

**CITY OF SUNNYSIDE  
STANDARD OPERATING PROCEDURES MANUAL  
CROSS CONNECTION CONTROL  
EFFECTIVE: JULY , 2004**

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## **1. Definitions.**

Except where specifically designated herein, all words used in this document shall carry their customary meanings. Words used in the present tense include the future and plural words include the singular. The word "shall" is always mandatory, and the word "may" denotes a use of discretion in making a decision. Any definition not found in this manual will take its meaning from Chapter 246-290 WAC, or as amended, or in the most recent edition of the "Manual of Cross Connection Control" published by the Foundation for Cross Connection Control and Hydraulic Research, University of Southern California.

1. "Air gap" means a physical separation through free atmosphere between the free-flowing end of a potable water supply pipeline and the overflow rim of an open or non-pressure-receiving vessel. To be an "approved air gap," the separation must be at least twice the diameter of the inlet piping (supply pipe) measured vertically, and never be less than one inch.
2. "Approved backflow prevention assembly" or "backflow assembly" or "assembly" means an assembly to counteract backpressures or prevent back-siphonage. This assembly must appear on the list of approved assemblies issued by the Washington State Department of Health. The assembly must be purchased and installed as a complete unit including two shut-off valves and test cocks.
3. "Auxiliary supply" means any water source or system other than the City of Sunnyside's water.

4. "Backflow" means the flow of water or other liquids, gases or solids from any source back into the distribution system, with the flow of water in the opposite direction of its intended flow.
5. "Backflow assembly tester" means a person holding a valid BAT certificate issued in accordance with WAC 246-290-490 and Chapters 18.27, 18.106, and 70.119 RCW.
6. "Backpressure" shall mean backflow due to water pressure on the downstream side of the meter which exceeds the operating pressure of the public potable water supply.
7. "Backsiphonage" shall mean backflow due to a negative or reduced pressure within the public potable water supply.
8. "Building inspector" shall mean the building inspector for the City of Sunnyside.
9. "City" shall mean the City of Sunnyside.
10. "Closed system" means any water system or portion of a water system in which water is closed to atmosphere.
11. "Consumer Water System" means the customer's portion of the water system, which begins at the downstream end of the service connection or the water meter, if one exists, and includes all water system plumbing within the property lines of the consumer's premises.
12. "Contamination" means the entry into or presence in a public water supply system of any substance which may be harmful to health and/or quality of the water.
13. "Cross-connection" means any physical arrangement where a public water system is connected, directly or indirectly (actual or potential), with any other nondrinkable water system or auxiliary system, wells, sewer, drain conduit, swimming pool, storage reservoir, plumbing fixture, swamp coolers, or any other device which contains, or may contain, contaminated or polluted water, sewage, used water, or other liquid of unknown or unsafe quality which may be capable of imparting contamination or pollution to the public water system as a result of backflow. Bypass arrangements, jumper connections, removable sections, swivel or changeover devices, or other temporary or permanent devices through which, or because of which, backflow may occur are considered to be cross-connections.
14. "Cross-connection specialist" or "CCS" shall mean a person holding a valid CCS certificate issued in accordance with the Washington Administrative Code.
15. "Degree of hazard" means the low or high hazard classification that shall be attached to all actual or potential cross-connections.

16. "Director" shall mean the public works director or his/her designee.
17. "DOH" means Washington State Department of Health.
18. "Double check detector assembly" or "DCDA" means an assembly which consists of two independently operating check valves which are spring-loaded or weighted. The assembly comes complete with a shut-off valve on each side of the checks, as well as test cocks to test the checks for tightness. It shall also be provided with a factory bypass arrangement with a meter and a minimum of an approved double check assembly.
19. "Double check valve backflow prevention assembly" or "double check assembly" or "double check" or "DCVA" or "DC" means an assembly which consists of two independently operating check valves which are spring-loaded or weighted. The assembly comes complete with a shut-off valve on each side of the checks, as well as test cocks.
20. "Health hazard" means an actual or potential threat of contamination of a physical, toxic or biological nature that would be a danger to health.
21. "High hazard" means the classification assigned to an actual or potential cross-connection that potentially could allow a substance that may cause illness or death to backflow into the potable water supply.
22. "In-premises protection" means a method of protecting the health of consumers served by the customer's plumbing system (i.e., located within the property lines of the customer's premises) by the installation of an approved air gap, backflow prevention assembly or device at the point of hazard.
23. "Inspector," "surveyor" or "specialist" shall mean a person holding a valid CCS certificate issued in accordance with the Washington Administrative Code, who meets the stipulations of the City of Sunnyside Cross Connection Code and the most recent edition of the City's standard operating procedures manual.
24. "Local administrative authority" means the local official, board, department or agency authorized to administer and enforce the provisions of the Uniform Plumbing Code and all other plumbing codes recognized by the state of Washington.
25. "Low hazard" means the classification assigned to an actual or potential cross-connection that could allow a substance that may be objectionable, but not hazardous to one's health, to backflow into the potable water supply.
26. "Mobile unit" shall mean units connecting to the City water system through a hydrant, hose bib, or other appurtenance of a permanent nature that is part of the

City water system or a permanent water service to a premises. Examples can include but are not limited to the following: water trucks, pesticide applicator vehicles, chemical mixing units or tanks, waste or septage hauler trucks or units, sewer cleaning equipment, carpet or steam cleaning equipment, rock quarry or asphalt/concrete batch plants, or any other mobile equipment or vessel. Uses that are excluded from this definition are recreational vehicles at assigned sites or parked in accordance with other City ordinances pertaining to recreational vehicles, and homeowner devices that are used by the property owner in accordance with other provisions of this, or other, City of Sunnyside ordinances pertaining to provision of water service to premises.

27. "Person" means a natural person (individual), corporation, company, association, partnership, firm, Limited Liability Company, Joint Venture Company or association, and other such entity.
28. "Plumbing hazard" means an internal or plumbing-type cross-connection in a consumer's potable water system that may be either a pollutional or a contamination-type hazard. This includes, but is not limited to, cross-connections to toilets, sinks, lavatories, wash trays, domestic washing machines and lawn sprinkling systems. Plumbing-type cross-connections can be located in all types of structures including but not limited to homes, manufactured homes, apartment houses, hotels and commercial or industrial establishments.
29. "Point-of-use isolation" shall mean the same as "in-premises protection."
30. "Pollutional hazard" means an actual or potential threat to the physical properties of the water system or the potability of the public or the consumer's potable water system but which would not constitute a health or system hazard, as defined. The maximum degree of intensity of pollution to which the potable water system could be degraded under this definition would cause a nuisance or be aesthetically objectionable or could cause minor damage to the system or its appurtenances.
31. "Potable water supply" means any system of water supply intended or used for human consumption or other domestic use and meets all requirements established by the Safe Drinking Water Act and the DOH regulations.
32. "Premises" means any piece of property to which water is provided including, but not limited to, all improvements, mobile structures and structures located on it.
33. "Premises isolation" means a method of protecting a public water system by installation of an approved air gap or approved backflow prevention assembly at the point of service (end of purveyor's service pipe) to protect the customer's plumbing system from the purveyor's distribution system.
34. "Public Water system" means the City's water system, consisting of source, treatment, storage and distribution facilities, ending at the point of delivery to the

consumer's water system, which is considered to be the end of the service connection or the water meter, if one exists.

35. "Reduced pressure detector assembly" or "RPDA" shall mean an approved assembly consisting of two approved reduced pressure backflow assemblies, set in parallel, equipped with a meter on the bypass line to detect small amounts of water leakage or use.
36. "Reduced pressure principle backflow prevention assembly" or "reduced pressure backflow assembly" or "RP assembly" shall mean an assembly containing two independently acting approved check valves together with a hydraulically operated, mechanically independent pressure differential relief valve located between the check valves. The assembly shall include properly located test cocks and tightly closing shut-off valves at each end of the assembly.
37. "SOP" means the most recent edition of the City of Sunnyside's standard operating procedures manual.
38. "Thermal expansion" means the pressure created by the expansion of heated water.
39. "Used water" means any water supplied by the City to a customer's property after it has passed through the service connection and is no longer under the control of the City.
40. "WAC" means the most recent edition of the Washington Administrative Code.

## **2. Application and responsibilities.**

This manual applies throughout the City and to every premises and property served by the City water system. It applies to any premises, public or private, regardless of date of connection to the City water. Every owner, occupant and/or person in control of any concerned premises is responsible for compliance with the terms and provisions contained herein.

## **3. Backflow prevention assembly requirements.**

A CCS employed by or under contract with the City shall determine the type of backflow assembly to be installed within the area served by the City. All assemblies shall be installed at the service connection unless it is determined by the CCS to install the assemblies at an alternate location for premises protection or at the point of use. The cross-connection shall be eliminated or an assembly shall be required to be installed in

each of the following circumstances, but the CCS is in no way limited to the following circumstances:

1. The nature and extent of any activity on the premises, or the materials used in connection with any activity on the premises, or materials stored on the premises, could contaminate or pollute the potable water supply.
2. Premises having any one or more cross-connections or potential cross-connections as that term is defined in this manual and the WAC.
3. When a cross-connection survey report form is required by the City to be filled out and returned and it has not been received.
4. Internal cross-connections are present that are not correctable.
5. Intricate plumbing arrangements exist or plumbing subject to frequent changes are present that make it impractical to ascertain whether or not cross-connections exist.
6. There is a repeated history of cross-connections being established or re-established.
7. There is unduly restricted entry so that inspections for cross-connections cannot be made with sufficient frequency to assure that cross-connections do not exist.
8. Materials, chemicals or any substance or apparatus is being used that if backflow occurred contamination would result.
9. Installation of an approved backflow prevention assembly is deemed to be necessary in the judgment of the CCS to accomplish the purpose of these regulations.
10. Any premises having an auxiliary water supply which is not in compliance with WAC 248-54-30 and is not acceptable to the City.
11. In the event a point-of-use assembly has not been tested or repaired as required by WAC 246-290-490, or as amended, and this manual.
12. If it is determined that additions or rearrangements have been made to the plumbing system without obtaining proper permits as required by the City code enforcement division.
13. All high health hazard premises which are defined in Table 9 of WAC 246-290-490, or as amended, are required to have premises isolation by installing a reduced pressure principle assembly in accordance with this manual.

14. When a garden hose attachment is connected to the premises plumbing, including but not limited to fertilizer applicators, pesticide applicators and radiator flush kits.
15. Where reclaimed or reused water systems are installed.
16. Premises on which any substance is handled under pressure so as to permit entry into the public water system.

#### **4. Irrigation systems.**

All irrigation systems shall be protected in accordance with the plumbing code regulations. In the event any system is equipped with an injector system, or has submerged heads, a reduced pressure principle assembly will be required.

#### **5. Fire systems.**

An approved double check detector backflow prevention assembly shall be the minimum protection on all new fire sprinkler systems using piping material that is not approved for potable water use, and/or that does not provide for periodic flow-through. A reduced pressure principle detector backflow prevention assembly must be installed, if any solution other than the potable water can be introduced into the sprinkler system. Retrofitting on fire sprinkler systems will be required in each of the following circumstances:

1. Where improper maintenance has occurred;
2. On all high hazard systems;
3. Wherever the CCS deems necessary; and
4. Wherever required by the WAC.

#### **6. Temporary meters and hydrant valves.**

Backflow protection will be required on temporary meters and all hydrant valves. The type of assembly will be commensurate with the degree of hazard and will be determined on a case-by-case basis by the CCS.

#### **7. Mobile units.**

Any mobile unit or apparatus as defined in the definitions section of this document which uses the City's water from any premises or piping within the distribution system shall first obtain a permit from the City. The mobile unit will be inspected to assure appropriate backflow protection is installed in accordance with this manual.

## **8. Right-of-way encroachment.**

1. No person shall install or maintain a backflow prevention assembly upon or within any City right-of-way except as provided in this section.
2. The City reserves the right to have an assembly installed in the right-of-way.
3. A backflow prevention assembly required by the City may be installed upon or within any City right-of-way only if the owner proves to the City that there is no other feasible location for installing the assembly, and installing it in the right-of-way will not interfere with traffic or utilities. The City retains the right to approve the location, height, depth, enclosure, and other requisites of the assembly prior to its installation.
4. All permits required by the City code to perform work in the right-of-way shall be obtained.
5. A property owner shall, at the request of the City and at the owner's expense, relocate a backflow prevention assembly which encroaches upon any City right-of-way, when such relocation is necessary for street or utility construction or repairs for purposes of public safety.

## **9. Plumbing code.**

As a condition of water service, customers shall install, maintain, and operate their piping and plumbing systems, including the installation and maintenance of backflow devices, in accordance with all Washington State plumbing codes. The City of Sunnyside Building Department is the Local Administrative Authority in relation to this Cross Connection Program and, as a result, will be informed and involved in all aspects of the Program that pertain to them.

## **10. Access to non-residential premises.**

Authorized employees of the City, with proper identification, shall have access during normal business hours, to all parts of non-residential premises and within the buildings to which water is supplied. If access to the premises or to the interior of a structure during these hours are denied, a reduced pressure principle assembly shall be required to be installed at the service connection to that premises.

## **11. Access to residential premises.**

Access to residential property, other than in the immediate vicinity of the service meter is not necessary for the fulfillment of this program. If so requested by the property owner, the CCS may access the property to assist the property owner in the identification of potential cross-connections within their own plumbing system.

## **12. Testing and repairs.**

Backflow prevention assemblies shall be tested and repaired in accordance with the requirements set out in the WAC and this manual. Minimum required testing shall include the following: at installation, annually thereafter, after any device repair and after any backflow incident.

## **13. Responsibilities of backflow prevention assembly testers.**

All backflow assembly testers operating within the City shall be certified in accordance with all applicable regulations and shall comply with all stipulations in this manual. Testing documentation shall be completed on forms provided by the City and shall be returned within 10 days of test completions. B.A.T. certification number and testing equipment information shall be provided on test form for City verification use.

## **14. Maintenance of assemblies.**

Backflow prevention assemblies shall be maintained in accordance with the requirements set out in the WAC, or as amended, and this manual.

## **15. Installation requirements and specifications.**

Backflow prevention assemblies shall be installed in accordance with the requirements set out in the WAC and this manual.

In the event the CCS allows a premises isolation assembly to be installed at an alternate location, there shall be no connections between the meter and the premises isolation assembly.

## **16. Thermal expansion.**

If a closed system has been created by the installation of a backflow prevention assembly, it is the responsibility of the property owner to eliminate the possibility of thermal expansion.

## **17. Pressure loss.**

Any reduction in water pressure caused by the installation of a backflow assembly is not the responsibility of the City. The City will give reasonable assistance to the owner regarding information on adequate sizing of assemblies and proper plumbing practices to provide for required pressure and flows for fire protection.

## **18. Parallel installation.**

Premises where non-interruption of water supply is critical shall have two assemblies of the same type installed in parallel. They shall be sized in such a manner that either assembly will provide the minimum water requirements while the two together will provide the maximum water requirements.

#### **19. New construction.**

1. On all new non-residential construction and multi-family residential buildings with water services larger than one inch (1"), an approved backflow assembly shall be installed at the service connection, or alternate location, if approved by the CCS. The type of the assembly will be commensurate with the degree of hazard as determined by the CCS.
2. When a building is constructed on commercial premises, and the end use of the building is not determined or could change, a reduced pressure principle backflow prevention assembly shall be installed at the service connection to provide protection of the public water supply in the event of the most hazardous use of the building.

#### **20. Residential service connections.**

The City shall install an approved backflow prevention assembly in accordance with this manual at any residential property which has been determined to have an actual or potential cross-connection and/or has violated the plumbing code or this manual in any way.

#### **21. Retrofitting.**

The City shall evaluate existing water services for potential cross-connections via periodic customer surveys and/or on-site inspection by a CCS. Evaluation of existing services will be prioritized within budgetary and manpower limitations as follows: Table 9 Facilities listed in WAC 246-290-490, all other industrial/processing facilities, all other non-residential facilities, multi-family residential, single family residential. Retrofitting shall be required on all service connections where an actual or potential cross-connection exists, and wherever else the City deems retrofitting necessary.

#### **22. Record Keeping.**

The City shall maintain a record of all backflow devices within the City water system, including the device type, size, location, date of installation, dates of testing, etc. The City shall notify the property owner and/or the responsible party of required annual testing a minimum of thirty (30) days in advance of the due date for testing to be complete.

### **23. Public Education.**

The City shall initiate and conduct an effective "Consumer Education Program" by way of handouts, public service announcements, community presentations, bulletin board displays and any other effective means identified hereafter.