



WEST PALM BEACH

**MANUAL FOR  
CROSS-CONNECTION  
CONTROL**

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## HISTORY

Initially, the primary responsibility for safeguarding water quality was left to local health agencies and building and inspection departments. Beginning with the Federal Safe Drinking Water Act (P.L.95-523), signed by President Ford in 1974, a chain of laws and regulations evolved that resulted in the States requirement for all public potable water systems to have a cross-connection control program; thus the birth of the Florida Safe Drinking Water Act (State of Florida Administrative Code Sections 403.850 - 403.864, Florida State Statutes).

In the United States, the federal government, under the Safe Drinking Water Act (SDWA) has jurisdiction over the public health aspects of the drinking water supply. State and local government also has jurisdiction over matters of public health related to the supply of water. The state/local regulations cannot supersede the federal regulations; however, they may be more stringent than the federal regulations. Lower levels of government (Water Purveyor) within a state, with the authority of the state, may impose other regulations or more stringent regulations not in conflict with state regulations.

## WHAT IS A CROSS-CONNECTION CONTROL MANUAL?

A Cross-Connection Control Manual is a written plan that is developed using recommended practices of the American Water Works Association (AWWA) set forth in *Recommended Practice for Backflow Prevention and Cross-Connection Control*, Manual M14.

The purpose of any Cross-Connection Control Manual is to protect the public potable water system from contamination or pollution via backflow due to backpressure or back-siphonage.

This manual shall be reviewed on an annual or as needed basis by the Director or his or her designee.

*Note:* Any Assembly, equipment or circumstance not covered by this Cross Connection Control Manual where water is connected or used which may constitute a potential health hazard will be handled at the discretion of the City of West Palm Beach Utilities Director or designee.

## WHAT IS A CROSS-CONNECTION?

A cross-connection is any temporary or permanent connection between a public potable water system or consumer's potable (i.e. drinking) water system and any source or system containing non-potable water or other substances. An example is the piping between a public potable water system or consumer's potable water system and an auxiliary water system, cooling system, ground water well, pool, irrigation system etc.

### A. INTENT, PURPOSE AND CONTROL:

1. To eliminate existing and/or potential hazards to the potable water within the City's

water distribution system. It is also the intent to apply the principle that the degree of protection should commensurate with the degree of hazard.

2. To protect the public's potable water supply from the possibility of contamination or pollution by containing, within the premise or private property, such contaminants or pollutants that could backflow or back siphon into the public potable water system. This process is called containment.
3. To eliminate existing and potential cross-connections with any other source of water or process water used for any purpose whatsoever which may jeopardize the safety of the public potable water supply.
4. To promote the elimination or control of existing cross-connections, actual and/or potential, between the consumer's potable water system(s) and non-potable water systems, plumbing fixtures, and industrial piping system(s).
5. To provide for the maintenance of a continuing cross-connection control program that will systematically and effectively prevent the contamination or pollution of the potable water system.
6. To establish a backflow prevention and cross-connection control manual.
7. To establish responsibilities between the Administrative Authority Water Purveyor (City of West Palm Beach) and the consumer regarding cross-connections, which shall be set forth in this manual and other applicable regulation.
8. To comply with the 1974 Federal Safe Drinking Water Act (P.L. 93-523), the State of Florida Administrative Code (Sections 403.850 - 403.864, Florida State Statutes), and all other State and Federal regulations as they pertain to cross-connection control with the public potable water supply.

### **B. RESPONSIBILITIES:**

#### 1. PUBLIC UTILITIES DIRECTOR

The Director of Public Utilities is primarily responsible for the prevention of contamination and/or pollution of the public potable water system. Such responsibility begins at the public water's supply point of origin and includes all of the public water distribution system, and ends at the point of delivery to the consumer. The Director shall exercise reasonable vigilance to ensure that the proper steps have been taken to protect the public potable water system. When it is determined that a backflow protection assembly is required for the prevention of contamination to the public potable water system of the City; the Director shall notify, or cause to be notified, in writing, the owner of any such building or premise, to correct, within a time set by this manual, any existing or installed plumbing that is in violation of this manual. Enforcement of this manual shall be

administered by the Director, or his/hers designee.

### 2. CITY OF WEST PALM BEACH (WATER PURVEYOR)

The City of West Palm Beach's responsibility, as the water purveyor, is to ensure a safe water supply which begins at the source and includes all of the public water distribution system, including the service connections and ends at the point of delivery to the consumer's water system(s). In addition, the City shall exercise reasonable vigilance to insure that the proper steps have been taken to protect the public potable water system. To insure that the proper precautions are taken, the Department of Public Utilities is required to determine the degree of hazard or potential hazard to the public potable water system; to determine the degree of protection required; and to ensure proper containment protection through an on-going Cross Connection Control program.

When it is determined that a backflow prevention assembly is required for the protection of the public potable water system, the City shall require the consumer, at the consumer's expense, except where otherwise stated in the manual, to install an approved backflow prevention assembly on each service connection, to test immediately upon installation and thereafter at a frequency as determined by the City to properly repair and maintain such assembly or assemblies and to keep adequate records of each test and subsequent maintenance and repairs, including materials and/or replacement parts.

The City will be responsible over time for installation of a dual check at residential services that are one inch in diameter or smaller and where it is determined that a high hazard does not exist.

### 3. CONSUMER

The consumer has the primary responsibility of preventing pollutants and contaminants from entering the consumer's potable water systems or the public potable water system. The consumer's responsibility starts at the point of delivery from the public potable water system and includes all of the property's water system(s).

In those instances where the consumer has an existing residential service one inch or smaller and a high hazard does not exist and where the consumer has an existing RP device, the consumer may apply to the City for the installation of a dual check. If approved by the City and only after the installation of the dual check, the consumer can have the RP removed by a plumber at their own expense.

The consumer, at their own expense, shall install, operate, test, and maintain approved backflow prevention assemblies where required in this manual. Prior to installation, replacement or relocation of a backflow prevention assembly, the consumer must apply for all necessary permits through the Development Services

Department. The Department of Public Utilities must be notified upon completion in order for the Department to perform the qualifying first test. The consumer will be responsible for the fee for the City to perform the first test. All subsequent tests shall be maintained and performed at the consumer's expense by a plumbing contractor approved by the Department of Public Utilities.

The consumer shall maintain accurate records of tests and repairs made to backflow prevention assemblies and shall maintain such records for a minimum period of five (5) years. The records shall be on a form approved by the City and shall include the list of replacement parts used. Following any repairs, overhaul, or re-piping of an assembly, the consumer shall have it tested to insure that it is in good operating condition and will prevent backflow. Tests, maintenance and repairs of backflow prevention assemblies shall be made by a Certified Plumbing Contractor that is certified to test and repair backflow prevention assemblies and is approved by the Department of Public Utilities. All relocated containment assemblies must be tested and inspected by the Water Purveyor prior to being placed in operation and a fee will be charged to the consumer's utility billing account.

#### 4. HEALTH AGENCY

The Florida Department of Environment Protection has the responsibility for promulgating and enforcing laws, rules, regulations, and policies to be followed in carrying out an effective Cross Connection Control Program.

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

#### 5. BUILDING INSPECTIONS

The Development Service Department, Construction Services Division of the City of West Palm Beach has the responsibility to not only review building plans and inspect plumbing as it is installed; but they have the explicit responsibility of preventing cross connections from being designed and built into the plumbing system within their jurisdiction. Where the review of building plans suggests or detects the potential for cross connections being made as an integral part of the plumbing system, the plumbing inspector has the responsibility, under the Florida Building Code, for requiring that such cross connections be either eliminated or provided with backflow prevention equipment approved by the Florida Building Code.

The plumbing inspector's responsibility, with respect to backflow prevention, begins at the point of delivery and continues throughout the entire length of the consumer's water system. The plan inspector should inquire about the intended use of water at any point where it is suspected that a cross connection might be made or where one is actually called for by the plans.

When such is discovered, it shall be mandatory that a suitable, approved backflow prevention assembly/device approved by the Florida Building Code be required by the plans and be properly installed. The primary backflow protection assembly for containment purposes only, shall have the approval from the Department of Public Utilities.

During construction of a new or existing structure the City's water supply shall be protected with an RP device at the consumer's expense.

It will be the responsibility of the Building/Plumbing Inspector to make applicants for building permits aware of the requirements of this manual and to inspect the installation of the required backflow prevention assemblies/devices.

It will also be the responsibility of the Building/Plumbing Inspector to notify the Department of Public Utilities when a backflow preventer permit has been issued and will not approve a site until the backflow prevention assembly has had its initial passing test administered and completed by the Department of Public Utilities. Prior to the initiation of water service, these backflow prevention assemblies shall be inspected by the Department of Public Utilities staff.

Should questions arise about the type or placement of any required backflow prevention assembly, the Building/Plumbing Inspector shall advise the Department of Public Utilities and the Director or designee, shall make the final determination.

### 6. ENGINEERING SERVICES

The Engineering Services Department has the responsibility to review and approve plans for all water extensions which will become part of the City of West Palm Beach water distribution system. In accordance with this manual, the Engineering Department must approve all sprinkler system plans prior to installation of any backflow prevention assembly. The Department also has the duty to verify that construction of such extensions and sprinkler systems comply with the requirements of this manual and other applicable City, County, and State regulations.

Prior to installation of the water meter, the Engineering Services Department shall ensure that the backflow device was installed in accordance with the standard detail.

### 7. CERTIFIED BACKFLOW TESTERS/REPAIRERS

**Certification Requirements:** All individuals or companies desiring to: install, test, repair, overhaul, or maintain backflow prevention assemblies within the City of West Palm Beach Utilities Service area, must submit the following current documents to the Department of Public Utilities in order to be a City certified backflow preventer tester/repairer:

- Certified Plumbing Contractor – State of Florida Occupational License
- County or City Local Business Tax Receipt from where the business originates (If not in West Palm Beach, must register as a contractor with the City of West Palm Beach, Construction Services, Occupational License Department)
- Backflow Prevention Assembly Tester Certification for each tester
- Backflow Prevention Assembly Repair Certification for each tester
- Annual Testing Kit Calibration Report/Certification for each testing kit that will be used by the certified backflow preventer tester/repairer

**Re-Certification:** All certified backflow preventer tester/repairers must become re-certified every two (2) years through an AWWA approved backflow prevention certification course or three (3) years through an ASSE approved backflow prevention certification course.

It is the sole responsibility of the certified backflow preventer tester/repairer to maintain current all required certifications, licenses etc. Further, it is the certified backflow preventer tester/repairer's responsibility to submit all required certifications to the Department of Public Utilities to avoid any undue delays to the consumer to whom services are being rendered. The Department of Public Utilities will not accept any test or repair report if any of the required certifications were expired when services were performed. Failure to comply may cause immediate removal from the certified backflow preventer tester/repairer list.

**Responsibilities:** Certified backflow preventer tester/repairers will be responsible for the following:

- Making competent installations, inspections, repairs and/or the overhauling of backflow prevention assemblies.
- Making reports of such repairs to the consumer and responsible authorities on forms approved by the Department of Public Utilities.
- Including the list of materials or replacement parts used.
- Maintaining equipment and competency in the use of all the necessary tools,



gauges, manometers and other equipment necessary to properly install, test, repair, and maintain backflow prevention assemblies.

- Ensuring original manufactured parts are used in the installation, repair and maintenance of backflow prevention assemblies.
- Maintaining the integrity of the assembly and not changing the installation, design, material or operational characteristics of an assembly during installation, repair or maintenance without prior approval of the Department of Public Utilities.
- Performing the work and being responsible for the competency and accuracy of all tests and reports.
- Providing a copy of all test and repair reports to the consumer and to the Department of Public Utilities within ten (10) business days of any completed test or repair work.
- Maintaining all records relating to testing and repairing backflow preventers for a minimum period of five (5) years.
- Reporting to the Department of Public Utilities if a containment backflow prevention assembly has been by-passed or removed by the consumer.
- Carrying all necessary credentials while testing and repairing backflow prevention assemblies (e.g. tester and repairer certification, testing kit calibration report) and present to City personnel upon request.

**Equipment:** All certified backflow preventer tester/repairers must obtain and employ backflow prevention assembly test equipment, which has been evaluated and/or approved by the Department of Public Utilities. All test equipment shall be registered with the Department of Public Utilities. All test equipment shall be checked for accuracy, calibrated annually (at a minimum) and certified to the Department of Public Utilities as to such accuracy/calibration, employing a calibration method acceptable to the City.

The City reserves the right to prevent any certified backflow preventer tester/repairers from testing and repairing backflow prevention assemblies within the City's service area due to falsification of records and non-compliance with this Manual, City ordinances, County, State and Federal laws and regulations.

The Department of Public Utilities shall maintain a list of certified backflow testers/repairers. Certified tester/repairers are not authorized and shall not use any city logo or service mark in any advertising or business forms or media.

### C. CONTROL OF BACKFLOW

Backflow prevention assemblies shall be installed by the customer on the service connection of any premises that has been identified by the Department of Public Utilities as having a potential for backflow. Backflow assemblies shall also be installed by the customer within the premises if potable water is also used for industrial, commercial, multi-family residential and/or fire-fighting purposes. Backflow prevention assemblies shall be installed as part of each single-family residential service connection wherever and whenever any of the following conditions exist:

- a. An auxiliary water supply;
- b. Any cross-connection exists;
- c. Internal plumbing or piping arrangements are unknown, making it impracticable or impossible to determine whether a cross-connection exists;
- d. The property is located in a flood zone;
- e. A swimming pool with autofill;
- f. An irrigation system has its own dedicated water service;
- g. As otherwise provided in this Manual or determined by the Department of Public Utilities to be necessary to prevent cross-connection.

### C. NEW, EXPANDED, AND/OR REMODELED FACILITIES:

- I. Each applicant for General Service (commercial) or Multi-Family water service will be required to comply with the requirements of this Manual
- II. Applicants for water service shall be reviewed for possible or potential cross-connections to the City of West Palm Beach potable water system.
- III. All general service (commercial) and multi-family dwellings water users will be required to install a backflow prevention assembly at the point of delivery. The type of backflow assembly required will be dependent upon the degree of hazard posed by the water user.
- IV. **All backflow devices must be lead free. Lead Free (LF) shall be included in the serial number or stamped on the body of the device. Any device that has been altered after being assembled by the manufacturer will not be approved.**
- V. If the City of West Palm Beach determines that a potential cross connection exists, the Department of Public Utilities shall make a determination as to whether the possibility of a hazard exists. Such determination shall utilize AWWA Standards as minimum guidelines and may require a specific type of backflow prevention assembly be provided for the premise.
- VI. The Department of Public Utilities may notify the new applicant for water service

in writing and arrange a meeting to discuss the requirements for backflow prevention. Procedures for inspection of the backflow prevention assembly will be discussed at this meeting.

- VII. The Department of Public Utilities shall provide a letter notifying the applicant for the water service what backflow prevention measures must be taken. Alternately, the requirements will be noted on the plan review comment sheet indicating what backflow prevention measures must be taken.

### D. HAZARD CLASSIFICATION

The type of backflow assembly required will be dependent upon the degree of hazard posed by the water user.

High Hazard: Following is a list of high hazard facilities and uses, but are not limited to:

Bottling plants, brewery, cannery, food processing, multi-story buildings, multi-family residential, battery manufacturer, exterminator, greenhouse, sand and gravel plants, chemical processing plant, pharmacy, dairy, dye works, film laboratory, print shops - photo copy/ blueprinting, fertilizer plant, car wash, auto service station, fuel/oil distribution, all medical facilities, commercial laboratory, schools, colleges, waterfront facilities and industries, all jails - detention - correctional - facilities, barber and beauty shops, commercial laundry, Laundromat, dry cleaning, rubber plants, metal fabricating operation, mortuary, morgue, x-ray equipment, all medical offices with a laboratory, aspirator, medical washing equipment, packing house, rendering plants, plating plant, poultry house, veterinary hospital - clinic - kennel - office, power plant, nuclear reactor, pumped fire sprinkler or riser system or those equipped with facilities for introduction of freeze prevention chemicals or substances other than water, properties with pools that have automatic fillers, auxiliary water supply and irrigation systems.

High hazardous uses include, but are not limited to: pumps and tanks handling sewage, radioactive, lethal, or toxic substances, boiler and steam connections, sewer waste lines, low inlets to receptacles containing toxic substances, coils or jackets used as heat exchangers, flush valve toilets without vacuum breaks, bacterial and viral materials, private wells, tanks or other private water supply, water systems or hose connections, with booster pumps, carbonation equipment, recycling system, irrigation system, pools with automatic fillers, golf course, assembly - factory - manufacturing - mill processing - plant, or similar hazard potential as determined by the Director (or designee).

- I. The consumer is responsible for installing sufficient internal isolation devices in compliance with the Florida Building code.
- II. The Director (or designee) may, if in his/her judgment deems that an imminent health hazard exists, may cause the water service to a building or premise to be terminated unless an air gap is provided.

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- III. All new construction plans and specifications shall be made available to the Director (or designee) for approval, and to determine the degree of hazard, when in question.
- IV. The Director (or designee) shall be notified by the consumer when the nature of the use of property changes so as to change the hazard classification of the property, if necessary.

### E. METHODS OF BACKFLOW CONTROL

Where required, an appropriate and approved backflow prevention assembly shall be installed.

The following minimum backflow protection shall be provided at or for service connections from the City’s public water system (referred to as the “Community Water System” or “CWS”) to the following categories of consumers:

**Table 1.1**

Category of Customer	Minimum Backflow Protection <sup>1</sup> to Be Provided at or for the Service Connection from the CWS to the Customer
Residential Premises	DuC for water services one inch or less and where a high hazard does not exist
Residential Premises	RP for water services larger than one inch, multi-family residential or where a high hazard exists
Beverage processing plant, including any brewery	DC if the plant presents a low hazard <sup>2</sup> ; or RP if the plant presents a high hazard <sup>2</sup>
Cannery, packing house, rendering plant, or any facility where fruit, vegetable, or animal matter is processed, excluding any premises where there is only restaurant or food service facility	RP
Car wash	RP
Chemical plant or facility using water in the manufacturing, processing, compounding, or treatment of chemicals, including any facility where a chemical that does not meet the requirements in paragraph 62-555.320(3)(a), F.A.C., is used as an additive to the water	RP
Dairy, creamery, ice cream plant, cold-storage plant, or ice manufacturing plant	RP <sup>3</sup>
Dye plant	RP
Film laboratory or processing facility or film manufacturing plant, excluding any small, noncommercial darkroom facility	RP
Hospital; medical research center; sanitarium; autopsy facility; medical, dental, or veterinary clinic where surgery is performed; or plasma center	RP

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Category of Customer	Minimum Backflow Protection <sup>1</sup> to Be Provided at or for the Service Connection from the CWS to the Customer
Laboratory, excluding any laboratory at an elementary, middle, or high school	RP
Laundry (commercial), excluding any self-service laundry or Laundromat	RP
Marine repair facility, marine cargo handling facility, or boat moorage	RP
Metal manufacturing, cleaning, processing, or fabricating facility using water in any of its operations or processes, including any aircraft or automotive manufacturing plant	DC if the facility presents a low hazard <sup>2</sup> ; or RP if the facility presents a high hazard <sup>2</sup>
Mortuary	RP
Premises where oil or gas is produced, developed, processed, blended, stored, refined, or transmitted in a pipeline or where oil or gas tanks are repaired or tested, excluding any premises where there is only a fuel dispensing facility	RP
Premises where there is an auxiliary or reclaimed water system <sup>4,5</sup>	<p>A. At or for a residential service connection<sup>6</sup>: DuC<sup>7</sup></p> <p>B. At or for a non-residential service connection<sup>6</sup>: DC if the auxiliary or reclaimed water is a low hazard<sup>8,9</sup>; or RP if the auxiliary or reclaimed water is a high hazard<sup>8,9</sup></p>
Premises where there is a cooling tower	RP
<p>Premises where there is an irrigation system that is using potable water and that...</p> <p>I. Is connected directly to the CWS's distribution system via a dedicated irrigation service connection</p> <p>II. Is connected internally to the customer's plumbing system</p>	<p>I. At or for a residential or non-residential dedicated irrigation service connection<sup>6</sup>: PVB if backpressure cannot develop in the downstream piping<sup>10</sup>; or RP if backpressure could develop in the downstream piping<sup>10</sup></p> <p>II. None<sup>11</sup></p>

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Category of Customer	Minimum Backflow Protection <sup>1</sup> to Be Provided at or for the Service Connection from the CWS to the Customer
<p>Premises where there is a wet-pipe sprinkler, or wet standpipe, fire protection system that is using potable water and that...</p> <p>I. Is connected directly to the CWS's distribution system via a dedicated fire service connection<sup>12</sup></p> <p>II. Is connected internally to the customer's plumbing system</p>	<p>I. At or for a residential dedicated fire service connection<sup>6</sup>: DuC if the fire protection system contains no chemical additives and is not connected to an auxiliary water system<sup>4</sup>; or RP or RPDA if the fire protection system contains chemical additives or is connected to an auxiliary water system<sup>4,13</sup></p> <p>II. B. At or for a non-residential dedicated fire service connection<sup>6</sup>: DC or DCDA if the fire protection system contains no chemical additives and is not connected to an auxiliary water system<sup>4</sup>; or RP or RPDA if the fire protection system contains chemical additives or is connected to an auxiliary water system<sup>4,13</sup></p> <p>II. None<sup>11</sup></p>
Radioactive material processing or handling facility or nuclear reactor	RP
Paper products plant using a wet process	RP
Plating facility, including any aircraft or automotive manufacturing plant	RP
Restricted-access facility	RP
Steam boiler plant	RP
Tall building – i.e., a building with five or more floors at or above ground level	DC if the customer has no potable water distribution lines connected to the suction side of a booster pump; or RP if the customer has one or more potable water distribution lines connected to the suction side of a booster pump
Wastewater treatment plant or wastewater pumping station	RP
Customer supplied with potable water via a temporary or permanent service connection from a CWS fire hydrant	Varies <sup>14</sup>

\*Dual Check Device (DuC); Double Check Valve Assembly (DC); Double Check Detector Assembly (DCDA); Pressure Vacuum Breaker Assembly (PVB); Reduced Pressure Principle Assembly (RP); Reduced Pressure Principle Detector Assembly (RPDA).

Notes:

<sup>1</sup> Means of backflow protection, listed in an increasing level of protection, include the following: a dual check device (DuC); a double check valve assembly (DC) or double check detector assembly

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(DCDA); a pressure vacuum breaker assembly (PVB); a reduced-pressure principle assembly (RP) or reduced-pressure principle detector assembly (RPDA); and an air gap. A PVB may not be used if backpressure could develop in the downstream piping.

<sup>2</sup> The CWS shall determine the degree of hazard. “Low hazard” or “non-health hazard” and “high hazard” or “health hazard” are defined in *AWWA Manual M14* as incorporated in paragraph 62-555.360(1)(a), F.A.C., and subsection 62-555.360(2), F.A.C.

<sup>3</sup> A DC may be provided if it was installed before 5-5-14; and if such a DC is replaced on or after 5-5-14, it may be replaced with another DC.

<sup>4</sup> For the purpose of this table, “auxiliary water system” means a pressurized system of piping and appurtenances using auxiliary water, which is water other than the potable water being supplied by the CWS and which includes water from any natural source such as a well, pond, lake, spring, stream, river, etc., includes reclaimed water, and includes other used water or industrial fluids described in *AWWA Manual M14* as incorporated in paragraph 62-555.360(1)(a), F.A.C., and subsection 62-555.360(2), F.A.C.; however, “auxiliary water system” specifically excludes any water recirculation or treatment system for a swimming pool, hot tub, or spa. (Note that reclaimed water is a specific type of auxiliary water and a reclaimed water system is a specific type of auxiliary water system.)

<sup>5</sup> The Department shall allow an exception to the requirement for backflow protection at or for a residential or non-residential service connection from a CWS to premises where there is an auxiliary or reclaimed water system if all of the following conditions are met:

- The CWS is distributing water only to land owned by the owner of the CWS.
- The owner of the CWS is also the owner of the entire auxiliary or reclaimed water system up to the points of auxiliary or reclaimed water use.
- The CWS conducts at least biennial inspections of the CWS and the entire auxiliary or reclaimed water system to detect and eliminate any cross-connections between the two systems.

<sup>6</sup> For the purpose of this table, “residential service connection” means any service connection, including any dedicated irrigation or fire service connection, that is two inches or less in diameter and that supplies water to a building, or premises, containing only dwelling units; and “non-residential service connection” means any other service connection.

<sup>7</sup> A DuC may be provided only if there is no known cross-connection between the plumbing system and the auxiliary or reclaimed water system on the customer’s premises. Upon discovery of any cross-connection between the plumbing system and any reclaimed water system on the customer’s premises, the CWS shall ensure that the cross-connection is eliminated. Upon discovery of any cross-connection between the plumbing system and any auxiliary water system other than a reclaimed water system on the customer’s premises, the CWS shall ensure that the cross-connection is eliminated or shall ensure that the backflow protection provided at or for the service connection is equal to that required at or for a non-residential service connection.

<sup>8</sup> Reclaimed water regulated under Part III of Chapter 62-610, F.A.C., is a low hazard unless it is stored with surface water in a pond that is part of a stormwater management system, in which case it is a high hazard; well water is a low hazard unless determined otherwise by the CWS; industrial fluids and used water other than reclaimed water are high hazards unless determined otherwise by the CWS; reclaimed water not regulated under Part III of Chapter 62-610, F.A.C., and surface water are high hazards.

<sup>9</sup> Upon discovery of any cross-connection between the plumbing system and any reclaimed water

system on the customer's premises, the CWS shall ensure that the cross-connection is eliminated.

<sup>10</sup> A DC may be provided if both of the following conditions are met:

- The dedicated irrigation service connection initially was constructed before 5-5-14.
- No chemicals are fed into the irrigation system.

<sup>11</sup> The CWS may rely on the internal backflow protection required under the *Florida Building Code* or the predecessor State plumbing code. The CWS may, but is not required to, ensure that such internal backflow protection is inspected/tested and maintained the same as backflow protection provided at or for service connections from the CWS.

<sup>12</sup> The Department shall allow an exception to the requirement for backflow protection at or for a residential or non-residential dedicated fire service connection from a CWS to a wet-pipe sprinkler, or wet standpipe, fire protection system if both of the following conditions are met:

- The fire protection system was installed and last altered before 5-5-14.
- The fire protection system contains no chemical additives and is not connected to an auxiliary water system as defined in Footnote 4.

<sup>13</sup> Upon discovery of any cross-connection between the fire protection system and any reclaimed water system on the customer's premises, the CWS shall ensure that the cross-connection is eliminated.

<sup>14</sup> The CWS shall ensure that backflow protection commensurate with the degree of hazard is provided at or for the service connection from its fire hydrant.

### **F. FIRE PROTECTION SYSTEMS:**

All connections for fire sprinkler systems connected to the public water system shall be protected based on requirements outlined in Table 1.1. All unmetered fire protection systems shall be protected with the appropriate backflow prevention device.

Private fire hydrants piped in excess of 150' from a potable source must be protected from backflow with an approved device (see table 1.1) installed within 150' from potable connection. Installation requirements shall be as per City of West Palm Beach standard details.

### **G. CHEMICAL HOLDING TANKS:**

No person shall fill special use tanks or tankers containing non-potable water, pesticides, fertilizers, other toxic chemicals or their residues from a public water system except at a location equipped with an over-the-rim (air gap) free discharge of water or an approved reduced pressure backflow prevention assembly properly installed on the public water supply. No supplier of water shall permit the filling of such special use containers except at locations so equipped.

Any person or company desiring to fill tankers directly from the potable water supply shall secure a permit from the City to do so. All tanker trucks must be inspected by the City prior to the issuance of the permit. Permits shall be renewed on a yearly basis as a



minimum. Filling of tankers shall only take place at locations approved by the City.

**H. INSTALLATION OF BACKFLOW PREVENTION ASSEMBLIES:**

1. Installation. All backflow prevention assemblies shall be installed in accordance with the manufacturer's installation instructions and in accordance with the standards of the City of West Palm Beach. These standards are maintained and available by the Department of Public Utilities and Engineering Department. Ownership, testing and maintenance of the backflow prevention assembly will be the responsibility of the consumer.
2. Time Limit. The consumer shall, upon notification, install the appropriate backflow prevention assembly not to exceed the following time frame:

High hazard Facilities	15 days
Low hazard Facilities	30 days

3. Installer. All backflow prevention assemblies shall be installed by a certified backflow preventer tester/repairer. The certified backflow preventer tester/repairers is responsible to make sure the assembly is working properly when it is installed, and to make available all installation and testing information for approval by the Director or designee.
4. Permits and fees. All backflow prevention assembly installations, including replacements, must obtain the proper permit(s). A backflow certification fee, as established by resolution of the City Commission, shall be charged for initial installations and any required re-testing.
5. Location.
  - a. General guidelines for location and installation requirements shall follow the City of West Palm Beach standard details. In general, all backflow prevention assemblies shall be installed on private property, on the consumer's plumbing line beyond the water meter but before any branching of plumbing lines from the common line, such that all water passing through the water meter shall also pass through the backflow preventer. No water shall be permitted at any time to by-pass backflow protection; if the customer requires a by-pass (parallel system) while the backflow prevention assembly is being tested or repaired, the by-pass line shall include a backflow prevention assembly of equal design and size as the first.
  - b. All backflow assemblies must have at least 18" clearance on all sides to allow for maintenance and repair and a minimum of 12" above finished grade. All backflow assemblies, application, location and installation must be approved by the Director of Public Utilities or designee.

- c. In areas where existing site conditions make it impractical or impossible to comply with the installation requirements outlined in the City of West Palm Beach standard details, and when necessary to avoid conflicts or barriers, the backflow prevention assembly shall be located no further than 15 feet from the water meter, or inside the building in a utility or mechanical room where the plumbing first enters the building, and provided further, that the property owner shall execute a Backflow Assembly Access Covenant, binding upon tenants or occupants of the building and binding upon heirs and successors in title, which shall guarantee access to the backflow prevention assembly by the Department of Public Utilities during business hours and restricting the owner, tenant, or occupant from tapping the plumbing between the water meter and backflow assembly for any purpose. Such Covenant shall be recorded in the Register of Deeds office of the County. Approval of this option will be on a case by case basis upon review of adequate site plans provided to the City. The City of West Palm Beach assumes no liability for property or other type of damage brought about by testing, repair or malfunctioning of a backflow prevention assembly installed inside a building structure.
  - d. Where fire service meters are used, the required backflow preventers may be installed inside the building subject to approval by the Director of Utilities (or his/her designee).
  - e. Backflow assemblies should generally not be located underground, in confined spaces, or inside buildings to prevent contamination, safety hazards, maintenance complications, and property damage. Ideal locations minimize pipe distance between the water meter and backflow assembly.
6. When it is not possible to interrupt water service, provisions shall be made for a "parallel installation" of backflow prevention assemblies. The Director will not accept an unprotected bypass around a backflow prevention assembly when the assembly is in need of testing, repair or replacement.

### **I. TESTING AND REPAIR:**

1. Tester. Testing of backflow prevention assemblies shall be made by a certified backflow preventer tester/repairer at the customer's expense.
2. Such tests are to be conducted upon installation and annually thereafter or at a frequency established by this Manual.
  - a) Non-Residential: All backflow preventer assemblies (i.e., double check valve assemblies and double check detector assemblies; pressure vacuum breaker assemblies; and reduced-pressure principle assemblies and reduced-pressure principle detector assemblies) required at or for non-residential service connections from the CWS shall be tested after installation or repair

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and annually thereafter and shall be repaired if they fail to meet performance standards.

- b) Residential: All backflow preventer (except dual checks) assemblies required at or for residential service connections from the CWS shall be tested after installation or repair and at least biennially (once every two years) thereafter and shall be repaired if they fail to meet performance standards. Residential service connections are service connections, including dedicated irrigation or fire service connections, which are two inches or less in diameter and that supply water to a building, or premises, containing only dwelling units; all other service connections are non-residential service connections.
  - c) Test Due Dates. Test results shall be required to be submitted to the Department of Public Utilities no later than the last day of the month in which the tests results are due. Non-residential results are due 12 months from the month the assembly was originally inspected and tested by the Department of Public Utilities. Residential results are due 24 months from the month the assembly was originally inspected and tested by the Department of Public Utilities.
  - d) If the Department of Public Utilities determines that a backflow prevention assembly is being used in extremely high hazard applications or has a history of frequent failures, the Department of Public Utilities may require that the assembly be tested at an interval determined by the City.
  - e) **All newly installed/relocated containment backflow assemblies must be tested by the Water Purveyor prior to being placed in operation. A fee shall be charged to the associated utility billing account for all initial tests/inspections/re-inspections performed by the Water Purveyor as determined by the City Resolution.**
3. Replacement. All dual check devices (DuCs) required at service connections from the Community Water System (CWS) shall be replaced approximately every 10 years or at a frequency to be determined by the Director of Public Utilities or designee. The Director of Public Utilities will determine and document whether a lesser frequency is appropriate based on data from spot- testing dual checks at service connections or based on data from backflow sensing meters at service connections. .
4. Testing requires a water shutdown usually lasting five (5) to twenty (20) minutes. For facilities that require an uninterrupted supply of water, and when it is not possible to provide water service from two separate meters, provisions shall be made for a “parallel installation” of backflow prevention assemblies.

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5. Any time that repairs to backflow prevention assemblies are deemed necessary, whether through annual or required testing or routine inspection by the owner or by the Department of Public Utilities, these repairs must be completed within a specified time in accordance with the degree of hazard. In no case shall this time period exceed:
  - a) High Hazard Facilities 15 days
  - b) Low Hazard Facilities 30 days
6. Existing backflows devices that are not on the approved list of University of Southern California's (USC) approved list of devices cannot be repaired. The device would then have to be replaced with a device from the USC approved list (<https://fccchr.usc.edu/list.html>)
7. A record of all testing and repairs is to be retained by the consumer. **Copies of the records must be provided to the Department of Public Utilities within ten (10) business days after the completion of any testing and/or repair work. Failure to submit test reports within 10 days may cause an interruption of water service. An Annual Backflow Test Report Administration Fee (per report) will be charged to the consumer as determined by City Resolution.**
8. It shall be unlawful for any customer or certified tester/repairer to submit any record to the Department of Public Utilities which is false or incomplete in any material respect. It shall be unlawful for any customer or certified tester to fail to submit to the Department of Public Utilities any record, which is required by this Manual.

### J. RECORDS:

All records of tests, inspections, surveys and repairs will be kept on file by the Department of Public Utilities. Records of backflow assemblies containing location, type, size, use, model, manufacturer and serial number shall be cross referenced with records of tests, surveys, inspections and repairs.

All Test Reports must have the following information:

- ✓ Customer Name
- ✓ Pass/Fail/New/Repair indication
- ✓ Complete Street Address of Device
- ✓ Customer Utility Account Number
- ✓ Meter Number
- ✓ Assembly/Device Serial Number/Manufacture, Model, Size
- ✓ Device Type
- ✓ Tester Name Certification Number and Company Name

### K. INSPECTION:

- I. New premises/facilities. Upon making application for water service and prior to connection to the City of West Palm Beach potable water system, the

owner/consumer or their agent shall have obtained the appropriate building permit(s), shall have installed the correct approved backflow prevention assembly as determined by the Department of Public Utilities and shall have obtained an inspection and initial test by the Department of Public Utilities.

- II. Existing premises/facilities. All premises where cross-connections are likely and/or have a potential of occurring shall be surveyed by the Department of Public Utilities to determine if a detailed inspection will be required. On request, the consumer shall furnish to the Director any pertinent information regarding the piping system on such property where cross-connections are deemed possible.
- III. Notice of Inspection. The consumer of a premise identified to have a potential cross-connection shall be notified at least fifteen (15) days in advance to secure an appointment for inspection of the premise(s). If the facility is deemed to be in an emergency situation, Emergency Procedures, as established in this Manual, shall be followed.
- IV. Notice of Required Correction. When applicable, a notice shall be sent to the owner/consumer or authorized representative indicating what corrective measures must be taken, type of device or assembly that needs to be installed and time limit for the installation to be completed.
- V. Upon compliance with the notice of required correction, the owner/consumer or authorized representative shall immediately notify the Department of Public Utilities to schedule a date for re-inspection.

### **L. RIGHT OF ENTRY:**

Duly authorized employees or agents for the City of West Palm Beach shall be permitted to enter upon properties during normal business hours for the purpose of sampling or testing the potable water supply, or to make inspections or observations of connections to the potable water supply. Refusal to allow entry for these purposes may result in discontinuance of water service.

#### NOTICE OF CONTAMINATION OR POLLUTION:

1. A consumer must immediately notify the Department of Public Utilities if the consumer's potable water system is or has potentially been contaminated or polluted.
2. A consumer must immediately notify the Department of Public Utilities if the consumer has reason to believe that backflow has occurred from the consumer's private water system to the public potable water system.

### **M. EMERGENCY PROCEDURES:**

In the event that a cross-connection is discovered or a water meter is found running backwards, the City of West Palm Beach potable water system shall be assumed to be in imminent danger of contamination and the City of West Palm Beach shall use the following procedures:

- 1) Shut off water to the premises and if possible remove the water meter.
- 2) Utilities Dispatch shall be notified of the incident.
- 3) Utilities Dispatch will immediately send units to the site to confirm the area as "Contaminated" and isolate the water system in the area.
- 4) Utilities Dispatch will then notify the Water Quality Laboratory at the Water Treatment Plant, who with direction from the Director of Public Utilities will determine notification procedures to the Department of Health and Rehabilitative Services and the Department of Environmental Protection.
- 5) The City of West Palm Beach Water Quality Laboratory shall take water samples at various points, both within and outside the isolated area of the water system to determine the extent of the contamination.
- 6) The Department of Public Utilities shall begin flushing all nearby fire hydrants and blow offs within the affected area as soon as the affected area of the distribution system/water main has been isolated.
- 7) Upon such time as the Water Quality Laboratory gives a clearance that water in the affected area is potable, service shall be restored to that area.

Water service to a cross-connection WILL NOT BE RESTORED until the contaminated source is either removed or safely protected by an approved backflow prevention assembly.

### **N. TERMINATION OF SERVICE**

In emergency conditions, when the public potable water supply is being contaminated or is in immediate danger of contamination, water service shall be disconnected immediately by the Department of Public Utilities without notification.

Any facility or premises with a backflow preventer receiving water from the city's public water system that fails to perform the required testing or complete required repairs or replacement of backflow preventers in accordance with this Manual

shall be subject to termination of water service following written notice to the owner of the facility or premises. Such termination shall continue until all violations of this section and the cross-connection manual are corrected. In the event of termination of water service, restoration of service shall require payment of all applicable fees and charges for utility services, as established by resolution of the city commission.

### **O. ENFORCEMENT:**

Violations of this Manual shall be enforced in accordance with the provisions of the City of West Palm Beach Code of Ordinances, which may include code enforcement proceedings, civil citation, or suit by the City to restrain, enjoin or otherwise prevent a violation of or to mandate compliance with this section and to recover damages resulting from any such violation.

Violation by certified tester/repair may result in revocation of the certification for a period not exceeding one year for the first violation. Certification may be revoked permanently should the certified tester/repairer be found to have committed violations on more than one occasion. The city may also file a complaint with the county or state agency responsible for issuing licenses or certificates.

In addition to any other action, failure to correct any cross-connection or perform any required testing or complete required repairs of any backflow preventer within the time required by written notice from the City may result in the correction of the cross-connection or the completion of testing or repairs by the City under extraordinary circumstances to prevent backflow of contaminants into the city public water system. In the event of such action by the City, the City's costs and all appropriate charges, as established by resolution of the city commission, will be billed to the owner of the facility or premises.

### DEFINITIONS:

**Air Gap (AG)** – The unobstructed vertical distance through free atmosphere between the lowest effective opening from any pipe or faucet supplying water to a tank, plumbing fixture, or other device and the flood level rim of the receptacle. An approved air gap vertical separation shall be at least double the diameter of the supply pipe. In no case shall the air gap be less than one (1) inch.

**Assembly** – An assembly of one or more approved body components and including approved shutoff valves.

**Auxiliary Water Supply** – Any water supply on or available to the premises other than the purveyor's approved public water supply.

**Backflow** - Any flow of water, mixtures of water and other liquids, gases or other substances into the public water supply from any other source due to a cross-connection, auxiliary intake, interconnection, backpressure, back-siphonage, any combination thereof, or other cause.

**Backflow preventer** – An approved effective assembly, device or method used to prevent backflow from occurring in the potable water supply.

**Backpressure** - Any pressure on any source of water other than the public water supply, which may be greater than the pressure on the public water supply and may result in a reversal of the normal direction of flow.

**Backsiphonage** – Backflow caused by negative or reduced pressure in the supply piping.

**Consumer (Customer)** - Any person, firm, or corporation responsible for any property at which water from the City public water supply is received; without regard to whether the City is aware of the existence of such customer. In the absence of other parties or the failure of other parties to accept the responsibilities herein set forth, the owner of record shall be ultimately responsible.

**Consumer's Water System** – Any water system commencing at the point of delivery and continuing throughout the consumer's plumbing system, located on the consumer's premises, whether supplied by public potable water or an auxiliary water supply. The system or systems may be either a potable water system or an industrial piping system.



**Consumer's Potable Water System** – That portion of the privately owned potable water system lying between the points of use and/or isolation protection. This system will include all pipes, conduits, tanks, receptacles, fixtures, equipment and appurtenances used to produce, convey, store or use potable water.

**Contamination** - the presence of any foreign substance (organic, inorganic, radiological or biological) in water that tends to degrade its quality so as to constitute a hazard or impair the usefulness of water.

**Containment** - preventing the impairment of the potable water supply by installing an approved backflow prevention assembly/device at the service connection.

**Cross connection** - Any physical connection between a potable water supply system and any other piping system, sewer fixture, container, or device, whereby water or other liquids, mixtures, or substances may flow into or enter the potable water supply system.

**Degree of Hazard** - the evaluation of the potential hazard.

**Director of Public Utilities**- the City official responsible for the public potable water system.

**Double check Valve Assembly (DC)**- A device composed of two (2) single, independently acting, approved check valves, including tightly closing shutoff valves located at each end of the device and suitable connections for testing the water tightness of each check valve. This device shall only be used to protect against low hazard conditions.

**Dual check device (DuC)** - consists of two check valves assembled in series which is suitable for prevention of backpressure and backsiphonage.

**Health Hazard** – An actual or potential threat of contamination or pollution of a physical or toxic nature to the public potable water system or the consumer's potable water system of such a degree or intensity that there would be a danger to health.

**High Hazard** - an actual or potential threat of contamination or pollution of a physical or toxic nature to the public potable water system or the consumers potable water system to such a degree or intensity that there would be a danger to health.

**Isolation** - the act of confining a localized hazard within a plumbing or distribution system by installing approved back flow prevention assemblies/devices.

**Low Hazard** – means a cross-connection or potential cross-connection involving any substance that generally would not be a health hazard but would constitute a nuisance or be aesthetically objectionable if introduced into the potable water supply.

**Multi-Family** - (also known as **multi-dwelling** unit) is a classification of housing where multiple separate housing units for residential inhabitants are contained within one building or several buildings within one complex.

**Non-Potable Water** - Water is not safe for human consumption.

**Pollution** – The presence of any foreign substance (organic, inorganic or biological) in the water system which tends to degrade its quality so as to constitute a hazard or 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 effect such waters for domestic abuse.

**Point of Delivery** – The point of delivery shall generally be at the property line of the customer, adjacent to the public street where the City’s water mains are located; or at a point on the customer’s property where the meter is located. The point of delivery for all fire line connections shall be considered as the point where the isolation valve is located, generally adjacent to the public water mains. The customer shall be responsible for all water piping, control devices and other appurtenances located on the customer’s side of the point of delivery.

**Potable Water** - Water from any source which has been investigated by the Health Department and which has been approved for human consumption.

**Pressure Vacuum Breaker Assembly** – An assembly consisting of an independently operating, internally loaded check valve, an independently operating, loaded air-inlet valve located on the discharge side of the check valve, with properly located resilient-seated test cocks and tightly closing resilient- seated shutoff valves attached at each end of the assembly designed to be operated under

pressure for prolonged periods of time to prevent back-siphonage. The pressure vacuum breaker may not be subjected to any back-pressure.

**Private Water System** – Any pipe, system of pipes and other associated facilities that are not part of the public water and are used in whole or in part to convey, move or receive water, regardless of the source(s) of water in such system.

**Protected Cross-Connection** – Any physical connection or other condition, which does not permit backflow because containment has been achieved.

**Public potable water system** – The potable water system owned, maintained and operated by the City. This system includes all transmission and distribution mains, lines, pipes, connections, storage tanks and other facilities used to produce, treat, convey or store potable water for public consumption or use.

**Reduced Pressure Zone (RPZ) Device** - a device containing within its structure a minimum of two (2) independently acting, approved check valves, together with an automatically operating pressure relief valve. The first check valve reduces the supply pressure a predetermined amount so that during normal flow and at cessation of normal flow, the pressure between the checks shall be less than the supply pressure. In case of leakage of either check valve, the differential relief valve, by discharge to atmosphere, shall operate to maintain the pressure between the checks less than the supply pressure. The unit shall include tightly closing shut-off valves located at each end of the device and each device shall be fitted with properly located test cocks. This device shall be used to protect against high hazard conditions.

**Service Connections** - The terminal end of a service connection from the public potable water system, or, in the absence of a complete service connection, the point at which water leaves the public potable water system and enters a private water system.

**Water Purveyor** – The owner or operator of the public potable water system that delivers an approved water supply to the public. As used herein, the terms Water Purveyor and City of West Palm Beach may be used synonymously.

**Water Supply (Approved)** - the term approved water supply shall mean any public potable water supply, which has been investigated and approved by the Florida Department of Environmental Protection or its delegated authority. The system must be operating under a valid health permit. In determining what constitutes an

approved water supply, The Health Department has reserved the final judgment as to its safety and potability.

**Vacuum Breaker (Atmospheric Type)** - a device used to prevent back siphonage - subjected to static line pressure.

**Vacuum Breaker (Pressure Type)** - a device suitable for continuous pressure, to be used to provide protection against back-siphonage.