

# Appendix O. Cross Connection Control Program

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# CITY OF ISSAQUAH CROSS CONNECTION CONTROL PROGRAM



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## ***Cross-Connection Control Program***

### **1. Purpose**

The purpose of this program is to protect the health of water consumers of the public water system. This cross-connection control program establishes minimum operating policies and backflow prevention assembly installation and testing practices. This program is structured such that it may be supplemented with published documents and materials developed by the City for its specific use. The authority to enforce these practices and policies is established in City of Issaquah Municipal Code Chapter 13.13 or its future revisions.

### **2. Definitions**

***Approved:*** depending upon the context, City of Issaquah-approved or Washington State Department of Health-approved.

***Air Gap (AG):*** an air gap is a physical separation between the free flowing end of a potable water supply pipeline and the overflow rim of an open or non-pressurized receiving vessel.

***Backflow:*** the undesirable reversal of flow of water or other substances through a cross-connection into the public water system or consumer's potable water system.

***Backflow Prevention Assembly:*** an assembly to prevent backflow; an assembly that, when installed, controls cross connections.

***BAT:*** a Washington State certified Backflow Assembly Tester holding a valid, State of Washington-issued, certificate in accordance with chapter WAC 246-290.

***CCC:*** Cross Connection Control; a program to control or eliminate cross connections; the act of controlling or eliminating cross connections.

***CCS:*** Cross Connection Control Specialist; one who is certified by the State of Washington to execute the City's Cross Connection Control Program.

***City:*** the City of Issaquah, City personnel or designee, having the authority to perform the associated duties described herein.

***Cross Connection:*** any actual or potential physical connection between a public water system or the consumer's water system and any source of nonpotable liquid, solid, or gas that could contaminate the potable water supply by backflow.

***DCDA:*** Double Check Detector Assembly; a type of backflow prevention assembly used to protect against low-health hazard. Generally installed on fire systems that require metering.

***DCVA:*** Double Check Valve Assembly; a type of backflow prevention assembly used to protect against low-health hazard.

***DOH:*** the Washington State Department of Health, Division of Drinking Water, the authoritative body for public drinking water systems.

***IMC:*** Issaquah Municipal Code; the body of law for the City of Issaquah.

***In-Premises Isolation:*** an approved air gap or approved backflow prevention assembly that is located within the property owner's property lines, to isolate a specific piece of equipment.

***Potable:*** water suitable for drinking by the public.

***Premises Isolation:*** an approved air gap or approved backflow prevention assembly that is installed at or near the service connection or an alternative location acceptable to the City to isolate the property owner's water system from the City's distribution system.

***RCW:*** the Revised Code of Washington; the compilation of all permanent laws now in force.

***RPBA:*** Reduced Pressure Backflow Assembly; a type of backflow prevention assembly used to protect against high-health hazard.

***RPDA:*** Reduced Pressure Detector Assembly; a type of backflow prevention assembly used to protect against high-health hazard. Generally installed on fire systems that require metering.

***Test Report:*** a report completed by a BAT that denotes the current condition of a backflow prevention assembly.

***WAC:*** the Washington Administrative Code; rules and regulations adopted by State agencies.

### **3. Responsibilities**

- a. The City of Issaquah
  - i. The City shall attempt to prevent the contamination of the water distribution system by inspecting for cross connections, providing guidance for new installations and existing connections, maintaining records on backflow prevention assemblies, and responding to property owner inquiries to meet the requirements of State regulations for cross-connection control.
  - ii. The City's responsibility for cross-connection control shall begin at the water supply source and end at the point of delivery to the property owner's water system.
- b. Property Owner
  - i. The property owner's water system begins at the downstream end of the service connection or water meter on the public right-of-way or utility-held easement.
  - ii. The property owner shall be responsible for eliminating cross connections by controlling them through the installation, regular testing, and maintenance of approved backflow prevention assemblies.
  - iii. The property owner shall be required to provide access for inspection to allow a determination of cross-connection potential and the necessary control methods. Further, the property owner shall provide any information that might be relevant to the CCS.
  - iv. The property owner shall notify the City of any assembly that the property owner believes is no longer required.
  - v. The property owner shall assume all costs associated with the inspection, testing, repair, and replacement of backflow prevention assemblies.

### **4. Applicability of Regulations and References**

- a. The control or elimination of cross connections shall be in accordance with the most current revisions of the following state, county, and local rules and regulations:
  - i. Cross-Connection Control: WAC 246-290-490;
  - ii. Washington State Plumbers Code: RCW 18.106;
  - iii. Washington State Building Code: RCW 19.27;
  - iv. Washington State Public Water Systems Mandate: RCW 70.119A.060;
  - v. Washington State Powers and Duties of the State Board of Health: RCW 43.20.050;
  - vi. City of Issaquah Municipal Code 13.13.
- b. The policies, procedures and criteria for determining appropriate levels of protection shall be in accordance with the most current editions of the following references:



- i. *Cross-Connection Control Manual: Accepted Procedure and Practice* published by the Cross-Connection Control Committee of the Pacific Northwest Section of the American Water Works Association;
  - ii. *Manual of Cross-Connection Control* published by the Foundation for Cross-Connection Control and Hydraulic Research, University of Southern California;
  - iii. *Recommended Practice for Backflow Prevention and Cross-Connection Control* (Manual M14) published by the American Water Works Association.
- c. Interpretation of the above regulations and references is at the discretion of the City.

## **5. Operating Procedures**

- a. Guidelines for In-Premises and Premises Isolation:
  - i. All commercial properties are required to have premises isolation by AG or RPBA.
  - ii. All buildings with a height of 30' or more from the water meter box lid to the highest gutter line, regardless of interior plumbing, is required to have premises isolation.
  - iii. Properties listed in WAC 246-290-490 Table 9 require premises isolation by AG or RPBA.
  - iv. Premises isolation shall be used if access to the property owner's property is unobtainable or the CCS determines premises isolation is prudent.
  - v. In-premises isolation will be used for controlling or eliminating cross connections on interior plumbing.
  - vi. In-premises isolation assemblies must provide a level of protection commensurate with the City's assessed degree of hazard.
  - vii. If access for inspection is denied by the property owner and there is not an immediate hazard present, the City will require an AG or RPBA at the property line or immediately upstream of the area where access has been denied. The property owner will assume all costs.
- b. Guidelines for Type and Location of Protection
  - i. The type of backflow protection required shall depend on the hazard. The hazard determination and required protection shall be made by the City and will generally follow guidelines defined in *Recommended Practice for Backflow Prevention and Cross-Connection Control*.
  - ii. The City shall perform inspections for new service connections, considering planned or future water uses. Proper selection and installation of a backflow prevention assembly shall be a condition of allowing new water service connection.
  - iii. The City shall perform inspections for existing service connections. These inspections will primarily be conducted as part of tenant improvement projects. The City may notify the property owner of a required inspection; the property owner is responsible for scheduling the inspection within 20 working days.

- iv. Type of backflow prevention assemblies:
  - A. An Air Gap (AG), Reduced Pressure Backflow Assembly (RPBA), or a Reduced Pressure Detector Assembly (RPDA) shall be used for services that present high health hazards, where back pressure and backsiphonage may occur.
  - B. A Double Check Valve Assembly (DCVA) or a Double Check Detector Assembly (DCDA) shall be used for low health hazards where back pressure and backsiphonage may occur. Higher levels of protection, that is AG, RPBA, or RPDA may be installed but would not be required.
- c. Guidelines for Eliminating Cross Connections
  - i. Cross connections shall be eliminated whenever possible.
  - ii. When cross connections cannot be eliminated, an approved air gap or an approved backflow prevention assembly, commensurate to the degree of hazard as determined by the City, shall be installed in accordance with Section 6 of this program.

## **6. General Installation Practices**

- a. The City shall assess the degree of hazard and determine the appropriate level of backflow protection needed.
- b. The specific installation criteria shall be in accordance with the City of Issaquah's *Standard Details Manual*.
- c. The backflow prevention assembly installed must appear on the current approved backflow prevention assemblies list developed by the University of Southern California Foundation for Cross Connection Control and Hydraulic Research or other entity acceptable to the Washington State DOH.
- d. The property owner is responsible for obtaining required permits.
- e. The property owner is responsible for notifying the City Water Department of assembly installation(s).
- f. Assemblies shall be accessible for testing and maintenance.
- g. Assemblies shall be protected against freezing, flooding, and mechanical damage.
- h. Assemblies shall not be installed in any enclosure or area containing fumes which are corrosive or toxic.

## **7. Inspection and Testing Procedures**

- a. General
  - i. Backflow prevention assemblies shall be inspected and tested at the time of:
    - A. Initial installation.
    - B. After the assembly is repaired or moved.

- C. Annually after the initial installation.
  - D. As required by the City if testing indicates repeated failures.
  - ii. Testing procedures shall be in accordance with the requirements set forth in section 4.b. of this document
  - iii. Test reports will only be accepted from those BATs who have a certificate of calibration for their testing equipment on file at the City.
- b. New installations
- i. All new assemblies shall be tested upon installation.
  - ii. A Certificate of Occupancy shall be dependent, in part, by a satisfactory inspection of the installation by the City.
  - iii. A Certificate of Occupancy shall be dependent, in part, by a satisfactory test result of the backflow prevention assembly.
  - iv. All repairs and testing must be performed by a State certified BAT.
  - v. All test reports, whether satisfactory or unsatisfactory, must be submitted to the City.

**Table 7-1**  
**Cross-connection Control Program Guidance**

The following matrix is intended to provide basic cross-connection control guidance to designers and project review staff. Specific questions or situations should be directed to City of Issaquah Water Quality staff for analysis.

Application	Required Protection Level	Protection location	Background
Non-Residential, Commercial or Mixed-use Properties.	Premises Isolation with RPBA.  Other in-premises assemblies may be required as determined by specific hazard(s).	Directly after meter or at first interior building penetration. No tees allowed between meter and assembly.	Premises isolation is recommended for non-residential (commercial), shopping centers and strip malls where uses and plumbing may change.  RP's provide the highest level of mechanical protection to the potable water system
Non-potable or unapproved water supply (irrigation or other) on property with, or adjacent to, potable water.	Premises Isolation with RPBA.  Other in-premises assemblies may be required as determined by specific hazard(s).	<u>All</u> potable water supplies to the property, directly after meter with no connections between the meter and the assembly.	<u>Any</u> unapproved water supply on property with, or adjacent to, a potable water source requires an RPBA on <u>all</u> potable service connections (unless otherwise approved by CCC program administrator).
Potable Water Irrigation w/o chemical injection.	DCVA	Directly after the Irrigation point of connection	DCVA provides appropriate level of protection without regard for site elevations and future plumbing modifications downstream of the assembly.
Fire Systems	With metered service: RPBA or DCVA depending on hazard.  Without metered service: RPDA or DCDA depending on hazard.	Directly after meter or first building penetration. No connections allowed between meter and assembly.	Chemical injection, antifreeze or on-property unapproved water supply triggers the RPBA/RPDA requirement.

c. Existing installations

- i. All assemblies shall be tested at least annually by a BAT.
- ii. The City shall notify property owners responsible for assemblies of record when testing is due.
- iii. Test reports indicating the assembly's satisfactory performance shall be forwarded to the City within 30 days from the date of notification.
- iv. If satisfactory test reports have not been received within the month due, a second letter will be sent to the property owner of record warning the property owner that a satisfactory test report must be received by the City within 10 working days or water service will be terminated.
- v. A reminder of water service termination shall be posted at the site if satisfactory reports are not received within the time period indicated in the second letter.
- vi. Failure to perform the required testing shall result in termination of water service for non-compliance of IMC 13.13.
- vii. The City will assess charges, as stated in IMC 3.65.040, for water service termination and resumption. The charges will be assessed to the water utility account.
- viii. The City may require testing more often than annually due to a history of failure, significant health risks, or propensity to damage.
- ix. The City, at any time, may inspect the assembly, the installation, or verify the test results.

d. Landscape Irrigation Systems

- i. Landscape irrigation system backflow prevention assemblies shall be tested during the yearly operational period.
- ii. Because new assemblies are installed throughout the year, and because subsequent, yearly testing is due annually from the month of installation, the following schedule may be used to adjust testing months for assemblies installed during winter months into a permanent spring or summer testing schedule. Testing months may also be dependent on existing schedules for the property.

**Table 7-2  
Irrigation Backflow Prevention Assembly Testing Schedule**

If installed during the month of:	January	February	September	October	November	December
Then subsequent, annual testing will be during the month of:	June	July	March	April	May	June

- iii. To abandon a landscape irrigation system, the backflow prevention assembly, pipe and connection between the main potable supply and the irrigation main line must be physically removed. The ‘tee,’ or similar connection must be removed from the supply piping feeding the system and replaced with ‘straight’ pipe. The revised piping arrangement must be inspected by Water Quality personnel.
- e. Any assembly that has been repaired, replaced or moved must be inspected and tested by a BAT and/or the City.
- f. Inspections of properties classified as ‘High Hazard.’
  - i. High Hazard classification of properties shall include those adopted from the ‘High Health Cross Connection Hazard Premises Requiring Premises Isolation by AG or RPBA’ from Table 9; WAC 246-290.
  - ii. The City shall assign inspection and correction priorities to high hazard sites, with special emphasis on the following types of facilities: hospitals, schools, clinics, laboratories, piers and docks, mortuaries, sewage treatment plants, food and beverage processing plants, chemical plants using water process, metal plating industries, petroleum processing or storage plants, car washes, facilities having a non-potable auxiliary water supply, and others specified by the City.
  - ii. If, during any site survey, a cross connection is found that presents, in the opinion of the inspector, an imminent threat to public health, the water service to the site shall be immediately terminated and shall remain off until the hazard is corrected.

- iii. The CCS shall provide the property owner and the City written or electronic results of the survey including a list of the cross connections found.
- iv. If an approved backflow prevention assembly is required on the property owner's system, the type and location of the assembly shall be specified in the inspector's notice to the property owner.
- v. The property owner shall notify the City when the installation and testing have been completed.
- vi. Non-compliance will result in a certified letter being sent to the property owner, requiring completion of the work and reminding the property owner that it is the City's responsibility to deny water service for non-compliance.
- vii. If work is not complete within the specified time or does not make special arrangements with the City for an alternate date based on extenuating circumstances, the City will discontinue water service. Standard City fees for termination and reconnection will be levied against the property owner's water service account.

## **8. Backflow Incident Response Procedures**

Due to the possible severity of cross-connection effects, the City shall respond to reported or possible backflow incidents immediately.

## **9. Quality Control Program**

- a. Tester Certification and Test Kit Calibration
  - i. Backflow assembly test reports shall only be accepted from State of Washington certified BATs.
  - i. Backflow assembly test reports shall only be accepted from BATs with current test kit calibration on file with the City.
  - ii. The criteria for tester certification and test kit calibration practices shall be in accordance with the current editions of the manuals described in Section 4 of this document.
  - iii. For the convenience of the property owner, the City may provide a list of BATs who have submitted valid test kit calibration results, is currently a State of Washington certified BAT, and have requested to be placed on the list. The list or City do not imply preference, and appearance on the list does not constitute endorsement by the City. A complete list of Washington State certified BATs can be found online at: [http://grcc.greenriver.edu/wacertservices/bat/bat\\_publiclist.asp](http://grcc.greenriver.edu/wacertservices/bat/bat_publiclist.asp)

b. Test Report Submittal Schedule

**Table 9-1  
Test Report Submittal Schedule**

Installation Type	Results	Test Report Submittal Schedule
New Backflow Prevention Assembly	Satisfactory Results	Submit Test Reports at the time of the testing (within 10 days of the test date).
	Unsatisfactory Results	Submit Unsatisfactory Test Report at the time of testing (within 10 days of test date). Submit Retest Report before Final inspection of the permit.
Existing Backflow Prevention Assembly	Satisfactory Results	Submit Satisfactory Test Report within 30 days of initial annual test notification.
	Unsatisfactory Results	Make necessary repairs and submit Satisfactory Test Report within 60 days of initial annual test notification.

**10. Records**

- a. A Master List of service connections and/or properties where the City relies upon approved backflow prevention assemblies to protect the public water system from contamination and shall be kept and will be in accordance with WAC 246-290-490. Information to be included in the Master List for all assemblies and AGs in lieu of assemblies:
  - i. Property owner name, address and contact information
  - ii. Exact location of assembly
  - iii. Assessed hazard level
  - iv. Required backflow prevention assembly
  - v. Installation date
  - vi. Assembly nomenclature
  - vii. Test results and history
  - viii. BAT contact information
- b. The City shall maintain records of Cross-Connection Control Program Summary Reports
- c. The City shall maintain records of Backflow Incident Reports



## **11. Public Education Program**

The City shall make available to property owners, information regarding backflow and backflow prevention, as well as the City's Cross-Connection Control Program. This public education program could include, but is not limited to:

- a. Articles in the City newsletter
- b. Fact sheets available for new property owners and developers
- c. Informational pamphlets and brochures available at the City office
- d. Water quality (Consumer Confidence) reports

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