




INFORMATION REPORT

TO:	Chair and Members Public Works Committee
COMMITTEE DATE:	July 6, 2022
SUBJECT/REPORT NO:	Surface Water Quality Program 2021 Annual Update (PW22058) (City Wide)
WARD(S) AFFECTED:	City Wide
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COUNCIL DIRECTION

Not Applicable.

INFORMATION

Report PW22058 serves to provide an update to Public Works Committee on the progress and successes of the Surface Water Quality Program (SWQP) for 2021, including stakeholder/partnership engagement and the overall framework for the SWQP.

Public Works Committee at its meeting of July 14, 2021, received the Enhanced Inspection and Monitoring – Hamilton Water and Wastewater Report (PW21019). Within PW21019, Hamilton Water made a commitment to provide an annual Surface Water Quality Report outlining the status of the SWQP, as well as other general highlights.

On June 22, 2020, a Water Quality Technologist (WQT) was hired by the Hamilton Water, Environmental Monitoring and Enforcement Unit (EME) to support the development of a SWQP.

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

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

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

To date, the following actions have been completed:

2020

- Inventory of receiving water bodies/watercourses;
- Inventory of Hamilton Water's stormwater and wastewater infrastructure assets with direct or indirect influence on Hamilton's surface water;
- Review of key internal and external background water quality program data;
- Identification and communication with key internal and external partners; and
- Four (4) locations were sampled by EME at Chedoke Creek.

2021

- Development of the SWPQ Framework;
- Internal and External engagement and review, which captured feedback and edits, of the SWQP Framework. Overall, the engagement and feedback received was positive; generating many discussions and questions that enhanced the SWQP for the City of Hamilton (City);
- In addition to the four (4) locations at Chedoke Creek, preliminary SWQP sampling began. The number of locations was increased to include an additional four (4) locations at Chedoke Creek and five (5) locations at Red Hill Valley Creek, two (2) locations at Battlefield Creek, and 10 locations within the Urban Core (Hamilton Harbour) area; and,
- Launch of the City of Hamilton's SWQP website with data sharing, through Open Hamilton that describes the program and enables the sharing of data with the public (<https://www.hamilton.ca/surfacewaterquality>).

Meetings were held with both internal staff and external partners in the development of the SWPQ Framework (presented in Appendix "A" to report PW22058) which included the following parties listed in Table 1.

Table 1 – Internal and External SWQP partners

Internal	External
Hamilton Water, including: Compliance and Regulations Section (C&R) Customer Service and Community Outreach Section (CS&CO) Environmental Monitoring and Enforcement Section (EME) Plant Operations (PO)	Hamilton Conservation Authority (HCA)
	Royal Botanical Gardens (RBG)
	Bay Area Restoration Council (BARC)
	Environment Hamilton
	Niagara Peninsula Conservation Authority (NPCA)
	Conservation Halton (CH)
	Grand River Conservation Authority (GRCA)

SUBJECT: Surface Water Quality Report 2021 Annual Update (PW22058) (City Wide) – Page 3 of 5

Internal	External
Water Distribution and Wastewater Collection Section (WDWWC)	Ministry of Environment, Conservation and Parks (MECP)
Watershed Management (WM)	Environment and Climate Change Canada (ECCC)
Water/Wastewater Systems Planning Section (WWWSP)	Redeemer College
Water Information Systems Unit (WIS)	Mohawk College
Woodward Upgrades Program (WUP)	McMaster University
Healthy and Safe Communities Division, including:	Ministry of Transportation (MTO)
Food and Water Safety Section	Hamilton Harbour Remedial Action Plan (HHRAP) which also includes Members from:
Indigenous Relations Section	- Cootes Paradise-Grindstone Water Quality Sub-committee
Environmental Services Division:	- Halton Region
Parks and Cemeteries Section	- McMaster University
Waste Management Division:	- Hamilton Industrial Environmental Association (HIEA), including Stelco and ArcelorMittal Dofasco
Recycling and Waste Disposal Section	- Hamilton Oshawa Port Authority (HOPA)
	- Fisheries and Oceans Canada (DFO)
	Ministry of Natural Resources and Forestry (MNRF)
	Transport Canada (TC)
	Stewards of Cootes Watershed and Stewards of Red Hill
	Friends of Cootes to Escarpment EcoPark System

In Q2 2022, the SWQP Framework attached as Appendix “A” to Report PW22058 was finalized. The SWQP Framework is a starting point for the City of Hamilton in gaining a holistic understanding of surface water quality and the potential impacts that various City assets may have on the natural environment. It highlights Hamilton’s major receiving water bodies, wastewater collection and treatment systems, internal and external partner engagement and a three-phased approach of program implementation.

- Phase I establishes a monthly surface water monitoring plan, sampling 33 locations throughout the City;

- Phase II focuses on assessing the initial sampling plan and making modifications as needed and expanding the coverage of the monitoring plan. This phase will take place between 2-5 years; and,
- From the baseline information captured in Phases I and II, Phase III will focus on infrastructure investment needed to better protect the receiving waters, as well as prioritizing identified areas of interest/on-going water quality anomalies, or hot spots, for regular inspection and enforcement activities, as needed.

As outlined in the SWQP, Hamilton's goal is to build a baseline understanding of ambient surface water conditions over time, develop open communication and transparency with various partners, and respond to and investigate any water quality anomalies that may be due to infrastructure malfunctions and standard operating conditions. The SWQP will also help to guide refinements of standard operating conditions and identify non-point source contaminants throughout Hamilton's Watersheds.

The SWQP Framework is a living document, that will be reviewed on an annual basis. It is a road map in ensuring there is a clear oversight of Hamilton's assets and the corresponding receiving waters. An annual program update will continue to be presented to Council outlining the successes, challenges, and other technical components of the Program. Any conditions that require immediate attention, will be addressed via the existing Hamilton Water Spill Response protocol.

Key parameters sampled for the SWQP throughout 2021 until May 2022, are presented in graph form, attached as Appendix "B" to Report PW22058. The graphs show the monthly average water quality results for each watershed/sub-watershed, in relation to other sample locations within that catchment. The key parameters presented are E. coli, Total Phosphorus, Dissolved Oxygen (DO), Chloride and Conductivity. The full dataset is available for download on the City's website (<https://www.hamilton.ca/surfacewaterquality>).

The WQT presented the SWQP Framework and collected 2021 water quality data to the Hamilton Harbour Remedial Action Plan (HHRAP) for their 2022 Science Days. It is too early within the SWQP to discuss surface water quality baseline trends; however, the 2021 data provides a great overview of preliminary data and potential hot spots that may require further investigation. As more data is collected, staff will be able to identify seasonal trends and isolate water quality baselines for wet and dry weather events. Additional SWQP data, complemented by external partner surface water quality data, will help the City to identify specific areas or events that require further investigation. Trending the data will support meaningful communication with our water quality partners; furthering the watershed approach to water quality discussions and actions.

Upcoming 2022 SWQP tasks, include:

- Continue monthly sampling at the 33 Phase I sample locations;
- Bi-annual data review with senior leadership;
- Draft water quality thresholds that will trigger additional sampling and/or investigation;
- Finalize Memorandums of Understanding (MOU) with all partners for data sharing of external surface water quality data on the public-facing SWQP Website;
- Develop intuitive approach to import external water quality data into the City's SWQP Website;
- Continue integrating the SWQP program into Hamilton Water's Spill Response protocol;
- Continue working with internal and external parties to enhance the communication between the multiple individuals and groups that are involved with water quality and the watershed approach; and,
- Develop SWQP Standard Operating Procedures (SOPs).

Council's investment to support the SWQP, is providing better visibility in the field and is setting the groundwork for a watershed management approach. Continued development of the SWQP and watershed management approach may require additional investments in the future which will be discussed in the annual reports and included in Water, Wastewater and Storm Rate budget deliberations.

APPENDICES AND SCHEDULES ATTACHED

Appendix "A" to Report PW22058 – SWQP Framework

Appendix "B" to Report PW22058 – SWQP Water Quality Data