



Conservation Advisory Board Meeting Agenda

December 14, 2023

This page intentionally left blank.



Notice of Meeting Conservation Advisory Board

Thursday, December 14, 2023

4:00 p.m.

at the HCA Main Office 838 Mineral Springs Road, Ancaster

Hamilton Conservation Authority is now conducting meetings in a hybrid format via an in-person and WebEx platform.

All hybrid meetings can be viewed live on HCA's You Tube Channel:

<https://www.youtube.com/user/HamiltonConservation>

- 1. Welcome** – Wayne Terryberry
- 2. Declaration of Conflict of Interest** – Wayne Terryberry
- 3. Approval of Agenda** – Wayne Terryberry
- 4. Delegations**
- 5. Member Briefing**
- 6. Chair's Report on Board of Directors Actions** – Wayne Terryberry
 - CA 2323 Oak Wilt Mapping & Workplan
 - CA 2324 HCA Trail Guide Mobile App Project Summary
- 7. Approval of Minutes of Previous Meeting**
 - 7.1. Minutes – Conservation Advisory Board (August 10, 2023) – Wayne Terryberry Page 1
- 8. Business Arising from the Minutes**
- 9. Staff Information/Presentation for Facilitated Input**
 - 9.1. Ecological & Water Resources Monitoring Programs Overview – Mike Stone / Lesley McDonell / Colin Oaks Page 7

10. Staff Reports/Memorandums

Reports for Recommendation

- | | | |
|---|--------------------|---------|
| 10.1. HCA Shoreline Management Plan | – Mike Stone | Page 31 |
| 10.2. HCA Floodplain Mapping Projects – Status Update | – Jonathan Bastien | Page 37 |

Memorandums to be Received

- | | |
|--------------------------------------|-------------|
| 10.3. Valens Lookout Platform Update | – Matt Hall |
|--------------------------------------|-------------|

11. New Business

12. Next Meeting – Thursday, February 8, 2023 at 4:00 p.m.

13. Adjournment

HAMILTON CONSERVATION AUTHORITY

Conservation Advisory Board

MINUTES

August 10, 2023

Minutes of the Conservation Advisory Board meeting held on Thursday, August 10, 2023 at 4:00 p.m., at Fifty Point Conservation Area, 1479 Baseline Road, Winona.

PRESENT: Wayne Terryberry – in the Chair
 Lisa DiCesare
 Haley McRae
 Cortney Oliver
 Brian McHattie
 Sherry O'Connor
 Brad Clark – Ex-Officio

REGRETS: Tyler Cunningham, Natalie Faught

STAFF PRESENT: Lisa Burnside, Grace Correia, Gord Costie, Lindsay Davidson, Scott Fleming, Liam Fletcher, Matt Hall, Bruce Harschnitz, Jasmine Marinelli, Lesley McDonell, Scott Peck, Karen Phong, Jonathan Roberts, Mike Stone, Jaime Tellier, and Nancy Watts

OTHERS: Media – Richard Leitner

1. Welcome

The Chair called the meeting to order and welcomed everyone present.

2. Site Tours

2.1. Fifty Point CA Watercourse and Pond Restoration Project

Scott Peck provided an overview of the watercourse and pond restoration project. The watercourse diversion and wetland creation will mitigate flooding from Watercourse-11 along Windermere Road and facilitate a self-sustaining fishery within the existing ponds. Funding for the project has been allocated from the 2022 operating surplus. Staff are also applying for grants to support the project.

Archeological assessments for the project are complete and did not result in any findings. Permission from Fisheries and Oceans Canada is the only remaining approval required for the project. Staff do not anticipate any challenges to the approval as the project is creating fish habitat. Matt Hall advised CAB that the capital division will be installing a new accessible fishing dock , allowing all user groups to enjoy enhanced fishing opportunities. Staff will be preparing promotional materials to communicate the scope and value of the project to patrons.

2.2. Fifty Point Entrance Improvements

Gord Costie shared details of improvements to the entrance of the Conservation Area. Fifty Point is the smallest but one of the busiest conservation areas within HCA. Access to the area was a common theme in comments in the recently completed master plan. To expedite entrance to the area, a third lane and second gatehouse were added. Additionally, online advanced day-pass sales has also been launched. Matt Hall advised CAB that additional improvements are planned for the remaining roadway into the area. The intent is to better accommodate pedestrian, cyclist, and vehicular users.

3. Declaration of Conflict of Interest

The Chair asked members to declare any conflicts under the HCA Administrative By-law. There were none.

4. Approval of Agenda

The Chair requested any additions or deletions to the agenda.

**CA 2320 MOVED BY: Lisa DiCesare
 SECONDED BY: Brian McHattie**

THAT the agenda be approved.

CARRIED

5. Delegations

There were none.

6. Election of Vice Chair

Wayne Terryberry reviewed the election procedures. He then called for nominations for the 2023 Vice-Chair of the Conservation Advisory Board.

Nominated: Sherry O'Connor

By – Mover: Cortney Oliver

Wayne called for nominations twice more. Having no further nominations, he asked Sherry O'Connor if she accept the nomination. The election for the office of Conservation Advisory Board Vice-Chair for 2023 was then closed and the position acclaimed with the following resolution.

**CA 2321 MOVED BY: Cortney Oliver
 SECONDED BY: Haley McRae**

THAT nominations for the 2023 Vice-Chair of the Conservation Advisory Board be closed and Sherry O'Connor be confirmed as Vice-Chair of the Hamilton Conservation Authority Conservation Advisory Board for 2023.

CARRIED

7. Chairman's Report on Board of Directors Actions

The following recommendations from the Conservation Advisory Board were approved at the July 6, 2023 Board of Directors meeting.

CA 2318 Proposal to Terminate HCA Water Quality Monitoring
Related to Darling Ingredients Effluent Discharge to
Christie Lake

CA 2319 Fifty Point Watercourse and Pond Restoration
Project Update / Final Design

8. Approval of Minutes of Previous Meeting

8.1. Minutes – Conservation Advisory Board (June 8, 2023)

**CA 2322 MOVED BY: Sherry O'Connor
 SECONDED BY: Haley McRae**

THAT the minutes of the June 8, 2023 Conservation Advisory Board meeting be approved.

CARRIED

9. Business Arising from the Minutes

There was none.

10. Staff Reports/Memorandums

10.1. Oak Wilt Mapping & Work Plan

Lesley McDonnell provided a summary of the report and answered the members' questions.

The need for public education on Oak Wilt was discussed. The Canadian Food Inspection Agency (CFIA) has released material that HCA can promote on our social media. Staff are continuing to monitor CFIA to understand if a fungicide prevention plan will be recommended. Currently, CFIA is recommending mechanical separation of roots.

**CA 2323 MOVED BY: Lisa DiCesare
 SECONDED BY: Cortney Oliver**

THAT the Conservation Advisory Board recommends to the Board of Directors:

THAT the Oak Wilt Mapping and Work Plan as detailed in this report be approved, and further;

THAT the Oak Wilt Mapping and Work Plan be incorporated into the HCA's Invasive Species Strategy update.

CARRIED

10.2. HCA Trail Guide Mobile App Project Update

Jasmine Marinelli presented a summary of the report and answered the members' questions.

A QR code to the trail app will be on the main trailhead signage and on the HCA website. There is potential to add other HCA-related messaging to the app content.

**CA 2324 MOVED BY: Brian McHattie
 SECONDED BY: Haley McRae**

THAT the Conservation Advisory Board recommends to the Board of Directors:

THAT the Trail Guide Mobile App Project Update be received and further;

THAT staff continue to expand the App to other major HCA conservation areas as part of operational work plans.

CARRIED

11. New Business

There was none.

12. Next Meeting

The next meeting of the CAB is scheduled for Thursday, October 12, 2023 at 4:00 p.m., at the HCA Main Administration Office – Woodend Auditorium.

13. Adjournment

On motion, the meeting was adjourned.

This page intentionally left blank.

Ecological & Water Resources Monitoring Programs Overview

CAB Meeting - December 14, 2023



A Healthy Watershed for Everyone

Aquatic Resource Monitoring Program

- Officially began in 2005, however HCA has been monitoring portions of the watershed since 1993.
- Watershed is divided into 3 sampling areas and monitoring is rotated yearly between them.
- 13 sites are spread across the 3 sampling areas and are monitored annually.
- An additional ~13 sites in each of the 3 sampling areas monitored on a rotating annual basis.
- Data is housed in a database on SQL server.



Aquatic Resource Monitoring Program

Sampled for:

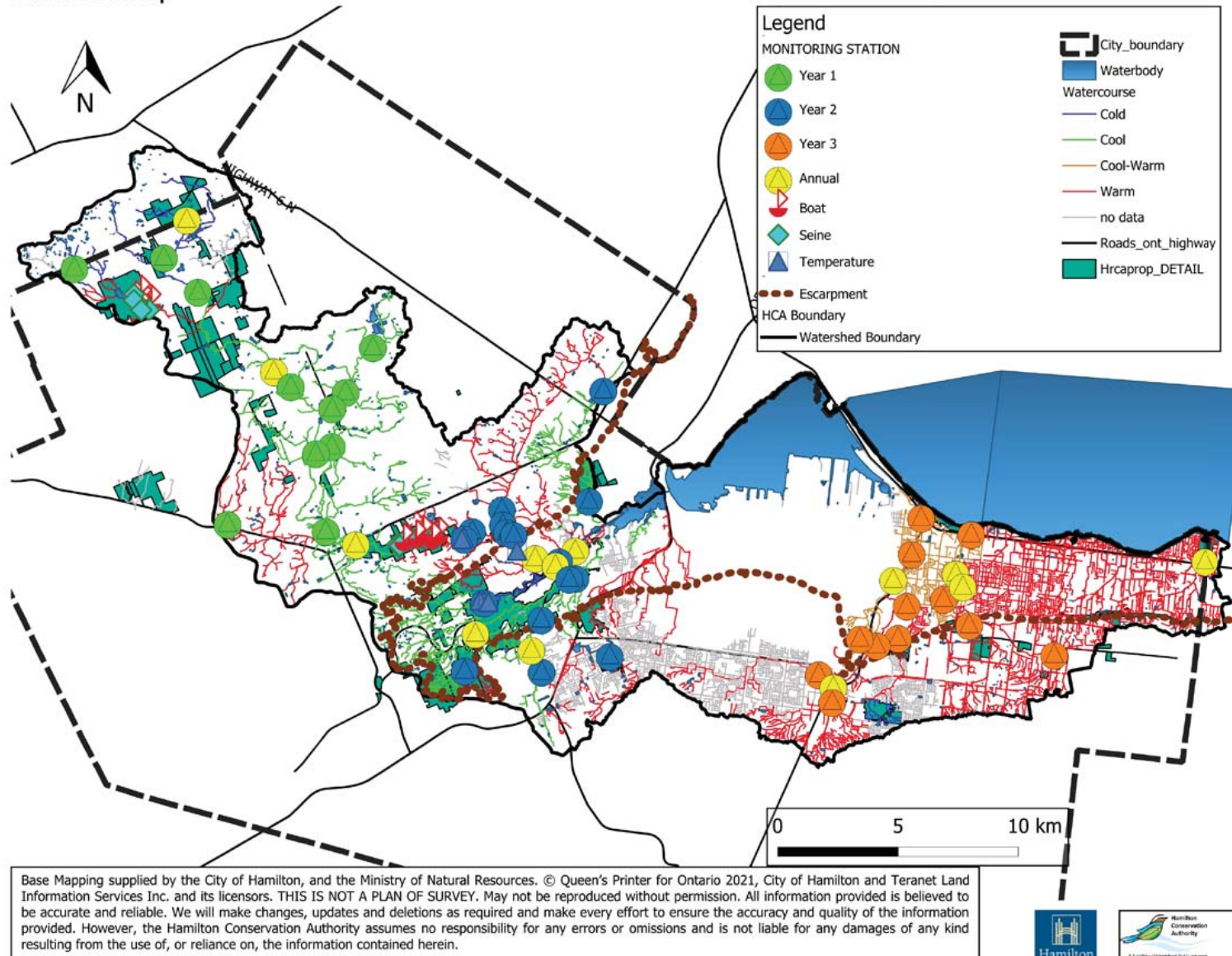
- Fish community.
- Benthic Invertebrate community.
- Temperature (currently just Spencer Creek).

Reporting:

- Annual permit sampling reports for MNRF and DFO.
- Benthic data used for the Watershed Report Card.
- Subwatershed Reports (currently in infancy).
- Data Requests (City, Consultants, partner organizations).



ARMP Field Map



Aquatic Resource Monitoring Program

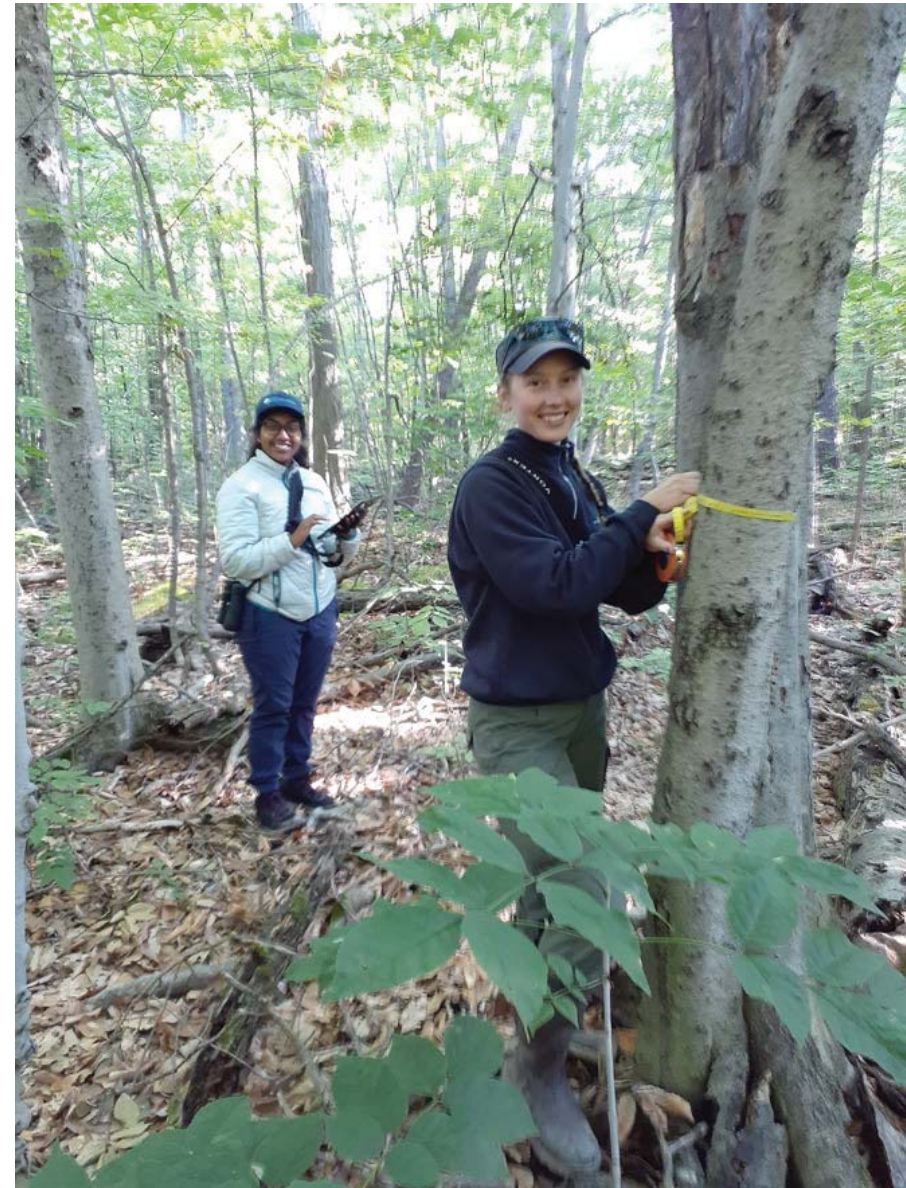
Current Analysis

- Fish data has a modified Index of Biological Integrity (IBI).
- Benthic Data is used to calculate an IBI for Watershed Report Card score.
- Stream temperature – Trend over time.

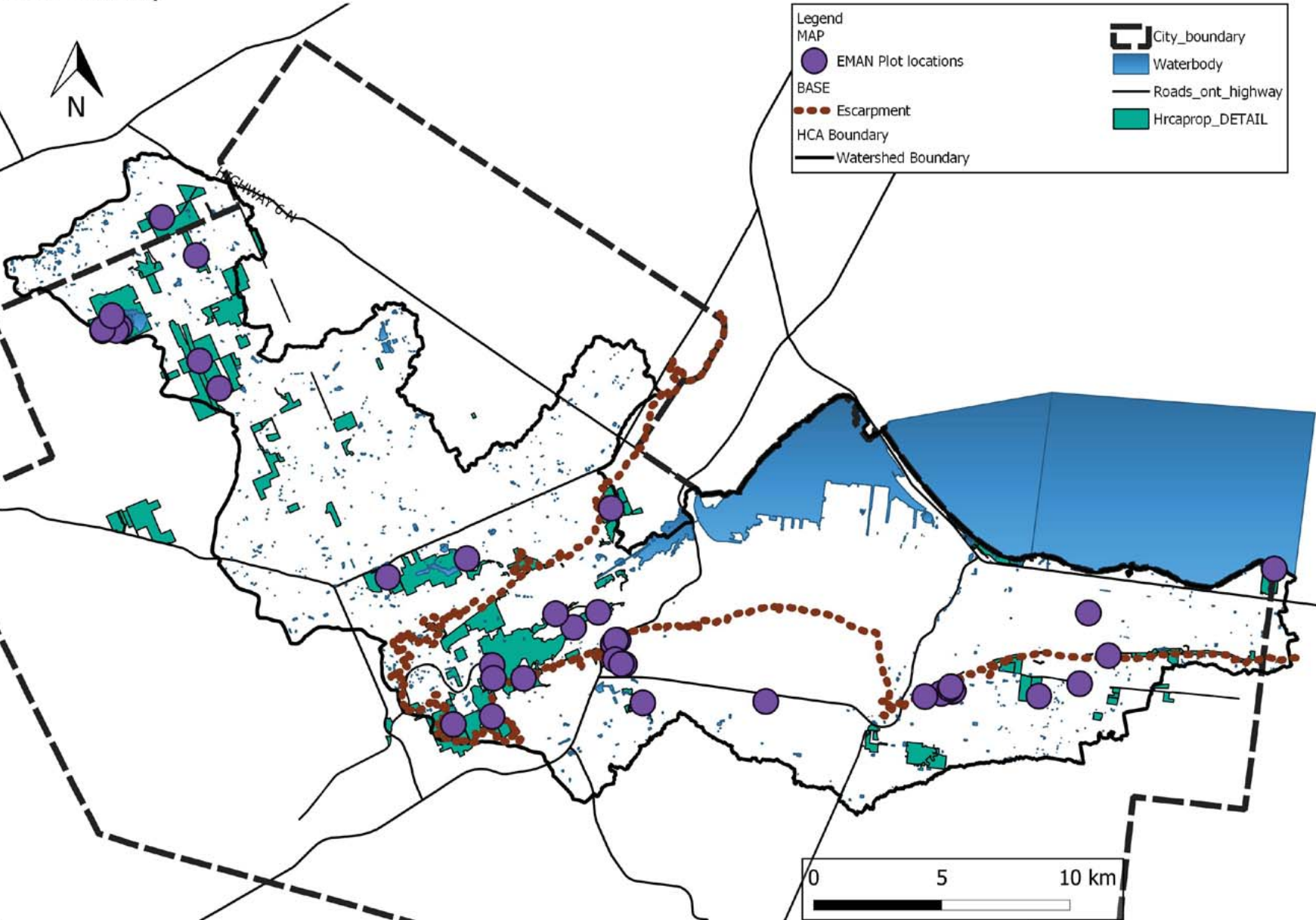


Terrestrial Resource Monitoring Program

- Started in 2013.
- 40 plots across the watershed.
- 10 plots monitored per year over 4 years.
- 19 plots within the urban boundary and 21 plots in the rural boundary.
- Clusters of plots in 4 Conservation Areas (Dundas Valley, Iroquoia Heights, Felkers Falls and Valens Lake Conservation Areas).
- Plots are 20x20m in size.



TRMP Field Map



Base Mapping supplied by the City of Hamilton, and the Ministry of Natural Resources. © Queen's Printer for Ontario 2021, City of Hamilton and Teranet Land Information Services Inc. and its licensors. THIS IS NOT A PLAN OF SURVEY. May not be reproduced without permission. All information provided is believed to be accurate and reliable. We will make changes, updates and deletions as required and make every effort to ensure the accuracy and quality of the information provided. However, the Hamilton Conservation Authority assumes no responsibility for any errors or omissions and is not liable for any damages of any kind resulting from the use of, or reliance on, the information contained herein.



Terrestrial Resource Monitoring Program

Monitor eight metrics

1. Tree health
2. Deadwood
3. Tree mortality
4. Native plant richness
5. Non-native species
6. Mean Coefficient of Conservativism
7. Spring ephemerals
8. Sampling recruitment



Restoration Monitoring

Saltfleet Wetlands (BC-1 & SC-8) & Fifty Point Wetland

- Waterfowl use days
- Plant survival
- Amphibian use
- Fish occurrence
- Invasive species

Christie Lake CA

- Amphibian use

Crooks Hollow/Lower Spencer

- Fish
- Benthics



Aquatic and Terrestrial Resource Monitoring Program Challenges

- Data gaps for coverage of the watershed.
- Temperature monitoring is currently limited to Spencer Creek.
- Complexity of the Watershed.
- Scientific Rigor – Power Analysis.
- Coordination between aquatic and water quality programs.
- Terrestrial monitoring is only forests and only plants.
- Time to write the reports.
- Inputting new data into the database.

Surface Water Quality (Chemistry) Monitoring Programs

1. Hamilton Harbour Remedial Action Plan (HHRAP) - Tributaries to Cootes Paradise
2. Provincial Surface Water Quality Monitoring Network (PWQMN)
3. Provincial Groundwater Monitoring Network (PGMN)

Hamilton Harbour Remedial Action Plan (HHRAP) - Tributaries to Cootes Paradise

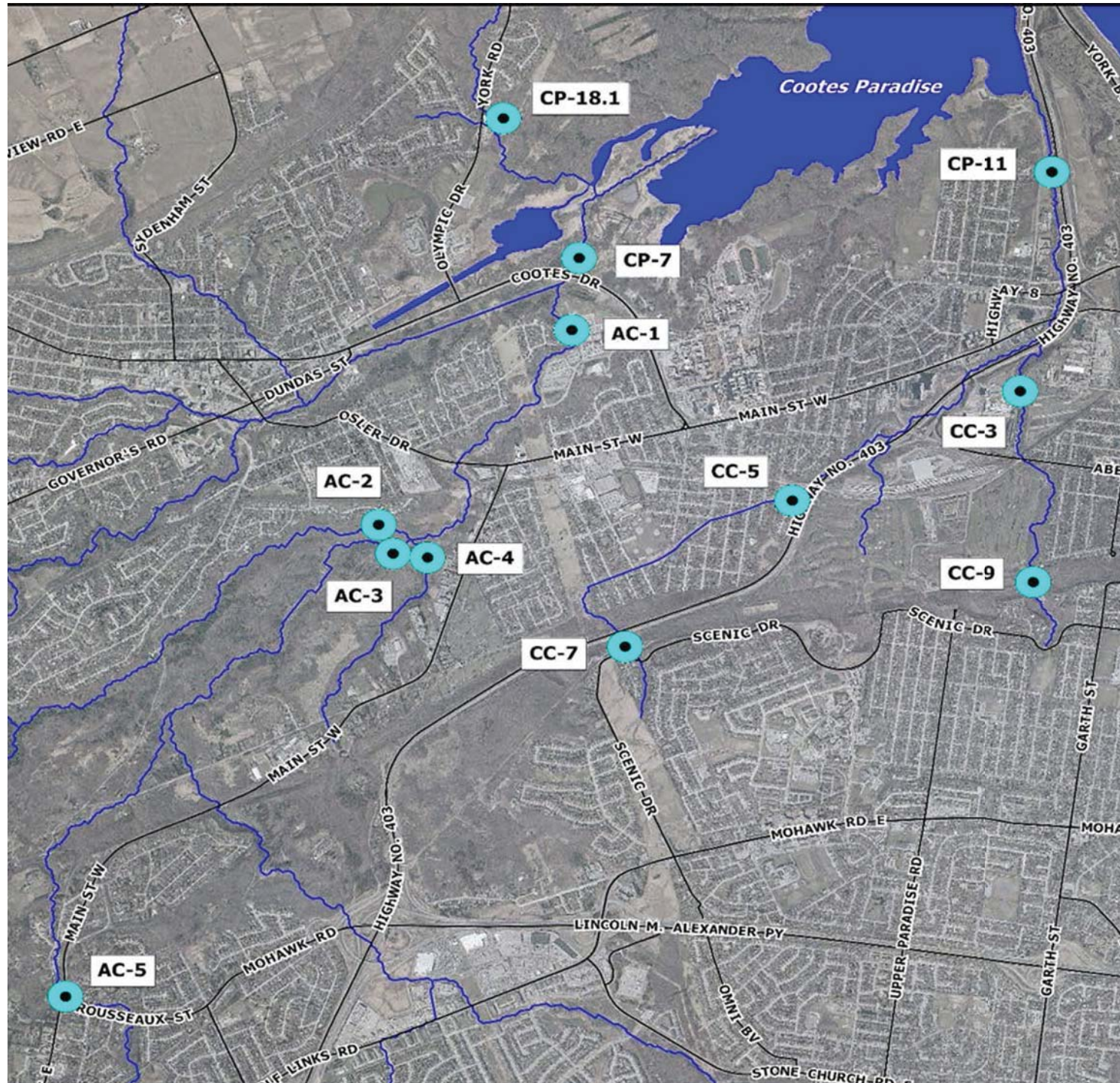
- Designed to help establish inputs of nutrients and sediments from the main creeks in the HCA watershed that drain into Cootes Paradise Marsh to support the HHRAP.
 - Lower Spencer Creek, Chedoke Creek, Borers Creek, Ancaster Creek and Sulphur Creek.
- Program started in April 2014 (took over sampling responsibility from RBG).
- Grab sampling sites expanded from 3 (prior to 2014), to 7 (starting in 2014), to 11 (starting in 2018).
 - Some sampling site locations moved slightly to better represent the overall water quality of the watercourse.

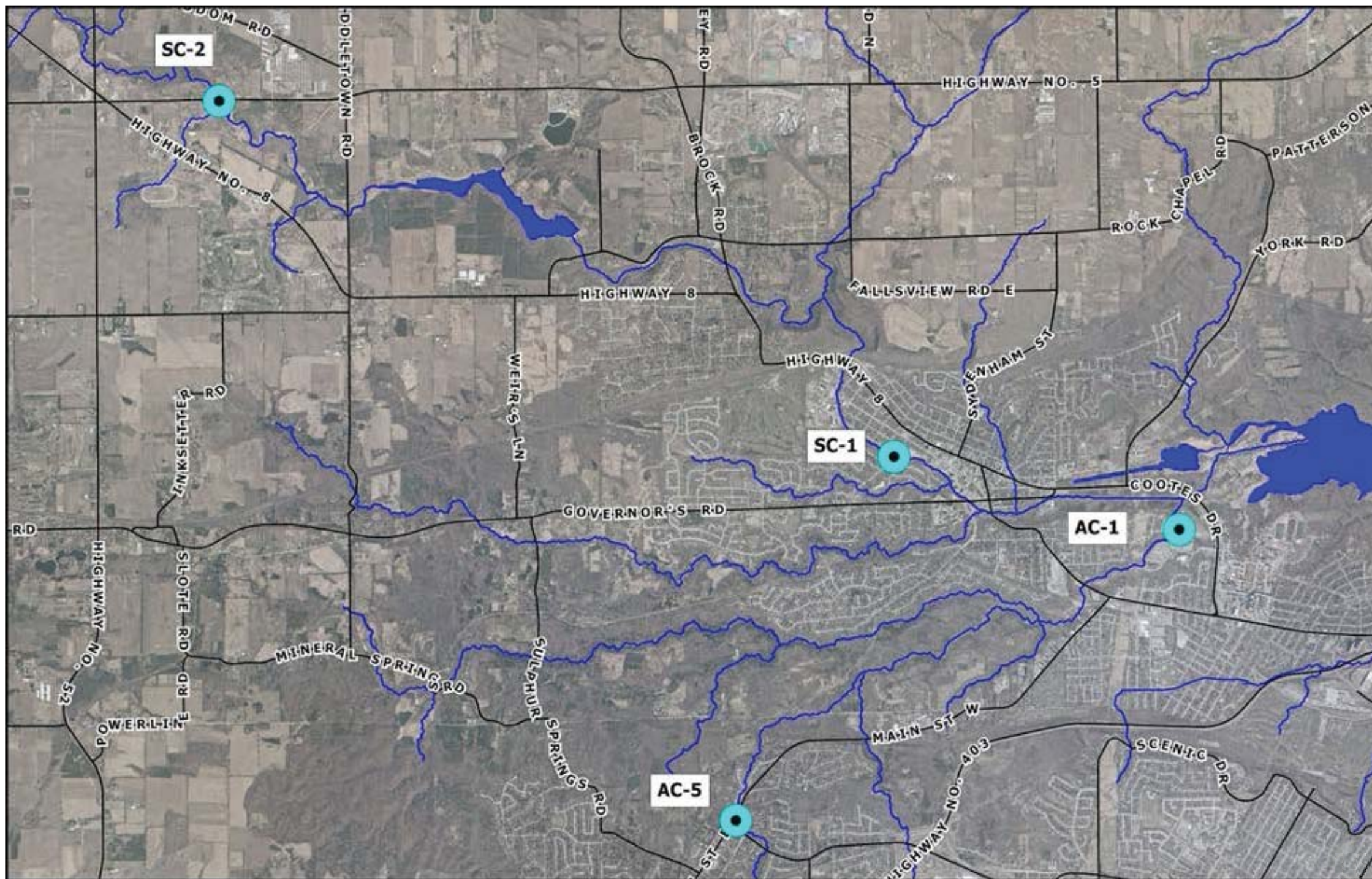
Hamilton Harbour Remedial Action Plan (HHRAP) - Tributaries to Cootes Paradise

- Expanded the biweekly sampling period from April to November, to year-round sampling starting in 2016.
- Program expanded to target heavy rain events using automated composite samplers
 - Ancaster Creek (AC-1) 2015; Ancaster Creek (AC-5) late 2017
 - Lower Spencer Creek late 2016; Middle Spencer Creek 2017

Hamilton Harbour Remedial Action Plan (HHRAP) - Tributaries to Cootes Paradise

- Collected samples analyzed by City lab for total phosphorus, ammonia, nitrate, nitrite, total suspended solids, and E. coli.
- HCA assesses results based on exceedances of targets, average overall concentrations (annual, seasonal), average wet event and dry event concentrations, and long-term trending.
- Annual communication of results to HHRAP and Data is included in 5-year Watershed Report Cards and Data is available for Watershed Studies
- Communication with MECP Spills Action Centre and City Spills Action Centre if water quality results identify any potential significant concerns





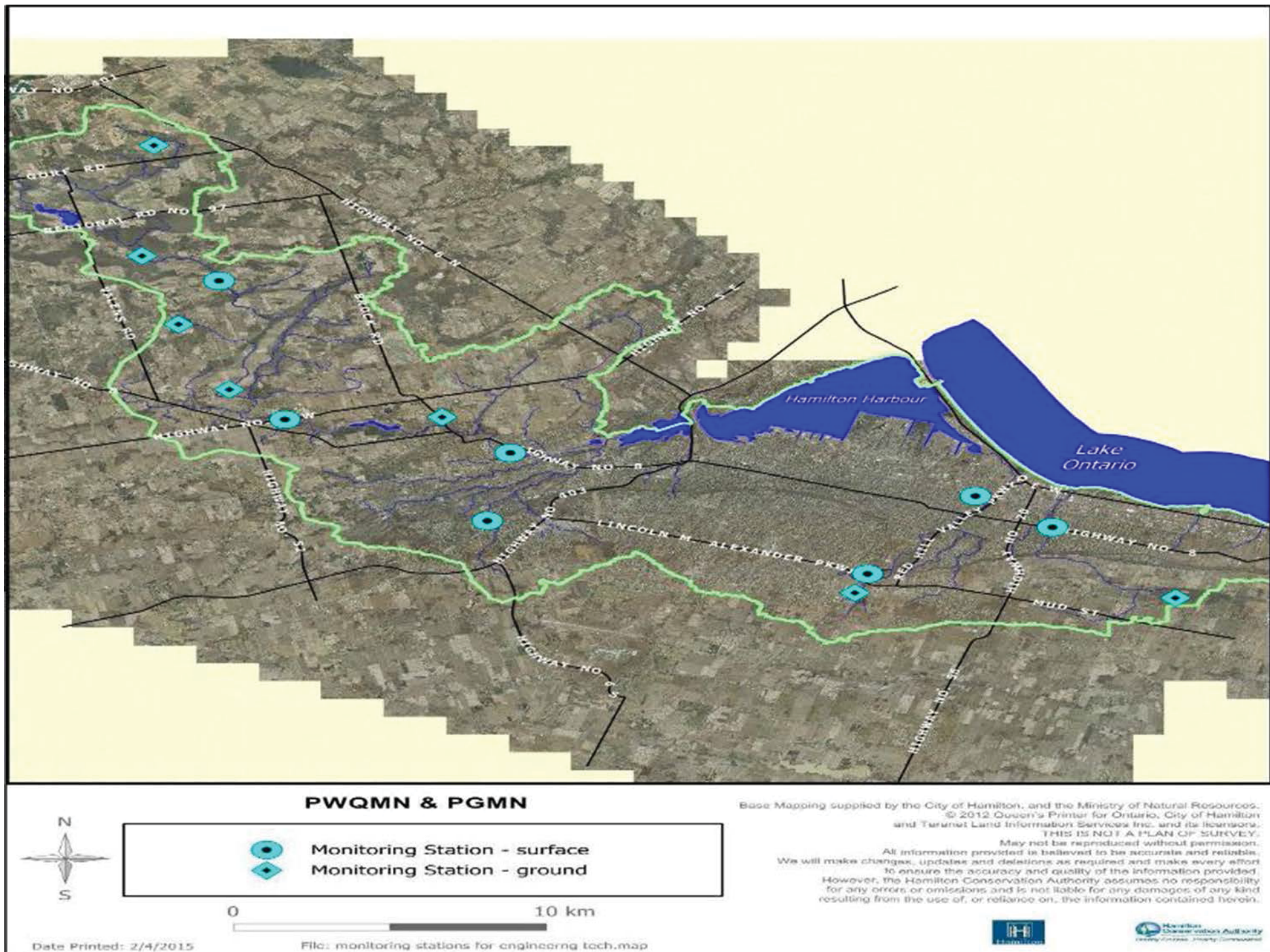


Provincial Surface Water Quality Monitoring Network (PWQMN)

- HCA collects grab samples on behalf of MECP as part of this Provincial long-term surface water quality monitoring program.
- 6 PWQMN stations across the watershed.
- Sampled once per month from April to November.
- Samples are analyzed for general water chemistry and metals by MECP; HCA receives a copy of the sample results.
- Data included in 5-year Watershed Report Cards and data is available for Watershed Studies.

Provincial Groundwater Monitoring Network (PGMN)

- HCA collects grab samples on behalf of MECP as part of this Provincial long-term groundwater water quality monitoring program.
- 7 PGMN sites across the watershed.
- Water quality sampled once per year in fall; HCA also collects groundwater level data for MECP every 2 months.
- Samples are analyzed for general water chemistry and metals by MECP; HCA receives a copy of the sample results.
- Data included in 5-year Watershed Report Cards and data is available for Watershed Studies.



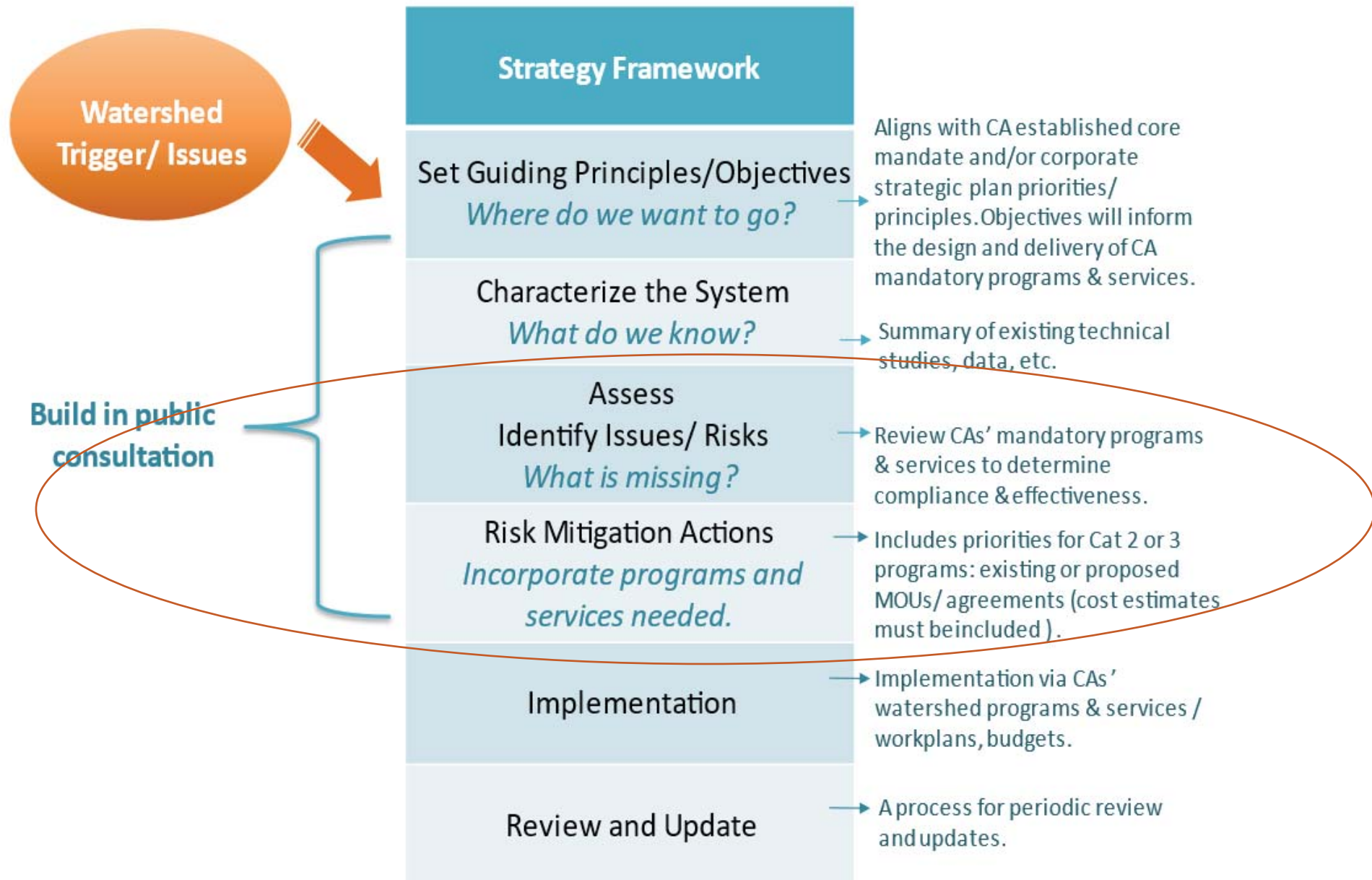
Surface Water Quality (Chemistry) Monitoring Programs - Challenges

- HHRAP monitoring program was not intended to be an environmental spill monitoring program.
- Often difficult to assist in identifying potential sources of identified elevated concentrations from available sampling sites.
- Accurate flow monitoring is challenging (need to convert sampled concentrations to loads).
- Long-term funding for HHRAP Monitoring Program.
- Isolation of the various programs due to who is responsible for analysis and reporting timeframes.
- Coordination between aquatic and water quality programs.
- Time to write the reports.

Watershed-Based Resource Management Strategy

- Ontario Regulation 686/21 - Mandatory Programs and Services – requires CA's to prepare a Watershed-Based Resource Management Strategy (WBRMS) by December 31, 2024.
 - Content generally prescribed in regulation.
 - Conservation Ontario guidance document January 2023.
- Provide summary of existing technical studies, monitoring programs, and other information on natural resources the authority relies on to inform and support delivery of programs / services.
- Undertake a review of programs and services for purpose of:
 - Identifying issues and risks that limit the effectiveness of the delivery of programs and services;
 - Identifying actions to address issues and mitigate risks;
 - Provide cost estimate for the implementation of actions.
- Purpose of WBRMS is to assist CA's with evolving or enhancing the delivery of programs and services, and improve efficiencies and their effectiveness in supporting mandatory Category 1 programs.

Watershed-based Resource Management Strategy Framework



Questions

1. Is the scope of the current monitoring programs adequate?
2. What issues or risks may be limiting the effectiveness of the monitoring programs?
3. What actions might help to address these issues and/or mitigate risks?
4. What are the top priorities to be addressed by the monitoring programs over the next 5 years?

Report

TO: Conservation Advisory Board

FROM: Lisa Burnside, Chief Administrative Officer (CAO)

RECOMMENDED BY: T. Scott Peck, MCIP, RPP, Deputy Chief Administrative Officer

PREPARED BY: Mike Stone, MCIP, RPP, Acting Director, Watershed Management Services

Jonathan Bastien, PEng, Manager, Water Resources Engineering

Alex Nizharadze, PEng, Water Management Specialist

MEETING DATE: December 14, 2023

RE: Hamilton Conservation Authority Shoreline Management Plan

STAFF RECOMMENDATION

THAT the Conservation Advisory Board recommends to the Board of Directors:

THAT the Draft Shoreline Management Plan be received as information;

THAT staff be directed to make the Draft Shoreline Management Plan available for public and stakeholder review and comment; and

THAT the final version of the Shoreline Management Plan based on the public input received then be returned to the Board for adoption.

BACKGROUND & PURPOSE

The Hamilton Conservation Authority's (HCA) watershed includes approximately 42 km of shoreline along Lake Ontario and Hamilton Harbour. This area extends from Fifty

Point Conservation Area at the east end of the watershed to the Woodland Cemetery at the west end of Hamilton Harbour (Figure 1).



Figure 1 – HCA Shoreline

Source: Zuzek Inc, October 2023

Shorelines are dynamic areas, and subject to influence from naturally occurring processes and forces of erosion, sediment transport and deposition, fluctuating water levels, wind and waves. As a result of these conditions, areas that lie along the Lake Ontario shoreline, including Hamilton Harbour, may be subject to hazardous conditions, including flooding hazards, erosion hazards and dynamic beach hazards.

The western end of the Lake Ontario shoreline within the HCA watershed consists of an approximately 8 km continuous stretch of dynamic beach, which is largely in public ownership (Hamilton Beach). The eastern half of the shoreline and Hamilton Harbour are predominantly in private ownership and developed; the shoreline in these areas has also largely been hardened, with a wide variety of flood and erosion protection structures in place. Interest in property re-development and infilling along this portion of the shoreline has created challenges and resulted in increased risks to public safety and property damage, aggravation of hazardous conditions, and impacts to coastal processes.

The provincial legislative and regulatory framework recognizes there are significant risks associated with development in shoreline areas. As a result, the overall objective of both provincial and HCA policy is to generally direct development to areas outside of shoreline hazard areas. In considering proposals for development on the shoreline, it is necessary to consider and account for the combined landward limits of the flooding, erosion and dynamic beach hazards in order to mitigate, to the greatest extent possible, the potential effects of these hazards on property and human safety, to ensure existing

hazardous conditions are not aggravated, and to provide for the maintenance of coastal processes and conservation of sensitive ecosystems.

Since 2006, HCA has regulated development in areas adjacent to the Lake Ontario and Hamilton Harbour shoreline that may be affected by flooding, erosion or dynamic beaches under Ontario Regulation 161/06 (HCA's Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses) made under the Conservation Authorities Act, R.S.O. 1990. The hazard limits associated with Great Lakes shorelines are delineated based on the Ontario Ministry of Natural Resources and Forestry (MNRF) standards and criteria, and consist of the furthest landward extent of the aggregate of all applicable hazards.

HCA's Planning & Regulation Policies and Guidelines (October 6, 2011) describe how the flooding, erosion and dynamic beach hazard limits are determined based on the provincial standards and criteria, and in consideration of existing available technical information and data. While HCA does map estimated hazard limits for the shoreline and their associated regulated areas, some of the information on which hazard limits are based has become outdated, and current and comprehensive mapping is not available to staff.

Given the above, HCA undertook to have a Shoreline Management Plan (SMP) prepared to assist in defining hazard limits and regulating development along the shoreline. The major objectives of the SMP include:

- Update coastal hazard mapping using the best available data and technical analyses for the entire HCA shoreline of Lake Ontario and Hamilton Harbour.
- Protect new development from coastal hazards, and ensure that it does not impact the environmental features and functions of the shoreline.
- Minimize danger to life and property damage from flooding, erosion, and associated hazards along the shoreline.
- Ensure that the shoreline development adequately addresses hazards through a combination of public and private management and development alternatives;
- Increase the resilience of coastal communities including climate change considerations.
- Incorporate nature-based options to reduce coastal hazards.

In response to a competitive Request for Proposals (RFP), Zuzek Inc., in partnership with SJL Engineering Inc. (SJL) and the Danish Hydraulic Institute (DHI), were retained by HCA in November 2021 to complete the Shoreline Management Plan.

STAFF COMMENT

Zuzek Inc. has completed a Shoreline Management Plan (SMP) for the Hamilton Conservation Authority. The SMP was completed over the 2021-23 period. Key components of the study included:

- Field data collection, including collection of oblique photographs of the entire shoreline and bathymetric data.
- Technical work and assessment to establish long-term recession (erosion) rates and update statistical analysis of lake levels. Numerical modelling tools were used to evaluate spatial variability in storm surge and nearshore wave conditions in the lake and harbour.
- Based on the outputs from the data collection and technical analysis, updated mapping was produced for the flooding, erosion, and dynamic beach hazards.
- Development of reach specific management recommendations for 8 shoreline reaches, based on the study principles of sustainable coastal development, integrated coastal management, and resilient coastal communities.

HCA staff reviewed and provided comment on a first draft of the SMP in May and June 2023. Based on study work completed and HCA comments, the report was updated and revised. The final report was submitted on October 20, 2023. Key findings and recommendations of the SMP include:

- The Lake Ontario shoreline within the HCA watershed is highly erosive, especially on the lake bottom at the toe of existing shoreline protection structures. Maintenance or upgrading of existing shoreline protection structures will be a forever commitment to protect existing dense residential development. Over time, the erosion and flooding hazards may become too severe to support ongoing residential development.
- Hamilton Beach provides almost 8 km of public open space, a waterfront trail, and sandy beaches. The historical sediment sources for this beach have all but disappeared and littoral drift is negatively impacted by lakefill barriers and harbour jetties, which will lead to further management challenges during periods of high lake levels, such as beach, dune, and bank erosion. The implementation of nature-based solutions to increase the resilience of the beach are encouraged, such as dune restoration and beach nourishment, avoiding hard armouring of the shoreline where possible.
- The shoreline in the harbour port lands and recreational amenities in the harbour are all heavily armoured. These shoreline protection structures should be monitored regularly with maintenance completed in a timely manner. Where possible, habitat

enhancement projects, such as rock shoals and islands, should be incorporated into future shoreline protection and maintenance projects.

- Monitoring of the bluffs fronting the Woodland Cemetery in Reach 8 should be completed annually, as signs of slope instability were observed. The shoreline is presently unprotected. Given the low wave energy environment and shallow conditions close to shore, there may be opportunities for innovative nature-based solutions that will protect the bluffs from further erosion and enhance nearshore habitat.

The SMP provides the HCA with updated coastal hazard mapping of its shoreline based on the latest technical information and data, and will assist the HCA in administering its regulation of development on the shoreline under Ontario Regulation 161/06.

The Shoreline Management Plan is a technical document. Notwithstanding, as part of the process to develop and finalize the Shoreline Management Plan, public consultation was included as a requirement to inform the public and stakeholders, including the City of Hamilton, of the findings of the document and to obtain comments. Staff intend to post the Draft Shoreline Management Plan on the HCA's web commenting platform known as "Bang the Table". From the comments received, the Draft Shoreline Management Plan will be finalized and brought forward to a future Board of Directors meeting for adoption.

STRATEGIC PLAN LINKAGE

The initiative refers directly to the HCA Strategic Plan 2019 - 2023:

- **Strategic Priority Area – Water Management**
 - Initiatives – Complete Lakeshore Management Plan.

AGENCY COMMENTS

Not Applicable.

LEGAL/FINANCIAL IMPLICATIONS

Not Applicable.

CONCLUSIONS

The Lake Ontario and Hamilton Harbour shoreline within HCA's watershed is impacted by flooding, erosion and dynamic beach hazards. HCA regulates the shoreline to help

minimize and mitigate the potential for damage to property as a result of hazards. To assist in the management and regulation of the shoreline, HCA retained Zuzek Inc. to complete a SMP. The SMP provides the HCA with updated coastal hazard mapping of its shoreline based on the latest technical information and data, and makes management recommendations on a reach specific basis to assist the HCA in administering its regulation of development on the shoreline under Ontario Regulation 161/06. The Draft Shoreline Management Plan will be made available for public and agency comment and will be finalized and brought forward to a future Board of Directors meeting for adoption.

Report

TO: Conservation Advisory Board

FROM: Lisa Burnside, Chief Administrative Officer (CAO)

RECOMMENDED BY: T. Scott Peck, MCIP, RPP, Deputy Chief Administrative Officer

PREPARED BY: Jonathan Bastien, PEng, Manager, Water Resources Engineering

MEETING DATE: December 14, 2023

RE: Hamilton Conservation Authority Flood Plain Mapping Projects – Status Update

STAFF RECOMMENDATION

THAT the Conservation Advisory Board recommends to the Board of Directors:

THAT the draft flood plain mapping reports and draft flood plain maps be made available for public and stakeholder review and comment; and

THAT the flood plain mapping reports and flood plain maps, based on the public input received, be brought forward for adoption by the Board of Directors.

BACKGROUND

The objective of flood plain management is to prevent the loss of life, minimize property damage and social disruption and encourage a coordinated approach to the use of land and the management of water. The components of flood plain management include directing development away from flood plains through land use planning and regulation of development, protection through structural measures, and emergency response through flood forecasting and warning.

HCA regulates watercourse flood plains to help minimize and mitigate the potential for loss of life and damage to property as a result of flood hazards. Flood plain mapping is a critical tool for HCA in achieving this objective.

Flood plain mapping is typically based on:

- Regulatory storm event (100-year design event or Hurricane Hazel historic storm)
- Historic storm information and does not account for climate change at this time
- Hydrology (Flows) account for rain, thunderstorm, and snow melt events (as required)
- Future land use projections (as per Official Plan)
- Does not account for flow-reduction due to flood control / SWM / storage in the storm sewer system
- Does not account for flooding effects of debris / ice jams during a storm

Additionally, flood plain mapping is typically developed or updated to account for:

- Updated topographic mapping, hydraulic analysis, and hydrologic analysis (including use of more recent land use and climate data) to represent current and future conditions
- Enhanced reproducibility and defensibility
- Extended coverage to additional reaches of watercourses
- Advances in modeling technology
- Production of digital flood plain maps, as opposed to hardcopy maps
- Adherence to a consistent standard

Currently, HCA has existing guidelines regarding the following, to guide the development of flood plain mapping:

- Background Information Report
- Mapping Check / Survey Work

- Hydrology (approach, QA/QC, documentation, preferred parameter values, calibration / verification, etc.)
- Hydraulics (approach, QA/QC, documentation, preferred parameter values, calibration / verification, etc.)
- Flood plain maps

STAFF COMMENT

HCA has a long-term program to systematically improve and expand our flood plain mapping. Currently, the following flood plain mapping studies are ongoing by external consultants:

- Stoney Creek & Battlefield Creek
- Stoney Creek Numbered Watercourses
- Redhill Creek

Maps showing the flood plain mapping study areas are provided in Figures 1 to 3. These three flood plain mapping studies are expected to be completed in draft form in the first quarter of 2024. The studies will develop reports detailing the modeling completed as well as summarizing the peak flows and flood levels at key locations. Flood plain maps detailing the extents of the expected regulatory flooding will also be produced.

HCA staff will review and provide comments on drafts of the reports and flood plain maps, which will then be accounted for in final versions.

These flood plain mapping studies will provide the HCA with updated watercourse flood hazard mapping based on the latest technical information and data and will assist the HCA in administering its regulation of development adjacent to watercourses under Ontario Regulation 161/06.

The flood plain mapping reports and flood plain maps are technical documents. Notwithstanding, as part of the process, public consultation is included as a requirement to inform the public and stakeholders of the findings of the document and to obtain comments. The City of Hamilton and Township of Puslinch will be included in this consultation process. Staff intend to post the reports and flood plain maps on the HCA's web commenting platform known as "Bang the Table". From the comments received, the reports and flood plain maps will be finalized and brought forward to a future Board of Directors meeting for adoption.

STRATEGIC PLAN LINKAGE

The initiative refers directly to the HCA Strategic Plan 2019 - 2023:

- **Strategic Priority Area – Water Management**
 - Initiatives – Complete floodplain mapping update program

AGENCY COMMENTS

Not Applicable.

LEGAL/FINANCIAL IMPLICATIONS

Not Applicable.

CONCLUSIONS

HCA regulates watercourse flood plains to help minimize and mitigate the potential for loss of life and damage to property as a result of flood hazards. To assist in the management and regulation of watercourse flood plains, HCA has retained consultants to complete flood plain mapping studies. The flood plain mapping provides the HCA with updated flood hazard mapping based on the latest technical information and data and assists the HCA in administering its regulation of development adjacent to watercourses under Ontario Regulation 161/06.

Three flood plain mapping studies are currently ongoing and expected to be completed in the first quarter of 2024. The flood plain mapping reports and flood plain maps will be made available for public and stakeholder, including the City of Hamilton and Township of Puslinch, comment and will be finalized and brought forward to a future Board of Directors meeting for adoption.

Figure 1 – Stoney Creek & Battlefield Creek Flood Plain Mapping Study Area

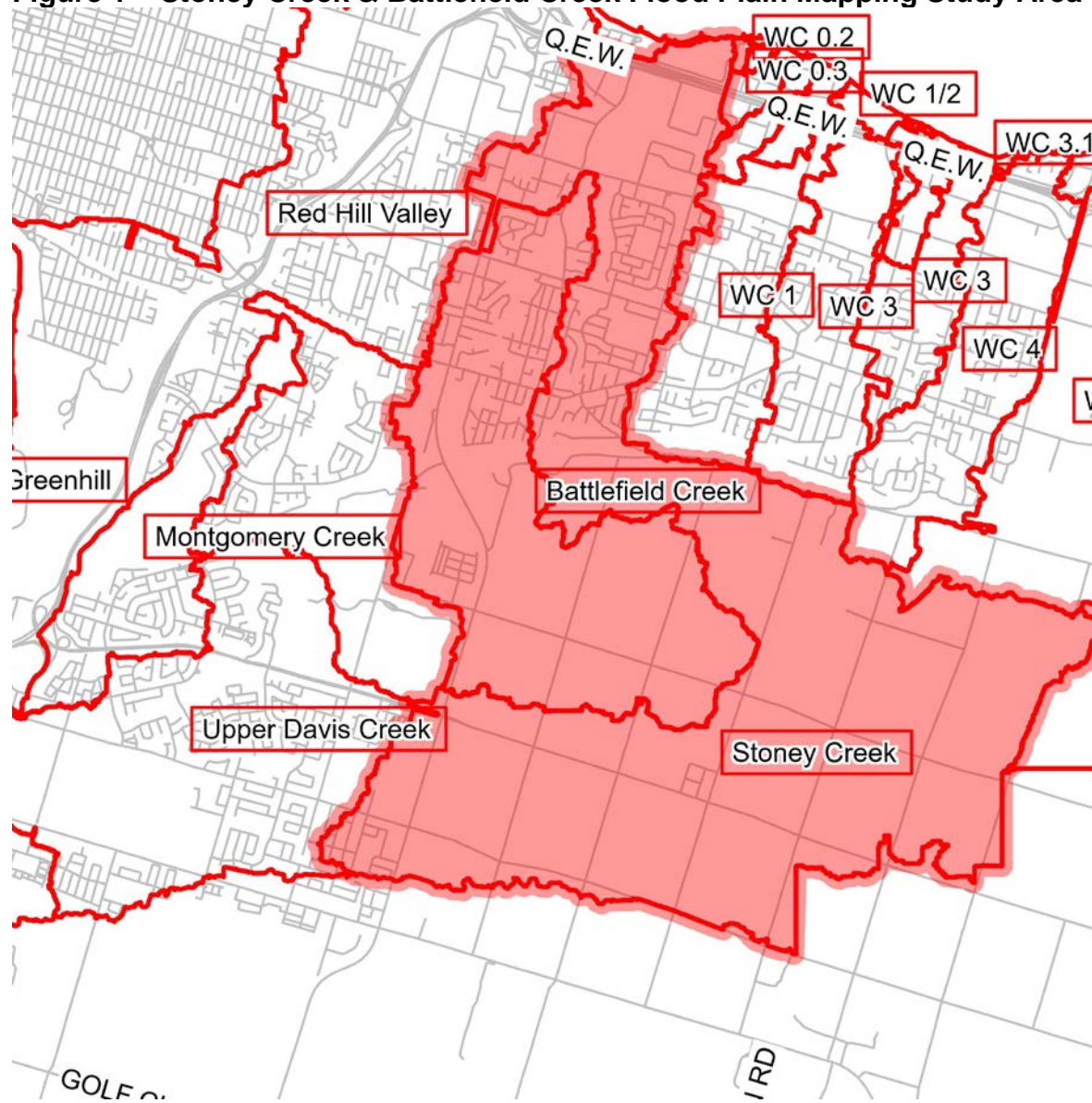


Figure 2 – Stoney Creek Numbered Watercourses Flood Plain Mapping Study Area



Figure 3 – Redhill Creek Flood Plain Mapping Study Area

