City of Tumwater

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Cross Connection Control

Public Works – Water Resources Program

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Chapter 1 – Introduction

PURPOSE AND SCOPE

This document contains a cross connection control plan for the City of Tumwater and is one element of the City's 2001 Comprehensive Water System Plan update. The purpose of the cross connection control plan is to meet the requirement of WAC 246-290-490, provide a clear definition of regulated existing and potential cross connections, provide procedures and design criteria for backflow prevention, and summarize current city, state, and federal policies and regulations regarding cross connections. The importance of having an approved cross connection control plan in place can be further understood by the following AWWA policy statement on cross connections.

> **AWWA recognizes water purveyors have the responsibility to supply potable water to their customers. In the exercise of this responsibility, water purveyors must implement, administer, and maintain ongoing backflow prevention and cross-connection control programs to protect public water systems from the hazards originating on the premises of their customers that may impair or alter the water in the public water systems. The return of any water to the public water system after the water has been used for any purpose on the customer's premises or within the customer's piping system is unacceptable and opposed by AWWA.**
>
> The water purveyor shall evaluate and regularly re-evaluate each water service to identify any actual or potential situation or connection that may allow backflow into the public water system. The water purveyor shall assure that effective backflow prevention measures, commensurate with the degree of hazard, are implemented to ensure continual protection of the water in the public water distribution system. Inspections of the customer's plumbing system beyond the point of service are generally the responsibility of state or local regulatory agencies having jurisdiction through rules, regulations, and recommendations (e.g., health official, building official). Most plumbing codes are only enforced on officially permitted new construction and renovation. The water purveyor's cross connection control program does not absolve the customer of the responsibility to prevent contamination of the private plumbing system under its control and of the public water system.
>
> If appropriate backflow-prevention measures commensurate with the degree of hazard have not been taken, or the water purveyor has not been provided with reasonable assurance of protection and continual enforcement, the water purveyor shall take necessary measures to ensure that the public water distribution system is protected from any actual or potential backflow hazard. Such action would include the testing, installation, and continual assurance of proper operation and installation of backflow-prevention assemblies and methods commensurate with the degree of hazard at the service connection or at the point of cross connection or both. If these actions are not taken, water service shall ultimately be eliminated.
>
> To reduce the risk private plumbing systems pose to the public water distribution system, the water purveyor's cross connection control program should include public education regarding the hazards backflow presents to the safety of drinking water and should include coordination with the cross connection efforts of local authorities, particularly health and plumbing officials. In areas lacking a health or plumbing enforcement agency, the water purveyor should additionally promote the health and safety of private plumbing systems to protect its customers from the hazards of backflow.

The protection and preservation of the public potable water supply is one of the highest priorities of a water purveyor. Once drinking water has been produced, provisions must be made to ensure that it will not be contaminated with tainted water or substances from other sources.

The purpose of the Tumwater cross connection control program is to establish recommended procedures to be used to protect the public potable water supply from the possibility of contamination or pollution due to existing or potential cross connections, as defined under WAC 246-290-010. This protection of the water consumers' health is maintained by ensuring the proper installation and surveillance of backflow prevention assemblies when actual or potential cross connections exists and cannot be eliminated.

DEFINITIONS

The following are definitions for words, which are widely used throughout this document, therefore, it is important to understand these key terms.

Cross Connection	Any actual or potential connection between a potable water line and any pipe, vessel, or machine containing a non-potable fluid, such that it is possible for the non-potable fluid to enter the potable water system by backflow.
Actual Cross Connection	A cross connection that currently exists.
Potential Cross Connection	A cross connection that does not exist at the time of inspection, but which may occur at any time. Examples of potential cross connections include: bypass arrangements, jumper connections, unattached hose connections, intricate piping, existing wells onsite, etc.
Potable Water	Water suitable for human ingestion, free from harmful or objectionable materials.
Non-Potable Water	All liquids and gases that are not potable water. A list of non-potable fluids is virtually infinite, but includes used water, fuel, liquid chemicals, gases, etc. Used water is any potable water that is no longer in the purveyors distribution system. In most cases, this includes any water downstream of the water meter and/or property line. Reclaimed water[1] is another example of "used water", but is still within the purveyor's distribution system for irrigation or other non-potable purposes.
Backflow	Reverse of the normal flow direction of water in a plumbing system or public water distribution system. It occurs due to a differential pressure existing between two different points within a continuous fluid system; a fluid of higher pressure

[1] Reclaimed water is not currently offered by the City of Tumwater, but it is under consideration as the LOTT Wastewater Alliance, in cooperation with the regional utilities, develops processes and timelines for availability.

	flowing to a fluid of lower pressure. Backflow is caused by either backpressure or back-siphonage.
Back Pressure	Results when the pressure (caused by a pump, elevated tank, or piping, boiler, or other means) on the consumer's side of the service connection that is greater than the pressure provided by the public water system and which may cause backflow.
Premise Isolation	A means of protecting the City owned and controlled water system through the installation of approved air gaps or approved backflow prevention assemblies at or near the service connection or alternative location acceptable to the City to isolate the consumer's water system from the City's distribution system.
Back-Siphonage	Results from a partial vacuum (negative pressure) within the piping system. Some common causes are (1) high velocities in pipe lines, (2) line repair or break that is lower than a service point, (3) lowered main pressure due to high water withdrawal rate such as fire fighting or water main flushing, and (4) reduced supply pressure on the suction side of the booster pump.

Appendix A contains examples that clearly illustrate typical cross connection situations.

BACKFLOW PREVENTION ASSEMBLIES

A wide choice of assemblies exists that can be used to prevent potential cross connections within the water system. Generally, the selection of the proper assembly to use is based upon the degree of hazard posed by the cross connection. Additional considerations are based upon piping size, location, and the potential need to periodically test the assembly to ensure proper operation. There are six basic types of assemblies/configurations that can be used to prevent potential cross connections:

1. Reduced Pressure Principle Backflow Assembly (RPBA)
2. Double Check Valve Assembly (DCVA)
3. Pressure Vacuum Breaker Assembly (PVBA)
4. Spill-Resistant Vacuum Breakers (SRVB)
5. Air Gaps[2]
6. Barometric Loops[2]

[2] Air Gaps and Barometric Loops are not considered assemblies, but these configurations are acceptable for the protection of the water supply. As their approval is limited to certain situations, please check with Development Services prior to installation to determine if your site is acceptable for either a barometric loop or air gap configuration.

An up-to-date listing of all approved backflow prevention assemblies is available for download through the USC website at: http://www.usc.edu/dept/fccchr/list/springer.html.

HOW TO USE THIS MANUAL

The intention of this manual is to aid users in implementing an effective cross control program. Using this manual in conjunction with the *Cross Connection Control Manual, Sixth Edition.* Published by the American Water Works Association, Pacific Northwest Section, this manual will provide the information necessary to ensure that the proper steps are taken towards reviewing new and existing developments for potential cross connections. The use of this information will also ensure that the proper procedures are followed during the installation and inspection of backflow prevention assemblies. This plan is arranged into five sections.

Chapter 2 explains the procedures for program implementation and administration. This section also discusses program policies and associated City actions.

Chapter 3 documents procedures for conducting facility surveys and service types, testing backflow assemblies, and record keeping.

Chapter 4 illustrates the current City ordinance for cross connections and provides an example of a new or modified ordinance.

Chapter 5 describes each of the backflow prevention assemblies and contains illustrations of each. The appendices contain other pertinent information regarding cross connections.

Chapter 2 – Program Implementation, Administration, and Policies

PROGRAM RESPONSIBILITY

Federal and state regulations place the responsibility for cross connection control on the City of Tumwater Public Works Operations as the water purveyor and/or on Development Services as the local authority for in-premise cross-connection prevention. When implementing a cross connection control program, the City needs to follow an organized plan that considers the enforcement authority, administration, personnel, certification, facility surveys, assembly testing, and public education.

In accordance with the Washington Administrative Code (WAC) 246-290-490 (1)(d), the City's responsibility for maintaining cross connection control shall begin at the water supply source, prior to treatment and distribution points. The purveyor's responsibility ends at the point of delivery to the customer's service location. The customer's service location begins at the downstream end of the service connection or water meter located in the public right-of-way or City-held easement. Any issues within the customer's service location after the point of delivery falls under the jurisdiction of the City's Development Services Department. Under Chapter 19.27 of the Revised Code of Washington (RCW), the responsibility for cross connection control within the consumer's service location, i.e., within the property lines of the consumer's premises, falls under the jurisdiction of Tumwater's Development Services as the local administrative authority.

ENFORCEMENT AUTHORITY

Tumwater Municipal Code (TMC) details City policy of cross connection control for the purpose of protecting the health of customers receiving water from the City by protecting the public water system from contamination under Chapters 13.04.430 – 13.04.490. As of the date of this publication, TMC revisions are underway to reflect the new regulations on purveyor responsibility and other issues.

ADMINISTRATION

The City's Public Works Department will carry out the functions of the water purveyor's cross connection control program, including survey, enforcement, and record keeping. The Superintendent of Public Works will oversee and manage program administration and designate an employee to carry out daily procedures. This designee will meet the requirements outlined in the section below labeled "Certification".

As with any successful program, the City of Tumwater has developed working relationships with multiple agencies on the federal, state, and local level. **Figure 2.1**, below, illustrates the relationship between the regulatory agencies and the program standards. **Figure 2.2** demonstrates the working relationship between Tumwater's Water Public Works Department and Tumwater's administrative agency, for in-premise cross connection control, Development Services, for the administration of the city's cross connection control program. **Figure 2.3** illustrates the flow of the plan review process for cross connection control.

Table 2.4 is a complete list of all certified cross connection control specialists employed with the City of Tumwater. Updates to this list will continue as necessary and recorded in the City's current edition of the cross connection control plan.

In the execution of this program, the Operations & Maintenance Division, in conjunction with the Engineering Division of the Public Works Department, and Development Services will have regular open communication. Each department is responsible to maintain and survey facilities as stated above under Program Responsibility. **By agreement between Development Services and Public Works, Public Works Operations will have authority, including survey and enforcement, over residential and fire protection service connections beyond the meter, up to and including the backflow protection assembly.** Responsibility for survey and enforcement of in-premise assemblies shall remain with the Development Service Department. In the event of a discrepancy of jurisdictional responsibility, the WAC and RCW directives take precedence. To resolve any conflicts, department directors will discuss appropriate measures to mitigate the current and similar future issues.

CITY POLICIES

The City has enacted varied policies to ensure the safety and quality of drinking water for all its customers. In accordance with the policies adopted in the Comprehensive Plan, the Public Works staff will operate to:

"Provide the highest quality water in sufficient quantity to meet the needs of the City"

The City of Tumwater Public Works Water Department accepts the responsibility to supply safe drinking water throughout the City. Part of this responsibility includes ensuring that the water is not contaminated prior to reaching the consumer due to backflow of contaminated water into the distribution system. To ensure backflow contamination does not occur and to maintain our high quality water supply, the City will enforce the policies outlined below.

Policy: As the Purveyor, the City Public Works Department will know the complete water distribution system in detail.

Action(s): Public Works operators will maintain a complete database of the complex infrastructure of the water system in detail. Operators will identify the type of connection required by each application or land use. Operators will know the various types of customers in the area and the amount of protection that currently exists. Operators will identify the need for greater protection in the event of new development or revisions on the property use.

Policy: Minimize the potential hazards of new cross connections.

Action(s): Review plans for new construction to identify potential cross connections.

Initiate procedures that will route all requests for new service or enlargement of existing services to the Plan Review Section of Development Services for identification of any cross connections.

Continue requiring the submission of plumbing plans with the construction plans for approval before issuance of a building permit.

FIGURE 2.1 - REGULATORY STANDARDS FOR CROSS CONNECTION CONTROL

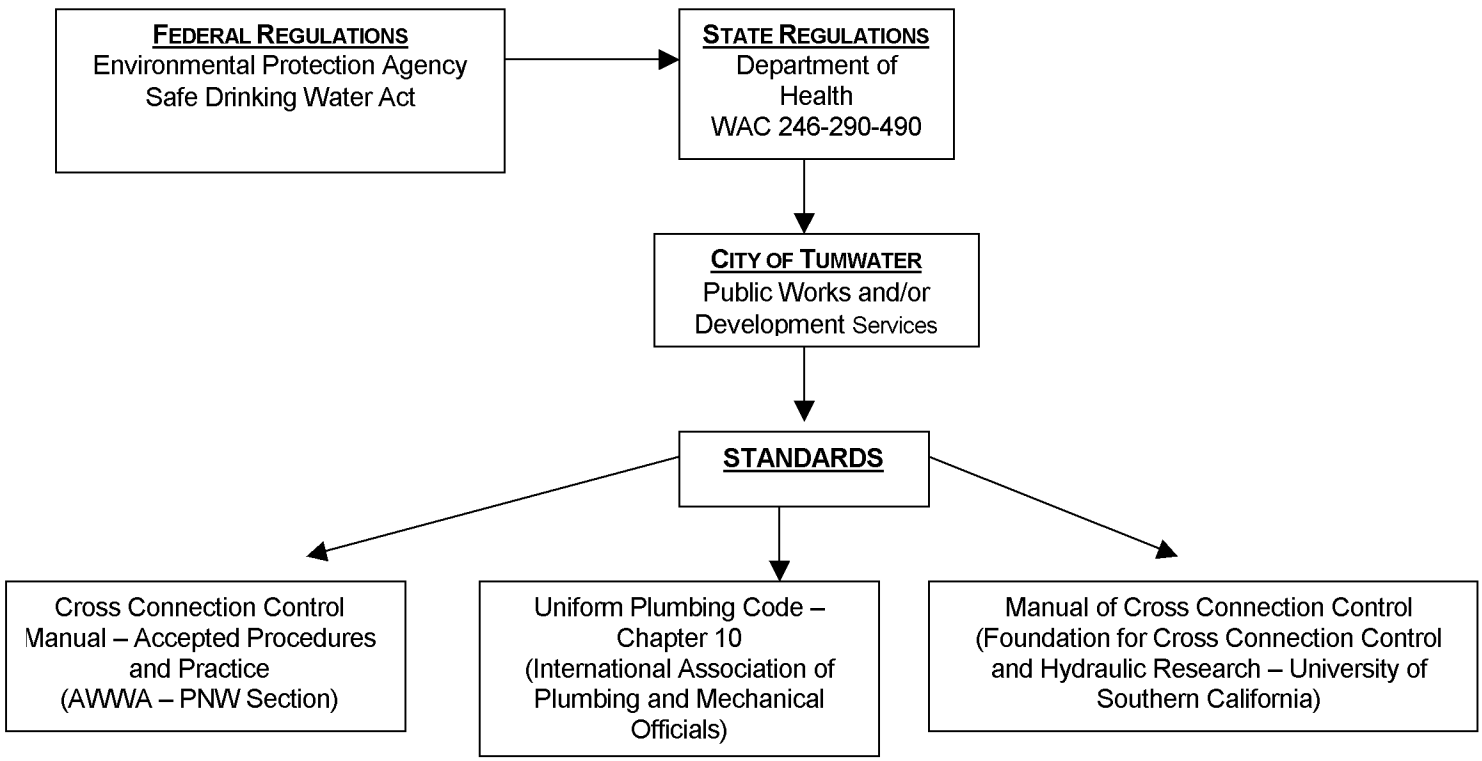


FIGURE 2.2 – DEPARTMENTAL RESPONSIBILITIES FOR CROSS CONNECTION CONTROL

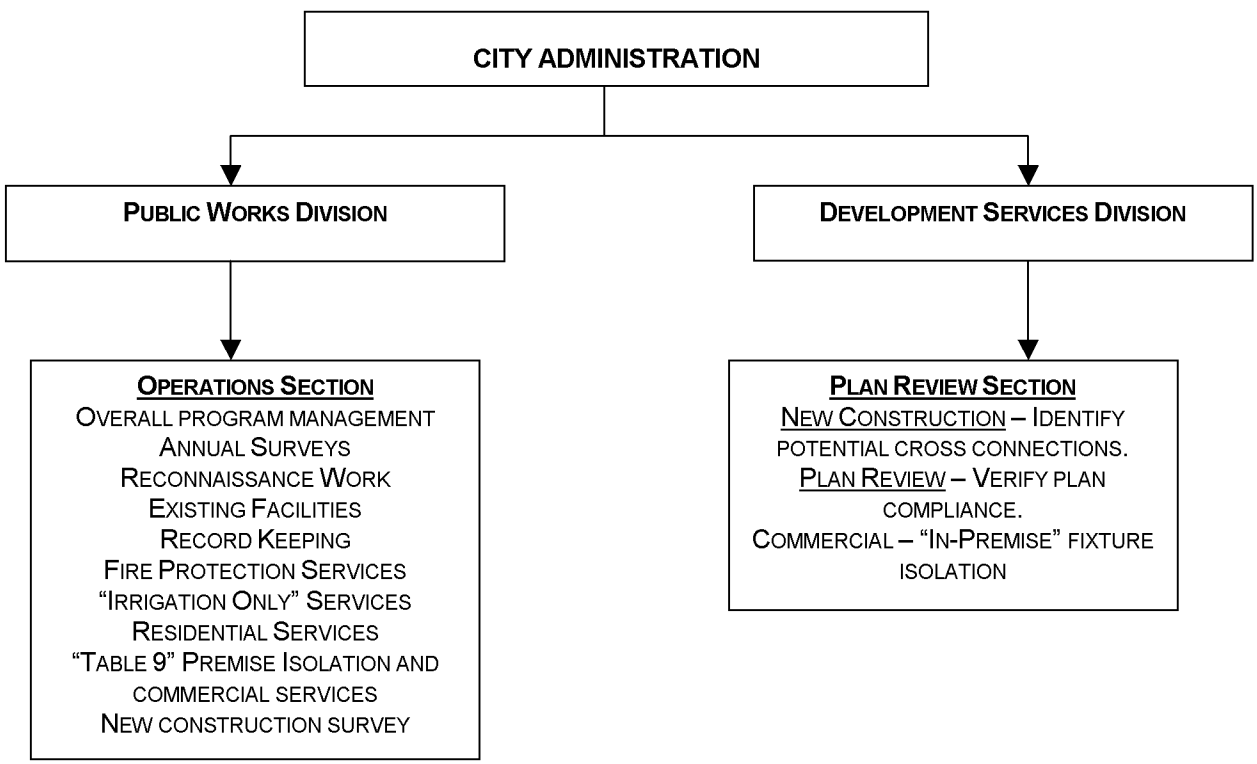


FIGURE 2.3 – PLAN REVIEW PROCESS FOR CROSS CONNECTION CONTROL

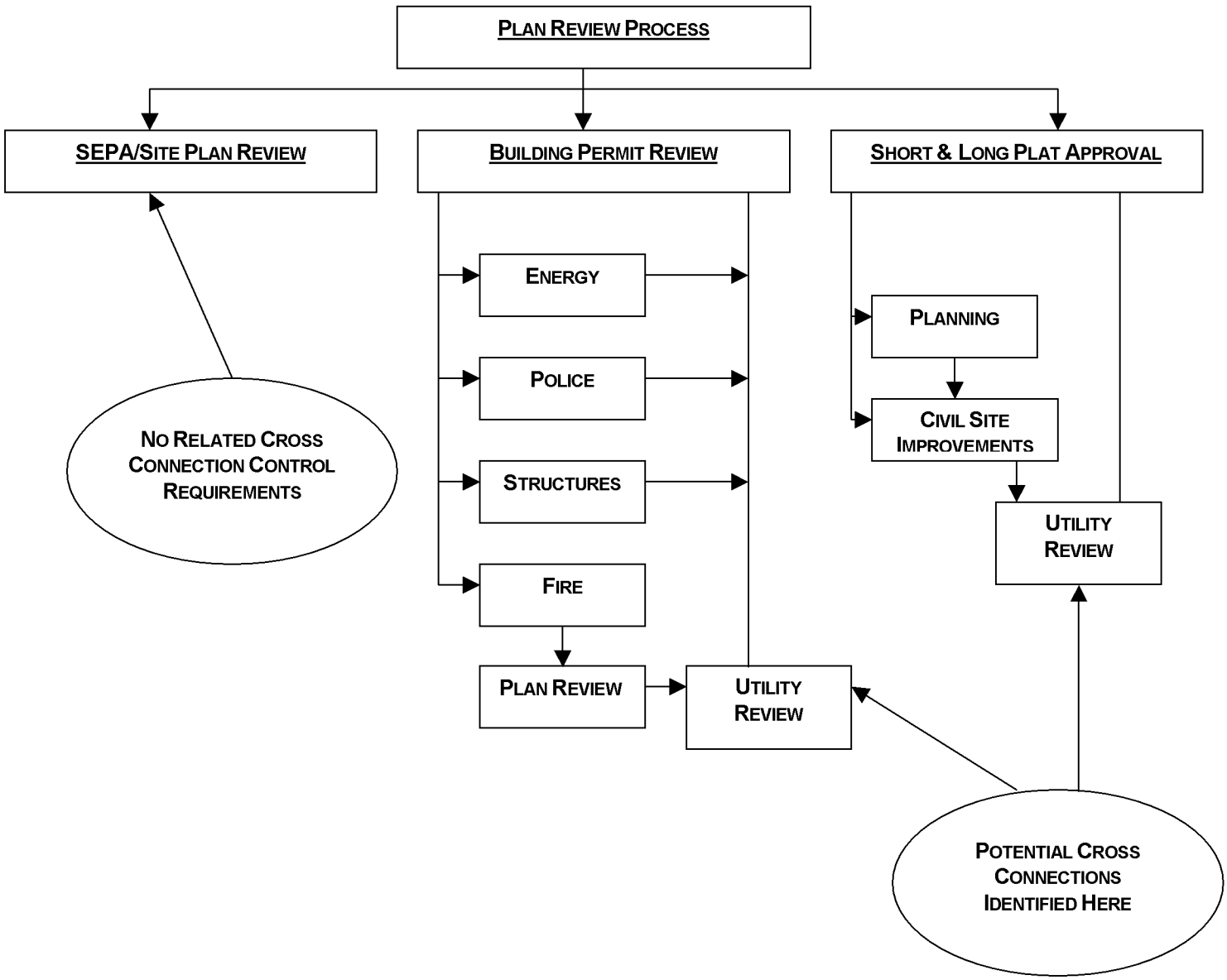


TABLE 2.4 – CITY OF TUMWATER CROSS CONNECTION CONTROL SPECIALISTS

NAME & TITLE	DEPARTMENT	CERTIFICATION NUMBER
Dave Barclift, CCS[3]	Operations & Maintenance	4153
Tiffany Ihly, CCS, BAT[4]	Operations & Maintenance	7488 – CCS, B2350 – BAT
Wayne Lobaugh, BAT	Facilities	B2984

[3] Cross-Connection Specialist
[4] Backflow Assembly Tester

City Policies, Continued.

Policy: Minimize the potential hazards of existing cross connections.

Action(s): Update and maintain a list of all existing cross connections and all backflow prevention assemblies throughout the City's service area.

Establish a reconnaissance program that inspects existing facilities for actual or potential cross connections within the City water system. This is an on-going endeavor that concentrates on all facilities under the authoritative jurisdiction of the City.

Inform all owners of fire sprinkler systems, both commercial and residential, of the new State requirements regarding these systems and require all owners to upgrade to current standards.

Policy: Public Works Operations will take corrective action if an existing cross connection is brought to the City's attention that is not controlled commensurate to the assessed degree of hazard.

Action(s): The City will make every effort to bring the consumer into compliance. Consumer retrofits will be required. The City may offer financial assistance to those who can prove hardship per Tumwater's Finance Department guidelines.

Ultimately, if the consumer does not abide by the regulations set forth by the City, the City may deny or discontinue water service to a customer's premise until the cross-connection hazard is eliminated or controlled to the satisfaction of program staff. As an alternative, the City may opt to install an assembly at the owner's expense to eliminate the potential for cross connection. In this event, the Program staff will notify Development Services in all cases prior to the action, to determine is a permit is needed, except in the event of an emergency.

Policy: Public Works Operations will be responsible for implementing Tumwater's Cross Connection Control Program for the protection of the City's drinking water distribution system.

Action(s): This section will ensure that annual testing is performed, that records of all actions for each assembly are kept on file, and that an on-going search for existing, uncontrolled, or unmonitored cross connections are performed.

Policy: Development Services will be responsible for reviewing all in-coming plans and requests for new construction. It will also be responsible for identifying potential cross connections, and ensuring that development plans meet the cross connection standards and criteria of the City. Other arrangements may be made by agreement between the Public Works Director and the Development Services director, on a case-by-case basis.

Action(s): All requests for new service, repair, or enlargement of existing services requiring a permit will route through the Development Services Department.

All new construction plans shall be reviewed and assessed for cross connections, and backflow prevention assemblies shall be installed correctly and concurrent with that facility.

Policy: The City will make every reasonable effort to ensure that all existing or potential cross connections, including in-premise cross connections, that cannot be eliminated are protected with an approved backflow prevention assembly. Ensure that all existing cross connection assemblies comply with the City's program.

Action(s): The City will make every reasonable effort to eliminate the potential hazard, add protection to the existing system, or disconnect water service at the owner's expense, to any premise where the customer fails to cooperate in the installation, maintenance, testing, inspection, or replacement of any backflow prevention assembly.

Notify the customer of all responsibilities and options required by the City's Cross Connection Control Program.

Make available to the general public, especially those affected by the Cross Connection Control Ordinance, all information necessary to assist them in complying with the City's cross connection control program.

When cross connections cannot be eliminated, the potential hazard will be controlled by the installation of an approved backflow assembly commensurate with the degree of hazard.

Policy: The City will conduct an annual inspection program and maintain testing results with the goal that all existing backflow prevention assemblies maintain proper operating condition compliant with the State regulations.

Action(s): Maintain a testing program wherein the City informs all backflow prevention assembly owners of their responsibility to have their assembly tested annually by a certified tester.

Keep records on all existing assemblies and verify that each passes an annual test.

Provide random spot inspections of existing assemblies to verify that they are properly installed and in working order.

Replace existing assemblies that are no longer on the most current Washington State approved list. However, these assemblies may remain in service until maintenance is required, at which point the owner will be notified that the assembly must be replaced.

PERSONNEL AND CERTIFICATION

The Superintendent of Public Works, as Operator of the water system, or his/her designee, will be responsible for organizing and implementing the Cross Connection Control Program. Any staff member involved in the administration of this program will receive training through recognized courses and seminars to become a certified cross connection control specialist. The staff member name and certification number will be updated and entered into **Table 2.4** of this manual.

To effectively manage the program, a staff member, as designated by the Public Works Superintendent, will provide assistance in surveying facilities, to provide additional information about potential cross connections in other areas of the Public Works duties, to provide educational outreach efforts, and to provide continuity in the program for personnel changes. This skilled staff member will also receive certifiable training in cross connection control (CCS) and backflow assembly testing (BAT). Individuals obtaining either CCS or BAT certification will be added to the **Table 2.4** list of City approved Cross Connection Specialists.

Currently, the City needs no additional employees to accomplish the goals of the Cross Connection Control Program. Public Works Operations will review the staffing needs annually to determine if the goals outlined in the program can be met given current staffing levels.

PUBLIC EDUCATION

The City will develop a procedure to provide cross connection control information and educate consumers about the operation of their water system. Such a program may include periodic bill inserts, public service announcements, pamphlet distribution, notification of new consumers, speeches to local civic groups or organizations, displays at local shopping outlets, and consumer confidence reports.

FINANCIAL IMPACTS

The costs to administer this Cross Connection Control Program arise primarily from personnel needs to review and identify cross connection hazards and to cover assembly testing and inspection in the Public Works Department. Funding for the program will be provided from the Utility Operating Fund for Public Works responsibilities.

Chapter 3 – Facility Surveys, Assembly Testing, & Record Keeping

The City of Tumwater Public Works Water Department has identified five types of services covered under the Cross Connection Control Program for drinking water. Due to the inherent potential cross connection hazards that exist with these services, the City requires premise isolation under most conditions. Under WAC 246-290-490 (4)(b)(iii) Table 9, the Department of Health identifies services of high health risk and requires premise isolation (see **Table 3.1** for those identified hazards). The City of Tumwater has opted for higher, proactive protection than Table 9, requiring premise isolation for ***all*** development except residential. Residential development will be considered on a case-by-case basis according to the assessed degree of hazard that exists.

COMMERCIAL/INDUSTRIAL SERVICE

Under existing City standards, all new development is required to install and maintain an approved, premise isolation cross connection control assembly that is commensurate to the assessed degree of hazard.

MULTI-FAMILY SERVICE

Any residential development having one or more metered connections serving more than 2 living units per meter will be treated as a commercial service for the purposes of this program.

FIRE SERVICE

Backflow protection is not required by the state for residential flow-through or combination fire protection systems constructed of potable water piping and materials. For service connections with fire protection systems other than flow-through or combination, the City program will, where such a case exists, ensure that premise isolation is installed in accordance with WAC 51-56-0600 of the Universal Plumbing Code (UPC).

The City will inspect and survey fire services annually, coordinating with the City Fire Department to acquire records indicating sites with fire service connections.

RESIDENTIAL SERVICE

For single-family residential homes, premise isolation is not mandatory unless the premise is regulated under the provisions of **Table 3.1**. If the premise is not regulated under Table 3.1, the City will rely upon backflow prevention at the point of hazard, in accordance with WAC 51-56-0600 of the UPC. Residential hazards, such as irrigation systems, swimming pools, spas, ponds, or boilers, will require the installation of an

approved backflow assembly by the consumer as specified by Program staff if a potential for cross connection exists.

IRRIGATION-ONLY SERVICE

The City will ensure that all irrigation-only services will receive protection that matches the assessed degree of hazard. Generally, the City will require premise isolation for all premises in need of protection.

TABLE 3.1 – DOH "TABLE 9" – HIGH HEALTH CROSS CONNECTION HAZARD PREMISES REQUIRING PREMISE ISOLATION BY AIR GAP (AG) OR REDUCED PRESSURE BACKFLOW ASSEMBLY (RPBA)[5]

Agricultural (farms and dairies)
Beverage bottling plants
Car washes
Chemical plants
Commercial laundries and dry cleaners
Premises providing both reclaimed and potable water
Film processing facilities
Food processing plants
Hospitals, medical centers, nursing homes, veterinary, medical, and dental clinics, and blood plasma centers.
Premises with separate irrigation systems using the utilities water supply and with chemical addition[6]
Laboratories
Metal plating industries
Mortuaries
Petroleum processing or storage plants
Piers and docks
Radioactive material processing plants or nuclear reactors[7]
Survey access denied or restricted
Wastewater lift and pumping stations
Wastewater treatment plants[7]
Premises with an auxiliary water supply[8]

NEW CONSTRUCTION

All applications for new services and enlargement of existing services will route through the Development Services department for the initial review of the plans to determine if any actual and/or potential cross connection hazard exists. The plot plan, mechanical plan, and plumbing fixture schedule will be submitted for review. Reviewers will make use of this plan and other applicable publications, such as the Plumbing Code, when assessing the cross connections.

As developers seek final approval for their plans, Development Services will require that backflow prevention assemblies are listed on the final plans before issuance of any approval. Experience shows that if the assemblies are shown on the plans, they are

[5] This table is subject to amendment. Please refer to WAC 246-290-490(4)(b)(iii) for current table.
[6] For example, parks, playgrounds, golf courses, cemeteries, estates, etc.
[7] RPBAs for connections serving these premises are acceptable only when used in combination with an in-plant approved air gap; otherwise, Tumwater will require an approved air gap at the service connection.
[8] Portion of text amended that differs from DOH "Table 9".

normally installed. Approval of the cross connection plan will not relieve the consumer of the responsibility to comply with the requirements of the other agencies having jurisdiction or future requirements to meet a higher standard for the protection of the public health and safety. The City, or other agencies, may still require the customer to install additional backflow assemblies or other modifications determined necessary in the final survey of the facilities prior to providing water service, or at a future date should changes in the customer's water use or plumbing increase the degree of risk to the City's water distribution system.

As part of the plan approval process, Development Services will provide the customer with the City's installation standards for assemblies and the assembly test requirements.

Upon completion of construction, the City will follow up with a facility survey to address compliance issues. After the survey, the City will notify the customer in writing, via survey report or letter, requesting changes, if needed, to bring the customer into compliance with the City's cross connection control program. Water service will not be connected until the customer has complied with all of the cross connection control requirements imposed by the City. These requirements must include the satisfactory completion of the assembly test by a certified tester.

The City will confirm with each non-residential customer verbally and in writing after successful completion of the cross connection control requirements and request that the customer notify the City when any changes are made to the customer's plumbing or in the customer's water use (if the water is to be utilized in any way other than for domestic consumption or if domestic use includes any use on Table 9 (e.g. reclaimed water use).

EXISTING FACILITIES

The City Public Works Department will develop a list and survey schedule of all existing facilities, based on the typical risk assessment of the various categories of facilities. The list will start with the highest risk categories, i.e., those with the highest health hazard. Table 3.1 is a valuable resource to prioritize existing facilities. Once established, this list and schedule will outline the initial survey and periodic repeat survey of facilities. Staff will utilize this list in order, except in circumstances that require a special survey of a facility, such as a response to a water quality complaint.

The City currently shows 1,014 backflow prevention assemblies in its database. Of these, it is Public Works' responsibility to track 719 assemblies to meet the requirements of the Department of Health program. Sixty-one (61) of these assemblies have been installed that meet the "Table 9" (see Table 3.1) definition of high-risk premises. An additional 135 fire sprinkler services have had backflow prevention assemblies installed and Public Works currently tracks their status.

The remaining 199 identified assemblies in the database are considered "in-premise". These assemblies fall under the jurisdiction of Development Services. The City of Tumwater owns the most assemblies, 64, and the Miller Brewery and Columbia Beverage are the largest private assembly owners with 22 and 14 assemblies respectively.

During 2002, Public Works Operations staff logged 1,026 hours in carrying out the requirements of the cross connection control program. Time requirements are attributed

primarily to testing and maintenance of the identified assemblies. Staff time is also dedicated to sending letters to homeowners and business owners/operators and making contacts to set up survey appointments.

SURVEY PROCEDURE

To initiate a survey, staff will set an appointment to meet with the owner or authorized representative of the facility to be surveyed. Staff will explain, in writing and verbally, that the purpose of the survey is to ensure the protection of the water distribution system from contamination, and that the survey is not for the purpose of identifying and isolating all cross connections ***within*** the customer's premise. Staff will explain the customer's responsibility to protect the public water supply, the Public Works Department's conditions for service, and other applicable regulations either at the time of the contact or at the survey appointment. Staff may request that the customer or a maintenance person familiar with the plumbing system accompany staff at the time of the survey for accurate assessment of the system.

During the survey, staff will identify cross connections and explain to the customer the City's concern about potential health risks to the public. Staff will take pictures and fully document all high hazard cross connections in order to locate them during future tests and/or surveys. Once the survey is complete, staff will mail a copy of the report to the customer. The survey report will state the backflow assemblies requires by the City at the meter for premise isolation to protect the water distribution system, and the assessment of the hazard or reason for the protection requirements. Staff will also include a copy of the City's installation standards and a list of approved assemblies with the customer's survey report. After identification of a cross connection hazard, the consumer will be notified in writing that he/she must comply with the City requirements within ninety days.

ASSEMBLY TESTING

To maintain compliance under state regulations, staff will require all backflow prevention assemblies to be tested using procedures specified in the most current edition of the University of Southern California (USC) Cross Connection Control Manual as required to protect the City's water distribution system. A certified Backflow Assembly Tester (BAT) will test these assemblies upon installation, after repair or relocation, after a backflow incident, and at a minimum of annually. Either a BAT or Cross Connection Specialist (CCS) will inspect all City-approved air gaps annually. The City requires that inspections and testing of all assemblies installed on irrigation systems are conducted at the time of installation, after a backflow incident, and after repair, reinstallation, or relocation. After testing and inspection, staff will report to the Cross Connection Control program administrator for review, determination of follow-up action (if necessary), and comparison to previous results for the specific assembly.

When the field test report shows that an assembly has failed its test, the City will require the customer to repair the assembly and return it to proper working condition in an amount of time to be determined on a case-by-case basis depending on the hazard.

If a certified private contractor completes the assembly testing, staff will periodically review and audit, via re-tests, testing results to ensure accuracy and limit City liability. Testers on staff at the City will submit verification of the calibration of their test kit annually. The City will specify the agency and acceptable methods for the verification of

test equipment calibration accuracy and test equipment calibration (e.g., USC FCCCHR procedures). The City will report any testing discrepancies to DOH for further action.

RECORDS AND REPORTING

An adequate record system is essential to the successful operation of a cross connection control program. Required by the Washington State Department of Health (DOH), these records will form the basis of any enforcement action or legal defense by the City. The DOH requires that the City have all records and reports available to the department or its representative(s) upon request. The Cross Connection Program staff will develop and maintain cross connection control records that will contain the following:

- A master list of service connections and/or consumer's premises where the City relies upon approved backflow preventers to protect the public water system from contamination, the assessed hazard level of each, and the required backflow preventer.

- Inventory information on:

    i. Approved air gaps installed in lieu of approved assemblies including exact air gap location, assessed degree of hazard, installation date, history of inspections, inspection results, and person conducting inspections.

    ii. Approved backflow assemblies including exact assembly locations, assembly description (type, manufacturer, model, size, and serial number), assessed degree of hazard, installation date, history of inspections, tests and repairs, test results, and person performing the inspection(s).

    iii. Existing approved AVBs used for irrigation system applications including location, description, (manufacturer, model, and size), installation date, history of inspections, and person performing inspections. AVBs will not be approved for new installation.

- Program staff will complete cross connection program summary reports and backflow incident reports annually and retained for five years.

In accordance with WAC 246-290-490(8)(a), the City will retain records pertaining to the master list of service connections and/or consumer's premises for as long as the premises pose a cross connection hazard. Once the hazard or connection is removed from the system, the City will retain the records for a minimum of five years.

In the event of a cross connection incident that has contaminated the public water system or occurred within a premise of a consumer served by the City, the City will notify DOH, Development Services, and the Thurston County Health Department as soon as possible after the incident, but no later than the end of the next business day, in accordance with WAC 246-290-490(8)(f). The City will document the details of the backflow incident using the *Backflow Incident Report Form* found in Appendix C. The City will include all backflow incident report(s) and the annual cross connection control program summary.

Chapter 4 – Cross-Connection Ordinance Information

INTRODUCTION

Appendix B contains the current City and State ordinances for cross connections. The Washington State DOH and the American Water Works Association (AWWA) have separately established criteria for the substantive requirements of City ordinances concerning cross connection control. The following is an example of ordinance language in compliance with these criteria.

ORDINANCE BACKGROUND

Purpose

Under the provisions of the Safe Drinking Water Act of 1986, the federal government has established, through the EPA, national standards for safe drinking water. These standards, as they apply to cross connections, are enforced by the State of Washington through the DOH under WAC 246-290-490. The City of Tumwater, as the water purveyor, has the primary responsibility for preventing water from unapproved sources from entering the public potable water system.

This ordinance, in conjunction with Chapter 10 of the UPC, WAC 246-290-490, and the current edition of the Cross Connection Control Manual Accepted Procedure and Practice, AWWA – PNW section, is to protect the health of the water consumer and the potability of the water in the distribution system. This is accomplished by eliminating or controlling all actual (direct) and potential (indirect) cross connection between potable and non-potable systems through the use of approved backflow prevention assemblies. The City of Tumwater is required to ensure that such assemblies are installed properly, receive annual inspection and tests, and that all new and existing plumbing systems are reviewed for identification of cross connections.

Applicability

The provisions of this chapter apply throughout the water service area of the City of Tumwater. They apply to all systems installed prior to or after its enactment. Therefore, any customers using water from the City of Tumwater are responsible for compliance with these regulations and shall be strictly liable for all damage incurred as a result of failure to comply with the express terms and provisions contained herein.

Enforcement

The Superintendent of Public Works will administer the provisions of this chapter. The Superintendent will designate cross connection specialists and establish all necessary rules and regulations to enforce these provisions. The City's Public Works Department will be responsible for monitoring, inspecting, and maintaining records for all existing cross connection assemblies except commercial in-premise fixture protection. Development Services will be responsible for reviewing all new and improvement plans

for cross connections. Development Services will also be responsible for ensuring the installation, testing, and maintenance of cross connection control assemblies for all commercial and industrial "in-premise" locations as deemed appropriate by Development Services and maintaining the associated records. Public Works staff will be responsible for ensuring the installation of all residential in premise assemblies as deemed appropriate.

Installation of Backflow Prevention Assemblies

Backflow prevention assemblies required by this chapter must be installed so as to be readily accessible for maintenance and testing. All assemblies shall be connected at the meter, the property line when meters are not used, or within any premise for which, in judgment of the City of Tumwater Cross Connection Control Specialist, the nature and extent of activity on the premises, or the materials used or stored, could present a health hazard, should a cross connection occur. This category includes:

1. Premises having an auxiliary water supply.
2. Premises having internal cross connections that are not correctable, or intricate plumbing arrangements which make it impractical to ascertain whether cross connections exist.
3. Premises where entry is restricted so that inspections for cross connections cannot be made with sufficient frequency or at sufficient short notice to ensure that cross connections do not exist.
4. Premises having a repeated history of cross connections being established or re-established.
5. Premises on which any substance is handled under pressure so as to permit entry into the public water system, or where a cross connection could reasonably be expected to occur. This includes the handling of process waters and cooling waters.
6. Premises where materials of a toxic or hazardous nature are handled such that if a back-siphonage should occur, a health hazard may result.
7. Any premise found on Table 3.1 (also known as DOH Table 9 -- WAC 246-290-490).
8. Fire sprinkler systems.
9. Irrigation systems.
10. Others as specified by the Superintendent and/or Director of Development Services.

Types of Backflow Prevention Assemblies Required

Specific types of backflow prevention assemblies are required in the following conditions:

1. An air gap separation or reduced principle backflow prevention assembly shall be installed where the water supply may be contaminated by industrial materials or waste of a toxic nature or any other contamination which would cause a health or system hazard.

2. An air gap must be used between a potable water supply and sewer-connected wastes.
3. Lawn sprinkler or irrigation systems, which are supplied by City water only as opposed to well-irrigated systems, shall be required to have a backflow prevention assembly as specified by program staff. If such systems contain an auxiliary pump or are subject to chemical additives, air gap separation or a reduced pressure principle backflow prevention assembly will be required.

Requirements

Public Works and Development Services

1. Public Works will perform evaluations and inspections of all existing facilities and inform the owner by letter of any corrective action deemed necessary, the method of achieving the correction, and the time allowed to make the correction. Development Services maintains authority over any "in-premise" assemblies.
2. Public Works shall ensure that all backflow prevention assemblies that are the responsibility of the water purveyor are tested annually to ensure satisfactory operation. Development Services maintains authority over any "in-premise" assemblies.
3. The City's Public Works Department shall inform the owner by letter, of any failure to comply with cross connection control requirements, preceding the first re-test and re-inspection. Once notified, the customer will be allowed fifteen (15) days to take corrective action, as specified by Public Works. In the event the Owner fails to comply with the necessary correction by the time of the second re-test and re-inspection, Public Works will inform the Owner, by letter, that the water service to the Owner's premises may be terminated within a period not to exceed five (5) days.
4. If Public Works determines at any time that a serious threat to the public health exists, water service may be terminated immediately and without notice.
5. For new developments, Public Works Operations will provide an on-site evaluation to determine if cross connections exist and what type of backflow preventer, if any, will be required before a water meter permit can be issued. All new commercial/industrial developments, multi-family, and fire protection services will be required to have "premise isolation" regardless of business application.

Owner

1. The Owner shall be responsible for the elimination or protection of all cross connections on his/her premises.
2. The Owner, whether notified by the City or not, shall, at the expense of the Owner, install, maintain, and have tested by a certified tester any and all backflow prevention assemblies on the premises.
3. The Owner shall return the assembly test reports to the City of Tumwater within thirty (30) days after receipt of the yearly test notification.
4. The Owner shall notify the City of any proposed or modified cross connections.

5. Owners who cannot shut down for operation for testing of assemblies must provide bypass piping with an additional backflow assembly at their expense.
6. The Owner shall only install backflow prevention assemblies that are approved by the Washington State DOH (WAC 246-290-490(4) & (5)).
7. The Owner shall only install backflow prevention assemblies in a manner that is approved by the Washington State DOH (WAC 246-290-490(6)(b)).
8. The Owner will be required to install a backflow prevention assembly at the service entrance if a private water source is maintained on his/her premise, even if it is not connected to the City's system.
9. Failure of the Owner to cooperate in the installation, maintenance, repair, inspection and testing of backflow prevention assemblies required by this ordinance may be grounds for the termination of water service, or the City will install an assembly at the expense of the owner.

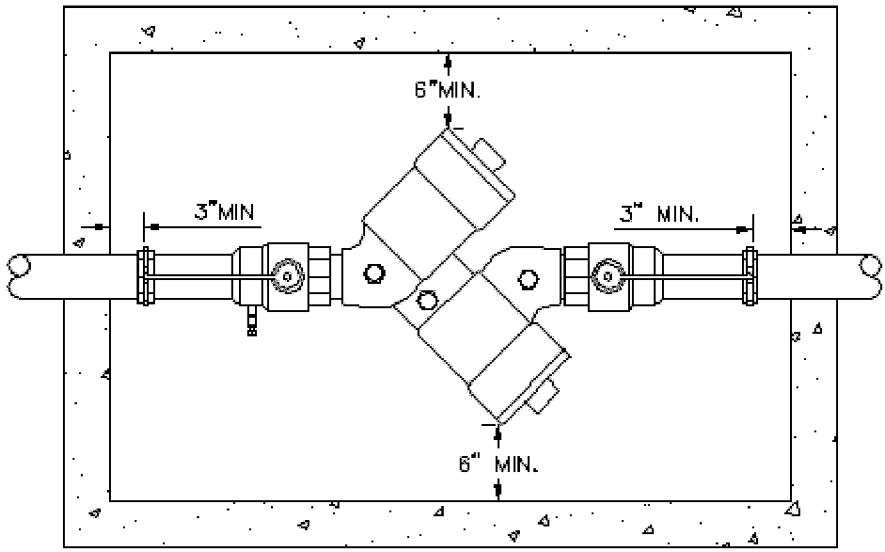
Annual Inspection and Testing Requirements

All reduced pressure principle backflow assemblies, double check valve assemblies, spill-resistant vacuum breaker assemblies, pressure vacuum breaker assemblies, and air gaps installed in lieu of a backflow preventer, shall be inspected and tested annually or more often when successive inspections indicate failure. All inspections and testing will be done by a certified tester. The test reports shall be returned to the City of Tumwater within thirty (30) days after the receipt of the yearly test notification.

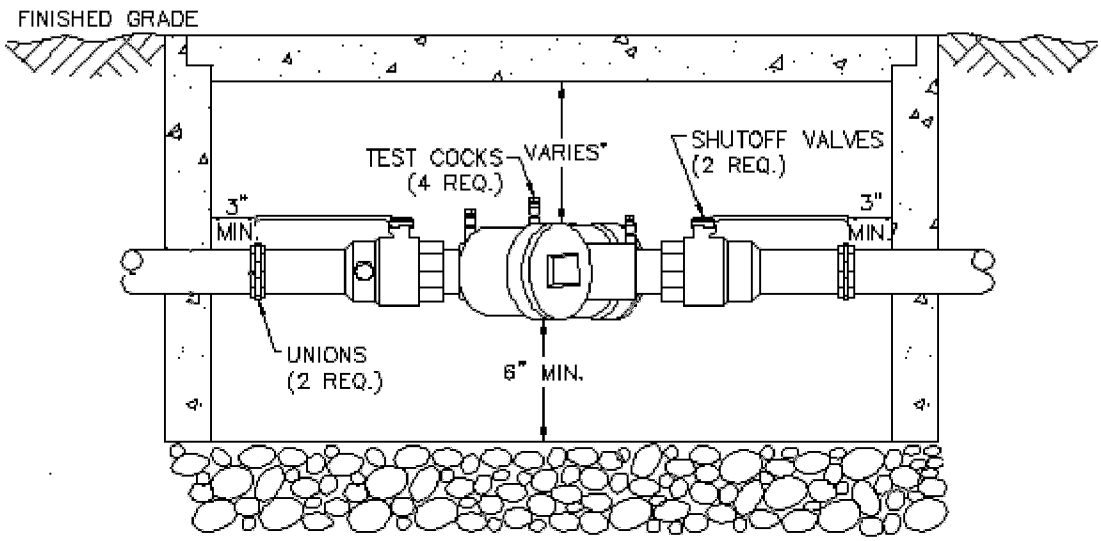
Appendix A – Typical Cross Connection Assembly Details

There are currently four basic types of backflow prevention assemblies that are accepted by the City of Tumwater to control cross connections. This chapter identifies each type of assembly, provides an overview of the assembly, and illustrates the minimum installation requirements for these assemblies. A more detailed description of these assemblies and their installation and testing procedures can be found in the *Cross Connection Control Manual Accepted Procedures and Practice* by the Pacific Northwest Section of the American Water Works Association.

Double Check Installation Details



TOP VIEW

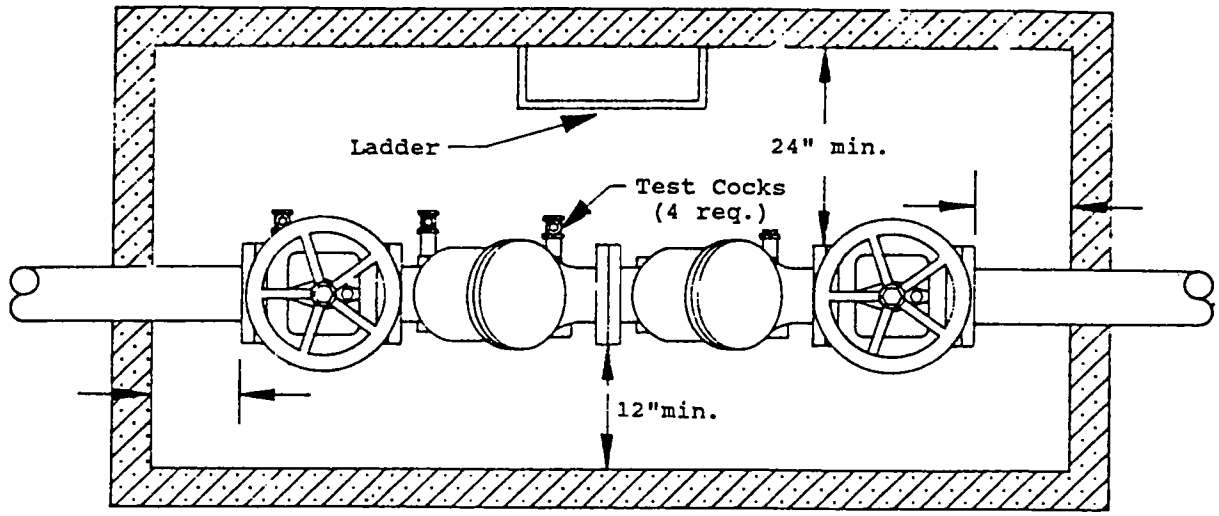


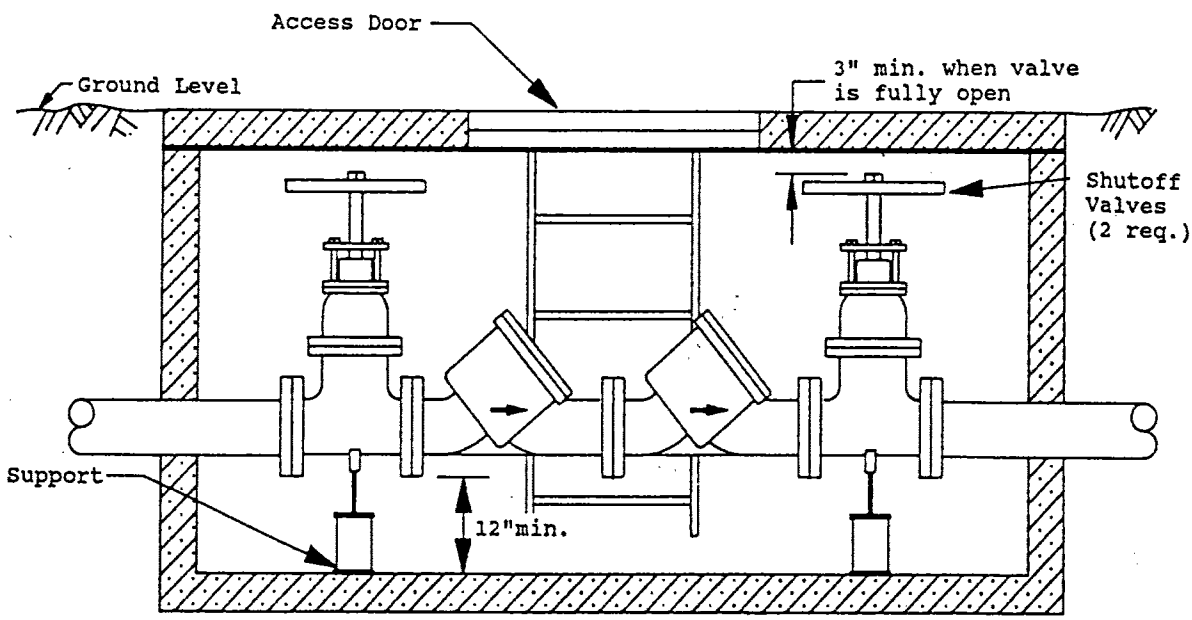
SIDE VIEW

NOTE: All items shall comply with the following

- DOUBLE CHECK VALVE ASSEMBLY SHALL BE A WASHINGTON STATE DEPT. OF HEALTH APPROVED MODEL.
- DOUBLE CHECK VALVE ASSEMBLY IS TO LAY HORIZONTAL WITH GROUND.
- THE WATER LINE SHALL BE THOROUGHLY FLUSHED PRIOR TO INSTALLING THE BACKFLOW ASSEMBLY.
- A PLUMBING PERMIT IS REQUIRED. IF SERVICE ADDRESS IS OUTSIDE CITY OF TUMWATER LIMITS CONTACT THURSTON COUNTY.
- DO NOT INSTALL DOUBLE CHECK VALVE ASSEMBLY IN AN AREA SUBJECT TO FLOODING.
- THE BACKFLOW ASSEMBLY SHALL BE TESTED AFTER INSTALLATION, PRIOR TO ACCEPTANCE AND ALSO YEARLY THEREAFTER BY A CERTIFIED BACKFLOW ASSEMBLY TESTER.
- TEST RESULTS SHALL BE SENT TO THE CITY OF TUMWATER CROSS CONNECTION SPECIALIST.

DOUBLE CHECK VALVE ASSEMBLY



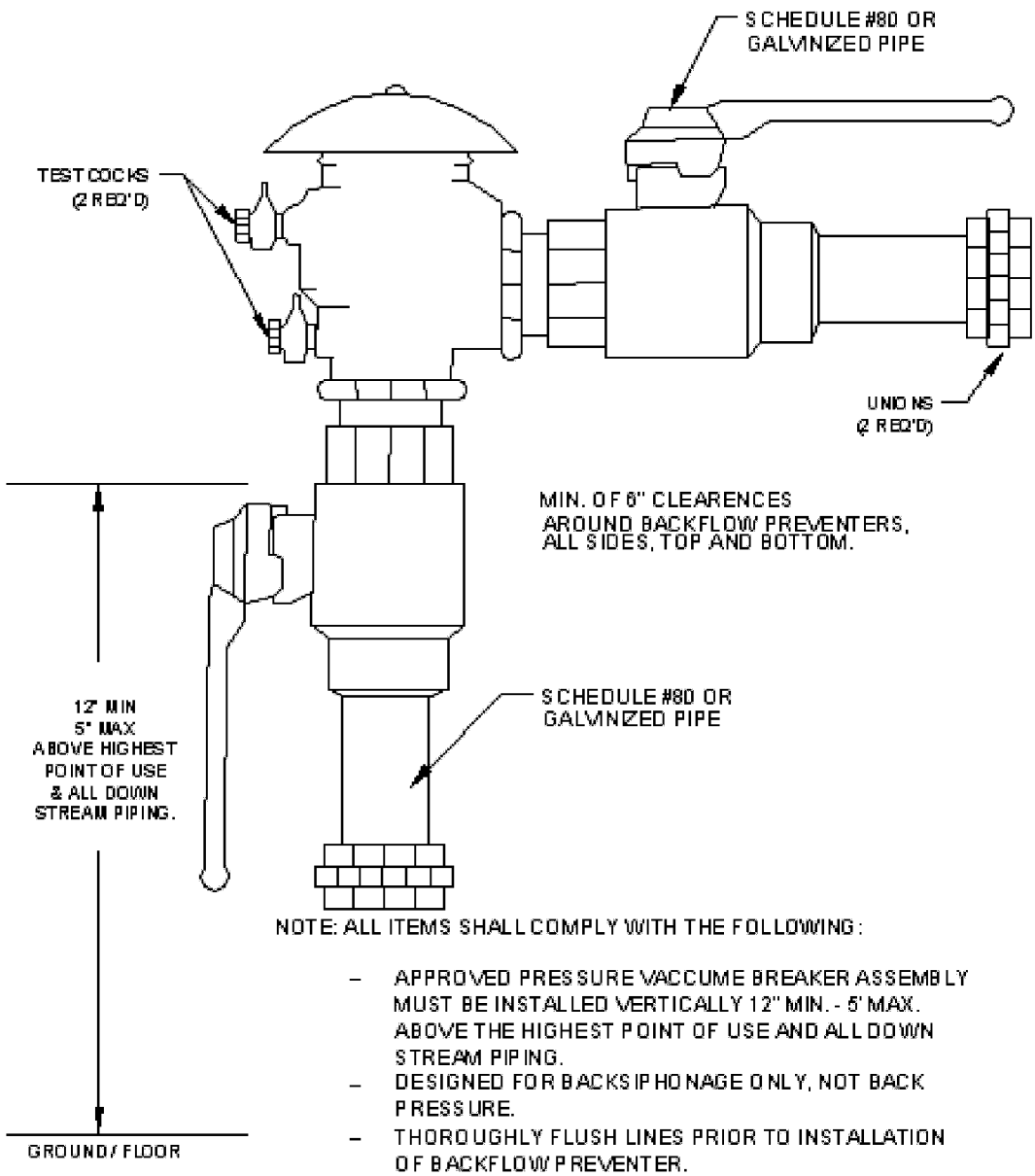


SIDE VIEW

NOTE: ALL ITEMS SHALL COMPLY WITH THE FOLLOWING:

-DOUBLE CHECK VALVE ASSEMBLY SHALL BE A WASHINGTON STATE DEPT. OF HEALTH APPROVED MODEL.
-BACKFLOW ASSEMBLY SHALL BE AN APPROVED MODEL WITH FOUR TEST COCKS AND A RESILIENT SEATED SHUT OFF VALVE MOUNTED AT EACH END.
-THE WATER LINE SHALL BE DISINFECTED, FLUSHED AND PRESSURE TESTED PRIOR TO INSTALLING THE BACKFLOW ASSEMBLY. THE BACKFLOW ASSEMBLY SHALL BE PROTECTED FROM FREEZING AND FLOODING.
-THE BACKFLOW ASSEMBLY SHALL BE TESTED AFTER INSTALLATION, PRIOR TO ACCEPTANCE AND ALSO YEARLY THEREAFTER BY A CERTIFIED BACKFLOW ASSEMBLY TESTER.
-TEST RESULTS SHALL BE SENT TO THE CITY OF TUMWATER WATER SECTION.
-ALL PIPE, VALVES, FITTINGS AND JOINTS FROM THE SUPPLY MAIN SHALL BE FLANGED AND RESTRAINED.
-FIRE DEPT. CONNECTION SHALL NOT EXIT THROUGH THE TOP OF THE VAULT
-GROUT PIPE ENTRANCE AND EXIT IN VAULT WITH WATER- TIGHT GROUT.
-VAULTS SHALL HAVE A MINIMUM OF THREE FEET CLEARANCE FROM ALL STRUCTURES.

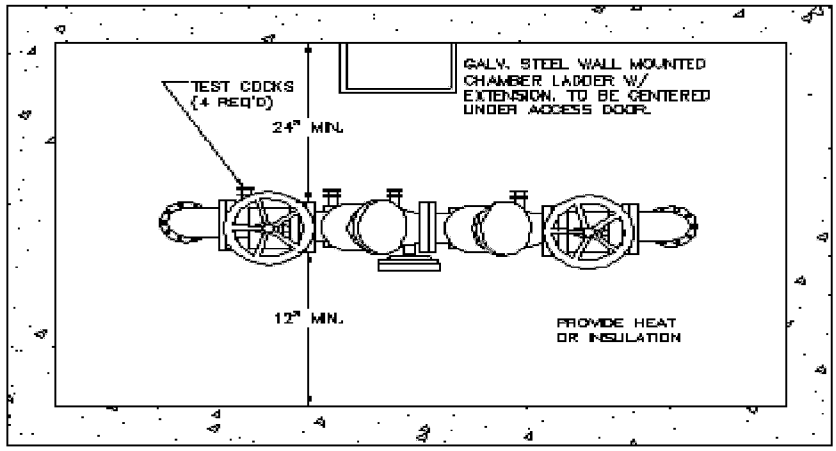
PRESSURE VACUUM BREAKER ASSEMBLY



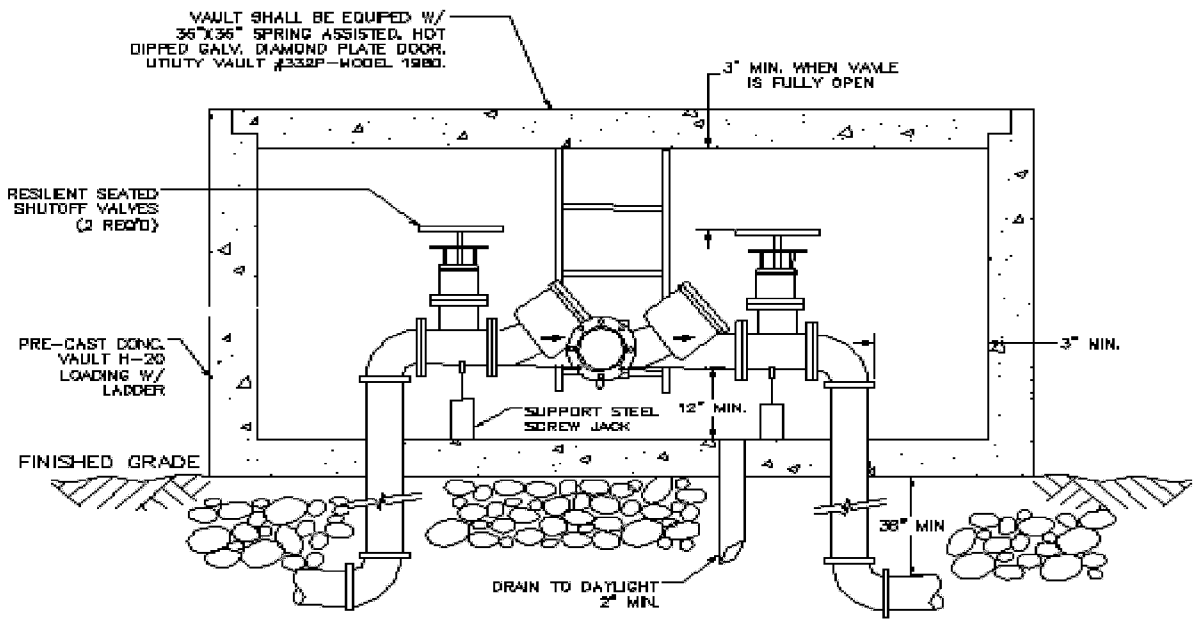
NOTE: ALL ITEMS SHALL COMPLY WITH THE FOLLOWING:

- APPROVED PRESSURE VACCUME BREAKER ASSEMBLY MUST BE INSTALLED VERTICALLY 12" MIN. - 5' MAX. ABOVE THE HIGHEST POINT OF USE AND ALL DOWN STREAM PIPING.
- DESIGNED FOR BACKSIPHONAGE ONLY, NOT BACK PRESSURE.
- THOROUGHLY FLUSH LINES PRIOR TO INSTALLATION OF BACKFLOW PREVENTER.
- IF A P.V.B.A. IS INSTALLED INDOORS. CONSIDERATION MUST BE GIVEN TO WATER LEAKAGE IF THE BACKFLOW PREVENTER FAILS. (EXCESS WATER SPILLAGE).
- DO NOT INSTALL IN AN AREA SUBJECT TO FLOODING.
- MUST BE PROTECTED FROM FREEZING CONDITIONS.
- THE BACKFLOW PREVENTER MUST BE A WASHINGTON STATE DEPARTMENT OF HEALTH APPROVED MODEL.
- A PLUMBING PERMIT IS REQUIRED.
- MUST BE TESTED AFTER INSTALLATION AND YEARLY THEREAFTER BY A WASHINGTON STATE CERTIFIED BACKFLOW ASSEMBLY TESTER.
- TEST RESULTS SHALL BE SENT TO THE CITY OF TUMWATER WATER DEPARTMENT.

Reduced Pressure Backflow Assembly Details



TOP VIEW

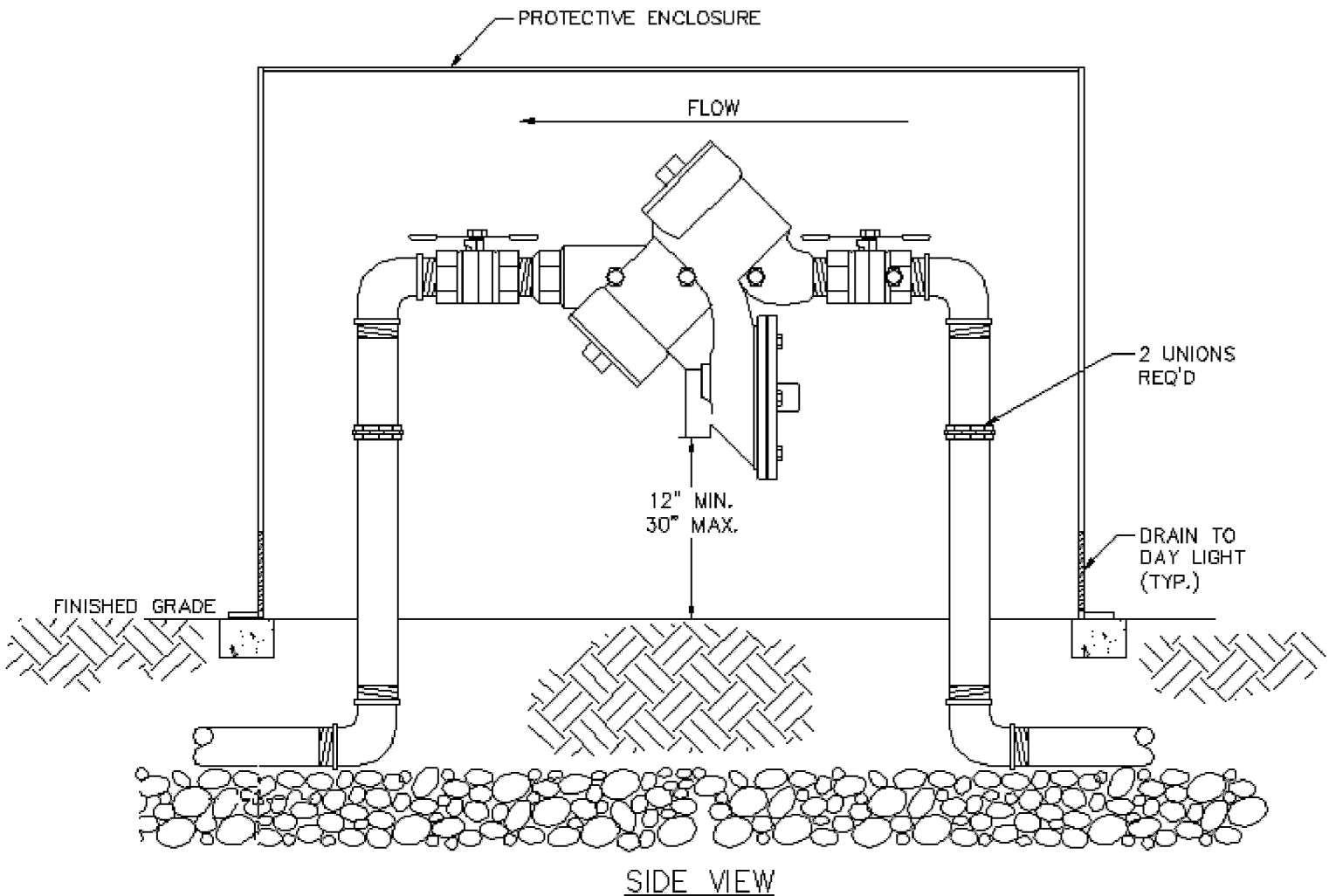


SIDE VIEW

NOTE: All items shall comply with the following

- Reduced Pressure Backflow Assembly shall be approved by the Washington State Department of Health.
- Approved reduced pressure backflow assembly to lay horizontal only.
- Designed for back siphonage and backpressure.
- The water line shall be disinfected, flushed, and pressure tested prior to installing the backflow assembly.
- The backflow assembly shall be protected from freezing and flooding.
- The backflow assembly shall be installed a minimum of 12" above ground level.
- All pipe, valves, and fitting joints, from supply main, shall be flanged and restrained.
- Fire department connection shall not exist through the top of vault.
- Grout pipe entrance and exit, in vault, with watertight grout.
- All vaults shall be pre-approved prior to installation.
- Vaults shall have a minimum of 3' clearance from all structures.
- The backflow assembly shall be tested after installation, prior to acceptance and also yearly thereafter by a certified backflow assembly tester.
- Test results shall be sent to the City of Tumwater water department.

Reduced Pressure Backflow Assembly Installation



NOTE: All items shall comply with the following

- REDUCED PRESSURE BACKFLOW ASSEMBLY SHALL BE A MAKE AND MODEL APPROVED BY THE WASHINGTON STATE DEPARTMENT OF HEALTH.
- REDUCED PRESSURE BACKFLOW ASSEMBLY IS TO LAY HORIZONTAL ONLY.
- THE WATER LINE SHALL BE THOROUGHLY FLUSHED PRIOR TO INSTALLING THE BACKFLOW ASSEMBLY.
- THE BACKFLOW ASSEMBLY SHALL BE PROTECTED FROM FREEZING AND FLOODING.
- THE BACKFLOW ASSEMBLY SHALL BE INSTALLED A MINIMUM OF 12" ABOVE FINISHED GRADE.
- A PLUMBING PERMIT IS REQUIRED. IF SERVICE ADDRESS IS OUTSIDE CITY OF TUMWATER LIMITS CONTACT THURSTON COUNTY.
- THE BACKFLOW ASSEMBLY SHALL BE TESTED AFTER INSTALLATION, PRIOR TO ACCEPTANCE AND ALSO YEARLY THEREAFTER BY A CERTIFIED BACKFLOW ASSEMBLY TESTER.
- TEST RESULTS SHALL BE SENT TO THE CITY OF TUMWATER CROSS CONNECTION SPECIALIST.

Appendix B – Cross Connection Control Ordinances

- WAC 246-290-490
- TMC 13.04.400

WAC 246-290-490 Cross-connection control.

(1) Applicability, purpose, and responsibility.

(a) All community water systems shall comply with the cross-connection control requirements specified in this section.

(b) All noncommunity water systems shall apply the principles and provisions of this section, including subsection (4)(b) of this section, as applicable to protect the public water system from contamination via cross-connections. Noncommunity systems that comply with subsection (4)(b) of this section and the provisions of WAC 51-46-0603 of the UPC (which addresses the installation of backflow preventers at points of water use within the potable water system) shall be considered in compliance with the requirements of this section.

(c) The purpose of the purveyor's cross-connection control program shall be to protect the public water system, as defined in WAC 246-290-010, from contamination via cross-connections.

(d) The purveyor's responsibility for cross-connection control shall begin at the water supply source, include all the public water treatment, storage, and distribution facilities, and end at the point of delivery to the consumer's water system, which begins at the downstream end of the service connection or water meter located on the public right-of-way or utility-held easement.

(e) Under the provisions of this section, purveyors are not responsible for eliminating or controlling cross-connections within the consumer's water system. Under chapter 19.27 RCW, the responsibility for cross-connection control within the consumer's water system, i.e., within the property lines of the consumer's premises, falls under the jurisdiction of the local administrative authority.

(2) General program requirements.

(a) The purveyor shall develop and implement a cross-connection control program that meets the requirements of this section, but may establish a more stringent program through local ordinances, resolutions, codes, bylaws, or operating rules.

(b) Purveyors shall ensure that good engineering and public health protection practices are used in the development and implementation of cross-connection control programs. Department publications and the most recently published editions of references, such as, but not limited to, those listed below, may be used as guidance for cross-connection program development and implementation:

(i) *Manual of Cross-Connection Control* published by the Foundation for Cross-Connection Control and Hydraulic Research, University of Southern California (USC Manual); or

(ii) *Cross-Connection Control Manual, Accepted Procedure and Practice* published by the Pacific Northwest Section of the American Water Works Association (PNWS-AWWA Manual).

(c) The purveyor may implement the cross-connection control program, or any portion thereof, directly or by means of a contract with another agency or party acceptable to the department.

(d) The purveyor shall coordinate with the local administrative authority in all matters concerning cross-connection control. The purveyor shall document and describe such coordination, including delineation of responsibilities, in the written cross-connection control program required in (e) of this subsection.

(e) The purveyor shall include a written description of the cross-connection control program in the water system plan required under WAC 246-290-100 or the small water system management program required under WAC 246-290-105. The cross-connection control program shall include the minimum program elements described in subsection (3) of this section.

(f) The purveyor shall ensure that cross-connections between the distribution system and a consumer's water system are eliminated or controlled by the installation of an approved backflow preventer commensurate with the degree of hazard. This can be accomplished by implementation of a cross-connection program that relies on:

(i) Premises isolation as defined in WAC 246-290-010; or

(ii) Premises isolation and in-premises protection as defined in WAC 246-290-010.

(g) Purveyors with cross-connection control programs that rely both on premises isolation and in-premises protection:

(i) Shall comply with the premises isolation requirements specified in subsection (4)(b) of this section; and

(ii) May reduce premises isolation requirements and rely on in-premises protection for premises other than the type not addressed in subsection (4)(b) of this section, if the conditions in (h) of this subsection are met.

(h) Purveyors may rely on in-premises protection only when the following conditions are met:

(i) The in-premises backflow preventers provide a level of protection commensurate with the purveyor's assessed degree of hazard;

(ii) Backflow preventers which provide the in-premises backflow protection meet the definition of approved backflow preventers as described in WAC 246-290-010;

(iii) The approved backflow preventers are installed, inspected, tested (if applicable), maintained, and repaired in accordance with subsections (6) and (7) of this section;

(iv) Records of such backflow preventers are maintained in accordance with subsections (3)(j) and (8) of this section; and

(v) The purveyor has reasonable access to the consumer's premises to conduct an initial hazard evaluation and periodic reevaluations to determine whether the in-premises protection is adequate to protect the purveyor's distribution system.

(i) The purveyor shall take appropriate corrective action within its authority if:

(i) A cross-connection exists that is not controlled commensurate to the degree of hazard assessed by the purveyor; or

(ii) A consumer fails to comply with the purveyor's requirements regarding the installation, inspection, testing, maintenance or repair of approved backflow preventers required by this chapter.

(j) The purveyor's corrective action may include, but is not limited to:

(i) Denying or discontinuing water service to a consumer's premises until the cross-connection hazard is eliminated or controlled to the satisfaction of the purveyor;

(ii) Requiring the consumer to install an approved backflow preventer for premises isolation commensurate with the degree of hazard; or

(iii) The purveyor installing an approved backflow preventer for premises isolation commensurate with the degree of hazard.

(k) Purveyors denying or discontinuing water service to a consumer's premises for one or more of the reasons listed in (i) of this subsection shall notify the local administrative authority prior to taking such action except in the event of an emergency.

(l) The purveyor shall prohibit the intentional return of used water to the purveyor's distribution system. Such water would include, but is not limited to, water used for heating, cooling, or other purposes within the consumer's water system.

(3) Minimum elements of a cross-connection control program.

(a) To be acceptable to the department, the purveyor's cross-connection control program shall include the minimum elements identified in this subsection.

(b) Element 1: The purveyor shall adopt a local ordinance, resolution, code, bylaw, or other written legal instrument that:

(i) Establishes the purveyor's legal authority to implement a cross-connection control program;

(ii) Describes the operating policies and technical provisions of the purveyor's cross-connection control program; and

(iii) Describes the corrective actions used to ensure that consumers comply with the purveyor's cross-connection control requirements.

(c) Element 2: The purveyor shall develop and implement procedures and schedules for evaluating new and existing service connections to assess the degree of hazard posed by the consumer's premises to the purveyor's distribution system and notifying the consumer within

a reasonable time frame of the hazard evaluation results. At a minimum, the program shall meet the following:

(i) For new connections made on or after the effective date of these regulations, procedures shall ensure that an initial evaluation is conducted before service is provided;

(ii) For existing connections made prior to the effective date of these regulations, procedures shall ensure that an initial evaluation is conducted in accordance with a schedule acceptable to the department; and

(iii) For all service connections, once an initial evaluation has been conducted, procedures shall ensure that periodic reevaluations are conducted in accordance with a schedule acceptable to the department and whenever there is a change in the use of the premises.

(d) Element 3: The purveyor shall develop and implement procedures and schedules for ensuring that:

(i) Cross-connections are eliminated whenever possible;

(ii) When cross-connections cannot be eliminated, they are controlled by installation of approved backflow preventers commensurate with the degree of hazard; and

(iii) Approved backflow preventers are installed in accordance with the requirements of subsection (6) of this section.

(e) Element 4: The purveyor shall ensure that personnel, including at least one person certified as a CCS, are provided to develop and implement the cross-connection control program.

(f) Element 5: The purveyor shall develop and implement procedures to ensure that approved backflow preventers are inspected and/or tested (as applicable) in accordance with subsection (7) of this section.

(g) Element 6: The purveyor shall develop and implement a backflow prevention assembly testing quality control assurance program, including, but not limited to, documentation of tester certification and test kit calibration, test report contents, and time frames for submitting completed test reports.

(h) Element 7: The purveyor shall develop and implement (when appropriate) procedures for responding to backflow incidents.

(i) Element 8: The purveyor shall include information on cross-connection control in the purveyor's existing program for educating consumers about water system operation. Such a program may include periodic bill inserts, public service announcements, pamphlet distribution, notification of new consumers and consumer confidence reports.

(j) Element 9: The purveyor shall develop and maintain cross-connection control records including, but not limited to, the following:

(i) A master list of service connections and/or consumer's premises where the purveyor relies upon approved backflow preventers to protect the public water system from contamination, the assessed hazard level of each, and the required backflow preventer(s);

(ii) Inventory information on:

(A) Approved air gaps installed in lieu of approved assemblies including exact air gap location, assessed degree of hazard, installation date, history of inspections, inspection results, and person conducting inspections;

(B) Approved backflow assemblies including exact assembly location, assembly description (type, manufacturer, model, size, and serial number), assessed degree of hazard, installation date, history of inspections, tests and repairs, test results, and person performing tests; and

(C) Approved AVBs used for irrigation system applications including location, description (manufacturer, model, and size), installation date, history of inspection(s), and person performing inspection(s).

(iii) Cross-connection program summary reports and backflow incident reports required under subsection (8) of this section.

(k) Element 10: Purveyors who distribute and/or have facilities that receive reclaimed water within their water service area shall meet any additional cross-connection control

requirements imposed by the department under a permit issued in accordance with chapter 90.46 RCW.

(4) Approved backflow preventer selection.

(a) The purveyor shall ensure that a CCS:

(i) Assesses the degree of hazard posed by the consumer's water system upon the purveyor's distribution system; and

(ii) Determines the appropriate method of backflow protection for premises isolation in accordance with Table 8.

TABLE 8

APPROPRIATE METHODS OF BACKFLOW PROTECTION FOR PREMISES ISOLATION

Degree of Hazard	Application Condition	Appropriate Approved Backflow Preventer
High health cross-connection hazard	Backsiphonage or backpressure backflow	AG, RPBA, or RPDA
Low health cross-connection hazard	Backsiphonage or backpressure backflow	AG, RPBA, RPDA, DCVA, or DCDA

(b) Premises isolation requirements.

(i) For service connections with premises posing a high health cross-connection hazard including, but not limited to, those premises listed in Table 9, the purveyor shall ensure that an approved air gap or RPBA is installed for premises isolation.

(ii) If the purveyor's CCS determines that no hazard exists for a connection serving premises of the type listed in Table 9, the requirements of (b)(i) of this subsection do not apply.

(iii) The purveyor shall document, on a case-by-case basis, the reasons for not applying the requirements of (b)(i) of this subsection to a connection serving premises of the type listed in Table 9 and include such documentation in the cross-connection control program summary report required in subsection (8) of this section.

TABLE 9

HIGH HEALTH CROSS-CONNECTION HAZARD PREMISES REQUIRING PREMISES ISOLATION BY AG OR RPBA

Agricultural (farms and dairies)

Beverage bottling plants

Car washes

Chemical plants

Commercial laundries and dry cleaners

Premises where both reclaimed water and potable water are provided

Film processing facilities

Food processing plants

Hospitals, medical centers, nursing homes, veterinary, medical and dental clinics, and blood plasma centers
246-290-490

Premises with separate irrigation systems using the purveyor's water supply and with chemical addition[+]

Laboratories

Metal plating industries

Mortuaries

Petroleum processing or storage plants

Piers and docks

Radioactive material processing plants or nuclear reactors[*]

Survey access denied or restricted

Wastewater lift stations and pumping stations

Wastewater treatment plants[*]

Premises with an unapproved auxiliary water supply interconnected with the potable water supply

\+ For example, parks, playgrounds, golf courses, cemeteries, estates, etc.

* RPBAs 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.

(c) Backflow protection for single-family residences.

(i) For single-family residential service connections, the purveyor shall comply with the requirements of (b) of this subsection when applicable.

(ii) If the requirements of (b) of this subsection do not apply and the requirements specified in subsection (2)(h) of this section are met, the purveyor may rely on backflow protection provided at the point of hazard in accordance with WAC 51-46-0603 of the UPC for hazards such as, but not limited to:

(A) Irrigation systems;
(B) Swimming pools or spas;
(C) Ponds; and
(D) Boilers.

For example, the purveyor may accept an approved AVB on a residential irrigation system, if the AVB is properly installed in accordance with the UPC.

(d) Backflow protection for fire protection systems.

(i) Backflow protection is not required for residential flow-through or combination fire protection systems constructed of potable water piping and materials.

(ii) For service connections with fire protection systems other than flow-through or combination systems, the purveyor shall ensure that backflow protection consistent with WAC 51-46-0603 of the UPC is installed. The UPC requires minimum protection as follows:

(A) An RPBA or RPDA for fire protection systems with chemical addition or using unapproved auxiliary water supply; and

(B) A DCVA or DCDA for all other fire protection systems.

(iii) For new connections made on or after the effective date of these regulations, the purveyor shall ensure that backflow protection is installed before water service is provided.

(iv) For existing fire protection systems:

(A) With chemical addition or using unapproved auxiliary supplies, the purveyor shall ensure that backflow protection is installed within ninety days of the purveyor notifying the consumer of the high health cross-connection hazard or in accordance with an alternate schedule acceptable to the purveyor.

(B) Without chemical addition, without on-site storage, and using only the purveyor's water (i.e., no unapproved auxiliary supplies on or available to the premises), the purveyor shall ensure that backflow protection is installed in accordance with a schedule acceptable to the purveyor or at an earlier date if required by the agency administering the Uniform Building Code as adopted under chapter 19.27 RCW.

(C) When establishing backflow protection retrofitting schedules for fire protection systems that have the characteristics listed in (d)(iv)(B) of this subsection, the purveyor may consider factors such as, but not limited to, impacts of assembly installation on sprinkler performance, costs of retrofitting, and difficulty of assembly installation.

(e) Purveyors may require backflow preventers commensurate with the degree of hazard determined by the purveyor to be installed for premises isolation for connections serving premises that have characteristics such as, but not limited to, the following:

(i) Complex plumbing arrangements or plumbing potentially subject to frequent changes that make it impracticable to assess whether cross-connection hazards exist;

(ii) A repeated history of cross-connections being established or reestablished; or

(iii) Cross-connection hazards are unavoidable or not correctable, such as, but not limited to, tall buildings.

(5) Approved backflow preventers.

(a) The purveyor shall ensure that all backflow prevention assemblies relied upon by the purveyor are models included on the current list of backflow prevention assemblies approved for use in Washington state. The current approved assemblies list is available from the department upon request.

(b) The purveyor may rely on testable backflow prevention assemblies that are not currently approved by the department, if the assemblies:

(i) Were included on the department and/or USC list of approved backflow prevention assemblies at the time of installation;

(ii) Have been properly maintained;

(iii) Are commensurate with the purveyor's assessed degree of hazard; and

(iv) Have been inspected and tested at least annually and have successfully passed the annual tests.

(c) The purveyor shall ensure that an unlisted backflow prevention assembly is replaced by an approved assembly commensurate with the degree of hazard, when the unlisted assembly:

(i) Does not meet the conditions specified in (b)(i) through (iv) of this subsection;

(ii) Is moved; or

(iii) Cannot be repaired using spare parts from the original manufacturer.

(d) The purveyor shall ensure that AVBs meet the definition of approved atmospheric vacuum breakers as described in WAC 246-290-010.

(6) Approved backflow preventer installation.

(a) The purveyor shall ensure that approved backflow preventers are installed in the orientation for which they are approved (if applicable).

(b) The purveyor shall ensure that approved backflow preventers are installed in a manner that:

(i) Facilitates their proper operation, maintenance, inspection, and/or in-line testing (as applicable) using standard installation procedures acceptable to the department such as those in the USC Manual or PNWS-AWWA Manual;
(ii) Ensures that the assembly will not become submerged due to weather-related conditions such as flooding; and
(iii) Ensures compliance with all applicable safety regulations.

(c) The purveyor shall ensure that approved backflow assemblies for premises isolation are installed at a location adjacent to the meter or property line or an alternate location acceptable to the purveyor.

(d) When premises isolation assemblies are installed at an alternate location acceptable to the purveyor, the purveyor shall ensure that there are no connections between the point of delivery from the public water system and the approved backflow assembly, unless the installation of such a connection meets the purveyor's cross-connection control requirements and is specifically approved by the purveyor.

(e) The purveyor shall ensure that approved backflow preventers are installed in accordance with the following time frames:
(i) For new connections made on or after the effective date of these regulations, the following conditions shall be met before service is provided:
(A) The provisions of subsection (3)(d)(ii) of this section; and
(B) Satisfactory completion of a test by a BAT in accordance with subsection (7) of this section.
(ii) For existing connections where the purveyor identifies a high health cross-connection hazard, the provisions of (3)(d)(ii) of this section shall be met:
(A) Within ninety days of the purveyor notifying the consumer of the high health cross-connection hazard; or
(B) In accordance with an alternate schedule acceptable to the purveyor.
(iii) For existing connections where the purveyor identifies a low health cross-connection hazard, the provisions of subsection (3)(d)(ii) of this section shall be met in accordance with a schedule acceptable to the purveyor.

(f) The purveyor shall ensure that bypass piping installed around any approved backflow preventer is equipped with an approved backflow preventer that:
(i) Affords at least the same level of protection as the approved backflow preventer that is being bypassed; and
(ii) Complies with all applicable requirements of this section.

(7) Approved backflow preventer inspection and testing.

(a) The purveyor shall ensure that:
(i) A CCS inspects backflow preventer installations to ensure that protection is provided commensurate with the assessed degree of hazard;
(ii) Either a BAT or CCS inspects:
(A) Air gaps installed in lieu of approved backflow prevention assemblies for compliance with the approved air gap definition; and
(B) Backflow prevention assemblies for correct installation and approval status.
(iii) A BAT tests approved backflow prevention assemblies for proper operation.

(b) The purveyor shall ensure that inspections and/or tests of approved air gaps and approved backflow assemblies are conducted:
(i) At the time of installation;
(ii) Annually after installation, or more frequently, if required by the purveyor for connections serving premises or systems that pose a high health cross-connection hazard or for assemblies that repeatedly fail;
(iii) After a backflow incident; and
(iv) After an assembly is repaired, reinstalled, or relocated or an air gap is replumbed.

(c) The purveyor shall ensure that inspections of AVBs installed on irrigation systems are conducted:
(i) At the time of installation;
(ii) After a backflow incident; and

(iii) After repair, reinstallation, or relocation.

(d) The purveyor shall ensure that approved backflow prevention assemblies are tested using procedures acceptable to the department, such as those specified in the most recently published edition of the USC Manual. When circumstances, such as, but not limited to, configuration or location of the assembly, preclude the use of USC test procedures, the purveyor may allow, on a case-by-case basis, the use of alternate (non-USC) test procedures acceptable to the department.

(e) The purveyor shall ensure that results of backflow prevention assembly inspections and tests are documented and reported in a manner acceptable to the purveyor.

(f) The purveyor shall ensure that an approved backflow prevention assembly or AVB, whenever found to be improperly installed, defective, not commensurate with the degree of hazard, or failing a test (if applicable) is properly reinstalled, repaired, overhauled, or replaced.

(g) The purveyor shall ensure that an approved air gap, whenever found to be altered or improperly installed, is properly replumbed or, if commensurate with the degree of hazard, is replaced by an approved RPBA.

(8) Recordkeeping and reporting.

(a) Purveyors shall keep cross-connection control records for the following time frames:

(i) Records pertaining to the master list of service connections and/or consumer's premises required in subsection (3)(j)(i) of this section shall be kept as long as the premises pose a cross-connection hazard to the purveyor's distribution system;

(ii) Records regarding inventory information required in subsection (3)(j)(ii) of this section shall be kept for five years or for the life of the approved backflow preventer whichever is shorter; and

(iii) Records regarding backflow incidents and annual summary reports required in subsection (3)(j)(iii) of this section shall be kept for five years.

(b) Purveyors may maintain cross-connection control records in original form or transfer data to tabular summaries.

(c) Purveyors may maintain records or data in any media, such as paper, film, or electronic format.

(d) The purveyor shall complete the cross-connection control program summary report annually. Report forms and guidance on completing the report are available from the department.

(e) The purveyor shall make all records and reports required in subsection (3)(j) of this section available to the department or its representative upon request.

(f) The purveyor shall notify the department, local administrative authority, and local health jurisdiction as soon as possible, but no later than the end of the next business day, when a backflow incident is known by the purveyor to have:

(i) Contaminated the public water system; or

(ii) Occurred within the premises of a consumer served by the purveyor.

(g) The purveyor shall:

(i) Document details of backflow incidents on a form acceptable to the department such as the backflow incident report form included in the most recent edition of the PNWS-AWWA Manual; and

(ii) Include all backflow incident report(s) in the annual cross-connection program summary report referenced in (d) of this subsection, unless otherwise requested by the department.

Title 13 Article IV. Cross-connections

Current Ordinance (TMC 13.04.430 et. seq)

13.04.430 Purpose.

It is the purpose of this article to protect the health of customers receiving water from the city by protecting the public water system of the city from contamination.
(1102, Added, 06/02/1987)

13.04.440 Definitions.

A. Whenever used in this article:
   1. "Backflow" means the flow, other than the intended direction of flow, of any foreign liquids, gases or substances into the city public water supply or distribution system.
   2. "Backflow prevention device" means a device to counteract back pressure or to prevent siphonage.
   3. "Cross-connection" means any physical arrangement whereby a public water supply is connected, directly or indirectly, with any other water supply system, sewer, drain, conduit, pool storage reservoir, plumbing fixture, or other device which contains or may contain contaminated water, sewer, or other waste or liquid of unknown or unsafe quality which may be capable of imparting contamination to the public water supply system of this district as a result of backflow.
   4. "Superintendent" means the superintendent of public works of the city public works department.

B. Upon the filing of one copy with the Finance Director, all definitions contained in the State of Washington Administrative Code (WAC) 248-54-285, as amended as of or after the effective date of the ordinance from which this section derives, shall by this reference be considered definitions within this article.

(O95-032, Amended, 10/17/1995; 1102, Amended, 06/02/1987; 869, Added, 03/18/1980)

13.04.450 State provisions adopted.

The provisions of WAC 248-54-285 as amended as of or after the effective date of the ordinance from which this section derives, relating to cross-connection control and elimination and the use of backflow prevention devices, when such are considered to be advisable, are adopted and made a part hereof, and all provisions of the Washington Administrative Code may be executed and applied by the department of public works in determining when cross-connections are prohibited and when backflow prevention devices shall be required.
(1102, Added, 06/02/1987)

13.04.460 Inspection--Right of entry.

The superintendent and other duly authorized employee(s) bearing proper credentials and identification shall be permitted to enter upon all properties receiving water service from the city for the purposes of inspection, observation and testing in accordance with the provisions of this article.
(1102, Added, 06/02/1987)

13.04.470 Backflow protection devices--Compliance required.

A. No water service connection from the city's water system to any premises shall be installed or maintained unless the water supply is protected by backflow prevention devices as required by the superintendent or his/her designee and the rules and regulations of the State Board of Health and this article. The installation or maintenance of a cross-connection which will endanger the city's water quality is prohibited. Any such cross-connection existing at the effective date of the ordinance from which this section derives, or hereafter installed, is declared a nuisance and shall be abated. The control

and/or elimination of cross-connections within the city shall be in accordance with WAC 248-54-285 or superseding Washington Administrative Code provisions.

B. Service to any property, landowner or water user receiving its water supply from the city water supply system shall be contingent upon compliance with all requirements of the rules and regulations of the State Board of Health and of this article. Service shall be discontinued to any premises, water user or property owner for failure to comply and any discontinued service will not be reestablished until the superintendent of public works has approved compliance with such requirement of the rules and regulations contained in this article.

(1102, Added, 06/02/1987)

13.04.480 Public works to administer.

The department of public works shall be responsible for administering this article including the development of the necessary procedures and practices to accomplish same, consistent with the standards in this article and WAC 248-54-285.

(1102, Added, 06/02/1987)

13.04.490 Violation - Penalty.

Any person who shall violate or fail to comply with any provisions of this chapter shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be punished in accordance with Chapter 1.12.

(O95-032, Amended, 10/17/1995; 1102, Added, 06/02/1987)

Appendix C – Backflow Incident Report Form

The following sample forms are included in this section.

- Backflow Incident Report Form
- Backflow Assembly Test / AG Inspection Report
- Backflow Assembly Test / AG Inspection Report - File Record
- Backflow Assembly Testers - Pre-approved for Submitting Test Reports
- Cross Connection Control Survey Report - Commercial Customers
- Water Use Questionnaire - Residential Customers

The pages following the sample forms include sample letters to the customer relating to the administration of a cross connection control program.

- Request to Complete Questionnaire
- Notice of Survey of Premises
- Request to Install Backflow Prevention Assembly
- Request to Submit Test of Backflow Prevention Assembly
- Second Notice to Test Backflow Prevention Assembly

Additional sample letters may be found in the PNWS-AWWA publication: *Cross Connection Control Manual, Supplement No. 1 Sample Letters and Record Forms*, First Edition, 1995 described in the section Guide to Publications.

City of Tumwater

BACKFLOW INCIDENT REPORT FORM

Reporting Agency: _____ Date: _____
Reported By: _____ Title: _____
Mail Address: _____
City: _____
State: _____ Zip Code: _____ Telephone: _____

Date of Incident: _____ Time: _____
General Location (Street, etc.): _____

Backflow Originated From:

Name of Premise: _____
Street Address: _____
City: _____
Contact Person: _____ Telephone: _____
Type of Business: _____

Description of Contaminants:

(Attach Chemical Analysis of MSDS if available)

_____
_____
_____
_____

Distribution of Contaminants:

Contained within customer's premise: ☐ Yes ☐ No
Number of persons affected: _____

Effect of Contamination:

Illness reported? ☐ Yes ☐ No
Illness type: _____

Physical irritation reported? ☐ Yes ☐ No
Irritation type: _____

Cross Connection Source of Contaminant:

(boiler, chemical pump, irrigation system, etc.)

_____
_____
_____

Cause of Backflow:

(main break, fire flow, etc.)

_____
_____
_____

Corrective Action Taken to Restore Water Quality:
(main flushing, disinfection, etc.)

_____
_____
_____

Corrective Action Ordered to Eliminate or Protect from Cross Connection:
(type of backflow preventer, location, etc.)

_____
_____
_____

Previous Cross Connection Survey of Premise:
Date: _____ By: _____

Types of Backflow Preventer Isolating Premise:
RPBA: ☐ RPDA: ☐ DCVA: ☐ DCDA: ☐ PVBA: ☐ SVBA: ☐
AVB: ☐ Air Gap: ☐ None: ☐ Other: _____

Date of Last Test of Assembly: _____

Notification of State Health Department:
Date: _____ Time: _____ Person Notified: _____

Attach sheets with additional information, sketches, and/or media information and return to:

City of Tumwater
Public Works Operations
% Cross Connection Control
555 Israel Road SW
Tumwater, WA 98501

BACKFLOW PREVENTION ASSEMBLY TEST REPORT

*ACCOUNT#*_____

NAME OF PREMISES _____ **Commercial ☐ Residential ☐**

SERVICE ADDRESS _____ **CITY** _____ **ZIP** _____

CONTACT PERSON _____ **PHONE ( )** _____ **FAX ( )** _____

LOCATION OF ASSEMBLY _____

DOWNSTREAM PROCESS _____ **DCVA ☐ RPBA ☐ . PVBA ☐ OTHER** _____

NEW INSTALL ☐ EXISTING ☐ REPLACEMENT ☐ OLD SER. # _____ **PROPER INSTALLATION? YES ☐NO ☐**

MAKE OF ASSEMBLY_____**MODEL** _____ **SERIAL NO.** _____**SIZE** _____

INITIAL TEST	**DCVA/RPBA CHECK VALVE NO. 1**	**DCVA/RPBA CHECK VALVE NO. 2**	**RPBA**	**PVBA/SVBA** AIR INLET
PASSED ☐ FAILED ☐	LEAKED ☐ _____PSID	LEAKED ☐ _____PSID	OPENED AT _____ PSID #1 CHECK _____PSID AIR GAP OK? _____	OPENED AT_____PSID DID NOT OPEN ☐
NEW PARTS AND REPAIRS	CLEAN REPLACE PART ☐ ☐_____ ☐ ☐_____ ☐ ☐_____ ☐ ☐_____	CLEAN REPLACE PART ☐ ☐ _____ ☐ ☐ _____ ☐ ☐ _____ ☐ ☐ _____	CLEAN REPLACE PART ☐ ☐ _____ ☐ ☐ _____ ☐ ☐ _____ ☐ ☐ _____	CHECK VALVE HELD AT _____PSID LEAKED ☐ _____ CLEANED ☐ REPAIRED ☐
TEST AFTER REPAIRS **PASSED ☐** **FAILED ☐**	LEAKED ☐ _____PSID	LEAKED ☐ _____PSID	OPENED AT _____PSID #1 CHECK_____PSID	AIR INLET _____ PSID CHK VALVE _____PSID

AIR GAP INSPECTION: Required minimum air gap separation provided? Yes ☐ No ☐ **Detector Meter Reading** _____

REMARKS: _____ **LINE PRESSURE** _____**PSI**

_____**CONFINED SPACE?** _____

TESTERS SIGNATURE: _____ **CERT. NO.** _____**DATE** _____

TESTERS NAME: _____ **PHONE** _____

REPAIRED BY: _____**DATE** _____

FINAL TEST BY: _____ **CERT. NO.** _____**DATE** _____

CALIBRATION DATE __ /__ /__ **GAUGE #** _____ **MODEL**_____ **SERVICE RESTORED? YES ☐ NO ☐**

I certify that this report is accurate, and I have used WAC 246-290-490 approved test methods and test equipment.

Backflow Assembly Test / AG Inspection Report

FILE RECORD

DISTRICT ASSIGNED INVENTORY NUMBER: _____

Name of Premises:
Premises Address:
Location of Assembly:
Type of Hazard Isolated:
Assembly Size: (inches) Assembly Type:
Make: Model:
Serial No.: Date Installed:

DateTest Notice Issued	Date of TestReport	Name of Certified Tester (BAT)	WA DOH BAT Certif. Number	Results Satisfactory Y / N	Repairs Made Y / N

Include retest after repairs as a separate line.

Attach all *Backflow Assembly Test / AG Inspection Report* forms.

COMMENTS/NOTES:

Page ____

BACKFLOW ASSEMBLY TESTERS

PRE-APPROVED FOR SUBMITTING TEST REPORTS

TO THE _____

Updated _____

Not all WA DOH certified backflow assembly testers (BAT) appear on this list. This list was compiled based on individual testers requesting to be listed for work in this area or previously submitting test reports to this Purveyor. BATs with additional certification as a WA DOH certified Cross Connection Control Specialist (CCS) are denoted by an asterisk (*).

For pre-approval by the Purveyor, the tester must show proof that his test equipment has been checked for calibration within the last 12 month period or that he is on the list of another utility recognized by this Purveyor as having a cross connection control program.

Name of Tester or Company and Address	Telephone Number	BAT Certificate No.

The WA Department of Health requires that all assemblies (RPBA, RPDA, DCVA, etc.) relied upon by the Purveyor to protect its distribution system be tested upon installation or relocation, thereafter annually, and after all maintenance work, by a State certified backflow assembly tester (BAT). The BAT certification is separate from other waterworks operator certification categories, a plumbing license, etc. Although the installation and maintenance work on a backflow prevention assembly may be done by a contractor or licensed plumber, only a person with a current BAT certification may perform the test on the assembly.

Assemblies shall be tested in accordance with the procedures approved by the WA DOH Approved test procedures are described in “Backflow Prevention Assembly Field Test Procedures Approved for Use in Washington State”, published July, 1998, and available from WA DOH.

Cross Connection Control

Survey Report

COMMERCIAL CUSTOMER

Date of Survey: _____

CUSTOMER INFORMATION

Premises name: _____ Telephone: _____

Address: _____ZIP:_____

Contact person: _____ Title:_____

Description of customer: _____

Description of water use: _____

Water Service and Backflow Prevention Assembly (BPA) Size / Type:

	Service size	Meter size	BPA size	BPA type
Domestic				
Fire line				
Irrigation				
Other				

CROSS CONNECTION CONTROL SPECIALIST (CCS) INFORMATION

Name: _____ Telephone: _____

Company's name: _____

Address: _____ZIP:_____

WA DOH Certif. #: _____ Year certified: _____

CROSS CONNECTION CONTROL SURVEY REPORT (Continued)

Survey Results

Item	Location & Description of Cross Connection	Backflow Prevention Provided/Required

Attach additional sheets if needed

CROSS CONNECTION CONTROL SURVEY REPORT (Continued)

Surveyor 's Comments

Surveyor 's Recommendations

I certify that this survey accurately reflects the overall risk posed to the Purveyor's distribution system by the customer's plumbing system and that the backflow prevention assembly/assemblies is/are properly installed. Based on the above survey, I find that (check one):

__ The present _____ (RPBA or DCVA) is commensurate with the degree of hazard.

__ The premises isolation assembly or assemblies should be changed for the reasons stated under "Surveyor's Comments", above.

_____ _____
Signature of CCS Date

This certifies receipt of this completed survey report and its submittal to the _____.

_____ _____
Signature of the Customer or authorized agent Date

It shall not be assumed by the customer or any regulatory agencies that the Purveyor's requirement for this survey, or for the installation of a specific backflow prevention assembly on a service pipe, constitutes an approval of the customer's plumbing system, compliance with the customer's plumbing system with the plumbing code, or an assurance to the customer of the absence of cross connections therein.

The completed survey report shall be first signed by the CCS conducting the survey, then counter-signed by the owner of the premises surveyed or his agent.

The survey shall include the inspection of the assembly installed on a service for premises isolation to verify its correct installation and status as a currently listed Approved assembly by the WA DOH.

Water Use Questionnaire

RESIDENTIAL CUSTOMERS

TO: _____ Date: _____

_____

_____

The attached brochure describes a "cross connection" and the potential for contamination of the public water system through unprotected cross connections. The purpose of this questionnaire is to help determine if you have any special plumbing or activities that may pose an increased risk of contamination to the water distribution system. Please respond by checking the appropriate box below:

YES	NO	Plumbing or Activity Present on Premises
		Underground Sprinkler System
		Water Treatment System (e.g. Water Softener)
		Solar Heating System
		Residential Fire Sprinkler System
		Other Water Supply (whether or not connected to plumbing system)
		Sewage Pumping Facilities or Grey Water System
		Boat Moorage with Water Supply
		Hobby Farms or Animal Watering Troughs
		Swimming Pool or Spa
		Greenhouse or Decorative Pond
		Photo Lab or Dark Room
		Home-Based Business. If Yes, Type: _____

BY: _____ Date: _____

Resident's signature

Please return the completed questionnaire to the address on the letterhead by {date} .

If you have checked "**Yes**" to any of the above, we will contact you to request further information. Your cooperation in completing this questionnaire is most appreciated.

If you have any questions, please contact the undersigned.

Name:_____ Telephone: _____

REQUEST TO COMPLETE QUESTIONNAIRE

< date >

< name >
< street address >
< city, ZIP >

Dear Customer,

WATER USE QUESTIONNAIRE

In compliance with WA Department of Health regulations the _____ carries out a program of "cross connection control" to protect the water distribution system from contamination. A cross connection is a point in a plumbing system where the drinking water is directly connected or could be connected to a contaminated source. The brochure accompanying this letter describes a cross connection in greater detail.

An essential part of our cross connection control program is our assessment of the degree of hazard posed by each of our customer's plumbing systems upon the public water system. For most residential customers, the hazard is minimal; the installation of your plumbing in compliance with the plumbing code provided adequate protection of your water potable water piping and our water distribution system.

However, customers with special plumbing or activities may pose an increased health risk to other customers served by the system. To achieve an acceptable level of risk of contamination, it may necessary to have a backflow preventer installed on your service pipe or alternate protection provided for the public water system.

Please complete and return the attached questionnaire to this office by __{date}___.

If you have checked any of the boxes on the questionnaire, we may contact you to request further information.

Your cooperation in completing this questionnaire is most appreciated. If you have any questions, please contact the undersigned at ( ) _____-_____.

Sincerely,

(Signature)_____

(Name)
(Title)

NOTICE OF SURVEY OF PREMISES (NON-RESIDENTIAL)

< date >

< name >
< street address >
< city, ZIP >

Dear Customer,

CROSS CONNECTION CONTROL SURVEY

In compliance with WA Department of Health regulations the _____ carries out a program of "cross connection control" to protect the water distribution system from contamination. A cross connection is a point in a plumbing system where the drinking water is directly connected or could be connected to a contaminated source. The brochure accompanying this letter describes a cross connection in greater detail.

An essential part of our cross connection control program is our assessment of the degree of hazard posed by each of our customer's plumbing systems upon the public water system. Non-single family residential customers pose a special concern because of the greater complexity of their plumbing system, special use of water (e.g., manufacturing), fire protection systems, etc.

To achieve an acceptable level of risk of contamination, it may necessary to have a backflow preventer installed on your service pipe or alternate protection provided for the public water system.

The survey for cross-connections requires special training. WA DOH regulations require that the survey (assessment of hazard) be done by a Cross Connection Specialist (CCS) with current WA DOH certification. It is the policy of the District to have surveys of all non-residential premises done by a CCS employed by the customer and the results submitted to the District for review.

Please arrange for the completion and return of the attached survey form to this office by _____{date}____. A list of local cross connection specialists providing this service is attached.

Your cooperation in completing this survey requirement is most appreciated. If you have any questions, please contact the undersigned at (____) ____-_____.

Sincerely,

(Signature) _____
(Name)
(Title)

Attachment: CCS List

REQUEST TO INSTALL BACKFLOW PREVENTION ASSEMBLY

< date >

< name >
< street address >
< city, ZIP >

Dear Customer,

CROSS CONNECTION CONTROL - INSTALLATION BACKFLOW PREVENTER

In compliance with WA Department of Health regulations the _____ carries out a program of "cross connection control" to protect the water distribution system from contamination.

The cross connection control policy of the _____ is to consider all plumbing systems, starting from the termination of the service pipe downstream of the water meter, to be a potential health hazard. A backflow prevention assembly commensurate with the degree of hazard is required on the service for isolation of your premises from the water distribution system. A copy of Resolution 99-1 describing our cross connection control policy is attached.

The cross connection control survey report submitted by your cross connection control specialist (CCS) assessed the overall public health hazard of your plumbing to the public water system. After reviewing this report, we agree with the assessment made by the CCS. A WA DOH approved _____{type of assembly}___ is required to be installed on your service at a location downstream of the water meter.

We realize that this expense was not anticipated. The relatively low degree of hazard assessed by the CCS allows us some latitude in the time frame for the installation of the DCVA. We request that you arrange for the installation of this assembly by ___{date}___, or when any modifications are made to your plumbing system, whichever comes first. A copy of our standard drawing for the installation of this assembly is attached. The installation should be overseen by your CCS to ensure compliance with these standards.

Your cooperation in this matter is most appreciated. If you have any questions, please contact the undersigned at (____) ____-_____.

Sincerely,

(Signature _____
(Name)
(Title)

cc: {City/County Plumbing Inspector}

REQUEST TO SUBMIT TEST OF BACKFLOW PREVENTION ASSEMBLY

< date >

< name >
< street address >
< city, ZIP >

Dear Customer,

ANNUAL TEST OF BACKFLOW PREVENTION ASSEMBLIES

The Washington Department of Health regulations (WAC 246-290-490) require water utilities to carry out a cross connection control program to protect its water supply from contamination. As part of this program, backflow prevention assemblies have been installed on your water service(s) and/or within your plumbing system to protect our water distribution system. To ensure that the backflow prevention assemblies properly function, annual testing is required.

We request that you now arrange for the annual testing of the reduced pressure principle (RPBA), double check valve (DCVA), and pressure vacuum breaker (PVBA or SVBA) assemblies described on the attached list. The testing must be done by a Washington Department of Health certified backflow assembly tester (BAT), and the results of the tests submitted to the District before _____{date or within 30 days of this letter}___.

For your convenience, please find attached a copy of list of the District's pre-approved backflow assembly testers working in this area. Also attached are the test report forms for completion by the BAT, for your signature and return to the District.

The plumbing code also requires the annual testing of assemblies. In addition to the test reports that you return to the District for the assemblies we require, you may wish to have all of the remaining assemblies within your premises tested at this time.

If you have any questions, please feel free to contact me at (____) ____-_____.

Sincerely,

(Signature) _____
(Name)
(Title)

SECOND NOTICE TO TEST BACKFLOW PREVENTION ASSEMBLY

< date >

< name >
< street address >
< city, ZIP >

Dear Customer,

First Notice Date: _____

Second Notice Date: _____

TESTING OF BACKFLOW PREVENTION ASSEMBLY - SECOND NOTICE

The Washington Department of Health regulations (WAC 246-290-490) require water utilities to carry out a cross connection control program to protect its water supply from contamination. As part of this program, backflow prevention assemblies required by the District to protect its water distribution system were installed on your service or within your premises. The WAC requires that these assemblies must be tested annually to verify that they are in good working condition.

The assembly/assemblies identified in our letter of _____ (copy attached) require testing by a WA DOH certified Backflow Assembly Tester upon installation, and thereafter annually, as a condition of our system continuing to supply potable water to your premises. **To date, you have not submitted the requested Test Report(s) to the District.**

If you have not submitted the requested Test Reports, you are requested to:

- immediately employ a DOH certified BAT to test the listed assembly/assemblies and;
- to submit a signed copy of the completed test report form(s) to the District **within 15 days of the date of this letter**.

Your co-operation is essential for the protection of your and the District's water supplies from contamination. Failure to comply with the annual testing requirement will necessitate enforcement action by the District that could include a shut-off of your water service.

Should you have any questions, please contact the undersigned at (____)____-_____.

Sincerely,

(Signature) _____
(Name)
(Title)

Appendix D – Backflow Prevention Educational Materials

The materials in Appendix D were reproduced for inclusion in this plan. Full-size copies are available from Public Works upon request. Backflow prevention topics covered include:

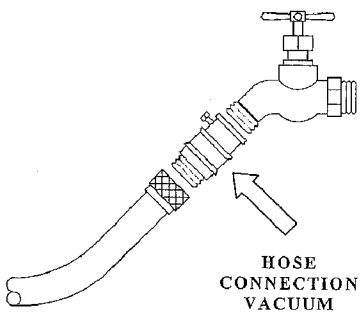
- Household Hazards
- Thermal Expansion of the Water Heater
- Lawn Irrigation
- Health Hazards
- Residential Fire Systems

HOSE CONNECTION VACUUM BREAKER

Hose connection vacuum breakers are specifically made for portable hoses attached to hose thread faucets. Their purpose is to prevent the flow of contaminated water back into the drinking water. These devices screw directly to the faucet outlet. They can be used on a wide variety of installations, such as service sinks, hose faucets near a wading pool, laundry tub faucets, etc.

Some units are designed for manual draining for freezing conditions. Some are furnished with breakaway set screws as a tamper proof feature.

These device are not intended for operation under continuous pressure.



HOSE CONNECTION VACUUM BREAKER

PROTECTION OF THE WATER PURVEYOR'S DISTRIBUTION SYSTEM

In general, the installation of plumbing in compliance with the plumbing code will provide adequate protection for your plumbing system from contamination.

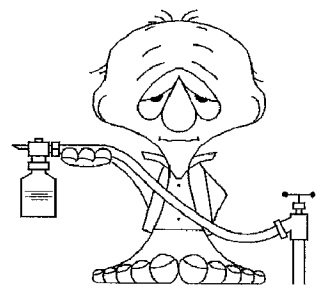
However, the water purveyor may require (as a condition of service) the installation of a backflow prevention assembly on the water service to provide additional protection for the public water system. A backflow prevention assembly will normally be required where a single-family residence has special plumbing that increases the hazard above the normal level found in residential homes, or where a hazard survey cannot be completed.

To help determine if a backflow prevention assembly is required, the water purveyor may send residential customers a Cross Connection Control Survey Questionnaire. The water purveyor will evaluate the returned questionnaires to assess the risk of contamination to the public water system. Based on the results of the evaluation, the installation of backflow prevention assemblies may be required on the services to some customers.

For further information contact your local water purveyor or the PNWS/AWWA Cross-Connection Control Committee through the PNWS office at (877) 767-2992.

HELP PROTECT YOUR DRINKING WATER FROM CONTAMINATION

Household Hazards



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R 9/30/02 [Brochure #4]

HOW CONTAMINATION OCCURS

Water normally flows in one direction, from the public water system through the customer's cold or hot water plumbing to a sink tap or other plumbing fixture. The plumbing fixture is the end of the potable water system and the start of the waste disposal system.

Under certain conditions water can flow in the reverse direction. This is known as *backflow*. Backflow occurs when a backsiphonage or backpressure condition is created in a water line.

Backsiphonage may occur due to a loss of pressure in the water distribution system during a high withdrawal of water for fire protection, a water main or plumbing system break, or a shutdown of a water main or plumbing system for repair. A reduction of pressure below atmospheric creates a vacuum in the piping. If a hose bib was open and the hose was submerged in a wading pool during these conditions, the non-potable water in the pool would be siphoned into the house's plumbing and back into the public water system.

Backpressure may be created when a source of pressure, such as a pump, creates a pressure greater than that supplied from the distribution system. If a pump supplied from a non-potable source, such as a landscape pond were accidentally connected to the plumbing system, the non-potable water could be pumped into the potable water supply.

COMMON HOUSEHOLD HAZARDS

Chemical Spray Applicators

The chemicals used on your lawn and garden can be toxic or fatal if ingested. These chemicals include pesticides, herbicides, and fertilizers. Even strong cleaning chemicals sprayed on cars, house siding, etc., may cause health problems if ingested.

Submerged Hoses

The list of chemicals that may be stored in a bucket or container is unending. Water held in pools, ponds or other vats open to the air and exposed to humans or animals may contain microbiological contaminants. Hoses submerged in buckets or containers can act as a conduit for contaminants under backflow conditions.

Underground Lawn Irrigation Systems

Underground irrigation systems often have puddles of standing water around the ground-level sprinkler heads. The sprinkler heads **are not** designed to be drip-tight under backflow conditions. The puddles of water may contain chemicals and/or microbiological contaminants, such as excrement from animals and chemical residue from fertilizer and herbicides sprayed on the lawn.

HOW TO PREVENT CONTAMINATION OF YOUR DRINKING WATER

protect your drinking water by taking the following precautions:

DON'T

- Submerge hoses in buckets, pools, tubs, sinks, ponds, etc.
- Use spray attachments without a backflow prevention device.
- Connect waste pipes from water softeners or other treatment systems to the sewer, submerged drain pipe, etc.
- Use a hose to unplug blocked toilets, sewers, etc.

DO:

- ✓ Keep the ends of hoses clear of all possible contaminants.
- ✓ If not already equipped with an integral (built-in) vacuum breaker, buy and install hose bib type vacuum breakers (see reverse side of this pamphlet) on all threaded faucets around your home. These devices are inexpensive and are available at hardware stores and home improvement centers.
- ✓ Install an approved backflow prevention assembly on all underground lawn irrigation systems. Remember, a plumbing permit is required for the connection of an underground lawn irrigation system to your plumbing system.

WHY THE INSTALLATION OF A BACKFLOW PREVENTER IS REQUIRED ON A WATER SERVICE

Water normally flows in one direction, from the public water system through the customer's cold or hot water plumbing to a sink tap or other plumbing fixture. The plumbing fixture is the end of the potable water system and the start of the waste disposal system.

Under certain conditions water can flow in the reverse direction. This is known as *backflow*. Backflow occurs when a backsiphonage or backpressure condition is created in a water line.

Backsiphonage may occur due to a loss of pressure in the water distribution system during a high withdrawal of water for fire protection, a water main or plumbing system break, or a shutdown of a main or plumbing system for repair. A reduction of pressure below atmospheric creates a vacuum in the piping. If a hose bib was open and the hose was submerged in a wading pool were flowing during these conditions, the non-potable water in the pool would be siphoned into the house plumbing then back into the public water system.

Backpressure may be created when a source of pressure, such as a pump, creates a pressure greater than that supplied from the distribution system. If a pump supplied from a non-potable source such as a landscape pond were accidentally connected to the plumbing system, the non-potable water could be pumped into the potable water supply.

WHAT THE HOMEOWNER SHOULD DO TO ENSURE PROTECTION FROM THERMAL EXPANSION

The homeowner should check to see that an expansion tank and T & P Valve are in place. If there is any doubt, the homeowner should contact a licensed plumber.

The T & P Valve should be periodically inspected to ensure that is properly operating. Some T & P Valves are equipped with a test level. Manually lifting the lever unseats the valve, allowing water to discharge. If water continues to leak from the T & P Valve after closing, the valve may need to be replaced. A drain line must be installed to avoid water damage and scalding injury when the valve operates.

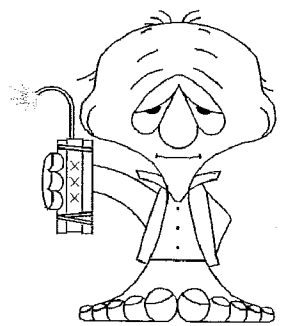
The T & P Valve should be periodically removed and visually inspected corrosion deposits and to insure it has not been improperly altered or repaired.

The above work can best be done by a licensed plumber.

For further information contact your local water purveyor, City or County building department, licensed plumber or the PNWS/AWWA Cross-Connection Control Committee through the PNWS office at (877) 767-2992.

PROTECT YOUR WATER HEATER FROM THERMAL EXPANSION

Without a Functioning Temperature & Pressure Relief Valve Your Water Heater Can Explode with the Force of Dynamite



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R 9/30/02 [Brochure #5]

THERMAL EXPANSION DANGER

Most homes are supplied with hot water from an electric or gas heated tank. Until the heating element stops working, and one is faced with a cold shower, the water heater is usually taken for granted. However, if not properly maintained, a water heater may become a safety hazard.

Water expands in volume as its temperature rises. The extra volume caused by thermal expansion must go somewhere. If not, the heated water creates an increase in pressure. This is the principle of a steam engine.

The temperature and pressure in the water heater is reduced when hot water is withdrawn from a faucet and cold water enters the tank. The increase in pressure from thermal expansion can also be prevented by water flowing back into the public water system. However, when a check valve, pressure-reducing valve or backflow preventer is installed in the service pipe a "closed system". Provisions must be made for thermal expansion in these cases.

The thermostat of the water heater normally maintains the water temperature at about 130° F (54° C). However, if the thermostat fails to shut off the heater, the temperature of the water will continue to increase.

If the water temperature increases to more than 212° F (100° C), the water within the tank becomes "super heated". When this super heated water is suddenly exposed to the atmosphere when a faucet is opened, it instantly flashes into steam and a violent reaction may result. As the pressure within the tank continues to build up under super heated conditions, the tank may explode.

PROTECTION FROM THERMAL EXPANSION

Protection from thermal expansion is provided in a plumbing system by the installation of a *thermal expansion tank* in the hot water system piping downstream of the hot water tank and a *temperature and pressure relief valve* (T & P Valve) at the top of the tank.

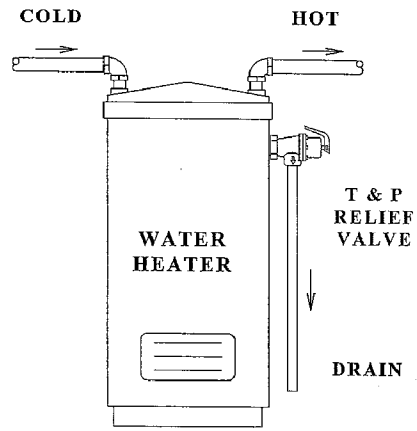
The thermal expansion tank controls the increased pressure generated within the normal operating temperature range of the water heater. The small tank with a sealed compressible air cushion provides a space to store and hold the additional expanded water volume.

The T & P Valve is the primary safety feature for the water heater. The *temperature* portion of the T & P Valve is designed to open and vent water to the atmosphere whenever the water temperature within the tank reaches approximately 210° F (99° C). Venting allows cold water to enter the tank.

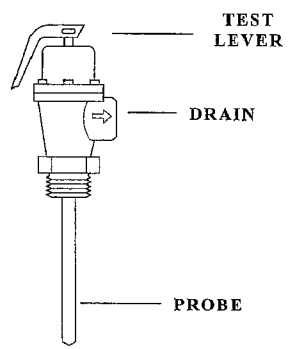
The *pressure* portion of a T & P Valve is designed to open and vent to the atmosphere whenever water pressure within the tank exceeds the pressure setting on the valve. The T & P Valve is normally pre-set at 125 psi or 150 psi.

Water heaters installed in compliance with the current plumbing code will have the required T & P Valve and thermal expansion tank. For public health protection, the water purveyor may require the installation of a check valve or backflow preventer downstream of the water meter. In these situations, it is essential that a T & P Valve and thermal expansion tank be properly installed and maintained in the plumbing system.

T & P VALVE LOCATION



TYPICAL T & P VALVE



LAWN (TURF) IRRIGATION SYSTEMS

For the protection of the water purveyor's distribution system, all irrigation systems must have an approved backflow prevention assembly that is commensurate with the degree of hazard. Irrigation systems are categorized as high health hazard or moderate health hazard as defined below.

Any irrigation system that contains pumps or injectors for the addition of chemicals and/or fertilizers is considered a high hazard. This risk assessment is also based on the additional hazard posed by bacterial contaminants found on lawns, and on the possibility of changes being made to the irrigation system by the customer. An approved reduced pressure backflow assembly (RPBA), or an approved air gap separation, should be required in all cases where chemicals or herbicides may be injected into the irrigation system, or where an auxiliary water supply is also provided for irrigation water.

All irrigation systems that are not classified as high health hazard are considered to be moderate health hazards. This risk assessment is based on the hazard posed by bacterial and chemical contaminants found on lawns, and on the possibility of changes being made to the irrigation system by the customer. An approved double check valve assembly (DCVA), or pressure vacuum breaker assembly (PVBA), should be required.

However, an approved PVBA does not provide adequate protection if it is subjected to flooding, backpressure, elevated piping, or if compressed air is used to winterize the irrigation systems. In these situations, an approved DCVA should be required as a minimum level of protection.

APPROVED BACKFLOW ASSEMBLIES

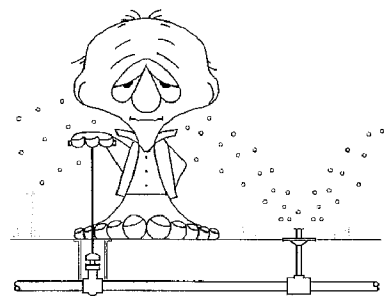
The water purveyor relies on approved backflow prevention assemblies to protect the public water system. Approved assemblies are manufactured with isolation valves and test cocks to permit field-testing to demonstrate that the assemblies are properly functioning to prevent backflow.

In addition to the above assemblies, plumbing codes also allow the use of atmospheric vacuum breakers (AVB) on lawn irrigation systems without chemical addition. Because an atmospheric vacuum breaker is not designed to be tested, some water purveyors require the installation of approved, testable assemblies. Contact your water purveyor regarding the requirements for isolation of your lawn irrigation system.

NOTE:

All irrigation piping should be considered as a non-potable water system due to an actual or potential health hazard.

LAWN IRRIGATION SYSTEMS AND BACKFLOW PREVENTION



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R 9/30/02 [Brochure #3]

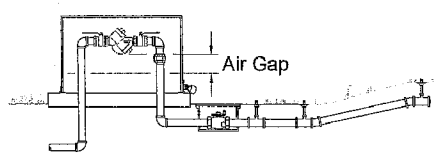
REDUCED PRESSURE BACKFLOW ASSEMBLY FOR ISOLATION OF LAWN IRRIGATION SYSTEM

The reduced pressure backflow assembly (RPBA) shall be installed to isolate irrigation systems using injectors or pumps to apply fertilizer and other agricultural chemicals.

The RPBA must be installed above ground to prevent the relief valve opening from becoming submerged.

The RPBA should be installed in an insulated enclosure to provide freeze protection.

The RPBA shall be tested by a certified backflow assembly tester upon installation, after repair of relocation, and at least annually.



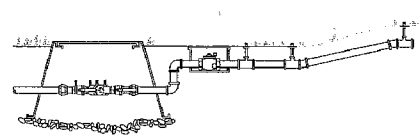
Reduced Pressure backflow Assembly in Above-Ground Enclosure

DOUBLE CHECK VALVE ASSEMBLY FOR ISOLATION OF LAWN IRRIGATION SYSTEM

The double check valve assembly (DCVA) may be installed to isolate all irrigation systems that do not use injectors or pumps to apply fertilizer and other agricultural chemicals.

The DCVA may be installed in a below ground enclosure provided the assembly test cocks are plugged; the test cocks are pointed up; adequate space is provided for maintenance and testing, and any compressed air connections are installed only downstream of the DCVA.

The DCVA shall be tested by a certified backflow assembly tester upon installation, after repair of relocation, and at least annually.



Double Check Valve Assembly in Below-Ground Box

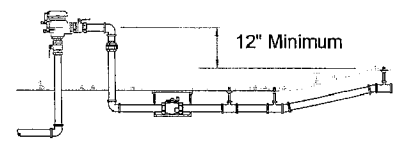
For further information contact your local water purveyor or the PNWS/AWWA Cross-Connection Control Committee through the PNWS office at (877) 767-2992.

PRESSURE VACUUM BREAKER ASSEMBLY FOR ISOLATION OF LAWN IRRIGATION SYSTEMS

The pressure vacuum breaker assembly (PVBA) may be installed to isolate all irrigation systems that do not use injectors or pumps to apply fertilizer and other agricultural chemicals.

The PVBA shall be installed at least 12 inches above the highest point in the irrigation piping.

The PVBA shall be tested by a certified backflow assembly tester upon installation, after repair of relocation, and at least annually.



Pressure Vacuum Breaker Assembly

Every water system has cross connections. Plumbing codes and State drinking water regulations require cross connections to be controlled by approved methods (physical air gap) or approved mechanical backflow prevention devices or assemblies. The various types of mechanical backflow preventers include: reduced pressure backflow assembly (RPBA), reduced pressure detector assembly (RPDA), double check valve assembly (DCVA), double check detector assembly (DCDA), pressure vacuum breaker assembly (PVBA), spill resistant vacuum breaker assembly (SVBA) and atmospheric vacuum breaker (AVB).

For a backflow preventer to provide proper protection, it must be approved for backflow protection, designed for the degree of hazard and backflow it is controlling, installed correctly, tested annually by a State certified tester, and repaired as necessary. Some States require mandatory backflow protection on certain facilities where high health-hazard-type cross connections are normally found. The following is a partial list of those facilities:

1. Hospitals, mortuaries, clinics.
2. Laboratories.
3. Food and beverage processing.
4. Metal plating and chemical plants.
5. Car washes.
6. Petroleum processing and storage plants.
7. Radioactive processing plants and nuclear reactors.
8. Piers and docks.
9. Sewage treatment plants.

WHAT TO DO?

It is impossible to cover all of the information pertaining to cross connections in a pamphlet. We hope the preceding information will inspire you to further educate yourself on the hazards of unprotected cross connections. Cross connection control manuals and training schools are offered throughout the Northwest. Information on manuals, schools and cross connection control can be obtained from:

WASHINGTON

DEPARTMENT OF HEALTH
Airdustrial Way, Bldg. 3
P.O. Box 47822
Olympia WA 98504-7822
(360) 236-3133

OREGON

OREGON DEPARTMENT OF HUMAN SERVICES
3420 Cherry Ave. NE, #110
Keizer, OR 97303
(503) 373-7201

BRITISH COLUMBIA, CANADA

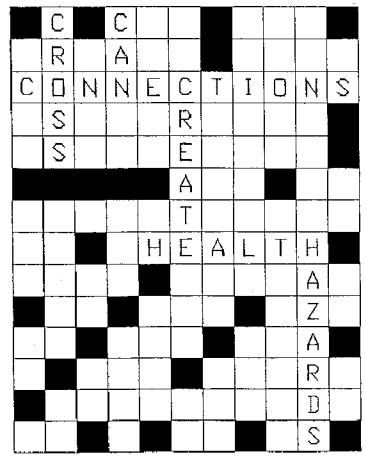
BC WATER & WASTE ASSOCIATION
Ste. 342 – 17 Fawcett Road
Coquitlam B.C. V3K 6V2
(604) 540-0111

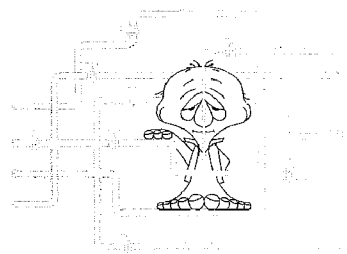
IDAHO

IDAHO DIVISION OF ENVIRONMENT
1410 N Hilton
Boise ID 83706
(208) 373-0275

Additional sources of information may be found on the PNWS-AWWA web site:

www.pnws-awwa.org





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PACIFIC NORTHWEST SECTION
Oregon – Washington - Idaho

R 11/20/02 [Brochure #2]

WHY BE CONCERNED?

Most water systems in the United States and Canada have good sources of water and/or sophisticated treatment plants to convert impure water to meet drinking water standards. Millions of dollars are spent to make the water potable before it enters the distribution system so most water purveyors think that their supplies are not in jeopardy from this point on. Studies have proven this to be wrong. Drinking water systems may become polluted or contaminated in the distribution system through uncontrolled cross connections.

Cross connections are installed each day in the United States because people are unaware of the problems they can create. Death, illness, contaminated food products, industrial and chemical products rendered useless are some of the consequences of such connections. As a result, many hours and dollars are lost due to *cross connections*.

WHAT IS A CROSS CONNECTION?

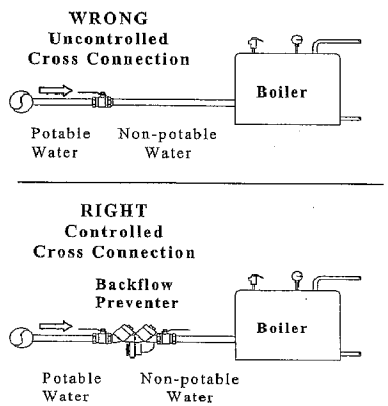
A cross connection is a point in a plumbing system where the potable water supply is connected to a non-potable source. Briefly, a cross connection exists whenever the drinking water system is or could be connected to any non-potable source (plumbing fixture, equipment used in any plumbing system). Pollutants or contaminants can enter the safe drinking water system through uncontrolled cross connections when backflow occurs.

Backflow is the unwanted flow of non-potable substances back into the consumer's plumbing system and/or public water system (i.e., drinking water). Backflow, to a certain degree, occurs continuously in every public water and/or plumbing system.

There are two types of backflow: *backsiphonage* and *backpressure*. *Backsiphonage* is caused by a negative pressure in the supply line to a facility or plumbing fixture. Backsiphonage may occur during waterline breaks, when repairs are made to the waterlines, when shutting off the water supply, etc.

Backpressure can occur when the potable water supply is connected to another system operated at a higher pressure or has the ability to create pressure, etc. Principal causes are booster pumps, pressure vessels, elevated plumbing, etc.

Backflow preventers are mechanical devices designed to prevent backflow through cross connections. However, for backflow preventers to protect as designed, they must meet stringent installation requirements.



WHERE ARE CROSS CONNECTIONS FOUND?

Cross connections are found in all plumbing systems. It is important that each cross connection be identified and evaluated as to the type of backflow protection required to protect the drinking water supply. Some plumbing fixtures have built-in backflow protection in the form of a physical air gap. However, most cross connections will need to be controlled through the installation of an approved mechanical backflow prevention device or assembly. Some common cross connections found in plumbing and water systems include:

1. Wash basins and service sinks.
2. Hose bibs.
3. Irrigation sprinkler systems.
4. Auxiliary water supplies.
5. Laboratory and aspirator equipment.
6. Photo developing equipment.
7. Processing tanks.
8. Boilers.
9. Water recirculating systems.
10. Swimming pools.
11. Solar heat systems.
12. Fire sprinkler systems.

For further information, contact your local water purveyor or the PNWS/AWWA Cross-Connection Control Committee through the PNWS office at (877) 767-2992.

RESIDENTIAL FIRE SPRINKLER SYSTEMS

Residential fire sprinklers are in greater demand today than ever before. Personal fire safety is such a trend that in many areas ordinances or resolutions require fire sprinklers on all new residential construction.

Residential fire sprinkler systems help save lives and reduce property damage. However, from the water purveyor's point of view, the residential fire sprinkler system presents a potential pollutant and/or contaminant source to the potable water system from cross-connections. Both homeowners and the public may be exposed to health hazards from residential fire sprinkler systems. Such hazards include stagnant water, non-potable piping, heterotrophic bacteria, and chemicals. Therefore these systems must be evaluated for health and system hazards.

The following minimal information should be considered in the selection of backflow protection on residential fire sprinkler systems.

Residential fire sprinkler systems are categorized as flow-*through*, *combination*, and *closed* fire protection systems. Each of these systems has their advantages and disadvantages. It should also be noted that what the local fire departments, local administrative authorities and water purveyors allow will determine which of these systems can be found in any particular jurisdiction. It is imperative that the water purveyor, local administrative authority, fire department, and other agencies coordinate their efforts in the design and operation of these systems.

Flow-through protection systems are those systems that do not have fire department pumper connections. They are constructed of approved potable water piping and materials to which sprinkler heads are attached. The system terminates at a connection to a toilet or other plumbing fixture to prevent the water from becoming stagnant.

Combination protection systems also do not have fire department pumper connections and are constructed of approved potable water piping and materials that serve both the fire sprinkler system and the consumer's potable water system.

Both of the above two systems do not require backflow preventers because they are connected directly to the potable water and the inherently designed to potable water standards.

Closed fire protection systems are separated from the potable water system by the minimum use of a Double Check Valve Assembly (DCVA) as long as no chemicals are used and a Reduced Pressure Backflow Assembly (RPBA) if chemicals are used. Closed system may have a fire department pumper connection.

NOTE:

1. The water purveyor must be consulted for proper backflow prevention requirements.
2. It is important to have the system engineered hydraulically. The NFPA standards 13 and/or 13D must be considered when designing the fire system.
3. Flow and pressure may not be adequate for fire protection.
4. A plumbing and/or fire permit may be required prior to starting the project.
5. A system is less expensive to install at initial house construction.
6. Some water purveyor's requirements may be more stringent than others – consult you local purveyor for requirements.

For further information contact your local water purveyor or the PNWS/AWWA Cross-Connection Control Committee through the PNWS office at (877) 767-2992.

RESIDENTIAL FIRE SPRINKLER SYSTEMS AND BACKFLOW PREVENTION

American Water Works Association
PACIFIC NORTHWEST SECTION
Oregon – Washington - Idaho

R 9/28/02 [Brochure #1]

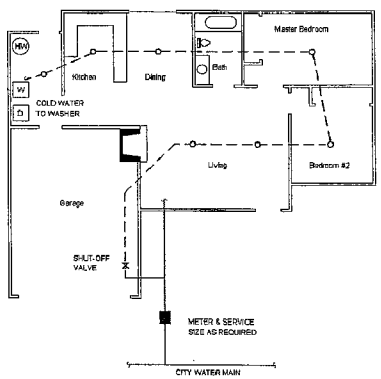
FLOW-THROUGH FIRE PROTECTION SYSTEMS

Advantages

1. Contains no standing or stagnant water.
2. No backflow protection is required.
3. Usually requires a single meter.

Disadvantages

1. Service line, meter and plumbing system must be designed hydraulically to supply both domestic and fire flow requirements.
2. Sprinkler system must have connection at the end to a clothes washer, dishwasher, toilet or other fixture to prevent water from becoming stagnant.



COMBINATION FIRE

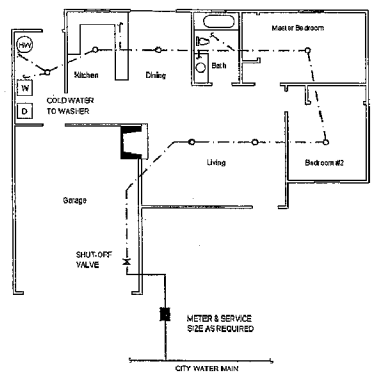
PROTECTION SYSTEMS

Advantages

1. Contains no standing or stagnant water.
2. No backflow protection is required.
3. Usually requires a single meter.
4. Water use throughout the potable water system eliminates need for water use at the end of the system.

Disadvantages

1. The service line, meter and plumbing system must be designed hydraulically to supply both domestic and fire flow requirements.



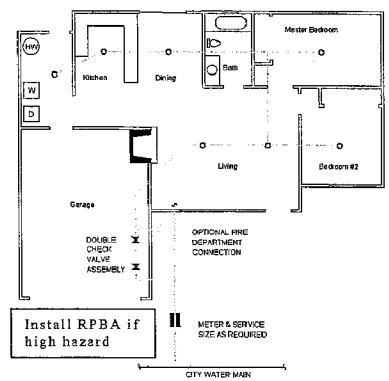
CLOSED FIRE PROTECTION SYSTEMS

Advantages

1. Installing a separately metered service line may be cheaper than upgrading an existing service.
2. A fire service rate is usually cheaper than a residential service rate.

Disadvantages.

1. Approved backflow preventers must be installed, thereby increasing the homeowner's cost by its initial installation, and thereafter for annual testing and maintenance.
2. When chemicals are added to the fire sprinkler system to prevent freezing, a high health hazard exists. This requires a higher, more expensive, level of protection, i.e., a Reduced Pressure Backflow Assembly (RPBA).
3. If the fire service and domestic service are combined, the fire service may not be turned off because of safety reasons.



Appendix E – Department of Health 2002 CCC Program Forms

- Cross-Connection Control Program Summary – As of 12/31/2002
- PWS CCC Activities – Annual Summary Report for 2002

Washington State Department of Health

Division of Drinking Water

Cross-Connection Control Program Summary
As of 12/31/2002

Part 1: Public Water System (PWS) Identification

PWS ID: 89700Q	PWS Name: City of Tumwater	County: Thurston

Part 2: Cross-Connection Control (CCC) Program Characteristics

A. Type of Program Currently Implemented

Type of Program	Check One
Premises isolation only.	☐
Combination program: reliance on both premises isolation and in-premises protection.	☒
In transition from a combination program to a premises isolation only program.	☐

B. Coordination with Local Administrative Authority (LAA) on Cross-Connection Issues

Indicate the status of coordination with LAAs in your service area. The LAA is the entity that enforces the Uniform Plumbing Code. Check one box in each of last 3 columns for each LAA in your service area.

LAA No.	Name of LAA[1] (e.g., the City or County Building Department)	PWS currently: Coordinates with LAA	PWS currently: Has Written Agreement with LAA	If not coordinating, did LAA Decline to Coordinate?
1	City of Tumwater	Y ☒ N ☐	Y ☐ N ☒	Y ☐ N ☒
2	Thurston County	Y ☐ N ☒	Y ☐ N ☒	Y ☐ N ☐
3		Y ☐ N ☐	Y ☐ N ☐	Y ☐ N ☐
4		Y ☐ N ☐	Y ☐ N ☐	Y ☐ N ☐
5		Y ☐ N ☐	Y ☐ N ☐	Y ☐ N ☐

[1] If more than 5 LAAs, attach separate sheet giving the above information.

C. Corrective or Enforcement Actions Available to the Purveyor

Type of Corrective Action	Indicate Whether Available	Most Often Used (Check one)
Denial or discontinuance of water service.	Y ☒ N ☐	☒
Purveyor installs backflow preventer and bills customer.	Y ☒ N ☐	☐
Assessment of fines (in addition to elimination or control of cross-connection).	Y ☐ N ☒	☐
Other corrective actions (describe below):	Y ☐ N ☒	☐

D. CCC Program Typical Responsibilities

Typical responsibilities *do not* include enforcement action related procedures or circumstances.

CCC Program Activity	Responsible Party (Check one per row)	
	Customer	Purveyor
Hazard Evaluation by DOH-certified CCS.	☐	☒
Backflow preventer (BP) ownership.	☒	☐
BP installation.	☒	☐
BP ***initial*** inspection (for proper installation – all BPs).	☒	☐
BP ***initial*** test (for testable assemblies).	☒	☐
BP ***annual*** inspection (Air Gaps and AVBs).	☒	☐
BP ***annual*** test (for testable assemblies).	☒	☐
BP maintenance and repair.	☒	☐

E. Backflow Protection for Fire Protection Systems

Please remember to enter number of days allowed if you require retrofitting.

PWS coordinates with ***LAA*** on CCC issues for fire protection systems (FPS).	Y ☒ N ☐ N/A ☐	
PWS coordinates with ***local Fire Marshal*** on CCC issues for FPS.	Y ☐ N ☒ N/A ☐	
PWS ensures backflow prevention is installed before serving ***new*** connections with FPS.	Y ☒ N ☐	
PWS requires retrofits to ***high***-hazard FPS.	Y ☒ (No. of days allowed: 90)	N ☐ N/A ☐
PWS requires retrofits to ***low***-hazard FPS.	Y ☒ (No. of days allowed: 90)	N ☐ N/A ☐

F. Backflow Protection for Irrigation Systems

Minimum level of backflow prevention required on irrigation systems ***without*** chemical addition.	Not Addressed ☐ AVB ☐ PV/SVBA ☐ DCVA ☒ RPBA ☐	
PWS currently inspects AVBs upon ***initial*** installation.	Y ☒	N ☐ N/A ☐
PWS currently inspects AVBs upon repair, reinstallation or relocation.	Y ☒	N ☐ N/A ☐

G. Used Water

PWS prohibits, by ordinance, rules, policy or agreement, the intentional return of used water (e.g. for heating or cooling) into the distribution system.		Y ☒ N ☐
If not prohibited at present, date plan to prohibit.	Date (mm/dd/yyyy):	N/A ☒
Current number of service connections returning used water to distribution system.		0

H. Backflow Protection for Unapproved Auxiliary Water Supplies[1] NOT Interconnected with PWS

Indicate the **minimum** backflow preventer and type of protection required for service connections having unapproved auxiliary water supplies *when they are NOT interconnected to the PWS.* Check only one per row.

Existing service connections.	None ☐	DCVA ☐	RPBA ☒	AG ☐
Type of protection required.	None ☐	In-premises protection ☐		Premises isolation ☒
New service connections.	None ☐	DCVA ☐	RPBA ☒	AG ☐
Type of protection required.	None ☐	In-premises protection ☐		Premises isolation ☒

[1] An auxiliary water supply is any water supply on or available to the customer's premises in addition to the purveyor's potable water supply.

I. Backflow Protection for Tanker Trucks and Temporary Water Connections

Minimum level of backflow protection (installed on or associated with the truck) required for tanker trucks taking water from PWS.	AG [X] DCVA [ ] RPBA [X] Not specified [ ] Tanker trucks not allowed [ ]
PWS requires tanker trucks to obtain water at designated filling sites each equipped with permanently installed backflow preventer(s).	Y [ ] (Min. site protection: DCVA [ ] RPBA [ ]) N [XX] N/A [ ] No sites provided [ ]
PWS currently accepts tanker trucks approved by other PWSs without further inspection or testing.	Y [ ] N [X] N/A [ ]
Minimum level of backflow protection required for temporary water connections (e.g., for construction sites).	AG [ ] DCVA [X] RPBA [ ] Not specified [ ] Temp. connections not allowed [ ]
PWS requires testing each time the temporary connection backflow preventer is relocated.	Y [X] N [ ] N/A [ ] (Temp. connections not allowed)
PWS provides approved backflow preventer for temporary connections.	Y [X] N [ ] N/A [ ] (Temp. connections not allowed)

J. Backflow Protection for Non-Residential Connections

For each category shown, indicate whether PWS has non-residential connections of that type and the **minimum** level of ***premises isolation*** backflow protection required (whether or not PWS currently has that type of customer).

Type of Connection	PWS has Customers of this Type	Minimum Premises Isolation Backflow Protection Required
Commercial	Y [X] N [ ]	Not required [ ] DCVA [ ] RPBA [X]
Industrial	Y [X] N [ ]	Not required [ ] DCVA [ ] RPBA [X]
Institutional	Y [X] N [ ]	Not required [ ] DCVA [ ] RPBA [X]
Other (specify): _____	Y [ ] N [ ]	Not required [ ] DCVA [ ] RPBA [ ]
Other (specify): _____	Y [ ] N [ ]	Not required [ ] DCVA [ ] RPBA [ ]

K. Backflow Protection for Wholesale Customers

Indicate whether the PWS requires backflow protection at interties with wholesale customers (other PWSs).

Type of Intertie	PWS has (plans to have) Customers of this Type	Backflow Protection Required (If protection is required, indicate minimum level)
Existing	Y [X] N [ ]	Not specified/Not required [XX] Always required [ ] Required only if purchaser's CCC program is inadequate [ ] Minimum required (if applicable): DCVA [ ] RPBA [ ]
New	Y [ ] N [X]	Not specified/Not required [ ] Always required [ ] Required only if purchaser's CCC program is inadequate [ ] Minimum required (if applicable): DCVA [ ] RPBA [ ]

Part 3: CCC Program Record-Keeping and Inventory

Indicate the type or name of computer software used by the PWS to track CCC records.

BMI ☐ BPMS ☐ Engsoft ☐ Tokay ☐ Other commercial CCC software [x] (specify): Hansen

Custom developed for or by PWS[1] ☐ Other non-CCC software (e.g. Excel) [x] None Used ☐

[1] Do not include commercial CCC software customized for PWS. Indicate these on line above.

Part 4: Comments and Clarifications

Enter comments or clarifications to any of the information included in this report.
Note for on-screen completion : Maximum length of each comment is 255 characters, including spaces.

Part No.	Comment
F	only properly installed existing AVBs are accepted
I	We are in the process of only allowing tanker trucks to fill at specific stations equipped with an RPBA.
I	We provide backflow assemblies for temporary connections in certain situations; otherwise the contractor provides backflow assembly.
K	We have one intertie with Olympia that remains closed unless we have an emergency.

Part 5: CCC Program Summary Completion Information

Enter dates in MM/DD/YYYY format.

I certify that the information provided in this CCC Program Summary is complete and accurate to the best of my knowledge.		
CCC Program Mgr Name (Print): Tiffney Ihly		Title: CCS
Signature:		Date:
Phone: (360) 754-4150	E-mail: TIFFNEYI @ ci.tumwater.wa.us	
I certify that the information provided in this report accurately represents the status and description of this water system's CCC Program.		
PWS Mgr Name (Print)[2]:		Title:
Signature:	Op. Cert No:	Date:

[2] The person that the CCC Program Manager reports to or other manager having direct responsibility and/or oversight of CCC program.

Washington State Department of Health

Division of Drinking Water

Public Water System Cross-Connection Control Activities Annual Summary Report for Year 2002

Part 1: Public Water System (PWS) and Cross-Connection Control Specialist (CCS) Information

PWS ID: 89700Q	PWS Name: City of Tumwater	County: Thurston
Provide name and Certification Number of CCS who develops and implements your CCC program.		
CCS Name (Last, First & MI): Ihly , Tiffney K.		CCS Phone: (360) 252-5458
CCS Cert. No.: 7488	BAT Cert. No. (if applicable): B2350	
CCS is (check one): PWS owner or employee ☒	On contract to PWS ☐	Volunteer or other ☐

Part 2: Status of Cross-Connection Control (CCC) Program

PWS has: A written CCC program Y ☒ N ☐ CCC implementation activities Y ☒ N ☐

(Written program may be a separate document or part of water system plan or small water system management program.)

Provide information regarding PWS's specific CCC Program Elements. Check one box in each column.

Program Element Number	Description of Element [See WAC 246-290-490(3)]	This Program Element is Currently: Included in Written Program	This Program Element is Currently: Being Implemented or is Completed
1	Legal Authority Established	Y ☒ N ☐	Y ☒ N ☐
2	Hazard Evaluation Procedures and Schedules	Y ☐ N ☒	Y ☒ N ☐
3	CCC Procedures and Schedules	Y ☐ N ☒	Y ☒ N ☐
4	Certified CCS Provided	Y ☒ N ☐	Y ☒ N ☐
5	Backflow Preventer Inspection and Testing	Y ☐ N ☒	Y ☒ N ☐
6	Testing Quality Control Assurance Program	Y ☐ N ☒	Y ☒ N ☐
7	Backflow Incident Response Procedures	Y ☐ N ☒	Y ☒ N ☐
8	Public Education Program	Y ☐ N ☒	Y ☒ N ☐
9	CCC Records	Y ☐ N ☒	Y ☒ N ☐
10	Reclaimed Water Permit	Y ☐ N ☐ N/A ☒	Y ☐ N ☐ N/A ☒

Part 3A: System Characteristics (as of 12/31/2002)

Indicate the number of connections of each type that the PWS serves (whether or not they are protected by backflow preventers). **Estimate if necessary.**

Type of Service Connection	Number
Residential (as defined by PWS)	3,986
All Other (include dedicated fire sprinkler and irrigation lines and PWS-owned facilities such as water and wastewater treatment plants and pumping stations, parks, piers and docks)	1,199
Total Number of Connections	5,185

Part 3B: Cross-Connection Control for High-Hazard Premises or Systems Served by the PWS

If PWS does not serve any high-hazard premises or systems, check here ☐ and go to Part 4.

- Complete all cells. Enter zero (0) in cells if PWS does not serve such premises.
- **Estimate number of connections served if necessary** (OK to use phone book).
- Hazard evaluations do not need to be done to complete this table.

Type of High-Hazard Premises or Systems [WAC 246-290-490(4)(b)]	Number of Connections as of 12/31/2002			
	Serving[1]	With Premises Isolation by AG/RP	With Premises Isolation AG/RP Inspected or Tested[2]	Granted Exception from Mandatory Premises Isolation
Agricultural (farms and dairies)	0	0	0	0
Beverage bottling plants (including breweries)	9	9	9	0
Car washes	1	0	0	0
Chemical plants	0	0	0	0
Commercial laundries and dry cleaners	3	3	3	0
Both reclaimed water and potable water provided	0	0	0	0
Film processing facilities	1	1	1	0
Dedicated fire protection systems with chemical addition or using unapproved auxiliary supplies	2	2	2	0
Food processing plants (including canneries, slaughter houses, rendering plants)	2	2	2	0
Hospitals, medical centers, nursing homes, veterinary, medical and dental clinics, and blood plasma centers	19	19	19	0
Separate irrigation systems using purveyor's water supply and chemical addition[3]	0	0	0	0
Laboratories	2	2	2	0
Metal plating industries	0	0	0	0
Mortuaries	1	1	1	0
Petroleum processing or storage plants	1	1	1	0
Piers and docks	0	0	0	0
Radioactive material processing plants or nuclear reactors	0	0	0	0
Survey access denied or restricted	0	0	0	0
Wastewater lift stations and pumping stations	13	13	13	0
Wastewater treatment plants	0	0	0	0
Unapproved auxiliary water supply interconnected with potable water supply	9	9	9	0
Other high-hazard premises (list):[4]				
Totals	62	61	61	0

[1] Count multiple connections or parallel installations as separate connections.

[2] Count only those connections ***whose premises isolation preventers*** were tested or inspected during year 2002

[3] For example, parks, playgrounds, golf courses, cemeteries, estates, etc.

[4] Premises with hazardous materials or processes (requiring isolation by AG or RP), such as: aircraft and automotive manufacturers, pulp and paper mills, metal manufacturers, military bases, and wholesale customers that pose a high hazard to the PWS. May be grouped together in categories, e.g.: other manufacturing, or other commercial. ***If needed, attach additional sheet giving same information as requested by table.***

Part 4A: Backflow Preventer Inventory and Testing Data During Year 2002

- Complete all cells. Enter zero (0) if there are no backflow preventers in the category.
- **Count only the backflow preventers that the PWS relies upon for protection of the distribution system.** ***If your records do not distinguish between premises isolation and in-premises protection preventers, enter all data in Premises Isolation section and check the box.***
- Count AVBs on irrigation systems only. **If you do not track AVBs, check box above the "AVB" column.**
- Count multiple tests or failures for any particular backflow preventers as one test or failure for that backflow preventer.
- Multiple Service or Parallel Connections: count each assembly separately.
- Assemblies on Dedicated Fire or Irrigation Lines: count as Premises Isolation Assemblies.

If PWS does not track AVBs check here ☐

	Backflow Preventer Category and Testing/ Inspection Information	Air Gap	RPBA	RPDA	DCVA	DCDA	PVBA	SVBA	AVB
Premises Isolation, including preventers isolating PWS-owned facilities. ***If In-Premises Protection preventers are also included, check here*** ☐.									
Rows 1 – 3 pertain ONLY to Premises Isolation preventers in service at beginning of 2002									
1	In service on 1/1/2002	0	66	0	295	15	2	0	0
2	Inspected and/or Tested in 2002[1]	0	66	0	295	15	2	0	0
3	Failed Inspection or Test in 2002	0	15	0	29	0	1	0	0
Rows 4 – 6 pertain ONLY to NEW Premises Isolation preventers installed during 2002									
4	New preventers installed in 2002[2]	0	29	0	22	4	0	0	0
5	Inspected and/or Tested in 2002[1]	0	29	0	22	4	0	0	0
6	Failed inspection or test in 2002	0	5	0	6	0	0	0	0
Premises Isolation Total at end of 2002[3]		0	95	0	317	19	2	0	0
In-Premises Protection (Fixture Protection or Area Isolation), including preventers within PWS-owned facilities.									
Rows 7 – 9 pertain ONLY to In-Premises Protection preventers in service at beginning of 2002									
7	In service on 1/1/2002	0	59	0	310	0	7	0	134
8	Inspected and/or Tested in 2002[1]	0	54	0	308	0	7	0	0
9	Failed Inspection or Test in 2002	0	7	0	28	0	0	0	0
Rows 10 – 12 pertain ONLY to NEW In-Premises Protection preventers installed during 2002									
10	New preventers installed in 2002[2]	0	5	0	91	0	0	0	0
11	Inspected and/or Tested in 2002[1]	0	5	0	91	0	0	0	0
12	Failed inspection or test in 2002	0	0	0	13	0	0	0	0
In-Premises Protection Total at end of 2002[3]		0	64	0	401	0	7	0	134
Grand Total at end of 2002		0	159	0	718	19	9	0	134

[1] Initial and/or routine annual inspection (for proper installation and approval status) and/or test (for testable assemblies only using DOH/USC test procedures).
[2] Includes preventers installed on connections where backflow prevention was not previously required and any preventers that replaced those in service at beginning of 2002. Replacement preventers may be of a different type than the original.
[3] Total at end of 2002 can't be more than the preventers in service at beginning of 2002 plus those installed during 2002. May be less due to changes in preventer type and preventers taken out of service during 2002.

Part 4B: Other Implementation Activities in 2002

Complete all cells. Enter zero (0) if not applicable.

Activity or Condition	Number
New service connections evaluated for cross-connection hazards to PWS in 2002.	82
New service connections requiring backflow protection to protect PWS.[1]	23
Existing service connections evaluated for cross-connection hazards to PWS in 2002.	511
Existing service connections requiring backflow protection to protect PWS.[1,2]	64
Exceptions granted to high-hazard premises per WAC 246-290-490(4)(b) in 2002.[3]	0
CCC enforcement actions taken by PWS during 2002.[4]	0

[1] Include services where either premises isolation or in-premises preventers were required to protect the PWS.
[2] Include existing services that need new, additional or higher level backflow prevention.
[3] A DOH Exception to Hazard Premises Form *must* be attached for each exception granted during the year.
[4] "Enforcement actions" mean actions taken by the PWS (such as water shut-off, PWS installation of backflow preventer) when the customer fails to comply with PWS's CCC requirements.

Part 5: Backflow Incidents, Risk Factors and Indicators during 2002

	Backflow Incidents, Risk Factors and Indicators during 2002	Number (Enter 0 if none)	Check if Data Not Available
Backflow Incidents during 2002			
1	Backflow incidents that contaminated the PWS.[5]	0	☐
2	Backflow incidents that contaminated the customer's drinking water system ***only***.[5]	0	☐
Risk Factors for Backflow during 2002			
3	Distribution main breaks per 100 miles of pipe.		☐
4	Low pressure events (<20 psi in PWS distribution system).	0	☐
5	Water outage events.		☐
Indicators of Possible Backflow during 2002			
6	Total health-related complaints received by PWS.[6]	2	☐
7	Received during BWA or PN events.[7]	0	☐
8	Received during low pressure or water outage events.	0	☐
9	Total aesthetic complaints (color, taste, odor, air in lines, etc.).	4	☐
10	Received during BWA or PN events.[7]	0	☐
11	Received during low pressure or water outage events.	0	☐

[5] Complete and submit a Backflow Incident Report form for each known backflow incident.
[6] Such as stomach ache, headache, vomiting, diarrhea, skin rashes, etc.
[7] **"BWA"** means ***Boil Water Advisory*** and **"PN"** means ***Public Notification*** for water quality reasons.

Part 6: Comments and Clarifications

Enter comments or clarifications to any of the information included in this report.
Note for on-screen completion : Maximum length of each comment is 255 characters, including spaces.

Part No.	Comment

Part 7: Report Completion Information

Enter dates in MM/DD/YYYY format.

I certify that the information provided in this CCC Activities Report is complete and accurate to the best of my knowledge.			
CCC Program Mgr. Name (Print): Tiffney Ihly		Title: CCS	
Signature:		Date: 3/12/03	
Phone: (360) 754-4150	E-mail: TIFFNEYI @ci.tumwater.wa.us		
I have reviewed this report and certify that the information provided is complete and accurate to the best of my knowledge.			
PWS Mgr./Owner Name (Print)[1]:		Title:	
Signature:	Op. Cert. No.:	Date:	

[1] The person that the CCC Program Manager reports to or other manager having direct responsibility for and/or oversight of the CCC program.