

(18) *Director* means the director of the department who is vested with the authority and responsibility for the implementation of an effective cross-connection control program and for the enforcement of the provisions of this section.

(19) *Double check valve assembly* means an assembly of two independently operating approved check valves with tightly closing shutoff valves on each end of the check valves, plus properly located test cocks for the testing of each check valve. The entire assembly shall meet the design and performance specifications as determined by a laboratory and field evaluation program resulting in current approval of a recognized and approved testing agency for backflow prevention assemblies. To be approved, these devices must be readily accessible for inline testing and maintenance.

(20) *Hazard, degree of* is a term evaluating the potential risk to public health based on available information and categorization of potential sources of contamination or pollution and the adverse effect of the contamination or pollution upon the potable water system.

(21) *Hazard, health* means any condition, device, or practice affecting the water supply system and its operation which creates or could create, or in the judgement of the director, may create a present or future danger to the health and well-being of the water consumer or the city's potable water supply.

(22) *Hazard, pollution* means any actual or potential threat to the physical properties of the water system or to the potability of the public or the consumer's potable water system but which would constitute a nuisance or aesthetically objectionable as to taste, odor or color or could cause damage to the system or its appurtenances, but would not necessarily be dangerous to the health of the water consumer.

(23) *Hazard, system* means an actual or potential threat of severe damage to the physical properties of the public potable water system or the consumer's potable water system.

(24) *Industrial fluids systems* means any system containing a fluid or solution which would constitute a health, system or pollution hazard if introduced into an approved water supply. This may include, but not limited to: Polluted or contaminated waters; process waters and "used waters" originating from the public potable water 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; oils, gases, glycerin, paraffins, caustic and acid solutions and other liquid and gaseous fluids used in industrial or other purposes or for firefighting purposes; or contaminated natural waters emanating from wells, springs, streams, rivers, bays, harbors, seas, irrigation canals or systems.

(25) *Pollution or polluted* means the presence of any foreign substance (organic, inorganic, or biological) in water which tends to degrade the water's quality so as to constitute a hazard or to impair the usefulness or 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 such water's domestic use.

(26) *Reduced pressure principle device* means an assembly of two independently-acting, approved check valves together with a hydraulically operating, mechanically independent pressure relief valve located between the check valves and at the same time below the first check valve. The unit shall include properly located test cocks and tightly closing shutoff valves at each end of the assembly. The entire assembly shall meet the design and performance specifications as determined by a laboratory and a field evaluation program resulting in current approval by a recognized and approved testing agency for backflow prevention assemblies. The assembly shall operate to maintain the pressure in the zone between the two check valves at an acceptable level less than the pressure on the public water supply side of the device. At cessation of normal flow the pressure between the two check valves shall be less than the pressure on the public water supply side of the device. In the event that either of the check valves leak, the differential relief valve shall operate to maintain the reduced pressure in the zone between the check valves by discharging to the atmosphere. When the inlet pressure is two pounds per square inch or less, the relief valve shall open to the atmosphere. To be approved, these devises must be readily assessable for in-line testing and maintenance and be installed in a location where no part of the device will be submerged.

(27) *Water, non-potable* means water which is not safe for human consumption or which is of questionable potability.

(28) *Water, potable* means any water which, according to recognized standards, is safe for human consumption.

(29) *Water purveyor* means a supplier of water, including property owners supplying water for their own use.

(30) *Water service connection* means the terminal end of a service connection from the public potable water system (i.e., where the water purveyor loses jurisdiction and sanitary control over the water at its point if delivery to the customer's water system). If a meter is installed at the end of the service connection, then the service connection shall mean the downstream end of the meter. "Service connection" shall also include water service connection from a fire hydrant and all other temporary or emergency water service connections from the public potable water system.

(31) *Water system* means the City of Smyrna water system and the customer's water system, where not specifically limited as such. The department system shall consist of the source facilities of the water system under the complete control of the department, up to the point where the customer's system begins (at and including the water meter and any required backflow prevention devices used in conjunction therewith). The source facilities shall include all components of the facilities used in the production, treatment, storage, and delivery of water to the distribution system. The distribution system shall include the network of conduits used for the delivery of water from the source to the customer's system. The customer's system shall include those parts of the facilities beyond the termination of the department's distribution system which are used in conveying department-delivered domestic water to points of use.

(32) *Water, used* means 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 and is no longer under the sanitary control of the water purveyor.

See also Georgia Rules for Safe Drinking Water, § 391-3-5-.13(); Manual of Cross-Connection Control, 9th ed., University of Southern California, 1993; Recommended Practice for Backflow Prevention and Cross Connection Control, American Water Works Association Manual of Water Supply Practices, Manual 14, 2nd Ed., 1990; Cross-Connection Control Manual, United States Environmental Protection Agency, June 1989.

(c) Duties.

(1) Department. The director shall be primarily responsible for the protection of public potable water distribution system from contamination or pollution due to the backflow of contaminants or pollutants through the public potable water service connection. Where appropriate, the department shall coordinate with other city departments, such as building inspectors, the fire department and the county board of health, to promulgate and enforce laws, ruled, regulations and policies to be followed in controlling cross-connections.

a) Program implementation and execution. The department shall initiate a backflow prevention program and emergency plan designed to ensure that customers install, test and maintain approved backflow prevention devices where needed to protect the public water supply from potential and actual hazardous sources of cross-connection. The department shall list, categorize, and prioritize for assessment potential sources of

contamination or pollution by the degree of hazard they present to the public water supply. The department shall assess a customer's system by inspecting the customer's system, including cross-connections and devices used, and using all information available to determine whether all appropriate devices are installed and maintained in proper working order. The department shall map and schedule inspections of installed devices and premises to ensure all devices continue to be installed and maintained in proper working order.

b) *Discretion.* The director shall use discretion, based on the Georgia Rules for Safe Drinking Water and on the city's policy and procedures for backflow and back-siphonage prevention and cross-connection control to determine whether the type of existing or proposed devices are sufficient to meet the threat of potential hazard to the city's potable water supply.

c) *Right to enter and to test.* The director, the director's authorized representative, shall have the right to enter a customer's premises to inspect and to test the piping system or systems thereof for cross-connection and compliance with the city's backflow prevention ordinance and policy. On request, the customer or occupant of any property so served shall furnish to the inspections agency any pertinent information regarding the piping system or refusal of access, when requested, shall be deemed evidence of the presence of cross-connections. The department is authorized to seek an inspection warrant when a customer or occupant of premises refuses access.

d) *Notice.* If, in the judgement of the director, an approved backflow prevention device is required at the customer's water service connection, the director or designated agent shall give notice in writing to the customer to install such an approved backflow prevention device at the service connection or where appropriate.

e) *Discontinuance of water service.* The director has the authority to discontinue water service to the premises until the requirements of this section have been satisfactorily met.

f) *Notice to authorities.* The department shall contact all appropriate federal state and local agencies, including the city board of health, upon a finding of possible contamination or pollution of the city's potable water supply.

(2) *Customer.* The customer shall immediately install approved backflow prevention device(s) as required and directed by the department at the customer's own expense. The customer has the duty to maintain approved

backflow prevention device(s) at all times. If a device so requires, the customer shall have the device tested annually or whenever deemed necessary by the department. The customer shall retain and provide testing results performed by an approved tester to the department as requested. Failure, refusal or inability on the part of the customer to install, have tested and maintained the device or to report testing results shall subject the customer to the Administrative Orders and Penalty Provisions of Sec 102-49 herein.

(d) *Requirements*. The following requirements are part of the department's policy for protection of the water supply:

(1) *Protection.* No water service connection to any premises shall be installed or maintained by the water purveyor unless the water supply is protected as required by state laws and regulation and this section. Service of water to any premises shall be discontinued by the water purveyor if a backflow prevention device required by this section is not installed, tested and maintained at the customer's expense, or if it is found that a backflow prevention device has been removed or bypassed. Service will not be restored until such conditions or defects are corrected.

(a) *Accessibility*. The customer's system shall be readily accessible and open for inspection at all reasonable times to authorize representatives of the department to determine whether cross-connections or other structural, sanitary, contamination or pollution hazards, including violations of these regulations, exist. Reduced pressure backflow prevention devices and assemblies shall be readily accessible and installed in such a manner as to prevent partial or total submergence of the device or assemblies. Pit installations are prohibited. The city shall have the right to inspect and test the backflow prevention device or devices on an annual basis or whenever deemed necessary, at the customer's expense. Upon a customer's failure to provide access, the department shall be authorized to seek an inspection warrant.

(2) Notice. When such a condition becomes known, but does not constitute an emergency, the director or his designated agent shall give notice in writing to such customer to install an approved backflow prevention device at his service connection.

Emergency hazards. When the city becomes aware of an actual emergency condition, the city water system and/or the department of public safety shall be authorized to isolate or contain the hazard or take any steps necessary to protect

the public water supply. The department taking action shall give notice to the customer as soon as is reasonably practical under the circumstances.

(3) *Installation.* An approved backflow prevention device appropriate to the degree of hazard shall also be installed by the customer at the customer's expense on each service line to a customer's water system at or near the property line or immediately inside the building being serviced but, in all cases, before the first branch line leading off the service line whenever any the following conditions exist:

a. When premises have an auxiliary water supply which does not or may not have a safe bacteriological or chemical quality and which is not acceptable as an additional source by the director.

b. When premises upon which any industrial fluids or any other objectionable substances is handled in such a fashion as to create an actual or potential hazard to the public water system. This shall include the handling of process waters and waters originating from the utility system which have been subject to deterioration in quality.

c. When premises have internal cross-connections that cannot be permanently corrected and controlled, or intricate plumbing and piping arrangements or where entry to all portions of the premises is not readily accessible for inspection purposes, making it impracticable or impossible to ascertain whether or not dangerous cross-connections exist.

d. When premises contain any service connection3/4 inches or larger in diameter.

(4) *Types of devices required or prohibited.* The type of protective device required shall be provided by and at the expense of the customer and shall depend upon the degree of hazard on premises.

a. The public water system shall be protected by an approved air-gap separation or an approved reduced pressure principle backflow prevention device whenever any of the following conditions exist:

1. Where there is an auxiliary water supply.
2. Where there is any health hazard which is handled in such a fashion as to create an actual or potential hazard to the public water system. Examples of premises where these conditions will exist include sewage treatment plants, hospitals, mortuaries, and plating plants.
3. Where there are uncontrolled cross-connections, wither actual or potential.

4. Where, because of security requirements or other prohibitions or restrictions, it is impossible or impractical to make a complete in-plant cross-connection survey or inspection.

b. The public water system shall be protected by an approved air-gap separation or an approved double check valve assembly whenever there exists a substance that would ne objectionable but not hazardous to health if introduced into the public water system.

c. Any backflow prevention device required herein shall be if an appropriate model and size. In addition, if a device is installed such that it directly affects fire hydrants, standpipes and/or sprinkler systems, the county fire marshal's office must approve the device prior to installation.

d. The customer shall install a thermal expansion relief device in the customer's water system whenever a backflow prevention device is installed.

e. Unprotected takeoffs from the service line ahead of any meter or backflow prevention device located at the point of delivery to the customer's water system shall be prohibited.

(5) *Effective dates.*

a. Section. This section shall become effective immediately upon approval by the board of commissioners.

b. Compliance. Customers with pre-existing cross-connections, auxiliary intakes, bypasses, or interconnections in violation of this policy shall have a reasonable time to comply with the director's order to install an approved backflow prevention device. After a thorough investigation of existing conditions and an appraisal of the time required to install an approved device, the deadline for compliance shall be determined by the director.

Section 102-56. Installation of mutual fire line meter on unmetered fire service systems.

(a) Purpose of section. The purpose of this section is to require the installation of an underwriter-approved factory mutual fire line meter or the optional method of dual service on all unmetered fire service systems having fire hydrants, hand hose connections or sprinkler heads on private property.

(b) Application for service connections.

(1) All persons making application for new fire service connections with private fire hydrants, hand hose connections or sprinkler heads will be required to have an underwriter-approved factory mutual fire line meter or dual service connection installed as part of the fire service system.

(2) When unauthorized water is used through a detector meter or a dual service connection in three or more billing periods in one calendar-year, it shall be replaced with a factory mutual fire line meter. Unauthorized use of water is defined as nonfirefighting water and/or water use without prior notifications and approval of the city revenue collection division.

(3) All domestic water supply must be metered with a proper meter, at or near the property line.

(c) *Work to be performed by water system personnel or City designated contractor.* Installation of factory mutual fire line meters as required by this section will be handled by City water system crews at the expense of the building owner or lessee. The cost of the installation will be at a rate established for each individual site.

(d) *Authority of revenue collection division, city water system.* The city revenue collection division and the city of Smyrna water system shall have the authority to cut off water service to buildings whose owners refuse to comply with the provisions of this section upon proper notification.

(e) *Monthly standby charge, other billing.* The regular monthly fire service standby charge shall be continued for fire service installation having a detector meter or mutual fire line meter. The water that is measured by the detector meter will be billed at five times the normal water charge.

(f) *Establishment of rates; additional requirements.* Minimum monthly charges shall be as established by the City. In addition:

(1) All water meters, detector for fire line shall be installed on or near city's rights-of-way.

(2) Vaults shall be constructed to city specifications.

(3) Vault construction and meter installation shall be inspected by the city after work has been completed to ensure that specifications have been met.

(4) Apartments are billed as a residence.

(g) *Definitions.* The following words, terms and phrases, when used in this section, shall have the meanings ascribed to them in this subsection, except where the context clearly indicated a different meaning:

Domestic water line means metered at the property line.

Dual service means separate fire and domestic water lines.

Fire service means permitted on unmetered lines with a backflow preventer installed near the customer's building, to be maintained by the customer. The customer is to be billed for monthly service.

Sections 102-57 Commercial car wash requirements

The purpose of this section is to reduce water consumption from commercial car wash facilities by requiring all new conveyor car washes to install operational recycled water systems.

(a) *Definitions*. The following words and phrases, whenever used in this division have the meaning defined in this section:

In-bay automatic car wash means a commercial car wash where the driver pulls into the bay and parks the car. The vehicle remains stationary while a machine moves back and forth over the vehicle to clean it, instead of the vehicle moving through the tunnel.

Conveyor car wash means a commercial car wash where the car moves on a conveyor belt during the wash. The driver of the vehicle can remain in the vehicle or wait outside of the vehicle.

Recycled water system means a water system that captures and reuses water previously used in wash or rinse cycles.

Self-service car wash means a commercial car wash where the customers wash their cars themselves with spray wands and brushes.

(b) *Applicability*,

(1) This section applies to all new conveyor car washes permitted and constructed after January 1, 2019, regardless of the water source.
(2) The provisions of this section do not apply to commercial conveyor car washes that were permitted or constructed before January 1, 2019.
(3) The provisions of this section do not apply to self-service car washes or in-bay car washes.

(c) *Commercial car wash water recycling requirement*. All new commercial conveyor car washes permitted and constructed after January 1, 2011, must install and maintain operational recycled water systems. A minimum of 50 percent of water utilized shall be recycled.