

**RICHMOND COUNTY WATER UTILITY
CROSS CONNECTION CONTROL PLAN**



April 2024



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Section 1: Program Scope

The Richmond Water Utility is required to implement a cross connection control plan as part of its approval to operate. The utility is required by the Nova Scotia Environment (NSE) to ensure that facilities classified as severe/high or moderate risk have appropriate Backflow Prevention Devices (BFP) installed and are maintained.

Purpose of Program

1. To protect the public potable water supply of the Municipality from the possibility of contamination or pollution by isolating within the customer's internal distribution system(s) or the customer's private water system(s) such contaminants or pollutants that could backflow into the public water system;
2. To promote the elimination or control of existing cross-connections, actual or potential, between the premises' potable water system(s) and non-potable water system, plumbing fixtures, and industrial piping systems; and,
3. To provide for the maintenance of a continuing program of cross-connection control that will systematically and effectively prevent the contamination or pollution of all potable water systems.

Definitions

1. **Cross Connection:** is any actual or potential connection between the public water supply and any pipe, vessel, tank, plumbing fixture, equipment or device connected to a non-potable system.
2. **Backflow:** is the reversal of flow in the public water supply caused by either back-siphonage or back pressure.
3. **Back Siphonage:** is caused when a reduction in pressure results in a partial vacuum in the piping system.
4. **Back Pressure:** is caused by a source of pressure that exceeds the public water supply pressure. This causes fluid or gas to be pushed into the water supply.
5. **Backflow Prevention (BFP) Device:** An assembly or means designed to prevent backflow. The Utility recognizes three types of BFP methods:
 - a. Air Gap (AG)
 - b. Reduced Pressure Principle Assembly (RP)
 - c. Double Check Valve Assembly (DCVA)
6. **Potable Water:** Water safe for human consumption.

7. **Premises isolation:** Isolation of the water located within a building or structure from the municipal water supply.
8. **Thermal Expansion:** When water is heated, density decreases and volume increases. In a closed piping system, such as that created by installation of a BFP to isolate a premises, the result is an increase in pressure.

Section 2: Overview of Authority and Power to Enforce

Section 19 of “SCHEDULE “D” MUNICIPALITY OF THE COUNTY OF RICHMOND WATER UTILITY SCHEDULE OF RULES AND REGULATIONS” outlines the requirements for customers and the Utility’s authority to enforce the Cross Connection Control Plan. The following text is from section 19 (e). Please review the document in its entirety for additional context.

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- e) In the event of any breach, contravention or non-compliance by a person of any of the provisions and regulations in a sub-paragraphs (a),(b),(c) or (d) the Utility may:
 - i. Suspend water service to such person, or
 - ii. Give notice to the person to correct the breach, contravention or non-compliance within 96 hours, or a specified lesser period. If the person fails to comply with such notice, the Utility may immediately thereafter suspend water service to such person.

“

Section 3: Roles and Responsibilities

Customer Responsibilities

1. Where, a facility is classified by the Utility as a severe/high or moderate risk, the Utility may require a customer, at the customer’s sole cost and expense, to install at any point on the Customer’s water service connection or water service pipe, one or more backflow prevention (BFP) devices, which devices shall be of a quality and type approved by the Utility.
2. Arrange for annual testing by an approved Cross Connection Control Tester, as certified through the Atlantic Canada Water and Wastewater Association (ACWWA) or equivalent, at the customer’s expense and submission of the annual test results to the Utility within 30 days of such a test.



3. Customers are advised to address thermal expansion when installing BFPs to ensure proper operation of the water system. When the installation of a backflow preventer creates a closed piping system one of the following means should be installed to protect against the increase of pressure due to thermal expansion:
 - a. A suitably sized diaphragm-type expansion tank appropriate for use within a potable water system;
 - b. An auxiliary thermal expansion relief (TER) valve set at a pressure of no more than 500 kPa. The TER valve shall be designed for repeated use and shall comply with CSA B125.3; or

Failure to account for thermal expansion may cause unusually high pressure in the customer’s system resulting in pressure surges, dripping of temperature and pressure (T&P) relief valves, dripping faucets and leaking toilet ball cock fill valves as well as potential damage to water heaters or other equipment.

Utility Responsibilities

1. Evaluate the risk of new construction, renovated, and existing buildings using CSA B64.10:17/CSA B64.10.1:17 and the “Hazard Classification Framework” provided in “A Guide to Assist Nova Scotia Municipal Water Works Develop A Cross Connection Control Program”.
2. Identify acceptable type of backflow prevention device that is appropriate for the customer.
3. Record keeping of BFP installations and ensuring required testing and maintenance is being performed by the customers.

Section 4: Hazard Classification Framework

Risk Classification	Definition	Example of Facilities
Severe/high	Any type of cross-connection or potential cross-connection involving water that has additives or substances that under any concentration can create a danger to health and is likely to result in serious injury or death.	Hospitals, operating, labs, mortuary facilities, plants using radioactive material, petroleum processing and storage facilities, chemical or plating plants, commercial laundries, sewage, automotive shops, dry cleaners, car washes plants, food and beverage processing plants, premises where access is restricted, dockside facilities for ships, premises with sprinkler



		systems with glycol loops.
Moderate	Any minor hazard connection that has a low probability of becoming a severe hazard.	Office buildings, multi-service interconnected facilities, schools, colleges, shopping malls, multi-tenant single service facilities, premises with sprinklers (no glycol), restaurants.
Minor	Any cross-connection or potential cross connection that constitutes only a nuisance and that results in a reduction in only aesthetic quality of water (color, odor, or taste with little to no health effects).	

Note: For complete list of facilities and their risk categorization, consult the most recent CSA B64.10.

Section 5: Survey of Facilities

The Utility will use the **Hazard Classification Framework** along with CSA B64.10:17/ CSA B64.10.1:17 to perform a survey of water services in the distribution to identify minor, moderate or high/severe risks of backflow. The Utility will focus on the most hazardous potential cross-connections, specifically those for commercial, industrial and institutional customers followed by multi-family development.

Applications for new construction and renovations affecting water services will be reviewed to ensure that cross connection hazards are properly identified and mitigated with the appropriate device.

Section 6: Program Administration

Record Keeping

The Utility will create and maintain a data management system that will include the following, but is not limited to:

- Cross connection survey and hazard assessment results for each building.
- Inventory of backflow prevention measures and/or devices (type, size, make, model, serial number, location).
- Inspection and testing reports.
- Backflow incident reports.
- Consumer information (e.g. billing address, account and meter numbers, etc.).

Section 7: Backflow Incident Response

The following list outlines the emergency response duties assigned to designated Municipal employees:

Director of Public WorksResponse Team Leader
 Water Systems Operator Response Team Leader, First Alternative
 Sewerage System Operator Response Team Leader, Second Alternative
 Chief Administrative Officer (CAO) Public Relations Contact

Response Procedure:

In the event of a suspected backflow incident, the **Response Team Leader** shall first contact the Nova Scotia Department of Environment and Labour (or Environmental Emergencies) along with the Water Systems Operator. A risk evaluation should be conducted to assess the severity of the situation. Where the nature of the contamination poses an immediate threat to public safety, the contaminated water supply shall be immediately taken offline until the source of the contamination has been identified and, if possible, remediated. Although the results of the assessment will determine the initial level of response, it may be appropriate to either downgrade or upgrade the level of response at any time during the progression of events. Once the situation has been assessed, the Response Team Leader will make decisions and commit resources as necessary. These resources may include local Fire Departments, regulatory agencies and contractors. Any water system users that may be affected by the incident shall be notified as soon as possible. If the risk assessment conclusion does not require a full system shutdown, the response team leader may decide to isolate the contaminated area. The response team shall identify and close the nearest water main shutoff and re-evaluate to confirm the expected result. It may be required to shut off the water further upstream to isolate the contaminated water. Upon confirmation that the contaminated water is isolated, the water main shall be flushed to remove contaminants. The system can then be disinfected, and new samples collected to ensure the water system meets drinking water standards. The Response Team Leader will ensure that all information pertaining to the occurrence and remediation of the situation has been properly documented. He/she is responsible for the preparation of all reports to the Regulatory Agencies and for the Incident Response Plan central file. He/she will also ensure that sufficient and representative samples are collected both during the incident and following any containment and clean-up procedures. The Response Team Leader will supervise any necessary remediation or clean-up activities and direct all subsequent monitoring. It is critical that the impacted area be restored to pre-emergency conditions.

Section 8: Public Education Plan

The Utility will create and maintain a section of the Municipal website (<http://www.richmondcounty.ca/>) for the public with educational content along with updates/changes to the program.