



City of
Parksville

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.





Table of Contents

DEFINITIONS.....	2
INTRODUCTION	4
PURPOSE	5
STRATEGIES	5
Administration/Personnel and Enforcement/Authority.....	5
Standards	5
Certification.....	6
Inspection – New or Renovated Facilities.....	6
Inspection – Existing Facilities.....	6
Responsibilities of the Water Purveyor (City of Parksville)	7
Responsibilities of the Water Consumer	7
Records Management.....	8
Program Structure	9
ASSEMBLIES FOR PREMISE ISOLATION	9
CERTIFIED TESTER	9
CONTACT INFORMATION.....	9
FORMS.....	10
Test Report.....	11
Incident Report	14
Facility Information	15
Existing Backflow Preventer Information	16
Backflow Incident Information	17
Administrative.....	18

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 (Nanose 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.

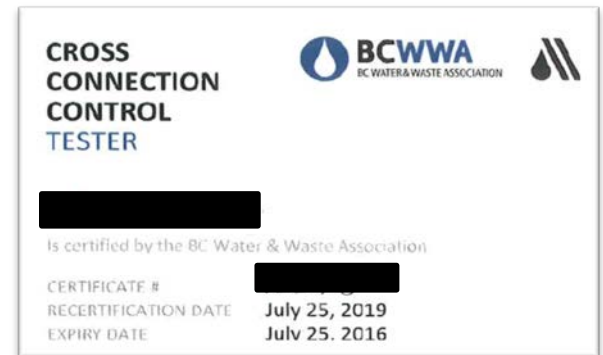
Standards

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 Silenieks
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: bsilenieks@parksville.ca



FORMS

Starts next page.



Test Report

See next page

Submit completed test report within 30 days of testing

Facility Type:

☐ Commercial ☐ Institutional ☐ Industrial ☐ Multi-Family ☐ Single Family ☐ Portable

Name of Premise: _____

Test Date: _____

Property Address: _____

Contact Name: _____

Phone: _____

Email: _____

Report Type: ☐ New Install ☐ Replacement ☐ Existing ☐ After Repair Retest

Assembly Type: ☐ RPBA ☐ RPDA ☐ DCVA ☐ DCDA ☐ PVB ☐ SRPVB ☐ AG ☐ SCVAF

Manufacturer: _____

Model: _____

Size: _____

Serial #: _____

Location of Assembly on Property/Building: _____

Hazard Type: ☐ Severe ☐ Moderate ☐ Minor

Isolation Type: ☐ Premise ☐ Individual ☐ Zone ☐ Area

Line Pressure:	PSI
Test Result:	<input type="checkbox"/> Pass <input type="checkbox"/> Fail

Reduced Pressure Backflow Assembly (RP)

Apparent Pressure Drop:	B. Relief Valve Opened at (≥ 2):	CV #2 Closed Tight:	A. CV#1 Static Pressure Drop:	C. Buffer (≥ 3) (A-B=C)
PSID	PSID	<input type="checkbox"/> Yes <input type="checkbox"/> No	PSID	PSID
Minimum air gap requirement provided? <input type="checkbox"/> Yes <input type="checkbox"/> No				

Double Check Valve Assembly (DCVA)

1 st Check	2 nd Check
<input type="checkbox"/> Closed Tight	<input type="checkbox"/> Closed Tight
PSID	PSID
<input type="checkbox"/> Leaked	<input type="checkbox"/> Leaked

Pressure Vacuum Breaker Assembly (PVB)

Air Inlet Opened at:	Check Valve Held at:
PSID	PSID
<input type="checkbox"/> Did Not Open	<input type="checkbox"/> Did Not Open

Air Gap (AG)

Minimum air gap provided? <input type="checkbox"/> Yes <input type="checkbox"/> No	Air gap distance: _____
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Comments/Reason for Failure: _____

Tester Name: _____

Certification #: _____

Tester Company Name: _____

Contact: _____

Test Gauge Serial #: _____

Gauge Calibration Date: _____

"I certify that I have tested the above assembly and that the test meets the performance requirements outlined in the current edition of the Canadian Standard Association CSA B64.10, BC Plumbing Code, and BC Water and Waste Association Testing Procedures."

Tester Signature: _____

Property Representative Signature: _____

Device Information

AG Air Gap	The unobstructed vertical distance between the lowest point of the water supply outlet and the flood level rim of a fixture or device into which the outlet discharges. Can be used for all hazards. Must be a minimum of 2x the diameter of the supply pipe and never less than 2.5 cm (1”).
DCVA Double Check Valve Assembly	A backflow preventer that consists of two check valves, two shut-off valves, and four test cocks. DCVA backflow preventers can be used under continuous pressure, and provide protection against back-pressure and back-siphonage. Can be used for minor and moderate degree of hazard.
DCDA	Double Check Detector Assembly – Used on fire sprinkler systems.
RPBA Reduced Pressure Backflow Assembly	A backflow preventer that consists of a relief valve located in between two check valves. Designed for use under continuous pressure and provide protection against back-pressure and back-siphonage. Can be used for all hazards.
RPDA	Reduced Pressure Detector Assembly – Used on fire sprinkler systems.
PVB Pressure Vacuum Breaker	A vacuum breaker that contains a check valve force-loaded or biased to a closed position, and an air inlet valve force-loaded or biased to an open position located downstream of the check valve. PVB devices have two test cocks and two shut-off valves. Designed for use under continuous pressure, and does not provide protection against back-pressure, only back-siphonage.
SRPVB Spill-Resistant Pressure Vacuum Breaker	A vacuum breaker that contains a check valve force-loaded or biased to a closed position, and an air inlet valve force-loaded or biased to an open position located downstream of the check valve. A diaphragm separates the flow from the atmospheric vent. They are equipped with a test cock, a bleeder, and shut-off valves. They are designed for indoor use under continuous pressure for all hazard types, but does not provide protection against back-pressure, only back-siphonage.
SCVAF Single Check Valve for Fire Protection Systems	A backflow preventer that consists of one check valve, shut-off valves and fitted with test cocks. Designed for use under continuous pressure on fire sprinkler and standpipe systems. Meant for minor hazards only and can protect against back-siphonage and back-pressure.

Isolation Type

Area Protection	Backflow protection provided for a section of a piping system with potable and non-potable connections downstream of a backflow preventer.
Individual Protection	Backflow protection provided at the connection to a fixture or appliance.
Premise Isolation	Backflow protection provided at the entrance to a building or facility.
Zone Protection	Backflow protection provided for sections of a piping system within a building or facility with no potable connections downstream of a backflow preventer.

Device Installation Clearances (mm)

Type of Device	Centerline height above floor		Minimum Clearance			
	Minimum	Maximum	Below the relief valve	Above the device	In front of the device	Behind the device
DCVA	750	1500	-	300	750	20
PVB	-	1500	-	300	750	20
RP	750	1500	300	300	750	20
SCVAF	750	1500	-	300	750	20
SRPVB	-	1500	-	300	750	20



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: _____