




# INFORMATION REPORT

<b>TO:</b>	Mayor and Members General Issues Committee
<b>COMMITTEE DATE:</b>	November 30, 2022
<b>SUBJECT/REPORT NO:</b>	Chedoke Creek Order - Historical Information and Remediation Update (PW19008(s)) (City Wide)
<b>WARD(S) AFFECTED:</b>	City Wide
<b>PREPARED BY:</b>	Cari Vanderperk (905) 546-2424 Ext. 3250
<b>SUBMITTED BY:</b>	Cari Vanderperk Director, Watershed Management Public Works Department
<b>SIGNATURE:</b>	

## COUNCIL DIRECTION

N/A

## INFORMATION

Chedoke Creek is an urban watercourse located in the west end of the City of Hamilton (City) emptying into Cootes Paradise. For the most part, the lower portion of the creek follows alongside Highway 403 where it extends through a combination of underground diversions and concrete channels. The creek bed becomes natural, north of Glen Road, to the outlet point into Cootes Paradise. Much of the Chedoke Creek watershed has been transformed over time as a result of urban development. It continues to be the receiving body for stormwater, combined sewer discharges, as well as two (2) of the City's Combined Sewer Overflow (CSO) tanks. The tanks are designed to discharge combined sewage during a large storm event, at the discretion of the Woodward Wastewater Treatment Plant operator, in order to mitigate basement and overland flooding.

In June of 2018 the City began receiving reports of abnormal water quality in Chedoke Creek from residents and community partners. Public Health and Public Works staff began investigating the issue including collecting water quality samples, completing

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video inspections of sewers in the area, and reviewing all wastewater facilities with potential overflows into Chedoke Creek.

On July 18, 2018, staff advised the Mayor and Members of Council that investigations at Chedoke Creek revealed an active discharge from the City's Main/King CSO tank located at 707 King Street West in Cathedral Park. The discharge was identified to be the result of a bypass gate being partially open (approximately 5%) at the Main/King CSO tank since January 28, 2014.

The discharge to Chedoke Creek was reported to the Ministry of Environment Conservation and Parks (MECP) Spills Action Centre as a spill on July 18, 2018. The bypass gate was also fully closed on July 18, 2018 and the discharge was confirmed to have been stopped on July 19, 2018.

On September 28, 2018, a consultant who was retained by the City issued a report that estimated the volume of the spill to be 24.0 billion litres of combined sewage over a period of approximately 4.5 years.

#### Internal Investigation:

Immediately after the discharge to Chedoke Creek was identified to have originated from the Main/King CSO tank, an internal investigation commenced and included an in-depth review of the following:

- Technical drawings;
- Original design schematics of the tank;
- Operator and site entry log books;
- Inspection records;
- Supervisory Control and Data Acquisition (SCADA) records;
- Standard operating procedures;
- Process Control Narratives; and,
- Sampling data.

As a result of this review, along with interviews with over 12 staff members and consultants, there were multiple contributing factors identified that led to the discharge going undetected for such a long period including the following:

- The bypass gate at the Main/King CSO tank was opened partially (approximately 5% or 14.8 cm) on January 28, 2014, at approximately 11:50 p.m., but there are no records of City staff attending the facility that night and in the absence of an emergency it is unusual for City staff to visit a CSO facility at that time of night;

- There was confusion caused by the naming convention for the bypass gate, and as a result its purpose was not well understood by staff. Proper naming of the gate during the design phase of the CSO tank to accurately reflect its function likely would have prevented any operation of the gate;
- The automated monitoring system did not detect the discharge from the CSO tank, nor was the discharge visible to staff during monthly facility inspections. Due to the depth (14 m below grade) and location of the gate a confined space entry is required to enter its vicinity;
- Water quality samples for Chedoke Creek were being collected by partner agencies and analysed at the City of Hamilton's Environmental Laboratory. However, it became clear that all of the parties that were reviewing the data were doing so as stand-alone data points as opposed to longer term trends (the latter of which would have indicated something abnormal occurring in Chedoke Creek much earlier); and,
- A separate control gate at the CSO tank failed in (approximately) January 2018 which caused the discharge volumes to increase (30% of the total discharge volume is estimated to have occurred in 2018). This gate failed in such a way that the automated monitoring system did not detect the failure, which in turn did not alert operators to the failure.

To-date, staff have not been able to determine why the bypass gate was opened or by whom in 2014.

#### MECP Investigation & Enforcement Branch Investigation and Charges:

In September 2018, Hamilton Water staff became aware that the MECP local district office had referred the Chedoke Creek spill investigation file to the MECP's Investigation & Enforcement Branch (IEB) for a more fulsome investigation. At the September 16, 2018 Council meeting, the Mayor and Council were informed of the referral through a verbal update provided by the City Solicitor.

A series of interviews with various City of Hamilton staff members (current and former) and consultants was conducted by the IEB investigator from October 2018 through to February 2020. The City was also required to provide the IEB with records, procedures and other documents associated with the Main/King CSO tank and the discharge event.

On December 9, 2020, the MECP served the City with two (2) charges in relation to the Main/King CSO discharge into Chedoke Creek. The charges are pursuant to Section 14 of the *Environmental Protection Act* for discharging a contaminant, namely, raw sewage, into the natural environment during the period of January 29, 2014 to July 18,

2018, and Section 30 of the *Ontario Water Resources Act* for discharging material, namely, raw sewage, into water which may impair the quality of the water for the period of January 29, 2014 to July 18, 2018.

These charges are currently before the courts and an update will be provided in a separate report from the City's Legal Services Division.

**Corrective and Preventative Actions:**

Since the discovery of the Main/King CSO discharge, Hamilton Water has implemented a number of corrective and preventative actions, the highlights of which are:

- In the weeks following the identification of the discharge more than 242,000 litres of material was removed from the surface of the creek and disposed of at the Woodward Wastewater Treatment Plant;
- A boom is installed annually from April to November to collect any floatable materials from the CSO tank and upstream inputs;
- The bypass gate has been physically locked/sealed preventing accidental operation and eliminating the possibility of unintended discharges;
- A video camera has been installed to observe the bypass gate and ensure no unintended discharge is occurring;
- The sensor that detects discharges from the CSO tank, and the autosampler that samples those discharges have both been relocated so that no discharges can occur without being detected;
- The second gate has been repaired; As part of a larger package of CSO tank upgrades to be delivered in 2023, the sensor for this gate will be replaced so that a similar failure cannot take place without detection (this technology was piloted from 2020 through 2022 at the Woodward WWTP);
- Detailed site inspections at all CSO facilities have been completed with no other similar issues identified. The inspection routines for these facilities were updated to require regular physical inspections for all critical gates and equipment
- The automated monitoring (SCADA) system was programmed to show error message "pop-up" to immediately alert operators of issues with critical gates or equipment at all CSO facilities;
- The naming conventions for the Main/King CSO tank were updated to rename the bypass gate from the "influent well overflow gate" to "maintenance bypass gate". All other CSO tank naming conventions have been verified for accuracy and understanding;
- The Enhanced City of Hamilton Outstations Team was created, made up of an Operator, Electrician, Instrumentation Technician and Millwright, who perform regular inspections at all of the CSO facilities and look at each facility as a whole to verify its operational functionality;

- All documents have been updated and properly controlled, this includes standard operating procedures for the CSO facilities and enhanced operator training;
- Hamilton Water developed and implemented the Wastewater Quality Management System (WWQMS) to ensure effective and disciplined management for the City's wastewater systems through control of records, the development of standardized logs and procedures, and the requirement for annual review and reporting processes;
- A Wastewater Overflows and Bypasses Monitoring website was created. This website includes a publicly accessible map that is updated every 15 minutes providing the status for each monitored combined sewer overflow location;
- Hamilton Water developed a Surface Water Quality Program (SWQP) that samples surface water locations monthly, throughout the city. The purpose of this program is to work with internal and external stakeholders to develop and monitor baseline surface water quality conditions. Data is provided through the Open Hamilton Data Portal for monitoring, trending and research purposes;
- Numerous consultant studies have been completed and posted to the City's website;
- The Chedoke Creek Water Quality Framework Study was completed which involved a high-level screening and prioritization of the available options for improvements to the Chedoke Creek watershed. It was developed through the participation of internal and external stakeholders;
- Hamilton Water created the Watershed Management Office, with a dedicated Director position to lead the City's first Watershed Action Plan which aims to prioritize and action City led recommendations provided from partner agencies involved in the Hamilton Harbour Remedial Action Plan; and,
- Hamilton Water installed small-scale treatment systems such as an aerator and floating treatment wetland in Chedoke Creek to act as pilots to determine effectiveness for possible larger scale systems in the future.

Ministry of Environment Conservation and Park's (MECP) Orders:

The MECP has served the City with multiple orders related to Chedoke Creek since August 2018, pursuant to their authority under the *Environmental Protection Act (EPA)* and the *Ontario Water Resources Act (OWRA)*. The bulk of the requirements of the multiple orders can be summarized by three key Orders.

First Order:

Provincial Officer's Order No. 1-J25YB (first Order) was served to the City by the MECP on August 2, 2018 which outlined an extensive list of requirements, most notably requiring the City to determine the quantity of combined sewage that was discharged, the impacts, and proposed mitigation measures, if any, to address the discharge.

The City retained the services of WSP E&I Canada Limited (WSP), formerly Wood Environmental Solutions Inc., to act as the Qualified Person under the first Order to analyse various remedial options. The report generated by WSP recommended direct removal of sediment that may be associated with the discharge that had accumulated on the bottom of Chedoke Creek by hydraulic dredging. However, because WSP's recommendations were based on limited field data due to the tight timelines applied by the MECP, and because the sediment in the creek likely derived from multiple sources (e.g. not just the Main/King CSO discharge event), WSP identified that a Municipal Class Environmental Assessment was recommended prior to implementing any remedial options.

WSP estimated any remedial action, including completion of the Municipal Class Environmental Assessment, to take 22-28 months with construction occurring in the fall/early winter due to the limited window of opportunity to work in a natural watercourse that is highly regulated during fish spawning season.

The City submitted the WSP report to the MECP as per the first Order deadline of January 31, 2019. While awaiting the MECP's review of the WSP report, the City engaged the services of another consultant with expertise in these matters, SLR, to conduct a peer review of the WSP report since many questions remained unanswered due to the limited time WSP had to complete their report. In May 2019, SLR opined that there were uncertainties associated with WSP's assessment due to the lack of field data and the tight timelines imposed by the MECP's first Order, which did not fully support the direct removal of sediment option and that further study was required. While continuing to await the MECP's review of the WSP report, the City decided to retain SLR to conduct field work to generate the missing data, and to complete an Ecological Risk Assessment (ERA) which would determine the most responsible remedial action. The ERA was expected to be completed by mid February 2020. The MECP was kept apprised of the City's decisions throughout this period.

#### Second Order:

Director's Order No. 1-MRRCX (second Order) was served to the City by the MECP on November 28, 2019, requiring the City to complete an ERA for Chedoke Creek by February 15, 2020. The second Order also required an Environmental Impact Evaluation in Cootes Paradise by May 1, 2020, something the City had not yet been required to explore. Within the response to the second Order, the MECP expected the City to identify a preferred remedial option and associated implementation timelines.

The objective of the ERA was to assess whether metals, polycyclic aromatic hydrocarbons (PAHs), nutrients and bacteria (*E. coli*), collectively known as Contaminants of Potential Concern (COPC), found in Chedoke Creek posed unacceptable risks to aquatic life, amphibians and aquatic-dependent wildlife. The

findings show that prior to and after the 2014 to 2018 discharge event, there were persistent elevated levels of COPC in the sediment. In surface water, nutrient and bacteria levels were higher during the discharge event, but decreased in the study area after the discharge to levels at or below those observed prior to the discharge event. In addition, E. coli levels observed in 2018-2019, after the discharge, were lower in the study area than at some locations upstream of the Main/King CSO tank. The ERA noted that given these findings along with disadvantages and risks associated with direct removal (dredging), that remediation of the creek would appear unnecessary to address effects from the sewage discharge and that no remedial action should be taken by the City. The results of the ERA and SLR's recommendation were presented at the February 13, 2020 General Issues Committee in Report PW19008(g)/LS19004(g), and a response was submitted to the MECP by the February 15, 2020 deadline indicating that no remedial action would be taken in Chedoke Creek.

The objective of the Environmental Impact Evaluation was to assess whether there was an environmental impact to Cootes Paradise from the Main/King CSO tank discharge. The evaluation included four (4) ecosystem components: water quality, sediment quality, aquatic vegetation, and fish community. Using a variety of over 90 existing information sources, the report included comparisons of data (where available) representing conditions before, during and after the Main/King CSO discharge event. Generally, it was found that the CSO discharge event created short-term water quality impacts but no long-term impacts to Cootes Paradise were observed based on the information reviewed. The evaluation concluded that no remediation activities were recommended pertaining to the CSO discharge event and that there was also no evidence of ongoing environmental impact. The results of the Environmental Impact Evaluation were presented at the April 29, 2020 Council meeting in Report PW19008(h) and submitted to the MECP by the May 1, 2020 deadline indicating that no remedial action would be taken in Cootes Paradise.

Third Order:

Director's Order No. 1-PE3L3 (third Order) was served to the City by the MECP on December 4, 2020, included a requirement for the City to submit a Workplan that identified an approach for targeted dredging in Chedoke Creek. The City again retained the services of WSP to serve as the Qualified Person to address the third Order requirements. The Chedoke Creek Workplan was presented at the February 17, 2021 General Issues Committee meeting in Report PW19008(j) and submitted to the MECP by the February 22, 2021 deadline. A summary of the Chedoke Creek Workplan is attached as Appendix "A" to Report PW19008(s).

The third Order required that the targeted dredging identified in the Chedoke Creek Workplan be completed by October 31, 2021, or such other date as approved by MECP. This deadline would later be extended to December 31, 2022 due to the

extensive permitting and approvals process required for in-water works and the associated timelines required to receive permits from the various regulatory agencies, all of which the MECP may not have contemplated when issuing the third Order.

The third Order also required the City to submit a Workplan for the broader Cootes Paradise and Western Harbour Remediation. This Workplan was presented at the July 5, 2021 General Issues Committee meeting in Report PW19008(m) in draft form. The final version was distributed to members of Council appended to Communications Update HW.21.03 and submitted to the MECP by the July 23, 2021 deadline. This Workplan proposed approaches to address the impacts associated with the increased nutrients discharged to Cootes Paradise and the Western Hamilton Harbour Area, that cannot be recovered by the targeted dredging of Chedoke Creek. A summary of the Cootes Paradise Workplan is attached as Appendix “B” to Report PW19008(s).

In addition to the above, the third Order required extensive community and stakeholder engagement to ensure the impacted landowner and community partners were in alignment and agreement with the Workplans.

#### Community Engagement:

The consultation process was an integral component of the Workplans and was designed to meet the requirements for considering affected stakeholders as described in the third Order. The consultation plan consisted of organized discussions, meetings and correspondence with key community partners and local agencies. The impacted landowner was identified as the Royal Botanical Gardens with whom the City engaged extensively throughout the planning phases of the project and into the construction phase. In the Spring of 2022, a virtual public meeting was held by the Ward 1 Councillor's office for local residents to learn about the planned construction activities and for the project team to address any questions and concerns. Notification to the general public continues to be accomplished by media releases, technical briefs and through the updates on the project website.

In addition, starting in early 2021, the City engaged Indigenous Nations and Peoples to determine key points of interface and opportunities for meaningful involvement. This included a presentation on the Workplans to the City's Indigenous Advisory Committee and discussions with the Mississaugas of the Credit First Nation, the Huron-Wendat Nation, the Six Nations of the Grand River Elected Council, and the Haudenosaunee Confederacy Chiefs Council (HCCC) through their representative agency, the Haudenosaunee Development Institute (HDI).

Consultation efforts with the Mississaugas of the Credit First Nation, the Huron-Wendat Nation and the Six Nations of the Grand River Elected Council concluded in favour of the Workplans and measures to mitigate any negative environmental impact as related



to dredging efforts and plans to remediate Chedoke Creek. HCCC/HDI representatives stopped participating in the Spring of 2021 and indicated strongly that the work should not proceed without their consent and approval, which had not been provided by the HCCC/HDI to either the City or the MECP.

**Protests and Project Delays:**

As per the Chedoke Creek Workplan, in late July 2022, a contractor for the City of Hamilton, Milestone Environmental Contracting Inc. (Milestone), began mobilizing equipment and preparing the Dredge Material Management Area at Kay Drage Park with the intention of starting the in-water targeted dredging work on August 22, 2022.

On August 18, 2022, preparation work at the site was paused after two individuals representing the HDI blocked access to the site via the Kay Drage Park Bridge with a vehicle and stated that they were exercising their treaty rights to attend the site. The HDI representatives indicated that they and others would continue to come to the work site and would not permit the work to proceed until certain conditions had been met and their consent for the project had been sought and received.

Work on the site was paused so that the project team could develop an Operational Safety Plan to restart the dredging work, to allow for discussions with the HDI to address their concerns, and for Staff to provide recommendations outlined in Report PW19008(r), to the September 7, 2022 General Issues Committee.

The recommendations from Report PW19008(r) authorized staff to continue consultations with the Mississaugas of the Credit First Nation, the Huron-Wendat Nation, the Six Nations of the Grand River Elected Council, and the Haudenosaunee Confederacy Chiefs Council (through their representative agency, the HDI) on the Chedoke Creek Remediation Project as well as to negotiate and enter into agreements, where appropriate, to provide for Indigenous Environmental Monitors from each Nation to attend the work site throughout the duration of the project.

As an update to the recommendations from Report PW19008(r), staff have entered into environmental monitoring agreements with both the Mississaugas of the Credit First Nation and the Six Nations of the Grand River Elected Council. Each agreement includes a fee upset limit for the duration of the dredging portion of the project of \$40,000. Conversations with the Huron-Wendat Nation continue, and the project team awaits their decision on whether they also wish to have members of their community participate in monitoring for the project. Additionally, each of the three nations were offered a tour of the project site. Members of the Six Nations of the Grand River Elected Council and their Lands and Resources Department accepted the offer and participated in a site tour which took place on November 3, 2022.

The City continued to engage in dialogue and correspondence with HDI representatives to attempt to address their concerns and explore options to have HDI members participate in monitoring for the project with the provision of capacity funding. The City and the HDI have been unable to come to an agreement that provides reasonable accommodation to allow this project to proceed without further delay. Unfortunately, staff have encountered obfuscation and changing demands. At this time, all communications from the City to the HDI are being conducted through representative legal counsel. The most recent communication from the HDI regarding capacity funding indicated that costs to engage with the HDI are now totaling \$350,000.

Staff have kept the MECP updated on the project status and the progress of discussions with the HDI. The MECP recently confirmed in writing their authority regarding the issuance of Orders and that it is the City's responsibility as delegated by the Province to consult with the HDI regarding their concerns. While the MECP has indicated verbally that they may be open to an extension to the December deadline based on the recent circumstances, that position has not been confirmed in writing at this time. Failure to achieve the deadlines stipulated in a Director's Order No. 1-PE3L3 may result in further charges and penalties. The City's consultant WSP E&I Canada Limited assessed the critical path of the project and identified that the in-water dredging work would have needed to start by September 22, 2022 for the completion of the dredging to be achievable by December 31, 2022.

Between September 21 and October 5, 2022, multiple attempts were made to resume the project, in line with the requirements outlined in the MECP Order to the City. However, those attempts were met with disruptions by HDI representatives attending the worksite, refusing to abide by safety protocols that had been put in place so that they could safely protest while observing the work, and creating health and safety risk both for themselves and for the City's contractor. On October 5, 2022 Milestone received a letter from the sub-contractor, who owns and operates the hydraulic suction dredger, invoking their right to refuse work due to dangerous and intimidating behaviour from the HDI representative(s) on site, and advising that they will continue to refuse to work until a safe and secure work environment is provided for their employees. As a result, the City's contractor Milestone also advised the City on October 5, 2022, that all project work would cease until safe, uninterrupted and unimpeded access to the work site can be provided by the City.

On October 6, 2022, the City agreed to allow all contractors for the project to standby, and not continue to attempt dredging works until further notice. Some equipment, such as the hydraulic suction dredger have now been demobilized from the site in order to reduce daily standby costs, and the only staff on-site consist of a skeleton crew during daylight hours for site monitoring purposes. Representatives from the HDI continue to attend the work site regularly to assess whether any work is being attempted.

All community partners that have been engaged throughout this project have been kept apprised of the status as changes occur.

Request for MECP Intervention and Deadline Extension:

Due to the ongoing challenges that have been experienced with the delays to the Chedoke Creek Remediation Project, on October 6, 2022 the City sent a letter to the MECP District Manager formally requesting:

1. That the MECP immediately issue an order to the HDI under Subsection 196(2) of the *Environmental Protection Act* and Subsection 104(3) of the *Ontario Water Resources Act*, requiring that they permit the City to have access to the work area; and,
2. That the MECP immediately extend the deadlines in the Director's Order to, at a minimum, December 31, 2023.

At the time of writing this report, a formal response from the MECP has not yet been received. Should the MECP agree to issue and enforce the requested order, the City will engage with Milestone about resuming works. However, as stated in the letter to the MECP, completion of the in-water works before December 31, 2022, is now unachievable. Decisions need to be made regarding the best path forward, as such the City's consultant is currently evaluating options with the contractor and will be making recommendations to the City shortly.

Costs:

The actions by the HDI have resulted in significant delays to the Chedoke Creek Workplan and an estimated \$700,000 in additional costs to the community (as of October 31, 2022). Additional costs continue to be incurred on a daily basis, while the City's contractor is on standby.

The total budgeted amount of this work, including the tendered construction bid price for the targeted dredging, is shown in the table below. Combined, the costs shown in both tables total approximately \$10M, which is within the allocated budget for the targeted dredging project.

## Summary of Costs Incurred to Date

Item	Cost
Small Scale Offsetting	\$ 35,933
Costs from 2018-2020	\$ 2,008,290
Emergency Procurement - WSP E&I Canada Limited, formerly Wood Environmental Solutions Inc. (Workplans, Data Collection, Design and Permitting)	\$ 791,144
Estimated Standby Costs (Aug 18 - Oct 31, 2022)	\$ 700,000
Milestone Environmental Contracting Inc. (Targeted Dredging of Chedoke Creek - Work Performed)	\$ 1,390,627
Total	\$ 4,925,994

## Committed Work Remaining

Item	Cost
Non-Competitive - WSP E&I Canada Limited, formerly Wood Environmental Solutions Inc. (Contract Administration, Investigative Field Work and Post Monitoring)	\$ 780,156
Tender - Milestone Environmental Contracting Inc. (Targeted Dredging of Chedoke Creek)	\$ 4,529,365
Total	\$ 5,309,521

To address the outcomes of the Cootes Paradise Workplan, approximately \$20M has been programmed into the 2023 Water, Wastewater, and Storm Rates Capital Budget. Within the next five years and once known, any additional required resources will be added into future budgets accordingly.

## Communications Strategy:

The City's Communications and Strategic Initiatives Division continues to support this project with a broader communications strategy that involves highlighting remediation work and ongoing investments in water quality and wastewater infrastructure work across the city. Various tactics including media outreach, updates to the project page on the City website, video and graphics production and use of social media are being utilized. This ensures the community and stakeholders are kept apprised of the Chedoke Creek remediation progress.

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An interactive webpage for the remediation efforts was launched on May 2, 2022 to support ongoing communications, and approximately 4000 project notices were sent to residents in the surrounding area on June 24, 2022.

To learn more about the status of dredging activities and the remediation efforts identified in the Cootes Paradise Workplan, please visit [www.hamilton.ca/chedokecreekremediation](http://www.hamilton.ca/chedokecreekremediation).

#### **APPENDICES AND SCHEDULES ATTACHED**

Appendix “A” to Report PW19008(s) – Chedoke Creek Workplan Summary

Appendix “B” to Report PW19008(s) – Cootes Paradise Workplan Summary