CITY OF HAMILTON
PUBLIC WORKS DEPARTMENT
Hamilton Water

TO:	Chair and Members Public Works Committee
COMMITTEE DATE:	November 4, 2019
SUBJECT/REPORT NO:	Wastewater Treatment Plant Bypass and Combined Sewer Overflow Reporting (PW19091) (City Wide) **(Outstanding Business List Item)**
WARD(S) AFFECTED:	City Wide
PREPARED BY:	Nick Winters (905) 546-2424 Ext. 1474
SUBMITTED BY: **SIGNATURE:**	Andrew Grice Director, Hamilton Water Public Works Department

RECOMMENDATION(S)

(a) That staff be directed to conduct a formal engineering study to analyse the unmonitored combined sewer overflow locations and assess the feasibility and budget estimates for monitoring installations, and that staff report back to a future meeting of the Public Works Committee with the results of the study;

(b) That staff be directed to report back to a future meeting of the Public Works Committee presenting an advanced external facing webpage that will provide information and answer questions about wastewater treatment plant bypasses and combined sewer overflows; and

(c) That the matter respecting Timely Notice of Any Notifications of Discharges of Untreated or Partially Treated Sewerage into Hamilton Harbour from Local Municipal Sewerage Treatment Plants be removed from the Public Works Committee Outstanding Business List.

EXECUTIVE SUMMARY

At the January 23, 2019 Council meeting staff were directed to develop an annual report on discharges to the natural environment from the Dundas and Woodward wastewater treatment plants (WWTPs), and to develop public notice protocols for the discharge of untreated or partially treated sewage into Hamilton Harbour.

This report satisfies Council direction regarding annual reporting for the 2018 calendar year and presents a public notice protocol whereby City Council and the public will be notified within 24 hours of any discharge of untreated or partially treated sewage into Hamilton Harbour from the Dundas and/or Woodward WWTPs. In addition, monitored and unmonitored combined sewer overflow (CSO) locations are discussed, including additional works that will be required to assess options for the remaining unmonitored locations.

Finally, this report identifies timelines and processes for implementing real-time public notification of the occurrence of WWTP bypasses and CSOs.

Alternatives for Consideration – See Page 6

FINANCIAL – STAFFING – LEGAL IMPLICATIONS

Financial: There are costs associated with studying the unmonitored CSO locations to assess the feasibility for monitoring installations at these locations and to develop budget estimates for the work. It is estimated that this study will cost less than $150K, and this amount has been included in the 2020 Water, Wastewater and Storm Water Rate Budget that will be presented to the General Issues Committee on November 25, 2019.

There will be costs associated with implementing recommendations made under the previously mentioned feasibility study for monitoring installations. Detailed budget estimates will be developed as part of that study, but at a high-level staff estimate that the initial capital costs could be upwards of $8 million depending upon the number of locations that require monitoring. In addition, there will be costs associated with ongoing maintenance and inspection of any new monitoring installations.

There are costs associated with the development of the advanced external facing webpage that will provide information and answer questions about WWTP bypasses and CSOs, however, these costs are minimal and are being completed using existing staff and resources.

Staffing: There are no staffing implications.

Legal: There are no legal implications.

HISTORICAL BACKGROUND

Annual Report on Wastewater Treatment Plant (WWTP) Discharges:

The following information pertains to WWTP bypass events at the City of Hamilton's (City) two (2) WWTPs. The Woodward WWTP is located at 700 Woodward Avenue, Hamilton and discharges into the Red Hill Creek. The Dundas WWTP is located at 135 King Street East, Dundas and discharges to the Desjardins Canal. Both discharge locations are connected to Hamilton Harbour (Harbour) and are integral for the City to reach its goal of delisting the Harbour.

The City of Hamilton has a large complex wastewater collection network consisting of both separated sewer systems and combined sewers. Combined sewers are found in older areas of the City and carry a combination of stormwater and wastewater in the same pipe. During periods of heavy rainfall, snowmelt, or elevated lake levels the combined sewers are inundated with large volumes of stormwater that can exceed the capacity of the pipes. This results in combined sewer overflows (CSOs) and can overwhelm the WWTPs resulting in a temporary bypass. WWTP operators monitor incoming flows and make operational adjustments to the treatment processes as required. To protect the plant from infrastructure damage, prevent flooding, and maintain compliance with the WWTP Environmental Compliance Approval (ECA) the WWTP operator will initiate a bypass event.

At the Woodward WWTP a bypass can occur at various stages in the wastewater treatment process. Since the completion of infrastructure upgrades in 2012 almost all bypass events have been classified as a secondary bypass. A secondary bypass means that the wastewater has been partially treated including the removal of large solids, grit and floatable material, and chemicals have been added to assist with phosphorus removal. Between May 15th and October 15th each year, secondary bypasses also receive chlorine disinfection followed by chlorine removal prior to discharge to the natural environment.

All bypasses are promptly reported to the Ministry of Environment, Conservation and Parks (MECP) Spills Action Centre and to Public Health Services as required by the regulations.

In 2018 all bypass events at the WWTP were the result of wet weather that generated flows in excess of the WWTP's treatment capacity. It is important to note that flows from the Dundas WWTP are carefully controlled and flows exceeding the plant capacity

are directed to the Woodward WWTP. There have been no costs associated with the clean-up of a WWTP bypass to date.

The 2018 data is presented in the following table:

	# of Bypass Events		Total Bypass Volume (ML)	
Bypass Location	5 Year Average (2014 - 2018)	2018	5 Year Average (2014 - 2018)	2018
Dundas WWTP	0	0	0	0
Woodward WWTP	14.6	17	1436	1868

Table 1 – Bypass Statistics

2019 Wastewater Treatment Plant Discharge Reporting to Council and the Public:

To satisfy Council's direction regarding timely notification of WWTP bypass events, staff have been working with the Customer Contact Centre (CCC) to establish a notification protocol.

Starting November 4th, 2019 staff will notify Council within 24 hours of the initiation of a WWTP bypass utilizing a standardized email. During regular business hours notification will come from Hamilton Water while any afterhour's notification will come from the CCC. Council will also receive an email notification once the bypass event has ended. The standardized emails that will be utilized for bypass initiation and conclusion are included as Appendices "A" and "B" to Report PW19091.

Hamilton Water, Corporate Services (Information Technology), and the City Manager's Office (Corporate Communications) have also developed a public facing webpage that provides information and answers questions about WWTP bypasses. This webpage will display a notification when a WWTP bypass is occurring, and a separate notification after a WWTP bypass has ended. The webpage will also be a repository for historical bypass data and it will be updated monthly.

Monitored & Unmonitored Combined Sewer Overflow (CSO) Locations:

The City's combined sewer system has 27 designed CSO locations at which combined sewage can be discharged to the natural environment, 14 of which have no instrumentation for monitoring. Twenty-three (23) of the CSO locations can actively discharge during a significant wet weather event (at the remaining four (4) CSO locations a manual stop gate would have to be removed using a crane for a discharge to be possible).

While not all 27 CSO locations are currently monitored, it is a requirement of the Federal Wastewater System Effluent Regulations (WSER) that annual reports for CSO discharges be submitted to Environment Canada. For CSO locations without flow metering capabilities, the data for these reports are currently generated using annual precipitation data and the City's All Pipes sewer model. In addition, CSO discharges are currently characterized every five (5) years via an environmental sampling program. This data is used as part of the WSER reports to calculate nutrient and pollutant loadings related to the CSOs.

In 2020 staff plans to initiate a formal engineering study to assess the feasibility of monitoring all CSO locations and to develop budget estimates for the work. It is estimated that this study will cost less than $150K, and this amount has been included in the 2020 Water, Wastewater and Storm Water Rate Budget that will be presented to the General Issues Committee on November 25, 2019. To ensure the transparency of this study staff have included recommendation (a) in Report PW19091.

For ease of reference a map identifying CSO locations is included as Appendix "C" to Report PW19091.

2020 WWTP Bypass and CSO Discharge Reporting to Council and the Public:

In addition to the 2019 discharge reporting process described previously, staff have been working to establish a more detailed and user-friendly process to notify Council and the Public of WWTP bypasses and CSOs.

Hamilton Water, Corporate Services (Information Technology), and Public Health Services are collaborating on an advanced external facing webpage that will provide information and answers questions about WWTP bypasses and combined sewer overflows (CSOs). This webpage will be similar to the Sewage Overflow webpage used by the City of Kingston (https://utilitieskingston.com/Wastewater/SewerOverflow/Map), and it will include a map with bypass/CSO locations with icons that will turn 'on' and 'off' when bypasses or CSOs begin and end.

The new webpage is anticipated to be complete in Q2 2020 and will provide 'real-time' reporting for those locations that have appropriate instrumentation installed. To ensure the transparency of this initiative staff have included recommendation (b) in report PW19091.

The costs associated with the development of the webpage as described are minimal and are being completed using existing staff and resources. Maintenance and upgrade costs associated with field infrastructure is still being evaluated and the costs will be included in the 2020 Water, Wastewater and Stormwater Rate Budget.

POLICY IMPLICATIONS AND LEGISLATED REQUIREMENTS

CSO discharges and WWTP bypasses are reported (monthly and annually), to Provincial and Federal regulatory authorities as required by existing Environmental Compliance Approvals and the Wastewater System Effluent Regulations.

The implementation of public reporting regarding WWTP bypasses and CSO discharges also addresses sections of the 2019 Woodward WWTP Environmental Compliance Approval document and related recommendations from the Provincial Government's Made in Ontario Environmental Plan.

RELEVANT CONSULTATION

Hamilton Water staff have been working closely with the City Manager's Office (Corporate Communications), Corporate Services (Information Technology), Public Health Services, and the Customer Contact Centre regarding the 2019 and 2020 discharge reporting processes presented previously.

ANALYSIS AND RATIONALE FOR RECOMMENDATION(S)

Staff are not able to complete the advanced external facing webpage that will provide information and answers questions about WWTP bypasses and combined sewer overflows (CSOs) in the 2019 calendar year. As a result, staff have prepared the 2019 Wastewater Treatment Plant Discharge Reporting to Council and the Public as an interim measure to satisfy the direction received at the January 23, 2019 Council meeting.

Recommendations (a) and (b) have been made to ensure transparency respecting initiatives that align with Council priorities.

Recommendation (c) simply seeks to remove the Item respecting Timely Notice of Any Notifications of Discharges of Untreated or Partially Treated Sewerage into Hamilton Harbour from Local Municipal Sewerage Treatment Plants from the Public Works Committee Outstanding Business List.

ALTERNATIVES FOR CONSIDERATION

Public Works Committee could elect to maintain the current WWTP bypass and CSO system. This would not allow for as timely and robust sharing of information with the public and therefore staff do not recommend this option.

ALIGNMENT TO THE 2016 – 2025 STRATEGIC PLAN

Community Engagement and Participation
Hamilton has an open, transparent and accessible approach to City government that engages with and empowers all citizens to be involved in their community.

Healthy and Safe Communities
Hamilton is a safe and supportive City where people are active, healthy, and have a high quality of life.

Clean and Green
Hamilton is environmentally sustainable with a healthy balance of natural and urban spaces.

Built Environment and Infrastructure
Hamilton is supported by state of the art infrastructure, transportation options, buildings and public spaces that create a dynamic City.

Our People and Performance
Hamiltonians have a high level of trust and confidence in their City government.

APPENDICES AND SCHEDULES ATTACHED

Appendix “A” to Report PW19091 - Woodward Wastewater Treatment Plant Bypass Notice - Initiation

Appendix “B” to Report PW19091 - Woodward Wastewater Treatment Plant Bypass Notice - Conclusion

Appendix “C” to Report PW19091 - Combined Sewer Overflow Map