Appendix E
Cross Connection Control Program

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CITY OF BONNEY LAKE

Cross Connection Control Procedures Manual

Program Administration, Requirements and Implementation

January 25, 2018

This document contains the 10 minimum elements required under WAC 246-290-490 and provides the details supportive of Bonney Lake Municipal Code 13.04.170

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Chapter 1 – Introduction

PURPOSE AND SCOPE

This Cross Connection Control Procedures Manual (Manual), used in conjunction with Bonney Lake Municipal Code (BLMC) Article IV, Section 13.04. Water Service Cross-Connections and Article V. Enforcement and state regulations WAC 246-290-490, outlines the framework for implementing cross connection control requirements at the City of Bonney Lake. To be acceptable to the Washington State Department of Health (DOH), a cross connection control program must include 10 minimum program elements listed in WAC 246-290-490(3). How the City meets those elements are described in this Manual.

This Manual reflects years of implementation practices in protecting the City's drinking water supply from cross connections and backflow incidents using industry standards and good engineering practices. The Manual provides direction to staff on program implementation activities, describes policies and procedures, and summarizes current City, State, and Federal requirements regarding cross connection control. The Manual is structured such that it may be supplemented with updated documents and materials developed by Public Services - Operations for its specific use. The authority to enforce these practices and policies is established In BLMC 13.04.170 and 13.04.220, and adopted by ordinance 588-1987.

Cross connection control is an integral part of the multiple-barrier approach to ensure safe drinking water. This multiple barrier concept includes providing protection to the City's water supply through: source protection programs like wellhead protection areas, providing treatment (disinfection), covered storage tanks, using good engineering design and practices, implementation of a cross connection control program, compliance and surveillance water quality monitoring programs, having certified operators, and emergency planning. Implementation of the Manual results in protecting the City's water system from contamination from the customer's plumbing supply/system through proper installation of the right backflow prevention assembly and annual testing of these assemblies by a DOH certified Backflow Assembly Tester (BAT).

DEFINITIONS

The following words are frequently used throughout the Manual and their definitions are as follows:

"Approved air gap (AG)" means a physical separation between the free flowing end of a potable water supply pipeline and the overflow rim of an open or non-pressurized receiving vessel. This separation must be at least:

- Twice the diameter of the supply piping measured vertically from the overflow rim of the receiving vessel, and in no case be less than one inch, when unaffected by vertical surfaces (sidewalls); and:
- Three times the diameter of the supply piping if the horizontal distance between the supply pipe and a vertical surface (sidewall) is less than or equal to three times the diameter of the supply pipe, or if the horizontal distance between the supply pipe and intersecting vertical surfaces (sidewalls) is less than or equal to four times the diameter of the supply pipe and in no case less than one and one-half inches.

"Approved atmospheric vacuum breaker (AVB)" means an AVB of make, model, and size that is approved by the DOH. AVBs that appear on the current approved backflow prevention assemblies list developed by the University of Southern California Foundation for Cross Connection Control and Hydraulic Research or that are listed or approved by other nationally recognized testing agencies (such as IAPMO, ANSI, or UL) acceptable to the authority having jurisdiction are considered approved by the DOH.

"Approved backflow prevention assembly" means a reduced pressure backflow assembly (RPBA), a reduced pressure detector assembly (RPDA), a double check valve assembly (DCVA), a double check detector assembly (DCDA), a pressure vacuum breaker assembly (PVBA), or a spill resistant vacuum breaker (SVBA) of make, model, and size that is approved by DOH. Assemblies that appear on the current approved backflow prevention assemblies list developed by the University of Southern California Foundation for Cross Connection Control and Hydraulic Research are considered approved by the DOH.

"Authority having jurisdiction" (formerly known as local administrative authority) means the local official, board, department, or agency authorized to administer and enforce the provisions of the Uniform Plumbing Code as adopted under chapter 19.27 RCW.

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

"Cross connection" means any actual or potential physical connection between a public water system or the consumer's water system and any source of non-potable liquid, solid, or gas that could contaminate the potable water supply by backflow.

"Category of contaminant" means a communicable disease, chemical, or physical hazard. Communicable diseases and chemical hazards can cause illness and in some cases death and are high health hazards. Physical hazards such as gasoline, propane, hot water and steam are examples of both low and high health hazards.

"Degree of hazard" means either a low cross connection hazard or a high health cross connection hazard.

"High health cross connection hazard" means a cross connection involving any substance that could impair the quality of potable water and create an actual public health hazard through injury, poisoning, or spread of disease. WAC 246-290-490 refers to these types of hazards as Table 9 hazards.

"In-premises protection" means a method of protecting the health of consumers served by the consumer's potable water system, located within the property lines of the consumer's premises by the installation of an approved air gap or backflow prevention assembly at the point of hazard, which is generally a plumbing fixture.

"Low cross connection hazard" means a cross connection that could impair the quality of potable water to a degrees that does not create a hazard to the public health, but does adversely and unreasonably affect the aesthetic qualities of potable waters for domestic use.

"Premises isolation" means a method of protecting a public water system by installation of approved air gaps or approved backflow prevention assemblies at or near the service connection or alternative location acceptable to the purveyor to isolate the consumer's water system from the purveyor's distribution system.

"Purveyor" means an agency, subdivisions of the state, municipal corporation, firm, company, mutual or

cooperative association, institution, partnership, or person or other entity owning or operating a public water system. Purveyor also means the authorized agents or these entities.

See **Appendix A** for a copy of DOH's publication which contains an extract of chapter 246-290 WAC, which covers minimum cross connection control requirements as well as additional definitions.

CITY, STATE, AND FEDERAL PROGRAM HISTORY

The requirement for the City to have a Cross Connection Control Program (Program) is not something new. State regulations administered by DOH, dating back to 1970; require the City's water system be protected from backflow and cross connection contamination. Though the federal Safe Drinking Water Act (SDWA) passed by Congress in 1974 does not specifically address the topic of cross connection control, it does state water purveyors are responsible for the water quality delivered to the customer's meter. The Environmental Protection Agency, which administers the SDWA, developed a series of nine "white papers" (2001) on distribution system issues of potentially significant public health concern. One of the papers is titled *Potential Contamination Due to Cross Connections and Backflow and the Associated Health Risks*. Water industry experts expect future federal rule making will require water purveyors to develop and implement a cross connection control program. The City is well positioned to meet any future federal requirements pertaining to having a Program given the years DOH has had state regulations requiring one.

The City's Program was established in 1996. The City has made great progress in our efforts to develop and implement an effective Program. These efforts include updating the BLMC, Cross Connection Control Inspector oversight of the program, software program replacement, dedicated administrative support, and protecting against the most severe and high health risk premises (commonly referred to as Table 9 facilities).

Chapter 2 – Legal Authority to Establish a Program (ELEMENT 1)

The control or elimination of cross connections is done according to the most current revisions of state and local rules and regulations. State regulations include:

- Chapters 51-56 and 51-57 WAC, Uniform Plumbing Code and Uniform Plumbing Code RCW 18.106, Washington State Plumbers Code
- RCW 19.27, Washington State Building Code
- RCW 43.20.050, Washington State Powers and Duties of the State Board of Health
- RCW 70.119A.060, Washington State Public Water Systems Mandate
- WAC 246-290-490, Cross Connection Control (**Appendix A**)

Local rules and regulations include BLMC chapter 13.04, which is the authority for the City to enforce the City's Program (**Appendix B**). Section 13.04.170, states cross connections are prohibited and gives the City authority to discontinue water service until corrections are made. Where cross connections cannot be eliminated, they are controlled by installation of an approved backflow assembly, which are appropriate to the degree of hazard it is protecting against.

The City of Bonney Lakes current "Engineering Development Policies and Public Works Design Standards (polices and standards contains the requirements for civil engineering infrastructure as adopted by the Bonney Lake City Council. The policies and standards are comprised of both written text and standard details that specify how infrastructure is constructed. These improvements include streets, driveways, sidewalks, curbs, street lighting, street trees, water, sewer, and storm drainage. Section 400 contains the requirements for cross connection control associated with all new construction and remodels and can be found online at *www.ci.bonney-lake.wa.us*

Chapter 3 – Program Administration

ROLES AND RESPONSIBILITIES

The Water Division, within the City's Public Services – Operations Division, carries out the maintenance and operational functions of the City's public water supply. All public water systems the size of the City's water system, are required to designate a certified operator as the Cross Connection Control Specialist. The water purveyor has the responsibility for cross connection control and it 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 meter setter (e.g. premises isolation).

The water purveyor has the responsibility to enforce premises isolation. The practice of premises isolation is used to protect against cross connections on the customer's premises where actual or potential hazards exist. Under this philosophy, the customers premises is separated from the City's water system by means of a backflow prevention assembly installed at the service connection, immediately downstream of the water meter.

The City's Public Services and Building Service Department has the authority and jurisdiction for any issues within the consumer's water system, per chapter 19.27 RCW. This type of protection is often referred to as "in-premises" isolation. In-premises isolation protects the health of the consumers served by their water/plumbing system by the installation of an approved air gap or approved backflow prevention assembly at the point of hazard.

The water customer is responsible for identifying and eliminating cross connections or controlling them through the installation, regular testing, and maintenance of approved backflow prevention assemblies. The water customer is responsible for providing the necessary information, scheduling, and providing access for inspection of cross connection potential and the necessary control methods. The water customer is responsible for notifying the City's Cross Connection Control Specialist (CCS) of any assembly the customer believes is no longer required. Finally, the water customer is responsible for all costs associated with the inspection, testing, repair, and replacement of backflow prevention assemblies.

The City's Program consists of premises isolation to protect the City's water system from contamination.

The functions of the Program are primarily carried out by the City's CCS and include survey, inspection, notification, enforcement, and record keeping. The minimum City certification requirement for the position include DOH certifications as a CCS.

This position works closely with the Public Services Department – Infrastructure Development Division inspectors regarding new and remodeled properties; and on capital improvement projects; Department of Health on severe and high health hazard premises and backflow incidents; contractors and BATs.

Chapter 4 – Program Implementation

PROCEDURES AND SCHEDULE FOR HAZARD EVALUATIONS, ELIMINATING OR CONTROLLING CROSS CONNECTIONS (ELEMENTS 2 AND 3)

Several guidance, policies, and procedures exist for determining the appropriate level of protection. The evaluation for the appropriate level of protection shall be in accordance with the most current editions of the following:

- *Cross Connection Control Manual, Accepted Procedure and Practice* published by the Cross Connection Control Committee of the Pacific Northwest Section of the American Water Works Association
- *Manual of Cross Connection Control* published by the Foundation for Cross Connection Control and Hydraulic Research, University of Southern California
- *Recommended Practice for Backflow Prevention and Cross Connection Control, AWWA M14,* published by the American Water Works Association
- *Current City of Bonney Lake Policies and Standards, Section 400*
- *Group A Design Standards,* Washington State Department of Health
- *BLMC 13.04*

The City prioritizes its backflow prevention efforts based on acceptable risk (probability of occurrence), category of contaminant, degree of hazard, and the reliability of the backflow preventer.

For customers requesting *new* service connections, an initial evaluation of the premises' planned or future water service is done by the City's CCS during the plan review process. Before water service is provided, the City's CCS inspects the initial installation. Proper selection and installation of a backflow prevention assembly, as determined by the City's CCS, shall be a condition of allowing new water service connection. Meter is installed and locked off until applicant/contractor/customer schedules a test date and time with the CCS and BAT. The CCS will then turn on water for the observation of the initial testing. If the test is completed and passes, water is then left on. If the test fails, water is turned off and locked until a retest is scheduled and the completion of a passing test report is submitted. The assembly shall be retested by a certified BAT. All assemblies must be tested at least annually thereafter by a certified BAT.

Approved backflow prevention assemblies are those which appear on DOH's *Approved Assemblies List*, developed by the University of Southern California Foundation for Cross Connection Control. This institute is currently the only one which the DOH recognizes as having the authority to approve backflow prevention assemblies. Below is the minimal protection requirements:

1. Air Gap (AG)
2. Reduced Pressure Backflow Assembly (RPBA)
3. Double Check Valve Assembly (DCVA)

All backflow assemblies shall operate as designed and approved by the approval agency having jurisdiction. Assemblies not meeting design standards shall be considered unapproved and will require repair or replacement.

The City's CCS becomes aware of possible cross connections associated with ***existing*** service connections through the course of doing City business. Periodic reevaluations are done by the City's CCS in response to remodels, notification by city inspectors, fire department personnel and water quality complaints. Locked off services, or empty residences or buildings that have sat in this configuration through the inspection date of record shall have the premises reassessed by the CCS and the assembly retested prior to obtaining service. An emphasis is placed on severe and high health premises (Table 9). High Table 9 Hazards must be addressed immediately. Service may be discontinued until an approved backflow assembly appropriate to the degree of hazard is installed and a passing test is submitted to the CCS. The City notifies the customer of the outcome of the hazard assessment by letter and in some cases by email. Timelines for corrections are based on the degree of hazard and are generally completed within 30 days. Larger and more complex premises can require additional time (six months or longer) due to securing adequate funding to complete the installation(s). The assemblies must also be on DOH's *Approved Assemblies List* and be installed in the correct orientation, and by a certified BAT.

The City of Bonney Lake's water supply to any premise listed in WAC 246-290-490 (4)(b)(iii)(Table 9) will require an approved Air Gap or Reduced Pressure Backflow Assembly installed directly behind the water meter, prior to any branch connections, on the customers side of the property line. These premises include, but are not limited to:

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

- Agricultural (hobby farms, 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, dialysis centers, nursing homes, veterinary, medical and dental clinics, and blood plasma centers
- Premises with separate irrigation systems using the purveyor's water supply and the chemical addition+
- Laboratories
- Metal plating industries
- Mortuaries
- Petroleum processing or storage plants
- Piers and docks
- Radioactive material processing plants for nuclear reactors+
- Survey access denied or restricted
- Wastewater lift stations and pumping stations (grinder pumps)
- Waste water treatment plants*
- Premises with an unapproved auxiliary water supply, whether or not interconnected with the potable water supply. Unapproved auxiliary water supplies included but are not limited to lakes, ponds, streams, rivers, tanks, wells, etc.

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

*RPBAs for connections serving these premises are acceptable only when in combination with an in-plant approved air gap; otherwise, the purveyor shall require an approved air gap at the service connection.

Unless otherwise approved by the City's CCS, installation of the appropriate type of backflow prevention assembly or air gap system for premises isolation is required at the meter (e.g. premises isolation). Any deviation from this must be pre-approved by the City's CCS. Below is a summary of requirements based on the evaluation of acceptable risk, degree of hazard, and the reliability of the backflow preventer.

Commercial
The degree of hazard for this type of service is considered a high health hazard. An approved backflow prevention assembly shall be a Reduced Pressure Backflow Assembly, Reduced Pressure Detector Assembly or approved AG for premises isolation.

Multi-Family Service
The degree of hazard for this type of service is a high health cross connection hazard. A residential development having one or more metered connections serving more than two living units per meter will be treated as a commercial service. An approved DCVA or a DCDA is required.

Fire Service
The degree of hazard for this type of service may be high or low, depending on the type of system installed. For example, backflow protection is not required for residential flow through or combination fire protection systems. However, dry fire suppression systems require a DCDA while a fire suppression system using chemicals requires an RPDA.

****Detector Readings are required to be recorded by a certified BAT during testing and submitted to the City CCS.***

Single-Family Residential Service
The degree of hazard for this type of service is generally low. However, premises isolation with a RPBA is required if high health hazards exists.

Residential Irrigation Service – The degree of hazard for this type of service is generally low. A minimum of a DCVA is required as long as no chemicals or auxiliary water are involved, otherwise an RPBA is required.

Irrigation Only Service
The degree of hazard for this type of service is generally low. An approved DCVA is required as long as no chemicals or auxiliary water are involved, otherwise an RPBA is required.

Auxiliary Water Source
The degree of hazard for this type of service is a high health hazard. Premises isolation is required with an approved RPBA. These auxiliary supplies may include, but are not limited to, any natural source such as a well, spring, river, stream, lake, rain water collected from drains, graywater, any source of water other than the City's potable water, etc.

Premises with improperly abandoned wells whether in use or not, shall have a premises isolation whether or not the supply is interconnected with the internal plumbing system or the City of Bonney Lake's. The City of Bonney Lake has no legal authority to require well abandonment, however, Tacoma Pierce County Health Department will be notified of all improperly abandoned wells. Wells abandoned to TPCHD standards do not require premises isolation.

Premises found to be pumping out of Lake Tapps Reservoir for irrigation are unauthorized. Department of Ecology will be notified of unauthorized withdrawal from the reservoir.

Premises found to be interconnected to City water for hydraulic boat lifts will require a RPBA.

Sewage Lift/Pumping Stations
The degree of hazard for this type of service is a high health cross connection hazard. Premises isolation is required with an approved RPBA. All sewage collection and pumping stations (grinder pumps) pose a severe health hazard due to the potential presence of human pathogens in the sewage. Lift/pumping stations can be utility owned or privately owned. All sewage lift/pumping stations are required to be protected by the installation of an approved RPBA.

DESIGNATE AT LEAST ONE PERSON CERTIFIED AS A CCS (ELEMENT 4)

The certified operator in "responsible charge" as the CCS for the City's Program currently resides in the Public Services - Water Operations Division. This individual has the authority and responsibility to develop and implement the Program.

PROCEDURES AND SCHEDULE FOR BACKFLOW PREVENTER INSPECTION, TESTING AND REPAIRS (ELEMENT 5)

There are over 3000 backflow assemblies installed in the City's service area which require annual testing. The due date for testing is typically based on the installation date of the assembly, not when the assembly was last tested. Notification of annual testing is sent out approximately 30 days from test due date. The cross connection control software, TOKAY, maintains an inventory of all the assemblies and test history data. This database also generates custom reports (e.g., DOH Annual Summary Report), annual testing notification letters, and repair letters to customers.

All testing of backflow assemblies must be done by a DOH certified backflow assembly tester (BAT). The testing frequency of backflow assemblies and approved air gaps, used in place of assemblies, are done:

- At initial installation
- After the assembly is repaired or moved
- Immediately after a backflow incident occurs
- Annually after the initial installation
- As required by the CCS, if testing indicates repeated failures

The test procedures used are those specified in the most recent edition of the *Manual of Cross Connection Control*, published by the University of Southern California Foundation for Cross Connection Control and Hydraulic Research, and approved by DOH. There are no alternate test procedures allowed.

Notification Procedures for Backflow Assembly Testing

1. Customers with backflow assemblies shall be required to have these assemblies tested in accordance with the City Cross-Connection Program at the owner's expense.
2. The annual test letter will be sent out thirty days prior to test due date.
3. If there is no response from the annual letter, a FIRST NOTICE will be sent notifying the customer that the City has yet to receive a passing test report. Two weeks are given to come into compliance.
4. If there is no response from the FIRST NOTICE, a SECOND NOTICE will be sent. An additional two weeks are given to come into compliance.
5. If there is no response from the SECOND NOTICE, a FINAL NOTICE is hand delivered by the CCS to the customer. This letter gives the customer an additional and FINAL, two weeks to have

their backflow assembly tested and results of the test sent to the City for compliance. If the customer is not home when the letter is delivered, a door hanger will be left on the customer's front door.

6. If the customer does not deliver test results to the City or make arrangements with the CCS within the final two weeks given in the "Final Notice", the customer's water service will be terminated on the date listed on the notice/door hanger.
7. Customers may have their water service re-instated by delivering a completed test report to the City and payment of a $100 turn on fee. Alternate arrangements for service reinstatement may be granted at the discretion of the City's CCS.

Completed test reports shall be submitted by the BAT to the city within 5 days from the date the test was performed. The BAT is also required to provide a copy of the test report to the customer. The City's notification letters provide a list of certified testers.

BATs can use their own test report form provided it includes the minimum test reporting elements found in **Appendix D**. In addition the City of Bonney Lake requires the detector reading on a double check detector assembly (DCDA) and reduced pressure detector assembly be recorded. If the minimum test reporting elements and the additional requirements of the City is not provided, then the test report will be denied and the City's CCS may require the re-testing of the assembly in their presence. Test results are to be emailed, mailed or faxed to the CCS within 5 days and contain the signature and printed name of the BAT. The results are then hand entered into the TOKAY database. When the field test report shows an assembly has failed its test, the City requires the customer to repair the assembly within 10 days and return it to proper working condition. Certain cases will be determined on a case-by-case basis, depending on the hazard.

Multiple failures of an assembly will result in the property owner having the assembly repaired or replaced by a certified BAT with an assembly appropriate for the degree of hazard.
The City will notify the DOH, Office of Drinking Water when it suspects a test report is falsified, for their follow-up. Retesting may be required, at the City's discretion, on backflow assemblies which have questionable test results or on assemblies which have test report information which has changed (e.g., the serial number, model number, location, or other information does not match information provided at the time of installation) and no prior notice was given.

QUALITY ASSURANCE PROGRAM (ELEMENT 6)

The City uses TOKAY software to track both BAT certification and test kit accuracy verification and calibration information. Test results can't be entered into the system if either one of these has lapsed. BATs are notified immediately if the test report contents are incomplete or incorrect. Correction generally occurs within a week.

The City requires BATs to submit current copies of their DOH certification (or renewal) and test kit verification of accuracy every January. The BAT certification information is checked against information provided from Washington Certification Services. The City also requires minimum test report content, which can be found in **Appendix D** and requires the detector reading on a double check detector assembly (DCDA) and reduced pressure detector assembly be recorded.

RESPONDING TO BACKFLOW INCIDENTS (ELEMENT 7)

In the event of a cross connection incident, which contaminates the City's water supply, or occurs within the premises of a consumer served by the City, the City will notify DOH and the Tacoma-Pierce County Health Department (TPCHD) as soon as possible after the incident, but no later than the end of the next business day. The City's response includes an onsite inspection to determine the extent of the backflow event and depending on the nature of the event, samples may be taken, the water line flushed, or the water turned off to contain the contamination. If the incident occurs after hours, staff will contact DOH and TPCHD using their emergency after hour's phone number (1-877-481-4901). The City will document the details of the backflow incident using DOH's Backflow Incident Report Form found in **Appendix C**. Additional supporting information such as photographs and sampling results (if taken) are attached to the report. Generally there is a follow-up meeting with DOH staff to discuss the incident and actions taken. Also the City will include all backflow incident report(s) as part of the Annual Summary Report (ASR).

PUBLIC EDUCATION (ELEMENT 8)

The City's primary educational effort involves a brochure sent along with the annual testing letter to convey the importance of preventing cross connections and maintain backflow preventions through annual testing. The annual Consumer Confidence Report has also been used to share this information. The City's website is also another avenue used to inform the public about the importance of preventing cross connections.

RECORD KEEPING AND REPORTING (ELEMENT 9)

Original records, such as project submittals, correspondence, plans, etc., are kept on file, either directly with the City's CCS, or if in conjunction with a larger project, on file with the Public Services Department Infrastructure Development Division. Eventually these files are archived according to retention schedules set forth in chapter 40.14 RCW and chapter 246-290 WAC. Records are kept both in paper and electronic format. As mentioned previously, annual test results are emailed, faxed or mailed, and results entered into the TOKAY database. TOKAY is used to track testing, repairing, or installation of an assembly associated with City facilities. Notification and violation letters along with emails are records which are also kept. These records will form the basis of any enforcement action or legal defense by the City. The master list, inventory information, list of approved AVBs, and ASR records are available to DOH upon request.

DOH Annual Summary Report Reporting (ASR)

2001 was the first reporting year of ASR data to DOH. DOH efforts are focused on larger utilities reporting this information (greater than 1,000 connections) and compliance with Table 9 facilities.

Master List

The TOKAY database maintains a master list of service connections of severe, high and low hazards for as long as the hazard exists. It is from this database that the annual notification letters are generated and sent.

Inventory of Backflow Prevention Assemblies

The TOKAY database maintains the inventory of active and inactive assemblies including the exact assembly location, assembly description (type, manufacturer, model, size and serial number), and the assessed degree of hazard, the installation date, history or inspection, tests and repairs, test results and the person performing the inspection. Approved air gaps installed in lieu of approved assemblies will include the same information as that of mechanical backflow prevention assemblies. The City does not allow atmospheric vacuum breakers (AVBs) for irrigation protection, therefore, there is no record keeping associated with AVBs.

Annual Test Report Results Retention
State regulations require retention of all test results for five years.

SPECIAL REQUIREMENTS FOR RECLAIMED WATER (ELEMENT 10)

The degree of hazard for this type of service is a high health hazard. A RPBA will be required on the water service to properties which both potable and reclaimed water are present. Where potable water is being used for makeup water for reclaimed water uses, the potable water supply must be protected with an air gap system.

TANKER TRUCK AND TRAILER REQUIREMENTS

1. Tanker trucks and trailers require a cross-connection inspection.
2. Tanker trucks and trailers will be assessed the same risk as an unapproved auxiliary supply, a high health hazard.
3. An Air Gap or Reduced Pressure Backflow Assembly is the required protection for all tanker trucks and trailers (unless otherwise approved by the City's CCS in writing.)
4. Inspections will be performed by appointment from 8:00am to 3:00pm.

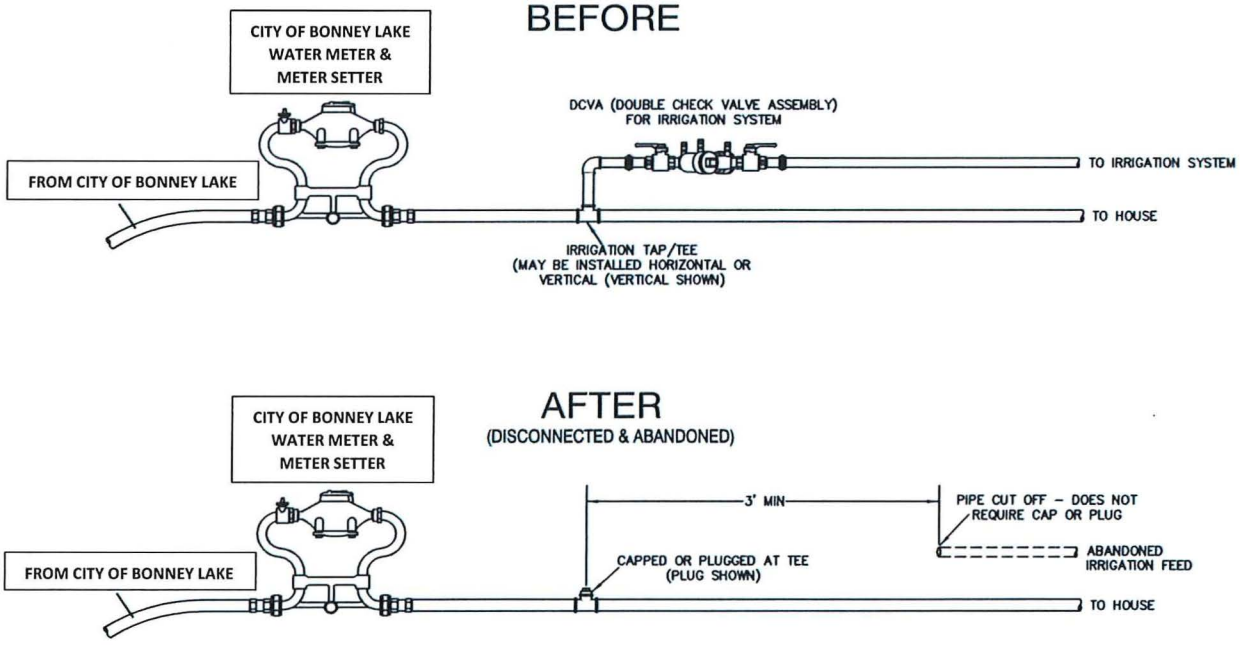
HYDRANT USE REQUIREMENTS

Authorization must be obtained to use a City hydrant. Permits can be obtained at the City of Bonney Lake Public Services building located at 19306 Bonney Lake Blvd. Bonney Lake, WA 98391.

1. Any portable pressure spray or cleaning unit that is connected to a hydrant shall be fitted with a double check valve assembly if it does not contain an approved Air Gap. If chemicals are used, a RPBA must be used in place of the DCVA. A completed test report dating back no longer than 30 days must be submitted at time of hydrant pick up.
2. Flushing storm drains and sanitary sewers from a hydrant is prohibited, unless approved by the CCS. In all cases an Air Gap must separate the potable water piping from the storm or sewer system.
3. Filling tanker trucks and trailers from a hydrant is assessed the same risk as an unapproved auxiliary supply; a high health hazard.
4. When using a hydrant to flush newly constructed water mains prior to the acceptance by the City and purity sample results, a DCVA is required to separate the potable water system from the new water main.

ABANDONMENT PROCEDURES FOR BACKFLOW ASSEMBLIES

In most cases the procedure for properly abandoning a backflow assembly will require the customer to excavate down to the customers water service line where it tees off for the backflow assembly and cap or plug it at the tee. Not all cases will be the same. Some of the cases will be subject to the discretion of the CCS. The backflow assembly must be removed along with three feet of pipe directly after the backflow assembly. Please see the drawing below of a common abandonment.



DO NOT BACKFILL YET

The customer must set up an appointment during normal business hours for the CCS to inspect the abandoned connection. The CCS will take photos of the abandoned connections and will note the files with details of the event in the TOKAY database. At the time the customer must backfill the excavation while the CCS observes the excavation being covered.

**If a reconnection is made a completed, passing test report must be submitted to the Cross Connection Control Specialist within 2 weeks of installation. Reconnection without an approved test report will be considered an illegal cross connection and services may be terminated immediately.*

March 2011
DOH 331-355 Revised

Cross-connection control rules and definitions

Extracts from Group A Public Water Supplies, chapter 246-290 WAC
The full rule is online at http://www.doh.wa.gov/ehp/dw/publications/331-010.pdf

WAC 246-290-010 Definitions.

"Approved air gap" means a physical separation between the free-flowing end of a potable water supply pipeline and the overflow rim of an open or non-pressurized receiving vessel. To be an air gap approved by the department, the separation must be at least:

- Twice the diameter of the supply piping measured vertically from the overflow rim of the receiving vessel, and in no case be less than one inch, when unaffected by vertical surfaces (sidewalls); and:
- Three times the diameter of the supply piping, if the horizontal distance between the supply pipe and a vertical surface (sidewall) is less than or equal to three times the diameter of the supply pipe, or if the horizontal distance between the supply pipe and intersecting vertical surfaces (sidewalls) is less than or equal to four times the diameter of the supply pipe and in no case less than one and one-half inches.

Acronyms

AG	air gap
AVB	atmospheric vacuum breaker
AWWA	American Water Works Association
BAT	backflow assembly tester
CCS	cross-connection control specialist
DCDA	double check detector assembly
DCVA	double check valve assembly
EPA	U.S. Environmental Protection Agency
IAPMO	International Association of Plumbing and Mechanical Officials
PVBA	pressure vacuum breaker assembly
RPBA	reduced pressure backflow assembly
RPDA	reduced pressure detector assembly
SVBA	spill resistant vacuum breaker assembly
UPC	Uniform Plumbing Code
WAC	Washington Administrative Code

"Approved atmospheric vacuum breaker (AVB)" means an AVB of make, model, and size that is approved by the department. AVBs that appear on the current approved backflow prevention assemblies list developed by the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research or that are listed or approved by other nationally recognized testing agencies (such as IAPMO, ANSI, or UL) acceptable to the authority having jurisdiction are considered approved by the department.

"Approved backflow preventer" means an approved air gap, an approved backflow prevention assembly, or an approved AVB. The terms "approved backflow preventer," "approved air gap," or "approved backflow prevention assembly" refer only to those approved backflow preventers relied upon by the purveyor for the protection of the public water system. The requirements of WAC 246-290-490 do not apply to backflow preventers installed for other purposes.

"Approved backflow prevention assembly" means an RPBA, RPDA, DCVA, DCDA, PVBA, or SVBA of make, model, and size that is approved by the department. Assemblies that appear on the current approved backflow prevention assemblies list developed by the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research or other entity acceptable to the department are considered approved by the department.

"Authority having jurisdiction" (formerly known as local administrative authority) means the local official, board, department, or agency authorized to administer and enforce the provisions of the Uniform Plumbing Code as adopted under chapter 19.27 RCW.

"Backflow" means the undesirable reversal of flow of water or other substances through a crossconnection into the public water system or consumer's potable water system.

"Backflow assembly tester" means a person holding a valid BAT certificate issued under chapter 246-292 WAC.

"Backpressure" means a 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.

"Backsiphonage" means backflow due to a reduction in system pressure in the purveyor's distribution system and/or consumer's water system.

"Combination fire protection system" means a fire sprinkler system that:

- Is supplied only by the purveyor's water;
- Does not have a fire department pumper connection; and
- Is constructed of approved potable water piping and materials that serve both the fire sprinkler system and the consumer's potable water system.□

"Consumer" means any person receiving water from a public water system from either the meter, or the point where the service line connects with the distribution system if no meter is present. For purposes of cross-connection control, "consumer" means the owner or operator of a water system connected to a public water system through a service connection.

"Consumer's water system" as used in WAC 246-290-490, means any potable or industrial water system that begins at the point of delivery from the public water system and is located on the consumer's premises. The consumer's water system includes all auxiliary sources of supply, storage, treatment, and distribution facilities, piping, plumbing, and fixtures under the control of the consumer.

"Contaminant" means a substance present in drinking water that may adversely affect the health of the consumer or the aesthetic qualities of the water.

"Council" means the Washington state building code council under WAC 51-04-015(2).

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

"Cross-connection control program" means the administrative and technical procedures the purveyor implements to protect the public water system from contamination via cross-connections as required in WAC 246-290-490.

"Cross-connection control specialist" means a person holding a valid CCS certificate issued under chapter 246-292 WAC.

"Cross-connection control summary report" means the annual report that describes the status of the purveyor's cross-connection control program.

"Department" means the Washington state department of health or health officer as identified in a joint plan of operation under WAC 246-290-030(1).

"Distribution system" means all piping components of a public water system that serve to convey water from transmission mains linked to source, storage and treatment facilities to the consumer excluding individual services.

"Emergency" means an unforeseen event that causes damage or disrupts normal operations and requires immediate action to protect public health and safety.

"Flow-through fire protection system" means a fire sprinkler system that:

- Is supplied only by the purveyor's water;
- Does not have a fire department pumper connection;
- Is constructed of approved potable water piping and materials to which sprinkler heads are attached; and
- Terminates at a connection to a toilet or other plumbing fixture to prevent stagnant water.

"High health cross-connection hazard" means a cross-connection involving any substance that could impair the quality of potable water and create an actual public health hazard through injury, poisoning, or spread of disease.

"In-premises protection" means a method of protecting the health of consumers served by the consumer's potable water system, located within the property lines of the consumer's premises by the installation of an approved air gap or backflow prevention assembly at the point of hazard, which is generally a plumbing fixture.

"Low cross-connection hazard" means a cross-connection that could impair the quality of potable water to a degree that does not create a hazard to the public health, but does adversely and unreasonably affect the aesthetic qualities of potable waters for domestic use.

"Potable" means water suitable for drinking by the public.

"Premises isolation" means a method of protecting a public water system by installation of approved air gaps or approved backflow prevention assemblies at or near the service connection or alternative location acceptable to the purveyor to isolate the consumer's water system from the purveyor's distribution system.

"Public water system" is defined and referenced under WAC 246-290-020.

"Purveyor" means an agency, subdivision of the state, municipal corporation, firm, company, mutual or cooperative association, institution, partnership, or person or other entity owning or operating a public water system. Purveyor also means the authorized agents of these entities.

"Reclaimed water" means effluent derived in any part from sewage from a wastewater treatment system that has been adequately and reliably treated, so that as a result of that treatment, it is suitable for beneficial use or a controlled use that would not otherwise occur, and it is no longer considered wastewater.

"Severe health cross-connection hazard" means a cross-connection which could impair the quality of potable water and create an immediate, severe public health hazard through poisoning or spread of disease by contaminants from radioactive material processing plants, nuclear reactors, or wastewater treatment plants.

"State building code" means the codes adopted by and referenced in chapter 19.27 RCW; the state energy code; and any other codes so designated by the Washington state legislature as adopted and amended by the council.

"Unapproved auxiliary water supply" means a water supply (other than the purveyor's water supply) on or available to the consumer's premises that is either not approved for human consumption by the health agency having jurisdiction or is not otherwise acceptable to the purveyor.

"Uniform Plumbing Code (UPC)" means the code adopted under RCW 19.27.031(4) and implemented under chapter 51-56 WAC. This code establishes statewide minimum plumbing standards applicable within the property lines of the consumer's premises.

"Used water" means water which has left the control of the purveyor.

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 non-community 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 51-56-0600 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 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 crossconnection control within the consumer's water system, i.e., within the property lines of the consumer's premises, lies with the authority having jurisdiction.

(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);

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

(iii) Guidance document: *Cross-Connection Control for Small Water Systems* published by the department.

(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 authority having jurisdiction in all matters concerning cross-connection control. The purveyor shall document and describe the 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 inpremises 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 addressed in subsection (4)(b) of this section, only if the following conditions are met:

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

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

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

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

(E) 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.

(h) The purveyor shall take appropriate corrective action as authorized by the legal instrument required by subsection (3)(b) of this section, when:

(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.

(i) 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.

(j) Except in the event of an emergency, purveyors shall notify the authority having jurisdiction prior to denying or discontinuing water service to a consumer's premises for one or more of the reasons listed in (h) of this subsection.

(k) The purveyor shall prohibit the intentional return of used water to the purveyor's distribution system. Used water includes, 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 connections made on or after April 9, 1999, procedures shall ensure that an initial evaluation is conducted before water service is provided;

(ii) For all other connections, 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 relied upon to protect the public water system are inspected and/or tested (as applicable) under 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 BAT 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. The public education 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 backflow preventers that protect the public water system including:

(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 in a permit issued under 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 as described in Table 8.

TABLE 8

APPROPRIATE METHODS OF BACKFLOW PROTECTION FOR PREMISES ISOLATION

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

(b) Premises isolation requirements.

(i) The purveyor shall ensure that an approved air gap, RPBA, or RPDA is installed for premises isolation for service connections to premises posing a high health crossconnection hazard including, but not limited to, those premises listed in Table 9, except those premises identified as severe in (b)(ii) of this subsection.

(ii) For service connections to premises posing a severe health cross-connection hazard including wastewater treatment plants, radioactive material processing plants, and nuclear reactors, the purveyor shall ensure that either an:

(A) Approved air gap is installed for premises isolation; or

(B) Approved RPBA or RPDA is installed for premises isolation in combination with an inplant approved air gap.

(iii) If the purveyor's CCS determines that no hazard exists for a connection serving premises of the type listed in Table 9, the purveyor may grant an exception to the premises isolation requirements of (b)(i) of this subsection.

(iv) The purveyor shall document, on a case-by-case basis, the reasons for granting an exception under (b)(i) of this subsection and include the documentation in the crossconnection control program annual summary report required in subsection (8) of this section.

TABLE 9

SEVERE* AND 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

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 premises isolation 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) (g)(ii) of this section are met, the purveyor may rely on backflow protection provided at the point of hazard in accordance with WAC 51-56-0600 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 under 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 51-56-0600 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 connections made on or after April 9, 1999, 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 code official administering the State Building Code as defined in chapter 51-04 WAC.

(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 approved backflow preventers commensurate with the degree of hazard as 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, in-line testing (as applicable), and repair 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 the 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 connections made on or after April 9, 1999, 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 the requirements of 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 crossconnection hazard; or

(B) In accordance with an alternate schedule acceptable to the purveyor.

(iii) For existing connections where the purveyor identifies a low 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) For backflow preventers that protect the public water system, 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 that protect the public water system are conducted:

(i) When any of the following occur:

(A) Upon installation, repair, reinstallation, or relocation of an assembly;

(B) Upon installation or replumbing of an air gap;

(C) After a backflow incident involving the assembly or air gap; and

(ii) Annually thereafter, unless the purveyor requires more frequent testing for high hazard premises or for assemblies that repeatedly fail.

(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, authority having jurisdiction, 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 contaminating the public water system on a backflow incident report form available from the department; 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.

For more information

Our publications are online at https://fortress.wa.gov/doh/eh/dw/publications/publications.cfm

Call the Office of Drinking Water Cross-Connection Control Program staff at (360) 236-3133 or toll-free (800) 521-0323.

PUBLIC HEALTH
ALWAYS WORKING FOR A SAFER AND
HEALTHIER WASHINGTON

If you need this publication in alternate format, call (800) 525-0127. For TTY/TDD, call (800) 833-6388.

Article IV. Water Service Cross-Connections

13.04.170 Inspection and right of access.

Failure to comply with the rules and regulations contained in this section or failure to permit entry upon the premises by authorized City personnel for the purposes of inspection and/or testing shall result in the water service being terminated to any premises, water user, or property owner.

13.04.180 Responsibility of customer.

Backflow prevention assembly procurement and installation shall be the customer's responsibility and shall be installed at the customer's side of the service connection or within any premises wherein the City of Bonney Lake certified cross-connection control specialist determines that the nature and extent of activity on the premises, or the materials used in connection with the activities, or materials stored on the premises will present a dangerous hazard to health should a cross-connection exist at the time the backflow prevention assembly is required to be installed or in the future. These hazards may include those found in the WAC 246.290.490 and the City of Bonney Lake Backflow Prevention and Control Program.

The customer is responsible for backflow assembly testing upon initial installation and annually thereafter. The customer is required to provide proof of installation and proof of a passing test to the cross-connection control specialist. Completed test reports shall be returned to the City of Bonney Lake within 30 days after the receipt of the yearly test notification. Tests and inspections may be required on a more frequent basis at the discretion of the cross-connection control specialist.

The customer is responsible for the proper operation of approved backflow assemblies required for the control of cross-connections between the premise and the public water system, or within the premises as required by the authority having jurisdiction, as the case may be.

All new service connections and those that are remodeled which are used for commercial purposes will be protected with a RPBA or RPDA located directly after the meter. Existing commercial use customers will not be required to retrofit providing that cross-connection protection is adequate and the premises is not remodeled. Premise isolation will be at the discretion of the cross-connection control specialist when a change of tenant or ownership occurs.

Water customers are required to comply with the Uniform Plumbing Code as it pertains to cross-connections and to take all measures necessary to prevent the contamination of the consumer's water system or the public water system as directed by authority having jurisdiction.

13.04.190 Prohibited. SHARE

The installation or maintenance of any uncontrolled cross-connection which could endanger the water quality of the City's public water system is prohibited. Any such cross-connections now existing or hereafter installed is declared unlawful and shall be abated immediately. Abatement includes, but is not limited to, the termination of water service or the installation of an approved backflow assembly equal to the degree of hazard at the customer's expense as determined by the City.

13.04.200 Citation of specific standards. SHARE

The provisions of WAC 246-290-490, as now or hereafter amended relating to cross-connection control, elimination, and the use of backflow prevention assemblies when such are considered to be advisable or required are hereby adopted and made part of this chapter. All provisions of the Washington State Administrative Code may be executed and applied by the Public Services Department in determining when cross-connections are prohibited and when backflow prevention assemblies shall be required and tested under the City's cross-connection control program. A copy of such provisions are on file in the Public Works Division.

13.04.210 Backflow devices. SHARE

Approved backflow prevention assemblies are those which appear on the Washington State Department of Health's "Approved Assemblies List", developed by the University of Southern California Foundation for Cross Connection Control and hydraulic Research.

Article V. Enforcement

13.04.220 Violation – Penalty. SHARE

Any person, firm or corporation willfully violating any of the provisions of this chapter is guilty of a misdemeanor. Said person, firm or corporation shall also be subject to the provisions of RCW 80.28.240 providing for civil damages..

Water service to any property, landowner, or water user is contingent upon compliance with all legal requirements pertaining to such water service. Service may be terminated to any premises, water user, or property owner for failure to comply with such requirements and terminated services will not be re-established until the Public Services Director or their designee are satisfied that there has been compliance.

Washington State Department of Health
Division of Environmental Health
Office of Drinking Water

Cross-Connection Control Program

BACKFLOW INCIDENT REPORT FORM

Note: *use this form to comply with WAC 246-290-490(8)(g).*

Part 1: Public Water System (PWS) Information

PWS ID:	PWS Name:	County:

Part 2: Backflow Incident Information

A. Incident Identification

Incident date:	Time of incident:	Incident ID (DOH use):

B. Information on Premises where Backflow Originated

Name of premises:		
Premises physical address:		
City: ,WA		Zip:
Premises type: non-residential ☐ residential ☐		
Premises category/description (Table 9 category*, if applicable):		
Most recent hazard evaluation prior to incident (mm/dd/yyyy): None ☐		
PWS's assessed hazard level:	*Premises isolation* required by PWS? Yes ☐ No ☐	
Type of backflow preventer required by PWS:	PWS relies on *in-premises protection*? Yes ☐ No ☐	
Other hazard evaluation information:		

*See WAC 246-290-490(4)(b)(i).

C. Method of Discovery of Backflow

How the backflow was discovered (check all that apply):	Direct observation ..... ☐ Meter running backwards ..... ☐ Water use decrease ..... ☐ Disinfectant residual monitoring ... ☐ Water quality monitoring ..... ☐	Water quality complaint ..... ☐ Illness/injury complaint ..... ☐ Result of Investigation ..... ☐ Other (Describe): ☐
Incident reported to the public water system by:	PWS Personnel ☐ Premises Owner/Occupant ☐ Other PWS Customer ☐ Backflow Assembly Tester ☐ Other (Specify):	

D. Contaminant Information

Contaminant type (check all that apply):	Microbiological ☐ Chemical ☐ Physical ☐
Describe contaminant (for example, the organism name, chemical, etc.). Please attach lab analysis or MSDS, if available.	

E. Extent and Effects of Contamination

Estimated extent of contamination:	Contained within premises ☐ Entered PWS distribution system ☐
Estimated number of connections affected:	Residential Non-residential
Estimated population affected or at risk:	Residential Non-residential
Number water quality complaints:	Describe water quality complaints:
Number illnesses reported:	Describe illnesses/irritation (specific illnesses, if known):
Number physical injuries(e.g. burns) or irritation(e.g. rashes) cases reported:	

Part 3: Cross-Connection Control Information at Backflow Site

A. Source of Contaminant

Source of contaminant or fixture type (check all that apply):	Air conditioner/heat exchanger ..... ☐ Auxiliary water supply ..... ☐ Beverage machine ..... ☐ Boiler, hot water system ..... ☐ Chemical injector/aspirator ..... ☐ Fire protection system ..... ☐ Irrigation system (PWS supplied) ..... ☐	Industrial/commercial process water/fluid..... ☐ Medical/dental fixture ..... ☐ Reclaimed water system..... ☐ Swimming pools, spa ..... ☐ Wastewater (sewage) system ..... ☐ Other (specify): ..... ☐ .....

B. Distribution System Pressure Conditions in the Vicinity of the Backflow Incident

Type of backflow:	Backsiphonage ☐ Backpressure ☐	**Typical distribution system pressure in vicinity of incident** (if range, enter lower end of range)**:** psi
Main/pressure status at time of incident (check all that apply):	Normal ..... ☐ Main break ..... ☐ Fire fighting ..... ☐ Other high usage ..... ☐ Power outage ..... ☐	Source/plant outage ..... ☐ Scheduled water shutoff by PWS ..... ☐ Unscheduled/emergency shutoff ..... ☐ Unknown ..... ☐ Other (specify) ☐

Describe causes and circumstances leading to backflow:

C. Backflow Preventer Information/Installation/Approval Status at Site of Backflow

Complete the tables in C and D for the ***premises isolation*** preventer for either of the following situations:

- If a premises isolation backflow preventer is installed ***and*** the contaminant entered the PWS distribution system.
- If the premises isolation assembly is the only backflow preventer at the site.

In all other cases, complete tables in C and D for the ***in-premises*** backflow preventer installed at the fixture. If more than one backflow preventer was involved in the backflow incident, copy tables C and D and complete them for the additional preventer(s).

If no backflow preventer was installed at the time the incident occurred, check this box ☐ and go directly to Part 4. Don't fill out the tables below (in C and D).

Backflow preventer information:	Type installed:	Installed for:
	Make:	Model: Size:
	Serial number:	Date installed:
Installation status (check all that apply):	Properly installed/plumbed ☐ Improperly installed/plumbed ☐	Improperly protected bypass present ☐ If so, explain:
Commensurate with assessed degree of hazard?	Yes ☐ No ☐	If not, explain:
DOH/USC-approved at time of backflow incident?	Yes ☐ No ☐	If not, approved when installed? Yes ☐ No ☐

D. Backflow Preventer Inspection/Testing Information at Site of Backflow

Most recent inspection/test information *prior* to backflow incident. Attach test report(s), if available.	No test report on record ..... ☐	
	Date tested/inspected: Passed test/inspection *without* repairs ..... ☐ Failed initial test/inspection, passed *after* repair ..... ☐ Failed test/inspection, no repairs made ..... ☐	
Inspection/test information *after* backflow incident [per WAC 246-290-490(7)(b)]. Attach test report.	Not tested/inspected ..... ☐	
	Date tested/inspected: Passed test/inspection *without* repairs ..... ☐ Failed initial test/inspection, passed *after* repair..... ☐ Failed test/inspection, no repairs made..... ☐	
Preventer failure information , if applicable (check all that apply):	Fouled check ..... ☐ Debris ..... ☐ Weather-related damage ..... ☐	Damaged seat .... ☐ Other: ☐
If preventer failed inspection/test, did failure allow backflow?	Yes ☐ No ☐ If yes, explain:	

Part 4: Corrective Action/Notifications

Action *taken* by PWS to restore water quality (check all that apply):	None ..... ☐ Flushed/cleaned mains ..... ☐ Flushed/cleaned plumbing... ☐ Disinfected mains ..... ☐ Disinfected plumbing ..... ☐	Other treatment (describe): ☐ Replaced mains ..... ☐ Replaced plumbing ..... ☐ Other: ☐
Action *ordered* by PWS to correct cross-connection (check all that apply):	None ..... ☐ Eliminate cross-connection... ☐ Remove by-pass ..... ☐ Install **new** preventer ... ☐ For *premises isolation* ☐ For *fixture protection* ☐	Change **existing** preventer ☐ Repair/replumb ..... ☐ Reinstall correctly ..... ☐ Replace with same type ☐ Upgrade type ..... ☐ Other: ☐
Action ordered accomplished?	Yes ☐ Date: No ☐	If no, explain:
Agency notifications per WAC 246-290-490(8)(f) (check all that apply):	DOH ☐ Local Health Agency ☐ Local Adm. Authority ☐ Issued by end of next business day:	
Notifications of consumers in area of incident (check all that apply):	Population at risk ☐ Public notification (PN per DOH regs.) ☐ Boil Water Advisory ☐ Other (describe):	
Other enforcement/corrective actions (describe):		

Part 5: Cost of Backflow Incident (optional)

Item	PWS Personnel Hours Expended	Cost to PWS ($)	Cost to Premises Owner ($)
Investigation			
Restoration of water quality			
Correction of cross-connection situation			
Litigation and/or settlement			
Other not included in above			

Part 6: Further Information/Documentation

Additional information about this incident such as pictures, sketches, newspaper/journal articles, water quality analyses, epidemiological reports, etc. would be helpful. Information may be in electronic form or hard copy.

Part 7: Form Completion Information

Note: *Form should be completed by a person currently certified as a Cross-Connection Control Specialist.*

I certify that the information provided in this Backflow Incident Report is complete and accurate to the best of my knowledge.		
CCC Program Mgr. Name (print):		Title:
Signature:	CCS Cert. Number:	Date:
Phone:	E-mail:	
I have reviewed this report and certify that the information is complete and accurate to the best of my knowledge.		
PWS Mgr./Representative Name (Print):		Title:
Signature:	Op. Cert. Number:	Date:

Please send completed backflow incident form:

By mail to:

Washington State Department of Health
Office of Drinking Water – CCC Program Manager
P O Box 47822
Olympia, WA 98504-7822

By email to: terri.notestine@doh.wa.gov or cccprogram@doh.wa.gov

Please send questions, comments, or suggestions about this form to us at the address above or e-mail them to cccprogram@doh.wa.gov

If you need this publication in an alternate format, call (800) 525-0127. For TTY/TDD, call (800) 833-6388.

BONNEY Lake

BACKFLOW PREVENTION ASSEMBLY TEST REPORT

RETURN TO:
Water Quality Section
19306 Bonney Lake Blvd.
P.O. Box 7380
Bonney Lake, WA 98391
Phone: 253-447-3227
Fax: 253-447-4330
Email: crossconnect@ci.bonney-lake.wa.us

EDEN ACCOUNT # _____

NAME OF PREMISE _____ COMMERCIAL ☐ RESIDENTIAL ☐

SERVICE ADDRESS _____ CITY _____ ZIP _____

CUSTOMER NAME _____ PHONE ( ) _____

LOCATION OF ASSEMBLY _____ USC APPROVED ☐

HAZARD TYPE _____ DCVA ☐ RPBA ☐ PVBA ☐ OTHER _____

NEW INSTALL ☐ EXISTING ☐ REPLACEMENT ☐ OLD SER. # ☐ PROPER INSTALL YES ☐ NO ☐

MAKE OF ASSEMBLY _____ MODEL _____ SERIAL # _____ SIZE _____

INITIAL TEST	**DCVA / RPBA CHECK VALVE NO. 1**	**DCVA / RPBA CHECK VALVE NO. 2**	**RPBA**	**PVBA / SVBA**
☐ **PASSED** ☐ **FAILED**	**CLOSED** ☐ **LEAKED** ☐	**CLOSED** ☐ **LEAKED** ☐	**OPENED AT** _____ **PSID** **#1 CHECK** _____ **PSID** **AIR GAP OK?** _____	**AIR INLET** **OPENED AT** _____ **PSID** **DID NOT OPEN** ☐ **CONTINUED TO FULLY OPEN?** _____
NEW PARTS AND REPARIS	**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: Supply Pipe Diameter _____" Separation _____" PASS ☐ FAIL ☐

REMARKS: _____

LINE PSID _____ DETECTOR METER READING: _____ CONFINED SPACE: YES ☐ NO ☐

TESTERS SIGNATURE: _____ CERT. # _____ DATE ____/____/____

TESTERS NAME PRINTED: _____ TESTERS PHONE # ( ) _____

REPAIRED BY: _____ DATE ____/____/____

AL TEST BY: _____ CERT. # _____ DATE ____/____/____

CALIBRATION DATE ____/____/____ SERIAL. # _____ MODEL _____

I CERTIFY THAT THIS REPORT IS ACCURATE AND I HAVE USED WAC 246-290-490 APPROVED TEST METHODS AND EQUIPMENT

Appendix E – Tanker Inspection / Hydrant Meter Test Report Form

19306 Bonney Lake Blvd. – Bonney Lake, WA 98391

Bonney Lake Public Services
Tanker Inspection Report

Permit Number: _____ Issued Date: ____/____/___

Business Name: _____ Business Phone _____

Contact Name:_____ Contact Phone:_____

Address:_____ City:_____ State:_____ Zip:_____

Vehicle Make:_____ License #:_____ State:_____

Tank Type:_____ Tank Capacity (gallons):_____ ***Photo ? YES NO***

Address for Job Site: _____ Hydrant Meter #:_____

Start Meter Read: _____ End Meter Read: _____

(To be completed by Cross-Connection Control Specialist Only)

Required minimum Air Gap provided? YES NO

Supply Pipe Diameter _____" Separation _____"

Method of filling inspected and approved YES NO

Attach copy of test report for approved backflow assembly used in lieu of Air Gap test (if applicable)

Additional Comments: _____

Inspected By: Cross-Connection Control Specialist: _____ Date:____/____/____

Responsible Party Signature: _____ Date:____/_____/_____

Conditions:

This inspection and permit are only good for the truck/hydrant meter listed on this report. Hydrant meters are only to be used with City of Bonney Lake hydrants.

Permits for hydrant meters are issued at The City of Bonney Lake Public Services Building
19306 Bonney Lake Blvd. Bonney Lake, WA 98391

The City of Bonney Lake's backflow prevention program is based on WAC 246-290-490 and cross connection control program. All connections to fire hydrants for construction related purposes shall have, as a minimum, a Washington State Health Department approved double check valve assemblies which are in good working order. A higher class of back flow prevention assembly may be required if the Cross Connection Control Specialist determines that a higher potential exists. The cross connection control assembly chosen for installation must be on the most recent Washington State Health Department approval listing. All installations must meet manufacturer's specifications, and the minimum standards of the uniform plumbing code. No physical connections from the public potable water supply to the sanitary sewer system will be permitted. I hereby authorize City representative(s) to inspect my water carrier/container, the hydrant use permit, and hook-up and/or backflow prevention assemblies. I understand that the permit must be kept in truck(s) and site at all times. It is a violation of Bonney Lake Municipal Code to connect to any fire hydrant without a permit. I represent the project manager, whom accepts financial responsibility for ensuring that all the conditions of this permit are met, as well as for all damages resulting from the use of the hydrant, meter, or make-up assembly. ***I understand that failure to meet the compliance requirements will result in the forfeiture of all use deposits, and confiscation of all meter-make up assemblies associated with the project. This includes failure to report monthly usages.***

Cross Connection Control Level of Protection

References:

- City Of Bonney Lake Engineering Design and Development Standards, most recent revisions
- Washington Administrative Code 246-290-490
- 2015 (or most current) Uniform Plumbing Code
- Washington State List of Approved Backflow Assemblies, DOH publication 331-137
- The most current USC (University of Southern California) List of Approved Backflow Assemblies
- USC/FCCCHR (University of Southern California – Foundation for Cross Connection Control and Hydraulic Research) 10th Edition Cross Connection Manual
- PNW Cross Connection Control Manual 6th Edition

A. Determine the degree of hazard.

1. Severe Health Hazard: A cross connection which could impair the quality of potable water and create an immediate, severe public health hazard through poisoning or spread of disease by contaminants from radioactive material, processing plants, nuclear reactors, or wastewater treatment plants.

2. High Health Hazard: A cross connection involving any substance that could impair the quality of potable water and create an actual public health hazard through injury, poisoning, or spread of disease. An example is reclaimed water which is water, as a result of treatment of wastewater, is suitable for a direct beneficial use or a controlled use that would not otherwise occur such as settling ponds for aquifer recharge or irrigation use. Regulations prohibit overspray, runoff and ponding of reclaimed water used for irrigation. Reclaimed water is NOT safe for human consumption.

3. Low Hazard: A cross connection that could impair the quality of potable water to a degree that does not create a hazard to the public health, but does adversely and unreasonably affect the aesthetic qualities of potable waters for domestic use.

B. Determine proper backflow protection based on the degree of hazard.

Hazard	Protection
Severe Health	AG/RP (air gap or reduced pressure backflow assembly)
High Health	RP (reduced pressure backflow assembly)
Low	DC (double check backflow assembly)

Application

1. Backflow protection for all commercial structures new or remodeled shall be a Reduced Pressure Backflow Assembly for premise isolation. (See City standards for installation requirements). This assembly shall be installed prior to the City of Bonney Lake releasing water meter.

2. Residential Irrigation systems shall be required to install a Double Check Valve Assembly (see City standards for installation requirements).

3. All Class 1,2,3,4 Fire Sprinkler Systems shall be required to install a Double Check Detector Assembly (see City standards and East Pierce Fire and Rescue Department installation requirements). This is for all sprinkler systems that do NOT have an injection system or an auxiliary water source.

4. All Class 5 & 6 Fire Sprinkler Systems shall be required to install a Reduced Pressure Detector Assembly (see City standards and East Pierce Fire and Rescue Department installation requirements). This is required for any system with injection or an auxiliary water source.

5. The order of events for installation of backflow assemblies is:
   - Contractor or Inspector calls for inspection.
   - City CCS determines type of hazard.
   - City CCS selects and inspects proper backflow assembly commensurate with degree of hazard.
   - City CCS inspects for proper installation (orientation, approval, hazard).
   - Meter is released upon proper installation. CCS is contacted for all irrigation & commercial meter sets by Public Services Lead for Cross Connection Inspection prior to setting meter & turning on water.
   - Assembly is tested by a certified backflow assembly tester.
   - CCS inspection portion is signed off.

6. What to do if assembly is not correct:
   - Contact inspector or contractor.
   - Turn off & lock off service.
   - Inform Public Services Lead & Utility Billing so meter does not get set until correction has been completed.
   - When in doubt take pictures.

7. Documentation:
   - Record assembly information such as Make, Model, Serial#, Size, Location and Hazard.
   - Date & Time.
   - Contact Person or Company.
   - Note any discrepancies.

8. New Construction:
   - All new main construction requires a double check valve to fill & flush. This backflow assembly shall pass the certification test (certification test is initial backflow assembly test using Washington State Testing Procedures done by certified backflow assembly tester prior to use and shall remain in place if in line with the new main until a passing bacteriological test is confirmed by the testing lab.
   - No new main shall be accepted for use without a passing bacteriological test from an approved laboratory.