




INFORMATION REPORT

TO:	Chair and Members Public Works Committee
COMMITTEE DATE:	August 10, 2022
SUBJECT/REPORT NO:	Hamilton Wastewater Approvals Process Update (PW22069) (City Wide)
WARD(S) AFFECTED:	City Wide
PREPARED BY:	Mark Bainbridge (905) 546-2424 Ext. 5929 Susan Girt (905) 546-2424 Ext. 2671
SUBMITTED BY:	Nick Winters Acting Director, Hamilton Water Public Works Department
SIGNATURE:	

COUNCIL DIRECTION

N/A

INFORMATION

Overview:

Report PW22069 provides Public Works Committee and Council with information regarding the impact that the City of Hamilton's (City) antiquated and complex wastewater collection system has on our ability to satisfy changing regulatory perspectives. In 2021, the construction value for approved building permits in the City reached \$2.0B for the first time, which reflects the very strong climate for growth. On June 17, 2022, another record was achieved as that date now marks the earliest in a calendar year that the City has reached the billion-dollar mark in building permit construction value. Historically the City has benefitted from an efficient wastewater infrastructure approvals process, but that process is more recently being impacted by changing regulatory and public views over our inherited wastewater system and the environmental and community impacts of combined sewer overflows (CSOs). Local development interest and activity is a positive influence on the community for residents, employers and our collective prosperity in general. However, the resulting demand for growth places additional pressure on servicing infrastructure at a time

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.

when environmental expectations are increasing.

The City's current wastewater collection system includes legacy infrastructure limitations that cannot be corrected over short timeframes. Given the changing regulatory perspectives regarding growth within communities with CSOs, continued approval of development growth will require a fine balance between local servicing capacity, environmental outcomes, infrastructure investments and operational programs. To solve this issue, Hamilton Water (HW) is initiating structured and formalized discussions with the Ministry of Environment, Conservation and Parks (MECP) to establish a threshold for environmental pollutant loading from the City's wastewater system that is intended to be equivalent to current MECP guidelines that focus on capture rates for combined sewage during wet weather events.

Historically, Hamilton has followed a strategy that includes CSO capture tanks and building enhanced treatment to remove pollutants from wastewater. This provides a level of environmental protection informed by targets that have been identified through the Hamilton Harbour Remedial Action Plan (HHRAP) working groups. The pollutant load to a waterbody is a function of both the concentration of the polluting parameters and the volume of the inflowing waters carrying these parameters.

HHRAP targets that apply to the Woodward Wastewater Treatment Plant (WWTP) will be achieved when the Tertiary Treatment Upgrade Project (Contract 3) of the Woodward Upgrades Program is commissioned in late 2022, lowering pollutant loadings discharged to the Harbour and compensating for CSOs that occur upstream.

An environmental pollutant loading threshold is a transitional approach to mitigate current infrastructure challenges until CSOs can be further prevented. This approach does not prevent all CSOs but is proposed to be equivalent to provincial guidance for volumetric capture under MECP Procedure F-5-5: Determination of Treatment Requirements for Municipal and Private Combined Sewer Systems (Procedure F-5-5). F-5-5 stipulates that during a seasonal window municipalities with a combined sewer system (CSS) are to capture and treat all the dry weather discharges to the CSS, plus 90% of the wet weather discharges.

HW is in the process of updating the City's Pollution Prevention and Control Plan (PPCP) which is a guiding document for improvements that will be made to the CSS over time, with the ultimate goal of eliminating CSOs and WWTP bypasses. The updated PPCP will focus on the City's commitment to meeting the HHRAP pollutant loading thresholds on which planned upgrades to the Woodward and Dundas WWTP's have been designed.

In addition, it is proposed that the City should re-establish our commitment to make large wastewater investments that are focussed on protecting the environment beyond the regulatory framework, in order to rebuild a modern sewer system that is reflective of newer design standards. These steps will promote a stronger, more trusting relationship with our local regulatory agency and encourage a smoother growth and development approvals process for both private and public infrastructure.

Background:

The City has some wastewater collection infrastructure dating back more than 100 years that still actively services the community today. Approximately 1,600 km of linear piping crosses the City to move wastewater to a central treatment facility known as the Woodward Avenue WWTP. The average age of the linear wastewater infrastructure in the City's combined sewer area is over 80 years. As a result, there is a great deal of piping that was built before the introduction of design standards that moved away from a single pipe system. This single pipe system known as a combined sewer was originally sized to convey wastewater and stormwater flow that was acceptable at the time. In addition, it is evident that old pipes still in service were not designed and installed contemplating the needs of the much larger modern City of today. The historical design was based on an acceptance that any flows in excess of the pipe capacity would overflow to local receiving waters as a community protection measure to mitigate sewer backup into homes and businesses. The City continues to operate with this limitation.

Design standards eventually moved away from the combined sewer approach in favour of a dual pipe system with the goal of keeping stormwater drainage separate from sanitary wastewater, thus removing the wet weather potential for overflows. Timing is difficult to pinpoint but this change in design evolved around the early 1960s after which all new sewers were built under the strategy of a two (2)-pipe separated system. By that time the City had developed a built boundary for the combined sewer system (CSS) roughly from the harbour to Mohawk Road and from West Hamilton to the Red Hill Creek. Everything developed outside that area is the separated sewer system (SSS). It is important to realize two (2) key characteristics of the CSS. The first is that it has overflow points designed to provide necessary relief when too much stormwater accumulates in the system. This impacts the natural environment. The second is that a significant portion of sanitary flow collected in the City's newer SSS must be sent through the combined sewer area in order to reach the WWTP. This impacts combined sewer capacity. This explains why development in new areas of the City are intrinsically connected to the performance status of old City infrastructure, even though it appears to be physically outside the combined sewer boundary.

Considering that development pressures are currently increasing, it is becoming evident that improved strategies related to MECP compliance approvals for new infrastructure are necessary. It has become common to receive questions and concerns from the MECP in connection with approvals for adding new infrastructure to support development within the community. Solutions to the limitations of system capacity must be found in order to continue to receive successful provincial approvals. A renewed understanding and approach with the MECP are necessary to balance the needs of the community, the environment and growth in the City.

Focus on Pollution Prevention:

While focus on environmental impacts has always been part of strategies applied in the City,

most notable with the initiation of the CSO tank program that began in 1988, there are still CSOs that impact the waterways. MECP Procedure F-5-5 is a guidance document that defines the expectations for municipal and private combined and partially separated sewer systems.

Some key goals of this procedure include:

- Elimination of all occurrences of dry weather overflows;
- Minimization of human health and aquatic life impacts from overflows;
- Achieve compliance with body contact water quality objectives at beaches impacted by overflows; and
- Capture 90% of all wet weather flows in an average annual year.

The focus of Procedure F-5-5 is to constructively influence municipal pollution prevention programming. The City has been proactive; pollution prevention and control planning efforts began prior to the issuance of Procedure F-5-5 (in February 1997) and has its roots in the designation of Hamilton Harbour (and Cootes Paradise) as an Area of Concern (AOC) in 1985. The original PPCP for the Regional Municipality of Hamilton-Wentworth was completed in 1991. The PPCP was updated in 2003 and is currently being revised at the request of the MECP. Preventing increases in CSOs and achieving 90% volumetric wet weather capture is increasingly becoming a key metric of the MECP regulatory focus, and the City's wastewater collection system is challenged to meet these objectives. It is important to note that Procedure F-5-5 is considered a guidance framework in Ontario and is not a direct regulatory instrument. However, it is increasingly being used as a basis on which to influence key infrastructure approval applications that are made under the Environmental Compliance Approval (ECA) process. These approvals are critical to the success of the City's programs in keeping up with growth and changing CSS viewpoints risk delays, added conditions or denials that affect future growth decisions.

HW realized over 10 years ago that 90% wet weather capture was not achieved in the CSS. At that time, efforts were made to develop a strategy to address the capacity restrictions. As part of cooperative discussions with the MECP, it was identified that the targets set by the HHRAP represent an environmental goal that goes beyond F-5-5 compliance thresholds in order to establish beneficial water quality conditions. These conditions, supported by scientific study, are considered reflective of what is necessary to remediate the Hamilton Harbour AOC. Focussing on this goal, the concept of enhanced pollutant loading reduction was expressed as equivalent to the provincial objectives of Procedure F-5-5. This approach was shared with the local MECP office and formed the strategic basis of the City's \$340M Woodward Upgrade Program, scheduled to be complete by the end of 2022. The identified strategy targets pollutant reduction within wastewater in place of targeting 90% volumetric control of wet weather flows. The Woodward Upgrade Program is a key component of the delisting program for Hamilton Harbour.

In November 2018, Ontario released its Made-in-Ontario Environmental Plan, which has a

core focus on keeping water safe and clean, an objective we all share. It calls for actions to improve the health of ecosystems and has become a driver for what is a distinct change in how the MECP now views approval of wastewater infrastructure. Experience in securing recent compliance approvals for capital works has highlighted a clear provincial interest in meeting guidance requirements as written, not interpreted. Additional interest in separating the CSS is also evident through discussions with the MECP.

More changes are being operationalized in 2022 to reflect adjustment of the provincial ECA Approvals process. Currently the requirement to obtain an ECA is under Section 54 of the *Ontario Water Resources Act* when it is necessary to use, operate, establish, alter, extend or replace new or existing sewage works. A separate ECA is required for each addition or change to a municipal sewage collection system (e.g., adding new wastewater collection pipes).

Since 2018, the MECP has been developing a new wastewater/stormwater approval system that will parallel the process initiated for drinking water systems in 2009. The MECP is adopting a Consolidated Linear Infrastructure (CLI) Permissions Approach for low-risk projects related to sewage collection and stormwater management, with a goal of getting low-risk public infrastructure projects built sooner. The CLI Environmental Compliance Approval (CLI ECA) is only applicable to sanitary and stormwater infrastructure that is currently owned by the City or infrastructure that the City will assume.

Under the proposed consolidated process, a municipality would no longer need to submit individual pipe by pipe ECA applications for future alterations provided they are built in accordance with new design criteria and all other MECP approved conditions. These pre-authorizations will allow municipalities to proceed without first having to obtain an individual MECP permission. In certain circumstances, and with municipal approval, developers who are constructing infrastructure on behalf of municipalities can receive pre-authorization if work is being carried out in accordance with the requirements of the City's CLI ECA's, including meeting MECP design standards.

The MECP anticipates that the CLI ECA process will:

- Create an efficient process for low-risk projects;
- Provide clear, transparent and consistent requirements;
- Improve environmental protection through updated and consolidated terms and conditions;
- Establish a more comprehensive picture of sewage works across the province;

All existing and future approvals will be incorporated into two (2) CLI ECA's:

- One for municipal sanitary sewage collection systems, and:
- One for stormwater management works.

The Dundas and Woodward WWTPs will continue to operate under separate ECA's.

Under this approach, the City will be the approval authority for works considered pre-authorized by the MECP. The current duplicative processes of having the municipality oversee the technical review and then submit applications to the MECP to confirm the same requirements have been met, will be eliminated, and the MECP expects that this will provide for a more efficient process. This benefit however, may be difficult to realize within a CSS that overflows during wet weather. Without establishing a common understanding and approach with the MECP and vision for system improvements, applications for developments that are contributing more system flow are excluded from the pre-approval process and approvals may take longer or not be issued at all.

The new approach may therefore come with potentially difficult decisions to support growth and manage existing capacity limitations. The new process is applicable only to works that are owned or will be assumed by the municipality and include three (3) classes of assets: piping, pumping and storage infrastructure. Works that do not meet the pre-authorized criteria must be submitted to the MECP for review and approval similar to the current process.

Discussions with MECP staff highlight that there is a strong interest in removing stormwater from the combined sewer system as seen in recent stormwater project reviews. Projects that have an opportunity to implement a separation, sending stormwater flow to local receiving waters, are expected to do so unless proven to be not possible. City work requiring capacity changes or that have impacts to CSOs will continue to require MECP approval. Additions or expansions of the CSS will be unacceptable.

Low impact development is a concept that is built into the new CLI ECA process, continuing momentum toward Green Infrastructure solutions. This is an element that can be expected to require changes in the way projects are implemented. The approval process will insist on exhausting opportunities for retention of water on site and implementation of low impact development strategies, before considering conventional stormwater management through pipes and ponds. These are agreeable changes that will require additional efforts and financing to implement.

HW prepared and submitted the Sanitary and Stormwater CLI ECA applications to the MECP by the required deadline (January 21, 2022) and is facilitating workshops with other City divisions to develop and establish the new review and internal approvals processes and procedures. Negotiations are about to commence with the MECP to modify standard conditions within the CLI ECAs to reflect the City's unique wastewater and stormwater systems and continue to promote safe developments that are aligned with goals for environmental and community protection.

Another tool that greatly helps the interaction between the City and the MECP is the City-wide Water, Wastewater, and Stormwater Master Plan (Master Plan). It represents a roadmap for improvements to the system that facilitate improved performance and growth and development. The current Master Plan project was initiated in June of 2017. This project has been impacted by changes in growth planning horizons and decisions that affect where

populations will be located within the City. The updated Master Plan will be available later in 2023 to help communicate how future growth will be managed to the year 2051 while balancing environmental and community impacts.

Challenges to be aware of:

- The MECP anticipates replacement of the Transfer of Review program (ToR) with the implementation and transition to CLI ECAs across the province. While the MECP will work with the City through the transition to address specific situations and concerns, HW will be responsible for either the technical review or Owner verification of development projects (i.e., low and/or high risk) post CLI ECA transition. Additional time for HW's review and approval may be expected, or additional staff resources may be required to support quicker review times.
- The standard CLI ECA language would require the City to follow the "Schedule C" process (submit application to the MECP for review), for all direct submissions (e.g. combined sewers) and projects that currently flow through ToR. This will require a longer approval process. If an agreement is reached with the MECP regarding a threshold for environmental pollutant loading this could potentially be avoided.
- The CLI ECAs won't allow separation of combined sewers without environmental assessment (EA) and the construction of infrastructure to improve stormwater quality. This means that detention and treatment strategies would be required in the City's urban core, which will be extremely challenging to achieve.
- Sampling, monitoring, and reporting of CSOs and Sanitary Sewer Overflows (SSOs) need to be managed. It is impractical to do so at all points of potential overflow in the City's current system. It will be important to achieve agreement with the MECP to allow complex hydraulic modelling tools with a calibration process to take the place of some system monitoring programs.
- The CLI ECA refers to MECP Procedure F-5-5 and 90% wet weather capture. If an agreement is reached with the MECP regarding a threshold for environmental pollutant loading this requirement could be replaced.
- Under the new CLI ECA approval process, confirmation of pre-authorized projects requires sign off by a Professional Engineer (P.Eng.). It is recommended that a City P.Eng. be identified for this technical review and sign-off similar to the Drinking Water System Approval process. However, this may require the approval of additional staff resources.

Work being done to help meet challenges:

Hamilton Water (HW) is working to manage the impact of these changes to the approval process for wastewater and stormwater systems through the following means:

- Monitoring programs are being undertaken to provide better datasets necessary to understand the quality and quantity of waters that flow through the City's wastewater and stormwater systems and into the environment;
- Inflow and infiltration studies are being conducted at strategic locations where risks are high to identify unnecessary consumption of sewer capacity;
- Local intensification study work is being done to assess where local improvements can be made in preparation for future growth;
- Hydraulic assessments are completed to identify the impact of developments and changes being made to the system;
- Master planning and servicing strategies are ongoing to identify what needs to be done in order to manage an old system that is under pressure from climatic influences as well as growth potential;
- Progress is being made on a Watershed Action Plan; and
- Work continues on the Surface Water Quality Program.

This work produces recommendations that will take time to implement and may not line up with the pace of development and the current expectations of the MECP approval process.

Planned Approach for the City:

The City has invested substantial financial resources to implement significant upgrades to improve the performance of our wastewater systems. This work has been a benefit to our residents and our environment.

The current MECP perspective appears to be changing in a way that will no longer accept the limitations that are associated with combined sewer infrastructure. This has an impact on the infrastructure approval process while growth is rapidly occurring. To solve this issue, HW is initiating structured and formalized discussions with the MECP to establish a threshold for environmental pollutant loading from the City's wastewater collection system that is equivalent to current MECP guidelines that focus largely on capture rates for combined sewage during wet weather events.

A successful agreement with the MECP will provide an opportunity to efficiently advance infrastructure work needed to meet goals and objectives under an Open for Business approach to City growth, while adhering to a well developed local environmental strategy. The outcome of this discussion and potential common agreement should be adequately documented in order to provide clarity for both City and MECP staff working at the project and approvals level. This approach is intended to support environmental objectives, in a way that is customized to the unique situation in the City and to optimize interactions with our provincial partners and community stakeholders.

In addition to addressing this more immediate objective, HW will be bringing forward recommendations for longer-term infrastructure investments, including options to convert old sewer designs to modern standards. This will hopefully encourage provincial confidence and

allow for a strategic and measured approach that is not pressurized by growth and development concerns.

Steps that may be taken to support this direction include:

- Sewer separation will continue to be pursued when opportunities exist;
- Storage and retention strategies can be implemented where feasible;
- Decentralized wastewater treatment strategies can be discussed where there are possible opportunities to reduce CSS pressures;
- Strong support for private lot control of stormwater contributing to combined sewer flows should continue. Onsite control should be strengthened through documented City guidance in parallel with support for Green Infrastructure opportunities to improve stormwater performance; and
- Private dewatering on a permanent basis should be excluded from the system to preserve capacity within the sewer system.

HW appreciates the support of City Council and will continue to work within the regulatory framework of Ontario to achieve the City's goals. The approach identified in Report PW22069 intends to help ensure that the City can continue to balance the financial, health and safety, growth, development, and environmental interests of our City on behalf of its residents.

APPENDICES AND SCHEDULES ATTACHED

N/A