




INFORMATION REPORT

TO:	Mayor and Members City Council
COMMITTEE DATE:	November 28, 2022
SUBJECT/REPORT NO:	Burlington Street Sewage Spill Update (PW22088) (City Wide)
WARD(S) AFFECTED:	City Wide
PREPARED BY:	Shane McCauley (905) 546-2424 Ext. 1020 Susan Girt (905) 546-2424 Ext. 2671
SUBMITTED BY:	Nick Winters Director, Hamilton Water Public Works Department
SIGNATURE:	

COUNCIL DIRECTION

N/A

INFORMATION

On Tuesday, November 22, 2022 Hamilton Water staff identified an improper connection between a combined sewer and a storm sewer in the vicinity of Wentworth Street North and Burlington Street East, Hamilton. Appendix "A" to Report PW22088 shows the location of the improper connection and the outfall that discharges to the Hamilton Harbour. This improper connection allowed combined sewage (made up of sanitary discharges in the sewer shed and storm water connections) to enter the storm sewer that outlets directly into the Hamilton Harbour at the Hamilton Oshawa Port Authority (HOPA) Pier 14. The combined sewage that entered the storm sewer is considered a spill under the Provincial Environmental Protection Act. Historical records indicate that the connection causing the spill likely occurred sometime in the later half of 1996 during a City of Hamilton capital construction project on Burlington Street East.

Upon field confirmation that there was an ongoing discharge of sanitary sewage to the storm sewer, Hamilton Water staff notified the Ministry of Environment, Conservation and Parks (MECP) Spills Action Centre (SAC) of the spill. This notification took place on

OUR Vision: To be the best place to raise a child and age successfully.

OUR Mission: To provide high quality cost conscious public services that contribute to a healthy, safe and prosperous community, in a sustainable manner.

OUR Culture: Collective Ownership, Steadfast Integrity, Courageous Change, Sensational Service, Engaged Empowered Employees.

Tuesday November 22, 2022, at approximately 12:12 p.m., followed by a call to the City of Hamilton Spills Line at 12:20 p.m.

Hamilton Water staff took immediate action to protect the environment and contain the spill. This included bringing in vacuum trucks to capture and prevent the sanitary sewage from continuing to enter the storm sewer and developing plans to reconfigure the sewer to correct the improper connection. In consultation with Engineering Services, Hamilton Water were able to quickly identify a solution which would connect the combined sewer directly to the Western Sanitary Interceptor, which is a large sewer that flows to the Woodward Wastewater Treatment Plant. Construction crews were on site on Wednesday November 23, 2022 by 7 a.m. and the reconfiguration work was completed at 9:32 p.m. that same evening. The MECP was also notified on November 23, 2022 at 9:32 p.m. that the improper connection was reconfigured and there was no possibility for the spill to reoccur in the future.

As of Monday November 28, 2022, the estimated volume of sanitary sewage that was discharged to the storm sewer over approximately 26 years, is estimated to be 337 million litres (equating to, approximately 13 million litres per year).

Background Information

In 2019, some routine investigative work was conducted for the subsurface infrastructure (sewers and watermains) in the area of Burlington Street East and Wentworth Street North, including the adjacent neighbourhoods. This work was part of the scope development by Engineering Services for a project that was focused on renewal of the road surface for the neighbourhood streets. The capital project ended-up being reprioritized until 2029, however, during the investigative work as part of the road resurfacing project, some non-urgent structural concerns unrelated to the spill, were identified with a sanitary sewer lateral at 517 Burlington Street East. In 2022, Engineering Services reached out to Hamilton Water and requested that they review this sewer lateral and undertake any necessary repairs under the City's Sewer Lateral Management Program.

Hamilton Water staff, as part of their investigation, undertook a review of archived sewer records in the vicinity of 517 Burlington Street East. During this review, staff located and reviewed a 2013 video of a maintenance access hole just west of the lateral they were asked to investigate. The Hamilton Water staff member reviewing the video recognized, based on their experience, that something did not "look right" and arranged for a field investigation. Both the video review and the field investigation took place the morning of Tuesday, November 22, 2022. The field investigation confirmed the existence of an improper connection between a combined sewer and a storm sewer in the vicinity of Wentworth Street North and Burlington Street East, Hamilton. It was further identified

that there was an ongoing discharge of combined sewage to the storm sewer which is considered a Spill under the Provincial Environmental Protection Act. The spill was promptly reported to the Ministry of Environment, Conservation and Parks (MECP) Spills Action Centre (SAC) on Tuesday November 22, 2022, at approximately 12:20 p.m.

Hamilton Water staff immediately took action to protect the environment and contain the spill. This included bringing in vacuum trucks to capture and prevent the combined sewage from continuing to enter the storm sewer and developing plans to reconfigure the sewers and prevent further discharge to the storm sewer. At the same time, Hamilton Water began investigating the history of the improper connection from the combined sewer to the storm sewer.

Sewer Repair/Reconfiguration

On November 22 and 23, 2022, Hamilton Water and Engineering Services worked together to determine an appropriate method to repair/reconfigure the improper combined sewer connection to the receiving storm sewer to eliminate this flow. Staff determined that it was possible to connect the combined sewer (that was spilling into the storm sewer) to the large Western Sanitary Interceptor sewer that flows directly to the Woodward Wastewater Treatment Plant. The reconfiguration included installing a new section of sewage pipe approximately 4.5 metres in length. Once this connection was made, the connection between the combined sewer and the storm sewer was eliminated by capping the ends of the abandoned pipe with concrete.

The new connection was completed on Wednesday, November 22, 2022 at 9:32 p.m. Temporary road surface restoration was completed, and construction crews left the site at 12:30 a.m. on Thursday November 23, 2022. Hamilton Water staff completed repairs as urgently as possible, repairing the sewer within 31 hours of discovery. Hamilton Water returned to the site first thing in the morning on Thursday, November 23, 2022 and completed a camera inspection of the reconfiguration and verified that the new connection was functioning properly, and the abandoned pipe was properly capped. City records were updated to reflect the new sewer configuration. Final restoration of the road surface will be completed by Engineering Services once Hamilton Water have completed their analysis verifying that the repairs are the most appropriate long-term solution.

Investigation of the Improper Connection

Hamilton Water conducted a review of historical construction records for projects that were completed in the area of the spill to attempt to identify how this situation occurred.

Hamilton Water discovered documents related to City construction contract RHW-96-20 for Burlington Street Reconstruction and Widening which, based on the current

understanding was completed by the City's former Transportation, Operations and Environment Division in 1996. In the engineering drawings associated with this contract, staff identified drawing 96-H-11 which includes a note stating, "Break into top of existing box culvert with 15" storm sewer". Staff also noted that on this drawing, a number of lengths of combined sewer pipe are incorrectly labeled as storm sewer pipes. Drawing 96-H-11 has been included as Appendix "B" to Report PW22088 illustrating this fact. It is City staff's current understanding that the 1996 Burlington Street reconstruction work included sub-surface infrastructure upgrades to watermains and a modification to the incorrectly labelled combined sewer that created an improper connection to the storm sewer.

As part of Hamilton Water's current review of archived sewer records related to this spill staff have located two videos of the maintenance access hole where the improper connection was made. The first video was taken as part of a contract for Zoom Camera inspections (C11-29-04) and was made in 2009. The second video was also taken as part of a contract for Zoom Camera inspections (C11-86-10) and was made in 2013. While the scope of the two (2) contracts varied somewhat, both contracts were focused on asset condition assessments to identify structural deficiencies, and to determine any immediate maintenance needs. Both videos show footage of the maintenance access hole where the improper connection was made and clearly shows sewage discharging into a 'hole' in the bottom of the pipe, but this type of connection between sewers isn't uncommon in older Cities like Hamilton. However, since neither of the videos showed immediate maintenance needs and the structures were in good condition, they would not have been flagged by the contractor for further review. In short, staff do not believe that any City staff member reviewed either of these videos until November 22, 2022. In addition, the contractor would not have had detailed enough knowledge of the City's sewer system to identify the improperly connected sewer pipes.

In 2015, Hamilton Water issued a third contract for Zoom Camera inspections (C11-39-15). However, the contractor was unable to complete 100 per cent of the inspections within the budget of the contract. As a result, the maintenance access hole containing the improper connection was not inspected as part of this contract. Following this contract, Hamilton Water decided not to issue another tender for this work. This was partly because, based on the first two rounds of inspections an annual maintenance (sewer flushing) program had been created which addressed many of the maintenance related issues and prevented them from reoccurring. In addition, the maintenance access holes showed very little change in their structural integrity over the relatively

short inspection cycles and it was determined that additional condition data was not immediately required.

A review of Hamilton Water's work order management system has determined that no other historic work orders have been issued for this maintenance access hole. As such, Hamilton Water would not have noticed the improper connection earlier.

Calculation of the Spill Volume

By examining Hamilton Water's Geographical Informational Systems (GIS) staff identified 50 properties with service connections that would have contributed to the sewage spill. A map that identifies these properties has been attached as Appendix "C" to Report PW22088.

Staff have developed an estimated volume for the spill by compiling the historic water meter readings for these properties. Meter readings are available for each property from 2003 which is when water meters were first installed as a result of Hamilton's universal water metering initiative. Staff calculated the average annual metered potable water usage for each property from 2003-2022 and used this average to fill in the annual usage from 1996 - 2002. Staff were then able to estimate the total water usage for each property over approximately 26 years.

It is important to note that some portion of the water used by these properties would have been used for purposes such as watering lawns/gardens and cooking/drinking and as a result it would not have been discharged into the sewer system. However, for the purposes of this calculation, 100 per cent of the water used by each property is assumed to have gone into the sewer system.

Based on the methodology described above, it is estimated that approximately 337 million litres of sanitary sewage from these 50 properties was spilled into the storm sewer over a period of approximately 26 years. This number does not include stormwater which would have entered the combined sewer during rain events or snow melt which would have added to the volume of water discharged and diluted the sanitary sewage being discharged from the properties.

Involvement of the Ministry of the Environment, Conservation and Parks (MECP)

Hamilton Water notified the MECP Spills Action Centre (SAC) of the spill at approximately 12:12 p.m. on Tuesday November 22, 2022. An MECP Environmental Officer attended the site on Tuesday, November 22, 2022 and remained on site for several hours observing how the spill was being contained, taking samples and

collecting information. Senior MECP staff also attended the site briefly and were briefed on the situation.

To date, several documents were requested and have been provided to the MECP, these include:

- Analytical results for samples collected by Hamilton Water's Environmental Enforcement Officers;
- Inspection videos for the sewers;
- Current and past drawings of the sewers;
- A map that identifies the properties that are connected to the combined sewer and that would have contributed to the sewage spill;
- A log that includes the date, time and estimated volume of sewage collected by the vacuum truck, and that was discharged to a properly connected sewer; and
- Timeline of the sewer repair/reconfiguration.

The completion of the spill was reported to the MECP SAC on Wednesday, November 23, 2022 at 9:32 p.m. The estimated spill volume was provided to the MECP the morning of November 28, 2022.

It has been reported through the local media that the Provincial Minister of the Environment, Conservation and Parks has directed MECP staff to issue an Order that will require Hamilton to audit its entire sewer system. However, to date no Order has been issued to the City.

Notifications and Communications

The City held a press conference on Tuesday, November 22, 2022 at 4:30 p.m. to inform media and the community about the spill. This was followed by a press conference by Mayor Horwath at 5:15 p.m. the same day. The media was also invited to attend the location of the spill on Wednesday, November 23, 2022 at 11 a.m. where Director Nick Winters, Hamilton Water explained the circumstance that resulted in the spill occurring and the work that was being completed.

On Wednesday, November 23, 2022, Hamilton Water hand delivered letters to the properties that contributed to the spill. A copy of this notification letter has been included as Appendix "D" to Report PW22088. The notification letter was also provided to the Ward Councillor's Office.

A dedicated webpage on the City's website has been launched to ensure that information about the spill is shared as soon as it becomes available. For details, visit: www.hamilton.ca/burlingtonstreetspill.

In addition to the notifications identified above, notifications were provided to the Hamilton Harbour Remedial Action Plan partners and to First Nations. Appendix “E” to Report PW22088 provides a summary of all of the notifications that were made to the community, partners/stakeholders, First Nations, and the media regarding the spill.

Hamilton Water also consulted with Public Health Services regarding any potential health impacts to the community. Due to the location of the spill, and the associated outfall to the natural environment, it is very unlikely that any member of the public would have come into direct contact with the contaminated water. It is also important to note that the outfall in question regularly receives discharges of combined sewage from sewer regulators that are active during wet weather in order to prevent basement flooding within the community.

Collection of Environmental Samples

Hamilton Water’s Environmental Monitoring and Enforcement unit was dispatched to collect samples as part of the spill investigation. Samples were collected of the flow that was entering the storm sewer, and also of the downstream stormwater (collected at a maintenance access hole closest to the storm outfall). It was not possible to collect samples right at the storm outfall as this particular outlet pipe is submerged and was blocked by a docked ship. Provisional analytical results for these samples are included as Appendix “F” to Report PW22088.

The provisional analytical results are indicative of normal residential sewage entering the storm sewer, and there is evidence that the sewage had been diluted by the time that it reached the downstream sample location.

Costs to Date

The total estimated cost of the spill containment and sewer repair/reconfiguration to date is approximately \$30,000, excluding staff time. The estimated costs are:

- Excavation and repair/reconfiguration of the sewer - \$17,000;
- Onsite vacuuming of combined sewer wastewater to stop the spill - \$9,830; and
- Permanent restoration of the road - \$3,000

Next Steps

Hamilton Water’s Water and Wastewater Systems Planning staff are in the process of completing a hydraulic analysis of the reconfigured sewers to validate that the repairs made are the most appropriate long-term solution. To assist with this analysis, Hamilton

**SUBJECT: Burlington Street Sewage Spill Update (PW22088) (City Wide) –
Page 8 of 8**

Water is investigating the feasibility of installing a flow meter and level sensor in the reconfigured sewer to identify whether there is any concern of sewer flooding during wet weather. Until the analysis can be completed, Hamilton Water will closely monitor the

reconfigured sewer during wet weather events. Once it has been verified that the sewer reconfiguration is the appropriate long-term solution, the permanent road restoration can take place.

Hamilton Water is also working to assess the environmental impact of the improper sewer connection, and whether any remediation work is required or practical.

Regardless of whether an order is issued by the MECP or not, Hamilton Water is developing plans to investigate the sewer system so that all stakeholders, can be assured that similar improper sewer connections do not exist elsewhere.

Future updates will be provided to the Public Works Committee regarding any Order issued by the MECP, and Hamilton Water's plan for investigation.

Finally, staff are continuing to identify and review available records related to the 1996 construction project that resulted in the improper sewer connection.

APPENDICES AND SCHEDULES ATTACHED

Appendix "A" to Report PW22088 – Map of the Spill Location and Storm Sewer Outfall

Appendix "B" to Report PW22088 – Construction Drawing 96-H-11

Appendix "C" to Report PW22088 – Map Showing Affected Properties

Appendix "D" to Report PW22088 – Hand Delivered Notice to Properties

Appendix "E" to Report PW22088 – Notifications

Appendix "F" to Report PW22088 – Environmental Sample Results