

LYNNWOOD
WASHINGTON

CROSS CONNECTION CONTROL OPERATING POLICY

Public Works Department
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I. DEFINITIONS

- A. Approved. Accepted by the Director of Public Works as meeting an applicable specification stated or cited in this regulation.
- B. Auxiliary Water Supply. Any water supply to the premises other than the City's approved public potable water supply.
- C. Approved Backflow Preventer. An approved backflow prevention assembly approved by the Washington State Department of Health and relied upon by the city for the protection of the public water system, including, but not limited to the following devices:
 - 1. Approved Air Gap (AG). The vertical physical separation between the free-flowing discharge end of a potable water supply pipeline and the overflow rim of an open or non-pressurized receiving vessel. To be an approved "air gap", the separation must be at least twice the inside diameter of the supply piping, and in no case be less than one inch. When the air gap is located within three pipe diameters (measured horizontally) of a wall, the separation must be at least three times the inside diameter of the supply piping, or four times the diameter of the supply piping for intersecting walls. The flow of water or other liquids, gases or from any source back into the customer's plumbing system or the water purveyor's water distribution system is prohibited.
 - 2. Atmospheric Vacuum Breaker (AVB). A device that contains a float check (poppet), a check seat, and an air inlet port. When water pressure is reduced to a gauge pressure of zero or below, the float check drops, allowing air to enter the device, preventing backsiphonage. It is designed to prevent backsiphonage only from low health hazards.
 - 3. Double Check Valve Assembly (DCVA). An Approved assembly consisting of two independently operating check valves, loaded to the closed position by springs or weights, and installed as a unit with, and between, two resilient seated shut off valves and having suitable connections for testing.
 - 4. Double Check Detector Assembly (DCDA). An approved assembly operating and functioning exactly as a double check valve assembly, with the addition of a factory installed bypass feature. This bypass feature is used to detect the unauthorized use of water allocated for fire protection and/or to detect leaks in the fire system. It includes a water meter and an approved DCVA on the bypass line.
 - 5. Pressure Vacuum Breaker Assembly (PVBA). An approved assembly consisting of a spring loaded check valve loaded to the closed position, an independently operating air inlet valve loaded to the open position and installed as a unit with,

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and between, two resilient seated shut off valves and having suitable connections for testing. It is designed to protect against backsiphonage only.

6. Reduced Pressure Backflow Assembly (RPBA). An approved assembly consisting of two independently operated check valves, spring loaded to the closed position, separated by a spring loaded differential pressure relief valve loaded to the open position, and installed as a unit with, and between, two resilient seated shut off valves, and having four suitable test cocks for checking the water tightness of the check valves and the operation of the relief valve.
 7. Reduced Pressure Detector Assembly (RPDA). An approved assembly operating and functioning exactly as a reduced pressure backflow assembly, with the addition of a factory installed bypass feature. This bypass feature is used to detect the unauthorized use of water allocated for fire protection and/or to detect leaks in the fire system. It includes a water meter and an approved RPBA on the bypass line.
- D. Backflow. The flow of water or other liquids, mixtures, or substances from any source back into the customer's plumbing or the water purveyor's water distribution system.
 - E. Backflow Prevention Assembly. The nomenclature "assembly" refers to a backflow preventer which is designed to be in-line tested and repaired, and to meet the head loss and flow requirements of the recognized approval authority. The "assembly" consists of the backflow prevention unit, two resilient seated shutoff valves, and test cocks.
 - F. Backflow Prevention Device. The nomenclature "device" refers to a backflow preventer that is not designed for in-line testing
 - G. Backpressure. Water pressure which exceeds the operating pressure of the City's potable water supply.
 - H. Backsiphonage. Backflow due to a negative or reduced pressure within the City's potable water supply
 - I. City. The City of Lynnwood or its duly authorized representative.
 - J. Contamination. An impairment of the quality of the potable water which creates an actual hazard to the public health through poisoning or through the spread of diseases by sewage, industrial fluids or waste. Also defined as severe or high hazard. Also see *Pollution*. The term "contamination" used in EPA and state drinking water regulations "Maximum contamination level" bestows a different meaning that that used in describing a cross connection hazard.

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- K. Cross-Connection. Any actual or potential physical connection between a potable water line and any pipe, vessel or machine containing a non-potable fluid, solid or gas, or has the possibility of containing a non-potable fluid, solid or gas, such that it is possible for the non-potable fluid, solid or gas to enter the water system by backflow.
- L. Customer. For purposes of cross-connection control, the owner or operator of a plumbing system connected to a public water system via a service connection.
- M. Director. The Director, or his delegated representative, in charge of the City of Lynnwood Department of Public Works.
- N. Fixture Isolation, or In-Premise Protection. A method of backflow prevention in which a backflow protection assembly is installed on the customers internal water supply line prior to a fixture, piece of equipment or area that has been determined to have backflow potential. This shall effectively isolate the fixture, piece of equipment or area that has been determined to have backflow potential from the rest of the customer's distribution system.
- O. Local Administrative Authority. The local building official, board, department or agency authorized to administer and enforce the provisions of the Universal Plumbing Code as adopted under Chapter 19.27 of the Revised Code of Washington
- P. Owner. Any person who has legal title to or license to operate or occupy a property upon which a cross-connection inspection will be made or upon which a cross-connection is present.
- Q. Person. Any individual, partnership, company, public or private corporation, political subdivision, agency of the State or of the United States or any other legal entity.
- R. Permit. A document issued by the City which allows the work to commence to install a backflow prevention assembly.
- S. Pollution. An impairment of the quality of the potable water supply which does not create a hazard to the public health but which does adversely affect the aesthetic qualities of such potable waters for domestic use. Also defined as low hazard. See also Contamination.
- T. Premise Isolation. A method of protecting a public water system by installation of an approved air gap or approved backflow prevention assembly at or near the water service connection to isolate the customer's plumbing system from the purveyor's distribution system. This type of protection does not provide protection to the personnel on the premises.

- U. Purveyor. The Purveyor or his delegated representative in charge of the City of Lynnwood water system.
- V. Reclaimed Water. Effluent derived in any part from sewage from a wastewater treatment system that has been adequately and reliably treated, so that as a result of that treatment, it is suitable for beneficial use or a controlled use that would not otherwise occur and is no longer considered wastewater.
- W. Water Service Entrance. That point in the owners water system beyond the sanitary control of the City; generally considered to be the outlet end of the water meter and always before any unprotected branch.

II. PURPOSE AND SCOPE

- A. This Policy establishes minimum standards for the City to protect the public potable water supply from possible contamination or pollution due to backflow or backsiphonage from a customer's private internal system into the public potable water system.
- B. This program is applicable to the City of Lynnwood water system. Other water purveyors within the city are required to develop and administer their individual cross-connection control programs per WAC 246-290-490.
- C. This Policy establishes the cross-connection control program, which provides guidelines and requirements for installation, testing, and maintenance of approved backflow prevention assemblies, and establishes permitting and inspection requirements for existing and new backflow prevention assemblies. The City of Lynnwood relies on 'Premise Isolation' to administer the cross-connection program. The customer is responsible to install backflow assemblies at fixtures within their establishment, per the 'Uniform Plumbing Code', to protect the potable water from contaminating other areas of the establishment. All pertinent departments within the City of Lynnwood shall coordinate efforts in administering this policy.
- D. The purpose of this Policy is not to create or otherwise establish or designate any particular class or group of persons who will or should be especially protected or benefited by the terms of this Policy.
- E. The City of Lynnwood will educate the public regarding cross-connection hazards by various means including but not limited to: brochure distribution, City website information, displays at public functions, site inspections, questionnaires, pre-development meetings, pre-construction meetings and over-the-counter dialogue.

III. AUTHORITY

The authority by which the City of Lynnwood administers this cross-connection program is based on and referenced by the following:

- A. The Federal Safe Drinking Water Act of 1974 (and Amendments of 1996)
- B. State of Washington Title 43 RCW (Revised Code of Washington)
- C. Chapter 246-290-490 of the WAC (Revised Code of Washington)
- D. City of Lynnwood Municipal Code, Chapters 13.12.080-085, 13.12.090, 13.12.100, 13.12.110, 3.104.010, 2.44.080
- E. City of Lynnwood Water System Comprehensive Plan adopted by resolution in 2006 and as updated
- F. *Manual of Cross-Connection Control* published by USC Foundation for Cross-Connection Control and hydraulic Research
- G. *Cross-Connection Control Manual, Accepted Procedure and Practice* published by the Pacific Northwest Section of the American Water Works Association
- H. *Guidance Document: Cross-Connection Control for the Small Water Systems* published by Washington State Department of Health (DOH) DOH publication #331-234

IV. RESPONSIBILITY

- A. The Director shall be responsible for administering the provisions of this Policy. A Cross-Connection Specialist, certified by the Washington State Department of Health, will be on staff and available to implement this policy.
- B. If the Director determines, consistent with the provisions of this Policy, that a backflow prevention assembly is required at any customer's premises, the Director, or his delegated agent, shall give notice to the customer to install an air gap or approved backflow prevention assembly which isolates the customers plumbing system from the City's distribution system.
- C. Installation of requested backflow protection assemblies shall be a condition of continued water service from the City and shall also be a condition of receiving a business license from the City. Service from the City's water supply system to any premises upon which the potential for backflow into the City system exists shall be subject to corrective action in accordance with this Policy.

- D. Upon installation the customer shall contact the City requesting inspection of said assembly or assemblies. The customer shall be subject to all applicable inspection and permitting fees as established by ordinance and this Policy.
- E. Upon approval of the installation by the City the customer shall have the assembly or assemblies tested by a state of Washington certified Backflow Assembly Tester (BAT) and shall submit a copy of the test report to the City in accordance with this Policy.
- F. A Cross Connection Control Permit is required to install such assemblies. The Cross Connection Control Permit shall be submitted to the Department of Public Works for processing as required by Lynnwood Municipal Code (LMC) 2.44.040.

V. FAILURE TO COMPLY – VIOLATIONS – PENALITIES

- A. Any violation of Section 13.12.080 through 13.12.086 may be enforced pursuant to the provisions of chapters 1.40 and 1.45 of the Lynnwood Municipal Code.
- B. Suspension of Underlying License or Permit. Any license or permit issued by the City for any activity that causes or results in a violation of this chapter may be suspended by the Director until the violation is corrected.
- C. Injunctive enforcement. Any violation of the provisions of this Chapter is hereby declared to be a public nuisance as defined in LMC 10.08.200 and may be abated through the processes in LMC Title 1, or in proceedings for injunctive or similar relief in Superior Court or other court of competent jurisdiction.
- D. Criminal Penalties. Any person who willfully violates any of the provisions or requirements of this Policy is guilty of a gross misdemeanor and upon said conviction of offense shall be subject to a fine not exceeding the sum of \$5000.00 and/or one (1) year in jail. Each day that each violation of this chapter continues shall be punishable as a separate offense.
- E. Protection of City of Lynnwood Water System, Cessation of Water Service. Any person who willfully violates any of the provisions or requirements of this policy shall be subject to discontinuance of supply of City water to the premise where the violation exists, and continue until corrective action has been taken to the satisfaction of the Director. Such discontinuance of City water shall be per the following guidelines:
 - Send first notice requesting a completed test form.
 - If no response is received within thirty (30) days, mail written notice to the person whose name the water service is established in or post written notice on the premises served. This notice shall provide that the cross-connection must be corrected within thirty (30) days of date the notice is mailed or posted on the

premises, or the water service shall be discontinued. This notice should also indicate the procedure for the customer to appeal the shut-off.

- If the cross-connection is not abated within the prescribed time, water service to the premises may be shut off immediately. If the City or its representative determines that service should not be interrupted, the City may hire a contractor to abate the cross-connection as required by the City, including the installation of a backflow prevention assembly. In such event, the City shall bill the property owner for all costs and administration incurred. Ten (10) days after default in payment of such costs, the City shall have the right to claim a lien against the real property and commence foreclosure proceedings pursuant to RCW 60.04 to collect such amount.
- In the event that the cross-connection, in the opinion of the City or any of its designated representatives, poses an imminent potential health or system hazard to the public water supply, service from the City water supply to the premises may be terminated without prior notice; provided, however, that said notice will be posted on the premises in the manner heretofore provided at the time water service is terminated; provided, further, that the City cross-connection control program manager shall notify the Department of Health when a water service has been shut off.

F. City of Lynnwood Allowed Corrective Action and Back Billing. If any person, firm, or corporation is found to not have an appropriate cross-connection control assembly, and the lack of such assembly is deemed to be an immediate threat to the City of Lynnwood water system. The City may elect to install an appropriate assembly and bill the customer for such work and materials. The installation of the assembly and back billing would not prevent the City from utilizing any of the other enforcement measures listed in this section.

G. Right of Appeal. Any person, firm or corporation aggrieved by a final order of the City with respect to this section shall have fourteen days to appeal to the Hearing Examiner, under the provisions of LMC 1.35.200-260.

VI. REQUIREMENTS

GENERAL REQUIREMENTS

- A. Compliance with the provisions of the City of Lynnwood Cross-Connection Control Operating Policy shall be a condition of receiving the City of Lynnwood water supply and shall also be a condition of receiving a City of Lynnwood Business License.
- B. It is unlawful for any person to allow any contaminants or pollutants to backfeed from their facility and/or property into the City distribution system. Any connections now existing or hereafter installed that could allow for backfeed of any contaminants or

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pollutants into the City distribution system shall be disconnected and/or eliminated. Connections which cannot be discontinued and/or eliminated shall require the installation of a Washington State Department of Health approved backflow prevention assembly that shall be regularly inspected and tested in accordance with this Policy. It is unlawful to return used water by any customer or install an unprotected bypass around any required backflow assembly.

- C. When the City requires that the public water supply be protected by premise isolation, the owner shall be responsible for water quality beyond the outlet end of the premise isolation assembly and should utilize fixture isolation protection for that purpose. Fixture isolation assemblies shall be installed in accordance with the Uniform Plumbing Code. A plumbing permit and inspections shall be required.
- D. The City may allow that the public supply be protected by fixture isolation for existing or new customer connections. Such an allowance shall only be permitted so long as the Director determines that the level of protection is adequate to protect the City's distribution system, and:
 - 1. Until such time as a) the property is remodeled or improved and the remodel or improvements meet the scope of the Level I improvements as defined in LMC 21.12.400, including subsequent revisions, or b) the business is sold or leased; and
 - 2. The owner agrees, in writing (unless waived by the City), to (a) implement and maintain the fixture isolating backflow protection to the satisfaction of the City; and (b) comply with all applicable plumbing codes, including permitting requirements. The owner shall allow their property to be inspected for possible cross-connections.

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- A. On new installations, the City will provide on-site evaluation and/or inspection of plans in order to determine the type of backflow assembly, if any, that will be required.
- B. For premises existing prior to the start of this program, the City will perform evaluations and inspections of plans and/or premises and inform the owner by letter of any corrective action deemed necessary, the method of achieving the correction and the time allowed for the correction to be made. Up to sixty (60) days will be allowed; however, this time period may be shortened by the Director depending upon to degree of hazard involved and the history of the backflow assembly(ies) in question.
- C. Premises are subject to inspection on or after the expiration date of required action to correct a cross-connection. Premises that have failed to comply with the City's request shall receive written notice, via registered mail, that water service to the premises will be terminated within a period not to exceed seven (7) calendar days. In the event the owner informs the City of extenuating circumstances as to why the correction has not

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been completed the City may grant a time extension up to but not exceeding thirty (30) days.

- D. If the City determines at any time that a serious threat to the public health exists, the water service shall be terminated immediately, provided, however, that notice will be posted on the premises affected at the time said service is terminated.
- E. Inspections shall be done during the initial installation, during on-site reviews of existing installations and after any relocation.
- F. When an initial installation or test identifies a backflow prevention assembly is not properly functioning, the owner shall correct the malfunction and have the assembly inspected and re-tested until the backflow device operates correctly.
- G. The City will maintain a database program that will provide for a backflow assembly testing quality control program that includes, but is not limited to:
 - Documentation by testers of valid certification.
 - Documentation of test calibration by testers.
 - Random assembly testing by City personnel to check tester results.
 - Hazard survey reports and decisions.
 - Backflow preventer inventory information.
 - Backflow preventer inspection and testing results.
 - Annual Summary Reports and Backflow Incident Reports.
- L. Immediately upon learning of a possible or confirmed backflow incident, the City will:
 - 1. Customer Notification.
 - a. As soon as possible, the City will notify customers not to consume or use water.
 - b. The City will start the notification with the customers nearest in location to the assumed source of contamination (usually the customer(s) making the water quality complaint).
 - c. The City will inform the customer about the reason for the backflow incident investigation and the city's efforts to restore water quality as soon as possible. The City will let the customer know that customers will be informed when then

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may use water, the need to boil water used for consumption until satisfactory bacteriological test result is obtained from the lab, etc.

- d. Where a customer cannot be contacted immediately, the City will place a written notice on the front door handle, and a follow-up visit will be made to confirm that the customer received notice about the possible contamination of the water supply.
 - e. When dealing with a backflow incident, the City will let customers know that it could take several days to identify the source and type of contaminant(s) and to clean and disinfect the distribution system.
2. Identification of Source of Contamination.
- a. The City will give consideration to the distribution system as a potential source of the contaminant (e.g., air valve below ground).
 - b. The City will not start flushing the distribution system until the source of contamination is identified (flushing may aggravate the backflow situation, and will likely remove the contaminant before a water sample can be collected to fully identify the contaminant).
 - c. The City will conduct a site to site survey to search for the source of contamination and the extent that the contaminant has spread through the distribution system. Note: a check of water meters may show a return of water (meter running backward) to the distribution system.
 - d. When the cross connection responsible for the system contamination is located, the City should discontinue water service to that customer, until the customer completes the corrective action ordered by the City.
3. Isolation of Contaminated Portion of System.
- a. The City will isolate the portions of the system that are suspected of being contaminated by closing isolating valves; leave one valve open to ensure that positive water pressure is maintained throughout the isolated system.
 - b. The City will notify all affected customers in the isolated area first and then notify other customers served by the system.
4. Public Health Impacts.

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- a. The City will seek immediate input from and work with state and local agencies to accurately communicate and properly mitigate potential health effects resulting from the backflow incident.
 - b. If appropriate, the City will refer customers that may have consumed the contaminant or had their household (or commercial) plumbing systems contaminated to public health personnel and Local Administrative Authorities (plumbing inspectors).
5. Cleaning/Disinfecting the Distribution System.
- a. The city will develop and implement a program for cleaning the contaminated distribution system consistent with the contaminant(s) identified.
 - b. Where both chemical and bacteriological contamination has occurred, the City will disinfect the system after the removal of the chemical contaminant.
 - c. Where any bacteriological contamination is suspected, the City will provide field disinfection.
6. Complete the Department of Health “Backflow Incident Report Form,” which includes:
- a. Part 1: Public Water System (PWS) information
 - b. Part 2: Backflow incident information
 - Incident identification
 - Information on premises where backflow originated
 - Method of discovery of backflow
 - Contaminant information
 - Extent and effects of contamination
 - c. Part 3: Cross-Connection Control Information at Backflow Site
 - Source of contaminant
 - Distribution system pressure conditions in the vicinity of the backflow incident
 - Backflow preventer information/installation/approval status at site of backflow
 - Backflow preventer inspection/testing information at site of backflow
 - d. Part 4: Corrective Action/Notification
 - e. Part 5: Cost of Backflow Incident

f. Part 6: Further Information/Documentation

g. Part 7: Form Completion Information

OWNER REPOSIBILITIES

- A. The owner shall be responsible for the elimination or protection, by an air gap or approved backflow prevention assembly, of all cross-connections on their premises.
- B. The owner, after having been informed by a letter from the City shall, at their expense, install any and all required backflow prevention assemblies.
- C. The Owner shall, at their expense, be responsible for having all backflow prevention assemblies tested; (1) at the time of installation, (2) annually after installation, or more frequently if tests indicate repeated failures to meet test criteria and, (3) after an assembly is repaired, reinstalled, relocated or an air gap is re-plumbed or replaced by an approved backflow prevention assembly. The test shall be performed by a State of Washington certified Backflow Assembly Tester (BAT). The results of the tests shall be reported within 30 days to the Director on a form provided by or approved by the City.
- D. The owner shall immediately, or no later than thirty (30) days, or otherwise as directed by the Director, correct any malfunction of the backflow preventer which is revealed by periodic testing.
- E. The owner shall inform the City of any proposed or modified cross-connections and also any existing cross-connections of which the owner has actual knowledge but has not been found by the City.
- F. The owner shall install only backflow prevention assemblies approved by the Washington State Department of Health.
- G. Any owner having a private well, or other private water source, shall not cross-connect to the City's system, and shall provide adequate premise isolation backflow prevention at the water meter.
- H. The owner shall provide access to premises at the City's request. In those cases where access is denied, a Reduced Pressure Backflow Assembly shall be installed at the service connection. If sewage or radioactive substances are present, an approved air gap shall be required at the service connection. Failure to provide access to inspect facilities shall be grounds for immediate termination of water service.
- I. The owner shall be responsible for the payment of all fees for permits, annual or semi-annual device testing, re-testing in the case that the assembly fails to operate correctly and any re-inspections for non-compliance with City requirements. Permits

and fee schedules shall be as specified in the applicable sections of the Lynnwood Municipal Code.

- J. The owner is required to report and cooperate in the investigation of a backflow incident.

VII. INSTALLATION AND TESTING – MINIMUM REQUIREMENTS

- A. Minimum requirements for the installation and testing of all backflow protection assemblies shall be in accordance with the *Cross Connection Control Manual-Accepted Procedure and Practice* produced by the Pacific Northwest Section, American Water Works Association (PNWS/AWWA), Sixth Edition, December 1995, including subsequent revisions, adopted by reference herein. A copy is available for viewing at the Finance Department and Public Works Department of the City of Lynnwood, additional copies can be purchased from the PNWS/AWWA.
- B. In addition, all backflow protection assemblies shall be installed at a location that is easily accessible for inspection and testing. Assemblies located in vaults shall have adequate clearances and depths to allow the City to inspect and tests performed. Assemblies that cannot be easily and readily inspected shall be required to be relocated and re-plumbed as required by the City. Temporary water use permits for purposes of construction or special events will be issued only if acceptable backflow requirements are met. A Double Check Valve Assembly is the minimum level of backflow prevention allowed. The owner shall contact the City for applicable installation requirements and standards.
- C. All bypass lines parallel to a line on which a backflow prevention assembly is installed shall have an approved backflow prevention assembly installed that is equal in type and degree of protection to the assembly required by the City on the main line.

VIII. BACKFLOW PROTECTION DEVICES

- A. All backflow protection assemblies (RPBAs, RPDAs, DCVAs, DCDAs, PVBAs and AVBs) installed for protection of the public water supply shall be models included on the current approved backflow prevention assemblies list developed by the University of Southern California (USC) Foundation for Cross-Connection Control and Hydraulic Research Manual of Cross Connection Control or other such agency acceptable to the Director. The Washington Department of Health maintains a copy of this list (DOH Publication # 331-137). A copy is available for viewing at the Finance Department and Public Works Department of the City of Lynnwood, additional copies can be purchased from the PNWS/AWWA.
- B. Any existing backflow protection assembly in use, but not currently listed by USC, can continue to be used providing all the following conditions are met:

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1. The assemblies were included on the City and/or USC list of approved backflow prevention assemblies at the time of installation;
 2. The assemblies have been properly maintained;
 3. The assemblies are functioning properly based on inspection by the City and testing by a certified Backflow Assembly Tester.
 4. The degree of protection is satisfactory for protection of the City's water system as determined by the Director.
- C. When an unlisted assembly does not meet the above conditions, is moved, or can not be repaired using spare parts from the original manufacturer, the assembly shall be replaced by an assembly currently listed as approved by the USC Foundation for Cross-Connection Control and Hydraulic Research or other such agency acceptable to the Director.

IX. APPLICABILITY

- A. The provisions of this manual are applicable to all connections to the City water supply. The City recognizes there are varying degrees of risk associated with different types of uses and will consider this when determining if a cross connection exists and applicable backflow prevention assemblies.
- B. A Cross Connection Control Survey (available on the City of Lynnwood website) is required to be completed by an authorized owner/agent to select the appropriate type and proper placement of the backflow assembly.
- C. The following Tables and Flow Charts, which may be used to help complete the survey, are derived from the Pacific Northwest Section - American Water Works Association's Cross Connection Control Manual, Accepted Procedures and Practices, Sixth Edition, 1996. These are subject to revisions, provide minimum requirements and guidance for the assessment of the degree of hazard and required level of protection. If the actual degree of hazard is determined by the Director to be higher than these tables indicate, a higher level of protection may be required.

X. APPENDIX

TABLE 1: RELATIVE LEVEL OF PROTECTION

The descriptions of application and relative level of protection are based on the perspective of the purveyor’s selection of assemblies and devices for the prevention of the contamination of the water distribution system. Plumbing codes may classify some devices providing higher levels of protection and as suitable for both backpressure and backsiphonage.

TABLE 1: RELATIVE LEVEL OF PROTECTION	
Level of Protection	Assembly Type
1	AG Approved Air Gap
2	RPBA Reduced Pressure Backflow Assembly
	RPDA Reduced Pressure Detector Assembly
3	DCVA Double Check Valve Assembly
	DCDA Double Check Detector Assembly
4	PVBA Pressure Vacuum Breaker Assembly
	SVBA Spill-Resistant Vacuum Breaker Assembly
5	AVB Atmospheric Vacuum Breaker
	HBVB Hose Bib Vacuum Breaker
	LFVB Lab Faucet Vacuum Breaker
	DCAV Dual Check with Atmospheric Vent
	DCV Dual Check Valve or Meter Check Valve (Dual)

Level of Protection:

1. For high and low health hazards, backpressure and backsiphonage.
2. For high and low health hazards, backpressure and backsiphonage.
3. For low health hazards only, backpressure and backsiphonage.
4. For very low health hazards, backsiphonage only.
5. For very low health hazards, backpressure and backsiphonage.

TABLE 2: MANDATORY SERVICE ISOLATION

For High Health Cross Connection Hazard Premises requiring premises isolation by AG or RPBA.

TABLE 2: USES REQUIRING MANDATORY SERVICE ISOLATION
Agricultural (Farms and Dairies)
Beverage Bottling Plants
Car Washes
Chemical Plants
Commercial Laundries and Dry Cleaners
Film Processing Facilities
Food Processing Facilities
Hospitals, Medical Centers, Nursing Homes, Veterinary, Medical and Dental Clinics, Blood Plasma Centers
Laboratories
Metal Plating Industries
Mortuaries
Petroleum Processing or Storage Plants
Piers and Docks
Radioactive Material Processing Plants or Nuclear Reactors ¹
Survey Access Denied or Restricted
Tall Buildings (Over 30 Feet)
Wastewater Lift Stations and Pumping Stations
Wastewater Treatment Plants ¹
Premises Where Both Reclaimed Water and Potable Water are Provided
Premises with Separate Irrigation Systems Using the Purveyor’s Water Supply with Chemical Addition ²
Premises with an Unapproved Auxiliary Water Supply Interconnected with the Potable Water Supply

NOTES

1. RPBA’s for connections serving these premises are acceptable only when used in combination with an in-plant approved air gap; otherwise, the purveyor shall require an approved air gap at the service connection.
2. Parks, playgrounds, golf courses, cemeteries, estates, etc.
3. This table is the same as “Table 9” of WAC 246-290-460(4).

TABLE 3: REQUIRED/RECOMMENDED PREMISE ISOLATION (RESIDENTIAL)

Table 2 in this document is the same as “Table 9” of WAC 246-290-460(4).

TABLE 3: REQUIRED/RECOMMENDED PROTECTION FOR RESIDENTIAL HAZARDS	
Description of Hazard or Premises	Minimum Protection Required/Recommended
Auxiliary Water Supply, interconnected with public water system	RPBA (Premises Isolation, required as per Table 2)
Auxiliary Water Supply, not interconnected with public water system	DCVA (Premises Isolation)
Boiler	RPBA on Boiler Feed Line (or for Premises Isolation)
Commercial Farms	RPBA (Premises Isolation, required as per Table 2)
Decorative Ponds	AVB at hose bibs
Dialysis Equipment	RPBA
Hobby Farms (5-10 acres, non-commercial)	DCVA (Premises Isolation)
Home Occupations (e.g. beauty salon, woodworking shop) where water use is essentially the same as for normal residential uses	AVB on hose bibs
Hydroponic, non-commercial greenhouse	RPBA (Premises Isolation)
Livestock Watering Trough	AG or AVB
Irrigation System (buried underground)	DCVA
Photo-Lab (non-commercial)	AVB at hose connection
Private Boat Moorings	AVB at hose connection
Soaker Hoses	RPBA (Premises Isolation)
Solar Heating System, heat exchanges w/chemicals	DCVA (Premises Isolation)
Solar Heating System, heat exchanges w/o chemicals	AVB at hose connection
Swimming Pool, Spa – heat exchangers	No Additional Protection
Swimming Pool, Spa – fill line with an approved AG plumbed in	RPBA on fill line
Swimming Pool, Spa – fill line plumbed in below water level (i.e., no AG)	RPBA
Sewage Pumps, Lift Stations, Grinder Pumps	AG or RPBA

**TABLE 4: REQUIRED/RECOMMENDED PREMISE ISOLATION
(COMMERCIAL)**

Table 2 in this document is the same as “Table 9” of WAC 246-290-460(4).

TABLE 4: REQUIRED/RECOMMENDED PROTECTION FOR COMMERCIAL HAZARDS	
Description of Hazard or Premises	Minimum Protection Required/Recommended
All commercial connections	DCVA (Premises Isolation)
Strip malls	DCVA (Premises Isolation)
Farms	RPBA (Premises Isolation, required as per Table 2)
Fish Farms	RPBA (Premises Isolation, required as per Table 2)
High Schools with Laboratories (no internal RPBA for area isolation)	DCVA (Premises Isolation)
Elementary Schools	DCVA (Premises Isolation)
Dry Cleaners	RPBA (Premises Isolation, required as per Table 2)
Photo Labs, Film Processors (Commercial)	RPBA (Premises Isolation, required as per Table 2)
Hydroponics, Greenhouses (Commercial)	RPBA or DCVA
Home-Based Businesses on a commercial scale	DCVA minimum

TABLE 5: RECOMMENDED PROTECTION AT FIXTURES AND EQUIPMENT

The information in Table 5 may differ from the backflow prevention requirements for individual plumbing fixtures found in plumbing codes. For public health protection within a customer’s premise, the plumbing code having jurisdiction governs. Table 5 is provided to illustrate only some of the health hazards found in plumbing systems. This table should be used by water purveyors in assessing the degree of hazard a customer’s plumbing system places upon the purveyor’s water distribution system. Deficiencies in backflow prevention within the customer’s premise should be compensated for through the selection of an appropriate assembly for premise isolation.

TABLE 5 (Page 1 of 4): RECOMMENDED PROTECTION AT FIXTURES AND EQUIPMENT			
DESCRIPTION OF FIXTURE, EQUIPMENT, OR USE OF WATER	ASSESSED HEALTH HAZARD	MINIMUM PROTECTION AT FIXTURE	ADDITIONAL PREMISE OR INTERNAL ISOLATION¹
Air Compressor	Low	DCVA	
Air Conditioning Systems	High	RPBA	
Air Washers	High	RPBA	
Aquarium Make-Up Water	High	AG/RPBA	
Aspirators (Medical/Lab)	High	AVB	RPBA
Aspirators (Medical/Lab)	High	RPBA	
Aspirators (Vault drain)	High	RPBA	
Aspirators (Weedicide, Herbicide and Pesticide)	High	RPBA	
Autoclave	High	RPBA	
Autopsy Tables	High	RPBA	
Baptismal Font	High/Low	RPBA/AG/AVB	
Bathtub (Below Rim Filler)	High	RPBA	
Bedpan Washer	High	RPBA	
Beverage Dispenser, Post-Mix Using CO ₂	High	RPBA	
Bidets	Low	AVB	
Boiler Feed Lines	High	RPBA	
Bottle Washing Equipment	High	RPBA	
Bottle Washing Equipment	High	PVBA/AVB	PVBA/AVB

NOTES

Where a high health hazard is assessed, the use of an atmospheric vacuum breaker or other backflow device for protection at a fixture should only be allowed when area or premise isolation is provided by an approved backflow assembly.

CITY OF LYNNWOOD CROSS CONNECTION CONTROL OPERATING POLICY

TABLE 5 (Page 2 of 4): RECOMMENDED PROTECTION AT FIXTURES AND EQUIPMENT			
DESCRIPTION OF FIXTURE, EQUIPMENT, OR USE OF WATER	ASSESSED HEALTH HAZARD	MINIMUM PROTECTION AT FIXTURE	ADDITIONAL PREMISE OR INTERNAL ISOLATION¹
Box Hydrant (Irrigation)	High	PVBA/DCVA	
Brine Tank	Low	AG/DCVA	
Can Washing Equipment	High	RPBA	
Can Washing Equipment	High	PVBA/AVB	PVBA/AVB
Chemical Feed Tank for Industrial Processes	High	AG/RPBA	RPBA
Chemical Feeder for Commercial Cleaners	High	AG/RPBA	
Chemical Feeder for Commercial Cleaners	High	AVB/PVBA	RPBA/DCVA
Chlorinators	High	RPBA	
Commercial Coffee Urns	Low	AG/AVB	
Computer Cooling Lines	High	RPBA	
Condensate Tanks	High	RPBA	
Commercial Cooking Kettles	Low	AG/AVB	
Cooling Towers	High	AG/RPBA	
Decorative Ponds	High	AG/RPBA	
Degreasing Equipment	High	RPBA	
Dental Equipment/Cuspidors	High	RPBA	RPBA
Dialysis Equipment	High	RPBA	
Dishwashers	Low	AVB	
Drinking Fountains	Low	AG	
Dye Vats and Tanks	High	AG/RPBA	
Etching Tanks	High	AG/RPBA	RPBA
Fermenting Tanks	High	AG/RPBA	RPBA
Fertilizer Injection	High	RPBA	
Film Processors	High	RPBA	
Fire Department Connection	Low	DCVA	
Fire Sprinkler System w/o Chemical Addition	Low	DCVA/DCDA	

NOTES

Where a high health hazard is assessed, the use of an atmospheric vacuum breaker or other backflow device for protection at a fixture should only be allowed when area or premise isolation is provided by an approved backflow assembly.

TABLE 5 (Page 3 of 4): RECOMMENDED PROTECTION AT FIXTURES AND EQUIPMENT			
DESCRIPTION OF FIXTURE, EQUIPMENT, OR USE OF WATER	ASSESSED HEALTH HAZARD	MINIMUM PROTECTION AT FIXTURE	ADDITIONAL PREMISE OR INTERNAL ISOLATION¹
Fire Sprinkler System w/ Chemical Addition	High	RPBA/RPDA	
Floor Drains	High	AG	
Flushing Floor Drains	High	AVB	DCVA
Fume Hoods (Lab)	High	AVB	RPBA
Garbage Can Washers	High	RPBA	
Heat Exchangers (Not Double Wall w/ Leak Path)	High	RPBA	
Heat Pumps	High	RPBA	
High Pressure Washers w/o Chemical Injection	Low	DCVA	
Hose Bibs (Residential)	Low	AVB/HBVB	
Hose Bibs (Industrial)	Varies	AVB/HBVB	RPBA/DCVA
Hoses (Kitchen Rinse)	Low	AVB	
Hot Tubs	High	AG/RPBA	
Hot Water Heating Boilers (Commercial)	High	RPBA	
Hydrotherapy Baths	High	RPBA	
Ice Makers	High	AG/RPBA	
Industrial Fluid Systems	High	RPBA	
Intertied (Looped) Services	Low	DCVA	
Irrigation System (Lawn) w/ Chemical Addition	High	RPBA	
Irrigation System (Lawn) w/o Chemical Addition	Low	PVBA/DCVA	
Janitor Sinks	Low	AVB/HBVB	
Kitchen Equipment	Low	AVB	
Laboratory Equipment	High	AVB/LFVP	RPBA
Laundry Machines (Commercial)	High	RPBA	
Livestock Drinking Tanks	High	AG/AVB	DCVA
Make-Up Tanks	High	AG/RPBA	
Mobile Carpet Cleaners	High	RPBA	

NOTES

Where a high health hazard is assessed, the use of an atmospheric vacuum breaker or other backflow device for protection at a fixture should only be allowed when area or premise isolation is provided by an approved backflow assembly.

TABLE 5 (Page 4 of 4): RECOMMENDED PROTECTION AT FIXTURES AND EQUIPMENT

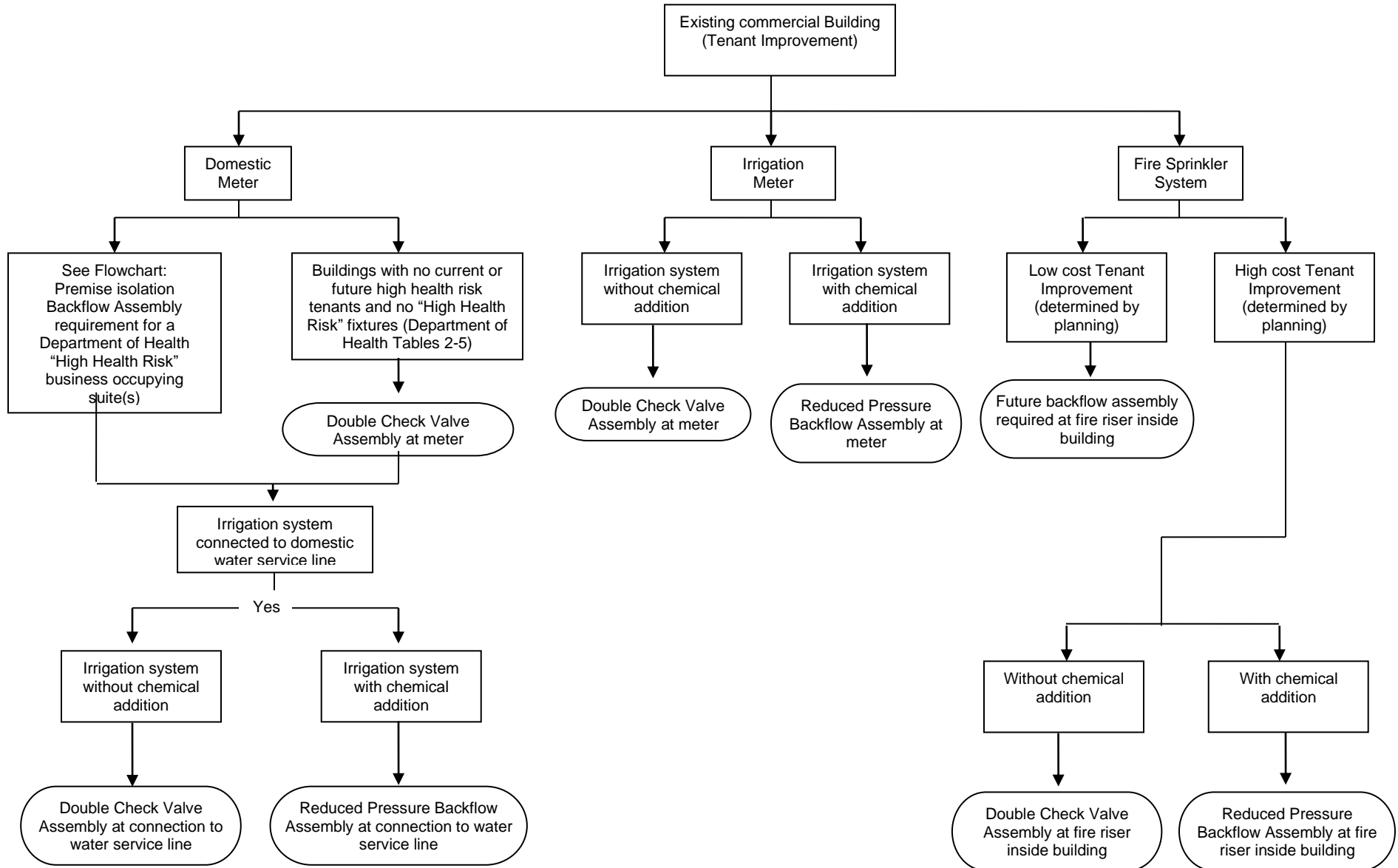
DESCRIPTION OF FIXTURE, EQUIPMENT, OR USE OF WATER	ASSESSED HEALTH HAZARD	MINIMUM PROTECTION AT FIXTURE	ADDITIONAL PREMISE OR INTERNAL ISOLATION¹
Pesticide Applicator Trucks	High	AG/RPBA	
Photo Developing Sinks/Tanks	High	RPBA	
Private Fire Hydrants	Low	DCVA	
Pump Prime Lines	High	RPBA	
Radiator Flushing Equipment	High	RPBA	
Recreational Vehicle Dump Station	Severe	AG	RPBA
Sewer Connected Equipment	Severe	AG	
Sewer Flushing	Severe	AG	
Spas	High	AG/RPBA	
Steam Generating Equipment	High	RPBA	
Sterilizers	High	RPBA	
Stills	High	RPBA	
Sumps	High	AG	
Swimming Pools	High	AG/RPBA	
Trap Primers	High	AG	
Used or Gray Water Systems	High	RPBA	
X-Ray Equipment	High	RPBA	

NOTES

Where a high health hazard is assessed, the use of an atmospheric vacuum breaker or other backflow device for protection at a fixture should only be allowed when area or premise isolation is provided by an approved backflow assembly.

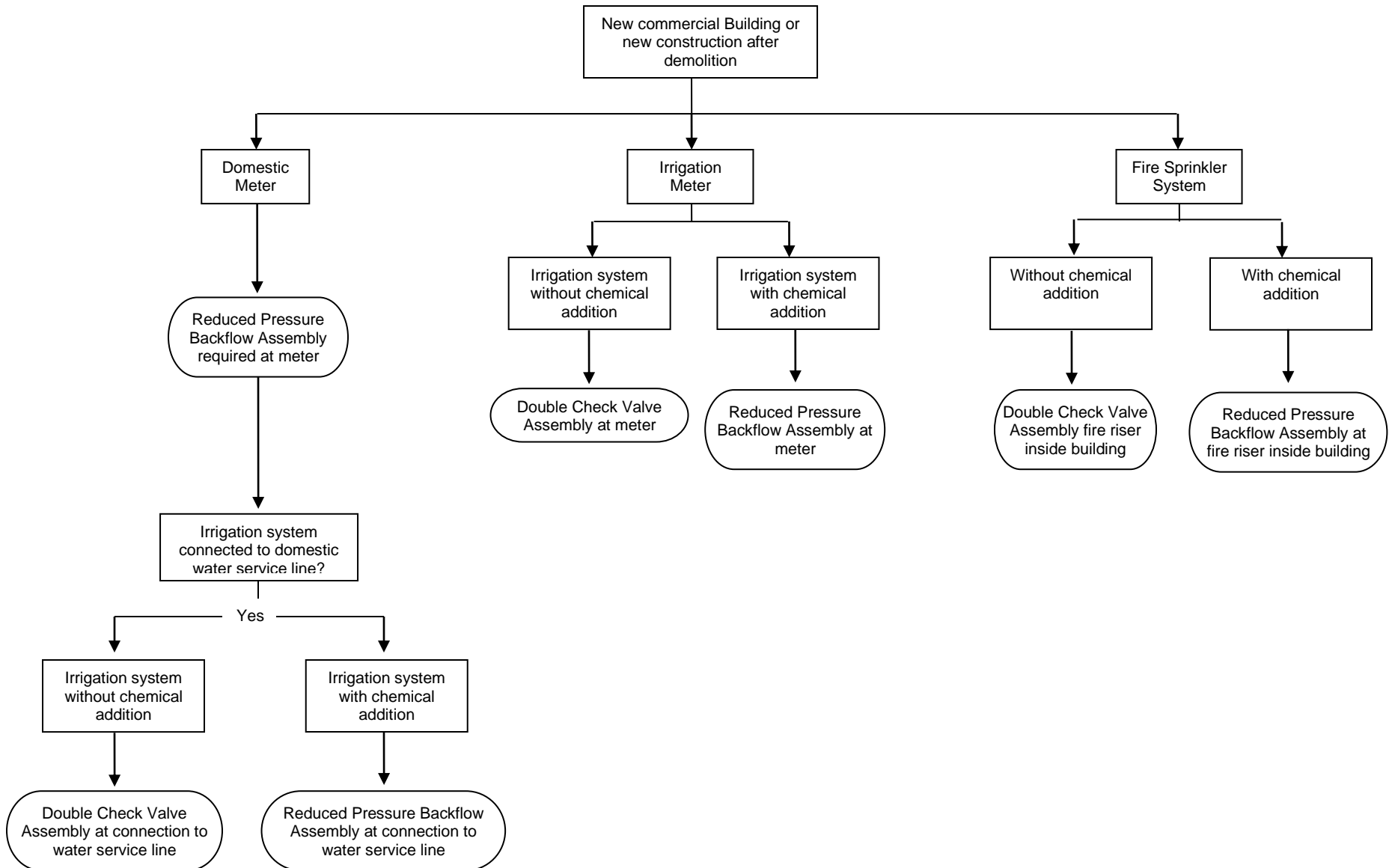
Flow Chart 1 – Existing Commercial building (Tenant Improvement)

(For in-premise protection at fixtures, consult Table 5 in the Cross Connection Control Operating Policy)



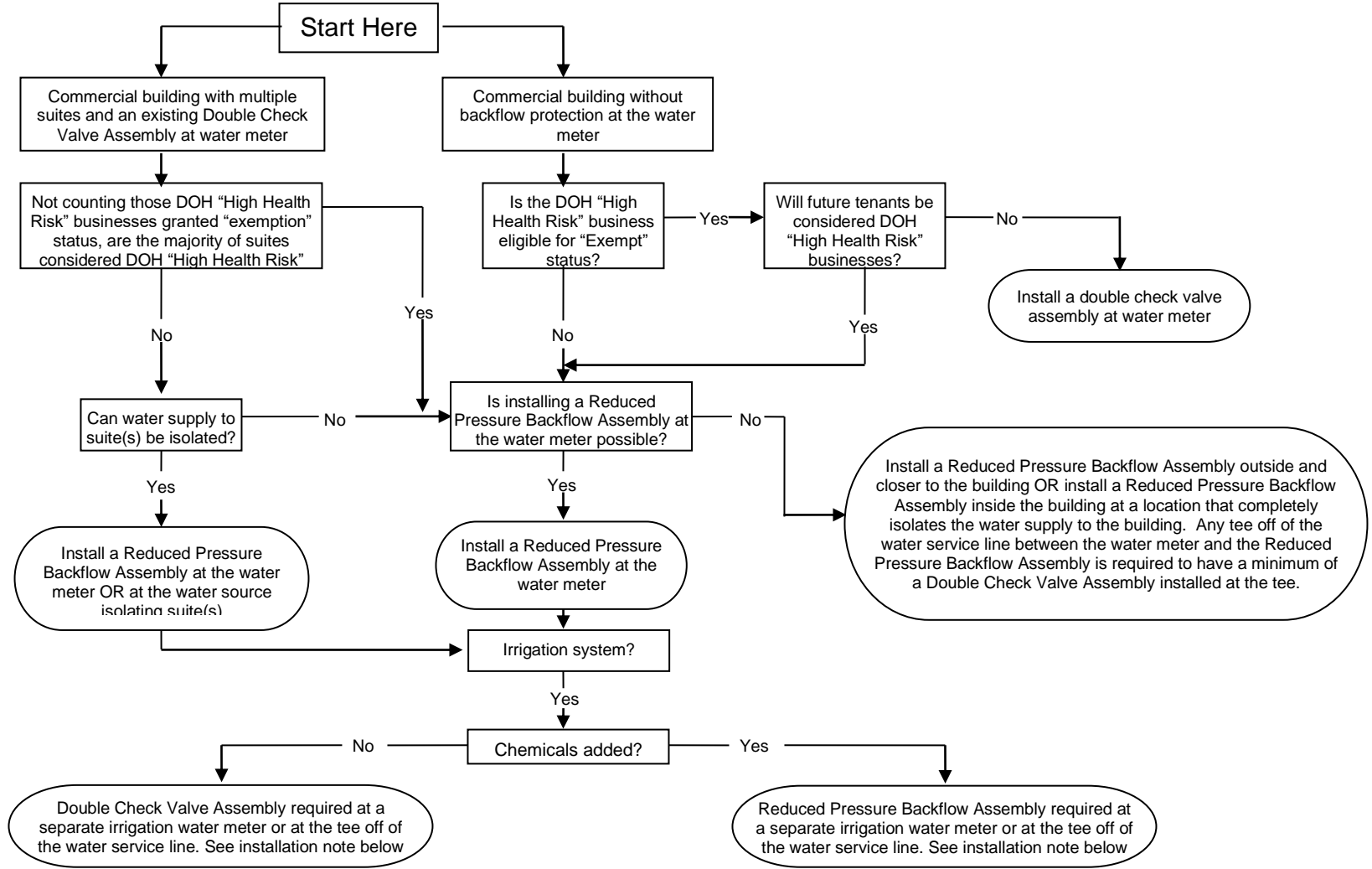
Flow Chart 2 – New Commercial Building or New Construction after Demolition

(For in-premise protection at fixtures, consult Table 5 in the Cross Connection Control Operating Policy)



Flow Chart 3 – High Risk Commercial Building

(See Table 2 in the Cross Connection Control Operating Policy for a list of High Health Risk businesses)



INSTALLATION NOTE: If the backflow assembly that is isolating the building is located at the water meter, the irrigation system backflow assembly must be located downstream of it. If the backflow assembly isolating the building or suite is installed close to or inside the building, the irrigation backflow assembly can be installed between the building backflow assembly and the water meter. However, consultation by a plumbing professional should be taken to allow sufficient distance between the two assemblies so proper functioning is insured.

Flow Chart 4 – Non-Commercial Single and Multi-Family Residential

(For in-premise protection at fixtures, consult Table 5 in the Cross Connection Control Operating Policy)

