



STAFF REPORT

Department/Function: Public Works

Chair: Councillor Jim Crawford

Meeting Date: September 14, 2016

Report No.: PW-2016-64

Report Title: Water System Backflow Prevention

RECOMMENDATION:

That report PW-2016-64 regarding water system backflow prevention and cross-connection control be received;

And that staff prepare a backflow prevention and cross-connection control by-law for presentation to the October 12, 2016 Committee of All Council meeting.

INTRODUCTION/BACKGROUND:

This report reviews backflow prevention and cross-connection control approaches, the current status in Tay, and recommends adoption of a program.

Walkerton/Approaches

One of the multiple barriers to water contamination, that was established as best practice following the water contamination issues in Walkerton, is the elimination of potentially contaminated water entering a distribution system from customer's premises. Two aspects of this are generally recognized:

1. Cross-connection refers to outside sources of water/liquid that may be connected to the plumbing and hence create a risk of mixing with municipal drinking water. Examples of this are private wells or process liquids in an industrial or commercial setting.
2. Backflow prevention refers to the installation of reliable devices in the plumbing to prevent flow of water in the unintended direction of a water distribution or plumbing system. Generally, a municipal system is protected by backflow prevention on the water service to a property – premise isolation. Additional, devices on site may be essential for

protection of water quality within the plumbing system. A simple case of this is the need for protection of household plumbing when in-ground sprinkler systems are installed. A secondary benefit of premise isolation is that the plumbing system is not at risk of draining if the municipal system draws a vacuum due to a main break at a low elevation (eliminating water heater collapses and burnouts).

History in Township

In 2010, the Superintendent of Water and Wastewater Operations prepared a backflow prevention and cross-connection control by-law and supporting documentation. However, a by-law was not adopted at that time. More recently, the Director of Public Works has identified this as an item in his annual review of tasks and priorities. In addition, Ministry of Environment and Climate Change inspections of our water systems have identified this as an 'opportunity for improvement'. In the development of the Class Environmental Assessment of the need for changes to drinking water supply and sewage management for Grandview Beach and Paradise Point back flow prevention was identified as an Immediate Term, Interim Measure to reduce risks prior to the implementation of the preferred alternative. For 2016 this program was identified as a goal for both the Director of Public Works and the Superintendent of Water and Wastewater Operations. Most recently with concern about low chlorine residuals in the seasonal water distribution system and the related boil water order, the Ministry of Environment and Climate Change and the Health Unit have reiterated this as an opportunity for improvement.

Fortunately, the Township's Chief Building Official and Water/Wastewater staff have provided leadership in this area. Since 2008, when building permits for new buildings and major renovations have been issued, backflow prevention devices have been required. Many commercial properties are already equipped with backflow prevention devices.

Equipment

There are several different approaches and types of equipment that can be used to address backflow prevention and cross-connection control. The simplest of these is provision of an air gap between the drinking water supply and other uses – most applicable in industrial settings. The most common approach is to use some sort of check valve assembly that only lets water flow from the drinking water source to the users. There are various levels of complexity with these valves with the selection of the valve based on the associated risks. In addition, vacuum break devices can be installed – such as on-premise protection from garden hose bib. Finally, any plumbing system that includes backflow prevention must be equipped with an expansion tank.

ANALYSIS:

At a high level, Council has the option of moving forward with backflow prevention and cross-connection control or not. In the current setting, it is clearly recommended that Council move ahead with a by-law. This would be consistent with most larger municipal systems.

In review, staff has looked at the by-laws from Barrie, Orillia, Severn, Peterborough and Midland. In addition, reference has been made to 'A Guide for Drinking Water System Owners Seeking to Undertake a Backflow Prevention Program', November 2014.

The challenge is making sure the hazards are addressed in priority order and that there are the staff resources to ensure implementation. One concern in many early by-laws was assigning a high risk category to all commercial properties. This was onerous for small business owners and took resources from higher risk properties. For example, a greeting card store may be a commercial property but represents a very small risk to the water system. In addition many by-laws have system wide provisions that require detailed reporting and staff time for inspections.

It is proposed that the by-law for Tay will require new construction to be provided with backflow protection and address our seasonal water system (and the adjacent properties on First Avenue). In the case, of new construction this provides a low cost introduction of a best practice. In the case of the seasonal water system, this addresses a large risk. Following implementation of the proposed by-law staff will propose revisions to expand the by-law to the next risks to be addressed.

For Tay, businesses with commercial or industrial process water are likely to be the next highest priority. This would be followed by properties outside of the seasonal water system that have an active well. The last of the priority properties would be those with in-ground sprinkler systems.

It is noted that, at this time, businesses that simply have a staff washroom (no hazardous activities) and simple residential properties (no well, no in-ground sprinklers) will not be included in the by-law or required to make plumbing changes.

Our first area of concern is properties in the Grandview Beach and Paradise Point area that have active wells or may have a pump that draws water from the lake. Any property that has more than one water source entering a dwelling will be required to have a dual check valve device on each supply. We will require these properties to be addressed prior to the start-up of the seasonal system in the spring of 2017. This is a significant undertaking and may require additional resources for inspections and documentation.

Generally the property owner is responsible to meeting the requirements of the Building Code and other standards. In the case of new construction this has been the case in Tay to-date. In some municipalities backflow prevention devices and expansion tanks are sold to the property owner with as part of the required meter package. It is proposed that any costs associated with backflow compliance be the responsibility of the property owner. For basic residential properties the equipment will be in the \$100 to \$200 range.

SUSTAINABILITY PLAN:

This report recommendation is consistent with the Township's Sustainability Plan items related to public health and provision services

FINANCIAL/BUDGET IMPACT:

There is no direct financial impact associated with this report. However, there will be additional staff effort, both office and field to facilitate implementation.

CONCLUSION:

Tay is overdue for a backflow prevention and cross-connection control by-law and should implement one promptly. It is recommended that staff prepare a by-law to include the current practice of requiring backflow for new construction and major renovations and also to address the seasonal water system in Grandview Beach and Paradise Point.

Date Prepared: September 6, 2016

Prepared and Recommended by:

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Date: September 7, 2016

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