

contaminating the systems community water. If the private plumbing system had a mixing tank with chemicals, it would be imperative that this “backflow” be prevented from happening. A more common potential for health impacts is where stale water which may have been dormant for long periods in a private plumbing system, with likely bacterial growth, re-enters other parts of the private plumbing system or backflows into City water mains due to pressure fluctuations.

Such cross connections are controlled by the installation of backflow preventers, combined with their continued testing, inspection and maintenance.

Potential Regulatory Requirements & the Drinking Water Management Plan (DWMP)

Cross connection control is practiced widely by most water utilities across North America.

On October 17, 2005, Council endorsed the Greater Vancouver Water District’s DWMP, which recommended member municipalities to implement CCC Programs within 5 years. CCC Programs are also mandated by the governing Health Authorities for both the Capital Regional District and the BC Interior. It is anticipated that all Health Authorities throughout the Province will initiate similar regulatory requirements in the next few years.

Surrey’s CCC Program

Protection from contamination and backflow preventer installation is a requirement of the Plumbing Code. The Plumbing Section of the Building Division has been managing this aspect of Surrey’s CCC Program for permitted construction and will continue in this role. Since 2005, Surrey’s Engineering Department assumed responsibility for all other aspects of the CCC Program, increasing the activity of the program to include enforcement of mandatory testing and repair, research and hazard assessment and the development of cross connection control standards.

When fully implemented, the CCC Program will be self-funding through annual fees associated with installed backflow preventers.

DISCUSSION

Impact to Surrey’s Water Consumers

The financial impact of the cross connection control to the public is manifested in costs of installation and continued maintenance of backflow preventers.

Almost all industrial, commercial, institutional and multi-family residential facilities require backflow prevention assemblies (for example, a restaurant may have 3 to 5 whereas a hospital may have well over 200 backflow prevention assemblies, in order to protect water consumers within the property).

Backflow prevention assemblies are fairly rare in single family residences. The most common cross connections found in single family residences that would require a

backflow prevention assembly include swimming pools with a direct fill connection and underground irrigation systems.

Installation costs vary from less than \$30 for minor devices to over \$10,000 for larger assemblies isolating the waterworks from a facility, but are usually under \$500 each.

Being mechanical devices, backflow prevention assemblies are subject to failure and require periodic testing. Typical costs associated with the testing and maintenance of a backflow prevention assembly range from \$100 to \$200 per annum for each device.

To date Surrey's municipal regulatory requirements regarding the prevention of contamination of drinking water are documented in the Plumbing By-law (by reference to the Plumbing Code only) and the existing Water By-law. The relevant requirement of cross connection control in the existing Water By-law has been included in this By-law.

Significant issues addressed in this by-law are described in Table 1 attached.

POLICY CONSIDERATIONS

This regulatory by-law is the statute component of the City's Cross Connection Control Program and is necessary to authorize those elements of the program that are not mandatory under the Plumbing Code.

This new CCC By-law will define the responsibilities of property owners, water consumers, businesses and technicians contracted to test and repair backflow preventers.

Legal Services has reviewed the proposed by-law and finds it acceptable from a legal perspective.

CONCLUSION

This By-law is to provide guidance regarding cross connection control requirements. It will supplement the Plumbing Code to require periodic testing and reporting, and through the technical standard, identify the level of hazard of cross connections and clarify the minimum backflow prevention requirements. This new By-law is necessary for the effective implementation of the CCC Program.

With the adoption of this by-law the City will have the authority to act on and enforce the measures necessary to protect the drinking water supplied by the City from cross connections. In addition the responsibilities of water consumers, property owners and industry stakeholders will be clarified.

Paul Ham, P.Eng.
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PH/VL/KL/EWM/brb
Attachments

Table 1
Waterworks Cross Connection Control Bylaw
Significant Issues

Proposed Section	Issue	Resolution
<p>The following By-law sections address important elements of the Water Consumer's responsibility:</p> <p>Premise Isolation:</p> <ol style="list-style-type: none"> 1. Sections 10, 11 & 16 (b) owners of property types identified by Engineering are required to protect the City waterworks by the installation of backflow preventers downstream of each service connection. 2. Section 12 the City shall not provide or continue water service to construction sites and vacant properties without all premise isolation requirements being met. <p>Responsibility of the Water Consumer:</p> <ol style="list-style-type: none"> 1. Sections 17 & 18 the consumer shall control cross connections, maintain backflow preventers and repair or replace backflow preventers. 2. Section 19 expenses involved with backflow preventers shall be borne by the consumer. <p>Damage Reparation:</p> <ul style="list-style-type: none"> • Section 26 costs resulting from legal claims made against the City as a result of an incident of backflow originating from the consumer's property shall be borne by the consumer. <p>Consumer to Commission Field Tests & Inspections:</p> <ul style="list-style-type: none"> • Sections 32, 33 & 34 the consumer shall commission and bear the costs of tests/inspections of backflow preventers and when such test/inspections are required. 	<p>The waterworks may be in danger of damage, pollution and contamination if not adequately protected from hazards originating within properties. Identification of hazardous property types and water usage is determined by Engineering.</p> <p>Due to unique difficulties associated with premise isolation to a construction site, addition stipulations are required to adequately protect the waterworks.</p> <p>Determine who shall bear the responsibility of backflow prevention.</p> <p>Determine who shall bear the costs of backflow prevention.</p> <p>Claims against the City would be forthcoming by parties injured as a result of backflow from a property and transmitted through the waterworks or any other number of reasons.</p> <p>Testing and inspection of backflow preventers is necessary to determine if they are in good working order to indicate if repairs are required.</p>	<p>The responsibilities of the property owner and water consumers have been clarified for the adequate protection of the waterworks from those properties and water usages identified by the City as hazardous enough to warrant protective measures.</p> <p>The requirement for premise isolation for construction backflow preventer installation is clarified; allowing for water service once the backflow preventer is in place.</p> <p>The consumer, as the person who determines their own water usage, is responsible for the installation and continued maintenance of backflow preventers within the property.</p> <p>The consumer shall bear all costs associated with backflow preventers installed on the property</p> <p>The consumer shall bear all legal costs sustained by the City.</p> <p>The consumer shall be responsible for the cost and commissioning of tests and inspections to backflow preventers as required on the property.</p>

Appendix I

Surrey Waterworks Cross Connection Control By-law, 2007

Appendix II

*Proposed Amendments to
Surrey Municipal Ticket Information Utilization By-law,
1994, No. 12508,*

Schedule 26 to By-law No. 12508

APPENDIX II

Proposed Amendments to Surrey Municipal Ticket Information Utilization By-law, 1994, No. 12508, as amended (the "By-law")

That the By-law be further amended as follows:

1. Amend Schedule "1" by adding a new Section 27 as follows:

- | | |
|----------------------------------|---|
| 27. Surrey Waterworks | - Manager, Administration & By-law |
| Cross Connection Control By-law, | - Senior By-law Enforcement Officer |
| 2007, No. _____". | - By-law Enforcement Officer |
| | - License Inspector |
| | - Member of Royal Canadian Mounted Police |
| | - Cross Connection Control Coordinator |

2. By adding a new Schedule 28 as attached.

SCHEDULE 28 to BY-LAW NO. 12508

SURREY WATERWORKS CROSS CONNECTION
CONTROL BY-LAW, 2007, NO. _____

	<u>SECTION</u>	<u>FINE</u>
1. Fail to install backflow preventer	7	\$300.00
2. Fail to install backflow preventer	14	\$300.00
3. Fail to control cross connection	17	\$300.00
4. Fail to maintain backflow preventer	17	\$300.00
5. Fail to repair backflow preventer	18	\$300.00
6. Removal of backflow prevention assembly	20	\$500.00
7. Fail to provide access	21	\$500.00
8. Fail to provide access	22	\$500.00
9. Fail to rectify contravention	25	\$300.00
10. Alter/damage backflow preventer	28	\$300.00
11. Alter/damage identification	29	\$200.00
12. Fail to install backflow prevention assembly	30	\$300.00
13. Fail to test backflow prevention assembly	32	\$200.00
14. Tester not authorized	35	\$300.00
15. Unauthorized test report	36	\$200.00
16. Unlawfully affix tag	36	\$200.00
17. Removal of test tag	37	\$200.00
18. Tag not authorized	39	\$200.00
19. Tester not eligible	40	\$300.00
20. Fail to conduct test correctly	43	\$200.00
21. Fail to conduct test correctly	44(a)	\$200.00

SURREY WATERWORKS CROSS CONNECTION
CONTROL BY-LAW, 2007, NO. _____

	<u>SECTION</u>	<u>FINE</u>
22. Fail to report correctly	44(c)	\$200.00
23. Fail to report correctly	44(d)	\$200.00
24. Fail to submit report	44(f)	\$200.00
25. Fail to notify of failed backflow preventer	44(g)	\$500.00
26. Falsify test report	45	\$1,000.00
26. Hinder tester	46	\$500.00