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TORONTO

Mandatory downspout disconnection

Source: ICLR

THE SCIENCE

The risk that extreme rainfall events will overwhelm storm and wastewater systems is increased where downspouts discharge directly into sewers. A large volume of water can be collected from rooftops during an extreme rain event and if this water is directed into the storm, sanitary or combined sewer system, sewers can quickly become overwhelmed, increasing the risk that water and wastewater is driven into homes, or that untreated wastewater will pollute local surface water. The increased risk of damage to homes from basement flooding not only affects houses with connected downspouts, but can also affect neighbouring properties. Accordingly, the benefits of downspout disconnection can be perceived both at the lot level and neighbourhood level.

A smaller volume of storm water in the sewer system reduces the risk of basement flooding caused by sewer backup and improves the quality of the water that is discharged from storm sewer systems into local streams and rivers. Roof runoff contains deposited atmospheric pollutants, particles or roofing materials and concentrations of other pollutants that can have negative environmental impacts on local lakes and streams. When downspouts are disconnected and drain over lawns and gardens, the rainwater is filtered through plant roots improving water quality and benefiting the environment.

THE TRIGGER

Over the past few decades, the City of Toronto has experienced a number of extreme rainfall events resulting in extensive damage to homes from basement flooding. There have been several major loss events affecting the City including extreme rainfall events in 2000, 2005 and 2013. Damage to homes has been evident in older parts of the City with combined storm and sanitary sewer systems, but most of the largest losses occurred in relatively new neighbourhoods with modern, separated storm and sanitary systems.

Actions to address the risk of damage from sewer backup and other water perils are a priority issue for the City. Toronto has developed a comprehensive program focusing on local infrastructure needs and actions seeking to involve property owners in taking steps to protect their homes. The long-term program includes specific action plans for each flood vulnerable neighbourhood throughout the City, a significant investment in sewer infrastructure renewal, financial incentives to encourage high-risk homeowners to install backwater valves and disconnect foundation drainage from the City's sewer system, and a major public outreach campaign. Toronto has consistently demonstrated a long-term commitment to aggressively confront the risk of damage to homes from sewer backup and extreme rainfall.

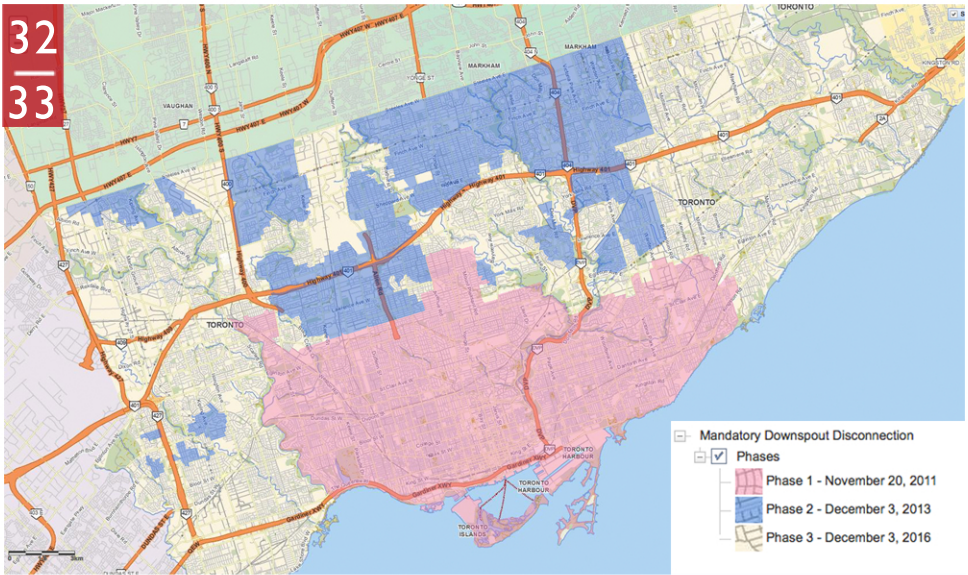


Figure 8 : *The mandatory downspout disconnection program will come into effect across the City in three phases as shown on the map. These phases are organized by priority, disconnecting the areas with combined sewer systems first.*
(Source: City of Toronto)

THE APPROACH

For new homes, Toronto's municipal code prohibits the connection of downspouts to sanitary, combined or storm sewer systems. Therefore, under normal circumstances, property owners and home builders cannot connect downspouts to sewers, and should instead drain eavestrough stormwater at grade away from buildings and adjacent properties. For existing homes a City-wide Voluntary Downspout Disconnection program was implemented in 1998 to decrease stormwater loads in the sewer system. The program targeted homes where downspouts were legally connected to either the combined or separate sanitary sewer system at the time of construction. Toronto offered to disconnect the downspouts at no cost to property owners.

In 2003, Toronto's Wet Weather Flow Management Master Plan identified downspout disconnection as one of the most effective and readily available source control options available to the City to reduce demands on the capacity of sewer systems.

The Voluntary Downspout Disconnection program initially focussed on two high risk neighbourhoods serviced by combined sewer systems. By 2006, a total of

26,000 downspouts had been disconnected, at an average rate of 2,300 downspouts disconnected each year, with \$1.5 million in annual funding. In 2007, the City Council approved a by-law to move from a voluntary program to a mandatory disconnection requirement starting in 2011, with all areas of the city to be covered by 2016. Every homeowner in Toronto is required to disconnect their downspouts unless they secure an exemption because the disconnection would create a hazardous condition.

THE OUTCOME

Transitioning from a voluntary to a mandatory program brought a number of challenges for the City. Toronto needed to develop the necessary computer systems, communications, application, processes and reporting tools to process applications for exemptions. The City also needed to communicate with the public and educate homeowners, Councillors and internal stakeholders about their underground plumbing system and how it operates.

Toronto does not provide financial incentives for the current mandatory downspout disconnection program unless property owners can prove financial assistance is needed. The City offers a reimbursement of the costs of labour and materials up to a maximum of \$500 for eligible low-income seniors or low income persons with a disability. Toronto provides tips on its website about what should be considered before disconnecting, how property owners can perform their own

disconnections and advice for hiring a contractor to perform the work. When the City's Mandatory Downspout Disconnection program was implemented, there was some push-back from property owners in areas serviced by separated sewer systems that did not feel disconnection should be a requirement for them.

A WORD FROM TORONTO

When asked for advice he would give to other municipalities that would like to implement a similar program, Michael Caruso, supervisor of the Downspout Disconnection Program for Toronto Water, recommended that "there should be an easy process for property owners that cannot comply with the by-law to apply for an exemption. In Toronto's experience, it was also important to provide sufficient staffing resources to handle calls and emails about the program, requests for assistance, inspection and the review of exemption applications," said Mr. Caruso. "Further, municipalities considering a similar program should keep in mind that low income property owners might need financial assistance and that seniors may need additional help to complete applications."