TORONTO

REPORT FOR ACTION

Amending the Foundation Drainage Policy and Storm Sewer Quality Limit for Manganese

Date: April 22, 2026
To: Infrastructure and Environment Committee
From: General Manager, Toronto Water
Wards: All

SUMMARY

This report responds to City Council direction for Toronto Water and Development Review to review the Foundation Drainage Policy (FDP) and the feasibility of revising the manganese quality limit for storm sewer discharge in the Sewers By-law (Toronto Municipal Code, Chapter 681). The objective of this review was to identify opportunities to support the City's priority of encouraging new housing starts while ensuring that sewer system capacity is not compromised.

Developments cannot proceed without adequate servicing infrastructure. Accordingly, the FDP prohibits groundwater discharges to the City's sewer systems to preserve the capacity required to support Toronto's continued growth and intensification. The policy amendments proposed in this report strike a balance between introducing greater flexibility to facilitate new housing development and maintaining the FDP's core objective of protecting sewer system capacity.

Following stakeholder consultations, hydraulic capacity analyses of the sewer system and background research, effective October 1, 2026, FDP amendments will allow a limited quantity of foundation drainage containing groundwater to be discharged into the City's storm sewers, under the following conditions:

- Foundation drainage flows meet the quality limits for storm sewer discharge in the Sewers By-law;
- The storm sewer to which the foundation drain connects will discharge directly to a watercourse or Lake Ontario without interacting with the combined sewer system (i.e., there is no interaction with any flow control structures);
- The maximum dry-weather discharge rate from foundation drainage is 3 L/s/ha for sites > 0.7 ha, and 2 L/s for sites ≤ 0.7 ha; and
- The total discharge rate under wet-weather conditions to the storm sewer from the site (i.e., both foundation drainage and stormwater) complies with all stormwater management targets per the City's Wet Weather Flow Management Guidelines.

Staff also recommend an increase to the manganese quality limit for discharges to the storm sewer system from 0.05 mg/L to 2.0 mg/L, which will exclude higher concentrations associated with non-natural manganese sources (e.g., brownfield properties). Toronto Water staff consider the health and environmental risks associated with this recommendation to be low because anticipated groundwater discharge volumes will be limited, and because manganese levels in most groundwater samples naturally cluster around low concentrations.

This report was developed in consultation with Development Review, who agree with the findings and recommendations.

RECOMMENDATIONS

The General Manager, Toronto Water recommends that:

1. City Council amend Toronto Municipal Code, Chapter 681 ("Sewers"), §681-4.J. Table 2 - Limits for Storm Sewer Discharge, by deleting "0.05" for the Manganese (total) limit and replacing it with "2.0".

2. City Council authorize the City Solicitor, in consultation with the General Manager, Toronto Water to prepare the necessary bill required to give effect to City Council's decision and to make such clarification, minor modifications, technical or stylistic refinements as may be identified by the City Solicitor.

FINANCIAL IMPACT

There are no financial implications resulting from the adoption of the recommendations contained in this report.

The Chief Financial Officer and Treasurer has reviewed this report and agrees with the financial impact information.

DECISION HISTORY

At its meeting on July 23, 2025, City Council directed the General Manager, Toronto Water and the Executive Director, Development Review to review the Foundation Drainage Policy to ensure that the City's interests in encouraging new housing starts are balanced with the objectives of the Policy and to report back on possible amendments. Additionally, City Council directed the General Manager, Toronto Water to review the feasibility of revising the manganese limit for discharging water into the City's storm sewer system.
Link: https://secure.toronto.ca/council/agenda-item.do?item=2025.PH23.14

COMMENTS

Background

Foundation drainage is water collected in a foundation drain, which is a perforated pipe installed beneath the foundation of a building for the purpose of collecting and conveying foundation drainage to a sump pump.

The Foundation Drainage Policy (FDP) came into effect for all new development applications as of January 1, 2022. For several years leading up to that date, the City led a Groundwater Management Strategy Steering Committee, which included development industry representatives and third-party technical experts in hydrogeology and foundation drainage management. The City consulted extensively with this group and other industry stakeholders and circulated the draft FDP to the Groundwater Management Strategy Steering Committee prior to it becoming effective.

The FDP considers two types of foundation drainage, one of which is "infiltrated stormwater". When it rains or snow melts, infiltrated stormwater can drain into the ground around a building and enter the foundation drain. The FDP contains provisions that allow infiltrated stormwater to be discharged to the City's sewers.

The other type of foundation drainage is groundwater, which is present when a building's foundation extends into the water table. Removing groundwater from a site by discharging it to the City's sewer system results in a continuous load on the system that reduces sewer capacity. Uncontrolled groundwater flow volumes can be significant.

Drainage from private property, including discharges from foundation drains, is regulated by the Sewers By-law (Toronto Municipal Code, Chapter 681), which is aligned with the Ontario Water Resources Act and requirements under the Ministry of Environment, Conservation and Parks' Environmental Compliance Approvals. Appropriate usage of sewage works in Toronto are also guided by the City's Design Criteria for Sewers and Watermains and the Wet Weather Flow Management Guidelines.

Objectives of the Foundation Drainage Policy

The City's sewer systems face many challenges. As Toronto continues to grow and become more dense, careful planning is critical to ensure adequate sewer capacity is available to service this growth. Cracks in aging sewers allow extraneous flows and is a component of what is referred to as "inflow and infiltration", which reduces sewer capacity. The amount of paved and impervious area in the city continues to increase, leading to greater runoff to sewers. Large and intense storms are also occurring with greater frequency. Building on the Sewers By-law, the FDP intends to ease the burden associated with these challenges.

The main objective of the FDP is to ensure that the capacity of sanitary sewers, pumping stations, trunk sewers and treatment plants is preserved to sustain the anticipated future growth and intensification of the city, which is why the FDP prohibits groundwater discharges to the City's sewer systems. As an example, a site that

discharges 50,000 litres of groundwater per day into a sanitary or combined sewer would displace the capacity for more than 200 residents, or almost 150 one-bedroom units. The FDP includes provisions for reasonable and fair exemptions based on technical infeasibility and subject to there being sufficient sewer capacity.

Developments cannot proceed if there is insufficient sewer capacity available to serve them. Constructing new sewers to accommodate groundwater flows from foundation drains would incur significant capital costs and cause major and long-term traffic disruptions. Instead, groundwater can and should be managed on-site by designing a building so that its foundations do not intersect with the water table, by collecting and reusing foundation drainage, or by constructing waterproof foundations, among other options.

The FDP aligns with and supports the objectives of other major City policies and programs, including the Wet Weather Flow Master Plan (WWFMP). The WWFMP is the City's long-term plan to improve water quality in Toronto's watercourses and Lake Ontario and was endorsed by City Council in 2003. Significant progress has been made on critical WWFMP initiatives, including advancing construction of the Don River and Central Waterfront Project, which is the largest and most significant stormwater management program in Toronto's history, the Basement Flooding Protection Program, the rehabilitation of City stormwater management facilities, and the implementation of erosion management works within watercourses.

In response to direction from City Council, staff conducted a review of the FDP to identify potential policy amendments to ensure that the City's interests in encouraging new housing starts are balanced with the FDP's objective of reserving sewer capacity for population growth. Staff conducted stakeholder consultations, hydraulic capacity analyses of the sewer system and background research.

Stakeholder Consultation

Toronto Water conducted three virtual stakeholder engagement sessions on October 28 and December 12, 2025, and February 27, 2026. Per City Council direction, the target audience for these sessions was the development industry, which has direct experience applying the FDP. Stakeholders from community and environmental groups were also invited to attend. Stakeholders were asked to provide further comments in writing after each session.

As part of the stakeholder consultations, staff explained that the City does not prescribe how to achieve compliance with the FDP. Staff outlined four design options to achieve compliance: (i) building foundations above the water table; (ii) using infiltration galleries; (iii) using greywater systems; and (iv) constructing watertight foundations. This section of the report describes these design options, along with a summary of the stakeholder feedback received on each and staff's comments.

A limited number of stakeholders also expressed interest in the City allowing groundwater to be discharged to combined sewers. The final part of this section of the report includes an overview of combined sewers, a description of how the proposed

amendments to the FDP will benefit developments in the combined sewer area, and the rationale for staff not supporting groundwater discharges to combined sewers.

Design Option 1: Build Foundations Above the Water Table

The maximum anticipated groundwater level (MAGWL) is the estimated highest level of the water table at a given site. It is calculated based on site-specific monitoring and includes an allowance for seasonal and multi-year fluctuations in groundwater, as described in the FDP Guidelines. Building above the MAGWL negates the need for other groundwater management solutions and leads to compliance with the FDP because the water table is not anticipated to rise above the base of the building's foundation at any given time.

Summary of Stakeholder Feedback

Industry stakeholders highlighted challenges with building above the MAGWL. Stakeholders noted that there are competing demands for limited ground-level space and perceived that the City prefers parking to be located below-ground. As a result, developers typically design facilities such as parking and utility and mechanical rooms to be below-ground, resulting in foundations that extend below the MAGWL, especially when there are multiple levels of underground parking.

Stakeholders further noted concerns that the current method for calculating the MAGWL described in the FDP Guidelines leads to overly conservative values.

Staff Comments

The objective of preserving sewer capacity should be balanced with urban design considerations. Many developments still include parking in their proposals, including underground parking. The City recognizes that it may be challenging to accommodate underground parking in areas with high water tables, and accordingly, both the Tall Building Design Guidelines and Mid-Rise Building Design Guidelines provide direction that when parking cannot be located underground, including due to a high water table, above-ground parking lined with active, grade-related uses is acceptable. Alternatively, developments can limit the amount of parking on the site, as the City eliminated most minimum parking requirements in 2021.

Developments that are designed to extend below the MAGWL, such as to accommodate parking or other facilities underground, must currently manage groundwater onsite. The proposed FDP amendments will provide greater flexibility for many projects that are designed to extend below the MAGWL, but constructing above the MAGWL is still encouraged.

The method to calculate the MAGWL was developed in 2021, based on the analysis and recommendations from industry-leading hydrogeologists and the best data available at the time. While the review of the MAGWL method was not in scope as part of this review, Toronto Water will assess the current approach and, if warranted, update the FDP Guidelines by 2028.

Design Option 2: Infiltration Galleries

An infiltration gallery is underground infrastructure that typically consists of perforated pipes in a trench, which temporarily stores foundation drainage and allows it to gradually infiltrate into the surrounding ground.

Summary of Stakeholder Feedback

Industry stakeholders noted that the construction of infiltration galleries requires significant space and can be challenging to implement on urban sites where maximizing building density is a priority.

Staff Comments

While staff recognize that space constraints may negatively impact the feasibility of infiltration galleries in highly urbanized areas, they remain a useful design option in less-urbanized areas. Infiltration galleries mimic natural infiltration processes and help maintain the natural hydrologic cycle, a key objective of the WWFMP.

Design Option 3: Greywater systems

Foundation drainage can be used on-site in a greywater system for non-potable purposes such as flushing toilets.

Summary of Stakeholder Feedback

Industry stakeholders noted various challenges with implementing greywater systems, notably due to public perception issues, noting that greywater may be discoloured and appear "dirty", resulting in frequent complaints from residents. Stakeholders further highlighted design complexities due to Ontario Building Code and public health requirements, as well as additional maintenance requirements for property owners.

Staff Comments

Despite these concerns, using groundwater in greywater systems for flushing toilets is technologically feasible and there is growing interest from some stakeholders to use such systems to comply with the FDP. Greywater systems have operated across Toronto for many years.

Design Option 4: Watertight Foundations

Watertight foundations are designed to be completely waterproof, not allowing any water to penetrate through a building's foundation (also referred to as "bathtubbing").

Summary of Stakeholder Feedback

Industry stakeholders noted that watertight foundations use more concrete and other materials than basements with conventionally drained foundations, which increases

construction time and costs and results in more embodied carbon. Stakeholders also noted that watertight foundations can negatively impact the feasibility and efficiency of geothermal projects and can be difficult and expensive to repair. Stakeholders noted a preference for reducing—rather than completely preventing—groundwater flows, such as by using watertight walls (e.g., caisson walls) in combination with a drained base to create "low-flow basements", which discharge limited flows to the sewer system.

Staff Comments

Although the City does not prescribe the use of watertight foundations and would accept other design options (such as those described above) for the purpose of complying with the FDP, staff recognize there are challenges associated with watertight foundations. The amendments to the FDP described in this report will enable the use of design approaches that reduce groundwater flows ("low-flow basements") in many areas of Toronto, creating greater flexibility to achieve compliance with the FDP.

Stakeholder Interest in Discharging Groundwater to Combined Sewers

Toronto Water staff informed stakeholders that it will amend the FDP to allow a limited quantity of foundation drainage containing groundwater to be discharged into the City's storm sewers, subject to conditions described in this report. However, City staff indicated there would be no change to its position on prohibiting groundwater discharges to combined sewers.

Summary of Stakeholder Feedback

Industry stakeholders advocated for this amendment and requested that the FDP be further amended to allow groundwater discharges to the combined sewer system as well.

Staff Comments

There are three types of sewer systems in Toronto: sanitary, storm and combined. Sanitary sewers convey wastewater flows to a local wastewater treatment plant. Storm sewers discharge stormwater (rain and melted snow) directly to local watercourses and Lake Ontario. Combined sewers, which are predominantly found in older parts of the city (approximately 25% of Toronto's drainage area), function both as a sanitary and storm sewer, with one pipe conveying both types of flows.

Much of the combined sewer area has been upgraded to include storm sewers alongside combined sewers. Approximately 70% of the combined sewer area is served by storm sewers that discharge directly into local watercourses or the lake without interacting with the combined sewer system and would be suitable for limited groundwater discharges under the amended FDP. Developments that front an appropriate storm sewer in the combined sewer area will therefore benefit from the amended FDP.

Staff do not support allowing groundwater discharges to combined sewers. When it is not raining, combined sewers carry all flows to wastewater treatment plants for full

treatment. Continuous groundwater flows to wastewater treatment plants during dry weather via combined sewers would lead to an overall increase of flow to these plants, which would in turn diminish their efficiency and increase operational costs.

Groundwater flows to the combined system usually cannot be "offset" during dry weather, thereby increasing base flows. During periods of heavy rainfall, the volume of stormwater that enters combined sewers may exceed the system’s capacity and some of the combined sewer flow must be diverted into watercourses and Lake Ontario. These "combined sewer overflows" ("CSOs") were designed to act as a relief valve and prevent sewer overloads that can lead to flooding of properties, public spaces or wastewater treatment plants.

The City is mandated under the Province's Procedure F-5-5 to manage CSOs. The City is making concerted efforts to eliminate CSOs through significant investments and capital upgrades. For example, the Don River and Central Waterfront project will keep CSO flows out of the Lower Don River, Taylor-Massey Creek and Inner Harbour by capturing them in a tunnel system, storing it during heavy rain events and transporting it for treatment. This is a key project supporting the City Council-endorsed WWFMP.

The City also has a Pollution Prevention Control Plan (PPCP), required under the Ministry of Environment, Conservation and Parks' Environmental Compliance Approvals. The PPCP includes an implementation plan to eliminate dry weather CSOs and minimize wet weather CSOs.

Unless controlled through the FDP, the City would be allowing increased flows to the combined sewer system from groundwater sources. These groundwater flows would be contrary to the intent of Provincial regulatory requirements and the City's WWFMP policy objectives and would undermine the City's significant capital upgrades and investments completed and underway.

Sewer System Hydraulic Capacity Analyses

Staff conducted hydraulic capacity analyses of the sewer system to determine if and under what conditions groundwater flows to sewers would be acceptable, while maintaining overall system performance and ensuring alignment with broader Toronto Water objectives and best engineering practices. Staff modelled various flow rates in a high growth area of Toronto, determining that limited flow rates during dry-weather conditions to storm sewers were acceptable and would be an appropriate basis for an amendment to the FDP.

Foundation Drainage Policy Amendments

Based on feedback from stakeholders, hydraulic capacity analyses of the sewer system and background research, Toronto Water will amend the FDP, effective October 1, 2026. The amended FDP will allow for a limited quantity of foundation drainage containing groundwater to be discharged into the City's storm sewers, under the following conditions:

- Foundation drainage flows meet the quality limits for storm sewer discharge in the Sewers By-law;
- The storm sewer to which the foundation drain connects will discharge directly to a watercourse or Lake Ontario without interacting with the combined sewer system (i.e., there is no interaction with any flow control structures);
- The maximum dry-weather discharge rate from foundation drainage is 3 L/s/ha for sites > 0.7 ha, and 2 L/s for sites ≤ 0.7 ha; and
- The total discharge rate under wet-weather conditions to the storm sewer from the site (i.e., both foundation drainage and stormwater) complies with all stormwater management targets per the City's Wet Weather Flow Management Guidelines.

These allowances and conditions are designed to ensure that the FDP's objective of reserving sewer capacity for growth continues to be met. Existing provisions for technical exemptions and foundation drainage containing only infiltrated stormwater will continue to apply. The current FDP direction as it applies to sanitary and combined sewers will remain unchanged.

Allowing limited groundwater flows into storms sewers may also provide benefits for aquatic life. In highly urbanized areas like Toronto, stormwater runoff from heated paved surfaces and roofs can raise temperatures in local waterways. Groundwater flows are typically colder than stormwater runoff, in particular during extreme heat events, and may provide a cooling effect.

Implementation of Amended Foundation Drainage Policy

The amended FDP will come into effect on October 1, 2026. This timing will ensure that Toronto Water and Development Review can update all required documents and associated processes, and that staff can be trained.

Development applicants with existing applications subject to the Foundation Drainage Policy will be able to amend their submission to benefit from the updated policy on a voluntary basis on or after that date. There will be no other amendments to the FDP beyond those described in Attachment 1, and applicants will continue to have the ability to request exemptions based on technological infeasibility or extenuating circumstances. The FDP will continue to not apply to development applications submitted prior to January 1, 2022, and to applications with an existing exemption status.

The City's website will serve as the source for updates to the public on FDP amendments. Stakeholders who participated in consultations will be informed by email when those updates are available.

Review of Manganese Quality Limit in Sewers By-law

Manganese is a naturally occurring element that is commonly found in the environment, including in groundwater. The Sewers By-law sets limits for numerous parameters, including manganese, for water discharges to the City's sanitary, combined and storm sewers. The current limit for manganese to storm sewers is 0.05 mg/L.

Most of Toronto's groundwater has elevated levels of naturally occurring manganese. Based on sampling data collected over a three-year period, more than 90% of these samples indicate manganese concentrations between 0 and 2.0 mg/L. Various samples also show significantly elevated manganese levels between 3 and 27 mg/L, as shown at the right end of the x-axis in Figure 1. Samples from these sites are likely linked to industrial pollution (e.g., brownfield properties), rather than being of natural origins.

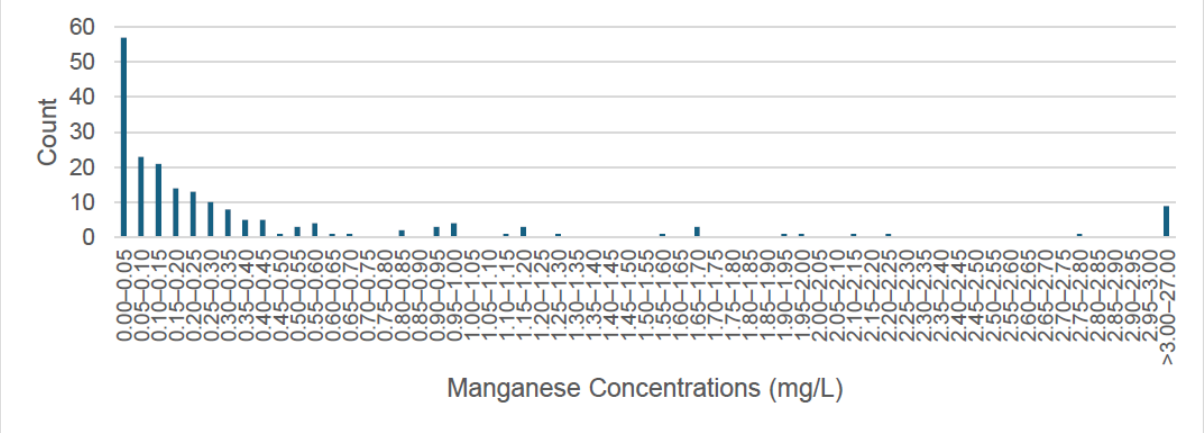

Figure 1. Distribution of manganese concentrations at sites across Toronto, 2017-2019.

There are no federal or Ontario provincial water quality requirements for manganese in surface waters and storm sewer discharges, and quality limits vary between municipal jurisdictions (see Table 1). Many municipalities, including Vancouver, Edmonton and Halifax, have no manganese quality limit for discharges to storm sewers.

The City of Mississauga completed a review of their Storm Sewer Use By-law in 2022, after which they raised their manganese quality limit for storm sewers from 0.05 mg/L to 2.0 mg/L. Staff report no known negative impacts due to this increase.

Table 1. Manganese (total) quality limits to storm sewers in various Canadian jurisdictions.

	Quebec City	Mississauga	London	York Region	Montreal	Ottawa
Mn Limit (mg/L)	2.3	2.0	1.0	0.15	0.1	0.05

Sewers By-law Amendments

Staff recommend increasing the manganese quality limit for storm sewer discharge in the Sewers By-law from 0.05 mg/L to 2.0 mg/L, which will allow more than 90% of properties to meet the new quality limit while excluding higher concentrations associated with non-natural manganese sources (e.g., brownfield properties). Toronto Water staff consider the risk to aquatic life and human health associated with this recommendation to be low because anticipated groundwater discharge volumes will be limited, and because manganese levels in most groundwater samples naturally cluster

around low concentrations (see Figure 1). Additionally, Mississauga staff report no known negative impacts associated with implementing the same quality limit.

Implementation of Amended Sewers By-law

The amended Sewers By-law will go into effect following City Council approval. Application forms and other documents will be updated in the coming months to reflect the amendment. Applicants should refer to the Sewers By-law published on the City's website for the most up-to-date information.

CONTACT

Eleanor McAteer, Director, Water Infrastructure Management, Toronto Water, 416-397-4631, Eleanor.McAteer@toronto.ca

Kurtis Elton, Manager, Policy Development, Water Infrastructure Management, Toronto Water, 416-397-4479, Kurtis.Elton@toronto.ca

SIGNATURE

Lou Di Gironimo
General Manager, Toronto Water

ATTACHMENTS

Attachment 1 - Summary of Amendments to the Foundation Drainage Policy