

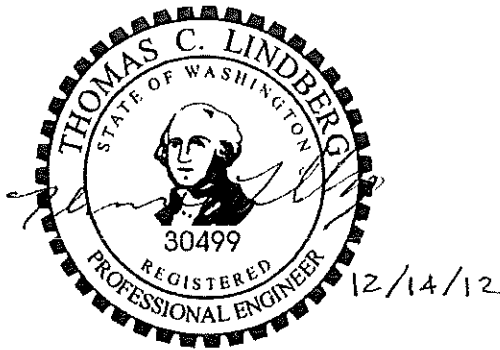


Cross-Connection Control Program

*Safeguarding
Shoreline's Water*

SHORELINE WATER DISTRICT
CROSS-CONNECTION CONTROL PROGRAM

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**Shoreline Water District
Cross-Connection Control Program
TABLE OF CONTENTS**

INTRODUCTION	1
CCC Program Purpose and Scope	2
District Authority	2
District Responsibility	2
District Enforcement Actions	2
CROSS-CONNECTION CONTROL PROGRAM	3
CCC Program Goals and Objectives.....	3
Identification of Existing Cross-Connections	3
Evaluation of CCC Program Elements	4
Element 1: Cross-Connection Control Code	4
Element 2: Evaluation of Service Connections	5
Element 3: Cross-Connection Control and Elimination.....	11
Element 4: Personnel Certification.....	13
Element 5: Backflow Prevention Assembly Inspection and Testing	13
Element 6: Testing Quality Control Assurance Program	14
Element 7: Backflow Incident Response.....	15
Element 8: Public Education	16
Element 9: Record Keeping	16
Element 10: Reclaimed Water Requirements.....	17
PROGRAM IMPLEMENTATION AND PLANNED IMPROVEMENTS.....	17

LIST OF TABLES

<u>No.</u>	<u>Title</u>	<u>Page</u>
1	Backflow Prevention Assembly Abbreviations.....	4
2	Summary of Existing Backflow Prevention Assemblies.....	4
3	Premises Requiring Mandatory Service Isolation by AG and/or RPBA.....	8
4	Backflow Prevention Requirements and Recommendations	9
5	Backflow Prevention Assemblies for Minimum Protection.....	9
6	District Personnel Certifications	13

APPENDICES

- A. List of Installed Backflow Prevention Assemblies
- B. List of Non-residential Service Connections
- C. Cross-Connection Control Program Implementation Schedule
- D. Cross-Connection Control Activities Annual Summary Report
- E. Cross-Connection Control Program Summary Report
- F. Sample Shoreline Water District Letters and Testing Forms for Customer Distribution
- G. Water Usage Questionnaires for New Service Connections
- H. Sample Backflow Incident Report Form – from Department of Health
- I. King County Certified Backflow Assembly Testers
- J. PNWS-AWWA Cross-Connection Control Brochures

SHORELINE WATER DISTRICT

Cross-Connection Control Program

INTRODUCTION

The Shoreline Water District (District) cross-connection control (CCC) program is a proactive and ongoing effort of the District to protect the health of its customers by preventing contamination through cross-connection of the drinking water supplied throughout the distribution system. A cross-connection is any physical connection, actual or potential, between the water system and any source of non-potable substance that could contaminate or pollute the potable water supply by backflow. All public water systems in Washington State are required to implement a cross-connection control program and include the program document in the system's water system plan. The State mandate for a CCC program and the required elements of a CCC program are contained in *WAC 246-290-490 Cross-Connection Control*. The following are the current minimum required elements of a CCC program.

1. Adopt a local ordinance, resolution or code that establishes the purveyor's legal authority, describes operating policies and the corrective actions of a CCC program.
2. 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.
3. Develop and implement procedures and schedules that eliminate cross-connections whenever possible or control cross-connections by installation of approved backflow preventers and ensure approved backflow preventers are properly installed.
4. Ensure that personnel, including one certified Cross-Connection Control Specialist (CCS), are provided to develop and implement the CCC program.
5. Develop and implement procedures to ensure approved backflow preventers relied upon to protect the public water system are properly inspected and tested.
6. Develop and implement a backflow prevention assembly testing quality control assurance program.
7. Develop and implement procedures for responding to backflow incidents.
8. Include information on the cross-connection control program in customer education materials.
9. Develop and maintain CCC program records.
10. Meet any additional CCC requirements imposed by the Department of Health if reclaimed water is distributed or received in the water service area.

CCC Program Purpose and Scope

This document establishes minimum standards for the District to protect the public water supply from possible contamination from backflow. This document also describes minimum CCC program operating policies, provides guidelines for installation, testing and maintenance of approved backflow prevention assemblies. In addition, permitting and inspection requirements for existing and new backflow prevention assemblies are described. The document concludes with program improvements that the District is planning to implement.

District Authority

The Federal Safe Drinking Water Act and the statutes of the State of Washington Title 43 RCW require purveyors to protect the public water systems from contamination. In addition, Washington Administrative Code establishes CCC program requirements for the State under *WAC 246-290-490*. In Washington State, the Department of Health (DOH) is the lead agency for the development and administration of the State's CCC program. The District has adopted cross-connection control code under the *Shoreline Water District Code (SWDC) Title 6: Facilities, Cross Connection Control Program*. This code establishes the District's authority in implementing a cross-connection program and taking corrective actions, as necessary, to prevent cross-connections.

District Responsibility

The District is responsible for protecting its drinking water from contamination, due to backflow of pollutants through water service connections. If the District determines that a backflow prevention assembly is necessary at a customer's premise, the District will notify the customer to install an approved backflow assembly. The list of approved backflow prevention assemblies for the state of Washington is available through the DOH; the list is updated annually. Installation of said backflow assembly shall be a condition of continued water service from the District. Upon installation, the customer shall arrange for inspection and testing of said assembly. The customer will be responsible for all applicable testing and inspection fees.

District Enforcement Actions

Any person, firm, or corporation who violates any of the provisions of this document or *SWDC Title 6: Facilities, Cross Connection Control Program* may be punished in accordance with the code. Any person, firm or corporation who violates any provisions and requirements of this document shall be subject to discontinuance of water service to the premise. Discontinuance of water service to the premise shall remain in effect until corrective action, as required by the District, is completed, including applicable testing and approvals.

CROSS-CONNECTION CONTROL PROGRAM

The District has implemented much of the required elements of the CCC program as listed above. This section describes the District's current CCC program and identifies areas to be addressed in order to comply with the current CCC program requirements. The District is committed to protecting the public water supply from contamination by eliminating potential cross-connections. The District's CCC program that follows includes a statement of its goals and objectives, the evaluation of CCC elements, program implementation, and planned program improvements.

CCC Program Goals and Objectives

The goals and objectives of the District's CCC program consist of:

- Preventing contamination of the public water supply by eliminating or properly protecting actual or potential cross-connections;
- Taking inventory of all existing and potential cross-connections; and
- Maintaining the inspection and testing program for all backflow prevention assemblies. Inspections shall occur during backflow prevention assembly installations, repairs or relocations, after a backflow incident involving the assembly, and at a minimum annually. The District will notify customers when testing is due.

The District will achieve these goals and objectives through the implementation of the CCC program that follows.

Identification of Existing Cross-Connections

The District currently does not have a formal process for identifying existing cross-connections; however, a process is identified in this document in Element 2: Evaluation of Service Connections. The District maintains a database that documents the existing backflow prevention assemblies within the system and applicable annual testing data.

Table 1 lists standard abbreviations for backflow prevention assemblies and the corresponding level of protection that each provides, with "1" being the highest protection and "5" being the lowest protection. The abbreviations will be used in the tables that follow.

Table 1
Backflow Prevention Assembly Abbreviations

Abbreviation	Description	Level of Protection
AG	Air Gap	1
RPBA	Reduced Pressure Backflow Assembly	2
RPDA	Reduced Pressure Detector Assembly	2
DCVA	Double Check Valve Assembly	3
DCDA	Double Check Detector Assembly	3
PVBA	Pressure Vacuum Breaker Assembly	4
SVBA	Spill-Resistant Pressure Vacuum Breaker	4
AVB	Atmospheric Vacuum Breaker	5

Table 2 summarizes the total number of each type of backflow prevention assembly protecting the District's distribution system as of June 2012.

Table 2
Summary of Existing Backflow Prevention Assemblies

Type of Assembly	Total Quantity
AG	4
RPBA	97
RPDA	1
DCVA	218
DCDA	36
PVBA	0
SVBA	0
AVB	0
Total	356

Evaluation of CCC Program Elements

The District is required to develop and implement a cross-connection control program in accordance with *WAC 246-290-490*. All required elements of a local CCC program must be documented and included in the District's Comprehensive Water System Plan. The evaluation of these CCC program elements, current level of implementation and future planned implementation are presented below.

Element 1: Cross-Connection Control Code

The purveyor is required to "adopt a local ordinance, resolution, code, bylaw, or other written legal instrument" outlining the purveyor's CCC program. In addition, this document must establish the purveyor's legal authority to implement a CCC program. Operating policies, technical provisions and corrective actions of the CCC program must also be addressed in the legal document.

The District has formally adopted code for CCC under SWDC Title 6: Facilities, Cross Connection Control Program. The code establishes the District's authority for implementing the CCC program, addresses the regulations in the WAC 246-290 and references the current CCC program contained in this document.

Element 2: Evaluation of Service Connections

Purveyors must develop and implement procedures for evaluating existing and new service connections to assess the risk of connecting the consumer's premises to the District's public water system. Purveyors are required to notify the consumer within a reasonable time frame of the evaluation results. New connections are required to be evaluated prior to providing water service. Existing connections shall have an initial inspection as well as a re-assessment based on a schedule acceptable to DOH.

Currently, the District is made aware of new service connections and changes in use through the Request for Fire Flow Analysis/Certificate of Water Availability application process in coordination with the Cities of Shoreline and Lake Forest Park. The premise risk assessment is performed during the application review and, if necessary, a backflow prevention assembly is required. The District then informs the customer of the type of assembly to be installed. To improve the evaluation process for service connections, the District will implement the following methodical approach:

- 1. When a future or existing customer applies for a Certificate of Water Availability/Request for Fire Flow Analysis they must include a completed water usage questionnaire, unless the customer is applying for a plat which is undeveloped and has no specific planned development, as determined by the District. The application and questionnaire will be reviewed by the District, during which the level of risk associated with the premise will be determined. The District will classify the premise as a high, medium, or low health hazard then specify the required backflow prevention assembly, if necessary. The District may request additional information, such as detailed plans and specifications, if necessary to appropriately classify the premise.*
- 2. The following is evaluated during the District's review:*
 - a. The actual or potential health hazard or contamination risk to the District's water system.*
 - b. The intricacy of any existing and/or proposed plumbing arrangement.*
 - c. The likelihood of cross-connections within the premise.*
 - d. Cross-connections which may be acceptable risks.*
 - e. Whether complete premise isolation or within premise protection is required.*
 - f. The actual or potential use and/or availability of any unapproved auxiliary water supply system within the premise.*
 - g. Any storage or handling of dangerous material or toxic substance which could be a health hazard if it entered into the system.*

After the review, the District will inform the property owner/authorized agent in writing if a cross-connection exists and will offer technical guidance for eliminating or controlling the cross-connection. If the District determines that the premise is a potential high-health risk, such as the premises listed in Table 3, then the appropriate approved backflow prevention assembly shall be installed for premise isolation, regardless of any in-premise protection.

- 3. A District Cross-Connection Control Specialist (CCS) will inspect any new building, structure, or ground installation for potential premise isolation during the construction phase. Once the inspection is completed, but prior to establishing the water service connection, the District CCS will inform the property owner/authorized agent that the inspection has been performed and recommend any additional backflow protection that is required. The District CCS will advise the property owner/authorized agent that it's their responsibility to have a current Washington State Backflow Assembly Tester (BAT) test the backflow prevention assembly prior to utilizing the water service, and that annual testing will be required. The District CCS will attend and witness the initial test of all backflow prevention assemblies installed within the jurisdiction. It will be the property owner/authorized agent's responsibility to coordinate with the District CCS to schedule an appointment to attend and witness the initial backflow prevention assembly test (24 hour advance notice required).*

The District has not performed a complete system-wide risk assessment of all existing service connections; but they will implement a program that evaluates all high health hazard premises, all commercial and/or industrial premises, all premises with fire systems, all premises with water systems utilizing booster pumps, and all premises with buildings 30 feet or more in height to insure premise isolation protection has been provided at the water service connection. Potential high-risk cross-connection premises will be evaluated first, followed by medium-risk then low-risk premises. Premises brought to the District's attention, which upon review are determined deficient in the required premise isolation backflow prevention, will be brought into current compliance without regard to any established priority list. The District will implement the following methodical approach to complete the initial evaluation:

- 1. Develop a priority list utilizing existing water service records, telephone directory yellow pages, and any other beneficial resources.*
- 2. Begin evaluating service connections, starting with highest health hazard risk on the previously developed priority list. The District CCS will determine the actual or potential health hazard or contamination risk to the District's water system.*
- 3. After the risk evaluation, the District CCS will determine if premise isolation backflow prevention is necessary and what level of protection is required for the degree of hazard.*
- 4. The District CCS will prepare a written report to file in the record keeping system at the District that will include, at a minimum:*
 - a. A list of all cross-connections, the location, and any methods of elimination or control.*
 - b. Any applicable drawings, sketches, blueprints, or photos.*

- c. Summary of findings, recommendations and requirements for corrective actions, and a time in which corrective action must be completed.*
- 5. The District CCS will notify the customer via letter of the premise isolation backflow prevention requirements, including the necessary corrective actions and due date for completion. The District will keep a copy of all correspondence on file.*
 - 6. The District CCS will follow-up with the customer on the completion due date to determine if the corrections have been performed. If the corrections are completed, the District CCS will inspect all backflow prevention assemblies which connect the premise property to the District's water service. If the corrections are in progress, but require more time for completion, a new due date may be set by the District CCS. If the corrections have been neglected, the District will exercise the appropriate authority, per WAC 246-290-490(2)(h-j), SWDC Title 6: Facilities, Cross Connection Control Program, and the District Cross-Connection Control Program, which may include, but is not limited to, denying or discontinuing water service to a customer's premise until the cross-connection hazard is eliminated or controlled to the satisfaction of the District.*
 - 7. Once all corrections have been completed, the passed Backflow Prevention Assembly Test Report will be filed with all the previous premise related documents.*
 - 8. The District will re-inspect the high health hazard premise isolation annually, if possible, or more often if justifiable. The re-inspection will focus on the premises that are not isolated from the system by an AG or RPBA, as long as the assemblies are approved and continue to pass annual testing and inspection.*

For a more detailed implementation schedule refer to Appendix C.

Table 3 lists typical premises posing a high health hazard that require an air gap and/or a reduced pressure backflow assembly to prevent contamination to the public water system. The list below can also be found under *WAC 246-290-490(4)(b)(iii)(Table 9)*. The District may grant exceptions on a case-by-case basis if the CCS determines there is no health hazard on the premise.

Table 3
Premises Requiring Mandatory Service Isolation by AG and/or RPBA
(High Health Risk)

Premise	Premise
Agricultural (farms and dairies)	Laboratories
Beverage Bottling Plants	Ice Manufacturing & Cold Storage Plants
Car Washes	Mortuaries and Autopsy Facilities
Chemical Plants and Metal Plating Industries	Petroleum Processing or Storage Plants
Commercial Laundries and Dry Cleaners	Piers, Docks and Boat Marinas
Premises with Potable and Reclaimed Water	Paper and Paper Products Plants
Film Processing Facilities	Survey Access Denied or Restricted
Food Processing Plants, Canneries, Packing (Slaughter) Houses	Wastewater Treatment Plants & Wastewater Lift and Pumping Stations
Hospitals, Medical Centers, Nursing Homes, Veterinary, Medical & Dental Clinics, Blood Plasma Centers and Medical Research	Radioactive Material Processing Plants or Nuclear Reactors
Irrigation Systems Utilizing District Water Supply with Chemical Addition	Unapproved Auxiliary Water Supply Interconnected with the Potable Water Supply
Fire Protection Systems Using Chemical Addition	Battery Manufacturing or Repair Facilities

Table 4 shows various facilities that require or recommend backflow prevention assemblies to be installed. **Table 5** lists fixtures, equipment, and areas that have the potential to contaminate the public drinking water system. The table also shows the minimum protection required by the District to prevent such contamination caused by the listed fixtures, equipment and areas. Per District standards, the Spill-Resistant Pressure Vacuum Breaker Assembly will be the minimum form of backflow prevention assembly and no new Atmosphere Vacuum Breakers will be installed. The District reserves the right to require a backflow prevention assembly which provides a higher level of protection upon premise review. In addition, the American Water Works Association (AWWA) published a manual entitled, "Recommended Practice for Backflow Prevention and Cross-Connection Control (AWWA Manual M14)" that outlines cross-connection control procedures as a tool for developing a CCC program. The AWWA Manual M14 as well as the "Cross-Connection Control Manual, Accepted Procedure and Practice" published by the Pacific Northwest Section (PNWS) of the American Water Works Association (AWWA) (PNWS-AWWA Yellow Manual) also recommend backflow prevention assemblies for typical hazards.

**Table 4
Backflow Protection Requirements and Recommendations**

Required Service Isolation
Premises with Approved Auxiliary Supply
Premises with Dedicated Fire Sprinkler Systems or Private Hydrants
Tall Buildings (Over 30 feet)
Recommended Service Isolation
Mobile Home Parks
Shopping Centers and Strip Malls
Non-Residential Services
Heat Exchangers or Solar Hot Water Systems
Irrigation Services Without Chemical Injection
Recreational Vehicle Parks

**Table 5
Backflow Prevention Assemblies for Minimum Protection**

Fixtures, Equipment and Areas	Minimum Protection	Fixtures, Equipment and Areas	Minimum Protection
Air Compressors	DCVA	Irrigation Systems w/o Chemicals	PVBA/SVBA/DCVA
Air Conditioning Systems	RPBA	Irrigation Systems w/ Chemicals	RPBA
Air Washers (controls air pollution)	RPBA	Janitor Sinks	SVBA/AVB*
Aquarium Make-Up Water	AG/RPBA	Kitchen Equipment	SVBA/AVB*
Aspirators, Medical/Lab	RPBA	Laboratory Equipment	RPBA
Aspirators, Vault Drain	RPBA	Laundry Machines, Commercial	RPBA
Aspirators, Weedicide/Herbicide/Pesticide	RPBA	Lavatories	SVBA/AVB*
Autoclaves	RPBA	Livestock Drinking Tanks	AG/DCVA
Autopsy Tables, Embalming Equipment	RPBA	Make-Up Tanks	AG/RPBA
Baptismal Fountains	RPBA/AG/AVB*	Mobile Carpet Cleaners	RPBA
Bathtub, Below Rim Filler	RPBA	Mobile Home Park	DCVA/RPBA
Bedpan Washers	RPBA	Mop Sinks	SVBA/AVB*
Beverage Dispensers using CO2	RPBA	Outboard Motor Test Tanks	AG/RPBA
Bidets	AG-Internal/SVBA/AVB*	Perchloroethylene Reclaim	AG/RPBA
Boat Lifts	RPBA	Pesticide Applicator Trucks	AG/RPBA
Boiler Feed Lines	AG/RPBA	Photo Developing Tanks and Sinks	RPBA
Bottle Washing Equipment	RPBA/PVBA/SVBA	Photostat Equipment	RPBA
Box Hydrants	PVBA/SVBA/DCVA	Pipette Washers	SVBA/AVB*
Brine Tanks	AG/DCVA	Potato Peelers	SVBA/AVB*
Can Washing Equipment	RPBA/PVBA/SVBA	Poultry Feeders	RPBA
Chemical Feeder Tanks	AG/RPBA	Pressure Washers w/o Chemicals	DCVA
Chilled Water Systems	RPBA	Private Fire Hydrants	DCVA
Chlorinators	RPBA	Processing Tanks	AG/RPBA
Commercial Coffee Urns	AG/SVBA/AVB*	Pump Seal Water	AG/RPBA
Computer Cooling Lines	AG/RPBA	Pumps, Pneumatic Ejector	RPBA
Condensate Tanks	AG/RPBA	Pump Prime Lines	RPBA
Commercial Cooking Kettles	AG/SVBA/AVB*	Pumps, Water Operated Ejector	RPBA
Cooling Towers	AG/RPBA	Radiant Floor Heat, Hydronic Heat	AG/RPBA
Decorative Ponds	AG/RPBA	Radiator Flushing Equipment	AG/RPBA
Degreasing Equipment	RPBA	Recreational Vehicle Dump Stations	AG

Table 5 (continued)
Backflow Prevention Assemblies for Minimum Protection

Fixtures, Equipment and Areas	Minimum Protection	Fixtures, Equipment and Areas	Minimum Protection
Demineralized Water Systems	RPBA	Serrated Faucets	SVBA/AVB*
Dental Equipment, Cuspidors	RPBA	Service Sinks	SVBA/AVB*
Detergent Dispensers (Dishwasher)	SVBA/AVB*	Sewer Connected Equipment	AG
Dialysis Equipment	RPBA	Sewer Flushing	AG
Dishwashers, Commercial	AG/RPBA/SVBA/AVB*	Shampoo Basins/Hose Rinse	SVBA/AVB*
Dishwashers, High-Temp	AG/SVBA/AVB*	Showers, Telephone	SVBA/AVB*
Drinking Fountains	AG	Sitz Baths	SVBA/AVB*
Dye Vats and Tanks	AG/RPBA	Soap Mixing Tanks	AG/RPBA
Dynamotors	DCVA	Solar Heating Systems	RPVA
Emergency Generators	RPBA	Solution Tanks	AG/RPBA
Espresso Machines	AG/RPBA	Spas	AG/RPBA
Etching Tanks	AG/RPBA	Specimen Tanks	AG/RPBA
Fermenting Tanks	AG/RPBA	Starch Tanks	AG/RPBA
Fertilizer Injection Equipment	RPBA	Steam-Air Sprays	RPBA
Film Processing Equipment	RPBA	Steam Cleaners	RPBA
Fire Depart. Connections w/o Chemicals	DCVA/DCDA	Steam Ejectors	RPBA
Fire Depart. Connections w/ Chemicals	RPBA/RPDA	Steam Generating Facilities	RPBA
Fire Sprinkler Systems w/o Chemicals	DCVA/DCDA	Sterilizers	RPBA
Fire Sprinkler Systems w/ Chemicals	RPBA/RPDA	Stillis	RPBA
Floor Drains	AG	Sumps	AG
Fluoride Tanks (Water Treatment Plants)	RPBA	Swimming Pools	AG/RPBA
Flushing Floor Drains	SVBA/AVB*	Toilets (Internal)	AG
Foamite Systems	RPBA/RPDA	Trap Primers	AG
Fountains, Ornamental	AG/RPBA	Ultrasonic Baths	AG
Frost-Free Yard Hydrant (Stop-and-Drain)	DCVA/RPBA	Urinals (Internal)	AG
Fume Hoods	RPBA	Used Water Systems	RPBA
Garbage Can Washers	RPBA	Vats	AG/RPBA
Garbage Disposals	RPBA	Washing Pools	AG/RPBA
Heat Exchangers Other Than Double Wall Types with Leak Path	RPBA	Wall Hydrants	SVBA/AVB*
Heat Pumps	RPBA	Wash Tanks	AG/SVBA/AVB*
High Pressure Washers w/o Chemicals	DCVA	Wastewater Lines	AG
High Pressure Washers w/ Chemicals	RPBA	Water-Air Sprays	DCVA
Hose Bibs	SVBA/AVB*	Water Closets (Internal)	AG
Hoses, Kitchen Rinse	SVBA/AVB*	Water Cooled Equipment	RPBA
Hot Tubs	AG/RPBA	Water Ejectors	RPBA
Hot Water Heating Systems	RPBA	Water Recirculating Systems	DCVA
Hot Water Boilers	RPBA	Water Settling	RPBA
Humidifier Tanks and Boxes	AG	Water Treatment/Water Softner	AG/RPBA
Hydraulically Operated Equipment	RPBA	Water Trucks	AG/DCVA
Hydrotherapy Baths	RPBA	Wet Vacuum Systems	RPBA
Ice Makers	AG/RPBA	Whirlpool Baths	DCVA/SVBA/AVB*
Industrial Fluid Systems	RPBA	Windshield Washer Fluid Aspirators	RPBA
Inter-Connected (Looped) Water Systems	DCVA	X-Ray Processors	RPBA

* SWD does not allow new AVBs to be installed in the system; existing AVBs are allowed if they meet the conditions of the WAC 246-290-490(5)(b).

Element 3: Cross-Connection Control and Elimination

This CCC program element requires that the purveyor eliminate existing cross-connections wherever possible. If elimination is not possible, then suitable approved backflow prevention assemblies should be installed properly by a certified CCS to reduce the risk of contamination in each of the following circumstances.

- If the nature and extent of any activity on the premises, the material used in connection with any activity on the premises, or the materials stored on the premises, could contaminate or pollute the drinking water supply in any way.
- Any premises having one or more cross-connections.
- Internal cross-connections that are not correctable or intricate plumbing arrangement that make it impractical to ascertain whether or not cross-connections exist.
- A repeated history of cross-connections being established or re-established.
- Unduly restricted entry so that inspections for cross-connections cannot be made with sufficient frequency or with sufficient notice to assure that cross-connections do not exist.
- Materials of a toxic or hazardous nature being used such that, if back siphoning should occur, a health hazard could result.
- Any mobile apparatus which uses water from the system or water from any premises within the system service boundaries.
- Any irrigation system.
- Any fire service and/or fire sprinkler.
- All new construction, remodels, commercial, business, industrial and private homes shall be evaluated to determine the necessity of an approved assembly.
- On any premise where installation of an approved assembly is deemed to be necessary to accomplish the purpose of these regulations in the District's judgment.

To ensure proper operation and accessibility of all approved assemblies, the following requirements shall apply to the installation of backflow prevention assemblies.

- No part of the approved assembly shall be submerged under water or installed on a location subject to flooding. If installed in a vault or a basement, adequate drainage shall be provided.
- Approved assemblies must be installed at the point of use. Alternate locations must be approved in writing by the District prior to installation.
- The approved assembly must be protected from freezing and other severe weather conditions.
- All approved assemblies installed shall be of a type and model pre-approved by the DOH and the District.

Shoreline Water District

- The approved assembly shall be readily accessible with adequate room for maintenance and testing. Approved assemblies 2 inches and smaller shall have a minimum clearance of 6 inches on all sides of the assembly. Approved assemblies larger than 2 inches shall have a minimum clearance of 12 inches on the back side, 24 inches on the test cock side, 12 inches plus the nominal size of the assembly below the assembly and 36 inches above the assembly.
- If the approved assembly is installed inside a building, the assembly shall be readily accessible at all times and an emergency after hours contact phone number and person shall be provided to the District.
- If the approved assembly is installed inside a building and it is installed 5 feet above the floor, it must be equipped with rigidly and permanently installed scaffolding acceptable to the District. This installation must also meet the requirements set forth by the U.S. Occupational Safety and Health Administration and the State of Washington Occupational Safety and Health Codes.
- Reduced pressure principle assemblies may be installed in a vault only if the relief valve discharge can be drained to daylight through an unobstructed drain pipe. The drain shall be of adequate capacity to carry the full rated flow of the assembly and shall be screened at both ends. An approved air gap shall be located at the relief valve orifice. This air gap shall be at least twice the inside diameter of the incoming supply line as measured vertically above the top rim of the drain and in no case less than 1 inch.
- Where an approved assembly is deemed necessary, the model of the assembly and installation plans shall be submitted to the District for approval prior to installation.
- Upon completion of the installation, the District shall be notified and an inspection will occur for approval of the installation. All approved assemblies must be registered with the District. Registration shall consist of installation location on premises, make, model and serial number of the assembly, and an initial test report.
- If any user refuses access to a premise, or to the interior of a structure, at reasonable times and with reasonable notice for inspection by the District, an RPBA will be required to be installed at the service connection to that premise.

Any variance from these installation requirements shall be requested in writing by the customer and must be approved by the District prior to installation.

Customers shall be responsible for following the provisions of the District's CCC program. In addition, customers shall be responsible for the elimination or protection of all cross-connections on their premises. The District will continue to maintain an inventory of the existing backflow prevention assemblies that it currently operates, maintains, and inspects. A separate inventory will include all assemblies on customers' premises that are responsibility of the customer to maintain. The District will keep this inventory on file at its facility, and shall update the inventory as necessary.

Cross-Connection Control Program

The District shall begin eliminating potential cross-connections and requiring installation of backflow prevention assemblies at all premises deemed to be "high-risk", such as those listed in Table 3. Once potential "high-risk" cross-connections are eliminated, the District will concentrate its efforts on reducing potential "medium-" and "low-risk" cross-connections. The medium-risk cross-connections shall be those customers requiring premise isolation, as determined by the District. The low-risk cross-connections shall be the District's remaining customers. The District will continue to enforce the proper backflow prevention assembly installation and testing, as previously stated and also described within Elements 5 and 6 of this program.

Element 4: Personnel Certification

WAC 246-290-490 requires that personnel, including one certified Cross-Connection Control Specialist (CCS), are provided by the purveyor to develop and implement a CCC program. Table 6 shows the certifications of the District's operation and maintenance personnel. Mr. Bob Heivilin and Mr. Mike Oberstadt are both certified as CCS.

The District has sufficient certified staff to implement and maintain the CCC program as outlined by the State. Mr. Bob Heivilin will serve as the District's primary personnel for maintaining and implementing the CCC program; Mr. Mike Oberstadt will serve as the backup personnel. The District will continue to provide properly certified personnel to implement the CCC program.

Table 6
District Personnel Certifications

Name	Current Title	Certifications	Certificate Number
Mike Oberstadt	Operations Lead	WDM-4, WDS-1, CCS	5430
Bob Heivilin	Utility Person IV/WQ	WDM-4, WDS-1, CCS, BAT	5407, B3620
Austin Hugill	Utility Person III	WDM-2	10950
Harold Berge	Utility Person III	WDM-2	11949
Jesse Foss	Utility Person III	WDM-1	11979
Toby Bigger	Utility Person I	WDM-1	12920

Certification Definitions:

WDM – Water Distribution Manager

WDS – Water Distribution Specialist

CCS – Cross-Connection Control Specialist

BAT – Backflow Assembly Tester

Element 5: Backflow Prevention Assembly Inspection and Testing

DOH requires that all backflow prevention assemblies are routinely inspected and tested by certified personnel. Inspections are required at the time of installation, annually thereafter, after a backflow incident, and/or after the assembly is repaired, reinstalled, or relocated. All assemblies found functioning improperly shall be promptly repaired or replaced by the customer. If any such assembly is not promptly repaired or replaced, the District may deny or discontinue service to the premise.

Shoreline Water District

The District is responsible for administering backflow assemblies that are installed on the public water distribution system, not including those assemblies installed after a meter on private premises. For assemblies installed on a customer's premise, the customer shall arrange for testing of said assemblies to be performed by a certified Washington State BAT. The customer will be subject to all applicable testing, maintenance and repair fees. On new installations, the District will (1) provide on-site evaluation and/or inspection of plans in order to determine the type of backflow prevention assembly, if any, that will be required; and (2) will attend and witness the initial test of all backflow prevention assemblies and require certification of proper installation by a BAT prior to providing water service. For existing premises, the District will perform evaluations and inspections of plans and/or premises and inform customers by letter of any corrective action deemed necessary, the method of achieving the correction, and the time allowed for the correction to be made. Ordinarily, corrections must be made within sixty days; however, the District may adjust this time period depending on the degree of hazard involved and the history of the assembly in question. Service may be discontinued immediately if necessary. The District will then inspect the premises on or after the expiration date of the required action to correct a cross-connection. If the premise is found to be in non-compliance with the District's request, the customer shall receive written notice that water service to the premise will be discontinued. If the customer informs the District of extenuating circumstances as to why the correction has not been completed within five working days of receipt of the notice of termination, the District may grant a time extension.

Inspection and testing of backflow prevention assemblies shall be done (1) during the initial installation, (2) during on-site reviews of existing installations, (3) after any repairs or maintenance, (4) after any relocation, and (5) on an annual basis or more frequently for certain high health hazard premises. When an initial installation or annual test indicates that a backflow prevention assembly is not functioning properly, the customer shall correct the malfunction within five working days as directed by the District. After correcting the problem, the customer shall submit a completed passing test report form to the District.

The customer shall be responsible for the payment of all fees for (1) permits, (2) annual (and additional, if deemed necessary by the District) backflow prevention assembly inspection/testing, (3) re-testing if the backflow prevention assembly fails to operate correctly, and (4) any re-inspections for non-compliance with District requirements. The District will continue to maintain records of backflow prevention assembly inspections.

Element 6: Testing Quality Control Assurance Program

This program element requires development and implementation of a quality control assurance program for the testing of backflow prevention assemblies. Successful implementation of this program element assures that all backflow prevention assemblies are properly tested and in working condition.

The District has developed procedures to ensure proper testing of all backflow prevention assemblies. Only certified Washington State BATs shall be utilized to test all backflow prevention assemblies. The District maintains a list of approved BATs which is available to customers upon request. Testing shall be recorded on the proper forms and maintained at the District's facility. The District Backflow Prevention Assembly Test Report form will be included with the annual testing notification and can be found in the Appendix F.

Cross-Connection Control Program

Testing personnel shall adhere to the following steps: (1) use only properly operating and calibrated gauge equipment; (2) follow proper field test procedures; (3) consult the manufacturer's repair and maintenance manual when disassembly is required; (4) use only original manufacturer spare parts; and (5) retest the backflow prevention assembly immediately after repair or maintenance.

In addition to the above steps, testing procedures performed by a certified BAT shall be in compliance with current test procedures approved by the DOH, the PNWS-AWWA yellow manual or the USC manual, which may include the following: (1) advise customer of an impending test/inspection so that the customer's staff may prepare for and be aware of potential service interruptions; (2) notify the fire department when shut down of a fire service is necessary; (3) flush residual dirt through test cocks before attaching test gauges; (4) ensure that the high and low pressure bypass hoses of the test kit are connected to the proper test cocks and open test cocks slowly when bleeding air through the bypass hoses; (5) test gauges shall be properly calibrated by a certified testing agency; (6) and assemblies should be tested before the warranty expiration date.

Element 7: Backflow Incident Response

Purveyors are required to develop a backflow incident response plan. The following paragraph outlines the District's response to a backflow incident. Other emergency response procedures are included in the *Shoreline Water District Disaster Plan* and the *Shoreline Water District Emergency Response Plan*, both of which are confidential documents kept on file at the District.

Emergency Condition: Water System Contamination and Pollution Due to a Backflow Incident

Impact on System: Potentially major impact; water not suitable for potable use - loss of supply and/or potential irreversible damage to water mains and pipes.

Emergency Response:

1. Notify the District's on-call personnel of the incident.
2. Shut down the affected mains, if possible, to contain the affected contaminants.
3. Notify the District's Operations Manager
4. Notify DOH of the backflow incident.
5. Notify all customers of the problem and instruct them to boil all water to be used for consumption and cooking, or issue a no-drinking warning.
6. Flush affected water mains to remove contaminants.
7. Disinfect storage tanks and water mains, as necessary, to remove contaminated residuals.
8. Analyze water quality in other parts of the distribution system to ensure that all contaminants were contained.

Shoreline Water District

This document (and the Shoreline Water District's Disaster Plan and Emergency Response Plan) outlines procedures to be followed if an emergency arises. When a CCC emergency is called into the City of Shoreline Police Department, or other emergency responder during non-business hours, the responder will notify the District's on-call person. This person will assess the emergency and notify any water division personnel, as deemed necessary, depending on the severity of the emergency. All emergencies will be reported to Mr. Denny Clouse, Operations Manager. Mr. Clouse will be responsible for coordinating with District personnel, as well as other emergency responders, if necessary.

Element 8: Public Education

Information on the CCC program must be included in educational materials distributed to water system customers. Educational materials include pamphlets, brochures, bill inserts, public service announcements, and consumer confidence reports.

The District will develop CCC program education materials and will include them in bill inserts, District-wide newsletters and provide copies at the customer counter of the District office.

Element 9: Record Keeping

Purveyors must develop and maintain records of their CCC program. At a minimum, purveyors must maintain the following records:

- Master list of service connections and/or premises where backflow prevention assemblies are protecting the public water system or fixtures.
- Assessed hazard level of each backflow prevention assembly.
- Inventory information on approved air gaps, including location, degree of hazard, installation date, inspection history, inspection results and personnel conducting inspections.
- Backflow prevention assembly inventory information, including location, description (type, manufacturer, model, size, and serial number), degree of hazard, installation date, inspection history, test and repair history, test results and inspecting personnel.
- Atmospheric Vacuum Breaker (AVB) inventory including location, description (manufacturer, model, and size), installation date, inspection history and inspecting personnel.
- Program summary and backflow incident reports.

The District currently maintains program records including a backflow prevention assembly inventory, completed DOH Summary Reports, and completed test and inspection reports. The backflow prevention assembly inventory information includes location, description, assessed degree of hazard, customer's name, and other pertinent information. The inventoried information is first recorded on a paper form then entered/scanned into a database maintained by the District. The paper and/or electronic records are filed according to the facility and stored at the District. The District will enhance its record keeping by adding, at a minimum, information in regards to the backflow prevention assembly installation date, history of inspections, tests and repairs, test results, and licensed person performing tests. All records will continue to remain at the District's facility to allow access by the District personnel.

Element 10: Reclaimed Water Requirements

Purveyors that distribute or receive reclaimed water within their water service area have additional cross-connection control requirements imposed by DOH through permits issued in accordance with Chapter 90.46 RCW.

The District currently does not distribute or receive reclaimed water within its service area; therefore, these requirements are not applicable. However, if reclaimed water is used in the future, then the District will follow all requirements of the permits issued under Chapter 90.46 RCW.

PROGRAM IMPLEMENTATION AND PLANNED IMPROVEMENTS

The District's ongoing CCC program is a dynamic program that requires staffing and resources to ensure its effectiveness in protecting the quality of drinking water in the distribution system. Refer to Appendix C for the overall CCC program implementation schedule. The District will implement the following items and planned improvements to ensure a successful CCC program.

- Adopt this updated CCC program document and reference it in the District's code.
- Throughout the life of the CCC program, the District plans to reference and incorporate elements from the latest edition of the "Cross-Connection Control Manual, Accepted Procedure and Practice" published by the Pacific Northwest Section (PNWS) of the American Water Works Association (AWWA) (PNWS-AWWA Yellow Manual), the AWWA manual entitled, "Recommended Practice for Backflow Prevention and Cross-Connection Control (AWWA M14)", and the "Manual of Cross-Connection Control" published by the Foundation for Cross-Connection Control and Hydraulic Research, University of Southern California (USC Manual).
- The District plans to improve the service connection evaluation process by following the methodical approach described within the section titled "Element 2: Evaluation of Service Connections". A hazard evaluation will be included within the evaluation program to determine the risk to the public drinking water supply. This evaluation will rank existing and potential cross-connections as high-, medium- and low-risk. Also, the District will perform a system-wide risk assessment of all existing service connections beginning with the high-risk connections then following with the medium- and low-risk connections. The District will then re-inspect annually the high-risk connections, which are not isolated from the system by an AG or RPBA.
- Based on the results of the service connection evaluation, the District will begin an elimination program, eliminating the potential high-risk cross-connections first by requiring installation of backflow prevention assemblies. Once the potential high-risk connections are eliminated, the District will concentrate on reducing the potential medium- and low-risk connections.

Shoreline Water District

- The District will continue its inspection practices of installed backflow prevention assemblies, as described within the section titled “Element 5: Backflow Prevention Assembly Inspection and Testing”. The District will ensure that all inspection and testing procedures are completed in a consistent manner. The District will continue documenting inspection and test results and maintain the records in order to comply with the regulatory requirements.
- The District plans to enhance record keeping practices by adding information in regards to backflow prevention assembly installation date, history of inspections, tests and repairs, test results, and licensed person performing tests.
- The District will continue developing and distributing CCC program public education materials. The District plans to include CCC program information with water bills and add program information to other handout materials. The District will also provide program information on its website. The District will use and distribute CCC brochures developed by the PNWS-AWWA, which are included in Appendix J.

APPENDIX A

Installed Backflow Prevention Assemblies

Service Address (Full)	Equipment Serial Number	Equipment Mfr Code	Equipment Model Number	Equipment Type Code	Equipment Display Size	Hazard Type
17202 15 Ave NE	Meat Department	Air Gap		AG		Dishwasher with Chemicals
17202 15 Ave NE	Bakery	Air Gap		AG		Dishwasher with Chemicals
17202 15 Ave NE	Back Room	Air Gap		AG		Cleaning Chemicals
17202 15 Ave NE	Dishwasher	Air Gap	Duo-Feed	AG		Chemical Feeder
20315 19th AV NE	N09300	Wilkins	350DA	DCDA	2 1/2"	Fire Sprinkler w/o Chemical Addition
17763 15th Ave NE	2527811	Wilkins	950XL	DCDA	3/4"	Fire Sprinkler w/o Chemical Addition
19021 14 CRT NE	W24251	Wilkins	950XLD	DCDA	3/4"	Fire Sprinkler w/o Chemical Addition
1750 NE 145 ST	2764242	Wilkins	950XL	DCDA	3/4"	Fire Sprinkler w/o Chemical Addition
20224 Ballinger Way NE	9708131201	Febco	856	DCDA	4"	Fire Sprinkler w/o Chemical Addition
20224 Ballinger Way NE	9802131403	Febco	856	DCDA	4"	Fire Sprinkler w/o Chemical Addition
1549 NE 177th St	B0841	Febco	806YD	DCDA	4"	Fire Sprinkler w/o Chemical Addition
14555 25 Ave NE	3JN0426	Ames	3000SS	DCDA	4"	Fire Sprinkler w/o Chemical Addition
19935 19TH AVE NE	B1012	Febco	806	DCDA	4"	Fire Sprinkler w/o Chemical Addition
1515 NE 150th Street	B7673	Febco	806YD	DCDA	4"	Fire Sprinkler w/o Chemical Addition
1521 NE 150 Street	B7672	Febco	806YD	DCDA	4"	Fire Sprinkler w/o Chemical Addition
1410 NE 180th Street	W99498	Wilkins	DCDA	DCDA	4"	Fire Sprinkler w/o Chemical Addition
145 NE 155th Street	103516	Ames	3000SS	DCDA	4"	Fire Sprinkler w/o Chemical Addition
20011 Ballinger Way NE	3BN0720	AMES	3000SS	DCDA	4"	Fire Sprinkler w/o Chemical Addition
17518 15th Ave NE	9808191450	Febco	856	DCDA	4"	Fire Sprinkler w/o Chemical Addition
17440 BROOKSIDE BLVD NE	960516121	Febco	856	DCDA	4"	Fire Sprinkler w/o Chemical Addition
20202 Ballinger WAY NE	3BJ0216	Ames	3000SS	DCDA	4"	Fire Sprinkler w/o Chemical Addition
1514 NE 179th St	123608	Ames	3000SS	DCDA	4"	Fire Sprinkler w/o Chemical Addition
16528 5th Ave NE	131587	AMES	3000SS	DCDA	4"	Fire Sprinkler w/o Chemical Addition
14803 15 Ave NE	V11421	WILKINS	350ADA	DCDA	4"	Fire Sprinkler w/o Chemical Addition
17763 15th Ave NE	V109102	Wilkins	350DA	DCDA	4"	Fire Sprinkler w/o Chemical Addition
19931 15 AVE NE	V09669	Wilkins	350ADA	DCDA	4"	Fire Sprinkler w/o Chemical Addition
19021 14 CRT NE	V04389	Wilkins	350ADA	DCDA	4"	Fire Sprinkler w/o Chemical Addition
1750 NE 145 ST	V14656	Wilkins	350ADA	DCDA	4"	Fire Sprinkler w/o Chemical Addition
17020 Brookside BLVD NE	9405110552	Febco	806	DCDA	4"	Fire Sprinkler w/o Chemical Addition
14810 15 AVE NE	V19754	WILKINS	350ADA	DCDA	4"	Fire Sprinkler w/o Chemical Addition
2400 NE 147TH AVE	B3359	Febco	806YD	DCDA	4"	Fire Sprinkler w/o Chemical Addition
20004 24th ave ne	022798-000	Watts	757	DCDA	4"	Fire Sprinkler w/o Chemical Addition
19930 Ballinger WAY NE	1215400802	Ames	3000SS	DCDA	4"	Fire Sprinkler w/o Chemical Addition
14500 15th Ave NE	31L1053	Ames	3000SS	DCDA	6"	Fire Sprinkler w/o Chemical Addition
1250 NE 145th Street	9806241438	Febco	856	DCDA	6"	Fire Sprinkler w/o Chemical Addition
20065 15 Ave NE	B2170	Febco	806YD	DCDA	6"	Fire Sprinkler w/o Chemical Addition

Installed Backflow Prevention Assemblies

Service Address (Full)	Equipment Serial Number	Equipment Mfr Code	Equipment Model Number	Equipment Type Code	Equipment Display Size	Hazard Type
20330 Ballinger Way NE	131728	Watts	709 DCDA	DCDA	6"	Fire Sprinkler w/o Chemical Addition
345 NE 175th Street	B64-5	HERSEY	DDC-II	DCDA	6"	Fire Sprinkler w/o Chemical Addition
2003 NE 160th ST	3021125	Febco	856	DCDA	6"	Fire Sprinkler w/o Chemical Addition
20041 Ballinger Way NE	N1D522	Wilkins	350DA	DCDA	6"	Fire Sprinkler w/o Chemical Addition
19916 19 Ave NE	1205	Ames	2000B	DCVA	1 1/2"	Fire Sprinkler w/o Chemicals
19230 Forest Park Dr NE	D2057	CONB	40-107-02	DCVA	1 1/2"	Premise Isolation
20330 Ballinger Way NE	40281	Watts	007M2QT	DCVA	1 1/2"	Irrigation w/o Chemicals
18033 15th Pl NE	683123	Wilkins	950XL	DCVA	1 1/2"	Irrigation w/o Chemicals
515 NE 172 Ct	EK381	Conbraco	40-107-A2	DCVA	1 1/2"	Fire Sprinkler w/o Chemical Addition
3338 NE 178th St	64716	Watts	007M2QT	DCVA	1 1/2"	Fire Sprinkler w/o Chemical Addition
518 NE 172nd Ct.	EK330	APOLLO/CONBR	40-107-A2	DCVA	1 1/2"	Fire Sprinkler w/o Chemical Addition
16719 8th Ave NE	8295	Ames	2000B	DCVA	1 1/2"	Fire Sprinkler w/o Chemical Addition
16717 8th Ave NE	8395	Ames	2000B	DCVA	1 1/2"	Fire Sprinkler w/o Chemical Addition
16768 Shore Dr NE	16794	Ames	2000B	DCVA	1 1/2"	Fire Sprinkler w/o Chemical Addition
18520 26 Ave NE	66736	Watts	007M2QT	DCVA	1 1/2"	Fire Sprinkler w/o Chemical Addition
17207 10 Ave NE	118246	Ames	007M2QT	DCVA	1 1/2"	Fire Sprinkler w/o Chemical Addition
15800 8 Ave NE	025928-000	Watts	850	DCVA	1 1/4"	Irrigation w/o Chemicals
17900 15 AVE NE	1125	Febco	2000 B	DCVA	1 1/4"	Fire Sprinkler w/o Chemical Addition
20068 15 AVE NE	491	Ames	2000 B	DCVA	1 1/4"	Fire Sprinkler w/o Chemical Addition
20066 15 AVE NE	1020	Ames	2000 B	DCVA	1 1/4"	Fire Sprinkler w/o Chemical Addition
20078 15 AVE NE	1554	Ames	2000 B	DCVA	1 1/4"	Fire Sprinkler w/o Chemical Addition
20076 15 AVE NE	1500	Ames	2000 B	DCVA	1 1/4"	Fire Sprinkler w/o Chemical Addition
20072 15 AVE NE	894	Ames	2000 B	DCVA	1 1/4"	Fire Sprinkler w/o Chemical Addition
20074 15 AVE NE	764	Ames	2000 B	DCVA	1 1/4"	Fire Sprinkler w/o Chemical Addition
17763 15th Ave NE	HA84057	FEBCO	850	DCVA	1"	Irrigation w/o Chemicals
17124 32nd Ave NE	A028394	Febco	805Y	DCVA	1"	Irrigation w/o Chemicals
17435 Brookside BLVD NE	1046882	Wilkins	950XL	DCVA	1"	Irrigation w/o Chemicals
16501 34th Ave NE	81664	Wilkins	950	DCVA	1"	Irrigation w/o Chemicals
19661 15th Ave NE	W104617	Wilkins	550	DCVA	1"	Irrigation w/o Chemicals
19653 15th Ave NE	AD0240	Febco	805Y	DCVA	1"	Irrigation w/o Chemicals
16520 Shore Drive NE	7513	CONB	40-105-A2	DCVA	1"	Irrigation w/o Chemicals
14604 9th Ave. NE	875065	Wilkins	950XL	DCVA	1"	Irrigation w/o Chemicals
16227 38th Street NE	429745	Wilkins	950XL	DCVA	1"	Irrigation w/o Chemicals
14555 25 Ave NE	130201	Febco	805Y	DCVA	1"	Irrigation w/o Chemicals
1720 NE 179th Street	61196	Watts	007M1QT	DCVA	1"	Irrigation w/o Chemicals
19004 Lago Pl NE	A154197	Febco	805Y	DCVA	1"	Irrigation w/o Chemicals

Installed Backflow Prevention Assemblies

Service Address (Full)	Equipment Serial Number	Equipment Mir Code	Equipment Model Number	Equipment Type Code	Equipment Display Size	Hazard Type
17628 25TH AVE NE	803228	Wilkins	950XLT	DCVA	1"	Irrigation w/o Chemicals
3010 NE 195TH CT	AK0780	Febco	805Y	DCVA	1"	Irrigation w/o Chemicals
15823 11th Avenue NE	B0777	CONB	40-105-02	DCVA	1"	Irrigation w/o Chemicals
20227 BALLINGER WAY NE	B7315	Febco	805Y	DCVA	1"	Irrigation w/o Chemicals
100 NE 161st Street	AK0164	Febco	805Y	DCVA	1"	Irrigation w/o Chemicals
20065 15 Ave NE	V7552	Febco	805Y	DCVA	1"	Fire Sprinkler w/o Chemical Addition
2215 NE 147TH ST	J8948	Febco	805Y	DCVA	1"	Irrigation w/o Chemicals
14708 15th Avenue NE	1306847	Wilkins	950XL	DCVA	1"	Fire Sprinkler w/o Chemical Addition
1825 NE SERPENTINE PL	856926	Wilkins	950XLT	DCVA	1"	Irrigation w/o Chemicals
2400 NE 147TH AVE	A026521	Febco	805Y	DCVA	1"	Irrigation w/o Chemicals
1400 NE 165th St	A006086	Febco	805Y	DCVA	1"	Irrigation w/o Chemicals
15343 25 Ave NE	9510271259	Febco	805Y	DCVA	1"	Irrigation w/o Chemicals
16516 10th AV NE	951101446	Febco	805Y	DCVA	1"	Irrigation w/o Chemicals
15557 8 Ave NE	1131529	Wilkins	950XL	DCVA	1"	Irrigation w/o Chemicals
18033 15th PI NE	A028770	Febco	805Y	DCVA	1"	Irrigation w/o Chemicals
17726 12TH AVE NE	A15582	Febco	850	DCVA	1"	Irrigation w/o Chemicals
17518 15th Ave NE	7413022	Wilkins	950XLT	DCVA	1"	Irrigation w/o Chemicals
16850 NE 170th St	104547	Wilkins	950	DCVA	1"	Irrigation w/o Chemicals
2543 NE 178th Street	48835	Watts	007M1QT	DCVA	1"	Fire Sprinkler w/o Chemical Addition
1824 Serpentine PI NE	V9404	CONB	40-105-A2	DCVA	1"	Irrigation w/o Chemicals
1822 NE Serpentine PI NE	AY702	CONB	40-105-02	DCVA	1"	Irrigation w/o Chemicals
2500 Ballinger WAY NE	1223078	Wilkins	950XLT	DCVA	1"	Irrigation w/o Chemicals
16328 27th Ave NE	A01827H	Febco	850	DCVA	1"	Irrigation w/o Chemicals
19201 Ballinger WAY NE	A59149	Febco	850	DCVA	1"	Irrigation w/o Chemicals
1445 NE 166th Ct.	1404038	Wilkins	950XLT	DCVA	1"	Irrigation w/o Chemicals
1424 NE 155th St	1612966	Wilkins	950XL	DCVA	1"	Irrigation w/o Chemicals
20224 Ballinger Way NE	331390	Watts	007M1QT	DCVA	1"	Irrigation w/o Chemicals
17413 32nd Ave NE	1818490	Wilkins	950XLT	DCVA	1"	Irrigation w/o Chemicals
19500 Ballinger WAY NE	308009	Watts	007M1QT	DCVA	1"	Premise Isolation
19500 Ballinger WAY NE	1819465	Wilkins	950XLT	DCVA	1"	Irrigation w/o Chemicals
16521 41st Ave NE	H40362	Febco	850	DCVA	1"	Irrigation w/o Chemicals
16018 32nd Ave NE	1117544	Wilkins	950XLT	DCVA	1"	Irrigation w/o Chemicals
20019 30th Ave NE	8489	Ames	2000B	DCVA	1"	Fire Sprinkler w/o Chemical Addition
1824 Serpentine PI NE	H01886	Febco	850U	DCVA	1"	Fire Sprinkler w/o Chemical Addition
18008 25th Ave NE	HA08189	Febco	850	DCVA	1"	Irrigation w/o Chemicals
18904 26th Ave NE	897892	Wilkins	950XL	DCVA	1"	Irrigation w/o Chemicals

Installed Backflow Prevention Assemblies

Service Address (Full)	Equipment Serial Number	Equipment Mfr. Code	Equipment Model Number	Equipment Type Code	Equipment Display Size	Hazard Type
335 NE 158th St	1387827	Watts	007M1QT	DCVA	1"	Irrigation w/o Chemicals
19931 15 AVE NE	HA50235	Febco	850	DCVA	1"	Irrigation w/o Chemicals
228 NE 174th St	2276364	Wilkins	950XLT	DCVA	1"	Irrigation w/o Chemicals
239 NE 178th St	14659	Ames	2000B	DCVA	1"	Fire Sprinkler w/o Chemical Addition
19021 14 CRT NE	43384	Watts	007M1QT	DCVA	1"	Irrigation w/o Chemicals
603 NE 165 ST	A06159	Ames	2000B	DCVA	1"	Fire Sprinkler w/o Chemical Addition
601 NE 165 ST	A06191	Ames	2000B	DCVA	1"	Fire Sprinkler w/o Chemical Addition
609 NE 165 ST	A06358	Ames	2000B	DCVA	1"	Fire Sprinkler w/o Chemical Addition
611 NE 165 ST	A06197	Ames	2000B	DCVA	1"	Fire Sprinkler w/o Chemical Addition
19036 21 AVE NE	2781341	Wilkins	950XLT	DCVA	1"	Irrigation w/o Chemicals
16252 38th Ave NE	30326	Febco	850	DCVA	1"	Irrigation w/o Chemicals
19217 12 Ave NE	2829620	WILKINS	950XLT	DCVA	1"	Irrigation w/o Chemicals
15521 35 AVE NE	HB35553	Febco	850	DCVA	1"	Irrigation w/o Chemicals
1834 Perkins WAY NE	2916301	Wilkins	950XLT	DCVA	1"	Irrigation w/o Chemicals
3006 NE 194 ST	2833829	Wilkins	950XLT	DCVA	1"	Irrigation w/o Chemicals
2121 NE 195 Pl	A07811	Watts	007M1QT	DCVA	1"	Irrigation w/o Chemicals
17305 32 AVE NE	2278424	Wilkins	950XLT	DCVA	1"	Irrigation w/o Chemicals
20011 Ballinger Way NE	2808001	Wilkins	950XLT	DCVA	1"	Irrigation w/o Chemicals
919 ne 185 st	H10791	Febco	850U	DCVA	1"	Irrigation w/o Chemicals
18082 25 AVE NE	HA94859	Febco	850	DCVA	1"	Fire Sprinkler w/o Chemical Addition
18082 25 AVE NE	2550328	Wilkins	950XL	DCVA	1"	Irrigation w/o Chemicals
3003 NE 160 ST	HC06968	Febco	850	DCVA	1"	Irrigation w/o Chemicals
19909 Ballinger WAY NE	561916	Wilkins	950XLT	DCVA	1"	Irrigation w/o Chemicals
719 NE 189 St	FT624	CONB	40-105-A2	DCVA	1"	Fire Sprinkler w/o Chemical Addition
19930 Ballinger WAY NE	1311032	Wilkins	950XLT	DCVA	1"	Irrigation w/o Chemicals
19584 23 AVE NE	5838	Ames	2000 B	DCVA	1"	Fire Sprinkler w/o Chemical Addition
15519 8 ave ne	A044593	Wilkins	350	DCVA	1"	Irrigation w/o Chemicals
3411 NE 158 ST	3380977	Wilkins	950XLT	DCVA	1"	Irrigation w/o Chemicals
20330 Ballinger Way NE	15143	Watts	007QT	DCVA	1/2"	Fire Sprinkler w/o Chemical Addition
2002 NE 160th Street	9506290800	Febco	805YD	DCVA	2 1/2"	Irrigation w/o Chemicals
1445 NE 166th Ct.	CJ-0369	Ames	Colt 200a	DCVA	2 1/2"	Fire Sprinkler w/o Chemical Addition
20034 15th Ave NE	U6198	Febco	805Y	DCVA	2"	Fire Sprinkler w/o Chemical Addition
19643 15th Ave NE	AD9501	Febco	805Y	DCVA	2"	Fire Sprinkler w/o Chemical Addition
19667 15th Ave NE	W65908	Wilkins	550	DCVA	2"	Fire Sprinkler w/o Chemical Addition
19631 15th Ave NE	W105608	Wilkins	550	DCVA	2"	Fire Sprinkler w/o Chemical Addition
19645 15th Ave NE	W90192	Wilkins	550	DCVA	2"	Fire Sprinkler w/o Chemical Addition

Installed Backflow Prevention Assemblies

Service Address (Full)	Equipment Serial Number	Equipment Mfr Code	Equipment Model Number	Equipment Type Code	Equipment Display Size	Hazard Type
19230 Forest Park Dr NE	W105175	Wilkins	550	DCVA	2"	Fire Sprinkler w/o Chemical Addition
19230 Forest Park Dr NE	W105172	Wilkins	550	DCVA	2"	Fire Sprinkler w/o Chemical Addition
19230 Forest Park Dr NE	W105177	Wilkins	550	DCVA	2"	Fire Sprinkler w/o Chemical Addition
19230 Forest Park Dr NE	W105180	Wilkins	550	DCVA	2"	Fire Sprinkler w/o Chemical Addition
19230 Forest Park Dr NE	W105173	Wilkins	550	DCVA	2"	Fire Sprinkler w/o Chemical Addition
19230 Forest Park Dr NE	W105179	Wilkins	550	DCVA	2"	Fire Sprinkler w/o Chemical Addition
19230 Forest Park Dr NE	W105178	Wilkins	550	DCVA	2"	Fire Sprinkler w/o Chemical Addition
19230 Forest Park Dr NE	W105176	Wilkins	550	DCVA	2"	Fire Sprinkler w/o Chemical Addition
19230 Forest Park Dr NE	W90265	Wilkins	550	DCVA	2"	Irrigation w/o Chemicals
19230 Forest Park Dr NE	W105174	Wilkins	550	DCVA	2"	Fire Sprinkler w/o Chemical Addition
19230 Forest Park Dr NE	W105171	Wilkins	550	DCVA	2"	Fire Sprinkler w/o Chemical Addition
2002 NE 160th Street	AE2337	Febco	805Y	DCVA	2"	Irrigation w/o Chemicals
145 NE 155th Street	A04799	Febco	850	DCVA	2"	Irrigation w/o Chemicals
345 NE 175th Street	173164	HERSEY	FDC	DCVA	2"	Irrigation w/o Chemicals
2715 NE 158th ST	3043579	Wilkins	950XLT	DCVA	2"	Irrigation w/o Chemicals
835 NE 155th Street	A08437	Febco	850	DCVA	2"	Irrigation w/o Chemicals
19524 Ballinger Way NE	AC775	CONB	40-108-A2T	DCVA	2"	Fire Sprinkler w/o Chemical Addition
816 NE 190th St	106061057	Febco	850	DCVA	3"	Irrigation w/o Chemicals
16045 25th AV NE	7181259	Febco	805YD	DCVA	3"	Irrigation w/o Chemicals
17447 37th AV NE	670	Watts	7	DCVA	3"	Irrigation w/o Chemicals
1530 NE 177th ST	J09671	Wilkins	350	DCVA	3"	Fire Sprinkler w/o Chemical Addition
1530 NE 177th ST	J10355	Wilkins	350	DCVA	3"	Fire Sprinkler w/o Chemical Addition
19500 Ballinger Way NE	8120	Watts	7	DCVA	3"	Premise Isolation
14500 15th Ave NE	90406	Watts	007M2QT	DCVA	3/4"	Fire Sprinkler w/o Chemical Addition
20224 Ballinger Way NE	A005348	Febco	805Y	DCVA	3/4"	Fire Sprinkler w/o Chemical Addition
20224 Ballinger Way NE	A006455	Febco	805YB	DCVA	3/4"	Fire Sprinkler w/o Chemical Addition
1549 NE 177th St	T6099	Febco	805Y	DCVA	3/4"	Fire Sprinkler w/o Chemical Addition
2525 NE 195th Street	14766	Watts	007M1QT	DCVA	3/4"	Fire Sprinkler w/o Chemical Addition
16325 5th Ave NE	A028747	Febco	805Y	DCVA	3/4"	Irrigation w/o Chemicals
14555 25 Ave NE	1281	Ames	2000B	DCVA	3/4"	Fire Sprinkler w/o Chemical Addition
16900 25TH AVE NE	377419	Febco	805Y	DCVA	3/4"	Irrigation w/o Chemicals
19935 19TH AVE NE	R7736	Febco	805Y	DCVA	3/4"	Fire Sprinkler w/o Chemical Addition
1515 NE 150th Street	Z1615	Febco	805Y	DCVA	3/4"	Fire Sprinkler w/o Chemical Addition
1521 NE 150 Street	Z1616	Febco	805Y	DCVA	3/4"	Fire Sprinkler w/o Chemical Addition
1250 NE 145th Street	A806846	Febco	805Y	DCVA	3/4"	Fire Sprinkler w/o Chemical Addition
1410 NE 180th Street	W10066	Wilkins	950XL	DCVA	3/4"	Fire Sprinkler w/o Chemical Addition

Installed Backflow Prevention Assemblies

Service Address (Full)	Equipment Serial Number	Equipment Mfr Code	Equipment Model Number	Equipment Type Code	Equipment Display Size	Hazard Type
145 NE 155th Street	10225	Ames	2000B	DCVA	3/4"	Fire Sprinkler w/o Chemical Addition
345 NE 175th Street	160425	HERSEY	FDC	DCVA	3/4"	Fire Sprinkler w/o Chemical Addition
2003 NE 160th St	A013556	Febco	805Y	DCVA	3/4"	Fire Sprinkler w/o Chemical Addition
2003 NE 160th St	12577	Watts	009M3QT	DCVA	3/4"	Boiler Feed Lines
16714 5th Ave NE	978341	Wilkins	950XLT	DCVA	3/4"	Irrigation w/o Chemicals
20011 Ballinger Way NE	4624	Ames	2000B	DCVA	3/4"	Fire Sprinkler w/o Chemical Addition
1243 NE 169th St	AJ7764	Febco	805Y	DCVA	3/4"	Irrigation w/o Chemicals
1243 NE 169th St	AJ9028	Febco	805Y	DCVA	3/4"	Irrigation w/o Chemicals
17518 15th Ave NE	A008250	Febco	805YB	DCVA	3/4"	Fire Sprinkler w/o Chemical Addition
20309 Ballinger Way NE	109902	Watts	709 QT	DCVA	3/4"	Fire Sprinkler w/o Chemicals
17440 BROOKSIDE BLVD NE	90879	Watts	007M2QT	DCVA	3/4"	Dishwasher w/o Chemicals
17440 BROOKSIDE BLVD NE	A000705	Febco	805YB	DCVA	3/4"	Fire Sprinkler w/o Chemical Addition
20202 Ballinger Way NE	14237	Watts	007M2QT	DCVA	3/4"	Fire Sprinkler w/o Chemical Addition
16337 34th Ave NE	A153505	Febco	805Y	DCVA	3/4"	Irrigation w/o Chemicals
20315 19th AV NE	1564695XLD	Wilkins	950XL	DCVA	3/4"	Fire Sprinkler w/o Chemical Addition
1514 NE 179th St	26533	Ames	2000B	DCVA	3/4"	Fire Sprinkler w/o Chemical Addition
16528 5th Ave NE	35285	AMES	2000B	DCVA	3/4"	Fire Sprinkler w/o Chemical Addition
16026 38th Ave NE	132240	Watts	709 QT	DCVA	3/4"	Fire Sprinkler w/o Chemicals
14803 15 Ave NE	2547572	WILKINS	950XL	DCVA	3/4"	Fire Sprinkler w/o Chemical Addition
19931 15 AVE NE	2409940	Wilkins	950XLD	DCVA	3/4"	Fire Sprinkler w/o Chemical Addition
20041 Ballinger Way NE	W106246	Wilkins	950XL	DCVA	3/4"	Fire Sprinkler w/o Chemical Addition
19025 14th Ct NE	A23582	Watts	007M3QT	DCVA	3/4"	Premise Isolation
19027 14 CRT NE	201503	Watts	007M3QT	DCVA	3/4"	Premise Isolation
19031 14 CRT NE	A23561	Watts	007M3QT	DCVA	3/4"	Premise Isolation
19033 14 CRT NE	A50401	Watts	007M3QT	DCVA	3/4"	Premise Isolation
19034 14 CRT NE	A23587	Watts	007M3QT	DCVA	3/4"	Premise Isolation
19035 14 CRT NE	A201531	Watts	007M3QT	DCVA	3/4"	Premise Isolation
19036 14 CRT NE	A201458	Watts	007M3QT	DCVA	3/4"	Premise Isolation
19037 14 CRT NE	A23654	Watts	007M3QT	DCVA	3/4"	Premise Isolation
19040 14 CRT NE	A22810	Watts	007M3QT	DCVA	3/4"	Premise Isolation
19041 14 CRT NE	A50404	Watts	007M3QT	DCVA	3/4"	Premise Isolation
19042 14 CRT NE	A54648	Watts	007M3QT	DCVA	3/4"	Premise Isolation
19043 14 CRT NE	A54660	Watts	007M3QT	DCVA	3/4"	Premise Isolation
19044 14 CRT NE	A201498	Watts	007M3QT	DCVA	3/4"	Premise Isolation
19045 14 CRT NE	A50482	Watts	007M3QT	DCVA	3/4"	Premise Isolation
19046 14 CRT NE	A50483	Watts	007M3QT	DCVA	3/4"	Premise Isolation

Installed Backflow Prevention Assemblies

Service Address (Full)	Equipment Serial Number	Equipment Mfr Code	Equipment Model Number	Equipment Type Code	Equipment Display Size	Hazard Type
19047 14 CRT NE	A23545	Watts	007M3QT	DCVA	3/4"	Premise Isolation
19050 14 CRT NE	A23584	Watts	007M3QT	DCVA	3/4"	Premise Isolation
19051 14 CRT NE	A23594	Watts	007M3QT	DCVA	3/4"	Premise Isolation
19053 14 CRT NE	A54652	Watts	007M3QT	DCVA	3/4"	Premise Isolation
19054 14 Ct NE	A201423	Watts	007M3QT	DCVA	3/4"	Premise Isolation
19055 14 CRT NE	A22796	Watts	007M3QT	DCVA	3/4"	Premise Isolation
19056 14 CRT NE	A50415	Watts	007M3QT	DCVA	3/4"	Premise Isolation
19057 14 CRT NE	A23508	Watts	007M3QT	DCVA	3/4"	Premise Isolation
19060 14 CRT NE	A22794	Watts	007M3QT	DCVA	3/4"	Premise Isolation
19061 14 CRT NE	A05555	Watts	007M3QT	DCVA	3/4"	Premise Isolation
19062 14 CRT NE	A23506	Watts	007M3QT	DCVA	3/4"	Premise Isolation
19063 14 CRT NE	A23610	Watts	007M3QT	DCVA	3/4"	Premise Isolation
19064 14 CRT NE	A23576	Watts	007M3QT	DCVA	3/4"	Premise Isolation
19065 14 CRT NE	201529	Watts	007M3QT	DCVA	3/4"	Premise Isolation
19066 14 CRT NE	201470	Watts	007M3QT	DCVA	3/4"	Premise Isolation
19067 14 CRT NE	201530	Watts	007M3QT	DCVA	3/4"	Premise Isolation
19052 14 CRT NE	A201460	Watts	007M3QT	DCVA	3/4"	Premise Isolation
19528 7th Ave NE	2790935	Wilkins	950XLT	DCVA	3/4"	Irrigation w/o Chemicals
14803 15 Ave NE Suite 200	HB20472	Febco	850	DCVA	3/4"	Irrigation w/o Chemicals
17202 15 Ave NE	2827942	Wilkins	950XLT	DCVA	3/4"	Irrigation w/o Chemicals
17020 Brookside BLVD NE	A16549	Febco	805Y	DCVA	3/4"	Irrigation w/o Chemicals
17020 Brookside BLVD NE	AJ5237	Febco	805Y	DCVA	3/4"	Fire Sprinkler w/o Chemical Addition
17447 37th AV NE	2854152	Wilkins	950XLT	DCVA	3/4"	Irrigation w/o Chemicals
14810 15 AVE NE	3018592 XL	Wilkins	950XL	DCVA	3/4"	Fire Sprinkler w/o Chemical Addition
18342 15 PL NE	3166992	Wilkins	950XLT	DCVA	3/4"	Irrigation w/o Chemicals
2400 NE 147TH AVE	T3073	Febco	805Y	DCVA	3/4"	Fire Sprinkler w/o Chemical Addition
1227 NE 165 ST	3343674	Wilkins	950XLT	DCVA	3/4"	Irrigation w/o Chemicals
16572 35 AVE NE	3333128	Wilkins	950XLT	DCVA	3/4"	Irrigation w/o Chemicals
20004 24th ave ne	202431	Watts	007M3QT	DCVA	3/4"	Fire Sprinkler w/o Chemical Addition
19930 Ballinger WAY NE	27249	Ames	2000 B	DCVA	3/4"	Fire Sprinkler w/o Chemical Addition
17763 15th Ave NE	U05610	WILKINS	350A	DCVA	4"	Premise Isolation
19921 19th Ave NE	L2102	FEBCO	805Y	DCVA	4"	Fire Sprinkler w/o Chemical Addition
2525 NE 195th Street	10930	Watts	709	DCVA	4"	Fire Sprinkler w/o Chemical Addition
1255 NE 152nd ST	J01116	Wilkins	350	DCVA	4"	Fire Sprinkler w/o Chemicals
15343 25 Ave NE	9510021314	Febco	805YD	DCVA	4"	Irrigation w/o Chemicals
16045 25th AV NE	9710231248	Febco	850	DCVA	4"	Fire Sprinkler w/o Chemical Addition

Installed Backflow Prevention Assemblies

Service Address (Full)	Equipment Serial Number	Equipment Mfr Code	Equipment Model Number	Equipment Type Code	Equipment Display Size	Hazard Type
19500 Ballinger Way NE	312103	Wilkins	350	DCVA	4"	Fire Sprinkler w/o Chemical Addition
1517 NE 147 ST	2CJ1218	Ames	2000 SS	DCVA	4"	Fire Sprinkler w/o Chemical Addition
17712 15th Ave NE	2L112007	Ames	2000 SS	DCVA	6"	Fire Sprinkler w/o Chemical Addition
20309 Ballinger Way NE	0822D1	Ames	2000 SS	DCVA	6"	Fire Sprinkler w/o Chemical Addition
16040 38 AVE NE	2382092	Wilkins	950XLT	DCVA		Irrigation w/o Chemicals
15343 25 Ave NE	96878	Watts	709 QT	DCVA		Irrigation w/o Chemicals
20224 Ballinger Way NE	A03410	Febco	860	RPBA	1 1/2"	Fire Systems with Chem Addition
20010 Ballinger Way NE	287533	Watts	909M1QT	RPBA	1 1/2"	Car Wash
17500 12TH AVE NE	242928	Wilkins	975XL	RPBA	1 1/2"	Premise Isolation
16827 BOTHELL WAY NE	850045	Wilkins	975XL	RPBA	1 1/2"	Car Wash
1400 NE 165th St	276653	Watts	909M1QT	RPBA	1 1/2"	Car Wash
20059 Ballinger Way NE	99237	Watts	009M2QT	RPBA	1 1/2"	Premise Isolation
14803 15 Ave NE	A36237	Watts	009M2QT	RPBA	1 1/2"	Premise Isolation
15343 25 Ave NE	18031	Conbraco	40-206-02	RPBA	1 1/4"	Degreasing Equipment
16045 25th AV NE	302910	Watts	909M1QT	RPBA	1 1/4"	Premise Isolation
19930 Ballinger Way NE	384010	Watts	909M1QT	RPBA	1 1/4"	Sterilizer
16045 25th AV NE	298922	Watts	909M1QT	RPBA	1 1/4"	Lab Sinks
16045 25th AV NE	240128	Watts	909QT	RPBA	1"	Boiler Feed Lines
16045 25th AV NE	104531	Watts	909QT	RPBA	1"	Lab Sinks
343 NE 178th St	A73528	Watts	009M2QT	RPBA	1"	Wastewater Lift/Pump stations
20315 19th AV NE	179352	Watts	009M2QT	RPBA	1"	Premise Isolation
20059 Ballinger Way NE	224974	Watts	009M2QT	RPBA	1"	Irrigation w/o Chemicals
2003 NE 160th ST	339221	Watts	009M2QT	RPBA	1"	Dishwasher with Chemicals
2003 NE 160th ST	335849	Watts	009M2QT	RPBA	1"	Boiler Feed Lines
16329 35th Ave NE	74594	Watts	009QT	RPBA	1/2"	Boiler Feed Lines
20036 Ballinger Way NE	BU960	CONB		RPBA	1/2"	Hot Water Tank
17500 12TH AVE NE	A71159	Watts	009QT	RPBA	1/2"	Film Processors
17500 12TH AVE NE	243168	Wilkins	975XL	RPBA	1/2"	Film Processors
1432 NE 151st Street	97844	Watts	009QT	RPBA	1/2"	X Ray Processor
1610 NE 179th Street	23781	Watts	009QT	RPBA	1/2"	Dental Equipment/Cuspidors
17732 15th Ave NE	3225	CONB	40-203-02	RPBA	1/2"	Beverage Dispenser w/o CO2
20227 BALLINGER WAY NE	1048310	Wilkins	975XL	RPBA	1/2"	Beverage Dispenser w/o CO2
17228 4th Ave NE	102389	Watts	009QT	RPBA	1/2"	Boiler Feed Lines
17202 15 Ave NE	34159	Watts	009QT	RPBA	1/2"	Beverage Dispenser with CO2
16522 18TH AVE NE	DM469	CONB	40-203-A2	RPBA	1/2"	Boiler Feed Lines
18002 15th Ave NE	74597	Watts	009QT	RPBA	1/2"	Cleaning Chemicals

Installed Backflow Prevention Assemblies

Service Address (Full)	Equipment Serial Number	Equipment Mfr Code	Equipment Model Number	Equipment Type Code	Equipment Display/Size	Hazard Type
18002 15th Ave NE	74591	Watts	009QT	RPBA	1/2"	Beverage Dispenser with CO2
17751 15th Ave NE	135477	Watts	009QT	RPBA	1/2"	Beverage Dispenser with CO2
20330 15th Ave NE	158560	Watts	009QT	RPBA	1/2"	Beverage Dispenser with CO2
17440 BROOKSIDE BLVD NE	57879	Watts	009QT	RPBA	1/2"	Boiler Feed Lines
17440 BROOKSIDE BLVD NE	BA908	Conbraco	40-203-02	RPBA	1/2"	Boiler Feed Lines
19930 Ballinger WAY NE	202740	Watts	009QT	RPBA	1/2"	Ice Machine
18044 25th Ave NE	188889	Watts	009QT	RPBA	1/2"	Boiler Feed Lines
17046 2 Ave NE	187252	Watts	009QT	RPBA	1/2"	Boiler Feed Lines
14705 22nd Ave NE	241276	Watts	009QT	RPBA	1/2"	Boiler Feed Lines
17235 Bookside Blvd NE	158477	Watts	009QT	RPBA	1/2"	Boiler Feed Lines
15812 35th Ave NE	262430	Watts	009QT	RPBA	1/2"	Boiler Feed Lines
2116 NE 175th ST	290895	Watts	009QT	RPBA	1/2"	Boiler Feed Lines
20059 Ballinger WAY NE	234386	Watts	009QT	RPBA	1/2"	Beverage Dispenser with CO2
17207 10 Ave NE	A12845	Watts	009QT	RPBA	1/2"	Boiler Feed Lines
18033 15th Pl NE	W209303	Wilkins	975XL	RPBA	1/2"	Boiler Feed Lines
17202 15 Ave NE	A02501	Watts	9	RPBA	1/2"	Premise Isolation
18033 15th Pl NE	W320750	Wilkins	975XL	RPBA	1/2"	Boiler Feed Lines
17202 15 Ave NE	A42869	Watts	009QT	RPBA	1/2"	Beverage Dispenser with CO2
17202 15 Ave NE	A13878	Watts	009QT	RPBA	1/2"	Beverage Dispenser with CO2
17202 15 Ave NE	A37791	Watts	009M2QT	RPBA	1/2"	Premise Isolation
17518 15th Ave NE	63771	Watts	009QT	RPBA	1/2"	Film Processors
17729 25th Ave NE	K2465	APOLLO / CON	4020302	RPBA	1/2"	Boiler Feed Lines
15571 9th AVE NE	A81196RP	Watts	009QT	RPBA	1/2"	Boiler Feed Lines
14759 23 AVE NE	W361610	Wilkins	975XL	RPBA	1/2"	Boiler Feed Lines
16541 21 AVE NE	139634	Watts	009QT	RPBA	1/2"	Boiler Feed Lines
4007 NE 161 ST	204452	Watts	009QT	RPBA	1/2"	Boiler Feed Lines
19009 16th Ave NE	164493	WATTS	009QT	RPBA	1/2"	Boiler Feed Lines
17126 10 AVE NE	323482	Watts	009QT	RPBA	1/2"	Boiler Feed Lines
14500 15th Ave NE	508784	Wilkins	975XL	RPBA	2"	Premise Isolation
20036 Ballinger Way NE	87449	Watts	009M2QT	RPBA	2"	Premise Isolation
19547 25TH AVE NE	W183068	Wilkins	975XL	RPBA	2"	Premise Isolation
816 NE 190th St	A43459	Watts	009M2QT	RPBA	2"	Irrigation w/o Chemicals
19930 Ballinger WAY NE	1342269	Wilkins	975XL	RPBA	2"	Premise Isolation
16528 5th Ave NE	W106833	Wilkins	975XL	RPBA	2"	Premise Isolation
14810 15 AVE NE	3044391XL	Wilkins	975XL	RPBA	2"	Premise Isolation
2003 NE 160th ST	A52120	Watts	009M2QT	RPBA	2"	Premise Isolation

Installed Backflow Prevention Assemblies

Service Address (Full)	Equipment Serial Number	Equipment Mfr Code	Equipment Model Number	Equipment Type Code	Equipment Display Size	Hazard Type
145 NE 155th Street	131880	Watts	009M2QT	RPBA	2"	Hot Water Tank
1530 NE 177th ST	168842	Watts	909	RPBA	3"	Premise Isolation
1530 NE 177th ST	169190	Watts	909	RPBA	3"	Premise Isolation
20036 Ballinger Way NE	A020958	Febco	825Y	RPBA	3/4"	Fire Sprinkler w/o Chemical Addition
2215 NE 147TH ST	A008023	Febco	825Y	RPBA	3/4"	Boiler Feed Lines
1720 NE 179th Street	90343	Watts	009M2QT	RPBA	3/4"	Boiler Feed Lines
17721 15TH AVE NE	1241909	Wilkins	975XL	RPBA	3/4"	Dry Cleaning Equipment
1250 NE 145th Street	BW367	CONB	40-204-A2	RPBA	3/4"	Boiler Feed Lines
1208 NE 201ST ST	163692	Watts	009M2QT	RPBA	3/4"	Wastewater Lift/Pump stations
14708 15th Avenue NE	258514	Watts	009M3QT	RPBA	3/4"	Dry Cleaning Equipment
1825 NE SERPENTINE PL	117763	Watts	009QT	RPBA	3/4"	Boiler Feed Lines
816 NE 190th St	123611	Watts	909QT	RPBA	3/4"	Boiler Feed Lines
16045 25th AV NE	102968	Watts	909QT	RPBA	3/4"	Hot Water Tank
2000 Perkins Way NE	T6640	Febco	825Y	RPBA	3/4"	Boiler Feed Lines
16508 8TH AVE NE	G7025	CONB	40-204-02	RPBA	3/4"	Boiler Feed Lines
17518 15th Ave NE	737244	Wilkins	975XL	RPBA	3/4"	Film Processors
18349 10th AV NE	AD6635	Febco	825Y	RPBA	3/4"	Wastewater Lift/Pump stations
19930 Ballinger Way NE	547560	Watts	909QT	RPBA	3/4"	Sterilizer
18033 15th Pl NE	E0233	Conbraco	40-204-A2	RPBA	3/4"	Boiler Feed Lines
20010 Ballinger Way NE	W090531	Wilkins	975XL	RPBA	3/4"	Beverage Dispenser with CO2
20059 Ballinger Way NE	130783	Watts	909HWQT	RPBA	3/4"	Dishwasher with Chemicals
17202 15 Ave NE	A62479	Watts	009M3QT	RPBA	3/4"	Air Compressor
1636 ne 169 st	W320057	Wilkins	975XL	RPBA	3/4"	Boiler Feed Lines
2003 NE 160th ST	308784	Watts	009M3QT	RPBA	3/4"	Commercial Kitchen Equipment
2003 NE 160th ST	308771	Watts	009M3QT	RPBA	3/4"	Commercial Kitchen Equipment
16505 5th AV NE	A10208	Watts	009QT	RPBA	3/8"	Beverage Dispenser with CO2
16045 25th AV NE	189254	WATTS	909	RPBA	4"	Premise Isolation
15230 15TH AVE NE	WC-133	CLAVAL	RP4	RPBA	8"	Premise Isolation
15230 15TH AVE NE	WC-132	CLAVAL	RP8LW	RPBA	8"	Premise Isolation
17000 Shore Dr NE	H23797	Febco	860	RPBA		Irrigation with Chemicals
15525 10th AV NE	W297276	Wilkins	975XL	RPBA		Boiler Feed Lines
20036 Ballinger Way NE	9703271450	Febco	826YD	RPDA	6"	Fire Sprinkler w/o Chemical Addition

Municipal Accounts

Account Number	Site Address	Name	Meter Size (in)
022340-000	16516 10 AVE NE	Shoreline Schools - Ridgecrest	4
022358-000	16045 25 AVE NE	Shoreline Schools - Kellogg Middle	4
022370-000	15343 25 AVE NE	Shoreline Schools - Shorecrest	4
022384-000	2800 NE 200 ST	Shoreline Schools - Aldercrest	4
022332-000	816 NE 190 ST	Shoreline Schools-N. City Elementary	3
022374-000	2715 NE 158 ST	Shoreline Schools - Briarcrest	3
022380-000	2000 Perkins Way	Shoreline Schools - Cedarbrook	3
022336-000	1216 NE 165 ST	Shoreline Schools - Bus Barn	2
022376-000	17447 37 AVE NE	Shoreline Schools - Brookside	2
21006	19547 25 Ave NE	King Co. Road Services	2
18376	.345 NE 175th St	King Co. Library	2
7250	145 NE 155 St	Shoreline Fire Department	1.5
16044	1242 NE 180 St	Shoreline Fire	1.5
21076	2201 NE 201 Pl	King Co. Housing	1.5
022354-000	2003 NE 160 ST	Shoreline Schools - Warehouse	1.5
022356-000	16006 15 AVE NE	City of Shoreline Parks	1.5
21078	20115 20 Pl NE	King Co. Housing	1
022364-000	NE 160 ST & 25 AVE NE	City of Shoreline Upper Hamlin Restroom	1
022350-000	16006 15 AVE NE	City of Shoreline-Parks Mtc Building	1
022334-000	835 NE 155 ST	City of Shoreline-Park Restrooms	1
20342	19201 Ballinger Way	City of Lake Forest Park	5/8
21004	19547 25 Ave NE	King Co. Road Services	5/8
23858	20031 Ballinger Way	King Co. WTD	5/8
022382-000	2545 NE 200 ST	Shoreline Schools - Aldercrest Annex	Meter Removed

Irrigation and Lift Station Accounts

Account Number	Site Address	Name	Meter Size (in)
022362-000	16045 25 AVE NE	Shoreline Schools - Irrigation	4
022368-000	15343 25 AVE NE	Shoreline Schools - Irrigation	4
022372-000	2715 NE 158 ST	Shoreline Schools - Irrigation	4
022378-000	17447 37 AVE NE	Shoreline Schools - Irrigation	4
022366-000	NE 160 & 25 AVE NE	City of Shoreline-Hamlin Baseball Fields - Irrigation	3
022330-000	816 NE 190 ST	City of Shoreline - Irrigation	3
022338-000	835 NE 155 ST	City of Shoreline - Irrigation	3
022352-000	16006 15 AVE NE	City of Shoreline - Irrigation	3
023226-000	1502 NE 179 ST	City of Shoreline - Irrigation	3
007584-000	100 NE 161 ST	City of Shoreline - Irrigation	2
13216	345 NE 175th St	KC Library - Irrigation	2
018356-000	201 NE 175th St	City of Shoreline - Irrigation	5/8
16440	18349 10 Ave NE	Ronald Wastewater - Lift Station	NA
18278	NE 178 St & 5 Ave NE	Ronald Wastewater - Lift Station	NA
18806	1208 NE 201 St	Ronald Wastewater - Lift Station	NA

Commercial Accounts

Account Number	Site Address	Name	Meter Size (in)
20228	19925 Forest Park Dr	Myong Sung Presbyterian Church	NA
14222	17201 15 Ave NE	Anderson Plaza	4
20756	20315 19 Ave NE	T3S LLC	4
16036	18045 15 Pl NE	St Marks Catholic Church	3
6290	1250 NE 145 St	Parkridge Care Center	2
12820	16505 5 Ave NE	Landmark Theater	2
14000	17127 15 Ave NE	Anderson House	2
15822	17518 15 Ave NE	Walgreens	2
15908	17505 15 Ave NE	Peking House	2
15920	1220 NE 175 St	YMCA	2
15982	18060 15 Pl NE	St Marks Catholic Church	2
17728	19010 5 Ave NE	Evergreen Baptist	2
18376	345 NE 175 St	King Co Library	2
20262	20051 Ballinger Way	Washington Tree Service	2
20574	19935 19 Ave NE	Lake Montessori	2
23866	16325 5 Ave NE	Development Services of America	2
25341	14500 15 Ave NE	Seattle Goodwill	2
5976	14622 15 Ave NE	Quadri Akbars (restaurant)	1.5
6052	14708 15 Ave NE	Ngyen Kim	1.5
9242	15555 15 Ave NE	Northwest Church	1.5
11686	16827 Bothell Way N	Butte Enterprises	1.5
13478	17418 8 Ave NE	Bethel Lutheran Church	1.5
14220	17127 15 Ave NE	Anderson House	1.5
14234	17233 15 Ave NE	US Postal Service	1.5
14236	17229 15 Ave NE	Parfitt Family LLC	1.5
14542	17018 15 Ave NE	Center for Human Services	1.5
14810	17202 15 Ave NE	Safeway	1.5
15712	1510 NE 177 St	Pohl Properties	1.5
15904	17521 15 Ave NE	Tokuno Steven	1.5
15914	1240 NE 175 St	Molnar Alex	1.5
16906	510 NE 175 St	Free Methodist Shoreline	1.5
17914	205 NE 205 St	Holyrod Cemetery	1.5
20256	20227 Ballinger Way	McDonalds	1.5
20258	20057 Ballinger Way	Washington Tree Service	1.5
20700	20330 Ballinger Village	Rite Aid (Ballinger Village)	1.5
20722	20202 Ballinger Way	24 Hour Fitness	1.5
20724	20036 Ballinger Way	Penhollow Markets	1.5
20788	1901 NE 205 St	Askar Ahmed	1.5
21018	19930 Ballinger Way	Ballinger Way LLC	1.5
24145	20011 Ballinger Way	Rose Crossing	1.5
24674	14810 15 Ave NE	ASCS Properties LLC	1.5
25339	14500 15 Ave NE	Seattle Goodwill	1.5

Commercial Accounts

Account Number	Site Address	Name	Meter Size (in)
5690	2400 NE 147 St	Shoreline Christian School	1
5734	14511 25 Ave NE	Shoreline United Methodist	1
5738	2215 NE 147 St	Carmelite Monastery	1
5846	14514 20 AVE NE	Prince of Peace Luthern Church	1
5858	1554 NE 145 St	Kaushik Libbie	1
5888	1551 NE 146 St	Painting	1
6280	14711 15 Ave NE	Shoreline Automotive	1
10946	16815 Bothell Way N	Combs Greg	1
11814	17440 Brookside Blvd	LFP Presbyterian Church	1
13302	616 NE 165th St	Korean Church	1
13480	17404 8 Ave NE	Bethel Lutheran Church	1
14002	17051 14 Ave NE	Anderson Larry (part of Anderson House)	1
14232	1221 NE 175 St	North City Lumber	1
14402	16910 15 Ave NE	Wilson Robert	1
14404	16920 15 Ave NE	7-11 Store	1
15710	1514-20 NE 177 St	Pohl Properties	1
15824	17518 15 Ave NE	Walgreens	1
15834	17730 15 Ave NE	(Leenas & Eagles)	1
15852	17750 15 Ave NE	Custom Pure	1
15878	17735 15 Ave NE	Hayes Shane	1
16038	18033 15 Pl NE	St Marks Catholic Church	1
18520	811 NE 201 St	North Ridge Swim Club	1
20244	20306 15 Ave NE	Sundquist	1
20248	20330 15 Ave NE	Roe Steve	1
20260	20059 Ballinger Way	Pagliacci Pizza	1
20264	20041 Ballinger Way	Public Storage Co	1
20270	20021 Ballinger Way	Klokstad Construction	1
20274	19909 Ballinger Way	Dodson, William	1
20276	19929 Ballinger Way	Dodson, William	1
20570	19939 Ballinger Way	Huoth Darrell	1
20572	19953 Ballinger Way	Todo Mexico	1
20764	20010 Ballinger Way	Andy's Chevron	1
20766	19960 Ballinger Way	Kim Peter	1
21020	19936 Ballinger Way	Triune Development	1
21022	19940 Ballinger Way	Triune Development	1
22955	14803 15 Ave NE	Hartley Steven-Blue Star (Hillis Clark Martin)	1
22977	20030 Ballinger Way	Lands Pacific Inc	1
23948	17529 15 Ave NE	17529 15 Ave LLC	1
24208	14701 15 Ave NE	Cressy Door Co	1
24654	15211 15 Ave NE	City Calvary Chapel	1

Commercial Accounts

Account Number	Site Address	Name	Meter Size (in)
24890	19500 Ballinger Way	Sunbreak Condo	1
25557	17001 Bothell Way N	CMSI-BP Gas Station	1
5605	20320-B Ballinger Way	Teriyaki Town (Ballinger Village)	5/8
5890	14521 17 Ave NE	American Legion Post 227	5/8
5966	14602 15 Ave NE	Pearl Black	5/8
5968	14610 15 Ave NE	Englund Gordan	5/8
5970	14612 15 Ave NE	Personal Touch	5/8
5974	14616 15 Ave NE	J & J Auto	5/8
6130	14820 15 Ave NE	Finch Jon-Cindy	5/8
6192	15419 15 Ave NE	Strathy Mike	5/8
6228	1432 NE 151 St	Hamada Ken	5/8
6284	14625 15 Ave NE	Community First Credit Union	5/8
6286	14615 15 Ave NE	Clark Allen	5/8
6288	14625 15 Ave NE	Community First Credit Union	5/8
6292	14501 15 Ave NE	Harveys Auto Service	5/8
6294	1234 NE 145 St	Church of Scientology	5/8
6306	14527 15 Ave NE	Earl's Garage	5/8
6310	14515 15 Ave NE	Earl's Garage	5/8
7308	15415 5 Ave NE	Shoreline Fellowship	5/8
7368	226 NE 152 St	True Jesus Church	5/8
8028	523 NE 165 St	Talley Kathleen	5/8
8032	525 NE 165 St	PSE	5/8
8034	521 NE 165 St	Shoreline Police	5/8
8036	517 NE 165 St	Hair House	5/8
8182	16268 5 Ave NE	McFarl David	5/8
9256	1424 NE 155 St	Huebner Building	5/8
9636	15518 27 Ave NE	Seattle Congregational Church	5/8
9648	15550 27 Ave NE	Stephenson Gordon	5/8
11296	16840 Bothell Way N	Depape Associates	5/8
12818	16535 5 Ave NE	Lee Eric J	5/8
13072	17060 3 Ave NE	Hua Liu	5/8
13306	522 NE 165 St	Century Development-Aquarium	5/8
13308	520 NE 165 St	Darigold Federal Credit Union	5/8
13310	518 NE 165 St	Century Development-Cameral Clinic	5/8
13312	516 NE 165 St	Century Development Geology	5/8
13314	16506 5 Ave NE	7-Eleven Inc.(Century Dev.)	5/8
13414	17424 5 Ave NE	Seventh Day Adventist	5/8
13616	16508 8 Ave NE	Tabernacle Church Baptist	5/8
14238	17211 15 Ave NE	Dr. H. Kumnen	5/8
14240	17203 15 Ave NE	Son Kun Soo	5/8
15008	1825 NE Serpentine Pl	Srf Seattle - center	5/8

Commercial Accounts

Account Number	Site Address	Name	Meter Size (in)
15714	17704 15 Ave NE	Nguyen Son	5/8
15718	1535 NE 177 St	Sims John	5/8
15826	17534 15 Ave NE	Northsound Carpet	5/8
15830	17554 15 Ave NE	North City Tavern	5/8
15836	1610 NE 179 St	Melton Pat	5/8
15850	1620 NE 179 St	Melton Pat	5/8
15854	17754 15 Ave NE	Les Schwab	5/8
15856	18002 #A 15 Ave NE	Five Starts LLC	5/8
15874	17751 15 Ave NE	Suni's Pizza	5/8
15876	17739 15 Ave NE	Torgesson Daryl	5/8
15880	17727 15 Ave NE	Frank Lumber	5/8
15884	17717 15 Ave NE	Granger Linda	5/8
15886	17711 15 Ave NE	Real Property Associates	5/8
15888	17713 15 Ave NE	Real Property Associates	5/8
15894	17563 15 Ave NE	Stoneccate Development	5/8
15896	17549 15 Ave NE	East Gary W. Coffee Shop	5/8
15898	17547 15 Ave NE	East Gary W. Coffee Shop	5/8
15900	17537 15 Ave NE	Communications Wholesale	5/8
15906	17517 15 Ave NE	RMS Sound	5/8
15912	1244 NE 175 St	Auto Cornerstone	5/8
15922	17500 12 AVE NE	Family Dental	5/8
16042	18005 15 Ave NE	Ahn Mi Young	5/8
16046	18026 14 Ave NE	Gibbons Sam-N Seattle Upholstery	5/8
16438	919 NE 185 St	B & S LLC	5/8
18690	20337 15 Ave NE	Atwork Custom Industries	5/8
18694	20065 15 Ave NE	Advantage IQ	5/8
19630	19024 15 Ave NE	Lemme Busso (Evergreen Landscaping)	5/8
19632	19028 15 Av NE	Lemme Busso (Evergreen Landscaping)	5/8
19634	19042 15 Ave NE	Leland Donald K	5/8
19646	19204 15 Ave NE	Montiel Floriberto	5/8
19660	19258 15 Ave NE	Guitarville (Columbia State Bank)	5/8
20230	19931 Forest Park Dr	Myong Sung Presbyterian Church	5/8
20250	20309 Ballinger Way	Wallace Properties	5/8
20252	20319 Ballinger Way	Schucks	5/8
20268	20021 Ballinger Way	Klokstad Gary E	5/8
20656	19946 Forest Park Drive	Olsen Ken	5/8
20702	20320-A Ballinger Way	Cleaners (Ballinger Village)	5/8
20704	20120 Ballinger Way	Ballinger Village	5/8
20708	20308 Ballinger Way	Teriyaki Town (Ballinger Village)	5/8
20710	20302 Ballinger Way	Ballinger Nails	5/8

Commercial Accounts

Account Number	Site Address	Name	Meter Size (in)
20712	20226-38 Ballinger Way	Ballinger Village	5/8
20714	20224 Ballinger Way	Suntana Tanning	5/8
20718	20222 Ballinger Way	Angler's Choice	5/8
20728	20132 Ballinger Way	Starbucks Coffee #3316	5/8
20730	20136 Ballinger Way	Party Central	5/8
20732	20128-20130 Ballinger Way	Ballinger Village	5/8
20734	20028 Ballinger Way	UPS	5/8
20736	20124 Ballinger Way	Splendid Pleasures	5/8
20738	20120 Ballinger Way	Blockbuster	5/8
20740	20214 Ballinger Way	Ballinger Village	5/8
20768	19944 Ballinger Way	Triune Development	5/8
20774	20036 19 Ave NE	Khorsandi Dr. Shohreh	5/8
20778	20056 19 Ave NE	Burkhart William-Ballinger Professional Offices	5/8
20780	20300 19 Ave NE	Robinson Engineering	5/8
20782	20310 19 Ave NE	White Greg and Rosemary	5/8
20786	20324 19 Ave NE	Ballinger Realty	5/8
21298	2960 NE 200 St	Lake Forest Park Congregational	5/8
21482	19062 Ballinger Way	Hughes W-North Park Heating	5/8
22708	1234 NE 175 St	Nguyen Tan-Europa Car Care	5/8
22965	14712 15 Ave NE	Wallace Pat	5/8
23035	18021 15 Ave NE	LLC Cheton	5/8
23242	17550 15 Ave NE	Sims John	5/8
23395	1211 NE 175 St	Barrie Jeremy	5/8
23428	17503 10 Ave NE	Lancaster Brad (Law Office)	5/8
23558	1216 Ne 145 St	Nail Spa Sense	5/8
23821	1222 NE 145 St	Tracey Michael	5/8
24053	17406 15 Ave NE	Safeway-Gas Station	5/8
24159	14724 15 Ave NE	Romeos Pizza (BURNED)	5/8
24538	17712 15 Ave NE	Real Property Associates	5/8
24951	509 NE 165 St	Scott Lyanne	5/8
25340	14500 15 Ave NE	Seattle Goodwill	5/8
25908	1505 NE 205 St	Pacwest Energy-Gas Station	5/8
26067	20206 Ballinger Way	Happy Bean Smoothie	5/8
26102	20333 Ballinger Way	FDIC - City Bank	5/8
26180	14614 15 Ave NE	Elegant Nails	5/8
26197	519 NE 165 St	Frenandez Audreana	5/8

Wholesale Accounts

Account Number	Name	Meter Size (in)
22342	Fircrest	8
22348	Fircrest	6
22344*	Fircrest	2
22346*	Fircrest	2

*This is a bypass and should only be charged for consumption.

APPENDIX C

Cross Connection Control Program Implementation Schedule

Task	Planned Implementation (Starting from Policy Adoption Date)
Assess purveyor's water system facility hazards	Within 30 days
Install backflow preventers on purveyor's system facility hazards	Within 6 months
Conduct hazard assessment for new customers	Upon application for service
Ensure backflow preventers are installed for new customers	Before service is provided
Conduct hazard assessments for existing high hazard customers	Within 12 months
Notify existing high hazard customers of hazard assessment results and backflow preventer installation requirements	Within 18 months
Ensure backflow preventers are installed for existing high hazard customers	Within 12 months*
Conduct hazard assessments for existing, non-high hazard, commercial customers	Within 24 months
Notify existing non-high hazard commercial customers of hazard assessment results and backflow preventer installation	Within 36 months
Ensure backflow preventers are installed on connections to existing, non-high hazard, commercial customers	Within 48-60 months*
Re-assess non-high hazard commercial customers	Every 5 years
Conduct hazard assessment for existing residential customers	Within 24 months
Notify residential customers of hazard assessment results and backflow preventer installation requirements	Within 36 months
Ensure that backflow preventers are installed on residential connections that require protection	Within 36-48 months*
Re-assess residential customers	Every 5 years
* Earlier backflow prevention assembly installation is required when a customer's water use changes (e.g., tenant changes), and/or building modifications require a plumbing permit.	

APPENDIX D



Public Water System Cross-Connection Control Activities Annual Summary Report for Year 2010

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

PWS ID: 39600	PWS Name: SHORELINE WATER DISTRICT	County: KING
Provide name and Cert No. of CCS who develops and implements your CCC program		
CCS Name (last, first & mi): Heivilin, Robert R.		CCS Phone: (206) 362-8100
CCS Cert No.: 5407	BAT Cert. No. (if applicable): B3620	
CCS is (check one): PWS owner or employee ☒ On contract to PWS ☐ Volunteer or other ☐		

Part 2: Status of Cross-Connection Control (CCC) Program at end of 2010

PWS has (check one box in each column below):	
A written CCC program plan Y ☒ N ☐	CCC implementation activities Y ☒ N ☐

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

Provide information regarding PWSs specific CCC Program Elements

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

Part 3A: System Characteristics at End of 2010

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

Type of Service Connection	Number
Residential (As defined by PWS)	7900
All Other (Include dedicated fire sprinkler and irrigation lines and PWS-owned facilities such as water and wastewater treatment plants)	300

and pumping stations, parks, piers and docks.)	
Total Number of Connections	8200

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

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

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

Type of High-Hazard Premises or Systems [WAC 246-290-490(4)(b)]	Number of Connections at end of 12/31/2010			
	A. Being Served Water by PWS ¹	B. With Premises Isolation by AG/RP	C. With Column B AG Inspected or RP Tested ²	D. Granted Exception from Mandatory Premises Isolation
Agricultural (farms and dairies)	0	0	0	0
Beverage bottling plants (including breweries)	0	0	0	0
Car washes	2	2	1	0
Chemical plants	0	0	0	0
Commercial laundries and dry cleaners	2	2	2	0
Both reclaimed water and potable water provided	0	0	0	0
Film processing facilities	0	0	0	0
Dedicated fire protection systems with chemical addition or using unapproved auxiliary supplies	1	1	1	0
Food processing plants (including canneries, slaughter houses, rendering plants)	0	0	0	0
Hospitals, medical centers, nursing homes, veterinary, medical and dental clinics, and blood plasma centers	11	3	1	0
Separate irrigation systems using purveyor's water supply and chemical addition ⁴	0	0	0	0
Laboratories	0	0	0	0
Metal plating industries	0	0	0	0
Petroleum processing or storage plants	0	0	0	0
Piers and docks	0	0	0	0
Radioactive material processing plants or nuclear reactors	0	0	0	0
Survey access denied or restricted	0	0	0	0
Wastewater lift/pump stations (non-residential only)	3	3	3	0
Wastewater treatment plants	0	0	0	0
Unapproved auxiliary water supply interconnected with potable water supply	0	0	0	0
Wholesale Customer	2	2	2	0
Totals	21	13	10	0

¹Count multiple connections or parallel installations as *separate* connections.

²Count only those connections with AG or RPBA installed for premises isolation. Don't include connections with in-premises protection only, or connections with DCVA/DCDAs installed for premises isolation.

³Count only those connections whose premises isolation preventers were inspected (AG) or tested (RPBA) during 2010.

⁴For example, dedicated lines to irrigation systems in parks, playgrounds, golf courses, cemeteries, estates, etc.

⁵Premises with hazardous materials or processes (requiring isolation by AG or RPBA) such as: aircraft and automotive manufacturers, pulp and paper mills, metal manufacturers, military bases, and wholesale customers that pose a high hazard to the PWS. May be grouped together in categories, e.g.: other manufacturing or other commercial. If needed, attach additional sheet giving same information as requested in table.

Page 2

Part 3C: Cross-Connection Control for Medical Category High-Hazard Premises Served by the PWS

If PWS does not serve any medical type premises, check here ☐ and go to Part 4A.

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

Type of High-Hazard Premises or Systems [WAC 246-290-490(4)(b)]	Number of Connections at end of 12/31/2010			
	A. Being Served Water by PWS ¹	B. With Premises Isolation by AG/RP	C. With Column B AG Inspected or RP Tested ²	D. Granted Exception from Mandatory Premises Isolation
Hospitals				
Hospitals (include psychiatric hospitals and alcohol and drug treatment centers)	0	0	0	0
Facilities for Treatment and Care of Patients Not Located in Hospitals Counted Above				
Same day surgery centers	0	0	0	0
Out-patient clinics and offices	1	1	0	0
Alternative health out-patient clinics and offices	0	0	0	0
Psychiatric out-patient clinics and offices	0	0	0	0
Chiropractors	0	0	0	0
Hospice care centers	0	0	0	0
Childbirth centers	0	0	0	0
Kidney dialysis centers	0	0	0	0
Blood centers	0	0	0	0
Dental clinics and offices	6	1	1	0
Facilities for Housing Patients				
Nursing homes	2	0	0	0
Boarding homes	0	0	0	0
Residential treatment centers	0	0	0	0
Other Medical-Related Facilities				
Mortuaries	0	0	0	0
Morgues and autopsy facilities (not in hospitals)	0	0	0	0
Veterinarian offices, clinics and hospitals	2	1	0	0
All other (describe in Part 6: Comments on page 6)	0	0	0	0
Totals	11	3	1	0

¹Count multiple connections or parallel installations as *separate* connections.

²Count only those connections with AG or RPBA installed for premises isolation. Don't include connections with in-premises protection only, or connections with DCVA/DCDAs installed for premises isolation.

³Count only those connections whose premises isolation preventers were inspected (AG) or tested (RPBA) during 2010.

Part 4A: Backflow Preventer Inventory and Testing Data During Year 2010

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

If PWS does not track AVBs Check here: ☒

Backflow Preventer Category and Testing/Inspection Information		Air Gap	RPBA	RPDA	DCVA	DCDA	PVBA	SVBA	AVB
Premises Isolation, including preventers isolating PWS-owned facilities. <i>If In-Premises Protection preventers are also included, check here.</i> ☐									
<i>Rows 1-3 pertain ONLY to Premises Isolation preventers in service at beginning of 2010</i>									
1	In service on 1/1/2010	0	23	0	40	1	0	0	unk
2	Inspected and/or Tested in 2010 ¹	0	15	0	33	1	0	0	unk
3	Failed Inspection or Test in 2010	0	3	0	2	0	0	0	unk
<i>Rows 4 - 6 pertain ONLY to NEW Premises Isolation preventers installed during 2010</i>									
4	New preventers installed in 2010 ²	0	0	0	2	4	0	0	unk
5	Inspected and/or Tested in 2010 ¹	0	0	0	2	4	0	0	unk
6	Failed inspection or test in 2010 ³	0	0	0	1	0	0	0	unk
7	Preventers taken out of service in 2010 ³	0	0	0	0	1	0	0	0
<i>Premises Isolation Total at end of 2010⁴</i>		0	23	0	42	4	0	0	unk
In-Premises Protection (Fixture Protection or Area Isolation), including preventers within PWS-owned facilities.									
<i>Rows 8 - 10 pertain ONLY to In-Premises Protection Preventers in service at beginning of 2010</i>									
8	In service on 1/1/2010	4	74	1	168	31	0	0	unk
9	Inspected and/or Tested in 2010 ¹	4	52	0	108	22	0	0	unk
10	Failed Inspection or Test in 2010	0	3	0	6	0	0	0	unk
<i>Rows 11 - 13 pertain ONLY to NEW In-Premises Protection Preventers installed during 2010</i>									
11	New preventers installed in 2010 ²	0	4	0	6	1	0	0	unk
12	Inspected and/or Tested in 2010 ¹	0	4	0	6	1	0	0	unk
13	Failed inspection or test in 2010	0	1	0	0	0	0	0	unk
14	Preventers taken out of service in 2010 ³	0	3	0	0	1	0	0	0
<i>In-Premises Protection Total at end of 2010⁴</i>		4	75	1	174	31	0	0	unk
Grand Total at end of 2010		4	98	1	216	35	0	0	unk

¹Initial and/or routine annual inspection (for proper installation and approval status) and/or test (for testable assemblies only using DOH/USC test procedures). Includes preventers installed on connections where backflow prevention was not previously required and any preventers that replaced those in service at beginning of 2010. Replacement preventers may be of a different type than the original.

²Includes preventers installed on connections where backflow prevention was not previously required and any preventers that replaced those in service at the beginning of 2010. Replacement preventers may be of a different type than the original.

³New or existing preventers taken out of service, whether or not they were replaced by the same type or different type of preventer.

⁴Total at end of 2010 should be equal to the number of preventers in service at beginning of 2010 plus those installed during 2010 minus the number of preventers taken out of service during 2010.

Part 4B: Other Implementation Activities in 2010

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

Activity or Condition	Number
New service connections evaluated for cross-connection hazards to PWS in 2010.	1
New service connections requiring backflow protection to protect PWS. ¹	1
Existing service connections evaluated for cross-connection hazards to PWS in 2010.	1
Existing service connections requiring backflow protection to protect PWS. ^{1,2}	1
Exceptions granted to high-hazard premises per WAC 246-290-490(4)(b) in 2010. ³	0
CCC enforcement actions taken by PWS during 2010. ⁴	0

¹Include services where either premises isolation or in-premises preventers were required to protect the PWS.²Include existing services that need new, additional or higher level backflow prevention.³A DOH Exceptions to Hazard Premises Form *must* be attached for each exception granted during the year.⁴"Enforcement actions" mean actions taken by the PWS (such as water shut-off, PWS installation of backflow preventer) when the customer fails to comply with PWSs CCC requirements.**Part 5: Backflow Incidents and "Off-Normal" Events in 2010**

Backflow Incidents, Risk Factors and Indicators during 2010	Number (Enter 0 if none)	Check if Data Not Available
Backflow Incidents during 2010		
1 Backflow incidents that contaminated the PWS ⁵ .	0	☐
2 Backflow incidents that contaminated the customer's drinking water system only ⁵ .	0	☒
Risk Factors for Backflow during 2010		
3 Distribution main breaks per 100 miles of pipe.	0.00	☒
4 Low pressure events (<20 psi in PWS distribution system).	0	☒
5 Water outage events.	0	☒
Indicators of Possible Backflow during 2010		
6 Total health-related complaints received by PWS. ⁶	0	☐
7 Received during BWA or PN events. ⁷	0	☐
8 Received during low pressure or water outage events.	0	☐
9 Total aesthetic complaints (color, taste, odor, air in lines, etc.).	0	☒
10 Received during BWA or PN events. ⁷	0	☐
11 Number of these complaints received during low pressure or water outages events.	0	☐

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

Part 6: Comments and Clarifications

Enter comments or clarifications to any of the information included in this report. Note for on-screen completion: Comments will not "word wrap" from one line to the next. Press to continue on new line. Maximum length of each comment is 255 characters, including spaces.

Part No.	Date Added	Comment
----------	------------	---------

Part 7: Report Completion Information

I certify that the information provided in this CCC Activities Report is complete and accurate to the best of my knowledge.		
CCC Program Mgr. Name ¹ : Robert R. Heivilin		Title: Utility Person IV
Signature:		Date: 04/29/2011
Phone: (206) 362-8100	E-mail: bobh@shorelinewater.org	
I have reviewed this report and certify that the information provided is complete and accurate to the best of my knowledge.		
PWS Mgr./Owner Name ² : Denny Clouse		Title: Operations Manager
Signature:	Op. Cert. No.:	Date: 04/29/2011

¹ CCC Program Manager is generally the CCS who is responsible for development and implementation of the PWSs CCC Program.

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



Cross-Connection Control Program Summary Report For 2010

Describe the characteristics of the PWS's CCC Program at the end of 2011. Complete this form only if PWS had written CCC program plan, policies or procedures at end of 2011.

Part 1: Public Water System (PWS) Identification

PWS ID: 39600	PWS Name: SHORELINE WATER DISTRICT	County: KING
---------------	------------------------------------	--------------

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

A. Type of Program Currently Implemented

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

B. Coordination with Authority Having Jurisdiction (AHJ) on Cross-Connection Issues

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

AHJ No.	Name of AHJ (e.g., the City or County Building Department)	PWS Currently:		AHJ Declined to Coordinate
		Coordinates with AHJ	Has Written Agreement with AHJ	
1	City of Shoreline	Y ☒ N ☐	Y ☐ N ☒	Y ☐ N ☒
2	City of Lake Forest Park	Y ☐ N ☒	Y ☐ N ☒	Y ☐ N ☒
3		Y ☐ N ☐	Y ☐ N ☐	Y ☐ N ☐
4		Y ☐ N ☐	Y ☐ N ☐	Y ☐ N ☐
5		Y ☐ N ☐	Y ☐ N ☐	Y ☐ N ☐

¹ If more than 5 AHJs, attach separate sheet giving the above information.

C. Corrective or Enforcement Actions Available to the Purveyor

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

D. CCC Program Responsibilities

Do not include enforcement action related procedures or circumstances.

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

E. Backflow Protection for Fire Protection Systems

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

PWS coordinates with <i>AHJ</i> on CCC issues for fire protection systems(FPS).	Y ☐ N ☒ N/A ☐
PWS coordinates with <i>local Fire Marshal</i> on CCC issues for FPS.	Y ☐ N ☒ N/A ☐
PWS ensures backflow prevention is installed before serving <i>new</i> connections with FPS.	Y ☒ N ☐
PWS requires retrofits to <i>high</i> -hazard FPS.	Y ☐ No. of days allowed: 0 N ☐ N/A ☒
PWS requires retrofits to <i>low</i> -hazard FPS.	Y ☐ No. of days allowed: 0 N ☒ N/A ☐

F. Backflow Protection for Irrigation Systems

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

G. Used Water

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

H. Backflow Protection for Auxiliary Water Supplies¹ NOT Interconnected with PWS

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

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

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

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

I. Backflow Protection for Tanker Trucks and Temporary Water Connections

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

J. Backflow Protection for Non-Residential Connections

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

Type of Connection	PWS has Customers of this Type	Minimum Premises Isolation Backflow Protection Required
Commercial	Y ☒ N ☐	Not Required ☒ DCVA ☐ RPBA ☐
Industrial	Y ☐ N ☒	Not Required ☐ DCVA ☐ RPBA ☐
Institutional	Y ☒ N ☐	Not Required ☒ DCVA ☐ RPBA ☐

K. Backflow Protection for Wholesale Customers

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

Type of Intertie	PWS has (plans to have) Customers of this Type	Backflow Protection Required
Existing	Y ☒ N ☐	Not specified / Not required ☐ Always required ☒ Required only if purchaser's CCC program is inadequate ☐ Minimum required (if applicable): DCVA ☐ RPBA ☒
New	Y ☐ N ☒	Not specified / Not required ☐ Always Required ☐ Required only if purchaser's CCC program is inadequate ☐ Minimum required (if applicable): DCVA ☐ RPBA ☐

L. Exceptions to Mandatory Premises Isolation

PWS's written CCC Program Plan <i>allows</i> system to grant Exceptions to mandatory premises isolation per WAC 246-290-490(4)(b)(iii).	Y ☐ N ☐ Doesn't Address ☒
PWS currently grants new Exceptions.	Y ☐ N ☒
PWS granted Exceptions in previous reporting years.	Y ☐ N ☒

Part 3: CCC Program Record-Keeping and Inventory

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

Cross-Track (BMI) ☐	BPMS ☒	XC2 (Engsoft) ☐	Tokay ☐	Other commercial CCC software (specify) ☐
Custom developed for or by PWS ¹ ☐	Other non-CCC software (e.g. Excel) ☐	None Used ☐		

¹ Do not include commercial CCC software customized for PWS. If PWS uses customized commercial software, check the box for the appropriate commercial software name.

Part 4: Comments and Clarifications

Enter comments or clarifications to any of the information provided in this report.

Part No.	Date Added	Comment

Part 5: CCC Program Summary Completion Information

I certify that the information provided in this CCC Program Summary is complete and accurate to the best of my knowledge.		
CCC Program Mgr. Name ¹ : Robert R. Heivilin		Title: Utility Person IV
Signature:		Date: 04/29/2011
Phone: (206) 362-8100	E-mail*: bobh@shorelinewater.org	
I certify that the information provided in this report accurately represents the status and description of this water system's CCC Program.		
PWS Mgr/Owner Name ² : Denny Clouse		Title: Operations Manager
Signature:	Op. Cert. No.:	Date: 04/29/2011

*Required Field. For security reasons, an e-mail address must be provided. DOH will e-mail you to confirm any changes made to your data

¹ The CCC Program Manager is generally the CCS responsible for developing and implementing the PWS's CCC program.

² The person that the CCC Program Manager reports to or other manager having direct responsibility and/or oversight of the CCC program.
This person doesn't need to be in charge of the entire water system.



1519 NE 177th St. • P.O. Box 55367 • Shoreline, WA 98155 • Phone: 206.362.8100 • Fax: 206.361.0629

Annual Backflow Prevention Assembly Testing Notice

June 21, 2012

TEST FORM DUE NO LATER THAN: July 21, 2012

Customer Name
Address
Shoreline, WA 98155

Re: Backflow Prevention Assembly Test Due
Raferty - 16329 35 AVE NE

Dear Customer,

Our records indicate the following backflow prevention assemblies are located at your facility. These backflow prevention assemblies must be tested and certified, as required by State and local regulatory authority, no later than the date indicated: **July 21, 2012.**

The purpose of the program is to protect the integrity of the water distribution system as well as the health, safety and general welfare of customers like you who use it. Backflow prevention assembly tests are required to be completed annually on all backflow devices installed on your property and the completed test forms submitted and kept on file at Shoreline Water District. A certified backflow prevention assembly tester must perform the annual backflow prevention assembly test and certification. The backflow tester you choose may submit your test results to Shoreline Water District, however, the owner is ultimately responsible for submitting the test results. Shoreline Water District is not responsible for the expense of testing your backflow prevention assembly(s).

Please note that if your system is not brought into compliance, tested and evidence of compliance provided to the Shoreline Water District within 30 days from the date of this letter, the Shoreline Water District may discontinue water service to this address until evidence of your system's compliance has been provided. Your prompt attention to this matter will avoid disruption of your water service.

If you have any questions regarding the above backflow testing requirements, please call: (206) 362-8100

Sincerely,

Bob Heivilin
Utility Person 4
Cross-Connection Control Program
(206) 362-8100

Assemblies Due to be Tested:

Type	Mfr	Size	Model	SN	Due
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1519 NE 177th St. • P.O. Box 55367 • Shoreline, WA 98155 • Phone: 206.362.8100 • Fax: 206.361.0629

Annual Backflow Prevention Assembly Testing Notice

SECOND NOTICE

June 21, 2012

TEST FORM DUE NO LATER THAN: July 21, 2012

Customer Name
Address
Shoreline, WA 98155

Re: Backflow Prevention Assembly Test Over Due
Raferty - 16329 35 AVE NE

Dear Customer,

Our records indicate that we have not received current test reports for the following backflow prevention assemblies are located at your facility. This is our second notice in this regard. A previous notice was sent on: **06/21/12**. These backflow prevention assemblies must be tested and certified, as required by State and local regulatory authority, no later than the date indicated: **July 21, 2012**.

The purpose of the program is to protect the integrity of the water distribution system as well as the health, safety and general welfare of customers like you who use it. Backflow prevention assembly tests are required to be completed annually on all backflow devices installed on your property and the originals submitted and kept on file at Shoreline Water District. A certified backflow prevention assembly tester must perform the annual backflow prevention assembly test and certification. The owner are responsible for submitting the test results to Shoreline Water District. Shoreline Water District is not responsible for the expense of testing your backflow prevention assembly(s).

Please note that if your system is not brought into compliance, tested and evidence of compliance provided to the Shoreline Water District within 15 days from the date of this letter, the Shoreline Water District may discontinue water service to this address until evidence of your system's compliance has been provided. Your prompt attention to this matter will avoid disruption of your water service.

If you have any questions regarding the above backflow testing requirements, please call: (206) 362-8100

Sincerely,

Bob Heivilin
Utility Person 4
Cross-Connection Control Program
(206) 362-8100

Assemblies Due to be Tested:

Type	Mfr	Size	Model	SN	Due
------	-----	------	-------	----	-----

SHORELINE



Water District

1519 NE 177th St. • P.O. Box 55367 • Shoreline, WA 98155 • Phone: 206.362.8100 • Fax: 206.361.0629

Annual Backflow Prevention Assembly Testing Shut-Off Notice

June 21, 2012

TEST FORM DUE NO LATER THAN: July 21, 2012

Customer Name
Address
Shoreline, WA 98155

Facility Name
Located at 12345 Main St., Shoreline, WA 98155

Dear Customer,

This is our third and FINAL notice in this regard. Our records indicate that we have not received the annual test reports on the following backflow prevention assembly:

We have previously sent you notices on the following dates:

June 21, 2012
00/00/00

In order for backflow prevention assemblies to continue to operate efficiently they must be tested and serviced when required. As well, in order to comply with the enabling legislation the listed backflow prevention assemblies must be tested annually by a certified and licensed tester. This letter is to give you notice that the requested tests must be completed and the necessary inspection forms returned to this office within **5 days** of the date of this letter or the water service to the subject premises may be discontinued without further notice. Completed test forms may be delivered to the address below:

Shoreline Water District
1519 NE 177th St.
Shoreline, WA 98155
or Fax: 206-361-0629

You are hereby notified that the water supply to the above noted premises will be discontinued if the backflow prevention assemblies are not tested within **5 days**. Water service may not be resumed until testing of backflow prevention assemblies has been completed and the resulting fees have been paid.

If you have any questions, do feel free to contact the Cross Connection Control Supervisor at the above address or you may phone **(206) 362-8100**.

Sincerely,

Bob Heivilin

Over Due Backflow Assemblies:

Type	Mfr	Size	Model	SN	Due
------	-----	------	-------	----	-----

There are no BFP Assembly records at this Facility which are overdue for testing at this time.

BACKFLOW PREVENTION ASSEMBLY TEST REPORT

Return reports to:

Shoreline Water District
Water Quality / Backflow
Prevention
PO Box 55367
Shoreline WA 98155

FAX: (206) 361-0629

Assembly ID _____ Schedule Code _____ Authorized Tester: _____

Facility Name _____ Commercial: ☐ Residential: ☐

Mailing Address _____

Service Address _____ City: _____ Zip: _____

Contact Name _____ Phone: _____ FAX: _____

Equip Location _____

Hazard Type _____ DCVA ☐ RPBA ☐ PVBA ☐ AG ☐ Other _____

New Install ☐ Existing ☐ Replacement ☐ Old SN# _____ Proper Installation? ☐ Yes ☐ No

Make of Assembly: _____ Model: _____ Serial Number _____ Size: _____

Initial Test	DCVA / RPBA CHECK VALVE #1	DCVA / RPBA CHECK VALVE #2	RPBA	PVBA/SVBA
Opened at _____ PSID	Leaked ☐ _____ PSID	Leaked ☐ _____ PSID	Opened at _____ PSID	Air Inlet
Passed ☐ Failed ☐			#1 Check _____ PSID	Opened at _____ PSID
			Air Gap OK _____	Did not Open ☐
New Parts and Repairs	Clean Replace Part ☐ ☐ _____ ☐ ☐ _____ ☐ ☐ _____ ☐ ☐ _____	Clean Replace Part ☐ ☐ _____ ☐ ☐ _____ ☐ ☐ _____ ☐ ☐ _____	Clean Replace Part ☐ ☐ _____ ☐ ☐ _____ ☐ ☐ _____ ☐ ☐ _____	Check Valve Held at _____ PSID Leaked ☐ Cleaned ☐ Repaired ☐
Test After Repairs	Leaked ☐ _____ PSID	Leaked ☐ _____ PSID	Opened at _____ PSID #1 Check _____ PSID	Air Inlet _____ PSID Check Valve _____ PSID
Passed ☐ Failed ☐				

Air Gap Inspection: _____ Supply Pipe Diameter: _____" Separation: _____" Pass ☐ Fail ☐

Remarks: _____ ☐ USC 10th Edit. Line Pressure _____ PSI

☐ Confined Space

Tester Signature: _____ Cert. No.: _____ Date: _____

Tester Name Printed: _____ Testers Phone # () _____

Repaired By: _____ Date: _____

Final Test By: _____ Cert. No.: _____ Date: _____

Calibration Date: _____ Make/Model: _____ Gauge # _____

APPENDIX G



SHORELINE

Water District

Water Usage Questionnaire

Multi-Family (Duplex or more) / Commercial /

Multi-Family / Commercial / Industrial / Fire / Irrigation / Construction

PLEASE RETURN THIS COMPLETED FORM TO:

Shoreline Water District
Attn: Water Quality Division
1519 NE 177th Street
Shoreline, WA 98155

Today's Date _____ Meter Application # _____

Project Name _____ WSEA # _____

Business Name _____

Business Type _____

Physical Property Address _____

City _____ State _____ Zip code _____

Property Owner _____

Mailing Address _____

Mailing City _____ State _____ Zip code _____

Contact Person _____ Phone Number _____

(1) Please indicate if your facility has, or will have, any of the following:

	Yes	No		Yes	No
Air conditioning system	☐	☐	Chemical feed tank for industrial process	☐	☐
Air washer	☐	☐	Chemical feed (<i>commercial cleaners</i>)	☐	☐
Aquarium make-up water	☐	☐	Chlorinators	☐	☐
Aspirator, chemical	☐	☐	Computer cooling lines	☐	☐
(<i>Herbicide, pesticide, weedicide</i>)			Condensate tanks	☐	☐
Aspirator, Medical / lab	☐	☐	Cooling towers	☐	☐
Autoclave	☐	☐	Decorative ponds	☐	☐
Autopsy table	☐	☐	Degreasing equipment	☐	☐
Auxiliary Water System	☐	☐	Dental equipment / cuspidors	☐	☐
(<i>Well, pond, creek, other</i>)			Dialysis equipment	☐	☐
Baptismal fountain	☐	☐	Dye vats and tanks	☐	☐
Bathtub, below rim filler	☐	☐	Etching tanks	☐	☐
Bedpan washer	☐	☐	Fermenting tanks	☐	☐
Beverage dispenser (<i>post-mix Co2</i>)	☐	☐	Fertilizer injection	☐	☐
Boiler feed lines	☐	☐	Film processors	☐	☐

	Yes	No		Yes	No
Bottle washing equipment	☐	☐	Fire Department pumper connections	☐	☐
Box hydrant (irrigation)	☐	☐	Fire system (with booster pump)	☐	☐
Building three stories or more tall	☐	☐	Fire system (without chemicals)	☐	☐
Car wash	☐	☐	Fire system (with antifreeze or chemicals)	☐	☐
Fume hoods (lab)	☐	☐	Livestock drinking tanks	☐	☐
Garbage can washers	☐	☐	Make-up tanks	☐	☐
Heat exchangers	☐	☐	Photo developing sinks / tanks	☐	☐
(other than double wall with leak path)			Pump prime lines	☐	☐
Heat pumps	☐	☐	Radiant heat system (with chemicals)	☐	☐
High pressure washers	☐	☐	Radiator flushing equipment	☐	☐
Hot tubs (direct water connection)	☐	☐	Recreational vehicle sewage dump	☐	☐
Hot water heating boilers	☐	☐	Sewer connected equipment	☐	☐
Hydrotherapy baths	☐	☐	Solar water heating system	☐	☐
Ice makers	☐	☐	Spas	☐	☐
Industrial fluid systems	☐	☐	Steam generating equipment	☐	☐
Irrigation system (no chemicals)	☐	☐	Stills	☐	☐
Irrigation system (chemical)	☐	☐	Swimming pools	☐	☐
Laboratory equipment	☐	☐	Trap primers	☐	☐
Laundry machines (commercial)	☐	☐	Used, reclaimed or gray water systems	☐	☐
			X-ray equipment	☐	☐

(2) Are you aware of any existing backflow protection located at this property?

Please describe _____

(3) Please provide the name of all products or chemicals that are mixed with water at your location:

(4) Please provide the name of all products or chemicals that are stored in bulk at your location:

Name of person completing this form _____

THIS SECTION TO BE COMPLETED BY SWD CCS/WQ						
TYPE OF WATER USE	HAZARD ASSESSMENT		BACKFLOW PROTECTION REQUIRED			
	LOW	HIGH	DCVA	DCDA	RPBA	RPDA
DOMESTIC	☐	☐	☐	☐	☐	☐
IRRIGATION	☐	☐	☐	☐	☐	☐
FIRE	☐	☐	☐	☐	☐	☐

BACKFLOW REQUIRED?	☐ YES	☐ NO	CCS INITIALS
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Water District

Single Family Residential Water Usage Questionnaire

PLEASE RETURN THIS COMPLETED FORM TO:

Shoreline Water District
Attn: Water Quality Division
1519 NE 177th Street
Shoreline, WA 98155

Today's Date _____

Meter Application # _____

Physical Property Address _____

City _____ State _____ Zip code _____

Property Owner _____

Mailing Address _____

Mailing City _____ State _____ Zip code _____

Contact Person _____ Phone Number _____

(1) Please indicate if your residence has, or will have, any of the following:

	Yes	No		Yes	No
Aspirator, chemical (Herbicide, pesticide, weedicide)	☐	☐	Hot tubs (direct water connection)	☐	☐
Auxiliary Water System (Well, pond, creek, other)	☐	☐	Hot water heating boilers	☐	☐
Bathtub, below rim filler	☐	☐	Irrigation system (no chemicals)	☐	☐
Boiler feed lines	☐	☐	Irrigation system (chemical)	☐	☐
Building three stories or more tall	☐	☐	Fire system (with antifreeze or chemicals)	☐	☐
Computer cooling lines	☐	☐	Livestock drinking tanks	☐	☐
Decorative ponds	☐	☐	Radiant heat system (with chemicals)	☐	☐
Dialysis equipment	☐	☐	Recreational vehicle sewage dump	☐	☐
Fertilizer injection	☐	☐	Sewer connected equipment	☐	☐
Fire system (with booster pump)	☐	☐	Solar water heating system	☐	☐
Fire system (without chemicals)	☐	☐	Swimming pools	☐	☐
			Trap primers	☐	☐
			Used, reclaimed or gray water systems	☐	☐

(2) Are you aware of any existing backflow protection located at this property?

Please describe _____

Name of person completing this form _____

THIS SECTION TO BE COMPLETED BY SWD CCS/WQ						
TYPE OF WATER USE	HAZARD ASSESSMENT		BACKFLOW PROTECTION REQUIRED			
	LOW	HIGH	DCVA	DCDA	RPBA	RPDA
DOMESTIC	☐	☐	☐	☐	☐	☐
IRRIGATION	☐	☐	☐	☐	☐	☐
FIRE	☐	☐	☐	☐	☐	☐

BACKFLOW REQUIRED?	☐ YES	☐ NO	CCS INITIALS
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APPENDIX H



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:	Count	y:
---------	-----	-------	-------	----

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 <i>in-premises protection</i> ? 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	☐	Water quality complaint	☐
	Meter running backwards	☐	Illness/injury complaint	☐
	Water use decrease	☐	Result of Investigation	☐
	Disinfectant residual monitoring ...	☐	Other (Describe):	☐
	Water quality monitoring	☐		
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	☐	Industrial/commercial process water/fluid.....	☐
	Auxiliary water supply	☐	Medical/dental fixture	☐
	Beverage machine	☐	Reclaimed water system.....	☐
	Boiler, hot water system	☐	Swimming pools, spa	☐
	Chemical injector/aspirator	☐	Wastewater (sewage) system	☐
	Fire protection system	☐	Other (specify):	☐
	Irrigation system (PWS supplied)	☐		

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

Type of backflow:	Backsiphonage ☐	Typical distribution system pressure in vicinity of incident (if range, enter lower end of range): psi		
	Backpressure ☐			
Main/pressure status at time of incident (check all that apply):	Normal	☐	Source/plant outage	☐
	Main break	☐	Scheduled water shutoff by PWS	☐
	Fire fighting	☐	Unscheduled/emergency shutoff	☐
	Other high usage	☐	Unknown	☐
	Power outage	☐	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 protected bypass present ☐	
	Improperly installed/plumbed ☐ 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 <i>prior</i> to backflow incident. Attach test report(s), if available.	No test report on record	☐
	Date tested/inspected:	
	Passed test/inspection <i>without</i> repairs	☐
	Failed initial test/inspection, passed <i>after</i> repair	☐
	Failed test/inspection, no repairs made	☐
Inspection/test information <i>after</i> backflow incident [per WAC 246-290-490(7)(b)]. Attach test report.	Not tested/inspected	☐
	Date tested/inspected:	
	Passed test/inspection <i>without</i> repairs	☐
	Failed initial test/inspection, passed <i>after</i> repair.....	☐
	Failed test/inspection, no repairs made.....	☐
Preventer failure information , if applicable (check all that apply):	Fouled check	☐ Damaged seat ☐
	Debris	☐ Other: ☐
	Weather-related damage	☐
If preventer failed inspection/test, did failure allow backflow?	Yes ☐ No ☐ If yes, explain:	

Part 4: Corrective Action/Notifications

Action <i>taken</i> by PWS to restore water quality (check all that apply):	None	☐	Other treatment (describe): ☐
	Flushed/cleaned mains	☐	
	Flushed/cleaned plumbing...	☐	
	Disinfected mains	☐	
	Disinfected plumbing	☐	
Action <i>ordered</i> by PWS to correct cross-connection (check all that apply):	None	☐	Change existing preventer ☐
	Eliminate cross-connection...	☐	
	Remove by-pass	☐	
	Install new preventer ...	☐	
	For <i>premises isolation</i>	☐	
	For <i>fixture protection</i>	☐	
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 ☐		
Notifications of consumers in area of incident (check all that apply):	Issued by end of next business day:		
	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-m	ail:	
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.

APPENDIX I

King County: Certified Backflow Assembly Testers

BAT #	Name	Contact Number
B5680	Akins, Tom	(253) 970 - 2673
B5046	Allenfort, Jack	(425) 495 - 1939
B4454	Anderson, Scott	(206) 660 - 8763
B0255	Angus, Clifford	(206) 762 - 5900
B0815	Arndt, Larry	(206) 522 - 1830
B5710	Atkinson, Craig	(206) 714 - 4879
B3086	Attaway, Ron	(206) 947 - 0852
B4107	Babbel, Byron	(206) 242 - 3085
B5656	Bargelski, Chris	(206) 779 - 4016
B4123	Barth, James	(425) 766 - 2968
B5698	Baskin, Ron	(425) 443 - 5977
B4142	Bauer, Jacob	(206) 786 - 3460
B3632	Baxmann, Dale	(206) 795 - 9192
B4810	Beck, John	(253) 854 - 7228
B4811	Bellamy, Gordon	(206) 250 - 4120
B4345	Berenshtein, Uri	(206) 571 - 8804
B5031	Boe, Lance	(253) 839 - 3186
B3684	Borchardt, Rock	(425) 483 - 7202
B5433	Bowden, Thomas	(425) 260 - 5589
B3424	Brezina, Charles	(253) 941 - 6817
B0546	Brotten, George	(206) 930 - 2867
B4203	Brown, Ronald	(425) 821 - 6801
B5657	Brown, Chris	(253) 273 - 9942
B5554	Bushman, Chad	(206) 651 - 6049
B2993	Bushong, Aaron	(425) 531 - 0805
B3751	Calis, Simon	(253) 405 - 2356
B2560	Carucci, Frank	(206) 781 - 8288
B5561	Chapman, Thomas	(206) 909 - 3071
B0030	Cole, Darren	(206) 528 - 2148
B0475	Collier, Michael	(206) 246 - 5325
B5528	Crosby, Stephen	(425) 361 - 1054
B5040	Cruz, Antonio	(206) 251 - 6753
B4027	Cuthbert, Rian	(253) 874 - 0186
B5756	Czarnecki, Nick	(206) 850 - 0171
B5251	Dantic, Jose	(425) 430 - 2442
B2681	Dennehy, Patrick	(206) 818 - 3559
B4296	Deraitus, Joshua	(253) 941 - 8383
B4981	Dixon, Mark	(206) 306 - 7083
B0838	Dochstuhl, Richard	(425) 888 - 0433
B4982	Drexler, Joshua	(253) 720 - 0262

B1584	Dulin, Kevin	(425) 432 - 4590
B5562	Dunn, Tamar	(206) 772 - 2583
B2121	Dupleich, Bradley	(253) 854 - 0714
B1253	Edlund, Marilyn	(425) 255 - 5726
B5622	Ellisor, Stephen	(425) 269 - 4793
B4310	Elwanger, Jeffrey	(253) 691 - 5370
B5006	Finh, Gary	(206) 799 - 3845
B5025	Fisher, Scott	(425) 531 - 4192
B5590	Flannery, Jason	(425) 247 - 4242
B4250	Flowers, Ernest	(425) 254 - 8417
B2939	Foster, Ben	(206) 784 - 6161
B4541	Gallagher, Kevin	(425) 235 - 9962
B3945	Gardner, Daniel	(206) 440 - 9077
B3395	Garnett, Nils	(253) 838 - 9780
B5685	Gilbert, Dan	(206) 595 - 6272
B5539	Gilbreath, Jr., Odell	(206) 949 - 7955
B1423	Gittings, Michael	(253) 297 - 4387
B3198	Good, Bruce	(206) 322 - 3000
B3592	Graham, Kenneth	(253) 838 - 9780
B5263	Grant, Travis	(425) 449 - 2072
B4491	Gutierrez, Salvador	(253) 638 - 2080
B3946	Hale, Jeffrey	(206) 241 - 5909
B4103	Hanson, Loren	(425) 427 - 8889
B3088	Hanson, William	(206) 634 - 2461
B4728	Hasme, Michael	(206) 764 - 7006
B4704	Holt, John	(425) 888 - 1234
B5543	Holtzclaw, John	(360) 403 - 7325
B5471	Hulke, David	(206) 633 - 1700
B4088	Johnson, Anthony	(206) 909 - 2886
B4450	Jordison, Chad	(253) 639 - 9820
B0973	Keeney, George	(425) 487 - 2180
B5579	Keith, Kenneth	(206) 762 - 1450
B5648	Kilmer, Bruce	(425) 623 - 6533
B1208	Koch, Karl	(206) 762 - 3311
B5281	Kottwitz, Jonathan	(425) 398 - 9294
B5297	Kottwitz, Pamela	(425) 273 - 4512
B5253	Krieg, Jim	(206) 550 - 2173
B1345	Kroeger, James	(425) 486 - 1442
B4804	Lamb, Justin	(425) 220 - 5103
B5364	Landeck, Nathan	(206) 724 - 3250
B5759	Larson, Stephen	(206) 371 - 5629
B5565	Laufasa, John	(206) 949 - 5970
B4209	Law, Marcus	(206) 835 - 0763

B4832	Lindstrom, Paul	(206) 243 - 2384
B4179	Malavotte, Ronald	(360) 825 - 6417
B4730	Mann, Raymond	(253) 333 - 7720
B5592	Mauter, Stephen	(425) 890 - 1432
B3950	McClain, Scott	(206) 571 - 6164
B2298	McCulloch, Allen	(253) 859 - 1388
B2995	McKay, Grant	(425) 864 - 2300
B0205	McLaughlin, Dennis	(206) 364 - 9531
B4253	McLaughlin, Dominic	(206) 890 - 8337
B5255	Meister, John	(253) 468 - 7064
B5117	Meyer, Randall	(253) 826 - 0099
B4363	Miedema, Harley	(206) 463 - 6193
B4818	Miller, Jr., Larry	(206) 227 - 6643
B5349	Minisci, Jeffrey	(360) 340 - 0753
B3781	Mock, Steve	(253) 373 - 0377
B5289	Montoya, Augustine	(206) 422 - 9035
B4634	Morris, Stuart	(206) 628 - 5073
B5581	Murphy, Paul	(253) 606 - 3373
B3646	Nadeau, Jeffrey	(206) 783 - 4315
B2426	Nardone, Vince	(425) 481 - 2919
B1503	Nelson, Patricia	(425) 392 - 1523
B5440	Newhall, Greg	(425) 462 - 8200
B5688	Nickel, Mitchell	(206) 575 - 1962
B5320	No, Sung	(425) 686 - 4441
B5175	Norris, Jeffery	(425) 275 - 1207
B3361	Olivas, Gabriel	(425) 687 - 6368
B3933	Olsen, Frank	(253) 261 - 5839
B4706	O'Neill, Joshua	(253) 670 - 3038
B2809	Peters, James	(206) 764 - 1689
B4287	Pfeiffer, Linda	(425) 333 - 4934
B3951	Pitzl, Darren	(206) 241 - 5909
B4578	Pylkki, Eric	(425) 754 - 8383
B4090	Rhome, Richard	(206) 241 - 5909
B5061	Richards, Kirk	(425) 864 - 4953
B4779	Riehl, Kelly	(800) 869 - 6980
B5304	Romulo, Mariano	(206) 255 - 2971
B5596	Salter, James	(206) 551 - 5174
B5243	Sanders, Christopher	(206) 658 - 7925
B5496	Saulibio, Leslie	(206) 353 - 3616
B4672	Sayre, Zaran	(253) 941 - 4012
B5556	Schaffe, Edward	(425) 747 - 5643
B4906	Scheuffele, Brook	(206) 375 - 0971
B5036	Seil, Mark	(425) 888 - 9535

B3255	Simkins, Jeremy	(425) 277 - 2888
B4495	Sizemore, John	(253) 638 - 6448
B3937	Smith, Gary	(425) 681 - 4048
B3265	Smith, Jeffrey	(425) 454 - 1190
B3953	Sorenson, Trisha	(425) 239 - 1372
B5692	Spiry, James	(206) 510 - 6558
B3337	Stalkfleet, Jeffery	(425) 303 - 0828
B5244	Strand, Vette	(425) 359 - 7777
B3834	Stuppi, Andrew	(253) 200 - 1661
B5225	Sutton, Chris	(425) 277 - 2888
B5206	Swanson, Toby	(206) 538 - 4821
B1528	Taller, Jr., Joseph	(253) 854 - 5291
B3284	Taylor, Charles	(425) 430 - 4473
B5499	Treharne, Darren	(425) 443 - 0921
B5738	Volynets, Alex	(877) 899 - 3473
B4708	Wagner, Ken	(206) 248 - 2340
B5446	Walsh, Michael	(206) 992 - 1389
B5502	Wayman, Scott	(425) 844 - 9319
B5271	Winterbourne, Gram	(425) 836 - 5193
B4101	Wu, Ying Tak	(206) 542 - 9284
B4334	Yanes, Melvin	(425) 271 - 5598
B5568	Yolian, Mesrop	(206) 261 - 9084

Common Household Hazards

Chemical Spray Applicators

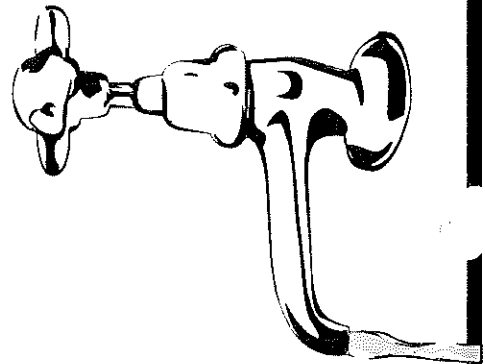
The chemicals used on your lawn and garden can be toxic or fatal if ingested. These chemicals include pesticides, herbicides, and fertilizers. Even strong cleaning chemicals sprayed on cars, house siding, etc., may cause health problems if ingested.

Submerged Hoses

Water held in pools, ponds or other vats open to the air and exposed to humans or animals may contain microbiological contaminants. Hoses submerged in buckets or containers can act as a conduit for contaminants under backflow conditions.

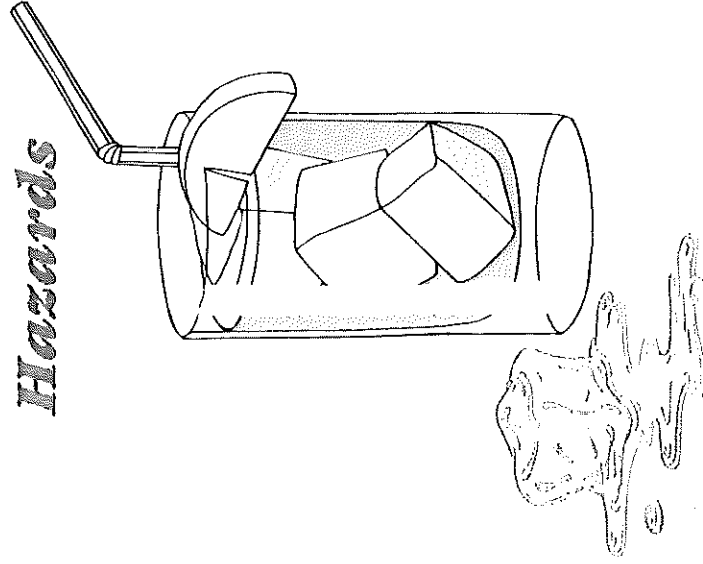
Underground Lawn Irrigation Systems

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



Help protect your
Drinking Water
from
Contamination

Household Hazards



American Water Works Association
Pacific Northwest Section

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

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How Contamination Occurs

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

Under certain conditions water can flow in the reverse direction. This is known as **backflow**.

Backflow occurs when a backsiphonage or backpressure condition is created in a water line.

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

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

How to Prevent Contamination of Your Drinking Water

Protect your drinking water by taking the following precautions:

Don't:

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

Do:

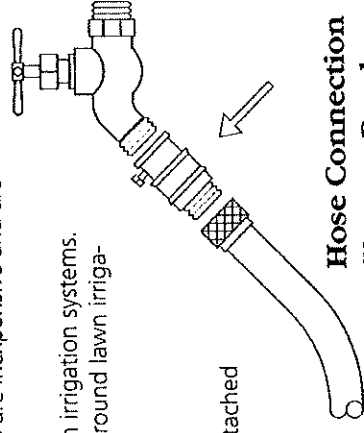
- ✓ Keep the ends of hoses clear of all possible contaminants.
- ✓ If not already equipped with an integral (built-in) vacuum breaker, buy and install hose bib type vacuum breakers on all threaded faucets around your home. These devices are inexpensive and are available at hardware stores and home improvement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

Hose Connection Vacuum Breaker

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

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

These devices are not intended for operation under continuous pressure.



Protection of the Water Purveyor's Distribution System

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

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

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

What is a Cross Connection?

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

Backflow is the unwanted flow of non-potable substances back into the consumer's plumbing system and/or public water system (i.e., drinking water).

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

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

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

For further

information

contact your

local water

purveyor or the

PNWS/AWWA

Cross-Connection

Control Committee

through the

PNWS office at

(877) 767-2992

or on the web at

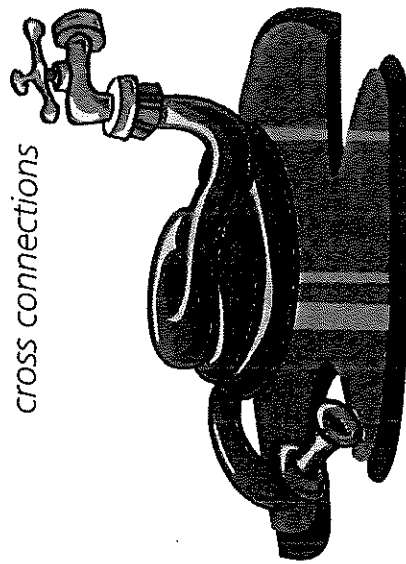
www.pnws-awwa.org

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Cross Connections can create Health Hazards

Drinking water systems
may become

Polluted
or
Contaminated
through uncontrolled
cross connections



American Water Works Association
Pacific Northwest Section

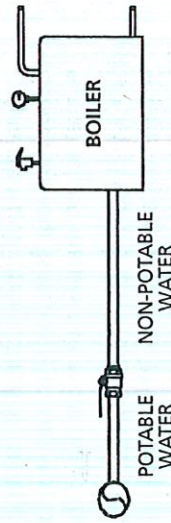
Why Be Concerned?

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

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

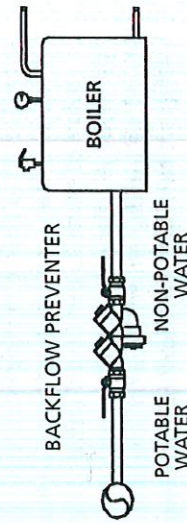
Wrong:

Uncontrolled Cross Connection



Right:

Controlled Cross Connection



Where are Cross Connections Found?

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

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

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

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

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

What to Do?

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

Washington

Department of Health
Airdustrial Way, Bldg. 3
P.O. Box 47822
Olympia WA 98504-7822
(360) 236-3133

Oregon

Oregon Health Division
3420 Cherry Av NE, #110
Keizer OR 97303
(503) 373-7201

British Columbia, Canada

BC Water & Waste Association
Ste. 342 - 17 Fawcett Road
Coquitlam B.C. V3K 6V2
(604) 540-0111

Idaho

Idaho Division of Environment
1410 N Hilton
Boise ID 83706
(208) 373-0275

Additional sources of information may be found on the PNWS-AWWA web site:
www.pnws-awwa.org

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

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

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

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

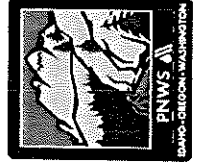
Note:

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

Residential Fire Sprinkler Systems and Backflow Prevention

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

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American Water Works Association
Pacific Northwest Section

Residential Fire Sprinkler Systems

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

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

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

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

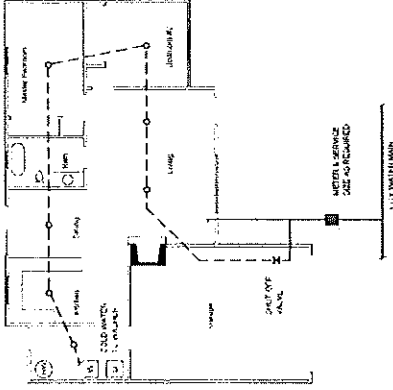
Flow-Through Fire Protection Systems

Advantages

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

Disadvantages

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



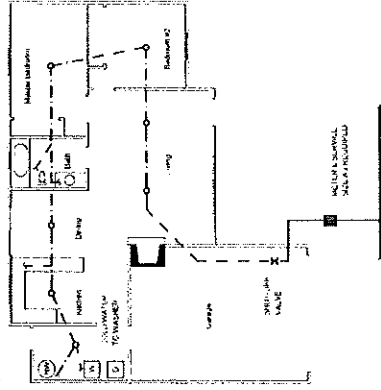
Combination Fire Protection Systems

Advantages

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

Disadvantages

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



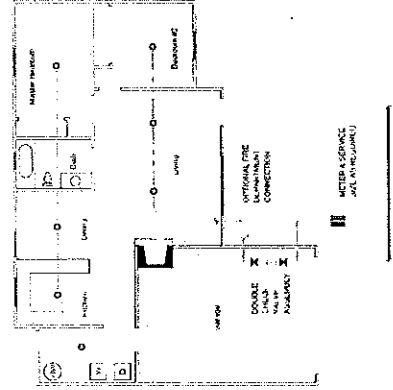
Closed Fire Protection Systems

Advantages

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

Disadvantages

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



Approved Backflow Assemblies

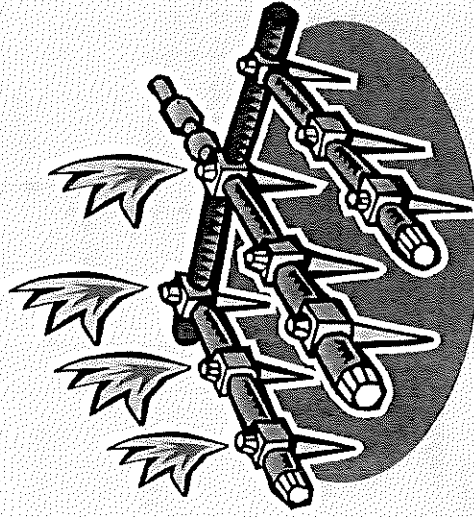
The water purveyor relies on approved backflow prevention assemblies to protect the public water system. Approved assemblies are manufactured with isolation valves and test cocks to permit field-testing to demonstrate that the assemblies are properly functioning to prevent backflow.

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

Note:

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

Lawn Irrigation Systems and Backflow Prevention



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

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American Water Works Association
Pacific Northwest Section

Lawn (Turf) Irrigation Systems

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

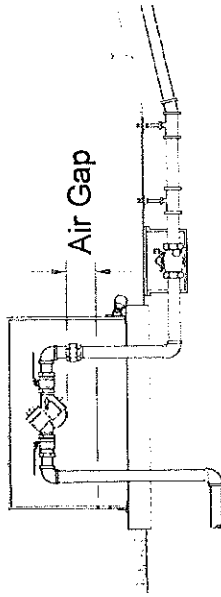
Any irrigation system that contains pumps or injectors for the addition of chemicals and/or fertilizers is considered a high hazard. This risk assessment is also based on the additional hazard posed by bacterial contaminants found on lawns, and on the possibility of changes being made to the irrigation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

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

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

Reduced Pressure Backflow Assembly for Isolation of Lawn Irrigation System

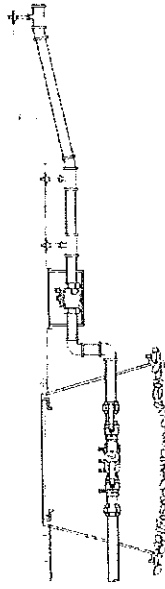
- The reduced pressure backflow assembly (RPBA) should be installed to isolate irrigation systems using injectors or pumps to apply fertilizer and other agricultural chemicals.
- The RPBA must be installed above ground to prevent the relief valve opening from becoming submerged.
- The RPBA should be installed in an insulated enclosure to provide freeze protection.
- The RPBA should be tested by a certified backflow assembly tester upon installation, after repair or relocation, and at least annually.



*Reduced Pressure Backflow Assembly
in Above-Ground Enclosure*

Double Check Valve Assembly for Isolation of Lawn Irrigation System

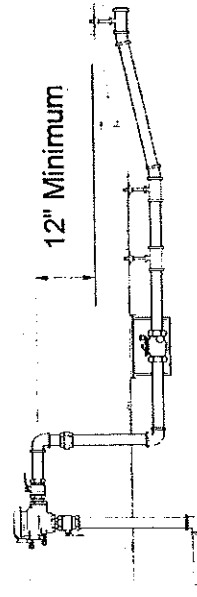
- The double check valve assembly (DCVA) may be installed to isolate all irrigation systems that do not use injectors or pumps to apply fertilizer and other agricultural chemicals.
- The DCVA may be installed in a below-ground enclosure provided the assembly test cocks are plugged; the test cocks are pointed up; adequate space is provided for maintenance and testing; and any compressed air connections are installed only downstream of the DCVA.
- The DCVA shall be tested by a certified backflow assembly tester upon installation, after repair or relocation, and at least annually.



*Double Check Valve Assembly
in Below-Ground Box*

Pressure Vacuum Breaker Assembly for Isolation of Lawn Irrigation Systems

- The pressure vacuum breaker assembly (PVBA) may be installed to isolate all irrigation systems that do not use injectors or pumps to apply fertilizer and other agricultural chemicals.
- The PVBA shall be installed at least 12 inches above the highest point in the irrigation piping.
- The PVBA shall be tested by a certified backflow assembly tester upon installation, after repair or relocation, and at least annually.



Pressure Vacuum Breaker Assembly

Protection from Thermal Expansion

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

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

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

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

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

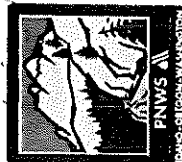
For further
information
contact your
local water
purveyor,
City or County
building
department,
licensed plumber
or the
PNWS/AWWA
Cross-Connection
Control Committee
through the
PNWS office at
(877) 767-2992
or on the web at
www.pnws-awwa.org

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Protect Your Water Heater from **Thermal Expansion**

Without a functioning
Temperature &
Pressure Relief Valve
your water heater can

Explode
with the force of
Dynamite



American Water Works Association
Pacific Northwest Section

Thermal Expansion Danger

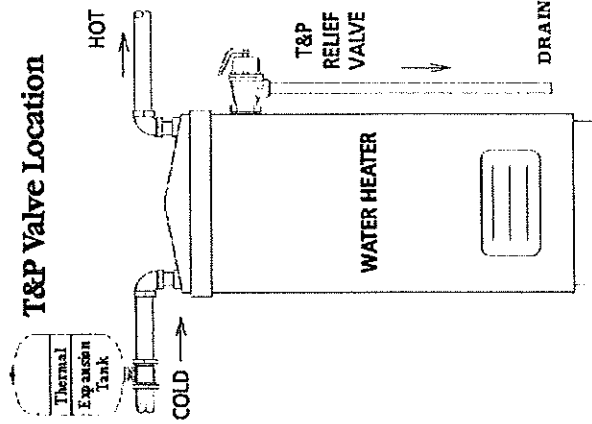
Most homes are supplied with hot water from an electric or gas heated tank. Until the heating element stops working, and one is faced with a cold shower, the water heater is usually taken for granted. However, if not properly maintained, a water heater may become a safety hazard.

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

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

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

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



T&P Valve Location

Why the Installation of a Backflow Preventer is Required on a Water Service

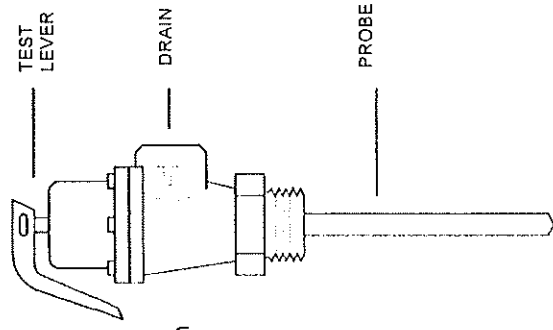
Water normally flows in one direction, from the public water system through the customer's cold or hot water plumbing to a sink tap or other plumbing fixture. The plumbing fixture is the end of the potable water system and the start of the waste disposal system.

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

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

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

Typical T&P Valve



What the Homeowner Should Do to Ensure Protection from Thermal Expansion

- The homeowner should check to see that an expansion tank and T & P Valve are in place.
- If there is any doubt, the homeowner should contact a licensed plumber.
- The T & P Valve should be periodically inspected to ensure that it is properly operating.
- Some T & P Valves are equipped with a test lever. Manually lifting the lever unseats the valve, allowing water to discharge. If water continues to leak from the T & P Valve after closing, the valve may need to be replaced. A drain line must be installed to avoid water damage and scalding injury when the valve operates.
- The T & P Valve should be periodically removed and visually inspected for corrosion deposits and to insure it has not been improperly altered or repaired.
- Installation specifications may vary; the above work can best be done by a licensed plumber. Installations should always be in accordance with Manufacturers Instructions.

MSA

Murray, Smith & Associates, Inc.
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