

Director's Order

Section 157.3 Environmental Protection Act, R.S.O. 1990
Section 16.4 Ontario Water Resources Act, R.S.O. 1990
Section 26.3 Pesticides Act, R.S.O. 1990
Section 107 Safe Drinking Water Act, S.O. 2002, c.32 (SDWA)
Section 32 Nutrient Management Act, 2002, S.O. 2002

Order Number
1-PE3L3

To:

HAMILTON, CITY OF
700 WOODWARD Ave N
HAMILTON ON L8H 6P4
Canada

HAMILTON, CITY OF
71 MAIN STREET WEST, 1st Floor
HAMILTON, ONTARIO L8P 4Y5
Canada

Site: Chedoke Creek, downstream of the Main/King Combined Sewer Overflow discharge pipe, the eastern end of Cootes Paradise and western end of Hamilton Harbour, and as further described in the Provincial Officer Report # 1-OW6SS under section entitled "Description of the Site and the Orderees".

Response to Request

Attention: City Clerk

I have reviewed Provincial Officer Order 1-OW6SS ("Order") dated 20/11/2020 (dd/mm/yyyy) in response to your request for the review dated November 27, 2020, submitted by your lawyer, Ms. Rosalind Cooper on behalf of the City of Hamilton. I have considered your submissions and met with the issuing Provincial Officer, Shelley Yeudall and technical support staff in the Ministry of the Environment Conservation and Parks (Ministry) to discuss the Order and the above noted request. I have also considered the submissions made at a meeting held on December 3, 2020 between City officials Andrew Grice, Cari Vanderperk and Mark Bainbridge and Ministry officials including myself, Shelley Yeudall, Lindsey Burzese, Zafar Bhatti and Sarah Day.

Pursuant to my authority under s. 157.3 of the Environmental Protection Act, R.S.O. 1990, c. E.19 (EPA) and s. 16.4 of the Ontario Water Resources Act, R.S.O. 1990, c. O.40 (OWRA) I hereby confirm and alter portions of the Order as set out below.

Item No. 1 of the Order was altered to extend the compliance date as specified below.

Item No. 2, No. 3, No. 8 and No. 10 of the Order were altered to extend the compliance dates as specified below, and to refer to the Director as opposed to Provincial Officer for the submission of required documents.

Item No. 6, No. 7, No. 12, No. 13, No. 15, No. 17, No. 18, No. 19 and No. 20 of the Order were altered to refer to the Director as opposed to the Provincial Officer.

Item No. 16 of the Order was revoked.

Item No. 4, No. 5, No. 9, No. 11 and No. 14 of the Order are confirmed.

For ease of reference this order uses the definitions used in the Provincial Officer's Report.

Also, for ease of reference, the Director's Order now reads as follows:

1. By January 15, 2021, retain the services of a Qualified Person that has the experience and qualifications to carry out the work specified in this order.
2. By January 15, 2021, submit to the Director written confirmation that the Qualified Person has been retained to carry out the work specified in this order, that a copy of the order has been given to the Qualified Person; and that the Qualified Person has the experience and qualifications to carry out the work.

Chedoke Creek Downstream of the Main/King CSO Discharge Pipe

3. By February 22, 2021, submit to the Director, for approval, a remediation workplan for Chedoke Creek that is developed by the Qualified person to undertake the targeted dredging of Chedoke Creek based on the recommendation identified in section 5.2.5 of the Wood report entitled "MECP Order # 1-J25YB Item 1b – Chedoke Creek Natural Environment and Sediment Quality Assessment and Remediation Report" dated January 24, 2019 ("Chedoke Creek Workplan"). The Chedoke Creek Workplan shall be prepared in accordance with the requirements set out in Items 4 and 5 below.

4. The Chedoke Creek Workplan shall, at a minimum:

- i. Consider technical reports, Ministry comments and affected stakeholders' comments, to determine an acceptable plan to implement the recommendation in the Wood report to restore the Chedoke Creek, while mitigating impacts of implementing the plan on the natural environment, including water;
- ii. Contain a detailed timeline setting out critical milestones and checkpoints with the Ministry for carrying out the Chedoke Creek Workplan;
- iii. Contain a Species at Risk assessment plan and associated timelines for Chedoke Creek downstream of the spill and including potential impacted areas downstream of Chedoke Creek that may be impacted by targeted dredging;
- iv. Undertake consultation with the Species at Risk Branch within the Ministry in respect of any identified items pursuant to 4 iii) and incorporate this feedback and outcome into the workplan for any species at risk;
- v. Provide a description of any anticipated approvals needed to implement the Chedoke Creek Workplan, initial consultation and proposed timelines to obtain such approvals, if required, for the Workplan to be implemented;
- vi. The consultation in iv) and v) shall include the Regional Technical Support Section of the Ministry;
- vii. Contain a description of the identified areas and the extent (depth, location) of the targeted dredging with a description of how the items outlined in Item 5 below were addressed and a description of any methods for refining identified areas in Item 5 including the impacted areas identified in the Wood reports and SLR reports and timing as needed, in the Chedoke Creek Workplan;
- viii. Contain a description of the approximate volume of material to be removed;
- ix. Identify and contain a description of proposed mitigation measures for any short-term impact(s) that may arise from implementing the Chedoke Creek Workplan for Chedoke Creek, its shoreline and connected waterways/natural environment, on any species at risk and other potentially impacted uses. Mitigation measures may include, but are not limited to: exclusion measures for local aquatic uses; limit recreational uses in the area; total suspended solids control as required for carrying out the targeted dredging; and proposed monitoring during any remediation to monitor effectiveness of mitigation measures during dredging identified in iv); and
- x. Contain a proposed monitoring plan to monitor the recovery of the natural environment and effectiveness of the Chedoke Creek Workplan once dredging is complete.

5. With respect to the area from the Main/King CSO outfall to the mouth of Chedoke Creek, the Chedoke Creek Workplan shall take into consideration the scope of targeted dredging work necessary to restore the natural environment to pre-spill conditions, as to be agreed upon by the Ministry, and to mitigate any impairments or potential impairments from the spill, in relation to the following, but not limited to:

- i. Sediment areas identified as impacted, in consultation with the Ministry, by the sewage spill;
- ii. Sediment areas identified as containing elevated organic material consistent with sewage sludge;
- iii. Sediment areas identified as elevated nutrients (particularly TP, TAN, and TKN);
- iv. Sediment areas identified as had, may have, or continuing to have reduced dissolved oxygen levels in the water column from historical levels;
- v. Sediment areas identified as having elevated parameters as identified by the ERA carried out by SLR ("Ecological Risk Assessment (ERA), Chedoke Creek, Hamilton, Ontario" dated February 12, 2020) to have moderate or high risk for impacts, or otherwise identified by the reports or in comments by the Ministry; and
- vi. Addressing any ecological flow path requirements and connectivity within the creek in any remedial action plan that may impact low flow path and connectivity.

6. By October 31, 2021 or such other date approved by the Director in writing, complete the approved Chedoke Creek Workplan.

7. Within one (1) month of the completion of the of the work undertaken pursuant to the approved Chedoke Creek Workplan, submit to the Director, a report prepared by the Qualified Person confirming that the natural environment has been restored to pre-spill conditions and that further impairment to the natural environment will not occur as a result of the spill to the Chedoke Creek as detailed in the attached Provincial Officer's report, and at a minimum contain the following:

- i. The details of the work undertaken to complete the Chedoke Creek Workplan;
- ii. Any monitoring results completed before, during and after the work undertaken in accordance with the Chedoke Creek Workplan;
- iii. Analysis of the results in Item 7(ii) above for the purposes of the intended monitoring; and
- iv. Determination if any requirement for on-going monitoring is required to verify the effectiveness or maintenance of the remedial actions undertaken is necessary.

Cootes Paradise/Western Hamilton Harbour Area

8. By March 22, 2021, submit to the Director for approval, a proposed remediation/mitigation report that is prepared by a Qualified Person(s) for the Cootes Paradise/Western Hamilton Harbor Area to offset the added nutrient loading, principally TP, identified in the Wood reports, the SLR reports and particularly the Hatch reports, and address any other potential on- going impacts (dissolved oxygen, algal blooms) as a result from the sewage spill to this area ("Cootes Paradise Report").

9. The report in Item 8 shall, at a minimum:

- i. Identify and review all potential remediation or mitigation measures, whether direct, indirect, or a combination of measures with consideration for short and long-term measures to address the remediation goal to offset added nutrient loading particularly for TP and any potential on-going impacts (dissolved oxygen, algal blooms) from the sewage spill to the Cootes Paradise/Western Hamilton Harbor Area as identified in the Wood reports, the SLR reports and the Hatch reports;
- ii. Undertake consultation with and provide a summary of comments received from the Royal Botanical Gardens, Hamilton Conservation Authority, the Ministry, and any other relevant affected stakeholders for potential remediation and mitigation options as per item i. above;
- iii. Contain a cost/benefit analysis of all options to assess efficiency and effectiveness of any remediation or mitigation options;
- iv. Identify the recommended options for remediation and mitigation;

- v. Identify the proposed offset goal to achieve remediation and/or mitigation with respect to the approximate equivalent loadings from the sewage spill;
 - vi. Propose a methodology for quantification with respect to the offset of the loadings for any remediation and/or mitigation measures to meet the intended goal for overall remediation and/or mitigation to address the added TP loading from the spill; and
 - vii. Identify and propose timelines to implement the recommended remediation or mitigation measures to offset loadings from TP, impacts to dissolved oxygen from nutrients or other measures that may improve existing or potential impairments with identification of options that can be implemented as soon as possible to start to reduce the on-going or potential impacts.
10. Within six (6) weeks of approval of Item 8 above or such other date approved by the Director in writing, submit to the Director for approval, a proposed workplan for the approved remediation/mitigation measures for Cootes Paradise/Western Hamilton Harbour Area ("Cootes Paradise Workplan"). The workplan shall consider and address, as necessary, Work Ordered in Item 8 and 9 above and any ministry comments upon approval of Item 8, and shall include, but not be limited to, the following:
- i. A detailed workplan and timeline for carrying out the approved remediation/mitigation options within the Cootes Paradise/Western Hamilton Harbour Area;
 - ii. Calculations referred to in Item 9 iv) and v) or as otherwise approved; and
 - iii. Proposed follow-up monitoring required to ensure the recovery and effectiveness of the remediation plan.
11. Within two (2) weeks of the approval obtained pursuant to item 10 above, commence implementation of the approved Cootes Paradise Workplan within the timelines set out in the approval.
12. Submit a report prepared by the Qualified Person within one (1) month of the completion of the work undertaken pursuant to the approved Cootes Paradise Workplan to the Director confirming that the natural environment has been restored and outlining the completed items and the work undertaken to restore the natural environment, including, but not limited to, the following:
- i. Any monitoring results completed before, during and after the work undertaken in accordance with Cootes Paradise Workplan;
 - ii. Analysis of the results in Item 12 (i) above for the purpose of the intended monitoring; and
 - iii. Determination if any requirement for on-going monitoring is needed to verify the effectiveness or maintenance of the remedial actions undertaken as necessary.
13. Provide notice to any impacted landowner(s) of the following items:
- i. within 7 days of submission of any proposed workplan(s) submitted to the Director for approval; and
 - ii. within 7 days of the approval of any workplan(s) by the Director.
14. Provide notice to any impacted landowner(s) at least seven (7) days before the implementation of any work on the approved Chedoke Creek Workplan or the approved Cootes Paradise Workplan;
15. Within seven (7) days of any work on the Chedoke Creek Workplan and the Cootes Paradise Workplan, provide written confirmation to Director, that implementation of the approved workplan(s) has commenced.
16. Within (2) days of any limitations or changes being identified to the approved workplans, notify the Director and within two (2) weeks, submit, in writing for review and acceptance, any proposed changes to an approved workplan with the relevant information to support any proposed changes. Written acceptance by the Director of the proposed changes is required prior to implementation of any proposed changes.
17. Prior to the first of each month, provide to the Director written, monthly progress updates on the progress made to comply with this order.
18. In conjunction with the written monthly progress updates, the City shall meet with the Director within 7 days of the submission of the monthly report to discuss the progress reports.
19. Post this order on the web site of the City for public viewing within 24 hours of it being served and it shall remain posted unless otherwise directed by the Director.
- A. While this order is in effect, a copy or copies of this order shall be posted in a conspicuous place.

B. While the order is in effect, report in writing, to the District or Area Office, any significant changes of operation, emission, ownership, tenancy or other legal status of the facility or operation.

Request for Hearing

You may require a hearing before the Environmental Review Tribunal if, within 15 days of service of this order, you serve written notice of your appeal on the Environmental Review Tribunal and the Director. Your notice must state the portions of the order for which a hearing is required and the grounds on which you intend to rely at the hearing. Except by leave of the Environmental Review Tribunal, you are not entitled to appeal a portion of the order or to rely on grounds of appeal that are not stated in the notice requiring the hearing. Unless stayed by the Environmental Review Tribunal, the order is effective from the date of service.

Written notice requiring a hearing must be served personally or by mail upon:

The Secretary	and	Director
Environmental Review Tribunal		Ministry of the Environment, Conservation and Parks
655 Bay Street, 15th Floor		119 King St. W., 9th floor Hamilton, ON, L8P 4Y7
Toronto, ON M5G 1E5		Fax: (905) 521-7806

Where service is made by mail, the service shall be deemed to be made on the fifth day after the date of mailing and the time for requiring a hearing is not extended by choosing service by mail.

For your Information

The procedures to request a hearing and other information provided above are intended as a guide. The legislation should be consulted for additional details and accurate references.

Reasons for Response

I altered work ordered item Items No. 1, No. 2, No. 3 and No.8 of the Order allow the City of Hamilton more time to follow their internal procurement and funding process to retain the Qualified Person within a reasonable period of time. Additional time was granted, at the City's request, to allow the City more time to work with the Qualified Person to complete the Chedoke Creek Workplan and the Cootes Paradise Report.

I altered work ordered Item No. 10 of the Order to allow at least six (6) weeks, or such other date approved by the Director, for the submission of the Cootes Paradise Workplan in relation to the approved remediation/mitigation measures for Cootes Paradise/Western Hamilton Harbour Area. The additional time will allow the City more time to develop the Cootes Paradise Workplan in consultation with the Qualified person and accommodate their internal approval processes.

Item No. 16 of the order was revoked as I agree with the City that the requirements were duplicative, and that the monthly update meetings required by Item No. 17 (formerly No. 18 of the Order) will provide the necessary updates to me and the Ministry on the City's progress in complying with the order. Item No. 17, No. 18, No. 19 and No. 20 of the Order were renumbered accordingly.

I am confirming work ordered Items No. 4, No. 5, No. 6, No. 7, No. 9, No. 11, No. 12, No. 13, No. 14, No. 15, No. 17, No. 18, No. 19 and No. 20 of the Order.

A meeting was held on December 3, 2020 between City officials Andrew Grice, Cari Vanderperk and Mark Bainbridge, and me along with Ministry staff, in response to the request for review of the Order. I discussed the requirements of the Order in detail, including in relation to the clarifications sought by the City in its request for review, with support from Ministry officials in attendance. The City was given opportunity to ask questions of me and Ministry officials regarding the work ordered, and I discussed expectations of the Order moving forward. I am of the view that given the nature of the discussions, and the City's understanding of the work that is required of them, I did not see a need to alter any other terms of the order.

I note that Item No. 2, No. 3, No. 6, No. 7, No.8, No. 10, No. 12, No. 13, No. 15, No. 17, No. 18, No. 19 and No. 20 were altered to refer to the Director, as opposed to the Provincial Officer, for the purposes of administering the requirements of the order, and so I am apprised of progress made to comply with the Order.

Issued at City of Hamilton this 04/12/2020 (dd/mm/yyyy).



Stephen Burt

Badge # 1504

Hamilton District

Provincial Officer's Report

Order Number
1-OW6SS

To:

HAMILTON, CITY OF
700 WOODWARD Ave N
HAMILTON ON L8H 6P4
Canada

HAMILTON, CITY OF
71 MAIN STREET WEST, 1st Floor
HAMILTON, ONTARIO L8P 4Y5
Canada

Site:

Chedoke Creek, downstream of the Main/King Combined Sewer Overflow discharge pipe, the eastern end of Cootes Paradise and western end of Hamilton Harbour, and as further described in the Provincial Officer Report under section entitled "Description of the Site and the Orderees".

Observations

1. Authority to Issue Order

This Order is being issued pursuant to my authority under sections 157, 157.1 and 196 of the Environmental Protection Act and under sections 16, 16.1, and 104 of the Ontario Water Resources Act.

2. Definitions

For the purpose of this Order, the following terms shall have the meanings described below:

"adverse effect" means one or more of:

- (a) impairment of the quality of the natural environment for any use that can be made of it,
- (b) injury or damage to property or to plant or animal life,
- (c) harm or material discomfort to any person,
- (d) an adverse effect on the health of any person,
- (e) impairment of the safety of any person,
- (f) rendering any property or plant or animal life unfit for human use,
- (g) loss of enjoyment of normal use of property, and
- (h) interference with the normal conduct of business.

"cBOD" means Carbonaceous Biochemical Oxygen Demand

"City" means the City of Hamilton.

"Combined Sewers" means pipes that collect and convey both wastewater from residential, commercial, institutional and industrial buildings and facilities (including infiltration and inflow) and stormwater runoff through a single-pipe system;

"Combined Sewer Overflow (CSO)" means a discharge to the environment from a Combined Sewer system that usually occurs as a result of precipitation when the capacity of the combined sewer is exceeded.

"combined sewer system" is a wastewater collection system which conveys sanitary wastewaters (domestic, commercial and industrial wastewaters) and stormwater runoff through a single pipe system to a Sewage Treatment Plant (STP) or treatment works. Combined sewer systems which have been partially separated and in which roof leaders or foundation drains contribute stormwater inflow to the sewer system conveying sanitary flows are still defined as combined sewer systems in Procedure F-5-5.

"discharge", when used as a verb, includes add, deposit, emit or leak and, when used as a noun, includes addition, deposit, emission or leak; ("rejet", "rejeter")

"DO" means Dissolved Oxygen

"Dry weather flow" is sewage flow resulting from both: 1) Sanitary wastewater (combined input of industrial, domestic and commercial flows); and 2) Infiltration and inflows from foundation drains or other drains occurring during periods with an absence of rainfall or snowmelt.

"EPA" means the Environmental Protection Act, R.S.O. 1990, c. E.19.

"ERA" means Ecological Risk Assessment.

"HATCH" means HATCH Limited.

"HATCH reports" means the following reports:

- Report entitled "Quantification of Volume and Contaminant Loadings" dated September 28, 2018 by HATCH Limited;
- Report entitled "Main-King CSO Tank Overflow Volume Estimates" by HATCH Limited dated April 14th, 2020.

Ministry" or "MECP" means the Ontario Ministry of Environment, Conservation and Parks.

"municipality" means the City of Hamilton

"operator" means a person who adjusts, inspects or evaluates a process that controls the effectiveness or efficiency of a facility, and includes a person who adjusts or directs the flow, pressure or quality of the wastewater within a wastewater collection facility;

"Order" means this Provincial Officer's Order 1-OW6SS, as it may be amended.

"overflow event" occurs when there is one or more CSOs from a combined sewer system, resulting from a precipitation event. An intervening time of twelve hours or greater separating a CSO from the last prior CSO at the same location is considered to separate one overflow event from another.

"owner" means a municipality or person having authority to construct, maintain, operate, repair, improve or extend water works or sewage works; ("propriétaire")

"owner of the pollutant" means the owner of the pollutant immediately before the first discharge of the pollutant, whether into the natural environment or not, in a quantity or with a quality abnormal at the location where the discharge occurs, and "owner of a pollutant" has a corresponding meaning; ("propriétaire du polluant", "propriétaire d'un polluant")

"OWRA" means the Ontario Water Resources Act, R.S.O. 1990, c. O.40.

"Partially Separated Sewer Systems" means wastewater collection systems that originally had Combined Sewers and where either only a portion of a system was retrofitted to separate sewers, or in which roof leaders or foundation drains still contribute stormwater inflow to the separated sewer conveying sanitary sewage, and/or a new development area served by separate sewers was added to an area served by Combined Sewers;

"person having control of a pollutant" means the person and the person's employee or agent, if any, having the charge, management or control of a pollutant immediately before the first discharge of the pollutant, whether into the natural environment or not, in a quantity or with a quality abnormal at the location where the discharge occurs, and "person having control of the pollutant" has a corresponding meaning;

"pollutant" means a contaminant other than heat, sound, vibration or radiation, and includes any substance from which a pollutant is derived;

"practicable" means capable of being effected or accomplished;

"Provincial Officer" means the undersigned provincial officer or, in the event that the undersigned is unable to act, any other provincial officer authorized to act pursuant to the EPA and OWRA.

"Provincial Officer's Report" means this 18-page report which comprises part of the Order.

"restore the natural environment", when used with reference to a spill of a pollutant, means restore all forms of life, physical conditions, the natural environment and things existing immediately before the spill of the pollutant that are affected or that may reasonably be expected to be affected by the pollutant, and "restoration of the natural environment", when used with reference to a spill of a pollutant, has a corresponding meaning;

"Sanitary Sewers" means pipes that collect and convey wastewater from residential, commercial, institutional and industrial buildings, and some infiltration and inflow from extraneous sources such as groundwater and surface runoff through means other than stormwater catch basins;

"Separate Sewer Systems" means wastewater collection systems that comprised of Sanitary Sewers while runoff from precipitation and snowmelt are separately collected in Storm Sewers;

"sewage" includes drainage, storm water, commercial wastes and industrial wastes and such other matter or substance as is specified by the regulations; ("eaux d'égout")

"sewage works" means any works for the collection, transmission, treatment and disposal of sewage or any part of such works, but does not include plumbing to which the Building Code Act, 1992 applies; ("station d'épuration des eaux d'égout")

"Site" means the site described as: Chedoke Creek, downstream of the Main/King Combined Sewer Overflow discharge pipe, the eastern end of Cootes Paradise and western end of Hamilton Harbour and as further described in the Provincial Officer Report under section entitled

"Description of the Site and the Orderees".

"SLR" means SLR Consulting (Canada) Ltd.

"SLR reports" means the following reports:

- Letter report entitled "Peer Review Report - Chedoke Creek Natural Environment and Sediment Quality Assessment and Remediation Report" dated May 15, 2019 by SLR Consulting (Canada) Ltd.;
- Report entitled "Ecological Risk Assessment (ERA), Chedoke Creek, Hamilton, Ontario" by SLR Consulting (Canada) Ltd. dated February 12, 2020 (including "APPENDIX A Previous Environmental Investigations Sampling Locations");
- Report entitled "Cootes Paradise: Environmental Cootes Evaluation Hamilton, Ontario" by SLR Consulting (Canada) Ltd. dated April 22, 2020; and
- Letter report entitled "Response to Ministry of Environment, Conservation and Parks May 28, 2020 letter entitled Chedoke Creek Spill Response – District Comments" by SLR Consulting (Canada) Ltd. dated June 12, 2020.

"spill", when used with reference to a pollutant, means a discharge,

(a) into the natural environment,

(b) from or out of a structure, vehicle or other container, and

(c) that is abnormal in quality or quantity in light of all the circumstances of the discharge,

and when used as a verb has a corresponding meaning; ("déversement", "déverser")

"Storm Sewers" means pipes that collect and convey runoff resulting from precipitation and snowmelt (including infiltration and inflow);

"substance" means any solid, liquid or gas, or any combination of any of them.

"TAN" means Total Ammonia Nitrogen

"TKN" means Total Kjeldahl Nitrogen

"TP" means Total Phosphorous

"Tribunal" means the Environmental Review Tribunal

"TSS" means Total Suspended Solids

"Wet weather flow" is the combined sewage flow resulting from:

1. Sanitary wastewater; and
2. Infiltration and inflows from foundation drains or other drains resulting from rainfall or snowmelt; and
3. Stormwater runoff generated by either rainfall or snowmelt that enters the combined sewer system.

"Wood" means Wood Environmental & Infrastructure Solutions a division of Wood Canada Limited.

"Wood reports" means the following reports:

- Report entitled "MECP Order # 1-J25YB Item 1b – Chedoke Creek Natural Environment and Sediment Quality Assessment and Remediation Report" dated January 24, 2019 by Wood Environmental & Infrastructure Solutions;
- Report entitled "MECP Order # 1-J25YB Item 1c – Implementation and Costing Report" dated January 24, 2019 by Wood Environmental & Infrastructure Solutions; and
- Memo entitled "Chedoke Creek Project, Wood Commentary on SLR Peer Review Comments, City of Hamilton" dated May 23, 2019 by Wood Environmental & Infrastructure Solutions.

3. Description of the Site and the Orderees

The City of Hamilton is the owner and operator of two (2) wastewater treatment plants (WWTP) called Dundas WWTP and Woodward WWTP located at 135 King Street West and 700 Woodward Avenue, respectively. Sewage is collected via the wastewater collection system made up of both Separate Sewer Systems and Combined Sewer Systems and Partially Separated Sewer Systems serving the former towns of Stoney Creek, Hamilton, Dundas, Ancaster and Waterdown and other hamlets surrounding the City.

The City of Hamilton is also the owner and operator of the wastewater collection system which includes approximately nine (9) Combined Sewer Overflow (CSO) tanks. CSO tanks are engineered structures designed to hold a portion of combined sewage (sewage and stormwater) during rain events that is in excess of the WWTP capacity. The purpose of providing storage capacity at the CSO tanks is to prevent untreated sewage from discharging to the natural environment. When the rain stops, the sewage is gradually pumped to the WWTP for treatment. Under heavy rain conditions, a CSO tank storage capacity may be exceeded, which may result in combined sewer overflow into the receiving water although at a more diluted concentration than raw sewage. The Main/King CSO Tank and Pumping Station (HCS04) located at 707 King Street West, Hamilton has a combined sewage storage capacity of 75,000 m³.

As detailed later in this Provincial Officer's Report, from January 28, 2014 until July 18, 2018, sewage from the Main/King CSO pumping station was discharged to Chedoke Creek on multiple occasions in the absence of rain and when the capacity of the CSO tank was not exceeded. The sewage flowed from the pumping station into the overflow chamber and out via a 2400 mm discharge pipe traveling west/northwest discharging into Chedoke Creek just north of Glen Road, Hamilton. The spill flowed north in Chedoke Creek discharging into the south-eastern portion of Cootes Paradise with the usual currents going out the Desjardins Canal into the western end of Hamilton Harbour.

The Site is described as: Chedoke Creek, downstream of the Main/King Combined Sewer Overflow discharge pipe, the eastern end of Cootes Paradise and western end of Hamilton Harbour, and as detailed in Appendix A.

Appendix A shows a map of the Site entitled "Chedoke Creek, downstream of the Main/King Combined Sewer Overflow discharge pipe, the eastern end of Cootes Paradise and western end of Hamilton Harbour".

The following are property uses of land surrounding Chedoke Creek:

Neighbouring land uses to the east include Hwy 403 with park land further east (Kay Drage Park/former Landfill); To the south and west is a mix of residential homes and apartments, institutional properties (long term care facility and former school), and Royal Botanical Garden's park land extending north to Princess Point; and To the north of Chedoke Creek is Cootes Paradise and additional Royal Botanical Garden (RBG) park land.

4. Events Leading to the Provincial Officer's Order

An estimated volume of 24 billion litres of sewage spilled from the Main/King CSO Tank and associated Pumping Station into Chedoke Creek during the period of January 28, 2014 until July 18, 2018 as a result of the incorrect operation of a valve, and the malfunction of a second gate valve without detection. The purpose of a CSO tank is to collect and retain sewage and storm flows during rain events that would otherwise overwhelm a waste water collection system and thereby prevent untreated sewage from discharging to the natural environment. The associated pumping station then pumps the sewage to the pant when the rain stops, and capacities allow for more flow. Discharges from a CSO tank should not occur during dry weather conditions or during rain events for which the tank capacity has been designed. Because the discharge was abnormal in quality and quantity and unapproved under the OWRA it was determined a spill.

The following chronology is a description of this Provincial Officer's dealings with this spill event since first being assigned to it on July 6, 2018:

Prior to July 6, 2018 the District Office received Annual Reports from the City about the Main/King CSO tank which reported no recent combined sewer overflows. The City also did not report any operating problems encountered and corrective actions taken with respect to the CSO tank as required under condition 4 (c) of the Certificate of Approval (CofA)/Environmental Compliance Approval (ECA) # 3-1455-94-956.

On July 6, 2018, the Spills Action Centre received a public complaint regarding the City discharging sewage into Chedoke Creek and Cootes Paradise. The complaint was forwarded to the Hamilton District Office. The caller reported the presence of sewage odours, worse than he had ever experienced, and raw sewage related plastic debris within Chedoke Creek. Caller reported that the problem had been ongoing since the City installed the CSO tank. The caller indicated that they had also reported the same observations to the City.

On July 9, 2018, Hamilton District Manager, Paul Widmeyer received an email from the Hamilton Health Unit, regarding the health hazard of extremely high E. coli results meeting the criteria of "suspected sewage contamination" in Chedoke Creek with results reported of 3.4 million CFU/100 mL and a trend of historical high results from approximately the end of May 2018.

On July 10, 2018 the Hamilton Health Unit required the City of Hamilton to post warning signs for the public at potential water access points along Chedoke Creek, Princess Point Park, Cootes Paradise Waterfront Trail, Desjardin Canal (which allows flow between Cootes Paradise and Hamilton Harbour) and to remove the canoe/kayak dock at Princess Point Park.

On July 11, 2018 the Hamilton Conservation Authority took samples in the Chedoke Creek watershed at several locations for E. coli and human/bovine bacteria markers in order to isolate the section of Chedoke Creek where the discharge was occurring and determine the source of contamination. Sample results showed high concentrations of E. coli and bacteria readings consistent with human source. Resampling was conducted on July 18, 2018 by the Hamilton Conservation Authority with results also showing high concentrations of E. coli and bacteria readings consistent with human source.

On July 13, 2018, I received a presentation from the Hamilton Harbour Remedial Action Program (HHRAP) committee where the Royal Botanical Gardens (RBG) presented photos of the Chedoke Creek on July 4, 2018 showing a significant amount of sewage solids floating on the surface.

On July 16, 2018, I visited the site at Kay Drage Park bridge with Water Compliance Supervisor, Zafar Bhatti and detected sewage odours and observed sewage debris in Chedoke Creek.

On July 17, 2018, the undersigned Provincial Officer met with City staff at Chedoke Creek outfall and detected strong sewage odours downwind of the outfall and observed significant sewage debris in the creek. City staff identified the sewage as algae. At the Kay Drage Park bridge a slight increase in sewage debris was observed in the creek.

The City had been checking their system and providing update reports from staff suggesting natural organics, algae or sediment reflux all-natural sources and not sewage coming from the sewage system up to July 18th, 2018 but my inspections were on-going to determine the source.

On the morning of July 18, 2018, I visited the upstream portion of the Chedoke Creek outfall at the MTO work site on the east side of the 403 and observed that the water was running clear with no odour.

On July 18, 2018, Calder Engineering Ltd conducted a confined space inspection and sampling of the twin box culvert and connecting and storm sewer pipe from overflow chamber of Main/King CSO tank and Pumping Station located at 707 King Street West. The twin box culvert channels Chedoke Creek under Main Street West to where Chedoke Creek emerges north of Glen Road and receives flow from several different areas. It was this inspection that found sewage flowing into the box sewer from King/Main

CSO tank at an estimated rate of 150 L/sec, while clear water was coming from Chedoke Creek. Further investigation at the Main /King Pump Station found sewage in the CSO tank overflow chamber discharging to a 2400 mm storm discharge culvert. Sewage was entering the overflow chamber through a reported 4.7% open 3000 mm x 3000 mm maintenance gate valve between the overflow chamber and the influent 1950 mm combined sewer entering the pumping station wet well. Once identified the City closed the gate and reported the spill to the Spills Action Centre due to the discharge being of abnormal quality and quantity.

Water Compliance Supervisor Zafar Bhatti and I attended the King/Main CSO tank location on July 18, 2018 to confirm that the discharge had stopped and to conduct a visual inspection of the Chedoke Creek outfall which showed no flow from the east side of the box culvert which had been observed the previous day by the undersigned Provincial Officer. Sewage debris was still observed with sewage odours. Preliminary reports from the City indicated that the gate valve had been open since January 29, 2014. The initial estimated volume of sewage discharged to the creek from January 29, 2014 until the gate valve was fully closed was initially reported as 15.9 billion litres (and more accurately determined to be 24 billion litres later).

The undersigned Provincial Officer also conducted a site visit on July 20, 2018 and found strong sewage odours on Glen Road, downwind of the creek and observed a boom installed by City contractors between Kay Drage Park bridge and the Chedoke Creek Outfall to collect floating materials.

On July 27, 2018, the City confirmed that a gate valve between the sewage pumping station wet well and overflow chamber had been open since January 28, 2014 allowing dry weather flow out of the station. In January 2018 a second gate valve malfunctioned which directed added (wet and dry weather) flow from a large combined sewer into the wet well where the first gate valve was open which allowed the added flow to spill into the overflow chamber and discharging to Chedoke Creek.

A Provincial Officer Order (POO) Number 1-J25YB was issued on August 2, 2018 requiring the City, among other things, to evaluate impacts of the sewage spill to Chedoke Creek from the Main/King CSO tank facility between January 28, 2014 and July 18, 2018. This evaluation required evaluation of impacts to Chedoke Creek from the spill and anticipation/risk of on-going impacts, recommendations for remediation and/or mitigation, if necessary, and regarding the most effective way to complete the remediation and/or mitigation; and associated implementation timeline for any necessary remedial and/or mitigation work by November 30, 2018.

In October 2018, the City submitted a report entitled "Quantification of Volume and Contaminate Loadings" by HATCH dated September 28, 2018 which stated that an estimated 24 billion litres (24 million cubic metres) of raw sanitary sewage and combined sewage was discharged to Chedoke Creek from January 28, 2014 to July 18, 2018. The Total Contaminant Loadings (in Tonnes) for the period from January 28, 2014 to July 18, 2018 were estimated to be 2375 Tonnes of TSS, 47 Tonnes of TP, 159 Tonnes of TAN, 312 Tonnes of TKN and 1373 Tonnes of cBOD.

On January 31, 2019, the City submitted a consultant's (Wood) report (report entitled "MECP Order # 1-J25YB Item 1b – Chedoke Creek Natural Environment and Sediment Quality Assessment and Remediation Report" dated January 24, 2019 by Wood Environmental & Infrastructure Solutions) as a fulfilment of the above Order #1-J25YB, which recommended Direct Removal (section 5.2.5) of settled material by hydraulic dredging. The report stated, "Physical removal of the organic sediment will directly address the three primary sources of potential impairment including nutrient contamination, bacteriological contamination and habitat loss". Options considered in the order of most to least effective were: Direct Removal, Chemical Inactivation, Physical Capping and No Action.

On March 20, 2019, the City reported that a peer review of the original reports was being conducted. On May 30, 2019 I received both: a Peer Review Report by SLR, dated May 15th, 2019; and a memo from Wood, dated May 23, 2019.

On September 19, 2019 as part of the review of the above reports, the Surface Water Specialist of the Technical Support Section and I requested clarification from the City on the identification of a clear conclusion or recommendation for remediation and/or mitigation option the City was proposing. The City had submitted both the Wood report with one recommendation for dredging and the peer review, which recommended no action. No clear indication was provided by the City on which recommendation it was proposing. With no response from the City by September 30th, 2019 I requested a response by October 4th. The City reported on October 1, 2019 that additional sampling work was completed at the site during the last week of September 2019 as a result of the peer review to identify the need for any remedial work.

On October 10, 2019 in a meeting the City informed the Director, me and other Ministry staff that an ERA had been started. I requested a final report and recommendations by November 15th, 2019. The City then informed us that an ERA final report could not be provided until the end of January 2020 as lab analysis and data interpretation/report would take additional time. The Surface Water Specialist of the Technical Support Section in consultation with the Director and I, informed the City that the contaminated sites environmental risk assessment process cannot be used for the determination of spill clean-up requirements as this process does not have the same requirements as a spill to undertake practicable clean-up to restore the natural environment under Section 93 of the EPA. The legal duty to restore the natural environment in section 93 of the EPA helps to prevent a spill site from becoming a

contaminated site and to ensure the owner deals with the spill and its impacts. Some of the analyses undertaken in an ERA can be used to identify areas and extent of impact of a spill, which may be incorporated into the full evaluation of impact and remediation/mitigation options for the spill, but it does not identify level of clean-up required for spills or the practicable measures available to address the impacts of the spill.

In order to ensure appropriate timelines were followed, a Provincial Officer Order (POO) was issued and the City submitted a Request for Review resulting in the Directors decision to issue Director's Order #1-MRRCX on November 28th, 2019 clarifying the work to be conducted with revised time lines of submission of the ERA in Chedoke Creek by February 14, 2020 and Cootes Paradise Environmental Impact Evaluation (EIE) report by May 1, 2020. Work required was:

1. A Chedoke Creek ERA and evaluation of the environmental impact, an identification and evaluation of sewage remaining in the creek, identification of any anticipated on-going environmental impacts to the creek, and a review of options designed to remediate the creek and monitor the environmental condition of the creek, written proposed actions with justification in respect to the remediation and the monitoring of the creek including selected option(s) for environmental remediation and monitoring with supporting documentation/justification and an implementation timeline including significant milestones and any approvals required; and
2. An environmental impact evaluation to Cootes Paradise from the sewage discharged including a written assessment of any anticipated on-going environmental impacts with identification of contaminants related to the sewage spill, any known environmental impacts and an assessment of anticipated on-going environmental impacts from the identified contaminants including a spatial and environmental evaluation of the contaminants remaining (floatables and non floatables) in Cootes Paradise, and any proposed remedial actions and recommendations with justification including timelines with surface water monitoring program.

On February 14, 2020 the City submitted its Chedoke Creek ERA report and letter of position recommending that no further actions or additional remedial work was required to address the effects from the sewage spill or previous effects from the sewage discharge because of the alleged likelihood of recontamination, presence of historical contamination, and potential presence of a species at risk.

On May 28, 2020, the Director provided preliminary comments from the Ministry technical experts to the City and asked the City to provide additional information and clarification in order to complete its review of the Chedoke Creek ERA and better understand the City's methodology used to conclude that no further action or remediation was needed in Chedoke Creek. The request included, but was not limited to:

- o Clarification on the assessment of the creek sediment;
- o Additional work to verify the presence of a species at risk (Lilliput mussel);
- o Additional evidence to support the no-dredging conclusion to address organic material related to the spill; and
- o an assessment of any other remedial options considered.

The City and its consultant provided additional information to the Director, me and Ministry staff on June 15, 2020 and maintained that no further action was required.

In a letter dated February 13th, 2020 and in a meeting on March 13, 2020 the Royal Botanical Gardens (RBG), expressed concerns regarding ecological damage, potential extent of contamination to the bed of the marsh, which is owned by RBG, and requested a robust analysis of the spill impact and future remediation efforts. RBG plays a critical role in administering marsh restoration programs, ecological remediation plans and are responsible for the health and safety of visitors, program participants and staff of Cootes Paradise.

On April 30, 2020, the City submitted the required Cootes Paradise EIE and letter of position. It did not recommend any action or additional remedial work to address the effects from the sewage spill because the City believed either impact was short-lived or no adverse impact was sustained on water quality, sediment, aquatic vegetation or fish in Cootes Paradise.

I provided the materials for technical review by Technical Support Section, and as a result of their review comments they advised me that more work is needed to address the impacts of the spill on Chedoke Creek and Cootes Paradise as outlined in section entitled 4.2 Workplan below.

4.1 Environmental Site Investigations and Related Information

To date, the following reports detailing environmental site investigations and related information regarding the Site have been received, reviewed by Ministry Staff, provided for technical review and are listed below:

Documents submitted under Order No. 1-J25YB, dated August 2, 2018

- Report entitled "Quantification of Volume and Contaminant Loadings" dated September 28, 2018 by HATCH Limited;

- Report entitled "MECP Order # 1-J25YB Item 1b – Chedoke Creek Natural Environment and Sediment Quality Assessment and Remediation Report" dated January 24, 2019 by Wood Environmental & Infrastructure Solutions;
- Report entitled "MECP Order # 1-J25YB Item 1c – Implementation and Costing Report" dated January 24, 2019 by Wood Environmental & Infrastructure Solutions;

Additional Letter Reports/Peer Review submitted

- Letter report entitled "Peer Review Report - Chedoke Creek Natural Environment and Sediment Quality Assessment and Remediation Report" dated May 15, 2019 by SLR Consulting (Canada) Ltd.;
- Memo entitled "Chedoke Creek Project, Wood Commentary on SLR Peer Review Comments, City of Hamilton" dated May 23, 2019 by Wood Environmental & Infrastructure Solutions.

Documents submitted under Directors Order No. 1-MRRCX dated November 28, 2019

- Letter from the City entitled "Response to Director's Order 1-MRRCX" Items 1 & 2 submitted on February 14th, 2020 with the following report attachment:
 - "Ecological Risk Assessment (ERA), Chedoke Creek, Hamilton, Ontario" by SLR Consulting (Canada) Ltd. dated February 12, 2020 (including "APPENDIX A Previous Environmental Investigations Sampling Locations").
- Report entitled "Main-King CSO Tank Overflow Volume Estimates" by HATCH Limited dated April 14th, 2020.
- Letter from the City entitled "Response to Order No.1-MRRCX, Items 3 and 4" submitted on April 30, 2020 with the following attachments:
 - Letter from the City of Hamilton entitled "Director Order Number; Item No. 4, Surface Water Monitoring Program" dated April 30, 2020; and
 - Report entitled "Cootes Paradise: Environmental Cootes Evaluation Hamilton, Ontario" by SLR Consulting (Canada) Ltd. dated April 22, 2020.

Confirmation of Position and Methodology Clarification

- Letter from the Ministry to the City entitled "Chedoke Creek Spill Response – District Comments" dated May 28, 2020
- Letter of response from the City entitled "Response to District Comments – Chedoke Creek Spill Response" dated June 15, 2020 with the following attachment:
 - Letter entitled "Response to Ministry of Environment, Conservation and Parks May 28, 2020 letter entitled Chedoke Creek Spill Response – District Comments" by SLR Consulting (Canada) Ltd. dated June 12, 2020.

4.2 Work Plan

As previously discussed, I provided the materials for technical review by Technical Support Section, and as a result of their review comments they advised me that more work is needed to address the impacts of the spill on Chedoke Creek and Cootes Paradise as outlined in this section.

Chedoke Creek

The City and its consultants (Wood and SLR) have identified dredging in Chedoke Creek as the only effective option, of the options assessed, to address the increased sewage parameter concentrations in the sediment from the spill. SLR reported that hydraulic dredging could improve sediment quality but identified several items potentially limiting the effectiveness or feasibility of hydraulic dredging and therefore did not recommend dredging, namely: 1) a potential species at risk presence in Chedoke Creek due to its identification in nearby Cootes Paradise; 2) an inability to differentiate sediment contaminated by the spill versus historical contamination; and 3) the likelihood of recontamination from other on-going sources of contamination to the creek.

I asked Ministry technical experts to assess the above potential limitations and was advised that the limitations noted can be addressed with the refinement of targeted dredging locations and mitigation measures or limitations and were not supported as outlined below and based on the information provided. They advised further work is required to assess and address the potential presence of any species at risk in Chedoke Creek that may be subject to dredging. This could include the development of mitigatable measures to protect any species at risk during dredging or avoidance of specific areas for dredging. Consideration on the impact of dredging on species at risk is also given for: if the potential impact from dredging is deemed to be a long-term negative impact; if current conditions are degraded due to historical or spill impacts and already potentially negatively impacting the species; and if there would be a long-term impact improvement despite a short-term negative impact from dredging, in order to determine what and where it is appropriate to dredge. The City is required to address the impacts of the spill and restore the natural environment even if historical contamination (even similar contamination) is present and does not absolve the owner of cleaning up a spill. It is also felt that any recontamination from on-going sources, such as: the closed landfill, combined sewer overflows; potential sanitary sewer cross-connections; and stormwater, are within the City's range of scope and responsibility. Significant improvements have been made to most of these sources (in quantity and quality) in the last 10-15 years, as shown by the improved conditions in the creek and sediment

before the spill. Any on-going sources of contamination are not anticipated to re-contaminate any remediated area to the same level historically seen or to the level seen from the 24 billion litres of sewage seen in this spill and is generally minor in comparison to the loadings seen from the spill.

Some of the key items from the Ministry's technical staff review of the Chedoke Creek ERA and impact assessment are as follows:

- The data interpretation and aggregate data analysis used in assessing pre spill conditions, spill period conditions and post spill conditions did not look at specific year differences (2018 vs 2014-2017) but used mean data analysis over the spill period potentially masking the extent of the impact of the spill seen, particularly in 2018, for some parameters and didn't determine if the pre-spill period used was representative of conditions at the time of the spill.
- Information supported the sediment being impacted by the sewage spill by some of the nutrients;
- Impacted sediment was found to be a moderate to high risk with bacteria, PAH's and copper;
- The contaminant loading of nutrients, cBOD and other sewage related parameters showed ongoing impact on DO levels;
- Elevated TAN levels in Chedoke Creek above pre-spill conditions were on-going.

Cootes Paradise

The consultant's report (SLR) concluded that no further action was required based on some limited monitoring data indicating that Cootes Paradise had returned to pre-spill conditions. Despite a request from the Director, myself and ministry technical staff the report did not consider, a loadings assessment from the spill to understand the magnitude of the loadings added to the system and to have a long-term impact on the system e.g. algal blooms. The additional loadings will undo and delay the improvements from several projects that are being/have been undertaken to improve the conditions in Cootes Paradise to meet HHRAP goals, such as improvements to TP treatment at the Dundas sewage treatment plant. The added loadings may also increase the likelihood and extent of algal blooms for several years. Based on advice received from ministry technical experts, it is not as feasible, for a number of reasons, to undertake a direct restoration of the added loadings to Cootes Paradise and the western Hamilton Harbour area both from the extent and type of the dispersion of TP, and the cost, effectiveness and potential to cause more harm than good in these areas using a direct removal method like dredging. In order to address the impacts of the increased loadings caused by the spill, based on advice received from Ministry experts, other remedial options must be considered and utilized to offset and/or improve the conditions in these systems in an effort to mitigate the added loading and associated impact as a result of the spill, and thus restore the natural environment.

I have considered some of the key items from the Ministry's technical staff review of the Cootes Paradise EIE and are as follows:

- As previously discussed, the data interpretation and aggregate data analysis used in assessing pre spill conditions, spill period conditions and post spill conditions did not look at specific year differences (2018 vs 2014-2017) but used mean data analysis over the spill period potentially masking the extent of the impact of the spill seen.
- Total Phosphorous (TP) and E. coli also showed similar patterns during the spill with TP double the concentration seen during pre and post spill periods for the east end of Cootes Paradise (CP11, CP11.2 and CP1).
- Rough loadings analysis for Total Phosphorous to Cootes Paradise from the spill in the:
 - The last 6 months of the spill (January-July 2018) added about 94 kg/d of TP which is approximately double the average annual daily TP loadings (39 kg/day) on top of the normal TP loadings to the system during that time, which may be retained in various forms and recirculated within providing an additional source of nutrients.
 - The previous four years of the spill (2014-2017) added approximately half, at about 21 kg/d, of the annual average daily TP loading of 39 kg/d on top of the normal TP loadings to the system during that time; and
 - The total spill loading of 47,750 kg, compared to the annual average modelled loading of 14,100 kg/yr, indicated that the loadings from the spill over 4.5 years were equivalent to approximately three (3) years of additional loadings to Cootes Paradise from the point sources (e.g. Dundas sewage treatment plant, combined sewer overflows and the non-point sources (urban and rural stormwater runoff in the tributaries) combined.
- The report did not assess total ammonia nitrogen (TAN) as a contaminant of potential concern for Cootes Paradise. TAN can have other impacts including eutrophication, elevated nutrients supporting greater algal blooms, and can also cause a nitrogenous oxygen demand impacting dissolved oxygen. Data showed levels at CP11 much higher during the spill, e.g. 13.1 mg/L TAN compared to 1.95 mg/L of TAN during pre and post spill with similar trends at CP11.2 and CP1, although to a lesser extent.
- TKN, Ammonia and cBOD would show high input levels to the systems compared to average annual loadings
- The report did not assess the potential for added loadings to the system to impact algal blooms.
- Although diluted throughout a larger area (Chedoke Creek, the eastern portion of Cootes and into Hamilton Harbour to some extent), potential long-term impacts from the additional loadings, particularly for Total Phosphorous were not evaluated.
- The assessment on Chedoke Creek identified that the bulk of the loadings of some parameters, particularly TP, moved beyond Chedoke Creek into Cootes Paradise. Understanding of the currents and water exchange between Cootes Paradise and Hamilton

Harbour indicates that some of the loading also would have moved into Hamilton Harbour.

Considering the above, I am of the view that more work is needed. The work ordered under section 157, in respect of section 93 and section 14 of the EPA, is needed to restore the natural environment as a result of the spill, and to prevent further impairment to the natural environment, and to prevent adverse effects.

The EPA imposes a duty to mitigate and restore the natural environment on the owner of a pollutant and the person having control of a pollutant that is spilled as per section 93 of the EPA which states:

93 (1) The owner of a pollutant and the person having control of a pollutant that is spilled and that causes or is likely to cause an adverse effect shall forthwith do everything practicable to prevent, eliminate and ameliorate the adverse effect and to restore the natural environment.

When duty effective

(2) The duty imposed by subsection (1) comes into force in respect of each of the owner of the pollutant and the person having control of the pollutant immediately when the owner or person, as the case may be, knows or ought to know that the pollutant is spilled and is causing or is likely to cause an adverse effect.

The City is owner of the pollutant and the City's employees and operators were the person(s) having control of the pollutants, namely raw sewage contaminants (including TSS, TP, TAN, TKN and cBOD), that were discharged into the natural environment over approximately 4.5 years (January 28, 2014 and July 18, 2018) from its sewage works. The discharge of 24 billion litres of sewage was not authorized under the OWRA. As previously discussed, the discharges were occurring at all times, during both dry weather and wet weather conditions regardless of the CSO tank's operating level. The discharged volume of the dry weather flow alone, raw sanitary sewage, was 2.9 billion litres which is abnormal to be discharged to the natural environment considering this volume under normal operating conditions would have received full treatment at the wastewater treatment plant. The estimated normal CSO operation volume during the spill period (2014-2018), for the Main-King CSO if it was operating properly, was modelled by HATCH to be about 0.321 billion litres in total for those five years. Sanitary sewage flow of approximately 2.9 billion litres alone added approximately a loading of 771 tonnes of TSS, 502 tonnes of cBOD, 13 tonnes of TP, and 101 tonnes of TKN into Chedoke Creek. This discharge was further augmented by wet weather flow making a total volume of the spill 24 billion litres with total loadings of 2375 tonnes of TSS, 1373 tonnes of cBOD, 47 tonnes of TP, and 312 tonnes of TKN with no treatment by the WWTP or CSO tank. I consider these volumes and loadings excessive and abnormal in quality and quantity. As a result of the discharge, sewage was spilled into the Chedoke Creek causing adverse effects, including impairment to the quality of the natural environment, including waters (e.g. Chedoke Creek and Cootes Paradise), for any use that can be made of it, impairment to the safety of any person, and loss of enjoyment of normal use of property. Examples include odour complaints from RBG and the public due to raw sewage debris floating in the water and on the shore. As a result of the discharge, technical review by ministry experts have determined an adverse effect was observed as a result of the spill and if the natural environment is not restored the remaining spilled contaminants may cause further adverse effect.

As previously discussed, in July 2018, the City began remediation efforts along the surface of Chedoke Creek which included the installation of booms and removal of floating sewage by boat and hydrovac trucks. A seasonal boom was put in place to capture any further associated sewage floatables discharged. The operator station inspection program has been revised and assessments on critical valves have been completed in the system and maintenance prioritized. I am advised by the Ministry's technical experts that these efforts have not restored the natural environment to the pre-spill conditions as required under Section 93 of the EPA due to ongoing evidence of sewage parameter concentrations present above pre-spill conditions for some parameters and on-going low DO conditions.

Accordingly, the City was requested on several occasions, in writing and during meetings to assess and make recommendations to remediate the impacts of the spill (Order No. 1-J25YB dated August 2, 2018, Order No. 1-J3XAY dated November 21, 2019, Directors Order No. 1-MRRCX dated November 28, 2019 and letter dated May 28, 2020 entitled "Chedoke Creek Spill Response – District Comments".)

In addition, the City was in contravention of s.14 of the EPA in relation to the spill, which has caused and may cause an adverse effect as discussed above.

Pursuant to section 30(1) of the OWRA every person that discharges or causes or permits the discharge of any material of any kind into or in any waters or on any shore or bank thereof or into or in any place that may impair the quality of the water of any waters is guilty of an offence.

The discharge of sewage from the Main/King CSO described above constituted a contravention of section 30 of the OWRA. The City as the owner and operator discharged or caused or permitted the discharge of a material/sewage into or in any waters, Chedoke

Creek and Cootes Paradise/Hamilton Harbour, has impaired and may continue to impair the quality of the water further if work is not done.

For the purposes of the OWRA, the quality of water is deemed impaired by the discharge of material, where certain conditions are met as set out in section 1(3) of the OWRA. In the circumstances of this spill, the quality of water is deemed impaired for Chedoke Creek and its connected waterways/natural environment for the following: there was a degradation in the appearance and odour of the water; and the quality of the water was impaired by the discharge of 24 billion litres of sewage that entered the water directly and caused or may cause injury to or interference with any living organism that lives in or comes in contact with or as a result of it using or consuming the water or sediment that is in contact with the water.

For the purposes of section 30 of the OWRA, I am of the view, after having consulted with ministry experts, that the spill caused or may cause impairment to the system and therefore the items identified in the Order are required and more work is needed. Some of the identified impairments or potential impairments also include: 1) The sediment has been identified as having moderate to high risk for effects to some organisms from PAHs. Elevated levels of bacteria have or may have impacted uses or continue to do so; 2) Elevated TAN and nitrite levels in the water and added TKN levels in the sediment will continue to have an added nutrient source, impact DO levels, and add to the eutrophication of the system, all of which may continue to impact organisms in the water and sediment; and 3) the added nutrient loadings, particularly TP, at the significance of the loading to the entire system, will continue to increase the risk in the frequency and size of algal blooms which may impair the water for its use or cause injury as a result of algal blooms.

Considering the above noted on-going impacts and continuing potential impairment, I am of the opinion, after consultation with Ministry staff and technical experts, that a "no action" recommendation by the City does not discharge its obligation to restore the natural environment nor does it address or prevent potential adverse effects, or may impair or continued impairment of the natural environment, including waters.

Thus, further action is necessary to restore the natural environment in relation to Chedoke Creek and that further action is needed to offset the impacts of the spill to Cootes Paradise. Accordingly, I require the City to undertake remedial measures outlined in the accompanied Provincial Officer's Order to restore the natural environment in Chedoke Creek as a result of the spill and take steps to determine what is required in relation to Cootes Paradise and implement those steps once an appropriate course of action is determined.

Based on previous significant public interest, and the need to keep the public informed, the Order also requires posting on the City's website with progress reports, as needed. Progress reports and meetings with the Ministry are outlined to improve collaborative communication and information sharing during spill response workplan development, remediation and ensure timely progress towards restoring the natural environment. Landowner notifications are also required to improve communications with stakeholders.

5. Legal Basis for the Order and Provincial Officer's Opinion

I reasonably believe that the City of Hamilton has contravened or is contravening those provisions of the EPA as outlined in the Offences, Suspected Violation(s)/Offences section of this report.

And

I further reasonably believe that the City of Hamilton has contravened or is contravening those provisions of the OWRA as outlined in the Offences, Suspected Violation(s)/Offences section of this report.

And

I further reasonably believe that the requirements in this Order are in the public interest in order to prevent any further discharge of material into Chedoke Creek, Cootes Paradise and Hamilton Harbour, that may impair the quality of any water;

And

I further reasonably believe the requirements specified in this Order are necessary:

- i) to prevent, or reduce the risk of any adverse effect on the natural environment from contaminated sediment which sediment was the direct result of the spill or spills to the Chedoke Creek from the Main/King CSO and which will continue to discharge compounds into the natural environment from the Site; and/or
- ii) to prevent, decrease or eliminate an adverse effect that may result from the presence of such contaminants in, on or under the Site.

6.0 Attachments

The attachments listed below form part of the Order:

Appendix A – Site Map "Chedoke Creek, downstream of the Main/King Combined Sewer Overflow discharge pipe, the eastern end of Cootes Paradise and western end of Hamilton Harbour"

Offence(s)

Suspected Violation(s)/Offence(s)

Act – Regulation – Section

Description

Environmental Protection Act, 93 (1) The owner of a pollutant and the person having control of a pollutant that is spilled and that causes or is likely to cause an adverse effect shall forthwith do everything practicable to prevent, eliminate and ameliorate the adverse effect and to restore the natural environment.

(2) The duty imposed by subsection (1) comes into force in respect of each of the owner of the pollutant and the person having control of the pollutant immediately when the owner or person, as the case may be, knows or ought to know that the pollutant is spilled and is causing or is likely to cause an adverse effect. R.S.O. 1990, c. E.19, s. 93.

Environmental Protection Act, Section 14 (1) Subject to subsection (2) but despite any other provision of this Act or the regulations, a person shall not discharge a contaminant or cause or permit the discharge of a contaminant into the natural environment, if the discharge causes or may cause an adverse effect. 2005, c. 12, s. 1 (5).

Ontario Water Resources Act, Section 30 (1) Every person that discharges or causes or permits the discharge of any material of any kind into or in any waters or on any shore or bank thereof or into or in any place that may impair the quality of the water of any waters is guilty of an offence. R.S.O. 1990, c. O.40, s. 30 (1).



Shelley Yeudall
Provincial Officer
Badge Number: 881

Provincial Officer's Order

Order Number
1-OW6SS

Environmental Protection Act, R.S.O. 1990, c.E 19 (EPA)
Nutrient Management Act, R.S.O. 2002, c.4 (NMA)
Ontario Water Resources Act, R.S.O. 1990, c.O. 40 (OWRA)
Pesticides Act, R.S.O. 1990, c. P11 (PA)
Safe Drinking Water Act, S.O. 2002, c.32 (SDWA)

To: HAMILTON, CITY OF
700 WOODWARD Ave N
HAMILTON ON L8H 6P4
Canada

HAMILTON, CITY OF
71 MAIN STREET WEST, 1st Floor HAMILTON, ONTARIO L8P 4Y5
Canada

Site: Chedoke Creek, downstream of the Main/King Combined Sewer Overflow discharge pipe, the eastern end of Cootes Paradise and western end of Hamilton Harbour, and as further described in the Provincial Officer Report under section entitled "Description of the Site and the Ordeees".

Work Ordered

Pursuant to my authority under sections 157, 157.1, 196 of the Environmental Protection Act and under sections 16, 16.1, and 104 of the Ontario Water Resources Act I hereby order you, the City of Hamilton, to do the following:

1. By December 11, 2020, retain the services of a Qualified Person that has the experience and qualifications to carry out the work specified in this Order.
2. By December 11, 2020, submit to the undersigned Provincial Officer written confirmation that the Qualified Person has been retained to carry out the work specified in this Order, that a copy of the Order has been given to the Qualified Person; and that the Qualified Person has the experience and qualifications to carry out the work.

Chedoke Creek Downstream of the Main/King CSO Discharge Pipe

3. By January 22, 2021, submit to the undersigned Provincial Officer, for approval, a remediation workplan for Chedoke Creek that is developed by the Qualified person to undertake the targeted dredging of Chedoke Creek based on the recommendation identified in section 5.2.5 of the Wood report entitled "MECP Order # 1-J25YB Item 1b – Chedoke Creek Natural Environment and Sediment Quality Assessment and Remediation Report" dated January 24, 2019 ("Chedoke Creek Workplan"). The Chedoke Creek Workplan shall be prepared in accordance with the requirements set out in Items 4 and 5 below.
4. The Chedoke Creek Workplan shall, at a minimum:
 - i) Consider technical reports, Ministry comments and affected stakeholders' comments, to determine an acceptable plan to implement the recommendation in the Wood report to restore the Chedoke Creek, while mitigating impacts of implementing the plan on the natural environment, including water;
 - ii) Contain a detailed timeline setting out critical milestones and checkpoints with the Ministry for carrying out the Chedoke Creek Workplan;
 - iii) Contain a Species at Risk assessment plan and associated timelines for Chedoke Creek downstream of the spill and including potential impacted areas downstream of Chedoke Creek that may be impacted by targeted dredging;

iv) Undertake consultation with the Species at Risk Branch within the Ministry in respect of any identified items pursuant to 4 iii) and incorporate this feedback and outcome into the workplan for any species at risk;

v) Provide a description of any anticipated approvals needed to implement the Chedoke Creek Workplan, initial consultation and proposed timelines to obtain such approvals, if required, for the Workplan to be implemented;

vi) The consultation in iv) and v) shall include the Regional Technical Support Section of the Ministry;

vii) Contain a description of the identified areas and the extent (depth, location) of the targeted dredging with a description of how the items outlined in Item 5 below were addressed and a description of any methods for refining identified areas in Item 5 including the impacted areas identified in the Wood reports and SLR reports and timing as needed, in the Chedoke Creek Workplan;

viii) Contain a description of the approximate volume of material to be removed;

ix) Identify and contain a description of proposed mitigation measures for any short-term impact(s) that may arise from implementing the Chedoke Creek Workplan for Chedoke Creek, its shoreline and connected waterways/natural environment, on any species at risk and other potentially impacted uses. Mitigation measures may include, but are not limited to: exclusion measures for local aquatic uses; limit recreational uses in the area; total suspended solids control as required for carrying out the targeted dredging; and proposed monitoring during any remediation to monitor effectiveness of mitigation measures during dredging identified in iv); and

x) Contain a proposed monitoring plan to monitor the recovery of the natural environment and effectiveness of the Chedoke Creek Workplan once dredging is complete.

5. With respect to the area from the Main/King CSO outfall to the mouth of Chedoke Creek, the Chedoke Creek Workplan shall take into consideration the scope of targeted dredging work necessary to restore the natural environment to pre-spill conditions, as to be agreed upon by the Ministry, and to mitigate any impairments or potential impairments from the spill, in relation to the following, but not limited to:

i) Sediment areas identified as impacted, in consultation with the Ministry, by the sewage spill;

ii) Sediment areas identified as containing elevated organic material consistent with sewage sludge;

iii) Sediment areas identified as elevated nutrients (particularly TP, TAN, and TKN);

iv) Sediment areas identified as had, may have, or continuing to have reduced dissolved oxygen levels in the water column from historical levels;

v) Sediment areas identified as having elevated parameters as identified by the ERA carried out by SLR ("Ecological Risk Assessment (ERA), Chedoke Creek, Hamilton, Ontario" dated February 12, 2020) to have moderate or high risk for impacts, or otherwise identified by the reports or in comments by the Ministry; and

vi) Addressing any ecological flow path requirements and connectivity within the creek in any remedial action plan that may impact low flow path and connectivity.

6. By October 31, 2021, or such other date approved by the Provincial Officer in writing, complete the approved Chedoke Creek Workplan.

7. Within one (1) month of the completion of the of the work undertaken pursuant to the approved Chedoke Creek Workplan, submit to the undersigned Provincial Officer, a report prepared by the Qualified Person confirming that the natural environment has been restored to pre-spill conditions and that further impairment to the natural environment will not occur as a result of the spill to the Chedoke Creek as detailed in the attached provincial officer's report, and at a minimum contain the following:

i) The details of the work undertaken to complete the Chedoke Creek Workplan;

ii) Any monitoring results completed before, during and after the work undertaken in accordance with the Chedoke Creek Workplan;

iii) Analysis of the results in Item 7(ii) above for the purposes of the intended monitoring; and

iv) Determination if any requirement for on-going monitoring is required to verify the effectiveness or maintenance of the remedial actions undertaken is necessary.

Cootes Paradise/Western Hamilton Harbour Area

8. By January 22, 2021, submit to the undersigned Provincial Officer for approval, a proposed remediation/mitigation report that is prepared by a Qualified Person(s) for the Cootes Paradise/Western Hamilton Harbor Area to offset the added nutrient loading, principally TP, identified in the Wood reports, the SLR reports and particularly the Hatch reports, and address any other potential on-going impacts (dissolved oxygen, algal blooms) as a result from the sewage spill to this area ("Cootes Paradise Report").
9. The report in Item 8 shall, at a minimum:
- i. Identify and review all potential remediation or mitigation measures, whether direct, indirect, or a combination of measures with consideration for short and long-term measures to address the remediation goal to offset added nutrient loading particularly for TP and any potential on-going impacts (dissolved oxygen, algal blooms) from the sewage spill to the Cootes Paradise/Western Hamilton Harbor Area as identified in the Wood reports, the SLR reports and the Hatch reports;
 - ii. Undertake consultation with and provide a summary of comments received from the Royal Botanical Gardens, Hamilton Conservation Authority, the Ministry, and any other relevant affected stakeholders for potential remediation and mitigation options as per item i. above;
 - iii. Contain a cost/benefit analysis of all options to assess efficiency and effectiveness of any remediation or mitigation options;
 - iv. Identify the recommended options for remediation and mitigation;
 - v. Identify the proposed offset goal to achieve remediation and/or mitigation with respect to the approximate equivalent loadings from the sewage spill;
 - vi. Propose a methodology for quantification with respect to the offset of the loadings for any remediation and/or mitigation measures to meet the intended goal for overall remediation and/or mitigation to address the added TP loading from the spill; and
 - vii. Identify and propose timelines to implement the recommended remediation or mitigation measures to offset loadings from TP, impacts to dissolved oxygen from nutrients or other measures that may improve existing or potential impairments with identification of options that can be implemented as soon as possible to start to reduce the on-going or potential impacts.
10. Within three (3) weeks of approval of Item 8 above, submit to the undersigned Provincial Officer for approval, a proposed workplan for the approved remediation/mitigation measures for Cootes Paradise/Western Hamilton Harbour Area ("Cootes Paradise Workplan"). The workplan shall consider and address, as necessary, Work Ordered in Item 8 and 9 above and any ministry comments upon approval of Item 8, and shall include, but not be limited to, the following:
- i) A detailed workplan and timeline for carrying out the approved remediation/mitigation options within the Cootes Paradise/Western Hamilton Harbour Area;
 - ii) Calculations referred to in Item 9 iv) and v) or as otherwise approved; and
 - iii) Proposed follow-up monitoring required to ensure the recovery and effectiveness of the remediation plan.
11. Within two (2) weeks of the approval obtained pursuant to item 10 above, commence implementation of the approved Cootes Paradise Workplan within the timelines set out in the approval.
12. Submit a report prepared by the Qualified Person within one (1) month of the completion of the work undertaken pursuant to the approved Cootes Paradise Workplan to the undersigned Provincial Officer confirming that the natural environment has been restored and outlining the completed items and the work undertaken to restore the natural environment, including, but not limited to, the following:
- i) Any monitoring results completed before, during and after the work undertaken in accordance with Cootes Paradise Workplan;
 - ii) Analysis of the results in Item 12 (i) above for the purpose of the intended monitoring; and
 - iii) Determination if any requirement for on-going monitoring is needed to verify the effectiveness or maintenance of the remedial actions undertaken as necessary.

Communication

13. Provide notice to any impacted landowner(s) of the following items:

- i) within 7 days of submission of any proposed workplan(s) submitted to the undersigned Provincial Officer for approval; and
- ii) within 7 days of the approval of any workplan(s) by the undersigned Provincial Officer.

14. Provide notice to any impacted landowner(s) at least seven (7) days before the implementation of any work on the approved Chedoke Creek Workplan or the approved Cootes Paradise Workplan;

15. Within seven (7) days of any work on the Chedoke Creek Workplan and the Cootes Paradise Workplan, provide written confirmation to undersigned Provincial Officer, that implementation of the approved workplan(s) has commenced.

16. Commencing March 1, 2021 and on the first day of the month, until the completion report for each workplan is submitted, submit a three (3) month summary report, prepared by the Qualified Person(s), to the undersigned Provincial Officer, detailing all of the actions taken in implementing the approved workplan in the preceding three months.

17. Within (2) days of any limitations or changes being identified to the approved workplans, notify the undersigned Provincial Officer and within two (2) weeks, submit, in writing for review and acceptance, any proposed changes to an approved workplan with the relevant information to support any proposed changes. Written acceptance by the undersigned Provincial Officer of the proposed changes is required prior to implementation of any proposed changes.

18. Prior to the first of each month, provide to the undersigned Provincial Officer written, monthly progress updates on the progress made to comply with this Order.

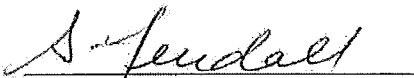
19. In conjunction with the written monthly progress updates, the City shall meet with the undersigned Provincial Officer within 7 days of the submission of the monthly report to discuss the progress reports.

20. Post this Order on the web site of the City for public viewing within 24 hours of it being served and it shall remain posted unless otherwise directed by the undersigned Provincial Officer.

- A. While this Order is in effect, a copy or copies of this order shall be posted in a conspicuous place.
- B. While the Order is in effect, report in writing, to the District or Area Office, any significant changes of operation, emission, ownership, tenancy or other legal status of the facility or operation.

This Order is being issued for the reasons set out in the annexed Provincial Officer's Report which forms part of the Order.

Issued at City of Hamilton this 20/11/2020 (dd/mm/yyyy)



Shelley Yeudall
Badge Number: 881
Hamilton District

APPEAL/REVIEW INFORMATION

REQUEST FOR REVIEW

You may request that this order be reviewed by the Director. Your request must be made in writing (or orally with written confirmation) within seven days of service of this order and sent by mail or fax to the Director at the address below. In the written request or written confirmation you must,

- specify the portions of this order that you wish to be reviewed;
- include any submissions to be considered by the Director with respect to issuance of the order to you or any other person and within respect to the contents of the order;
- apply for a stay of this order, if necessary; and provide an address for service by one of the following means:
 1. Mail
 2. Fax

The Director may confirm, alter or revoke this order. If this order is revoked by the Director, you will be notified in writing. If this order is confirmed or amended by order of the Director, the Director's order will be served upon you. The Director's order will include instructions for requiring a hearing before the Environmental Review Tribunal.

DEEMED CONFIRMATION OF THIS ORDER

If you do not receive oral or written notice of the Director's decision within seven days of receipt of your request, this order is deemed to be confirmed by order of the Director and deemed to be served upon you.

You may require a hearing before the Environmental Review Tribunal if, within 15 days of service of the confirming order deemed to have been made by the Director, you serve written notice of your appeal on the Environmental Review Tribunal and the Director. Your notice must state the portions of the order for which a hearing is required and the grounds on which you intend to rely at the hearing. Except by leave of the Environmental Review Tribunal, you are not entitled to appeal a portion of the order or to rely on grounds of appeal that are not stated in the notice requiring the hearing. Unless stayed by the Environmental Review Tribunal, the order is effective from the date of service.

Written notice requiring a hearing must be served personally or by mail upon:

The Secretary
Environmental Review Tribunal
655 Bay Street, 15th Floor
Toronto, ON M5G 1E5

and

Director (Provincial Officer Orders)
Ministry of the Environment, Conservation and Parks
119 King St. W., 9th floor Hamilton, ON, L8P 4Y7
Fax: (905) 521-7806

Where service is made by mail, it is deemed to be made on the fifth day after the date of mailing and the time for requiring a hearing is not extended by choosing service by mail.

Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal by

Tel: (416) 212-6349

Fax: (416) 326-5370

www.ert.gov.on.ca

FOR YOUR INFORMATION

- Unless stayed by the Director of the Environmental Review Tribunal, this order is effective from the date of service. Non-compliance with the requirements of this order constitutes an offence.
- The requirements of this order are minimum requirements only and do not relieve you from complying with the following:
 - Any applicable federal legislation;
 - Any applicable provincial requirements that are not addressed in the order; and
 - Any applicable municipal law.
- The requirements of this order are severable. If any requirement of this order or the application of any requirement to any circumstances is held invalid, the application of such requirement to other circumstances and the remainder of the order are not affected.
- Further orders may be issued in accordance with the legislation as circumstances require.
- The procedures to request a review by the Director and other information provided above are intended as a guide. The legislation should be consulted for additional details and accurate reference.

Appendix A - Site Map
Chedoke Creek downstream of the Main King Combined Sewer
Overflow discharge pipes, the eastern end of Cootes Paradise
and western end of Hamilton

Drawing Water and Environmental Compliance Division
Central Region Technical Support Section

- Legend**
- Chedoke Creek Outfall
 - Point of Interest
 - Main King Combined Sewer Overflow Tank and Pumping Station (MCSO)
 - Combined Sewer Overflow Tank Overflow Pipe
 - Glen Road, Hamilton
- Land Use**
- Vacant (no colour)
 - Agricultural
 - Residential
 - Commercial
 - Industrial
 - Institutional
 - Special/Exempt
 - Government



Data Sources, Uses and Constraints

1. Parcel boundaries and taxmaps provided by the Ministry of Natural Resources and Forestry
2. Land Use Information provided by the Municipal Property Assessment Corporation

Disclaimer

The map shown here is for illustration purposes only. Ministry of the Environment, Conservation and Parks does not warrant, represent, or guarantee the accuracy, reliability, or completeness of the information provided. While every effort has been made to use data believed to be accurate, a degree of error is inherent in all maps. Map products are provided as a service to the public and Ministry of the Environment, Conservation and Parks will accept no liability for consequential and indirect damages arising from the use of this map. This map is distributed "as is" without warranties of any kind, either express or implied, including but not limited to warranties of suitability to a particular purpose or use.

