



Cross Connection Control Program

Operations Department

The Cross Connection Control Program is in place to preserve and protect the City's potable water supply and distribution system. This program will ensure the system is not compromised by back-siphonage or backpressure which will result from a cross connection.



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DEFINITIONS

Air gap - The unobstructed vertical distance between the lowest point of the water supply outlet and the flood level rim of the fixture or unit into which the outlet discharges. This distance must be vertically orientated and at least twice the inside diameter of the inlet pipe, but never less than 1”.



Atmospheric Vacuum Breaker (AVB) – Used to isolate minor to moderate hazards only. AVB is effective against backflow caused by back-siphonage only and should not be used if backpressure can develop in the downstream piping.

Auxiliary Water Supply – Any water available on or to premises originating from a source or system, other than from the City of Parksville waterworks system.

Backflow – A hydraulic condition in the water piping system which causes water to flow in reverse of the normal direction.

Backpressure – Caused when a potable water system is connected to a non-potable water system operating under higher pressure. It may be caused by booster or recirculating pumps, boiler or heating systems, elevated piping or holding tanks, etc.

Back-siphonage – Caused by negative or reduced pressure in the supply piping. It may be caused by watermain break or repair, hydrant flushing, firefighting, etc.

Backflow Assembly Tester – A person holding a valid cross connection control tester certificate from BC Water and Waste Association (BCWWA).

Backflow Preventer – A device or plumbing arrangement in the water system which is designed to prevent backflow and which meets the design and installation criteria requirements of the CAN/CSA standards B64.10 (most current edition).

Consumer – Any person to whom water is supplied by the City and includes the owner of the premises to which water is supplied.

Cross Connection – Any temporary, permanent or potential water connection between the potable public water supply and a source of contamination or pollution.

Cross Connection Control Coordinator – The cross connection control coordinator for the City of Parksville is also the utilities technician.

Cross Connection Control Program (CCCP) – The City of Parksville cross connection control program policies, procedures and specification which provide reference, guidelines, bulletins and amendments relevant to the Cross Connection Control Bylaw No.1529.

Double check valve assembly (DCVA) – An assembly consisting of two force-loaded, independently acting check valves, including tightly closing resilient-seated shutoff valves located at each end of the assembly and fitted with properly located resilient-seated test cocks. Used for moderate or minor hazard application.



Dual Check Valve - A backflow preventer consisting of two independently acting, force-loaded, soft-seated check valves in series. This backflow preventer does not have a relief port or test cocks. They are to be used for minor residential hazards only where there is no health hazard involved.



Hazard – Refers to one of three levels of hazard: minor, moderate and high as determined by the City of Parksville cross connection control coordinator.

- Minor Any active cross connection or potential cross connection that constitutes only a nuisance, with no possibility of any health hazard.
- Moderate Any minor hazard that has a low probability of becoming a severe hazard.
- High Any actual cross connection or potential cross connection involving any substance that could be a danger to health.



Hose Connection Vacuum Breaker (HCVB)– Used for minor hazards only. HCVB is effective against backflow caused by back-siphonage and low head pressure caused when the end of a hose is elevated above the HCVB.

Potable Water – Water that is fit for human consumption as defined in the Drinking Water Protection Act and regulations.

Premises Isolation –Protection of the waterworks from contamination due to backflow by the installation of one or more backflow preventers downstream of the service connection on the connection pipe conveying water on a premise and upstream of the first outlet or connecting water pipe.

Pressure Vacuum Breaker (PVB) – An assembly that prevents backflow when pressure in the system upstream of the backflow preventer falls below atmospheric pressure. Used for minor and moderate hazard application. PVB is effective against back-siphonage only and should not be used if backpressure can develop in the downstream piping.



Reduced Pressure Backflow Assembly (RPBA) – An assembly containing two independently acting, internally loaded check valves separated by a reduced pressure zone. Used for severe hazard applications where an approved air gap is impractical.



Zone or Area Protection - Protection provided for sections of a piping system within a building or facility with no domestic connections downstream of a backflow preventer.

INTRODUCTION

The City of Parksville owns, operates and maintains a potable water supply and distribution system of about 105 km and 5,000 water connections. The City has experienced considerable growth in the last decade and is responsible for supplying and distributing potable water to about 12,227 permanent residents (2014). During the summer months, the City accommodates an additional 11,500 seasonal residents and visitors each day. The City also delivers bulk potable water to residents outside the City boundary (Nanosee Bay Peninsula Water Service Area) during the summer months.

In the Province of British Columbia, the Ministry of Health Services provides leadership and assumes responsibility for providing safe drinking water to British Columbians. The City of Parksville has developed a cross connection control program in compliance with the Island Health Authority's Permit to Operate a Water System which is mandated under the Drinking Water Protection Act, Part 2, Section 8. This program helps protect the potable water supply from contaminants that can be introduced into the system by back-siphonage or backpressure.

The City of Parksville cross connection control program receives its authority from the Cross Connection Control Bylaw No. 1529 and the British Columbia Plumbing Code, Division B, Part 2, Section 2.6.2, which requires potable water be protected from contamination. The City follows CSA B.64.10 (most current edition) for selection, installation, maintenance and field testing of backflow preventers. Approved backflow prevention devices are essential to protect the potable water from contaminants.

Cross connection control can be divided into two categories; prevention from contamination inside private property protecting its users and prevention from contamination of the water purveyor system. The cross connection control coordinator concentrates mainly on demanding protection for the City's system. Information on devices used for internal protection is requested for some specific situations. Cross connection control assemblies which protect the City's potable water system must be owned by the consumer and these assemblies are required to be installed downstream of the point of service.

Safety of drinking water is a public health issue. If a person becomes ill or dies from drinking water, a purveyor may be required to defend itself in a prosecution. This prosecution could be brought by the Crown under the Criminal Code (Canada), under the *Drinking Water Protection Act*, or in a claim for damages brought by a consumer under the common law of negligence or nuisance. In such cases, municipal insurance rates will increase and therefore be reflected in the cost of operation.

In order to better service the public, maintain insurance premiums, provide greater health protection and given the legislation mentioned above, the City of Parksville implemented the cross connection control program.

PURPOSE

The purpose of the cross connection control program is to:

1. Educate the public about the dangers of cross connection and how the public can protect themselves and others from harm.
2. Promote the elimination and control of existing cross connections.
3. Provide guidance to ensure the backflow prevention unit selection is appropriate, installation is done properly and testing and maintenance practices are followed.
4. Ensure tracking of all testable backflow devices to confirm that they are working properly.

STRATEGIES

To maintain an ongoing cross connection control program to ensure the delivery of clean safe water to the residents of the City of Parksville.

Administration/Personnel and Enforcement/Authority

The cross connection control coordinator has the responsibility to administer the cross connection control program. Bylaw officers have the authority to enforce the bylaw.

The City of Parksville Cross Connection Control Bylaw No. 1529 is enacted to provide adequate enforcement authority. It provides staff the ability to turn off or discontinue service in case of non-compliance. The Respecting the Enforcement of Bylaw Offence Notice Bylaw No. 1486 includes charges for creation of cross connection, obstruction of City employee or officer, unauthorized connection, failure to have an approved backflow assembly tested, illegal connection and creation of an interconnection to drinking water system.

Standards

Selection, installation and testing of backflow prevention assemblies shall follow those set forth in the latest edition of Standard CAN/CSA-B64.10 "Selection and installation of backflow preventer Maintenance and field testing of backflow preventers".

British Columbia Plumbing Code, Division B, Part 2.6.2 shall be followed along with the City of Parksville engineering standards.

Certification

All testing shall be done by a tester possessing a valid cross connection control certificate, through BCWWA (BC Water and Waste Association). Each backflow prevention assembly must be tested upon installation, once every twelve months, after repairs and after relocation. Temporary assemblies must be tested each time they are installed for use.

Inspection – New or Renovated Facilities

All applications for new services and upgrading existing services must be routed through the manager of operations.

The site plan, mechanical plan and the plumbing fixture schedules must be checked for actual and potential cross connections by the manager of operations and the cross connection control coordinator.

Required backflow assemblies will be listed on the final plans before approval. Occupancy will not be approved until all backflow assemblies are properly installed and tested.

The most common uses for a testable backflow prevention device are to protect potable water from backflow caused by underground irrigation systems and fire sprinkler systems.

Inspection – Existing Facilities

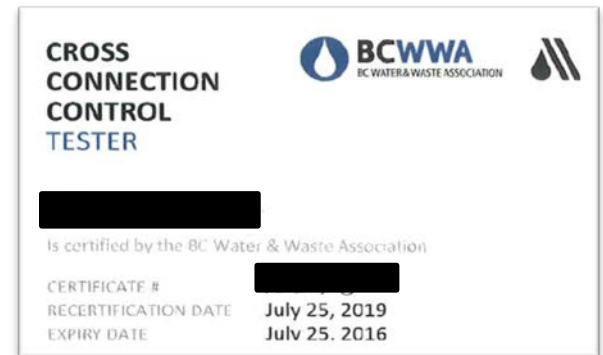
All existing facilities where cross connection is suspected, are or will be listed on a priority list, starting with the high and medium hazard for industrial, commercial and institutional (ICI) properties. Annual test reports for all industrial, commercial and institutional buildings shall be sent to the cross connection control coordinator within thirty days of completion.

Residential underground irrigation test reports should be sent to the cross connection control coordinator once every three years. This is voluntary at the moment and will change in the coming years.



Residential fire sprinkler systems constructed with materials approved for potable water and flow-through (not closed) systems only require the installation of a dual-check backflow assembly. If the system is not flow-through and not constructed with approved materials, a double check valve assembly must be installed and records of the system must be sent to the cross connection control coordinator immediately.

Other residential conditions such as medical devices, swimming pools, auxiliary water systems and residential boilers and geothermal systems shall be reported to the cross connection control coordinator immediately.



Responsibilities of the Water Purveyor (City of Parkville)

The City of Parkville's responsibility for cross connection control begins at the water supply source. This includes all public water treatment, storage and distribution facilities and end at the downstream end of the water meter and City boundaries.

The City shall do its best to prevent the contamination of the water distribution system by identifying facilities of medium and high risk and by providing guidance to consumers so cross connections can be controlled. The City maintains records of received test reports until a new report is provided.

The cross connection control program is addressing premise isolation on all medium and high hazard water use processes first. The coordinator sends letters to the consumer or property owner explaining the requirements, if any, for cross connection control. If no response is received from the consumer or property owner, a second letter is sent explaining the importance of compliance. If no response is received in the allotted time frame, a final letter will be sent as a termination of water service notice.

Once all medium and high hazard water users have been addressed, the program will follow up with the minor hazard uses. Public education programs will be delivered to inform residents of the dangers of backflow.

The City of Parkville cross connection control coordinator will provide education material or guidance so standards can be met. This guidance will be in the interest of protecting the public health. Cross connection incidents are covered in the water systems emergency response plan.



Responsibilities of the Water Consumer

The consumer is responsible to comply with all matters prescribed in the Cross Connection Control Bylaw No. 1529. It is the responsibility of the consumer to insure onsite water practices or processes do not affect the City of Parkville water utility in a negative manner.

The consumer shall control every cross connection on a premise in an acceptable manner and shall maintain every backflow preventer in good working order (this applies to temporary and permanent connections).

When it becomes known or suspected that a backflow preventer is no longer needed or not in good working order, whether from inspection or field test results or other indications, the consumer shall arrange for the immediate repair or replacement of the backflow preventer and the cross connection control coordinator shall be contacted immediately.

The type of backflow prevention assembly required will depend on the degree of hazard that exists, the probability of a backflow incident occurring, and the type of circumstance causing potential or actual backflow to occur.

The purchase, installation, operation, maintenance, field testing, field inspection, repair, removal or replacement of a backflow preventer used to protect the municipal water system from a property/facility shall be at the sole expense of the consumer. The consumer shall be responsible for ensuring a tester/installer/inspector is certified by the BC Water and Waste Association and the certification has not expired.

The consumer shall ensure that the test report is submitted to the cross connection control coordinator at the City of Parksville within thirty days of testing the device.

The consumer shall notify the cross connection control coordinator of any changes of use of the premises or facilities or alteration, addition or removal of any part of the private water system including its appurtenance and fixtures.

The consumer shall install, upgrade, replace or remove backflow preventers to control any modified cross connections in compliance with this bylaw and CSA standard B64.10 (latest version).

The consumer is responsible for the installation of pressure or air release devices to prevent pressure fluctuation within the private water system due to thermal expansion.

The consumer shall be responsible for providing the necessary information, scheduling and access to allow for the proper inspection of backflow potential and the selection of an appropriate cross connection control device.

Records Management

- The end goal is to have the record of all backflow prevention assemblies installed within the City of Parksville and to keep the records up to date.
- A copy of each inspection report is kept by the cross connection control coordinator until a new report for the unit is completed.
- Owners (person in charge) of properties which have testable backflow assemblies should keep documentation for a minimum of three years..
- Record management is done with a database program. The record management software keeps track of assemblies due for testing.
- All tested backflow assemblies shall have a City of Parksville supplied tag showing the assembly identification number, tester's name, tester's certification number, what it is protecting and the date tested.
- Any and all cross connection incidents reported or noticed will be recorded on the incident report form.

Program Structure

The City of Parksville cross connection control program is structured to allow for updates in policy. This structure includes bulletins which will notify the general public and contractors of the requirements for cross connection control not specifically addressed in the accepted CSA standard. These bulletins will specify the requirements of the cross connection control program if they show a discrepancy or vary from the accepted CSA standard. In the case of a discrepancy between the accepted CSA standard and a bulletin of the cross connection control program, the intent of the bulletin will prevail.

The City will:

1. Continue to implement and maintain the cross connection control program.
2. Develop annual work plans and program structure.
3. Regularly evaluate cross connection control funds.
4. Regularly evaluate and update the cross connection control program.

ASSEMBLIES FOR PREMISE ISOLATION

Assemblies for premise isolation shall be in accordance with the Canadian Standards Association (CSA), B64.10 (latest edition), Manual for the Selection and Installation of Backflow Prevention Devices.

CERTIFIED TESTER

A list of certified cross connection testers can be downloaded through the BCWWA Cross Connection Control website www.bcwwa.org.

CONTACT INFORMATION

The City of Parksville cross connection control coordinator may be contacted at:

City of Parksville
Barbara Sileniaks
Utilities Technician/Cross Connection Control Coordinator
Address: 1116 Herring Gull Way, Parksville, BC V9P 1R2
Mail: PO Box 1390, Parksville, BC V9P 2H3
Phone: 250 951-2489
Email: bsileniaks@parksville.ca

FORMS

Starts next page.

Test Report

See next page

BACKFLOW PREVENTION ASSEMBLY TEST REPORT

Name of Premise: _____

Street Address: _____

Location of Assembly: _____

 Assembly: _____
 Make Model Serial # Size Type

 Line Pressure at time of test: PSI: _____ New: Annual: Replacement:

Initial Test Results		Apparent Pressure Drop _____psid		
<input type="checkbox"/> RPBA	Relief Valve (≥2psi) Opening Point (B) _____psid	Check Valve #2 <input type="checkbox"/> Closed Tight <input type="checkbox"/> Leaked	Static Pressure Drop Check Valve #1 (A) _____psid	Buffer (≥3 psid) A – B = Buffer _____psid <input type="checkbox"/> Passed <input type="checkbox"/> Failed
	Required minimum air gap separation provided for RP? <input type="checkbox"/> YES <input type="checkbox"/> NO			
<input type="checkbox"/> DCVA	Check Valve #1 <input type="checkbox"/> Closed Tight _____psid <input type="checkbox"/> Leaked	Check Valve #2 <input type="checkbox"/> Closed Tight _____psid <input type="checkbox"/> Leaked	Assembly <input type="checkbox"/> Passed <input type="checkbox"/> Failed	
<input type="checkbox"/> PVBA	Air Inlet Valve Opened at _____psid	<input type="checkbox"/> Opened Fully <input type="checkbox"/> Passed <input type="checkbox"/> Failed	Check Valve Closed at _____psid <input type="checkbox"/> Passed <input type="checkbox"/> Failed	
<input type="checkbox"/> AIR GAP	Minimum air gap separation achieved		<input type="checkbox"/> Passed <input type="checkbox"/> Failed	

Certified BFP Tester Info (BFP Tester – Please fill out this section and sign below)		
Tester's Name (Please Print)	Tester's BCWWA Certificate Number	Tester's Phone No.
Company Name		

Tester's Certification: *I certify that I have tested the above assembly and that it meets the performance requirements outlined in the current edition of the BC Building Code and Canadian Standards Association – CAN / CSA B64.10*

Tester's Signature **Date Test Completed (dd-mmm-yyyy)** **Owner's or Representative Signature**

TEST RESULTS AFTER REPAIRS ON REVERSE SIDE

Mail or Fax **COMPLETED report to: City of Parksville**
Operations Department, 1116 Herring Gull Way
P.O. Box 1390 Parksville, BC V9P 2H3
Telephone: 250 248-5412 Fax: 250 248-6140

BACKFLOW PREVENTION ASSEMBLY TEST RESULTS AFTER REPAIRS

Name of Premise: _____

Street Address: _____

Line Pressure at time of test: _____ psi

 Recertification Test:

Repaired or Replaced BFP Assembly Info (BFP Tester – Please correct or add missing information)					
Assembly Status: <input type="checkbox"/> Repair <input type="checkbox"/> Replacement (if required, fill in appropriate date)					
Make	Model No.	Serial No	Size (in.)	Type	External BFP No
TEST RESULTS AFTER REPAIRS			Apparent Pressure Drop _____psid		
<input type="checkbox"/> RPBA	Relief Valve (≥ 2 psi) Opening Point (B) _____psid	Check Valve #2 <input type="checkbox"/> Closed Tight <input type="checkbox"/> Leaked	Static Pressure Drop Check Valve #1 (A) _____psid	Buffer (≥ 3 psid) A – B = Buffer _____psid <input type="checkbox"/> Passed <input type="checkbox"/> Failed	
	Required minimum air gap separation provided for RP? <input type="checkbox"/> YES <input type="checkbox"/> NO				
<input type="checkbox"/> DCVA	Check Valve #1 <input type="checkbox"/> Closed Tight _____psid <input type="checkbox"/> Leaked	Check Valve #2 <input type="checkbox"/> Closed Tight _____psid <input type="checkbox"/> Leaked	Assembly <input type="checkbox"/> Passed <input type="checkbox"/> Failed		
	<input type="checkbox"/> PVBA	Air Inlet Valve Opened at _____psid <input type="checkbox"/> Opened Fully <input type="checkbox"/> Passed <input type="checkbox"/> Failed	Check Valve Closed at _____psid <input type="checkbox"/> Passed <input type="checkbox"/> Failed		
<input type="checkbox"/> AIR GAP	Minimum air gap separation achieved		<input type="checkbox"/> Passed <input type="checkbox"/> Failed		

Certified BFP Tester Info (BFP Tester – Please fill out this section and sign below)		
Tester's Name (Please Print)	Tester's BCWWA Certificate Number	Tester's Phone No.
Company Name		

Tester's Certification: I certify that I have tested the above assembly and that it meets the performance requirements outlined in the current edition of the BC Building Code and Canadian Standards Association – CAN / CSA B64.10

 Tester's Signature

 Date Test Completed (dd-mmm-yyyy)

 Owner's or Representative Signature

 Mail or Fax
 Within 48 Hours

 COMPLETED report to City of Parksville
 Operations Department, 1116 Herring Gull Way
 P.O. Box 1390, Parksville, BC V9P 2H3
 Telephone: 250 248-5412 Fax: 250 248-6140

Incident Report

The incident report is comprised of four forms to be completed in its entirety for all actual and suspected backflow occurrences. Backflow is a serious matter which must be documented and addressed immediately.

To report a suspected or actual backflow incident, please call 250 248-6144 (emergency number) and 250 951-2489 (cross connection control coordinator) immediately.

Facility Information**Name of Facility:** _____**Facility Address:** _____**Date and Time of Incident:** _____**Facility Owner:** _____**Owner's Address (if different):** _____**Owner's Phone Number:** _____**Owner's Email:** _____

Premises type: Residential Industrial Commercial Institutional Institutional Agricultural

Most recent survey prior to incident: *yyyy/mm/dd* Never

Hazard Level: Minor Moderate High

Comments:

Existing Backflow Preventer Information**Type of Premises Isolation:**

RPBA DCVA PVB Dual Check HCVB Other: _____

Backflow Preventer Details:

Make: _____

Model: _____

Size: _____

Serial Number: _____

Date Installed: _____

Last Test date: _____

Name and Company of Last Tester: _____

Installation Status:

CSA Approve Improperly plumbed or maintained Bypass around assembly with no device
 Obvious alterations to Backflow Preventer or plumbing since last survey

How did the Backflow Preventer fail to prevent the backflow? Are there any other unprotected hazards identified at the facility? Are there any fixture isolation in the premises? (Please attach additional details, sketches, etc.)

Backflow Incident Information

Please attach any addition details, sketches, etc.

How was the backflow discovered? (Check all that apply)

- Direct observation Meter running backwards Water use decrease
 Disinfectant residual monitoring Water quality monitoring Water quality complaint
 Illness/injury complaint Result of investigation Other: _____
-

Incident reported to CCC Coordinator by (Name, company name, address and phone number). Please attach business card

Contamination type:

- chemical physical microbiological
-

Describe name, colour, odour, etc. of contamination/pollutant. Please attach MSDS if available:

Contaminant contained within premises distribution system**Comments:**

Source and location of contaminant or fixture type (i.e. boiler, irrigation, process water):

Administrative**Distribution system status at time of break (i.e. main break, firefighting, etc)**

Estimated number of water services affected:**Estimated population affected or at risk:****Number of illnesses reported:****Date of survey after backflow incident: yyyy/mm/dd**

Form forwarded to: Internally: _____ Vancouver Island Health Authority Other: _____

Please ensure all documentation is forwarded to the Cross Connection Control Coordinator, including pictures, sketches, etc.

Comments:

 Additional information attached

Property owner:**I certify that the information provided in this report is complete and accurate to the best of my knowledge. (Attach business card)**

Name: _____ Signature: _____