1.0 PURPOSE

1.1 To establish administrative rules for the implementation of a program of cross-connection control in Seattle Public Utilities’ direct service water supply area to protect the health of water consumers and the potability of the public water system. This rule supersedes three Department (SPU) Operating Instructions, 4001-64-53, Cross-Connection Inspection; 4001-64-56, Pier and Waterfront Inspection; and 4001-64-59, Backflow Prevention Device Installation and Testing, which are hereby rescinded.

2.0 ORGANIZATIONS AFFECTED

2.1 Seattle Public Utilities (SPU)

2.2 Public Health – Seattle King County (PHSKC), formerly Seattle-King County Department of Public Health

2.3 Seattle Department of Planning and Development (DPD)

2.4 City of Shoreline

3.0 REFERENCES

3.1 City of Seattle Cross-Connection Control Ordinance, Council File No. 115660, May 28, 1991. (See Appendix 1.)

3.2 2000 Uniform Plumbing Code (Chapter 6) and City of Seattle Amendments (Ordinance No. 14712, effective October 23, 1989).


3.4 WAC 246-290-490, Department of Health (DOH) Drinking Water Regulations, Cross-Connection Control.

3.5 WAC 296-24-12005, Department of Labor and Industries (DLI) Boilers and Unfired Pressure Vessels Law, Backflow Protection.


3.10 SPU Standard, Connection, and Administrative Charges Rule (Standard Charges), latest version.

4.0 POLICY

4.1 It is the policy of Seattle Public Utilities to protect the public water supply and its water users as required and intended by state regulations by controlling each potential cross-connection as close to its source as practical.

5.0 DEFINITIONS

5.1 Approved Backflow Prevention Assemblies: Assemblies that are approved by the State and appear on their published approval list and that are approved for use in the SPU direct service area; specifically, Reduced Pressure Backflow Assemblies (RPBA), Double Check Valve Assemblies (DCVA) and Pressure Vacuum Breaker Assemblies (PVBA). This applies to assemblies that, at time of original installation, were approved by the State, appeared on their published approval list current at that time, and were approved for use in the SPU direct service area. (See the definitions and descriptions provided in the Cross-Connection Control Manual: Accepted Procedure and Practice, Pacific Northwest Section, American Water Works Association, Latest Edition.)

5.2 Backflow: The flow of any foreign liquids, gases or other substances from any source, back into the potable water supply within a facility and/or public water supply. Backflow may occur due to either backsiphonage or backpressure.

5.3 Backflow Assembly Tester (BAT): A person holding a BAT certificate issued in accordance with WAC 246-290.

5.4 Backpressure: Backflow caused by positive pressure (above the supply pressure) in the piping system downstream of the supply piping.

5.5 Backsiphonage: Backflow caused by a negative pressure (vacuum) or reduced pressure in the supply piping.

5.6 Call-back Inspection: A follow-up inspection of a direct service customer's premises, performed by SPU to monitor the customer's activities toward achieving compliance subsequent to the cross connection inspection.

5.7 Contamination: Any impairment of the quality of the water from any substance
which may adversely affect the health of the consumer.

5.8 Controlled Cross-Connection: A connection between the SPU water system and any non-potable water system with an approved backflow prevention assembly properly installed and maintained so that it will continuously afford the protection commensurate with the degree of hazard.

5.9 Cross-Connection: Any physical arrangement whereby a public water supply is connected, or has the potential for being connected, directly or indirectly, with anything that does not exclusively contain or convey potable water from a Washington State Department of Health-approved source.

5.10 Cross-Connection Inspection: An inspection of a direct service customer’s premises, performed by SPU, expressly for purposes of evaluating and locating cross-connection potential inherent in supplying that customer’s water system.

5.11 Degree of Hazard: The degree of hazard is derived from an evaluation of the potential risk to public health and the adverse effect of the hazard upon the potable water system. Hazards may include:

5.11.1 Health Hazard: Any condition, device or practice in the water supply system and its operation which, in the judgment of SPU, could create a danger to the health and well-being of the water customer.

5.11.2 System Hazard: An actual or potential threat to the physical properties of, or to the potability of water in SPU’s water system or the customer’s potable water system, which would constitute a nuisance or be aesthetically objectionable or could cause damage to the system or its appurtenances, but would not be dangerous to health.

5.12 Seattle Public Utilities (SPU): SPU, the Director of SPU, his designee or his authorized agents. Authorized agents include the Customer Service Deputy Director, the Director of Utility Service Teams, the Supervisor of Utility Service Inspection, and Senior Utility Service Inspectors.

5.13 Direct Service Water Customer (or Water Customer): Those customers receiving water through a meter installed by SPU for end uses directly from the SPU distribution system and classed as direct service or retail for billing purposes.

5.14 Pollution: Any impairment of the quality of the water which may adversely affect the aesthetic characteristics of the water.

5.15 Potable Water Supply: Any water supply system intended or used for human consumption or other domestic uses and which must meet Washington State Department of Health Public Water System Rules and Regulations.


5.17 Temporary Usage Connections: Any vehicle to which a tank or container is affixed for containing water and/or chemicals or materials, or any temporary use of water for construction, cooling, testing, or other non-domestic purposes which
are capable of imparting contamination or pollution to the public water supply
through a cross-connection between such points of usage and the water supply
via a fire hydrant or other temporary connection.

5.18  Water Service Connection: The terminal end of a service connection from the
SPU water system; the city union, i.e., where SPU loses jurisdiction and sanitary
control over the water at its point of delivery to the customer's water system.
Service connection shall also include water service connections from a fire
hydrant and all other temporary or emergency water service connections from
the public potable water system.

5.19  Water System: For the purpose of this policy and procedure, the water system is
considered to be made up of two parts: the SPU system and the customer's
system. The SPU system shall consist of the source and transmission facilities
and the distribution system, and shall include all those facilities of the water
system under the complete control of SPU, up to the point where the customer's
system begins. The customer's system shall include those parts of the facilities
beyond the termination of SPU's distribution system which are utilized in
conveying SPU-delivered water to points of use.

6.0  RESPONSIBILITIES

6.1  Seattle Public Utilities

6.1.1  SPU, through the Utility Service Inspection Unit of its Customer Service
Branch, shall prevent contamination of the water distribution system and
maximize protection of on-property water consumers by maintaining
surveillance over new and existing plumbing within buildings to meet the
requirements of the state regulations in cross-connection control. SPU
has no responsibility or authority beyond the farthest downstream
installed and operable backflow assemblies.

6.2  Water Customer

6.2.1  The water customer shall be responsible for eliminating cross-
connections or controlling them through the installation, regular testing
and maintenance of approved backflow prevention assemblies.

6.2.2  The water customer shall be responsible for providing the necessary
information, obtaining required permits (including change of use permits)
and providing entry and access for inspection, to allow a determination of
the cross-connection, potential and the necessary control methods.

6.2.3  The water customer is responsible for notifying SPU of any assemblies
which the customer believes are no longer required.
6.2.4 The water customer is responsible for all costs associated with the installation, testing, repair and replacement of backflow prevention assemblies.

6.2.5 The water customer is responsible for providing signs at all water takeoff points downstream of backflow prevention assemblies.

7.0 PROCEDURES

7.1 The following procedures represent minimum cross-connection control operating policies:

7.1.1 General

7.1.1.1 Applicability of Regulations and References

7.1.1.1.1 The control or elimination of cross-connections shall be in accordance with the State of Washington Administrative Code on Cross-Connection Control (WAC 246-290-490) and the 2000 Edition of the Uniform Plumbing Code, Chapter 19.27 RCW, and subsequent additions.

7.1.1.1.2 The policies, procedures and criteria for determining appropriate levels of protection shall be in accordance with the Cross-Connection Control Manual: Accepted Procedure and Practice, Pacific Northwest Section, American Water Works Association, Latest Edition, and The Manual of Cross-Connection Control, Foundation for Cross-Connection Control and Hydraulic Research, University of Southern California (latest edition), with the following major exceptions:

7.1.1.1.2.1 Double Check Detector Assemblies and Reduced Pressure Detector Assemblies are approved for use in SPU's direct service area only as backflow assemblies and are not intended to take the place of any bypass meters retired on water services.

7.1.1.1.2.2 Services (fire/domestic) to buildings over three (3) stories or over 30 feet in height shall be protected with DCVAs. Backflow protection will not be required on service lines to existing systems exceeding three stories or 30 feet in height on a retrofit basis, unless, in the judgment of SPU, significant modifications to
the customer's water system, such as an increase of the service size, installation of booster pumps, or other changes that result in an increased ability to provide water flow, are being made during rehab construction.

7.1.1.1.2.3 Fire services constructed of materials which are not approved in the Uniform Plumbing Code or the City of Seattle Amendments for use in potable water piping systems shall be protected with DCVAs.

7.1.1.1.2.4 A Reduced Pressure Backflow Assembly or Air Gap is required for all Table #9 High hazard customers as referenced and required by WAC 246-290. In-premise protection is required by the City of Shoreline and PHSKC per the Cross-Connection Joint Program Memorandum of Understanding.

7.1.1.1.2.5 An Air Gap or Reduced Pressure Backflow Assembly is required on any aspirator-type equipment capable of introducing any substance into the water line downstream of such equipment.

7.1.1.2 Guidelines for Type and Location of Protection

7.1.1.2.1 Type: The type of backflow protection required shall depend on the degree of hazard.

7.1.1.2.1.1 An air gap (AG) or Reduced Pressure Backflow Assembly (RPBA) shall be used if industrial waste or other similar toxic contamination is present that would cause a health or system hazard.

7.1.1.2.1.2 A double check valve assembly (DCVA) would be required if objectionable pollution (not hazardous to health) is present. Higher levels of protection, i.e., AG or RPBA, can be installed but would not be required.

7.1.1.2.1.3 A Pressure Vacuum Breaker Assembly (PVBA) and Spill-proof Vacuum Breaker Assembly (SVBA) would be required if objectionable pollution (not hazardous to health) is present, and there is no possibility of backpressure. Higher levels of protection, i.e., AG, RPBA or DCVA can be installed, but would not be required.
7.1.1.2.1.4 Any assembly required by these Administrative Rules shall be a model approved by the State of Washington Department of Health.

7.1.1.2.2 Location of Protection: The backflow protection shall be located as close to the hazard as practical and as required by WAC 246-290-490 and SPU. If access for inspection by SPU is denied by the water customer, in lieu of denying water service, and with the approval of PHSKC or the City of Shoreline, SPU may require that an AG or RPBA be installed at the property line or at agreed location with PHSKC or the City of Shoreline. An AG and RPBA would be required in those instances where SPU suspects sewage connected plumbing.

7.1.1.3 Personnel Certification

7.1.1.3.1 At least one SPU staff member must be certified by the state as a Cross-connection Control Specialist (CCS). Normally, the Supervisor of the Utility Service Inspectors and two Senior Inspectors will have such certification.

7.1.2 Plan Review of New and Rehab Construction

7.1.2.1 SPU’s representative will review all new and rehab construction plans submitted to the Seattle Department of Planning and Development (DPD) that, by the description provided by the owner, may require cross-connection control. The cross-connection control requirements will be written on the Cross-Connection Plan Review form with attachments and returned to the architect or designer submitting the plans for review.

7.1.2.2 Water service will not be provided to new construction until the cross-connection control requirements are addressed.

7.1.2.3 NOTE: Owners are required by DPD to obtain Master Use Permits whenever the use of a building or lot changes in a way which would be regulated differently than the current use.

7.1.3 Consultation

7.1.3.1 SPU representatives in the Utility Service Inspection Unit of the Customer Service Branch are available to review plans and interpret State Regulations and SPU Administrative Rules to assist water customers in meeting the cross-connection control ordinance and minimize retrofits and revisions.

7.1.4 Inspection of Installations and Initial Assembly Testing

7.1.4.1 A SPU inspector shall jointly inspect all new installations of
backflow preventers on Table #9 for high hazard water customers as referenced by WAC 246-290-490, and outlined in the Joint Program Memorandum of Understanding with PHSKC. All new backflow assemblies will be inspected after assemblies have been tested, and test report provided by a Washington State licensed Backflow Assembly Tester (BAT). (See Section 7.3.3 for annual testing requirements.) The owner and/or installer is responsible for notifying SPU, City of Shoreline, or PHSKC of newly installed assemblies requiring inspection.

7.1.4.2 A SPU inspector shall inspect premises after the removal of any assembly which provides premise isolation. PHSKC will inspect in-premises assemblies no longer needed. An assembly no longer needed and for which the site was inspected, will be removed from SPU's records.

7.1.5 Temporary Usage Inspections

7.1.5.1 A SPU inspector shall inspect equipment or processes for which a hydrant permit (see SPU's hydrant use policy and procedures) for temporary water service that has been requested and which poses a cross-connection potential, e.g., spray and tank trucks.

7.1.5.2 Corrections of deficiencies cited at the time of inspection must be completed before a hydrant permit will be issued.

7.1.5.3 Temporary users of water requesting a hydrant permit and whose use constitutes a cross-connection hazard, must produce an inspection certificate showing a current annual inspection, certified by SPU before a hydrant permit will be issued.

7.1.6 Regular Inspections of High Hazard Sites

7.1.6.1 The Utility Service Inspection Unit shall assign priorities to and schedule high-hazard site inspections with special emphasis placed on the types of facilities listed in WAC 246-290-490. The Senior Utility Service Inspector shall notify the responsible party of the premises scheduled for inspection, and if possible, arrange a time that is convenient to the water customer.

7.1.6.1.1 NOTE: IF DURING THE INSPECTION, A CROSS-CONNECTION IS FOUND THAT PRESENTS, IN THE OPINION OF THE INSPECTOR, AN IMMEDIATE THREAT TO PUBLIC HEALTH, WATER SERVICE TO THE SITE SHALL BE IMMEDIATELY TERMINATED, AND SHALL REMAIN OFF UNTIL THE HAZARD IS CORRECTED.

7.1.6.2 After the inspection is complete, the Senior Utility Service Inspector shall notify the responsible party on the premises by a Site Survey letter listing the cross-connections found and
requesting their correction within a specified time. If an approved backflow prevention assembly is required on the customer’s system, the type and location of the assembly shall be specified. A copy of the Site Survey shall be sent to PHSKC or the City of Shoreline, depending on the site location.

7.1.6.3 The water customer shall notify SPU at the completion of the work and a follow-up inspection will occur. If the work has been completed satisfactorily, then the Site Survey is abated and no further action will be needed.

7.1.6.4 If the water customer does not complete the work required in the letter of citation within the time specified, a second, certified letter will be sent requiring the water customer to complete the work within a shorter specified time (generally 10 days) and reminding the water customer that it is SPU's responsibility to deny water service to anyone who does not comply with backflow protection requirements.

7.1.6.5 If the water customer does not complete the work within the time specified in the second letter or does not make special arrangements with SPU for an alternate compliance date based on extenuating circumstances, SPU will give notice to the water customer of its intention to shut off water to the property on a specified date. On that date, the water service meter will be shut off and remain off until the backflow protection work has been completed.

7.2 The following represents required backflow prevention assembly installation practices.

7.2.1 General

7.2.1.1 The criteria for assembly installation practices shall be in accordance with the Cross-Connection Control Manual: Accepted Procedure and Practice, Pacific Northwest Section, American Water Works Association, Latest Edition.

7.2.1.2 All new installations shall be inspected by SPU, the City of Shoreline, or PHSKC (per the Cross-Connection Joint Program Memorandum of Understanding).

7.2.1.3 Assemblies shall be accessible for testing and maintenance. They shall be installed no higher than five (5) feet above the floor or ground surface to the center line of the assembly, or be provided with an Occupational Safety and Health Administration (OSHA) approved work platform for assembly maintenance and testing.

7.2.1.4 Assemblies shall be protected against freezing, flooding and mechanical damage.
7.2.1.5 Assemblies shall not be installed in any enclosure or area containing fumes which are corrosive or toxic.

7.2.2 Air gap

7.2.2.1 An approved air gap shall mean a physical separation, unobstructed by guards, shields, or any other coverings, between the potable water supply system, measured vertically from the terminal point of the supply pipe to the overflow rim of the receiving vessel. This vertical, physical separation must be at least twice the diameter of the supply pipe but in no case shall this distance be less than one inch.

7.2.3 Reduced Pressure Backflow Assembly and Double Check Valve Assembly

7.2.3.1 RPBAs and DCVAs shall be installed per Washington State Department of Health List of Approved Backflow Assemblies.

7.2.3.2 RPBAs and DCVAs shall be installed with minimum clearances of 6 inches in front of test cocks, check valves, and relief valve covers to facilitate testing and maintenance. If an assembly is installed in an area with limited accessibility, such as a crawl space or pipe chase, a minimum of 24 inches clearance in front of test cocks shall be provided.

7.2.3.3 RPBAs and DCVAs shall be installed a minimum of 12 inches above ground or flood level, whichever is higher.

7.2.3.4 RPBAs shall not be installed in a below grade pit, vault, box, or chamber.

7.2.3.5 RPBAs shall be installed in a location where discharge from the relief port will not be objectionable, and shall be provided with an air-gapped drain which will reasonably handle the full discharge.

7.2.3.6 DCVAs shall be installed per WAC 246-290-490 Washington State Department of Health Approved Assemblies.

7.2.4 Pressure Vacuum Breaker Assembly (PVBA) and Spill-proof Vacuum Breaker (SVBA)

7.2.4.1 Shall be installed in accordance with the Cross-Connection Control Manual: Accepted Procedure and Practice, Pacific Northwest Section, American Water Works Association, Latest Edition, with the following major exception:

Vacuum breakers shall not be installed where there are any chemical addition capabilities, e.g., dishwasher supply lines with automatic detergent dispensing, chemical proportioners or
aspirators, etc.

7.3 The following represents backflow prevention assembly testing requirements.

7.3.1 General

7.3.1.1 Annual testing of backflow assemblies shall be per WAC 246-290-490.

7.3.1.2 Backflow assembly testing procedures shall be in accordance with WAC 246-290-490 and the Cross-Connection Control Manual: Accepted Procedure and Practice, Pacific Northwest Section, American Water Works Association, Latest Edition.

7.3.2 Initial Inspection

7.3.2.1 As indicated in Section 7.1.4, initial inspection of new assemblies shall be conducted by SPU per Table # 9 WAC 246-290-490 and the Cross-Connection Joint Program Memorandum of Understanding with PHSKC and SPU.

7.3.3 Annual Testing

7.3.3.1 All mechanical assemblies (RPBA, DCVA, PVBA, SVBA) shall be tested annually by a certified Backflow Assembly Tester. Testers are to follow the acceptable testing procedures approved by Washington State Department of Health. Notification of the requirement for testing will be done annually by the department to all water customers responsible for annual testing of their assemblies. Results of the test must be forwarded to SPU within 30 days of the date of the notification.

7.3.3.2 If no test results have been received within 30 days of notification, a second letter will be sent, requesting testing reports be forwarded to the Department within 10 days.

7.3.3.3 If no test results have been received within 30 days of notification, a late fee will be charged to the water account, based on SPU Standard Charges.

7.3.3.4 Water service may be terminated unless action is satisfactorily taken to test the backflow assembly(ies) and service may be discontinued until testing is completed and test reports provided to SPU.

7.3.4 Testing After Repair or Replacement

7.3.4.1 Testing after repair or replacement is required by WAC 246-290-490 & the Uniform Plumbing Code, chapter 6.
7.3.5 Quality Control Assurance Program

7.3.5.1 Testing reports require at a minimum: BAT certification number; test kit accuracy verification and/or calibration; test kit identification number; tested assembly make, model, serial number, and size; assembly location; and site hazard. SPU shall check BAT certification and proof of test kit accuracy.

7.3.5.2 SPU staff, certified as BAT, shall conduct periodic, random field verification of water customer’s BAT assembly test results and reporting.

7.4 Incident Response

7.4.1 Water quality complaints concerning possible cross-connection incidents (e.g., gasoline, petroleum smell, blue water, etc.) will be responded to jointly by SPU, and either PHSKC or the City of Shoreline, depending on site location.

7.4.1.1 SPU will lead the off-premises investigation.

7.4.1.2 SPU will test the water at the meter.

7.4.1.3 PHSKC or the City of Shoreline, depending on the site location, will lead the investigation inside the facility to determine the problem.

7.4.2 SPU shall have a utility service inspector on-standby at all times to respond to potential incidents. SPU shall maintain 24-hour telephone call center with access to inspectors.

7.4.3 SPU shall maintain 24-hour contact information for PHSKC and the City of Shoreline.

7.5 Education

7.5.1 SPU shall educate consumers about cross-connection control through customer publications and community outreach.

7.6 Recordkeeping

7.6.1 SPU shall maintain a database for recordkeeping.

7.6.1.1 The database shall include at a minimum: listing of backflow prevention assemblies, assembly address and location, details of assemblies installed, site hazards, customer contact information, and inspection and testing information and results.

7.6.1.2 SPU and PHSKC shall be responsible for entering their own data into the SPU database.
7.6.2 SPU shall maintain on file backflow incident reports and program summary reports as required by WAC 246-290-490.

8.0 APPENDIX

AN ORDINANCE relating to the Water Department, authorizing the
Superintendent of Water to administer a cross-connection
control program and to issue administrative rules therefor, and
amending SMC 21.04.070 to provide authority to administer such
program.

WHEREAS, a cross-connection is any physical arrangement whereby a
public water supply is connected, directly or indirectly, with
anything that does not exclusively contain or convey potable
water from a State-approved source; and

WHEREAS, Section 284-54 of the Washington Administrative Code Rules
and Regulations governing Public Water Supplies requires that all
cross-connections are to be eliminated or controlled; and

WHEREAS, Section 248-54 of the Washington Administrative Code
requires that in order to eliminate or control cross-
connections, every water purveyor is to establish a cross-
connection control program; and

WHEREAS, Seattle Water Department is the water purveyor (retail
supplier) for the City of Seattle and for some adjacent
unincorporated areas of King County; and

WHEREAS, the Seattle Water Department must demonstrate
administrative and enforcement authority for the purpose of
establishing a cross-connection control program acceptable to the
Department of Health; Now, Therefore,

BE IT ORDAINED BY THE CITY OF SEATTLE AS FOLLOWS:

Section 1. The Superintendent of Water is authorized and
directed to administer a cross-connection control program to protect
the health of water customers and the potability of the public water
system and to comply with the requirements of Washington law in
connection therewith. The Superintendent of Water is authorized and
directed to promulgate pursuant to SMC 3.02 rules and regulations
to implement a cross-connection control program consistent with
this authority. Said rules and regulations shall include but not be
limited to:

1. Minimum cross-connection control operating policies;
2. Backflow prevention assembly installation practices;

and

Section 2. That SMC 21.04.070 (Ord. 65877 § 5 (part),
1935) be amended as follows:

21.04.070   Cross Connections

A. In no case shall any cross connexion be allowed
between two or more City service connections, or between
any City service connection and pipe supplying water from
any other source. Cross connections as defined in Section
248-54 of the Washington Administrative Code (1991), or as
may be amended, shall be eliminated or controlled in
accordance with the administrative rules of the Water
Department and any applicable rules of the State of
Washington Department of Health or any other applicable
City, State, or federal laws.

B. As a term and condition of all water service, the
Superintendent of Water or his/her duly authorized
representatives shall have a right to access at all
reasonable times to all parts of the buildings or premises
supplied by water from the City for the purpose of
ascertaining the need to eliminate or control cross-
connections.

C. The Seattle Water Department shall deny or
discontinue water service to any customer failing to
cooperate in the elimination of cross-connections or the
control of cross-connections through the installation,
maintenance, testing or inspection of backflow prevention
assemblies required by the Seattle Water Department.

D. When in the discretion of the Superintendent of
Water appropriate circumstances so warrant, the
Superintendent may charge the account of any customer who
violates any applicable rules and regulations concerning
cross connections for all costs, including service calls,
and any damages incurred by the Water Department in relation to such violation.

Section 3. Any act taken pursuant to the authority and prior to the effective date of this ordinance is hereby ratified and confirmed.

Section .... This ordinance shall take effect and be in force thirty days from and after its passage and approval, if approved by the Mayor, otherwise it shall take effect at the time it shall become a law under the provisions of the city charter.

Passed by the City Council the ___ day of ______, 19___.

and signed by me in open session in authentication of its passage the ___ day of ______, 19___.

President of the City Council.

Approved by me this ___ day of June, 19__.

Mayor.

Filed by me this ___ day of June, 19__.

City Comptroller and City Clerk.

By ____________________________

Deputy Clerk.

(SEAL)