Board of Directors Meeting Agenda

Thursday, January 5, 2023

Hamilton Conservation Authority

A Healthy Watershed for Everyone

This page intentionally left blank.

Hamilton Conservation Authority

A Healthy Watershed for Everyone

Board of Directors Meeting

Thursday, January 5, 2023 at 6:00 p.m.

This meeting will be held in person for Board of Directors members and designated, limited staff only.

The public may view the meeting live on HCA's You Tube Channel: https://www.youtube.com/user/HamiltonConservation

1. **Call to Order** – Santina Moccio

2. **Declarations of Conflict of Interest**

3. **Approval of Agenda**

4. **Member Briefing**

   4.1. Update Re. Bill 23 More Homes Built Faster Act Update – Lisa Burnside

5. **Delegations - None**

6. **Consent Items for Applications, Minutes and Correspondence**

   6.1. Applications – Development, Interference with Wetlands, Alterations to Shorelines and Watercourses Page 1

   6.2. Approval of Board of Directors Minutes – November 3, 2022 Page 7

   6.3. Approved November 17, 2022 Budget & Administration Committee Minutes – for receipt only Page 17

   6.4. Letter from Minister of the Environment, Conservation and Parks regarding the Review of updated assessment reports and source protection plan for the Halton - Hamilton Source Protection Region, received November 4, 2022 Page 23

   6.5. Letter from Ministry of Municipal Affairs and Housing regarding Greenbelt Amendments and Revocation of the Central Pickering Development Plan and O. Reg 154/03, dated December 16, 2022 Page 25

   6.6. Letter from Ministry of Natural Resources and Forestry regarding Minister's direction for conservation authorities regarding fee changes associated with

Hamilton Conservation Authority

A Healthy Watershed for Everyone

Memorandum

TO: **Board of Directors**

FROM: **Lisa Burnside, Chief Administrative Officer**

RECOMMENDED & PREPARED BY: **T. Scott Peck, MCIP, RPP, Deputy Chief Administrative Officer/Director, Watershed Planning and Engineering**

Mike Stone, MCIP, RPP, Manager, Watershed Planning, Stewardship & Ecological Services

DATE: **January 5, 2023**

RE: **Summary Enforcement Report**
Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation 161/06

HCA Regulation applications approved by staff between the dates of October 21, 2022 to December 16, 2022 are summarized in the following Summary Enforcement Report (SER-1/23).

RECOMMENDATION

THAT the Board of Directors receive this Summary Enforcement Report SER-1/23 as information.

This page intentionally left blank.

HAMILTON REGION CONSERVATION AUTHORITY
DEVELOPMENT, INTERFERENCE WITH WETLANDS, AND ALTERATIONS TO SHORELINES AND WATERCOURSES APPLICATIONS
December 19, 2022
Development, Interference with Wetlands, and Alterations to Shorelines and Watercourses Applications Report to the Board of Directors of the Hamilton Region Conservation Authority, January 05, 2023
The proposed works are subject to Ontario Regulation 161/06, and in particular Section 2, Subsection (1).

SUMMARY ENFORCEMENT REPORT SER 1/22

File Number	Date Received	Date Permit Issued	Review Days	Applicant Name	Location	Application Description	Recommendation / Conditions
F/F,C/22/72	09-Sep-22	21-Oct-22	42		1431 Regional Rd 97 Lot 28, Concession 9 Flamborough	Construction of a pool, patio and septic system in a regulated area of Fletcher Creek and the Fletcher Creek Provincially Significant Wetland.	Approved subject to standard conditions.
SC/F,C/22/57	08-Aug-22	24-Oct-22	8		93 Creanona Blvd Lot 3, Concession BF Stoney Creek	Construction of a two storey addition and renovation of an existing single family dwelling in a regulated area of Lake Ontario.	Approved by the Board of Directors subject to standard conditions.
A/F,C/22/79	17-Oct-22	24-Oct-22	7		1131 Garner Rd E Lot 53, Concession 3 Ancaster	Upgrades to the Garner Road Water Pumping Station in a regulated area of Tiffany Creek.	Approved subject to standard conditions.
SC/C/22/51	12-Jul-22	25-Oct-22	35		62 Lake Ave N Lot 25, Concession 2 Stoney Creek	Construction of a separate basement dwelling unit in an existing single residence in a regulated area of Battlefield Creek.	Approved subject to standard conditions.

HAMILTON REGION CONSERVATION AUTHORITY
DEVELOPMENT, INTERFERENCE WITH WETLANDS, AND ALTERATIONS TO SHORELINES AND WATERCOURSES APPLICATIONS
December 19, 2022
Development, Interference with Wetlands, and Alterations to Shorelines and Watercourses Applications Report to the Board of Directors of the Hamilton Region Conservation Authority, January 05, 2023
The proposed works are subject to Ontario Regulation 161/06, and in particular Section 2, Subsection (1).

SUMMARY ENFORCEMENT REPORT SER 1/22

SC/F,C/22/58	08-Aug-22	31-Oct-22	89		42, 44, 48, 52 and 54 Lakeshore Dr Lot 11, Concession BF Stoney Creek	Construction of an armour stone headwall outlet on the Lake Ontario shoreline, including the removal of existing armour stone, and construction of 28 vacant land condominium units.	Approved subject to standard conditions.
H/F,C/22/78	12-Oct-22	01-Nov-22	26		220 Harbour Front Dr Lot 16, Concession 1 Hamilton	Construction of improvements to stormwater management works, including replacing sections of the existing storm sewer, a new oil-grit separator (OGS), an emergency shut-off valve, and a new outfall in a regulated area of the Hamilton Harbour shoreline.	Approved subject to standard conditions.
D/C/22/81	12-Oct-22	09-Nov-22	29		86 Main St Lot 52, Concession 1 Dundas	Exterior façade upgrades to Town Centre Plaza in a regulated area of Ancaster Creek.	Approved subject to standard conditions.
SC/F,C/22/84	04-Nov-22	14-Nov-22	22		11 Jones St Lot 24, Concession 3 Stoney Creek	Construction of an addition in a regulated area of Stoney Creek.	Approved subject to standard conditions.

HAMILTON REGION CONSERVATION AUTHORITY
DEVELOPMENT, INTERFERENCE WITH WETLANDS, AND ALTERATIONS TO SHORELINES AND WATERCOURSES APPLICATIONS
December 19, 2022
Development, Interference with Wetlands, and Alterations to Shorelines and Watercourses Applications Report to the Board of Directors of the Hamilton Region Conservation Authority, January 05, 2023
The proposed works are subject to Ontario Regulation 161/06, and in particular Section 2, Subsection (1).

SUMMARY ENFORCEMENT REPORT SER 1/22

A/F,C/22/62	07-Sep-22	14-Nov-22	38		98 Academy St Lot 46, Concession 2 Ancaster	Construction of an addition, pool house and associated landscaping in a regulated area of Ancaster Creek.	Approved subject to standard conditions.
A/F,C/22/80	12-Sep-22	18-Nov-22	67		Between 94 Rousseaux St and 120 Mohawk Rd Lot 46, Concession 2 Ancaster	Installation of conduit in a regulated area of Ancaster Creek.	Approved subject to standard conditions.
D/F,C/22/83	02-Nov-22	21-Nov-22	15		38 York Rd Lot , Concession Dundas	Addition of a second drive thru lane at an existing restaurant, including minor asphalt and curb work, landscaping, and installation of a new menu board sign in a regulated area of Sydenham Creek.	Approved subject to standard conditions.
D/C/22/86	27-Oct-22	28-Nov-22	25		64 Jerome Park Dr Lot , Concession Dundas	Construction of a cabana in the rear yard in a regulated area of Spring Creek.	Approved subject to standard conditions.
D/F,C/22/85	07-Oct-22	07-Dec-22	63		7 Governors Rd Lot 51, Concession 1 Dundas	Installation conduit via directional drilling in a regulated area of Spencer Creek.	Approved subject to standard conditions.

HAMILTON REGION CONSERVATION AUTHORITY
DEVELOPMENT, INTERFERENCE WITH WETLANDS, AND ALTERATIONS TO SHORELINES AND WATERCOURSES APPLICATIONS
December 19, 2022
Development, Interference with Wetlands, and Alterations to Shorelines and Watercourses Applications Report to the Board of Directors of the Hamilton Region Conservation Authority, January 05, 2023
The proposed works are subject to Ontario Regulation 161/06, and in particular Section 2, Subsection (1).

SUMMARY ENFORCEMENT REPORT SER 1/22

H/F,C/22/88	31-Oct-22	07-Dec-22	40		134 Sterling St Lot 57, Concession 1 Hamilton	Construction of the Sterling Weir Chamber in a regulated area of Lower Spencer Creek.	Approved subject to standard conditions.
D/C/22/87	23-Nov-22	14-Dec-22	17		101 Robinhood Dr Lot 52, Concession 1 Dundas	Replacement of an existing deck in a regulated area of Sulphur Creek.	Approved subject to standard conditions.
H/F,A/22/82	27-Oct-22	14-Dec-22	48		565 Aberdeen Ave Lot 57, Concession 2 Hamilton	Debris removal from Inlet HC13IL01 in a regulated area of Chedoke Creek.	Approved subject to standard conditions.
H/F,C,A/22/76	05-Oct-22	14-Dec-22	51		99 Highland Rd W, 655 Pritchard Rd and 1603 Rymal Rd E Lot 34, Concession 8 Hamilton	Construction of the final stormwater management pond for the Multi-Area Employment Lands (25T-2014-02) in a regulated area of Hannon Creek.	Approved subject to standard conditions.
SC/F,C,A/22/53	21-Jul-22	14-Dec-22	78		690 South Service Rd Lot 13, 14, Concession 1 Stoney Creek	Construction of an industrial manufacturing building, retaining walls, grading and fill placement, alteration of a watercourse in a regulated area of Stoney Creek Numbered Watercourse 5.	Approved subject to standard conditions.

Hamilton Region Conservation Authority

Minutes

Board of Directors Meeting

November 3, 2022

Minutes of the Board of Directors meeting held on Thursday, November 3, 2022 at 7.p.m., at the HCA main office, 838 Mineral Springs Road, in Ancaster, by an in-person and videoconference hybrid format and livestreamed via YouTube.

PRESENT: **Santina Moccio – in the Chair**
Dan Bowman **Brad Clark**
Jim Cimba **Susan Fielding**
Tom Jackson **Cynthia Janzen**
Esther Pauls – Webex

Jennifer Stebbing – Foundation Chair

REGRETS: **Lloyd Ferguson, Russ Powers, Maria Topalovic**

STAFF PRESENT: **Madolyn Armstrong, Jonathan Bastien, Lisa Burnside, Grace Correia, Scott Fleming, Matt Hall, Bruce Harschnitz, Scott Peck, Mike Stone, Jaime Tellier, and Nancy Watts**

OTHERS: **None**

1. Call to Order

The Acting Chair called the meeting to order and welcomed everyone present. She congratulated all re-elected Councillors (Councillors Jackson, Clark and Pauls) and thanked both Councillors Ferguson and Powers for their service as this would be their last board meeting.

2. Declarations of Conflict of Interest

The Chair asked members to declare any conflicts under the Board's Governance Policy. There were none.

3. Approval of Agenda

The Chair requested any additions or deletions to the agenda. There were none.

BD12, 3112 **MOVED BY: Cynthia Janzen**
SECONDED BY: Jim Cimba

THAT the agenda be approved.

CARRIED

4. Delegations

There were none.

5. Consent Items for Applications, Minutes and Correspondence

The following consent items were adopted:

5.1. Applications – Development, Interference with Wetlands, Alterations to Shorelines and Watercourses

5.2. Approval of Board of Directors Minutes – October 6, 2022

5.3. Level Two Low Water Condition, declared as of October 19, 2022

Item 5.4 was brought out of the consent agenda requesting comments from staff.

5.4. Email from the Ministry of Natural Resources and Forestry re. MNRF proposals in support of More Homes Built Faster: Ontario's Housing Supply Action Plan 2022-23, dated October 25, 2022

The members brought the email from MNRF regarding Bill 23, the *More Homes Built Faster Act*, out of the consent agenda for discussion. Lisa provided the members with a high-level explanation of major areas of the proposals and the potential impacts to HCA in general.

Major areas of the proposed legislation:

- Streamlining Conservation Authority (CA) permits
- Focusing CA role in planning reviews
- Freezing CA fees related to planning and development proposals, as well as for permits
- Identifying CA lands suitable for housing

- Changes to Ontario's natural heritage system and Ontario Wetland Evaluation System

There was a lengthy discussion on the proposed legislation. The members expressed considerable concern at the implications of the changes and passed a motion to endorse the following key points to be sent to our municipal partners:

- Proposed changes should take into account a watershed based approach to balance growth with the environment and public health and safety.
- CAs should continue with the ability to review and comment on natural heritage in permitting and planning applications and retain responsibility for Natural Hazard approvals to ensure safe development.
- We request continued collaboration with the Province in regard to the proposed changes and support Conservation Ontario's call to engage with the established multi-stakeholder Conservation Authorities Working Group (CAWG) that helped guide the Province in its implementation of the last round of changes to the *CA Act.*
- Municipalities should retain the option to enter into MOUs with CAs for municipally requested advisory services.
- Permit CAs to work towards cost recovery targets so that development pays for development.
- The Province should recognize the importance of CA lands and ensure clear policies to protect them.

The board also directed staff to include these key points in a letter to the Province, copying local MPPs, as well as directing the CAO to publish an Op Ed to local media.

BD12, 3113 **MOVED BY: Jim Cimba**
SECONDED BY: Brad Clark

THAT the following key points regarding the Ministry of Natural Resources and Forestry proposals in support of More Homes Built Faster: Ontario's Housing Supply Action Plan 2022-23 be sent to HCA's member municipalities:

- **Proposed changes should take into account a watershed-based approach to balance growth with the environment and public health and safety.**
- **CAs should continue with the ability to review and comment on natural heritage in permitting and planning applications and retain responsibility for Natural Hazard approvals to ensure safe development.**
- **We request continued collaboration with the Province in regard to the proposed changes and**

support Conservation Ontario's call to engage with the established multi-stakeholder Conservation Authorities Working Group (CAWG) that helped guide the Province in its implementation of the last round of changes to the *CA Act.*

- **Municipalities should retain the option to enter into MOUs with CAs for municipally requested advisory services.**
- **Permit CAs to work towards cost recovery targets so that development pays for development.**
- **The Province should recognize the importance of CA lands and ensure clear policies to protect them; and further,**

CARRIED

6. Foundation Briefing

Jennifer Stebbing reported on the following:

Donations

The Foundation received a total of **$14,718** in donations from October 1st to October 31st, 2022. They break down as follows:

- $6,051 to the Foundation's Area of Greatest Need Fund
- $3,000 proceeds from a Friends of Westfield fundraising event in support of the Westfield Locomotive 103 Restoration Fund
- $2,750 to the Tribute Tree Fund

The remaining $2,917 was directed to various projects, including the Dundas Valley, Dundas Valley Trails, and Land Securement Funds. This brings our fiscal year-to-date fundraising total to **$712,674**, which is 86% of their goal.

The Friends of Westfield annual Chinese Dinner fundraiser returns on Saturday, November 19, at the Rockton Fairgrounds. This year's event will raise funds for the locomotive restoration at Westfield Heritage Village. Tickets and information are available on the Friends of website.

BD12, 3114 **MOVED BY: Susan Fielding**
SECONDED BY: Dan Bowman

THAT the Foundation Briefing be received.

CARRIED

7. Member Briefing

There was none.

8. Business Arising from the Minutes

There was none.

9. Reports from Budget & Administration Committee and Conservation Advisory Board

There were none.

10. Other Staff Reports/Memoranda

10.1. 2023 Operating Budget

Scott Fleming presented the proposed operating budget for next year. The goals of the budget are:

1) Engage in those initiatives identified as important in HCA's 2019-2023 Strategic Plan
2) Limit the municipal levy increase to be no more than 2%
3) In areas of uncertainty, budget conservatively to mitigate risk
4) Operate on a cash neutral basis (Break-Even)

Significant expenses noted include a 3.5% COLA increase for staff and a casual wage increase of $0.25/hr above minimum wage, ongoing inflation, IT network and computer infrastructure modernization, corporate climate change initiatives, two additional staff for Watershed Management Services to support permit and plan review service targets and one additional staff member for the Hamilton Mountain Conservation Areas.

Revenues are expected from a 2% increase to municipal levy, the full Confederation Beach Park management fee as it is assumed both WWW and Lakeland will be operating, revenues from permit and planning fee increases and modest Conservation Area fee increases, Conservation Area day use admissions, and membership pass sales as well as continued strong demand for camping and Valens cabins coming on line in 2023.

It was also noted that HCA will be embarking to complete a new strategic plan with the current plan reaching its conclusion at the end of 2023.

BD12, 3115 **MOVED BY: Susan Fielding**
SECONDED BY: Cynthia Janzen

THAT the 2023 Operating Budget, as presented, be approved by the Board of Directors.

CARRIED

10.2. Biodiversity Action Plan

Mike Stone brought forward a report on a local collective effort to address the pressing concern of species and habitat biodiversity protection and enhancement. A Biodiversity Working Group, comprised of local agencies and environmental organizations, has been formed. Staff sought endorsement from the Board of Directors to participate on the working group and for its work toward developing a Biodiversity Action Plan (BAP) for Hamilton. It is expected the BAP will be finalized in 2023 and will be brought back to the Board of Directors for approval.

BD12, 3116 **MOVED BY: Dan Bowman**
SECONDED BY: Brad Clark

THAT the Board of Directors endorse the development of a Biodiversity Action Plan; and further

THAT staff be directed to continue to work with the Biodiversity Working Group to support the on-going development of a Biodiversity Action Plan; and,

THAT staff be directed to provide the final approved Biodiversity Action Plan subsequent to City of Hamilton approval in 2023 for HCA Board of Directors consideration and approval.

CARRIED

10.3. Request for Proposal – Saltfleet Conservation Area Wetland Design (SC-5)

Scott Peck presented the results of the request for proposal for the design of the third wetland for the Saltfleet Conservation Area. Only one submission was received from Water's Edge Environmental Solutions Team. Water's Edge completed the design work for the previous two Saltfleet wetlands and has extensive experience in natural channel and wetland design. Staff were satisfied the quote submitted was reasonable and within expected range, and therefore recommended the proposal be accepted at the quoted cost.

There was discussion regarding any additional measures that could be undertaken to improve the number of submissions. Scott advised that a number of companies familiar to HCA downloaded the package but did not submit proposals. Staff expect companies are experiencing high workloads due to Covid.

BD12, 3117 **MOVED BY: Clark**
SECONDED BY: Cynthia

THAT the proposal for the Wetland Design - Saltfleet Conservation Area Wetland Restoration Project submitted by Water's Edge Environmental Solutions Team be accepted at a cost not to exceed $ 186,862.08 plus HST.

CARRIED

10.4. Watershed Conditions Report

Jonathan Bastien presented a summary of the memorandum, noting there has been no recent significant watercourse or Lake Ontario shoreline flooding events. Current flows are at to slightly above base flow conditions, however current and average monthly flows in October have been significantly below the long-term averages. The Lake Ontario mean daily water level is currently approximately 25cm below average for this time of year.

The Christie Lake water levels are well below the preferred summer operating levels and are within preferred winter operating levels. Staff continue to actively monitor and manage reservoir levels and dam outflows from Christie Lake. Levels in Valens Lake have been moderately decreasing over the last week during the ongoing annual winter drawdown of the reservoir.

There are currently no significant rainfall events forecasted for the watershed for the next two weeks. No significant Lake Ontario flooding is expected.

Due to worsening conditions, the Hamilton Low Water Response Team (LWRT) declared a Level 2 Low Water Condition for the entire HCA watershed. The watershed had been in a Level 1 Low Water Condition since July 28th. The declaration was accompanied by a request for a 20 percent voluntary reduction in normal water use.

The LWRT will continue to review and discuss further as drought can carry on through the winter.

BD12, 3118 **MOVED BY: Dan Bowman**
SECONDED BY: Jim Cimba

THAT the memorandum entitled Watershed Conditions Report be received.

CARRIED

10.5. Specific Agreement with the Haudenosaunee Wildlife and Habitat Authority

Bruce Harschnitz presented a summary of the report recommending HCA enter into a three-year agreement with the Haudenosaunee Wildlife and Habitat Authority for the annual deer harvest. The recommendation was approved. The harvest is scheduled to take place only on weekdays excluding Fridays between November 7 and December 1, 2022, inclusive for 2022. The agreement extends to 2023 and 2024 for the same locations only on weekdays excluding Fridays between November 6 to December 7, 2023 and November 4 to December 5, 2024 inclusive.

BD12, 3119 **MOVED BY: Cynthia Janzen**
SECONDED BY: Dan Bowman

THAT the Board of Directors approve the attached agreement allowing for a deer harvest in an area of Dundas Valley Conservation Area as identified on Schedule 'A', and generally bounded by Martin Road to the east, Jerseyville Road to the south, Paddy Green Road to the west, and Powerline Road to the north and; as identified on Schedule 'B' and generally bounded by 50 metres into HCA lands between Weir's Lane to the east, the CN rail line to the north, the lot line of private properties along the south and west only on weekdays excluding Fridays between November 7 and December 1, 2022, inclusive for 2022 and further,

THAT the agreement extends to 2023 and 2024 for the same locations only on weekdays excluding Fridays between November 6 to December 7, 2023 and November 4 to December 5, 2024 inclusive.

CARRIED

10.6. Conservation Areas Experiences Update

Bruce Harschnitz provided a verbal update, highlighting a follow up on Board direction from the September meeting to undertake trail improvements between Grant Boulevard to McMaster University, advising the members that CAPSS staff

have completed the work and staff have observed trail users taking advantage of the enhanced access.

The Spencer Gorge reservation system continued to manage visitation to the Greensville area during the Fall colours. There was a higher than normal volume of traffic in the area over the Thanksgiving weekend, with the continued closure of the Highway 8 hill and return of the Rockton World's Fair likely contributing to the situation. Staff continue to work with municipal partners for increased signage and enhanced parking enforcement in the area. Staff will continue to work on marketing and communications strategies to promote the reservation system. HCA's other areas, as well as destinations across the province, also saw high visitation due to the optimal weather this Fall colour season.

Westfield Heritage Village hosted its first ever Halloween Pumpkin Party using the reservation system. The event was well attended and reported on by local media.

Staff are now shifting to winterizing operations, including the boat lift at Fifty Point. The Road to Hope Marathon is being held at Confederation Beach Park this weekend. Appreciation by Councillor Esther Pauls was expressed for staff involved in hosting this event.

BD12, 3120 **MOVED BY: Brad Clark**
SECONDED BY: Susan Fielding

THAT the verbal update on the Conservation Areas Experiences be received.

CARRIED

11. New Business

The members inquired about the status of the repairs to the Devil's Punchbowl viewing platform. Matt Hall advised that temporary repairs to the guardrail were undertaken to allow the safe reopening on the majority of the viewing platform. Staff are working closely with the engineers and a local steel fabricating company to design and tie in the new guard. Staff are hopeful installation will be complete later this month and able to fully reopen then, if not, in early December. In addition, armour stones have now been placed to prevent vehicles from being able to leave the parking lot and reach the platform to prevent any similar incidents in the future.

12. In-Camera Items

There were none.

13. Next Meeting

The next meeting of the Board of Directors will be held on Thursday, December 1, 2022 at 7:00 p.m.

14. Adjournment

On motion, the meeting adjourned.

_____

Scott Fleming
Secretary-Treasurer

Hamilton Conservation Authority

Minutes

Budget & Administration Committee

November 17, 2022

Minutes of the Budget & Administration Committee meeting held on Thursday, November 17, 2022 at 6:00 p.m. at the HCA main office, 838 Mineral Springs Road, in Ancaster, and livestreamed on YouTube.

Present:	**Santina Moccio, in the Chair** **Dan Bowman** **Jim Cimba** **Maria Topalovic – by Webex**
Regrets:	**None**
Staff Present:	**Lisa Burnside, Gord Costie, Scott Fleming, Scott Peck, Jaime Tellier, and Nancy Watts**
Others Present:	**None**

1. Welcome

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

2. Declarations of Conflict of Interest

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

3. Approval of Agenda

The Chair requested any additions or deletions to the agenda. Lisa Burnside advised of an additional item under New Business, number 8.1, regarding the date of the upcoming Board of Directors meeting and start time of meetings.

BA 2239 **MOVED BY: Jim Cimba**
SECONDED BY: Dan Bowman

THAT the agenda be approved, as amended.

CARRIED

4. Delegations

There were none.

5. Consent Items

The following consent items were adopted:

5.1. Approval of Budget & Administration Committee Minutes – September 15, 2022

5.2. 3rd Quarter 2022 WSIB Injury Statistics

5.3. 2023 B&A Meeting Schedule

6. Business Arising from the Minutes

There was none.

7. Staff Reports/Memoranda

7.1. 3rd Quarter Financial Results - Operating

Scott Fleming presented a summary of the memorandum.

7.2. 3rd Quarter Financial Results – Capital and Major Maintenance

Scott Fleming provided a summary of the memorandum noting $2.1 million has been spent as of the end of the third quarter on capital and major maintenance. 61% of that was spent on projects and 39% on major maintenance. Significant capital projects include the entrance road reconstruction at Christie Lake, Tiffany Falls bridge replacement within Dundas Valley, Fifty Point marina channel dredging, construction of rental cabins at Valens Lake, and renovations to the Potts administration offices at Westfield Heritage Village.

Members positively commented on the completion of the cabins and confirmed with staff that projected revenues were part of 2023 operating budget.

7.3. 3rd Quarter Vendor Report

Scott Fleming provided a summary of the memorandum and answered the members' questions. Vendors are listed from largest spending during the Quarter to smallest, with vendors under $10K omitted. The majority of the large spending relate to ongoing large projects, with some day-to-day operating vendors included as well.

There was discussion regarding procedures for quotations for services. HCA has a purchasing policy that outlines the thresholds when quotations and public tenders are required.

BA 2240 **MOVED BY: Maria Topalovic**
SECONDED BY: Dan Bowman

THAT the memorandums entitled 3rd Quarter Financial Results – Operating, 3rd Quarter Financial Results – Capital and Major Maintenance, and 3rd Quarter Vendor Report be received.

CARRIED

7.4. 2023 Mileage Rate

Nancy Watts provided a summary of the report noting inflationary pressures and average mileage rate from other conservation authorities in the recommendation to increase the mileage reimbursement rate.

BA 2241 **MOVED BY: Dan Bowman**
SECONDED BY: Jim Cimba

THAT the Budget and Administration Committee recommends to the Board of Directors:

THAT the mileage rate of 56 cents per kilometre be increased to 58 cents per kilometre effective January 1, 2023.

CARRIED

8. New Business

8.1. Next Meeting of the HCA Board of Directors and Meeting Start Time

Lisa Burnside advised the members, the next Board meeting is scheduled for December 1st, however the City of Hamilton appointments for municipally elected officials to HCA's Board of Directors will be determined at a Council meeting which will not take place until after December 1st. As a result, HCA will be missing five directors from the Board, and quorum may not be possible to hold a meeting. Therefore, staff recommended through the Chair that the December 1st Board meeting be cancelled and a new meeting be scheduled for January 5, 2023 when the new Council members will be appointed.

Members noted that as per HCA's administrative by-law, the Chair can call a meeting of the Board of Directors at any time should an urgent matter arise in December.

It was also raised that there has been discussion in the past to start the meetings of the board of Directors at 6:00 p.m. rather than 7:00 p.m. It was noted we have successfully convened meetings at 6:00 p.m. on several occasions this year. The conclusion of meetings earlier in the evening was appreciated by the members, and would also shorten the length of the work day for staff. It was also remarked that we now have hybrid meeting capabilities to allow flexibility when scheduling for members is challenging as it reduces the need for travel time.

It was noted the Board of Directors must approve these recommendations and given timing, that the motions be sent to the Board of Directors as an email poll.

BA 2242 **MOVED BY: Jim Cimba**
SECONDED BY: Dan Bowman

THAT the Budget and Administration Committee recommends to the Board of Directors:

That the December 1, 2022 HCA Board of Directors meeting be canceled and rescheduled for January 5, 2023 (the first Thursday in January).

CARRIED

BA 2243 **MOVED BY: Jim Cimba**
SECONDED BY: Dan Bowman

THAT the Budget and Administration Committee recommends to the Board of Directors:

THAT HCA Board of Directors meetings will begin at 6pm.

CARRIED

BA 2244 **MOVED BY: Jim Cimba**
SECONDED BY: Dan Bowman

THAT the above recommendations be sent as an email poll to the Board of Directors in a timely manner.

CARRIED

9. In-Camera Items for Matters of Law, Personnel and Property

There were none.

10. Next Meeting

The next meeting of the Budget and Administration Committee is scheduled for Thursday, December 15, 2022 at 6:00 p.m. at the HCA Main Administration Office – Woodend Auditorium, 838 Mineral Springs Road, Ancaster, Ontario.

11. Next Meeting Adjournment

On motion, the meeting adjourned.

This page intentionally left blank.

Ministry of the Environment, Conservation and Parks

Office of the Minister

777 Bay Street, 5th Floor
Toronto ON M7A 2J3
Tel.: 416-314-6790

Ministère de l'Environnement, de la Protection de la nature et des Parcs

Bureau du ministre

777, rue Bay, 5e étage
Toronto (Ontario) M7A 2J3
Tél. : 416.314.6790

Ontario

357-2022-1804

Gerry Smallegange, Chair (A)
Halton Region Source Protection Authority
2596 Britannia Road West
Burlington, ON L7P 0G3

Lloyd Ferguson, Chair (A)
Hamilton Region Source Protection Authority
838 Mineral Springs Road P.O. Box 7099
Ancaster, ON L9G 3L3

Mr. Robert Edmondson, Chair
Halton-Hamilton Source Protection Committee
2071 Deer Run Avenue
Burlington, ON L7M 2S7

Dear Mr. Smallegange, Mr. Ferguson and Mr. Edmondson,

I'm pleased to inform you that the Ministry of the Environment, Conservation and Parks has completed its review of the updated assessment reports and source protection plan for the Halton-Hamilton Source Protection Region.

To ensure that the source protection plan remains current to protect sources of drinking water in the Halton-Hamilton Source Protection Region, I approve the amendments pursuant to section 36 of the *Clean Water Act, 2006.* These updates will take effect on the day a notice of this decision is posted on the Environmental Registry.

When the initial plan was approved in 2015, an order was given under section 36 of the *Clean Water Act, 2006* governing the future review of the plan, with an amended order issued on March 11, 2019, outlining the specific requirements. With the approval of these updates, compliance with the section 36 order has been achieved. I am not requiring another review of the source protection plan at this time. To ensure your source protection plan remains current and continues to protect sources of drinking water, future updates to the plan can be made through locally initiated amendments under section 34 of the Act. This would include updates to reflect new or expanding drinking water systems, new scientific or technical information, revisions to policies to address implementation challenges, and any other updates that are necessary to ensure your source protection plan is achieving its objectives to ensure that activities cease to be, or never become, significant threats to sources of drinking water.

I appreciate the dedication of the local municipalities, source protection authorities and committees, and all our partners and stakeholders for their work and contributions to these amendments. Our strong protection framework will continue to help ensure Ontario's drinking water is held to high safety standards and that sources of drinking water in the province are protected for future generations.

Sincerely,

David Piccini
Minister

C: Martin Keller, Senior Manager of Watershed Planning and Source Protection, Halton-Hamilton Source Protection Region
Hassaan Basit, President and Chief Executive Officer, Conservation Halton
Lisa Burnside, Chief Administrative Officer, Hamilton Conservation Authority
Kirsten Corrigal, Director, Conservation and Source Protection Branch, MECP

Ministry of Municipal Affairs and Housing

Office of the Minister

777 Bay Street, 17th Floor
Toronto ON M7A 2J3
Tel.: 416 585-7000

Ministère des Affaires Municipales et du Logement

Bureau du ministre

777, rue Bay, 17e étage
Toronto ON M7A 2J3
Tél. : 416 585-7000

Ontario

December 16, 2022

Dear Conservation Authorities and Conservation Ontario:

Re: Greenbelt Amendments and Revocation of the Central Pickering Development Plan and O. Reg. 154/03

The government is committed to taking bold action to address Ontario's housing supply crisis by building 1.5 million homes over the next 10 years.

That is why the government has taken further action to support this goal by making changes to the Greenbelt and revoking the Central Pickering Development Plan and the associated Minister's Zoning Order (O. Reg. 154/03) to help build at least 50,000 new homes, while leading to an overall expansion of the Greenbelt by approximately 2,000 acres.

Further to the letters sent on Nov 4, 2022, regarding proposed amendments to the Greenbelt and the letter on October 25, 2022 regarding the proposed revocation of the CPDP, I am writing to provide an update that the government has that the government has approved Amendment No. 3 to the Greenbelt Plan (by OIC 1745/2022), amended to the Greenbelt Area boundary (O. Reg. 59/05), and has revoked the Central Pickering Development Plan (by OIC 1746/2022). The amendments were approved as proposed without modifications.

As Minister, I approved the related amendments to the Oak Ridges Moraine Conservation Plan (O. Reg. 140/02) and revoked the Central Pickering Development Planning Area and the related Minister's Zoning Order (O. Reg. 154/03).

Information on the Greenbelt Area boundary regulation, and the Oak Ridges Moraine Conservation Plan, and the revocation of the Central Pickering Development Plan and Minister's Zoning Order can be found at:

- Designation of Greenbelt Area (O. Reg. 567/22) - https://www.ontario.ca/laws/regulation/r22567
- Oak Ridges Moraine Conservation Plan (O. Reg. 568/22) - https://www.ontario.ca/laws/regulation/r22568
- Zoning Area - Regional Municipality of Durham, Part of The City of Pickering (O. Reg. 566/22) - https://www.ontario.ca/laws/regulation/r22566

Further details on these changes, including updated mapping, will be available online soon.

Thank you to those Conservation Authorities who have provided feedback.

Sincerely,

Steve Clark

Minister

c. Kate Manson-Smith, Deputy Minister, Municipal Affairs and Housing
Sean Fraser, Assistant Deputy Minister, Municipal Affairs and Housing, Planning and Growth Division
Hannah Evans, Assistant Deputy Minister, Municipal Services Division

Ministry of Natural Resources and Forestry

Office of the Minister

99 Wellesley Street West
Room 6630, Whitney Block
Toronto, ON M7A 1W3
Tel.: 416-314-2301

Ministère des Richesses naturelles et des Forêts

Bureau du ministre

99, rue Wellesley Ouest
Bureau 6630, Édifice Whitney
Toronto ON M7A 1W3
Tél.: 416 314-2301

Ontario

December 28, 2022

TO: Conservation authorities as listed in the Attachment A "Minister's Direction to Not Change Fees"

SUBJECT: Minister's direction for conservation authorities regarding fee changes associated with planning, development and permitting fees

In support of Ontario's Housing Supply Action Plan: 2022-2023, the province made a series of legislative changes through the *More Homes Built Faster Act, 2022* (Bill 23) to help achieve the goal of building 1.5 million homes over the next 10 years. These changes accelerate housing development approvals while continuing to protect Ontario families, communities, and critical resources. A number of these changes affect conservation authorities and are intended to support faster and less costly approvals, streamline conservation authority processes, and help make land suitable for housing available for development.

To this end, pursuant to subsection 21.3 (1) of the *Conservation Authorities Act*, which is in effect January 1, 2023, I am issuing a Minister's Direction ("Direction"), attached to this letter as Attachment "A". Subsection 21.3 (1) provides that the "Minister may give a written direction to an authority directing it not to change the amount of any fee it charges under subsection 21.2 (10), in respect of a program or service set out in the list referred to in subsection 21.2 (2), for the period specified in the direction."

The purpose of this Direction, which is effective from January 1, 2023 to December 31, 2023, is to require a conservation authority not to change the amount of the fee it charges or the manner in which it determines the fee for any program or service that may be provided by the conservation authority. This relates to reviewing and commenting on planning and development related proposals or land use planning policies, or for permits issued by conservation authorities. For greater certainty, the "Prescribed Acts – subsections 21.1.1 (1.1) and 21.1.2 (1.1) of the Act" regulation (O. Reg. 596/22), effective January 1, 2023, prohibits a CA from providing a municipal (Category 2) or other (Category 3) program or service related to reviewing and commenting on a proposal, application, or other matter

made under prescribed Acts. This regulation therefore precludes the charging of a fee by a conservation authority for these specific programs or services provided under subsections 21.1.1 (1) or 21.1.2 (1.1) of the *Conservation Authorities Act.*

The conservation authorities listed in Appendix A of the Direction are encouraged to make the Direction publicly available on the Governance section of their websites.

Pursuant to subsection 21.2 (3) of the Act, I am also re-distributing the Minister's list of classes and programs and services in respect of which conservation authorities may charge a fee along with this Direction, with editorial changes to reflect the recent legislative and regulatory changes.

If you have any questions, please contact Jennifer Keyes, Director, Resources Planning and Development Policy Branch, at Jennifer.Keyes@ontario.ca or 705-761-4831.

If it is in the public interest to do so, I will provide further direction or clarification at a later date related to the matters set out in this Direction.

Sincerely,

The Honourable Graydon Smith
Minister of Natural Resources and Forestry

c: The Honourable Steve Clark, Minister of Municipal Affairs and Housing
The Honourable David Piccini, Minister of the Environment, Conservation and Parks

Ontario

Minister's Direction Issued Pursuant to Section 21.3 of the *Conservation Authorities Act*
(this "Direction")

WHEREAS section 21.2 of the *Conservation Authorities Act*, in effect on January 1, 2023, permits a Conservation Authority to charge a fee for a program or service if the program or service is included in the Minister's list of classes of programs and services in respect of which a Conservation Authority may charge a fee;

AND WHEREAS subsections 21.2 (6) and 21.2 (7) of the *Conservation Authorities Act* provide that a Conservation Authority shall adopt a written fee policy that includes a fee schedule listing the programs and services that it provides in respect of which it charges a fee, and the amount of the fee charged for each program or service or the manner in which the fee is determined (a "**Fee Schedule**");

AND WHEREAS subsection 21.2 (10) of the *Conservation Authorities Act* provides that a Conservation Authority may make a change to the list of fees set out in the fee schedule or to the amount of any fee or the manner in which a fee is determined, provided the authority shall give notice of the proposed change to the public in a manner it considers appropriate;

AND WHEREAS section 21.3 of the *Conservation Authorities Act* provides the Minister with the authority to give a written direction to an authority directing it not to change the amount of any fee it charges under subsection 21.2 (10), in respect of a program or service set out in the list referred to in subsection 21.2 (2), for the period specified in the direction;

NOW THEREFORE pursuant to the authority of the Minister of Natural Resources and Forestry under section 21.3, the Conservation Authorities set out under Appendix "A" of this Direction (the "**Conservation Authorities**" or each, a "**Conservation Authority**") are hereby directed as follows:

Fee Changes Prohibition

1. Commencing on the Effective Date and for the duration of the Term of this Direction, a Conservation Authority is prohibited from making a change under subsection 21.2 (10) of the *Conservation Authorities Act* to the amount of any fee or the manner in which a fee is determined in its fee schedule if such a change would have the effect of changing the fee amount for the programs and services described in paragraphs 2 and 3 of this Direction.

Program and Service Fees Impacted

2. This Direction applies to any fee set out in the Fee Schedule of a Conservation Authority, including without limitation fees for any mandatory program or service (Category 1), municipal program or service (Category 2), or Conservation Authority recommended program or service (Category 3) related to reviewing and commenting on

planning and development related proposals, applications, or land use planning policies, or for Conservation Authority permitting.

3. For greater certainty, this Direction applies to any fees in respect of the following programs or services provided under the Mandatory Programs and Services regulation (O. Reg. 686/21):
    a. Section 6: programs and services related to reviewing applications and proposals under the *Aggregate Resources Act*, *Drainage Act*, *Environmental Assessment Act*, and the *Niagara Escarpment Planning and Development Act*, for the purpose of commenting on the risks related to natural hazards arising from the proposal,
    b. Section 7: programs and services related to ensuring that decisions under the *Planning Act* are consistent with the natural hazards policies in the policy statements issued under section 3 of the *Planning Act* and are in conformance with any natural hazard policies included in a provincial plan as defined in section 1 of that Act,
    c. Section 8: programs and services related to Conservation Authority duties, functions, and responsibilities to administer and enforce section 28 and its regulations, section 28.0.1, and section 30.1 of the *Conservation Authorities Act*,
    d. Paragraph 4 of subsection 13 (3): programs and services related to reviewing and commenting on any proposal made under another Act for the purpose of determining whether the proposal relates to a significant drinking water threat or may impact any drinking water sources protected by a source protection plan, and
    e. Subparagraph 4 iv of section 15: programs and services related to reviewing and commenting on proposals made under other Acts for the purpose of determining the proposal's impact on the Lake Simcoe Protection Plan and the Lake Simcoe watershed.

Application

4. This Direction, applies to all Conservation Authorities in Ontario, listed in Appendix "A" to this Direction.
5. For greater certainty, this Direction also applies to the Conservation Authorities listed in Appendix "A" to this Direction when such Conservation Authorities are meeting as a source protection authority under the *Clean Water Act, 2006*.

Effective Date and Term

6. This Direction is effective from January 1, 2023 (the "**Effective Date**").
7. The term of this Direction is the period from the Effective Date to December 31, 2023 (the "**Term**").

Amendments

8. This Direction may be amended in writing from time to time at the sole discretion of the Minister.

HIS MAJESTY THE KING IN RIGHT OF ONTARIO
as represented by the
Minister of Natural Resources and Forestry

The Honourable Graydon Smith
Minister of Natural Resources and Forestry
December 28, 2022

This page intentionally left blank.

Ontario

APPENDIX A

LIST OF CONSERVATION AUTHORITIES TO WHICH THE DIRECTION APPLIES

Ausable Bayfield CA
R.R. #3
71108 Morrison Line
Exeter ON N0M 1S5
Brian Horner
bhorner@abca.on.ca

Cataraqui Region CA
Box 160
1641 Perth Road
Glenburnie ON K0H 1S0
Katrina Furlanetto
kfurlanetto@crca.ca

Catfish Creek CA
R.R. #5
8079 Springwater Road
Aylmer ON N5H 2R4
Dusty Underhill
generalmanager@catfishcreek.ca

Central Lake Ontario CA
100 Whiting Avenue
Oshawa ON L1H 3T3
Chris Darling
cdarling@cloca.com

Credit Valley CA
1255 Old Derry Rd
Mississauga ON L5N 6R4
Quentin Hanchard
quentin.hancard@cvc.ca

Crowe Valley CA
Box 416
70 Hughes Lane
Marmora ON K0K 2M0
Tim Pidduck
tim.pidduck@crowevalley.com

Essex Region CA
Suite 311
360 Fairview Ave West
Essex ON N8M 1Y6

Tim Byrne
tbyrne@erca.org

Ganaraska Region CA
Box 328
2216 County Road 28
Port Hope ON L1A 3V8
Linda Laliberte
llaliberte@grca.on.ca

Grand River CA
Box 729
400 Clyde Road
Cambridge ON N1R 5W6
Samantha Lawson
slawson@grandriver.ca

Grey Sauble CA
R.R. #4
237897 Inglis Falls Road
Owen Sound ON N4K 5N6
Tim Lanthier
t.lanthier@greysauble.on.ca

Halton Region CA
2596 Britannia Road West
Burlington ON L7P 0G3
Hassaan Basit
hbasit@hrca.on.ca

Hamilton Region CA
P.O. Box 81067
838 Mineral Springs Road
Ancaster ON L9G 4X1
Lisa Burnside
lisa.burnside@conservationhamilton.ca

Kawartha Region CA
277 Kenrei (Park) Road
Lindsay ON K9V 4R1
Mark Majchrowski
mmajchrowski@kawarthaconservation.com

Kettle Creek CA
R.R. #8
44015 Ferguson Line
St. Thomas ON N5P 3T3
Elizabeth VanHooren
elizabeth@kettlecreekconservation.on.ca

Lake Simcoe Region CA
Box 282
120 Bayview Parkway
Newmarket ON L3Y 3W3
Rob Baldwin
r.baldwin@lsrca.on.ca

Lakehead Region CA
Box 10427
130 Conservation Road
Thunder Bay ON P7B 6T8
Tammy Cook
tammy@lakeheadca.com

Long Point Region CA
4 Elm Street
Tillsonburg ON N4G 0C4
Judy Maxwell
jmaxwell@lprca.on.ca

Lower Thames Valley CA
100 Thames Street
Chatham ON N7L 2Y8
Mark Peacock
mark.peacock@ltvca.ca

Lower Trent Region CA
R.R. #1
714 Murray Street
Trenton ON K8V 5P4
Rhonda Bateman
rhonda.bateman@ltc.on.ca

Maitland Valley CA
Box 127

1093 Marietta Street
Wroxeter ON N0G 2X0
Phil Beard
pbeard@mvca.on.ca

Mattagami Region CA
100 Lakeshore Road
Timmins ON P4N 8R5
David Vallier
david.vallier@timmins.ca

Mississippi Valley CA
10970 Highway 7
Carleton Place ON K7C 3P1
Sally McIntyre
smcintyre@mvc.on.ca

Niagara Peninsula CA
250 Thorold Road West, 3rd Floor
Welland ON L3C 3W2
Chandra Sharma
csharma@npca.ca

Nickel District CA
199 Larch St
Suite 401
Sudbury ON P3E 5P9
Carl Jorgensen
carl.jorgensen@conservationsudbury.ca

North Bay-Mattawa CA
15 Janey Avenue
North Bay ON P1C 1N1
Chitra Gowda
chitra.gowda@nbmca.ca

Nottawasaga Valley CA
8195 Line 8
Utopia ON L0M 1T0
Doug Hevenor
dhevenor@nvca.on.ca

Otonabee Region CA
250 Milroy Drive
Peterborough ON K9H 7M9
Janette Loveys Smith
jsmith@otonabeeconservation.com

Quinte CA
R.R. #2
2061 Old Highway #2
Belleville ON K8N 4Z2
Brad McNevin
bmcnevin@quinteconservation.ca

Raisin Region CA
PO Box 429
18045 County Road 2
Cornwall ON K6H 5T2
Richard Pilon
richard.pilon@rrca.on.ca

Rideau Valley CA
Box 599
3889 Rideau Valley Dr.
Manotick ON K4M 1A5
Sommer Casgrain-Robertson
sommer.casgrain-robertson@rvca.ca

Saugeen Valley CA
R.R. #1
1078 Bruce Road #12, Box #150
Formosa ON N0G 1W0
Jennifer Stephens
j.stephens@svca.on.ca

Sault Ste. Marie Region CA
1100 Fifth Line East
Sault Ste. Marie ON P6A 6J8
Corrina Barrett
cbarrett@ssmrca.ca

South Nation River CA
38 Victoria Street
P.O. Box 29
Finch ON K0C 1K0
Angela Coleman
acoleman@nation.on.ca

St. Clair Region CA
205 Mill Pond Crescent

Strathroy ON N7G 3P9
Ken Phillips
kphillips@scrca.on.ca

Toronto and Region CA
101 Exchange Avenue
Vaughan ON L4K 5R6
John MacKenzie
john.mackenzie@trca.ca

Upper Thames River CA
1424 Clarke Road
London ON N5V 5B9
Tracey Annett
annettt@thamesriver.on.ca

Policy: Minister's list of classes of programs and services in respect of which conservation authorities may charge a fee

December 28, 2022

Preamble

A conservation authority is permitted to charge a fee for a program or service only if the program or service is included in the Minister's list of classes of programs and services in respect of which a conservation authority may charge a fee. The Minister's published list of classes of programs and services in respect of which a conservation authority may charge a fee ("Minister's Fee Classes Policy") is provided as per the provisions set out in section 21.2 of the *Conservation Authorities Act*. From time to time, the Minister may make changes to the list and will promptly update this document and distribute it to each conservation authority.

Categories of conservation authority programs and services

The *Conservation Authorities Act* establishes three categories of programs and services that a conservation authority may provide:

- Category 1: Mandatory programs and services, which are those that a conservation authority is required to provide under section 21.1 of the Act, and that are described in the "Mandatory Programs and Services" regulation (O. Reg. 686/21).
- Category 2: Municipal programs and services, which are those that a municipality, situated in whole or in part within a conservation authority's area of jurisdiction, requests a conservation authority to provide on behalf of the municipality pursuant to s. 21.1.1 of the Act under a memorandum of understanding or other agreement.
- Category 3: Other programs and services that the conservation authority determines are advisable to provide, pursuant to section 21.1.2 of the Act, to further the purposes of the Act.

Fees that a conservation authority may charge under the *Conservation Authorities Act*

Section 21.2 of the *Conservation Authorities Act* requires a conservation authority to administer the charging of fees in a transparent and accountable manner by adopting and publishing a written fee policy, which includes a fee schedule that lists the programs and services for which an authority charges a fee and the amount to be charged. Conservation authorities must maintain their fee schedule and if an authority wishes to make changes to its fee schedule, it must notify the public of the proposed change (e.g., on its website). In its fee policy, a conservation authority must also set out the frequency with which it will conduct a review of its fee policy, including its fee schedule, the process for carrying out a review of the fee policy, including the rules for giving notice of the review and any changes as a result of a review, and the circumstances under which any person may request the

authority to reconsider a fee that was charged to the person and the procedures applicable to the reconsideration. Decisions regarding the fee policy and fee schedule are made by the members of a conservation authority, comprised of representatives appointed by the participating municipalities and the agricultural sector representative member, where appointed by the Minister of Natural Resources and Forestry.

Reconsideration of fee charged

A conservation authority's fee policy must define the circumstances in which a person may request that the authority reconsider a fee that was charged and the procedures applicable to the reconsideration. Where the authority's fee policy permits a person to request the authority to reconsider the fee it has charged that person because it is contrary to the authority's fee schedule or excessive in relation to the program or service for which it was charged, that person may apply to the authority, in accordance with the procedures set out in the authority's fee policy, to request a reconsideration of the fee. After receiving and considering the request, the authority may vary the amount of the fee to be charged to an amount the authority considers appropriate, order that no fee be charged, or confirm the original amount of the fee.

Fees that a conservation authority may charge as prescribed by other legislation

The Minister's Fee Classes Policy does not include those instances where the authority is already authorized under another statute to charge a fee for a program or service. For example, where an authority administers an on-site sewage system program under the *Building Code Act, 1992*, the authority has the power to charge fees for that program. Similarly, under Part IV of the *Clean Water Act, 2006*, a municipality has enforcement responsibility to regulate significant drinking water threats in wellhead protection areas and intake protection zones and may delegate that responsibility to a conservation authority. When this delegation occurs, the conservation authority is also given the power to charge fees as the enforcement body under that Act.

Prescribed Acts

Pursuant to subsections 21.1.1 (1.1) and 21.1.2 (1.1) of the *Conservation Authorities Act*, the Minister may make regulations to prohibit a CA from providing a municipal (Category 2) or other (Category 3) program or service related to reviewing and commenting on a proposal, application, or other matter made under a prescribed Act. This precludes the charging of a fee by a conservation authority for any such program or service under an Act that has been prescribed for the purposes of subsections 21.1.1 (1.1) or 21.1.2 (1.1).

User-Pay Principle

The fees that conservation authorities charge, in accordance with the Minister's Fee Classes Policy, are considered 'user fees.' 'User fees' are fees paid to an authority by a

person or organization for a service that they specifically benefit from. This includes use of a public resource (e.g., park access or facility rental) or the privilege to do something (e.g., receive an approval through a permit or other permission to undertake a regulated activity).

For the purposes of this Minister's Fee Classes Policy, a fee may only be applied when the User-Pay Principle is considered appropriate, which is when there is a class of persons that directly benefits from a program or service delivered by an authority ("User-Pay Principle") (note: other restrictions may apply; see Table 1 below).

Enabling authorities to charge a fee for programs and services where the User-Pay Principle is considered appropriate increases opportunities for an authority to generate revenue. This may reduce an authority's reliance on the municipal levy (now called an "apportionment") to finance the programs and services it provides. However, it is up to a conservation authority to decide the proportion of the costs associated with administering and delivering a program or service that should be recovered by a user fee versus those costs that are offset by other funding sources, such as the municipal levy. Beginning with the 2024 calendar year budgets, if an authority considered opportunities to raise and use self-generated revenue such as fees to finance its operations, the authority will be required to include in its budget a description of what the authority considered.

Fee amounts

A conservation authority may determine the amount of a fee to be charged for a program or service that it provides. If a fee is to be charged for a program or service, the amount to be charged or the manner for determining the amount must be listed in the conservation authority's fee schedule. Some fee amounts cannot exceed the authority's costs for administering and delivering a program or service. For example, fees for planning services should be developed in conjunction with the appropriate planning authorities and set to recover but not exceed the costs associated with administering and delivering the services on a program basis. Similarly, fees for permitting services should be developed to recover but not exceed the costs associated with administering and delivering the services on a program basis. Other fees set by the authority for a program or service are not subject to this restriction, such as fees for selling products or fees for rentals. Fees that are not subject to this restriction can provide the authority with a source of revenue to help offset costs for other programs and services offered by the authority.

Minister's direction re fee changes

Pursuant to subsection 21.3 (1) of the *Conservation Authorities Act*, the Minister may give a written direction to a conservation authority directing it not to change the amount of any fee it charges, or the manner in which a fee is determined, in respect of a program or

service that is set out in this Minister's list of classes of programs and services in respect of which a conservation authority may charge a fee. Any conservation authority that receives a direction is required to comply within the time specified in the direction.

Minister's fee classes

The following is the list of classes of programs and services in respect of which an authority may charge a fee.

Table 1. Classes of programs and services for which conservation authorities may charge a fee

Classes of programs and services	Criteria
Category 1 mandatory programs and services (section 21.1 of the *Conservation Authorities Act*) and programs and services provided in accordance with the Mandatory Programs and Services Regulation (O. Reg. 686/21)	Category 1 programs and services where the following requirement is met: • The User-Pay Principle is appropriate.
Category 2 municipal programs and services – i.e., those programs and services an authority provides on behalf a municipality pursuant to a memorandum of understanding or service level agreement or other agreement (section 21.1.1 of the *Conservation Authorities Act*)	Category 2 programs and services, subject to any limitations that may be set out in the *Conservation Authorities Act* or its regulations, and where the following requirements are met: • The User-Pay Principle is appropriate; **and** • The parties agree through provisions in a memorandum of understanding, service level agreement, or other agreement governing the provision of the Category 2 program or service that the authority should be permitted to charge a fee for that program or service.
Category 3 authority determined programs and services (section 21.1.2 of the *Conservation Authorities Act*) that are financed in whole or in part by the municipal levy and on or after January 1, 2024 will require a cost apportioning agreement	Category 3 programs and services, subject to any limitations that may be set out in the *Conservation Authorities Act* or its regulations, that are financed in whole or in part by the municipal levy, and where the following requirements are met: • The User-Pay Principle is appropriate; **and** • Where a cost apportionment agreement has been entered into for a Category 3 program or service, the agreement includes provisions permitting the authority to charge a fee for the program or service. This requirement does not apply where the cost

	apportionment agreement relates to any of the following Category 3 programs and services: i) Recreational activities that are provided on land that is owned or controlled by the authority with the direct support or supervision of staff employed by the authority or by another person or body, or with facilities or other amenities maintained by the authority, including equipment rentals and renting facilities for special events. ii) Community relations to help establish, maintain, or improve relationships between the authority and community members. iii) Public education services to improve awareness of issues relating to the conservation, restoration, development, and management of natural resources in watersheds in Ontario. iv) The provision of information to the public. v) The sale of products by the authority.
Category 3 authority determined programs and services (section 21.1.2 of the *Conservation Authorities Act*) that are not financed in whole or in part by the municipal levy	Category 3 programs and services, subject to any limitations that may be set out in the *Conservation Authorities Act* or its regulations, that are not financed in whole or in part by the municipal levy, and where the following requirement is met: • The User-Pay Principle is appropriate.

Disclaimer

This Minister's Fee Classes Policy summarizes some of the requirements in the *Conservation Authorities Act* with respect to the charging of a fees by a conservation authority for programs and services. This document should not be construed as legal advice or a substitute for seeking independent legal advice. Anyone seeking to fully understand how the Act and regulations may apply to the charging of fees by a conservation authority for programs or services should refer to the Act and regulations. The Act and associated regulations take precedence in the event of any inconsistency with this policy.

This page intentionally left blank.

Ministry of Natural Resources and Forestry

Resources Planning and Development
Policy Branch
Policy Division
300 Water Street
Peterborough, ON K9J 3C7

Ministère des Richesses naturelles et des Forêts

Direction des politiques de planification et d'exploitation des ressources
Division de l'élaboration des politiques
300, rue Water
Peterborough (Ontario) K9J 3C7

To: **Conservation authorities and participating municipalities, Conservation Ontario and the Association of Municipalities of Ontario**

From: Jennifer Keyes, Director

Date: December 28, 2022

Subject: Legislative and regulation changes affecting conservation authorities

Good afternoon,

I am writing to provide you with information on amendments to the *Conservation Authorities Act* made as part of the *More Homes Built Faster Act, 2022*, as well as two regulations that have been approved by the province in support of Ontario's Housing Supply Action Plan, both of which will come into effect on January 1, 2023. In addition, the Minister of Natural Resources and Forestry has issued a direction regarding fees that will be distributed separately from this letter. A notice will be posted to the Environmental Registry of Ontario (ERO) in the coming weeks regarding these decisions.

Legislative Amendments

As you are likely aware, the *More Homes Built Faster Act, 2022* was passed this Fall, receiving Royal Assent on November 28, 2022. Several changes were made to the *Conservation Authorities Act* that are intended to further focus conservation authorities on their core mandate, support faster and less costly approvals, streamline conservation authority processes, and help make land suitable for housing available for development.

Notably, one part of the *More Home Built Faster Act, 2022* which came into effect upon Royal Assent were changes to Section 28.0.1 of the *Conservation Authorities Act*, which include provisions to require a conservation authority to issue a permission or permit where a Minister's Zoning Order has been made under section 47 of the *Planning Act*. This section was amended to also apply to orders made under section 34.1 of the *Planning Act*, otherwise known as the "community infrastructure and housing accelerator" tool, in addition to some other minor changes.

Other changes, which will come into effect on January 1, 2023, include:

- Updates to Section 21 of the Act so that a disposition of land in respect of which the Minister has made a grant under section 39 requires authorities to provide a notice of the proposed disposition to the Minister instead of requiring the Minister's approval. Authorities will also be required to conduct public consultations before disposing of lands that meet certain criteria.
- Sections 21.1.1 and 21.1.2 of the Act which provide that authorities may not provide a program or service related to reviewing and commenting on proposals, applications, or other matters under prescribed Acts.
- A new section 21.3 that enables the Minister to issue temporary direction to a conservation authority preventing the authority from changing the amount of a fee it charges under subsection 21.2 (10) of the Act.

Remaining legislative changes regarding conservation authority development regulations will not come into effect until proclaimed, following the creation of a new Minister's regulation with supporting regulatory details. This regulation is currently being consulted on until December 30th on the ERO, #019-2927: Proposed updates to the regulation of development for the protection of people and property from natural hazards in Ontario.

New Regulatory Requirements

Following the passing of these legislative amendments, the government has proceeded with making two regulations, both of which will come into effect on January 1, 2023.

Amendments were made to Ontario Regulation 686/21: Mandatory Programs and Services to require conservation authorities to identify conservation authority lands suitable for housing. This requirement is part of the preparation of the land inventory required to be completed by conservation authorities by December 31, 2024, and certain considerations for identifying whether or not lands are suitable for housing are listed.

A new Minister's regulation (Ontario Regulation 596/22: Prescribed Acts – Subsections 21.1.1 (1.1) and 21.1.2 (1.1) of the Act) was also made to focus conservation authorities' role when reviewing and commenting on proposals, applications, or other matters related to development and land use planning. Under this regulation, conservation authorities are no longer able to provide a municipal (Category 2) or other (Category 3) program or service related to reviewing and commenting on a proposal, application, or other matter made under the following Acts:

- The *Aggregate Resources Act*
- The *Condominium Act, 1998*
- The *Drainage Act*
- The *Endangered Species Act, 2007*
- The *Environmental Assessment Act*
- The *Environmental Protection Act*
- The *Niagara Escarpment Planning and Development Act*
- The *Ontario Heritage Act*
- The *Ontario Water Resources Act*
- The *Planning Act*

This regulation does not affect conservation authorities' provision of mandatory programs or services (Category 1) related to reviewing and commenting on a proposal, application, or other matter made under those Acts.

An administrative update to the "Determination of Amounts Owing Under Subsection 27.2 (2) of the Act" regulation (O. Reg. 401/22) was also made to update the methods of determining amounts owed by specified municipalities for operating expenses and capital costs related to mandatory the *Clean Water Act, 2006* and *Lake Simcoe Protection Act, 2008* programs and services to enable use of a benefit-based apportionment method.

I appreciate that with these most recent amendments, along with changes made over the last number of years, this is a time of significant transition for conservation authorities and their member municipalities. Throughout this time, conservation authorities have continued to deliver on their important roles in protecting people and property from natural hazards, conserving and managing lands, and drinking water source protection.

The ongoing efforts of conservation authorities to implement these changes is acknowledged, including initiatives led by conservation authorities and Conservation Ontario that have contributed to the Government's objectives of improving accountability and transparency and supporting timely development approvals to help address Ontario's housing supply crisis.

If you have any questions, please reach out to the Ministry of Natural Resources and Forestry at ca.office@ontario.ca. I look forward to working with you in the coming year.

Sincerely,

Jennifer Keyes

Director, Resources Planning and Development Policy Branch
Ministry of Natural Resources and Forestry

This page intentionally left blank.

Hamilton Conservation Authority

A Healthy Watershed for Everyone

Memorandum

TO: **Board of Directors**

FROM: **Lisa Burnside, Chief Administrative Officer (CAO)**

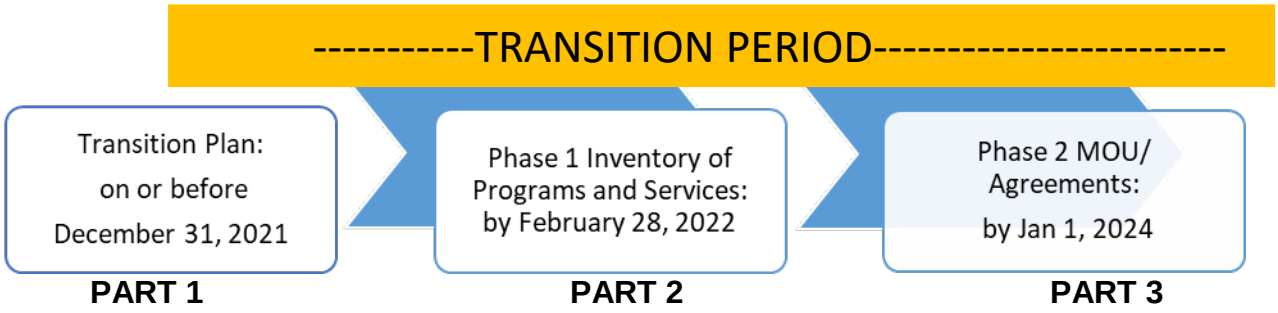
MEETING DATE: **January 5, 2023**

RE: **HCA Quarterly Report #3 to MNRF – Ontario Regulation 687/21**

BACKGROUND

On October 7, 2021, Ontario Regulation 687/21: Transition Plans and Agreements for Programs and Services Under Section 21.1.2 of the *Conservation Authorities Act* was passed.

The key components and deadlines for *Transition Plan and Agreements Regulation (O.Reg. 687/21)* are illustrated in Figure 1 below. As required, HCA developed and approved a Transition Plan and Inventory of Programs and Services in Part 1 and Part 2 as noted below. The inventory is based on the three categories identified in the Regulation which include (1) Mandatory, (2) Municipally requested, and (3), Other programs and services an Authority determines are advisable.



HCA currently is in part 3 of the Transition period where the first quarterly report to MECP was submitted to meet the July 1, 2022 requirement and the second report was submitted October 1, 2022 (now to MNRF given reporting change).

Six quarterly reports will be required in total with the third report required January 1, 2023. A final Conservation Authority report will be due January 31, 2024.

STAFF COMMENT

As required under Ontario Regulation 687/21 and identified in HCA's Transition Plan, quarterly Progress Reports are required to be submitted. Under the Regulation the Progress Reports must include the following;

- a summary of any comments or feedback on your inventory that were submitted by your participating municipalities or by any others;
- a summary of any changes that were made to your inventory;
- an update on the progress towards negotiating cost apportioning agreements with your participating municipalities, including any difficulties you are experiencing that might impact the ability to conclude any cost apportioning agreements by the transition date;
- a copy of your updated inventory, clearly indicating changes that have been made since your initial inventory was submitted in February 2022.

Staff have prepared the attached report which was submitted January 1, 2023 to meet the third quarterly report deadline outlining the consultation steps that have been undertaken to date with our two participating municipalities, the City of Hamilton and Township of Puslinch.

Prior to the municipal election and passing of Bill 23, *More Homes Built Faster Act, 2022*, the draft inventory has been well received and there have been no formal comments or concerns on the service areas and program areas included. Internal review was underway at our municipalities to review the draft inventory and coordinate any comments on it as well as review of category 2 and 3 programs and services which require MOUs and agreements.

However, the October 2022 municipal elections delayed progress on formalizing comments and agreements. Our municipalities have various competing priorities for this term of Council impacting dedicated municipal staff resources to the inventory and MOU development. Additionally, Bill 23 will enact changes to some of the programs and services noted in our inventory and Bill 23 also impacts the operations and processes of our participating municipalities. The timing and full impact is still to be determined once regulations and further information is released by the Province.

HCA will continue to ask for follow up meetings to be scheduled and to obtain feedback when the City of Hamilton and Township of Puslinch have any comments to share. Particularly in regard to our major funding municipality, the City of Hamilton, we do not expect discussions to resume until sometime in the New Year.

At this time, with timing and details unknown, it is very possible for the need to request an extension to the January 1, 2024 deadline for having MOUs in place with participating municipalities. Staff will continue to re-assess whether an

extension request may be required in 2023 and we will provide an update on these matters for the next quarterly report due April 1, 2023.

STRATEGIC PLAN LINKAGE

The proposed updates refer directly to the HCA Strategic Plan 2019-2023:

- **Strategic Goal – Organizational Excellence**

AGENCY COMMENTS

N/A

LEGAL/FINANCIAL IMPLICATIONS

There is no immediate financial impact, however, it should be noted that this undertaking will continue to involve significant time from staff, along with municipal partners.

CONCLUSIONS

Staff will continue to bring forward quarterly update reports to the Board of Directors and comply with the requirements of the Phase 1 regulations. Future update reports will be brought forward to the Board according to timelines that align with the following Progress Report deadlines set out in the Phase 1 regulations:

- April 1, 2023
- July 1, 2023
- October 1, 2023

HCA staff will also continue to carry out discussions and review of our inventory, as well as MOU development with both participating municipalities.

This page intentionally left blank.

Hamilton Conservation Authority

A Healthy Watershed for Everyone

HCA Quarterly Report #3 to the

Ministry of Natural Resources and Forestry (MNRF)

As required for Conservation Authority Act Amendments

Transition Plan and Agreements Regulation (O.Reg. 687/21)

January 1, 2023

HCA Quarterly Report #3 Details – January 1, 2023

HCA meetings with City of Hamilton staff to review Inventory of Programs and Services

- Last formal meeting took place August 10, 2022 and review process continues
- No formal comments or concerns regarding the Inventory have been received at this time
- No changes made to inventory at this time
- At this point, given Fall municipal election with renewed Council and changes from Bill 23 that will impact conservation authorities and our participating municipalities, there is definite potential for difficulties in meeting transition plan milestones
- Staff will continue to re-assess whether an extension request may be required in 2023 based on changes required to the inventory and the status of MOU approvals at that time.

HCA meetings with Township of Puslinch staff to review Inventory of Programs and Services

- No further formal meetings have taken place since May 26, 2022 and review process continues
- No formal comments or concerns regarding the Inventory have been received at this time, which represents status quo of current budget
- No changes made to inventory at this time
- At this point, given Fall municipal election with renewed Council and changes from Bill 23 that will impact conservation authorities and our participating municipalities, there is definite potential for difficulties in meeting transition plan milestones
- Staff will continue to re-assess whether an extension request may be required in 2023 based on changes that will be required to the inventory and the status of MOU approvals at that time.

Hamilton Conservation Authority

A Healthy Watershed for Everyone

Report

TO: **Budget & Administration Committee**

FROM: **Lisa Burnside, Chief Administrative Officer (CAO)**

PREPARED BY: **Nancy Watts, Director of Human Resources & Wellness**

MEETING DATE: **November 17, 2022**

RE: **2023 Mileage Rate**

STAFF RECOMMENDATION

THAT the Budget and Administration Committee recommends to the Board of Directors:

THAT the mileage rate of 56 cents per kilometre be increased to 58 cents per kilometre effective January 1, 2023.

BACKGROUND

As approved by the Budget & Administration Committee in June 2007 and the Board of Directors in July 2007, a yearly review of mileage is to take place with any change effective January 1. The rate of mileage compensation shall be subject to an annual adjustment based on the year-over-year change in the Consumer Price Index for Private Transportation in Ontario. An increase will take place only if the change would result in a minimum half cent increase in the rate. Staff will also monitor mileage rates from area conservation authorities to ensure our rate does not fall below the average.

STAFF COMMENT

Consumer Price Index (CPI)

The September 2022 year over year CPI for Private Transportation in Ontario did increase by 8.58% from September of last year, mainly to the increase in gas prices.

Area Conservation Authority Mileage Rates

The table below shows a summary of mileage rates from area conservation authorities:

Conservation Authority	Rate – cents per km
St. Clair	61
Upper Thames	50
Lake Simcoe	61
Grand River	58
Credit Valley	58
Niagara	62
Halton	58
Quinte	.61
Average	**58.6**

Canada Revenue Agency

Canada Revenue Agency publishes a guideline for calculating what is a “reasonable allowance” that would not be deemed to be taxable income. For 2022, that guideline is 61 cents for the first 5,000 km and 55 cents per km thereafter.

Based on the above information, increasing the mileage rate to 58 cents per km is recommended for 2023 as this meets average reimbursement rate with other area Conservation Authorities and recognizes that there has been a substantial increase in the CPI Private Transportation Index.

STRATEGIC PLAN LINKAGE

The initiative refers directly to the HCA Strategic Plan 2019 - 2024:

- Strategic Priority Area - Organization Excellence
    - Continue to update and streamline operational policies and leverage emerging technology to enhance business service delivery

AGENCY COMMENTS

Not applicable.

LEGAL/FINANCIAL IMPLICATIONS

Using past average mileage reimbursement figures, the two cent increase would increase annual mileage costs by approximately $1,500.

CONCLUSIONS

Based on the above information, it is recommended that the 2022 mileage rate of 56 cents per kilometre be increased to 58 cents per km for 2023.

Hamilton Conservation Authority

A Healthy Watershed for Everyone

Report

TO: **Budget & Administration Committee**

FROM: **Lisa Burnside, Chief Administrative Officer (CAO)**

MEETING DATE: **December 15, 2022**

RE: **2023 Annual General Meeting**

STAFF RECOMMENDATION

THAT the Budget & Administration Committee recommend to the Board of Directors:

> **THAT the HCA Annual General Meeting (AGM) be postponed until the completion of all appointments from HCA's participating municipalities.**

BACKGROUND

Following municipal election cycles, HCA receives municipal appointments for its Board of Director members. However, given the circumstances that half of the City of Hamilton's appointments are citizen members that require additional time to recruit and appoint following the election, HCA does not experience its renewed Board until the Spring following the municipal election. Accordingly, HCA's Administrative by-laws recognize that the Annual General Meeting may be delayed.

The Hamilton Conservation Authority Administrative By-Law under Section C (11) Meeting Procedures – Meeting Schedule and Annual General Meeting, indicates the following:

> The Annual General Meeting shall be the February meeting each year. The date of the meeting may be adjusted to allow for consideration for timing of municipal elections and corresponding municipal and citizen appointments.

STAFF COMMENT

HCA has delayed its AGM on occasions in the recent past, usually based on municipal election timing and corresponding municipal and citizen appointments, and staff are once again bringing this recommendation forward.

For the full renewal of the Board after the recent Municipal election, we have once again been advised that citizen appointments to HCA's Board of Directors will not be confirmed by City of Hamilton Council until sometime in late Spring 2023.

Given the interval until the full renewal of the Board of Directors, staff recommend the AGM be postponed until citizen appointments are complete.

STRATEGIC PLAN LINKAGE

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

- **Strategic Priority Area – Organizational Excellence**

AGENCY COMMENTS

N/A

LEGAL/FINANCIAL IMPLICATIONS

N/A

Hamilton Conservation Authority

A Healthy Watershed for Everyone

Report

TO: **Budget & Administration Committee**

FROM: **Santina Moccio, Acting Chair**

MEETING DATE: **December 15, 2022**

RE: **Email Voting**

RECOMMENDATION

THAT the Budget & Administration Committee recommends to the Board of Directors:

THAT the Administrative By-law under Section C - Meeting Procedures related to Electronic Meetings and Participation for electronic votes be revised with the following wording:

The Chair or the Chair's designate may administer a vote on a motion by electronic means if the motion is required on an urgent basis, or for any other reason as deemed necessary by the Chair or the Chair's designate. A deadline will be prescribed within which the votes must be cast, and the motion will pass by a majority vote; and further

THAT staff be directed to amend the Administrative Bylaw with this update.

BACKGROUND & COMMENT

During our recent requirement for an electronic vote it was noticed that the current wording in the by-law is not clear and is prone to several interpretations and misinterpretations. Additionally, votes for the passing of motions should reflect majority regardless of which format is used.

In the past two years over the course of the pandemic, electronic meetings and participation have become commonplace and our by-laws involve updating as required. Accordingly, the revised wording in the recommendation provides clarity on use and adoption of electronic votes.

Therefore, the following section of the administrative by-law is proposed to be amended:

> "When the Chair wishes the Board to vote on an urgent motion, and it is impracticable to hold an in-person Board meeting in a sufficiently timely manner, the Chair or his/her designate may administer a vote by telephone or by electronic means (email or otherwise), provided no member of the Board of Directors objects and provided the Chair concludes that it is fair and appropriate to hold such a vote. Unless impracticable, the vote shall be held by telephone conference call or similar method by which all Directors may simultaneously communicate orally with one another. Only in exceptional circumstances should a vote be taken through email. In each case, the Chair shall prescribe the time period within which, and the means by which, the votes must be cast. At the conclusion of the time period, if there are fewer votes cast than are required in order to constitute a quorum at a meeting of the Board of Directors, the vote shall be a nullity. Provided a quorum is achieved, the result of the vote shall be binding, but (except in the case of unanimous votes of approval in writing by all Directors) only until the next Board meeting. If the result of a vote (other than a unanimous vote of approval in writing by all Directors) is not approved at the next Board meeting, or if any Director who did not vote objects at the next Board meeting to the holding of the vote by telephone or by electronic means, or objects to the voting procedure prescribed by the Chair, the vote shall become a nullity, but the same motion may then be voted upon at the meeting in the ordinary course. In the case of unanimous votes of approval in writing by all Directors, the result of the vote shall be binding immediately. All votes by telephonic or electronic means shall be minuted in the same way as votes at in-person Board meetings."

The following revised clause is proposed:

> "The Chair or the Chair's designate may administer a vote on a motion by electronic means if the motion is required on an urgent basis, or for any other reason as deemed necessary by the Chair or the Chair's designate. A deadline will be prescribed within which the votes must be cast, and the motion will pass by a majority vote."

Hamilton Conservation Authority

A Healthy Watershed for Everyone

Report

TO: **Board of Directors**

FROM: **Lisa Burnside, Chief Administrative Officer (CAO)**

MEETING DATE: **January 5, 2023**

RE: **2023 Schedule of Board of Directors Meetings**

STAFF RECOMMENDATION

THAT the Board of Directors approve the following:

THAT the 2023 scheduled meeting dates for the Board of Directors as noted in this report, be approved.

BACKGROUND

The Hamilton Conservation Authority Board of Directors, as per the Administrative By-Laws, meets 10 times per year beginning at 6pm on the first Thursday of the month. The schedule is subject to the right of the Board to set a different meeting schedule or to change the date of a meeting, and the right of the Chair to call a special meeting.

All meetings are held in the Auditorium at the Hamilton Conservation Authority Administration Office, 838 Mineral Springs Road, Ancaster, and meetings have been held in a hybrid format since technology upgrades during the COVID pandemic.

STAFF COMMENT

The proposed 2023 meeting dates for Board of Director meetings are as follows:

2023 Board of Directors Meeting Dates – Start time 6pm

Thursday January 5	**Thursday July 6**
Thursday February 2	**Thursday September 7**
Thursday March 2	**Thursday October 5**
Thursday April 6	**Thursday November 2**
Thursday May 4	**Thursday December 7**
Thursday June 1	

STRATEGIC PLAN LINKAGE

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

- **Strategic Priority Area – Organizational Excellence**

AGENCY COMMENTS

N/A

LEGAL & FINANCIAL IMPLICATIONS

N/A

CONCLUSIONS

The regularly scheduled meetings of the Board of Directors provide for 10 meetings in a year. The Chair may call for additional meetings as necessary or cancel meetings due to lack of agenda items.

Hamilton Conservation Authority

A Healthy Watershed for Everyone

Report

TO:	**Board of Directors**
FROM:	**Lisa Burnside, CAO**
RECOMMENDED & PREPARED BY:	**T. Scott Peck, MCIP, RPP, Deputy CAO/Director, Watershed Management Services**
MEETING DATE:	**January 5, 2023**
RE:	**Natural Heritage Offsetting Guidelines**

STAFF RECOMMENDATION

THAT the Board of Directors approve the HCA "Natural Heritage Offsetting Guidelines" document dated January 5, 2023 that address issues associated with Ministerial Zoning Orders and other Provincially and Municipally led environmental assessment projects.

BACKGROUND

At the November 4, 2021 board meeting, staff presented a report which reviewed the comments provided by HCA's two participating municipalities, stakeholders and the public in regard to natural heritage offsetting and also undertook a review of natural features in the HCA watershed to help inform issues associated with offsetting and a recommended policy approach for the HCA.

Subsequently, the HCA Board of Directors unanimously approved the staff recommendation with the following motion relating to Natural Heritage Offsetting Policy for the HCA.

THAT the Board of Directors receive the report titled "Natural Heritage Offsetting Policy Review", dated November 4, 2021;

THAT the existing policy framework for natural heritage features as outlined in Section 3 of the HCA's Planning & Regulation Policies and Guidelines, October 2011, be maintained; and,

THAT offsetting/compensation be incorporated in the policy but be limited to address issues associated with Ministerial Zoning Orders and other Provincially and municipally led environmental assessment projects and to that end, the following policy amendment should be added to Section 3.1 General Policies, Natural Heritage of the HCA's Planning & Regulation Policies and Guidelines, October 2011.

> **"Section 3.1 i) – In the instance of a Ministerial Zoning Order (MZO) being issued by the Province of Ontario or a Provincially or municipally led environmental assessment that requires the removal or partial removal of a designated or regulated natural heritage feature, offsetting/compensation can be utilized to provide for "net gain" or at a minimum, "no net loss".**

It is noted that the approved policy does not permit offsetting/compensation for planning or permit applications. The policy only allows for offsetting/compensation for MZO's and projects approved through a Provincially and municipally led environmental assessment. It is noted that pursuant to recent Provincial changes to the *Conservation Authorities Act*, Section 28.0.1(24)(25), an agreement is required for permits issued for MZO's to compensate for ecological impacts associated with the proposed development.

With the Boards approval of the above noted policy, offsetting/compensation guidelines are required. As noted in the 2021 staff report, actual guidelines would need to be developed which would be drafted and presented to the Board at a later date.

STAFF COMMENT

The attached document titled "Hamilton Conservation Authority, Natural Heritage Offsetting Guidelines, January 5, 2023" has been prepared to provide guidance to staff when offsetting is being proposed for Provincial or municipal environmental assessments or similar studies or for when an agreement is required for permits issued for MZO's to compensate for ecological impacts associated with the proposed development. The document has been developed based on the work HCA staff completed for the development of the overall HCA Offsetting Policy, review of background reports related of offsetting as well as current offsetting guidelines in place at other conservation authorities.

In the review of environmental assessment proposals and as per the Board of Directors approved policy, HCA comments and direction will speak to the need to avoid, minimize or mitigate impacts to natural heritage features with offsetting always considered as a last resort for such projects. In these cases, the guidelines as detailed in the document will be used. As noted, the Conservation Authorities Act requires a conservation authority to enter into an offsetting/compensation agreement where a Ministerial Zoning Order has been issued and a permit required. In these circumstances, the offsetting guidelines will be used to develop such agreements.

The document highlights the prerequisites required for ecological offsetting as well as the requirements for an Ecological Offsetting Strategy for an offsetting proposal that must demonstrate how the loss of natural heritage features will be compensated for and that this offset will result in a “net gain” or at a minimum “no net loss’ of natural heritage features. A 3:1 replacement ratio is proposed for wetlands while a 2:1 replacement ratio is proposed for woodlands. These replacement ratios are based on a review of studies related to the success of offsetting as well as current practices at conservation authorities. Exceptions are also provided where offsetting is not required based on the size of the feature and lack of associated natural features.

STRATEGIC PLAN LINKAGE

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

- **Strategic Priority Area – Natural Area Conservation**
    - Initiatives – Promote sustainable development by working with the City of Hamilton on natural heritage issues and undertake HCA plan input and review program.

AGENCY COMMENTS

HCA staff have reviewed the proposed HCA Offsetting Guidelines with the City of Hamilton. The City has indicated in discussions with HCA staff that as the policy and guidelines only allow for proposals subject of an MZO or for Provincially or municipally led environmental assessments, that they have no outstanding issues with the guidelines as proposed.

LEGAL/FINANCIAL IMPLICATIONS

Not applicable

CONCLUSIONS

The proposed HCA Natural Heritage Offsetting Guidelines have been prepared based on a review of offsetting studies and approaches and on current practices related to offsetting by conservation authorities with offsetting policies in place. The proposed HCA Natural Heritage Offsetting Guidelines will provide guidance to HCA staff when considering MZO’s and environmental assessments proposed by the Province of Ontario, the City of Hamilton, County of Wellington or the Township of Puslinch.

This page intentionally left blank.

Hamilton Conservation Authority
Natural Heritage Offsetting Guidelines

January 5, 2023

1.0 Introduction and Background

The Hamilton Conservation Authority (HCA) Strategic Plan 2019-2023 outlines that the HCA's Vision is a "A healthy watershed for everyone" and that our Mission is "To lead in the conservation of our watershed and connect people to nature". Five Key Strategic areas are noted in the strategic plan with Natural Heritage Conservation being one of the key strategic areas for the HCA. Natural Heritage Conservation relates to the conservation, restoration and enhancement of watershed natural areas and ecology. Several initiatives are listed under Natural Heritage Conservation to further advancements in this regard. Specifically, one initiative is to "Promote sustainable development by working with the City of Hamilton on natural heritage issues and undertake the HCA plan input and review program".

As part of the HCA's work related to Natural Heritage Conservation and as directed by the HCA Board of Directors, in 2021 the HCA completed a review of natural heritage offsetting with consideration given to the potential benefits of adding offsetting policy to the HCA's Planning & Regulation Policies and Guidelines document.

A Discussion Paper was prepared by HCA staff and endorsed by the HCA Board of Directors. The Discussion Paper was used to consult with watershed stakeholders and the public. HCA staff reviewed the stakeholder and public input received through the consultation process and developed an approach that maintained the existing policy framework for natural heritage but noted that offsetting/compensation be incorporated in policy but be limited to address issues associated with Ministerial Zoning Orders and other provincially and municipally led environmental assessment projects.

Flowing from the staff recommendation, on November 4, 2021, the HCA Board of Directors approved the following motion.

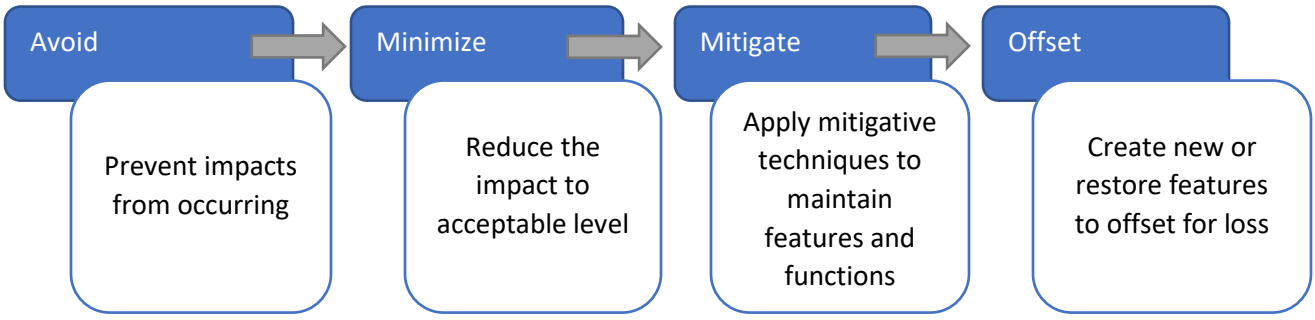
> **THAT the Board of Directors receive the report titled "Natural Heritage Offsetting Policy Review", dated November 4, 2021;**
>
> **THAT the existing policy framework for natural heritage features as outlined in Section 3 of the HCA's Planning & Regulation Policies and Guidelines, October 2011, be maintained; and,**
>
> **THAT offsetting/compensation be incorporated in the policy but be limited to address issues associated with Ministerial Zoning Orders and other Provincially and municipally led environmental assessment projects and to that end, the following policy amendment should be added to Section 3.1 General Policies, Natural Heritage of the HCA's Planning & Regulation Policies and Guidelines, October 2011.**

"Section 3.1 i) – In the instance of a Ministerial Zoning Order (MZO) being issued by the Province of Ontario or a Provincially or municipally led environmental assessment that requires the removal or partial removal of a designated or regulated natural heritage feature, offsetting/compensation can be utilized to provide for "net gain" or at a minimum, "no net loss".

It is noted that the approved policy does not permit offsetting/compensation for planning or permit applications. The policy only allows for offsetting/compensation for MZO's and projects approved through a Provincially and municipally led environmental assessment

With the Boards approval of the above noted policy for compensation/offsetting for MZO's and projects approved through a Provincially and municipally led environmental assessment, offsetting/compensation guidelines are required. It is noted that pursuant to Section 28.0.1(24)(25) of the Conservation Authorities Act, R.S.O. 1990, c. C.27, an agreement is required for permits issued for MZO's to compensate for ecological impacts associated with the proposed development.

As reviewed in the HCA Natural Heritage Offsetting Policy Development Discussion Paper, April 1, 2021", the mitigation hierarchy should be followed when offsetting/compensation is being considered. The mitigation hierarchy is as follows:



Source – Credit Valley Conservation Ecosystem Offsetting Guidelines, March 13, 2020

In the review of environmental assessment proposals and as per the Board of Directors approved policy, HCA comments and direction will speak to the need to avoid, minimize or mitigate impacts to natural heritage features with offsetting always considered as a last resort for such projects. In these cases, the guidelines as detailed in this document will be used. As noted, the Conservation Authorities Act requires a conservation authority to enter into an offsetting/compensation agreement where a Ministerial Zoning Order has been issued and a permit required. In these circumstances, the offsetting guidelines will be used to develop such agreements.

2.0 Guidelines

Infrastructure or similar provincial and municipal projects that, after following the requirements of the mitigation hierarchy, will result in the removal or partial removal of a natural heritage feature such as a wetland and/or a significant woodland, will be required to offset/compensate for the loss of these features and their ecological functions. These guidelines will also be used in the development of an agreement resulting from the issuance of a Ministerial Zoning Order.

It is noted that there are natural heritage features that cannot be replaced due to the rare nature of these features and offsetting/compensation will not be considered in this regard. These features include rare vegetation communities as defined by the Natural Heritage Reference Manual (NDMNRF, 2010), bogs or fens. Further, as a general guideline, offsetting/compensation will not be considered for watercourses, as defined by the Conservation Authorities Act.

2.1 Prerequisites for Ecological Offsetting

As part of the review process of an environmental assessment or MZO that proposes offsetting/compensation for the loss of a natural heritage feature, the following must be addressed through the Environmental Impact Study (EIS) or similar comprehensive environmental study:

• Demonstrate conformity with applicable provincial and local plans, including the Greenbelt Plan, A Place to Grow: Growth Plan for the Greater Golden Horseshoe and the City of Hamilton and County of Wellington Official Plans as applicable.

• Satisfy the “no negative impact test” for the loss of natural heritage feature to ensure consistency with Section 2.1 of the Provincial Policy Statement (PPS).

• Assess the impacts to natural heritage features and ecological functions such as wetlands, woodlands, and watercourses, as well as their associated vegetation protection zones.

• Demonstrate that the mitigation hierarchy steps of avoiding, minimizing and mitigating have been followed and that compensation is the only viable option.

• Include a preliminary Ecological Offsetting Strategy (EOS) that describes, in concept, how the loss of natural heritage feature will be compensated. This would include identifying the feature to be removed, proposal for replacement and general principles for feature creation.

2.2 Ecological Offsetting Strategy

An Ecological Offsetting Strategy (EOS) will be required where compensation is the only viable option. It will be the responsibility of the proponent to develop and implement this EOS. The EOS must demonstrate how the loss of natural heritage feature(s) will be compensated for and that this offset will result in a “net gain” or at a minimum “no net

loss' of natural heritage features. Ecological offsetting compensation projects must be both feasible and completed within a reasonable timeframe, preferably prior to the removal of the original feature. The EOS must also include a monitoring component to ensure the successful installation of compensation projects. The components of an EOS are further described in Appendix A.

2.3.Wetlands

All wetlands eligible for offsetting must be identified according to provincial standards such as the Ontario Wetland Evaluation System (OWES) or Ecological Land Classification (ELC). Ecological offsetting may be considered for the loss of wetland provided that the wetland is not a bog, fen or rare vegetation community as defined by the Natural Heritage Reference Manual (MNRF, 2010).

The loss of wetland and associated vegetation protection zone will be offset at a replacement ratio for the areal extent of the feature. The replacement ratio for the areal extent of the wetland shall be 3:1; the replacement ratio for the areal extent of the associated vegetation protection zone will be 1:1. This considers the replacement values from the perspective of form and function across spatial and time scales to ensure that the value of loss is supported with an appropriate net gain or at a minimum, no net loss.

2.3.1. Exceptions

a. Ecological offsetting will not be required for wetlands that are smaller than 0.5 ha or manmade features where it can be demonstrated to the satisfaction of the HCA that:
    i. The wetland is not part of an evaluated wetland complex;
    ii. The wetland is not part of or associated with a *significant* natural heritage feature or municipally designated natural heritage feature or natural heritage system;
    iii. The wetland is not part of or associated with a *sensitive* or *vulnerable ground water feature* or *surface water feature*;
    iv. The impacts to natural features, *ecological functions* and *hydrologic functions* are minimized to the satisfaction of HCA; and
    v. *Ecological functions* and *hydrologic functions* will be restored, enhanced or replaced to the greatest extent possible and to the satisfaction of HCA.

2.4. Woodlands

All woodlands eligible for offsetting must be identified according to provincial standards such as Ecological Land Classification (ELC) and the provincial criteria for defining woodlands. Ecological offsetting may be considered for the loss of woodland provided that the woodland is not a rare vegetation community as defined by the Natural Heritage Reference Manual (MNRF, 2010).

The loss of woodland and associated vegetation protection zone will be offset at a replacement ratio for the areal extent of the feature. The replacement ratio for the areal

extent of the feature will be 2:1; the replacement ratio for the areal extent of the associated vegetation protection zone will be 1:1. This considers the replacement values from the perspective of form and function across spatial and time scales to ensure that the value of loss is supported with an appropriate net gain or at a minimum, not net loss.

2.4.1 Exceptions

Ecological offsetting will not be required for woodlands that are within the City and County provided the tree by-laws have comparable compensation requirements and duplication of tree replacement will also be avoided. Ecological offsetting will also not be required for woodlands that are plantations managed for the production of fruits, nuts, Christmas trees, nursery stock or tree products or for woodlands identified smaller than 0.5 ha where it can be demonstrated to the satisfaction of the HCA that it does not provide any of the following features or functions:

• Any woodlands wholly or partially within 30 m of a key natural heritage / key hydrological or protected feature.

• Any woodland containing a provincially rare treed vegetation community with an S1, S2 or S3 in its ranking by the Ministry of Natural Resources and Forestry Natural Heritage Information Centre (NHIC).

Additional exclusions may be considered for communities that are dominated by the invasive non-native tree species buckthorn (Rhamnus species) or Norway maple (Acer platanoides), which threaten good forestry practices and environmental management. Such exceptions may be considered where native species cover less than 10% of the ground and are represented by less than 100 stems of any size per hectare.

3.0 Implementation

This Ecological Offsetting/Compensation Guideline provides implementation direction related to Section 3.1 i) of the HCA's Planning & Regulation Policies and Guidelines, October 2011. This guideline will be implemented for proposals under the Environmental Assessment Act and similar provincial and municipal processes. For example, a preliminary Ecological Offsetting Strategy (EOS) will be required for the loss of a natural feature as part of any EIS flowing from an environmental assessment. A detailed EOS will be required as part of a complete application for a permit related to the detailed design of an environmental assessment. This Ecological Offsetting/Compensation Guideline will be applied through the permitting process under section 28(1) of the Conservation Authorities Act where a Zoning Order has been made by the Minister of Municipal Affairs and Housing under section 47 of the Planning Act.

4.0 Effectiveness Monitoring

The proponent responsible for implementing approved ecological offsetting compensation projects will also be responsible for demonstrating that the projects have been completed and the associated natural heritage features are functioning as anticipated. Any monitoring or reporting requirements should be determined through the Ecological Offsetting Strategy (EOS), in consultation with HCA, prior to the implementation of any ecological offsetting compensation projects.

Appendix A – Components of an Ecological Offsetting Strategy

Through an agreed upon Terms of Reference with HCA, an Ecological Offsetting Strategy (EOS) must include the following information:

• Description, location and area of feature being lost.

• Description, location and area for where feature replacement is proposed.

• Description, location and area for any proposed feature enhancements (e.g. invasive species management, habitat creation, etc.).

• Detailed design drawings and supporting technical studies for feature replacement and any enhancements.

• Timing for implementation and project completion.

• Monitoring plan and schedule to demonstrate that features are functioning as anticipated.

• Contingency plan should timelines not be met or features not function as anticipated.

• Allowance for ensuring features are protected in perpetuity (e.g. zoning, transfer to public agency, etc.).

• Commitment to complete ecological offsetting requirements through a formal written agreement, as applicable.

Hamilton Conservation Authority

A Healthy Watershed for Everyone

Report

TO: **Board of Directors**

FROM: **Lisa Burnside, Chief Administrative Officer (CAO)**

RECOMMENDED BY: **T. Scott Peck, MCIP, RPP, Deputy CAO/Director, Watershed Management Services**

PREPARED BY: **Jonathan Bastien, P. Eng., Water Resources Engineer**

MEETING DATE: **January 5, 2023**

RE: **HCA Ice Management Plan**

STAFF RECOMMENDATION

THAT the Board of Directors approve the Hamilton Conservation Authority Ice Management Plan dated December 1, 2022.

BACKGROUND

On October 7th, 2021, the Province of Ontario enacted Ontario Regulation 686/21: Mandatory Programs and Services, under the *Conservation Authorities Act*: Section 4 of Ontario Regulation 686/21 established the requirement that an Ice Management Plan be developed, where such a plan is deemed necessary by the Conservation Authority. Frazil ice can occur in the Lower Spencer Creek area in Dundas and the Hamilton Conservation Authority (HCA) has a forecasting methodology in place to assist in the management of frazil ice. The attached Ice Management Plan details how the HCA manages frazil ice in our watershed and addresses the requirement of Ontario Regulation 686/21 as it relates to ice management plans.

STAFF COMMENT

The HCA has had a methodology in place since 2014 on how to manage frazil ice in the Lower Spencer Creek area of Dundas. The HCA Ice Management Plan consolidates this approach and recognizes flooding due to frazil ice along Lower Spencer Creek. This plan is based on recommendations for the monitoring program option from the consultant study completed by the firm exp and dated April 2014. To summarize, the HCA Ice Management Plan is as follows:

1. Routine forecasting of the potential for occurrence for frazil ice flooding;

2. Regular inspections of Lower Spencer Creek for frazil ice and flooding, when frazil ice is possible;

3. Routine debris removal from the banks and channel, as well as near structures, in reaches of Lower Spencer Creek on HCA property; and,

4. Ice removal by mechanical means (this is undertaken by the City of Hamilton)

STRATEGIC PLAN LINKAGE

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

- **Strategic Priority Area – Water Management**
    - Initiatives – Maintain and enhance our flood control infrastructure to address flooding and work to augment low flow conditions

AGENCY COMMENTS

N/A

LEGAL/FINANCIAL IMPLICATIONS

N/A

CONCLUSIONS

The HCA Ice Management Plan dated December 1, 2022 includes the historical studies relating to frazil ice and details the HCA methodology for the management of frazil ice that has been in place since 2014. The Ice Management Plan consolidates this information under one plan and satisfies the requirement under Ontario Regulation 686/21 relating to ice management plans to be developed when deemed required by the Conservation Authority.

Hamilton Conservation Authority

A Healthy Watershed for Everyone

Hamilton Conservation Authority

Ice Management Plan

December 1, 2022

November 2022

INTRODUCTION

On October 7th, 2021, the Province of Ontario enacted Ontario Regulation 686/21: Mandatory Programs and Services, under the *Conservation Authorities Act*: Section 4 of Ontario Regulation 686/21 established the requirement that an Ice Management Plan be developed, where such a plan is deemed necessary by the Conservation Authority. Frazil ice can occur in the Lower Spencer Creek area in Dundas and the Hamilton Conservation Authority (HCA) has a forecasting methodology in place to assist in the management of frazil ice. This Ice Management Plan details how the HCA manages frazil ice in our watershed.

OBJECTIVE

The below report summarizes the following:

- Identified potential ice hazards requiring a management plan;
- Previous ice management assessments that have supported the development of this Plan; and,
- Roles & responsibilities, as well as procedures & tools to implement the HCA Ice Management Plan

BACKGROUND

Lower Spencer Creek in Dundas has been periodically prone to flooding in the winter as a result of the formation of frazil ice. It is this potential ice hazard which has been identified as requiring an Ice Management Plan.

Frazil ice is formed when water flow is supercooled by turbulence and exposure to cold air during very low temperatures, typically accompanied by high winds. High flow velocities increase the turbulence and the surface area, providing more opportunity for heat loss to the air. This ice forms throughout the water column and adheres to banks and structures within the creek, reducing the flow capacity which can result in flooding.

An ice cover can reduce heat loss from the water to the atmosphere, thereby decreasing the rate of frazil ice generation. However, in fast moving sections of a river, the forces of high flow prevent the formation and development of ice covers.

The steep slope of Spencer Creek downstream of the Christie Lake Dam generates such fast moving turbulent flows, which in periods of sustained low temperatures, may lead to the creation of frazil ice. The frazil ice tends to accumulate in Lower Spencer Creek near Thorpe Street due to a general reduction in the slope of the creek and the velocity of the flowing water.

Two previous frazil ice related flooding events were identified. In January 2005, accumulation of frazil ice blocked Spencer Creek at Thorpe Street, which resulted in spillage onto Dundas Street and Cootes Drive. Emergency measures were employed by the City of Hamilton to break up and remove the ice. Catchbasins were cleared in the flooded area. A temporary overflow channel was created by constructing a snow berm to re-route the flow back into Spencer Creek. Dundas Street was closed due to flooding from Cootes Drive to Thorpe Street.

Another frazil ice related flooding event occurred in January 2009. The water from the creek overtopped the Thorpe Street Bridge and flooded the adjacent low-lying areas. An emergency snow berm was constructed to prevent the flood from flowing onto Dundas Street. The day prior to the creek overtopping, HCA issued a flood information bulletin and informed the City of Hamilton staff.

Additional details related to these flooding events is available in *Lower Spencer Creek Frazil Ice Study - Final Report* (Trow 2011), which is included in **Appendix A**.

PREVIOUS ICE MANAGEMENT ASSESSMENTS

The *Lower Spencer Creek Frazil Ice Study - Final Report* (Trow, May 2011) examined the underlying causes of flooding due to frazil ice along Lower Spencer Creek and to develop potential mitigation measures. Flow and temperature data during the past flooding events were collected and analysed. Hydraulic characteristics of the river within the study reach were studied, including the operating procedures of the dams. A field investigation was completed to observe the effect of the river morphology on the generation of frazil ice and to assess potential locations for establishing mitigation measures. Potential measures to prevent or reduce frazil ice generation and accumulation and subsequent flooding were evaluated based on their feasibility, environmental effects, and cost.

The subsequent *Lower Spencer Creek Frazil Ice Flooding Cost Benefit Analysis of Mitigation Alternatives* (exp (formerly Trow), September 2013) provided a cost-benefit analysis for measures to prevent / mitigate flooding due to frazil ice accumulation along Lower Spencer Creek. Evaluation criteria included cost (construction and maintenance), benefit, reliability, health/safety, reputation, and environmental effects. The analysis determined relative weights for each of the criteria, and assigned scores (out of 10) to each criterion for each alternative. Mitigation measures considered included weir, ice barrier, dam operation changes, bubbler, bypass channel, and a monitoring program. The analysis determined that the alternative with the highest score was the monitoring program option. It was recommended that Hamilton Conservation Authority prepare and adopt a formal monitoring program that will greatly reduce the possibility of flooding due to frazil ice accumulation.

The further subsequent *Spencer Creek Frazil Ice Forecasting* (exp, April 2014) study developed a method for frazil ice flood forecasting in Lower Spencer Creek, using temperature and discharge data. Exp completed a literature review, collected the data, and undertook data analysis. As a result, a spreadsheet-based tool was developed for predicting high probabilities of occurrence of frazil ice flooding in Lower Spencer Creek.

All three of these study reports are included in **Appendix A or Appendix B**.

HCA ICE MANAGEMENT PLAN

The HCA Ice Management Plan regards flooding due to frazil ice along Lower Spencer Creek. This plan is based on recommendations for the monitoring program option from the exp April 2014 study. The HCA Ice Management Plan is as follows:

1. Routine forecasting of the potential for occurrence for frazil ice flooding;

2. Regular inspections of Lower Spencer Creek for frazil ice and flooding, when frazil ice is possible;

3. Routine debris removal from the banks and channel, as well as near structures, in reaches of Lower Spencer Creek on HCA property; and,

4. Ice removal by mechanical means (this is undertaken by the City of Hamilton)

HCA Water Resources Engineering staff are responsible for routinely assessing the potential for the occurrence of frazil ice in Lower Spencer Creek. This spreadsheet-

based evaluation is completed as part of the routine Flood Forecasting and Warning assessments that evaluate the potential for riverine flooding and shoreline flooding. The methodology for forecasting frazil ice flooding in Lower Spencer Creek is as follows:

1. Collect temperature data as well as forecast temperatures from Environment Canada's Hamilton A station;

2. Collect flow data from the Water Survey of Canada's Spencer Creek gauge at Dundas St. (ID 02HB007);

3. Calculate the 5-day DDF for the forecast temperatures and the 5-day mass flow for the measured flows;

4. Calculate the 5-day average of the forecast temperatures. If this average is smaller than -14 °C, determine the maximum daily flow rate within the past 15 days;

5. The probability of occurrence of a frazil ice flooding event is high when one of the following criteria is observed:

    a. A freezing period (positive slope of the DDF curve) with a DDF exceeding 70 °C-days occurs, which is preceded by a significant increase in the flow rates (positive slope of the mass flow curve);

    b. And/or, the 5-day average of the forecast temperatures is smaller than -14 °C with a maximum daily flow rate greater than 11 m^3/s within the past 15 days;

6. Update the previous DDF points with actual temperature data

This methodology can be modified as more data points become available in the future. Further details regarding the approach for forecasting frazil ice flooding in Lower Spencer Creek is provided in **Appendix B**.

During periods where frazil ice is possible, HCA Water Resources Engineering staff are responsible for regular inspections of Lower Spencer Creek, to identify the presence of frazil ice and / or related flooding. Inspection notes are included in the frazil ice forecasting spreadsheet.

HCA Water Resources Engineering staff routinely inspect the reaches of Lower Spencer Creek on HCA property. The focus is on identifying significant in-channel and bank debris deposits that have the potential to not only be accumulation points for frazil ice but also locations where creek overtopping and flooding is expected. Where identified, such debris will be removed from the banks and channel, as well as near structures, by HCA staff.

APPENDIX A –

Lower Spencer Creek Frazil Ice Study - Final Report (Trow, May 2011)

Lower Spencer Creek Frazil Ice Flooding Cost Benefit Analysis of Mitigation Alternatives (exp (formerly Trow), September 2013)

APPENDIX B –

Spencer Creek Frazil Ice Forecasting (exp, April 2014)

This page intentionally left blank.

Since 1957

1595 Clark Boulevard
Brampton, ON
L6T 4V1

Tel: (905) 793-9800
Fax: (905) 793-0641

Buildings

Environment

Geotechnical

Infrastructure

Materials & Quality

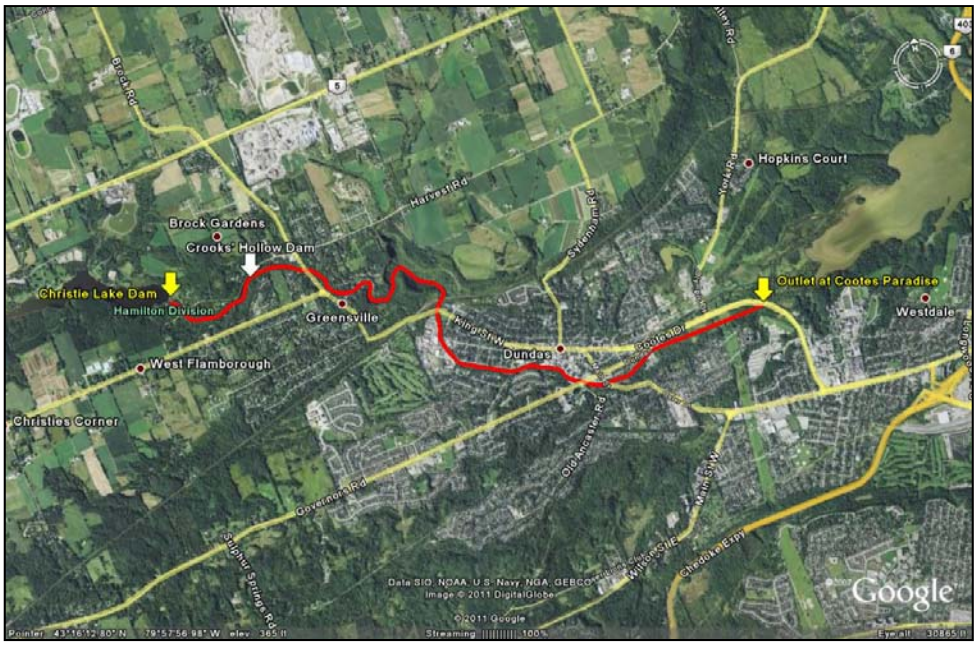
www.trow.com

One Company.
One Contact.
One Stop.

Lower Spencer Creek Frazil Ice Study
Final Report

Hamilton Conservation Authority

Hamilton Conservation Authority
Healthy Streams...Healthy Communities!



May 2011

Executive Summary

The purpose of this study is to examine the underlying causes of flooding due to frazil ice along Spencer Creek and to develop potential mitigation measures. Flow and temperature data during the past flooding events are collected and analysed. Hydraulic characteristics of the river within the study reach are studied, including the operating procedures of the dams. A field investigation is completed to observe the effect of the river morphology on the generation of frazil ice and to assess potential locations for establishing mitigation measures. Potential measures to prevent or reduce frazil ice generation and accumulation and subsequent flooding are evaluated based on their feasibility, environmental effects, and cost.

Table of Content

Tables

Figures

1. Introduction

In January 2011, Hamilton Conservation Authority (HCA) retained Trow to undertake a study on frazil ice accumulation along the lower reach of Spencer Creek, which has caused flooding within the former Town of Dundas on several occasions.

The objective of this study is twofold:

- to identify the underlying causes of frazil ice generation and accumulation along Spencer Creek;
- to recommend measures to decrease the generation of frazil ice and to prevent the resultant ice jams and/or reduce their impacts.

1.1 Background

In January of 2005, accumulation of frazil ice blocked Spencer Creek at Thorpe Street, which resulted in spillage onto Dundas Street and Cootes Drive (Figure 1-1).

The steep slope of Spencer Creek downstream of the Christie Lake Dam generates fast moving turbulent flows, which in periods of sustained low temperatures, may lead to the production of frazil ice. Frazil ice typically accumulates and creates ice jams in Spencer Creek downstream of Osler Drive, where the slope of the creek is gentle, and at bridges and culverts.

1.2 Study Area

Spencer Creek is the major river within the Hamilton Conservation Area in Ontario, draining an area of 291 km^2. The main branch of the river is 40 km long and flows into Lake Ontario at Hamilton Harbour after entering an area known as Cootes Paradise. The upper portion of the river passes through rural areas and agricultural lands, whereas the lower portion near the lake flows through urban development. Three dams are located within the Spencer Creek Watershed, namely Valens Dam, Christie Lake Dam, and Crooks Hollow Dam.

The study area consisted of Spencer Creek and its floodplain between Christie Lake Dam and the river outlet into Cootes Paradise at Cootes Drive. The study area, including the reach susceptible to frazil ice flooding, is shown in Figure 1-1.

1.3 Work Program

The following tasks were completed for this study:

1- Meeting with HCA staff to discuss the scope of the project;

2- Collecting and reviewing the background information and previous studies on Spencer Creek;

3- Conducting a field investigation of Spencer Creek downstream of Christie Lake Dam;

4- Studying the hydraulic characteristics of the river;

5- Evaluating alternative mitigation measures, including associated costs;

6- Recommending measures to prevent or reduce frazil ice generation/accumulation and to mitigate flooding due to ice jams based on their feasibility and effectiveness.

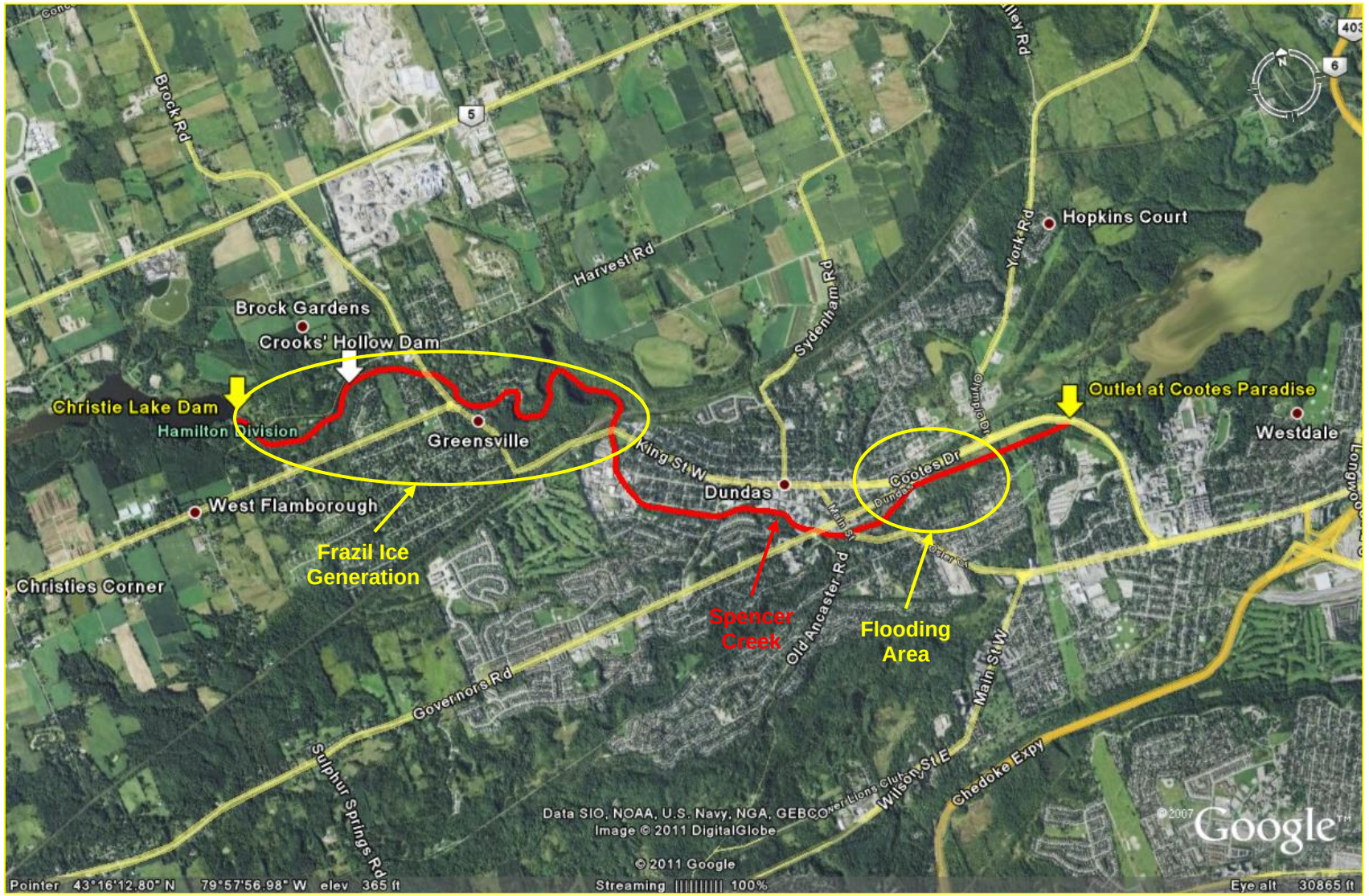


Figure 1-1: Study Area

2. Background Information

The following background information for Spencer Creek was provided by HCA:

1- Photos of the previous frazil ice flooding events, including the events of January 2005 and January 2009

2- A summary report of the January 2005 flooding event and a memorandum on the January 2009 event

3- Temperature, flow, and stage data for January 2005, February 2008, and January 2009

4- Output of the creek hydraulic model between Osler Drive and the outlet into Cootes Paradise, along with the 100 year and regional floodlines (Paragon Engineering Limited, 1992)

5- Draft operating manual for the Christie Lake Dam (Klohn Crippen)

6- Draft dam break and inundation mapping study of Christie Lake Dam (Klohn Crippen, 2005)

7- Report on evaluation of new winter operating level for Christie Lake Dam (Acres International, 2002)

2.1 Frazil Ice

Frazil ice is formed when water flow is supercooled by turbulence and exposure to cold air during very low temperatures, typically accompanied by high winds. High flow velocities increase the turbulence and the surface area, providing more opportunity for heat loss to the atmosphere.

An ice cover can reduce heat loss from the water to the atmosphere, thereby decreasing the rate of frazil ice generation. In fast moving sections of a river, the hydrodynamic forces of high flow prevent the formation and development of ice covers.

2.2 Previous Flooding Events

Two recent flooding events caused by frazil ice accumulation occurred in January 2005 and January 2009 within the former Town of Dundas.

2.2.1 January 2005 Event

Flooding of Lower Spencer Creek started on January 21, 2005 at Dundas Street near Cootes Drive. Water overflowed the north bank of the creek onto Dundas Street at the entrance to the Spencer Creek Trail parking lot (Figure 2-3). Dundas Street was closed due to flooding from Cootes Drive to Thorpe Street.

Measures taken to mitigate the flooding impacts included the following:

- Punching holes through the ice sheet cover along the channel to provide an additional flow path
- Creating an overflow channel by constructing a snow dyke to re-route the flow back to Spencer Creek (Figure 2-4)
- Clearing the catchbasins from ice/debris in the immediate area to maintain drainage for the ponded water (Figure 2-3)
- Mechanical removal of the ice (Figure 2-5)

Figure 2-1: Frazil Ice Accumulation at Thorpe St. Bridge (Jan. 2005)

Figure 2-2: Raised Water Level at Thorpe St. Bridge (Jan. 2005)

Figure 2-3: Clearing Catchbasins on Dundas St. (Jan. 2005)

Figure 2-4: Temporary Overflow Channel at Dundas St. (Jan. 2005)

Figure 2-5: Mechanical Removal of Frazil Ice at Thorpe St. Bridge (Jan. 2005)

2.2.2 January 2009 Event

Around January 13, 2009, the temperature in the HCA watershed decreased below the recorded normal levels (-6 °C) to -20 °C, with a windchill of -30 °C. HCA staff began monitoring the Lower Spencer Creek relative levels on the morning of January 14, using the downstream side of the south abutment of the Thorpe Street Bridge as a stage indicator.

On January 16, when the south abutment was at the verge of being overtopped, HCA issued a flood information bulletin and informed the City of Hamilton staff. The water from the creek overtopped the Thorpe Street Bridge on January 17 and flooded the adjacent low lying areas. An emergency snow berm was constructed to prevent the flood from flowing onto Dundas Street.

Figure 2-6: Downstream Side of the South Abutment of Thorpe St. Bridge (Left: Jan. 14, 2009; Right: Jan. 16, 2009)

Figure 2-7: Flooding and Snow Berm on Thorpe St. (Jan. 2009)

2.3 Climate and Flow Data

In this section, climate and flow data for Spencer Creek and their effect on frazil ice production and accumulation are investigated.

2.3.1 Historical Data

The climate normals for the City of Hamilton are summarized in Table 2-1. The data is a reduction of the Environment Canada's climate normals (1971-2000) for Hamilton A Station (Climate ID 6153194). Daily minima of -9.7 and -9.1 °C and number of days with minimum temperature below -10 °C of 14.5 and 12.5 for January and February respectively, indicate a potential for frazil ice formation in both of these months.

Precipitation magnitudes for January and February are 65.8 mm and 55.3 mm respectively, of which more than half is snowfall. During these months, rainfall and above zero temperatures resulting in snowmelt runoff could increase the streamflow in Spencer Creek.

Table 2-1: Climate Normals for Hamilton

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Temperature:												
Daily Average (°C)	-6	-5.2	-0.3	6.3	12.9	18	20.8	19.8	15.5	9.1	3.3	-2.7
Daily Maximum (°C)	-2.2	-1.2	4	11.2	18.5	23.7	26.3	25.1	20.7	13.8	7	0.9
Daily Minimum (°C)	-9.7	-9.1	-4.5	1.2	7.3	12.4	15.1	14.5	10.2	4.4	-0.4	-6.2
Precipitation:												
Rainfall (mm)	29.5	25.7	48.6	69.6	75	83.9	86.5	80.6	82.1	71.6	68.1	43.7
Snowfall (cm)	43.2	35.2	25.8	8.6	0.5	0	0	0	0	0.6	11	36.8
Precipitation (mm)	65.8	55.3	74.8	78	75.6	83.9	86.5	80.6	82.1	72.5	78.6	76.6
Days with Minimum Temperature:												
> 0 °C	1.8	2.1	6	17.9	30.1	30	31	31	29.8	26.5	13	3.9
<= 2 °C	30.4	27.7	28.3	17.5	3.2	0.1	0	0	0.97	9.6	22	29.6
<= 0 °C	29.2	26.2	25	12.1	0.87	0	0	0	0.17	4.5	17	27.1
< -2 °C	26.6	23.2	19.8	6.3	0.03	0	0	0	0.03	1.6	10.6	22.2
< -10 °C	14.5	12.5	5.2	0.23	0	0	0	0	0	0	0.37	7.7
< -20 °C	1.8	1.1	0.1	0	0	0	0	0	0	0	0	0.37
< -30 °C	0	0	0	0	0	0	0	0	0	0	0	0

Figure 2-8 shows the maximum, mean, and minimum daily flow rates for a 50 year period (1959 to 2009) for Spencer Creek. The data was collected from the Water Survey of Canada's gauge at Market Street (Station 02HB007).

The hydrograph is typical of rivers in southern Ontario. The line depicting the mean daily flow rates indicates that flows generally increase following the onset of the spring freshet in early March, when snowmelt and rainfall result in large runoffs. Flow then decreases throughout the summer, as rainfall is balanced by evaporation and infiltration due to higher temperatures. In the fall, rainfall and cooler temperatures result in relatively higher flows from October to December.

The line depicting the maximum daily flow rate indicates that flows can be much higher than the average on any given day, including the winter months. High flows during January and February may be due to above zero temperatures occurring concurrently with a rainfall event.

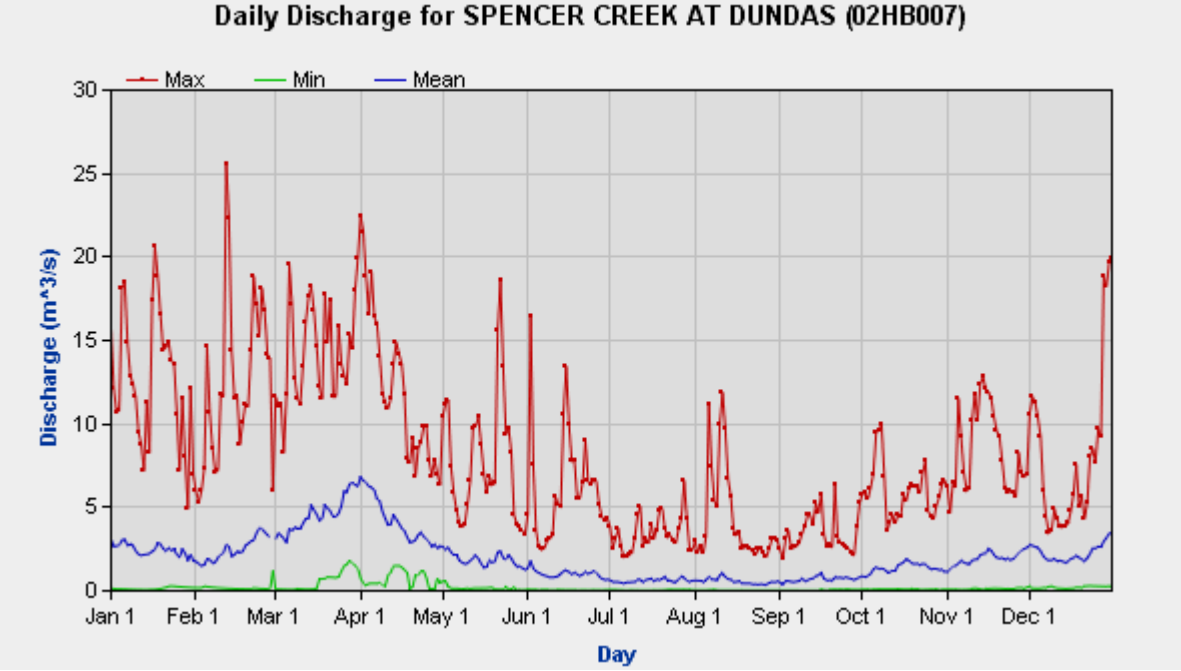


Figure 2-8: Average Daily Discharge for Spencer Creek

2.3.2 Temperature and Flow during Flooding Events

Flows and temperatures for Lower Spencer Creek at Market Street for January 2005 are shown in Figure 2-9. After January 22, flow measurements were likely impacted by the ice jam and cannot be considered accurate. Between January 12 and 14, the temperature rose well above 0 °C. This rise in the temperature resulted in high flows up to 12 cms between January 13 and 16. Subsequently, a cold snap began around January 14, with temperatures falling to -20 °C and a wind chill of -30 °C indicating windy conditions, for several days. Meanwhile, the flow rate in Spencer Creek decreased to approximately 2 cms.

Ice cover can form on Spencer Creek at various locations during the winter months. This ice cover likely broke up and melted at some locations due to the combination of high flows and temperatures between January 12 and 14. In the absence of the ice cover during the cold snap that followed beginning January 14, the rate of frazil ice generation likely increased significantly due to supercooling of the flow by high turbulence and heat loss at the surface. As the flow rate decreased, the volume of frazil ice likely exceeded the carrying capacity of the river system, especially in the slower flowing downstream reach. The frazil ice accumulated and deposited in locations where the flow velocity was not sufficient to keep it in suspension. This resulted in an ice jam and the subsequent flooding event.

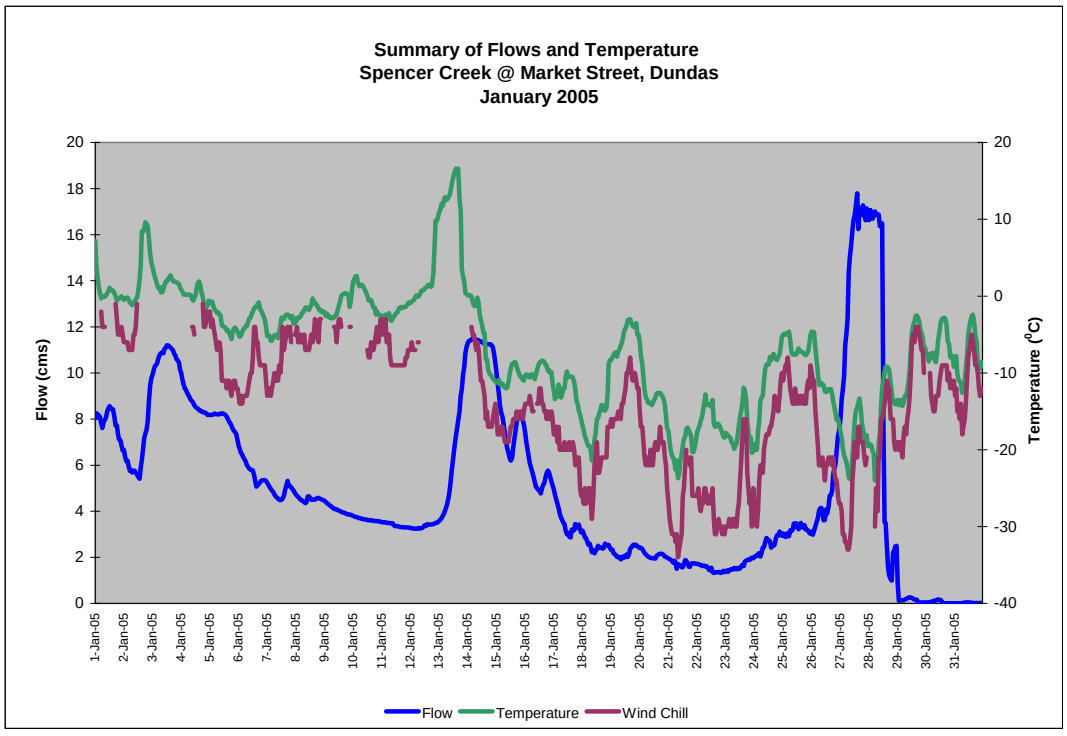


Figure 2-9: Flow and Temperature Data for January 2005

Figure 2-10 shows flows and temperatures for Lower Spencer Creek at Market Street for January 2009. A cold snap was experienced beginning around January 14 with the

temperature falling to -20 °C with a wind chill of -30 °C indicating windy conditions, which was sustained for several days. However, this cold snap was not preceded by a period of high temperatures and resulting high flows and the loss of ice cover. As a result, the flooding extent of the January 2009 event was very limited compared to the January 2005 event.

Flows and temperatures for Lower Spencer Creek at Market Street for February 2008 are shown in Figure 2-11 for comparison purposes. No flooding events were reported during February 2008. Two relatively high flow events were experienced following short periods of temperatures above zero, one around February 6 and the other around February 18. The flow during the February 6 event increased up to 8 cms. This high flow event was not immediately followed by a sustained cold snap. Rather, the temperatures fell below -10 °C beginning February 10, which lasted for only 2 days. The February 18 event, during which the flow increased up to 6 cms, was immediately followed by temperatures below -10 °C. However, this cold snap lasted only for about 2 days. The flow was not as high as the flow during the January 2005 flooding event.

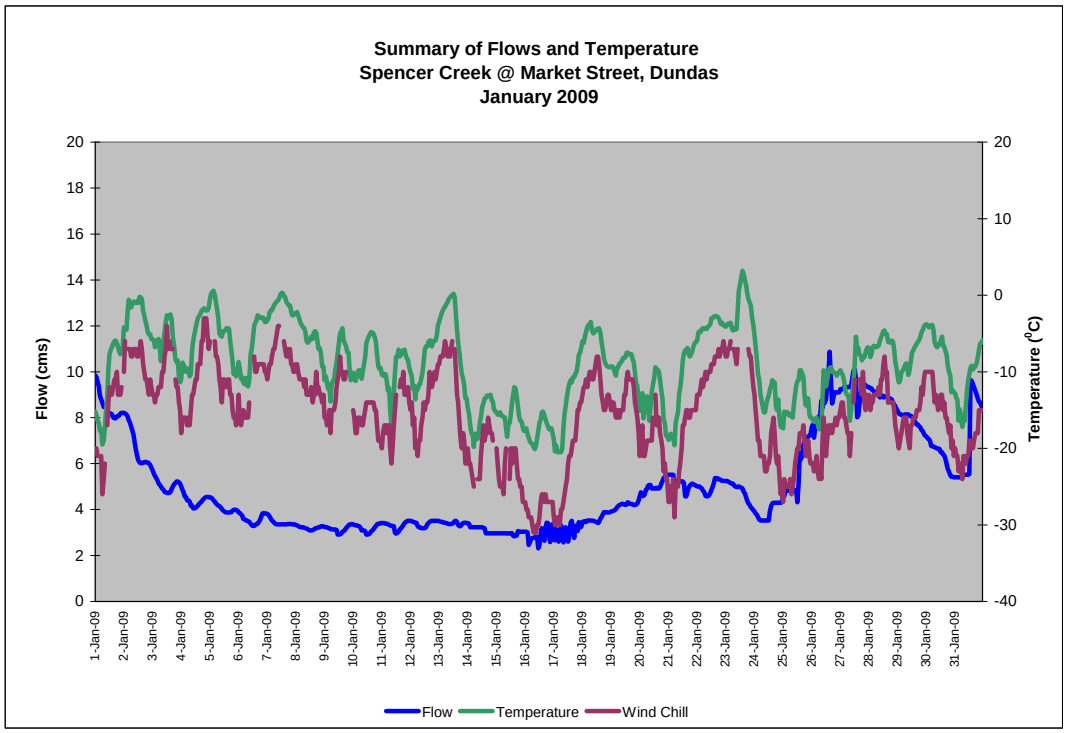


Figure 2-10: Flow and Temperature Data for January 2009

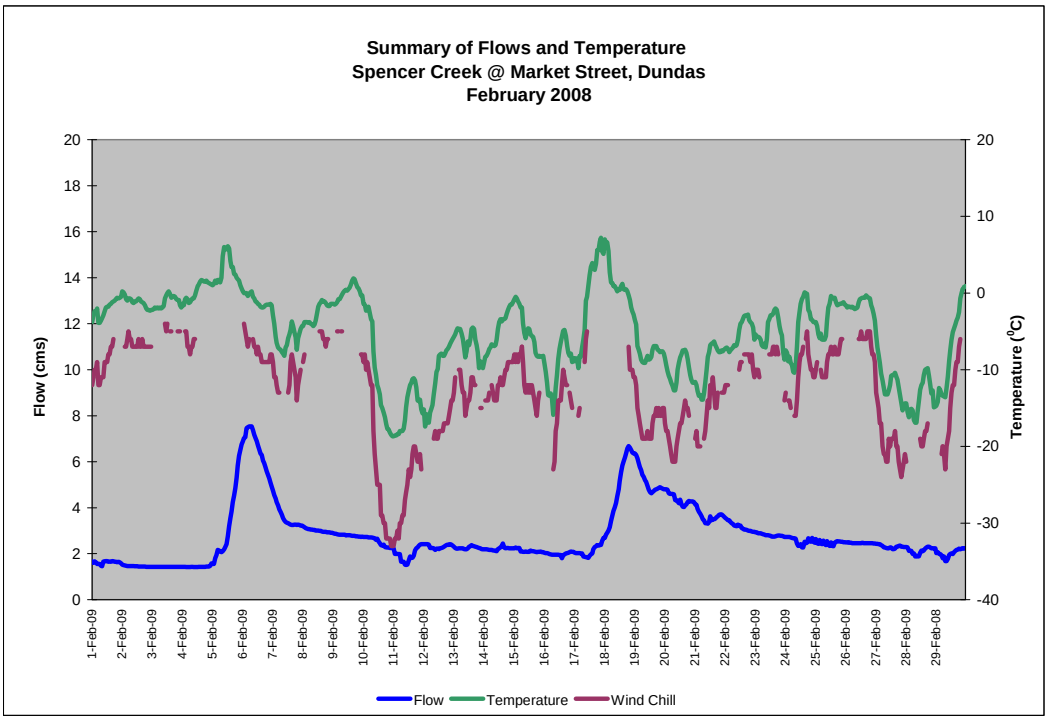


Figure 2-11: Flow and Temperature Data for February 2008

2.3.3 Frazil Ice Flood Forecasting

A formulation for estimating the frequency of occurrence of frazil ice flooding was developed for the former Town of Durham (Former Town of Durham Frazil Ice Study by Hatch Acres, 2006). This formulation was a result of the analysis of 16 years of flow and climate data. The criteria considered in this formulation are as follows:

- Cumulative Degree Days of Freezing (DDF, °C-days): Accumulation of a certain number of °C-days from the beginning of sub-zero temperature reduces the water temperature to near freezing levels before frazil ice generation occurs.

- Forecast 5-day Mass Flow Curve Slope: Hydrodynamic forces of high flows prevent the formation and development of ice cover over various parts of the river that would have otherwise reduced heat loss to the atmosphere. High flow also increases the turbulence and the surface area providing more opportunities to disperse heat to the atmosphere. In addition, high flow leads to higher water levels relative to the channel floodplain.

- Forecast 5-day DDF Curve Slope: Sustained temperature below a certain degree results in production of frazil ice, which may exceed the hydraulic capacity of the river to carry it. This ice carrying capacity is lower in the downstream reach of Spencer Creek, where the channel gradient is very small. As a result, frazil ice arrives at a greater rate than it can be carried downstream and consequently deposits and blocks the channel.

A similar formulation can be developed for the study reach by analysing several years of flow and climate data and correlating them to the conditions in which past frazil ice flooding events occurred.

2.4 Dam Operation

There are two dams located within the study area on Spencer Creek: Christie Lake Dam and Crooks' Hollow Dam.

2.4.1 Christie Lake Dam

Christie Lake Dam, located at the upstream limit of the study area, is the largest flood control structure within the Spencer Creek watershed. It consists of an earth dam, a 109 m long concrete overflow spillway, two radial gates, and a low flow outlet structure containing two slide gates and one valve.

The normal winter operational level for Christie Lake Dam begins on November 15 and continues until March 15. A reservoir level of 233.17 m is maintained throughout the winter by placing 1.52 m high steel service gates in front of the radial gates while both radial gates are set at the fully open position. The low flow gates remain closed while the low flow valve remains fully open during the winter.

2.4.2 Crooks' Hollow Dam

Crooks' Hollow Dam is located approximately 1.2 km downstream of the Christie Lake Dam. It is a concrete structure approximately 6.1 m high and 36.6 m long and has four ogee overflow spillways, which can be controlled with stop logs.

Crooks' Hollow Dam is not operated for flood control and hence does not have any significant active storage. As a result, the dam passes the Christie Lake Dam outflow with minimal flow attenuation. The dam is only operated on a seasonal basis. Stop logs are removed from the dam in the fall to lower the water level by approximately 1.52 m to the winter normal level of 215.06 m, resulting in a small head pond.

Crooks' Hollow Dam is scheduled to be decommissioned and removed by the end of 2011. A Class EA completed in 2009 concluded that the dam should be removed to address safety concerns regarding the dam's deteriorated condition, eliminate long-term operating and maintenance costs, and enhance local and downstream environmental conditions with no net long-term negative impacts to the environment.

Removal of this dam could increase the channel gradient at this section of the river, thereby increasing the potential for frazil ice generation. This increase is not likely to exacerbate the problem downstream, considering the steep gradient of the channel downstream of the Crooks' Hollow Dam.

3. Field Investigation

Trow personnel undertook a field investigation of Spencer Creek on February 15, 2011. The weather conditions were sunny with no wind and a temperature of -15 °C.

The objectives of the field investigation were as follows:

1. Observe the effects of the river morphology (slope, width, and roughness of the channel and floodplain) on the generation of frazil ice;
2. Determine the potential locations where frazil ice accumulation and ice jam could occur;
3. Examine potential locations for establishing remedial measures;
4. Digitally photograph the features of the study area as related to generation and accumulation of frazil ice at key locations. Pertinent labelled photographs, along with a key plan, are included in Appendix A.

The following key locations were examined during the field investigation:

1. Spencer Creek outlet to Cootes Paradise at Cootes Drive
2. Overflow Culvert to Desjardins Channel across Cootes Drive south of Olympic Drive
3. Overflow Culvert to Desjardins Channel across Cootes Drive south of Dundas Street
4. Dundas Street and Cootes Drive Intersection
5. Thorpe Street Bridge
6. Junction with Sydenham Creek
7. Market Street Bridge
8. CNR Culvert and King Street Bridge
9. Webster Falls
10. Christie Lake Dam

Ice cover was observed at several locations along the river. There was little evidence of frazil ice at areas of open water. The flow in Spencer Creek was generally of low velocity and shallow depth.

4. Hydraulic Characteristics

4.1 Channel Morphology

The channel profile downstream of the Christie Lake Dam is shown in Figure 4-1. The river is divided into four sections based on their average slope. The data was extracted from the dam break model developed by Klohn Crippen (2005).

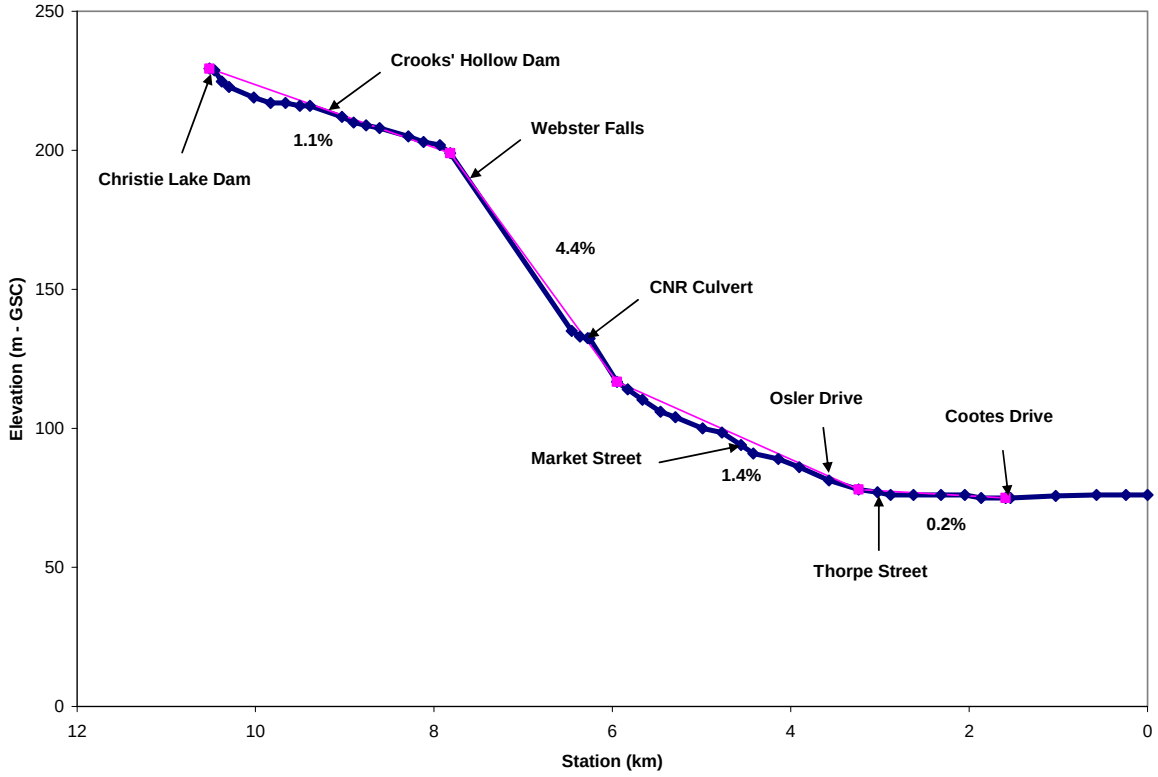


Figure 4-1: Spencer Creek Profile Downstream of Christie Lake Dam

From downstream of the Christie Lake Dam to upstream of Webster Falls, Spencer Creek has a moderate gradient with an average channel slope of 1.1%. From this point to downstream of the CNR Culvert, where Spencer Creek descends the Niagara Escarpment, the channel is very steep with an average slope of 4.4%. The Spencer Creek gradient is moderate between the CNR Culvert and Osler Drive, with an average slope of 1.4%. At this point (just upstream of Thorpe Street) the channel becomes very flat, with an average slope of 0.2%.

4.1.1 Areas of Frazil Ice Production

The steep upper and middle sections of Spencer Creek are suitable for frazil ice generation because high velocities and turbulence inhibits ice cover formation and induces heat loss to the atmosphere. There are a few rapids and waterfalls within this reach of Spencer Creek, including Webster Falls and the channel directly downstream of the CNR Culvert.

4.1.2 Areas of Frazil Ice Accumulation

Downstream of Osler Drive, the channel gradient of Spencer Creek becomes very low. This change in channel gradient reduces the flow velocity, providing an opportunity for the frazil ice to deposit and block the channel, especially at road crossings.

4.2 Ice Cover Progression

In areas of open water upstream of an ice cover, the incoming frazil ice may be arrested at the edge of the ice cover. The ice cover can progress upstream by stable accumulation of frazil ice.

The Froude number can be used as a measure of stability of frazil ice accumulation at the upstream edge of an ice cover. The Froude number is a dimensionless number, defined as the ratio of the flow inertia to gravitational forces. If the Froude number at the edge of the ice cover exceeds a critical value, the frazil ice will not be incorporated into the ice cover but will submerge and be carried away under the ice cover and eventually deposit, which may result in an ice jam. The critical Froude number can be estimated using the following formula:

$$F_C = \frac{V_C}{\sqrt{gy}} = \sqrt{2(1-e)\left(\frac{\rho-\rho_i}{\rho}\right)\left(\frac{\eta}{y}\right)\cdot\left(1-\frac{\eta}{y}\right)}$$

where:

V_C: the critical flow velocity (m/s)
y: flow depth (m)
e: void ratio of accumulated frazil ice ($0.3 < e < 0.7$)
ρ: unit mass of water (1000 kg/m^3)
ρ_i: unit mass of ice (920 kg/m^3)
η: depth of accumulated frazil ice

The critical Froude number varies from case to case. Using a void ratio of 0.5 for the frazil ice, the maximum F_C for stable frazil ice accumulation can be calculated to be 0.1. For practical purposes, a value of F_C = 0.08 has often been proposed by other studies on frazil ice.

5. Prevention and Mitigation Measures

Remedial measures undertaken during previous flooding events are reviewed and potential measures for mitigating the frazil ice flooding on Lower Spencer Creek are presented herein.

5.1 Current Procedures

Since the flooding event of January 2005, HCA has been closely monitoring the temperature and flow conditions of Spencer Creek in order to help identify the potential for frazil ice flooding. This aids HCA in issuing flood warnings to the City of Hamilton staff and the public in a timely fashion.

HCA issued a flood information bulletin on January 16, 2009. Localized flooding was reported on January 17, 2009. An emergency snow berm was constructed to contain any flooding.

During the flooding event of January 2005, the City of Hamilton staff undertook the following measures to reduce the impacts of the flooding:

- Ice was removed by mechanical means;
- Holes were punched through the ice cover to provide additional flow route;
- Catchbasins were cleared in the flooding area to provide additional drainage;
- A temporary overflow channel was created by constructing a snow berm to re-route the flow back into Spencer Creek.

Current mitigation procedures can be described as primarily reactive, since they are only implemented once flooding occurs or is imminent.

5.2 Potential Prevention and Mitigation Measures

There are a number of different approaches utilized throughout southern Ontario to address frazil ice flooding. These include methods for prevention or reduction of frazil ice generation and accumulation and measures to mitigate and control the impacts of flooding. Each measure has been evaluated for this study based on feasibility and environmental effects of implementation along Spencer Creek.

A sketch showing potential locations for implementing these measures is provided in Figure 5-2.

5.2.1 Prevention Measures

The following measures can be undertaken to prevent or reduce the generation and accumulation of frazil ice in a river. Some of these measures may be applicable to the Spencer Creek setting.

Low-Head Weir

Low-head weirs can be installed at moderate gradient locations to encourage the formation of an ice cover by raising the water level and decreasing the flow velocity on the upstream side of the weir. The ice cover inhibits the heat loss to the atmosphere, thereby decreasing the generation of frazil ice. Reducing the Froude number by raising the water level and decreasing the flow velocity contributes to the arrest of frazil ice on the upstream edge of the ice cover. Openings could be installed through the weir to minimize the environmental impact and fish habitat disruption by providing base flow to the downstream reach.

During Trow's field investigation, one location was identified that would be suitable for installation of a low-head weir. This location is at the Market Street Bridge (Figure 5-2). There are two step weirs at this bridge, one on the upstream end of the bridge and one on the downstream end. The crest of these weirs, which were implemented for erosion control, is set at the elevation of the river bed. Raising the crest of one of these weirs can further raise the water level and slow down the flow on the upstream side, encouraging the formation of an ice cover and the arrest of the oncoming frazil ice at the upstream edge of the ice cover.

The approximate height of the weir required to achieve a Froude number of 0.08 can be calculated. Under this Froude number, the incoming frazil ice can be arrested by the ice cover (see Section 4.1.2). A recently surveyed cross section of Spencer Creek just upstream of the Market Street Bridge (provided by HCA) was used in the calculations. Assuming a flow rate of 2 cms (the flow rate at the time of January 2005 flooding), the normal depth and Froude number at this cross section would be 0.35 and 0.45, respectively. A 0.85m high weir will raise the flow depth and decrease the Froude number to 0.08. At this height, a 1.5m wide opening is required to discharge the flow at a rate of 2 cms.

Detailed calculations are provided in Appendix B.

The effect of the weir on the regulated flood lines should be investigated before implementing such measures.

Installation of a weir would likely require a Class EA study under Conservation Ontario's Class EA for Remedial Flood and Erosion Control Projects (2002), and Location and Plans and Specification Approvals from MNR under the Lakes and Rivers Improvement Act (1990). It may also require approval under the federal Navigable Waters Protection Act and federal screening under Canadian Environmental Assessment Agency (CEAA).

A concept drawing of a low-head weir is provided in Appendix C.

Ice Barrier

The use of ice barriers (i.e. ice boom) would also encourage the formation of an ice cover, which reduces the rate of frazil ice generation and accumulation as previously discussed. An ice barrier would be effective in flat sections of a river, where the flow velocity is relatively low and the ice cover can progress upstream.

A typical ice boom located in downtown Ottawa, downstream of the Chaudiere Dam, is shown in Figure 5-1.

Figure 5-1: Typical Ice Barrier

A potential location for installing an ice boom would be at the site of Crooks' Hollow Dam. An ice cover could form upstream of the boom over the previous dam reservoir.

Installing a permanent boom in the river may be deemed to interrupt navigation, in which case a seasonal ice boom may be considered. An ice boom may require approval under the federal Navigable Waters Protection Act and federal screening under CEAA. There is no significant environmental impact associated with an ice barrier, except for the disturbance that could occur during the installation and maintenance of the boom.

Dam Operation

One approach to mitigate frazil ice flooding is to store the generated ice in a reservoir (at a flow check dam). Since the frazil ice in Spencer Creek is mainly generated downstream of Christie Lake Dam, and since the Crooks' Hollow Dam is scheduled to be removed, this approach will not be applicable to this study.

Large runoff resulting from snowmelt can be controlled by dam operation. Minimizing the outflow by modifying the operating procedures at the Christie Lake Dam during the winter months could reduce the flow velocity and turbulence in the downstream reach and lower the potential for frazil ice formation. The environmental impact associated with modifying the dam operation would be minimal, since there would be little change to the overall downstream flow.

Localized Prevention Measures

Localized prevention measures include thermal bubbler plumes and heating of the water.

Using a bubbler is a simple method to control ice in slowly moving water. In this method, air bubbles are generated to create a rising plume. The plume can entrain heat from the warmer layers near the bottom, bring it up to the surface, and transfer it to the ice. This method is most effective in deep waters, where the temperature gradient between the bottom and the surface is considerable, unless the air bubbles are externally heated.

The flow temperature can also be locally raised by providing an available heat source, such as treated sewage water. This approach would be very expensive if a heat source is not readily available. There could also be environmental concerns associated with heating of the water, such as disturbing the aquatic habitat.

These techniques could help keep the water near the Thorpe Street Bridge (Figure 5-2) or other structures clear from ice and hence, prevent frazil ice accumulation and the resulting ice jam at the site. However, the frazil ice could deposit and accumulate further downstream resulting in an ice jam.

5.2.2 Mitigation Measures

The following measures can be undertaken to mitigate the impact of frazil ice flooding.

Dyke and Bypass Channel

Dykes with bypass channels can be constructed at locations susceptible to frazil ice accumulation to facilitate the flow of the frazil ice downstream and to divert the flow away from developed areas. There would be environmental impacts associated with creating a bypass channel, including terrestrial and aquatic habitat disruption.

A bypass channel can also be used as a temporary measure to contain overbank spillage. An example is the temporary channel that was created during the January 2005 flooding event by constructing a snow berm to re-route the flood flow back into Spencer Creek. When snow is not available, other materials such as Jersey barriers or sand bags could be used.

A suitable location to construct a bypass channel would be near the Thorpe Street Bridge, starting at the Sydenham Creek junction and ending east of the Spencer Creek Trail parking lot (Figure 5-2).

Construction of a permanent bypass channel would likely require a Class EA study under Conservation Ontario's Class EA for Remedial Flood and Erosion Control Projects (2002) and Location and Plans and Specification Approvals from MNR under the Lakes and Rivers Improvement Act (1990). Excavated material would likely require chemical testing to determine an appropriate disposal method.

Dam Operation

When frazil ice accumulation occurs in the downstream reach during low flow conditions, the discharge from the Christie Lake Dam can be increased to flush the accumulated ice and carry it downstream to the storage area between the creek and Desjardin Channel as discussed above, or to the outlet at Cootes Paradise.

The dam outflow should not be increased to flow levels that would contribute to further generation of frazil ice or the flooding downstream. Downstream conditions would have to be closely monitored to determine if the flow increase has the desired effect. The environmental impact associated with modifying the dam operation would be minimal, since there would be little change to the overall downstream flow.

Mechanical Removal and Storage

When other approaches are inadequate to prevent frazil ice from blocking the river channel, the ice can be removed from the channel using mechanical equipment such as excavators or suction dredges. This approach was proven an effective reactive measure during the past flooding events. The mechanical removal of ice could potentially disrupt terrestrial and aquatic habitat.

Storage areas for frazil ice could be created in certain locations along the river reach. During Trow's field investigation, two locations suitable for off-channel storage were identified.

The first location is at the junction of Spencer Creek with Sydenham Creek (Figure 5-2). There is ample storage capacity on the northern bank of the creek at this location. The second location is the floodplain between the Thorpe Street Bridge and Olympic Drive (Figure 5-2). This floodplain has been created between the Spencer Creek and Desjardin Channel for fish spawning during the spring freshet.

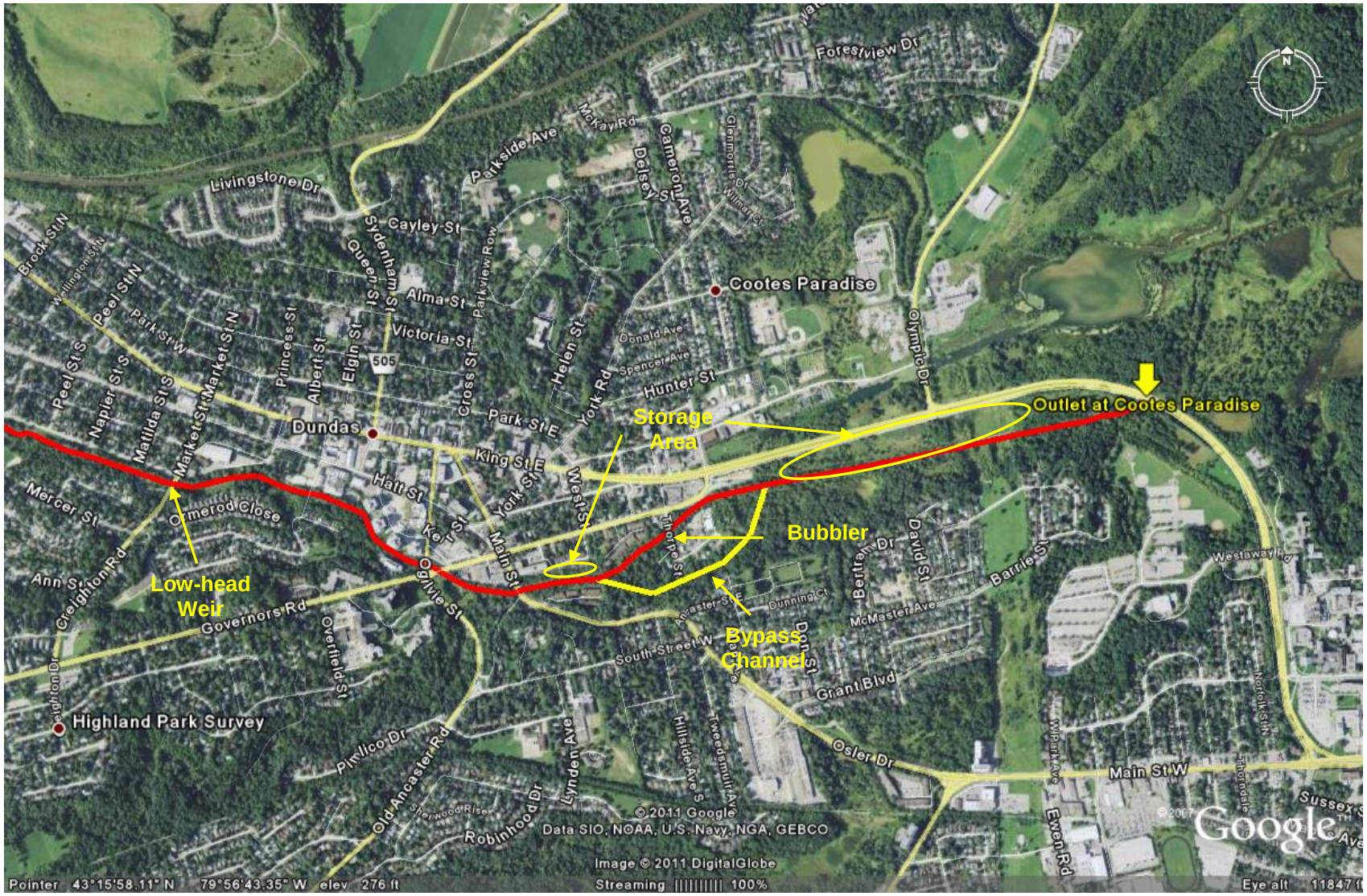


Figure 5-2: Location of Potential Prevention and Mitigation Measures

6. Cost Estimates

Order of magnitude cost estimates have been completed in order to demonstrate the economic feasibility of the potential mitigation measures discussed in the previous section.

6.1 Low-head Overflow Weirs

The proposed weir at the Market Street Bridge can be constructed at a relatively low cost. The cost of constructing one weir is approximately $15,000. Site access, dewatering, and diversion costs, which vary depending on the weir location, are not included in this estimate.

A Class Environmental Assessment must be completed before a weir can be installed. The cost of such a study is approximately $60,000 (or more if any secondary study is required to assess the environmental impacts).

6.2 Ice Barriers

An all season ice boom with four units, suitable for a section of the river approximately 20m wide and 2m deep, would cost approximately $25,000. The cost of installation would be approximately $6,500. Painting is not necessary for an ice boom. There would be an additional cost of up to $2,750 to paint a four-unit ice boom.

For a seasonal ice boom, there would also be the cost of removing and reinstalling the boom.

6.3 Dam Operation

The cost of modification to the Christie Lake Dam operation would consist of salary and expenses of HCA staff required to operate the dam over and above the normal winter operation.

6.4 Bubblers

The estimated cost for a bubbler system, including purchase and installation of an air compressor, piping system, and power supply, is $18,000. The ongoing energy cost would be approximately $600 per year (running for 3 months). By closely monitoring the condition of frazil ice generation and accumulation, the bubbler system could be activated only when required, in which case the energy cost would be lower. The cost of heating the air (to generate heated air bubbles) is not included in this estimate.

6.5 Bypass Channel

The proposed bypass channel would be approximately 700m long, 2m deep, and 10m wide. The estimated cost for constructing such a channel and spreading the excavated material at location is $350,000. The estimated cost for off-site disposal of excavated materials would be an additional $350,000, assuming an average 10 km haul distance to a disposal site.

A Class Environmental Assessment must be completed before the bypass can be constructed. The cost of such a study is approximately $60,000 (or more if any secondary study is required to assess the environmental impacts).

Creating a temporary bypass channel using physical barriers such as Jersey barriers would cost approximately $15,000 per every 100 m of length.

6.6 Mechanical Removal

The cost for mechanical removal of frazil ice depends on the volume of the ice to be removed over the period of potential risk. A more accurate estimate could be determined from the volume of the ice removed during the past flooding events.

Based on the time and the equipment required to remove the ice during an event, the cost of mechanical removal is estimated to be $10,000 per occurrence.

7. Conclusions and Recommendations

7.1 Conclusions

The conclusions of Spencer Creek frazil ice study are summarized as follows:

1- Flooding due to frazil ice accumulation and the subsequent ice jam is a recurring problem in Lower Spencer Creek.

2- At present, a defined procedure for frazil ice flooding mitigation is not available.

3- Measures to prevent or reduce the production and accumulation of frazil ice and mitigate the impact of frazil ice flooding can be undertaken. These measures can be implemented at various locations along Spencer Creek. These measures are summarized based on feasibility, cost, and environmental effect in Table 7-1.

7.2 Recommendations

The following studies that complement the present study are recommended:

1- The risks associated with the present reactive mitigation measures could potentially be reduced by the implementation of the proposed measures described in this report. A cost-benefit analysis would help determine the most effective use of funds.

2- A formulation for estimating the potential of occurrence for frazil ice flooding should be developed by analysing several years of flow and weather data and correlating them to those collected during the past flooding events. This would be an office study with an approximate cost of $15,000.

3- The existing monitoring program to issue flood warnings and trigger appropriate actions to mitigate flooding should be expanded to include the developed formulation.

4- Other sites, where mitigation measures to address frazil ice flooding have been installed, could be visited to better understand the applicability and effectiveness of such measures for Spencer Creek.

5- Test sections could be installed at critical locations in order to experimentally evaluate the performance of various mitigation measures discussed in Section 5, such as a low-head overflow weir.

Table 7-1: Summary of Potential Prevention and Mitigation Measures

Measure		Feasibility	Cost	Environmental Effect	EA Requirement	Permit Requirement
Prevention	Low-head Weir	Yes	Capital	Minimal	Likely	NWPA, CEAA
	Ice Barrier	Yes	Capital + Operation & Maintenance	Minimal	Not Likely	NWPA, CEAA
	Dam Operation	Yes	Operation & Maintenance	Minimal	Not Likely	None
	Localized Measures	No	Capital + Operation & Maintenance	Low	Not Likely	None
Mitigation	Dyke and Bypass	Yes	Capital	Significant	Likely	MOE
	Dam Operation	Yes	Operation & Maintenance	Minimal	Not Likely	None
	Mechanical Removal	Yes	Operation & Maintenance	Low	Not Likely	None

Trow Associates Inc.

Soheil Gholamreza-Kashi, P.Eng.
Water Resources Engineer
Infrastructure Division

William Grandy, P.Eng.
Project Manager
Infrastructure Division

Appendices

Appendix A: Photographs

Photo 1: Downstream of the Christie Lake Dam, Feb. 15, 2011

Photo 2: Webster Falls, Feb. 15, 2011

Photo 3: Downstream of CNR Culvert, Feb. 15, 2011

Photo 4: Upstream of Market St. Bridge, Feb. 15, 2011

Photo 5: Step Weirs at Market St. Bridge, Feb. 15, 2011

Photo 6: Junction with Sydenham Creek, Feb. 15, 2011

Photo 7: Upstream Side of the Thorpe St. Bridge, Feb. 15, 2011

Photo 8: Looking South on Thorpe St., Feb. 15, 2011

Photo 9: Upstream of Thorpe St. Bridge, Feb. 15, 2011

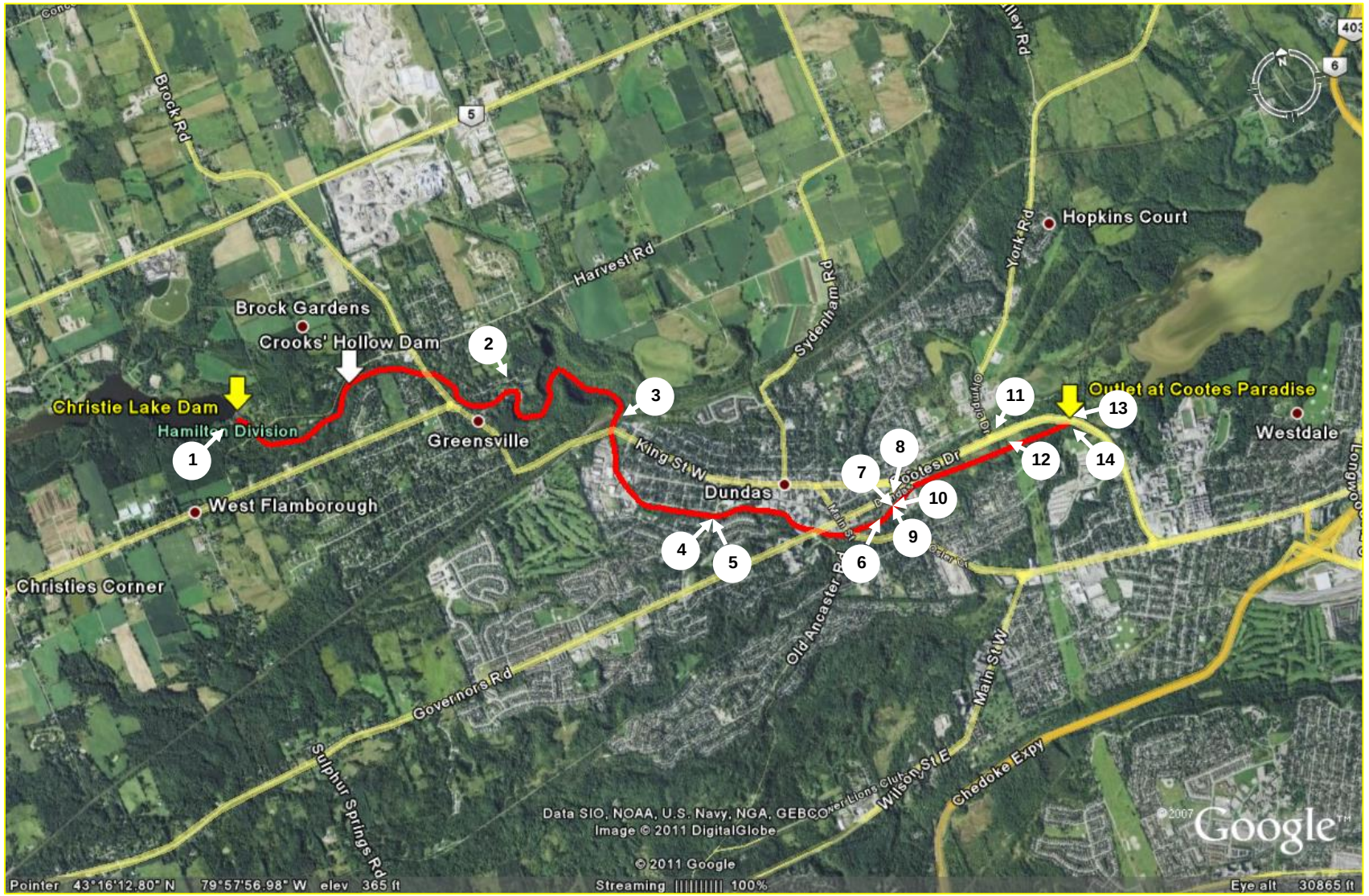
Photo 10: Downstream of Thorpe St. Bridge, Feb. 15, 2011

Photo 11: Cootes Dr. South of Olympic Dr., Feb. 15, 2011

Photo 12: South of Cootes Dr., East of Olympic Dr., Feb. 15, 2011

Photo 13: Upstream View of Cootes Dr. Bridge, Feb. 15, 2011

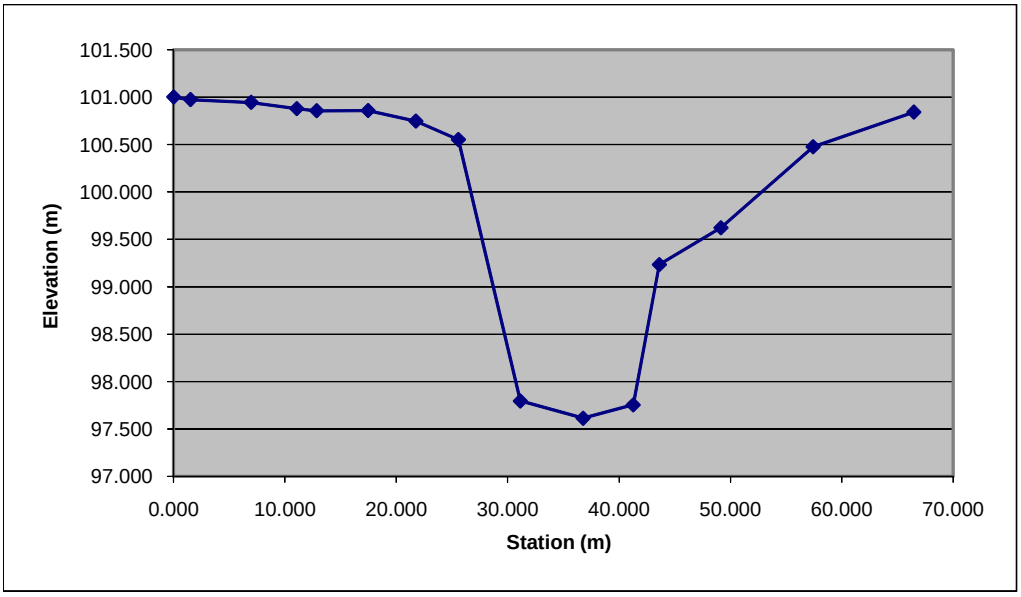
Photo 14: Upstream of Cootes Dr. Bridge, Feb. 15, 2011



Photographs Key Plan

Appendix B: Calculations

Low Head Weir Calculations



Q = (1/n).A.R^(2/3).S^(1/2)

Flow Rate, Q =	**2.00**	cms
Roughness Coefficient, n =	0.05	
Channel Slope, S =	0.0078	m/m
Flow Area, A =	2.80	m^2
Wetted Perimeter, P =	10.92	m
Top Width, B =	10.82	m
Normal Depth, y =	0.35	m
Velocity, V =	0.71	m/s
Froude Number, Fr =	0.45	

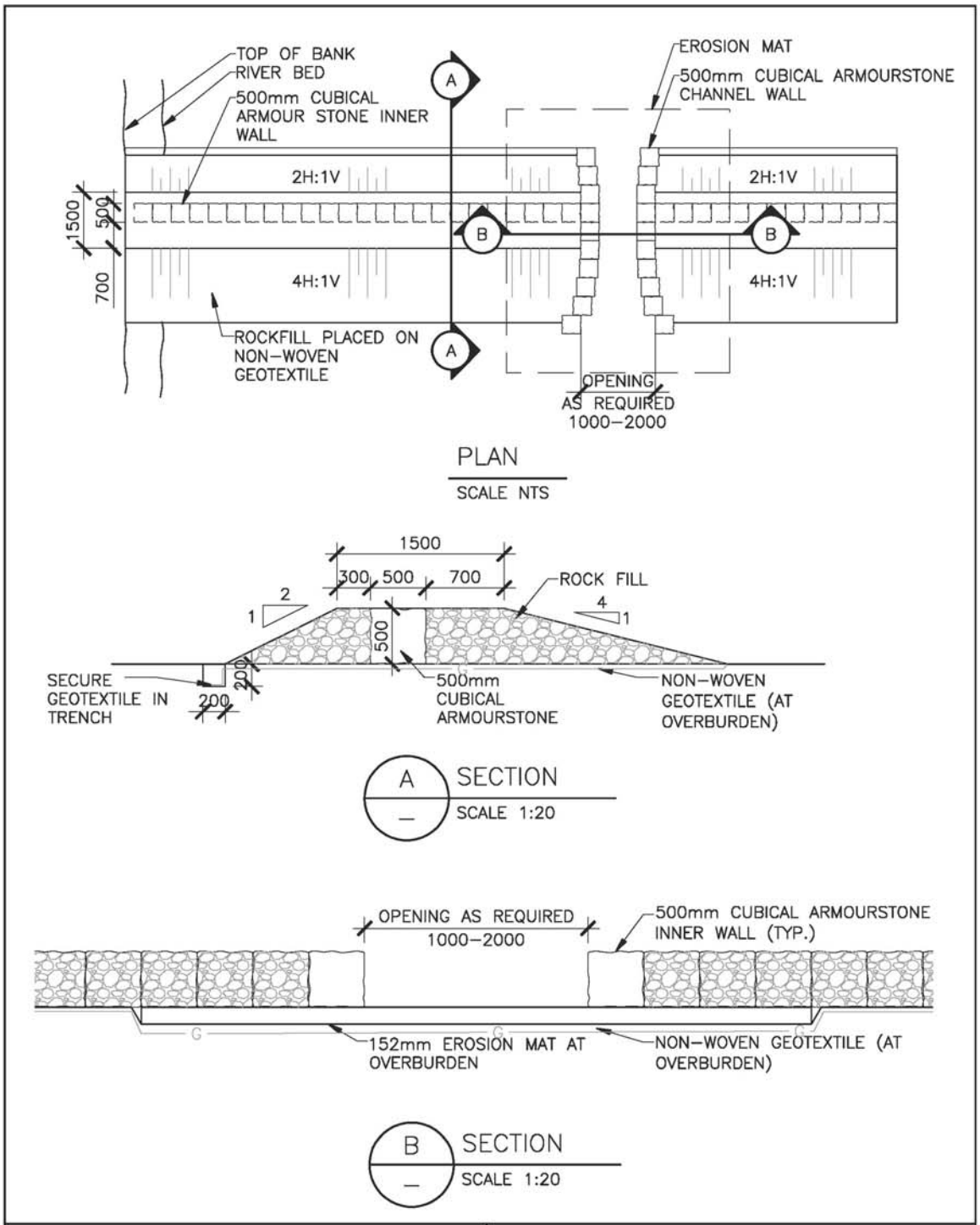
V = Q/A

Normal Depth, y =	**0.85**	m
Flow Area, A =	8.60	m^2
Wetted Perimeter, P =	12.97	m
Top Width, B =	12.60	m
Flow Rate, Q =	2.00	cms
Velocity, V =	0.23	m/s
Froude Number, Fr =	0.08	

Q = C.L.H^1.5

Weir Coefficient, C =	1.70	
Weir Length, L =	1.50	m
Head over Weir, H =	0.85	m
Weir Discharge =	**2.00**	cms

Appendix C: Drawing


TOP OF BANK
RIVER BED
500mm CUBICAL ARMOUR STONE INNER WALL
EROSION MAT
500mm CUBICAL ARMOURSTONE CHANNEL WALL
A
B
2H:1V
4H:1V
1500
500
700
ROCKFILL PLACED ON NON-WOVEN GEOTEXTILE
OPENING AS REQUIRED 1000-2000
PLAN
SCALE NTS
1500
300
500
700
ROCK FILL
2
1
4
1
500
200
200
SECURE GEOTEXTILE IN TRENCH
500mm CUBICAL ARMOURSTONE
NON-WOVEN GEOTEXTILE (AT OVERBURDEN)
A
SECTION
SCALE 1:20
OPENING AS REQUIRED 1000-2000
500mm CUBICAL ARMOURSTONE INNER WALL (TYP.)
152mm EROSION MAT AT OVERBURDEN
NON-WOVEN GEOTEXTILE (AT OVERBURDEN)
B
SECTION
SCALE 1:20
Hamilton Conservation Authority
Healthy Streams...Healthy Communities!
PROJECT TITLE
LOWER SPENCER CREEK - FRAZIL ICE STUDY
DRAWING TITLE
LOW HEAD WEIR CONCEPT
Trow Associates Inc.
1595 Clark Boulevard
Brampton, Ontario L6T 4V1
Tel.: (905) 793-9800
Fax: (905) 793-0641
SCALE
N.T.S.
CONTRACT NO.
--
DRAWING NO
HAM-01-RA
DRAWN BY
T.M.
DATE
MARCH 15, 2011

References

Ashton, G.D. (1986) "River and Lakes Ice Engineering", Littleton, Colorado, USA.

Baddour, R.E. (1990) "Computer Simulation of Ice Control with Thermal Bubbler Plumes: Line Source Configuration", *Canadian Journal of Civil Engineering*, 14, p509-513.

Beltaos, S., Hulley, M., Keene, B., and Watt, E. (2007) "Frazil ice flooding and potential mitigation: Moira River at Belleville", *CRIPE 14th Workshop on the Hydraulics of Ice Covered Rivers*, Quebec City, June 19-22, 2007.

Hatch (2009), "Crooks' Hollow Dam Class Environmental Assessment Project Plan".

Hatch Acres (2006), "Former Town of Durham Frazil Ice Study".

Klohn Crippen, "Operation, Maintenance and Surveillance Manual - Christie Lake Dam (Draft)".

Klohn Crippen (2005), "Dam Break and Inundation Mapping Study - Christie Lake Dam and Valens Dam (Draft)".

Trow Associates Inc. (2005), "Christie Lake Dam Major Maintenance Project Design Report".

Hamilton Conservation Authority

Lower Spencer Creek Frazil Ice Flooding Cost Benefit Analysis of Mitigation Alternatives

Type of Document
Final Report

Project Name
Lower Spencer Creek Frazil Ice Flooding
Cost Benefit Analysis of Mitigation Alternatives

Project Number
BRM-00500780-B0

Prepared By:

exp
1595 Clark Boulevard
Brampton, ON L6T 4V1
Canada

Date Submitted
September 2013

Hamilton Conservation Authority

Lower Spencer Creek Frazil Ice Flooding
Cost Benefit Analysis of Mitigation Alternatives

Type of Document:
Final Report

Project Name:
Lower Spencer Creek Frazil Ice Flooding
Cost Benefit Analysis of Mitigation Alternatives

Project Number:
BRM-00500780-B0

Prepared By:
William Grandy, P.Eng.
Soheil Gholamreza-Kashi, P.Eng.

exp Services Inc.
1595 Clark Blvd.
Brampton, Ontario L6T 4V1
Canada
T: +1.905-793.9800
F: +1.905-793.0641
www.exp.com

Soheil Gholamreza-Kashi, P.Eng.
Water Resources Engineer
Infrastructure Division
Professional License #: 100042261

William Grandy, P.Eng.
Practice Lead, Water Resources
Infrastructure Division
Professional License #: 100081764

Date Submitted:
September 2013

Legal Notification

This report was prepared by **exp** Services Inc. for the account of **Hamilton Conservation Authority**.

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. **Exp** Services Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this project.

Executive Summary

The purpose of this study is to provide a cost-benefit analysis for measures to prevent/mitigate flooding due to frazil ice accumulation along the lower reach of Spencer Creek. Evaluation criteria included cost (construction and maintenance), benefit, reliability, health/safety, reputation, and environmental effects. The analysis determined relative weights for each of the criteria, and assigned scores (out of 10) to each criterion for each alternative. Mitigation measures considered included weir, ice barrier, dam operation changes, bubbler, bypass channel, and a monitoring program. The analysis determined that the alternative with the highest score was the monitoring program option. The monitoring program includes:

1. Regular inspections
2. Development of a formulation for estimating the potential of occurrence for frazil ice flooding
3. Debris removal from the banks and channel, as well as near structures
4. Ice removal by mechanical means

It was recommended that Hamilton Conservation Authority prepare and adopt a formal monitoring program that will greatly reduce the possibility of flooding due to frazil ice accumulation.

Table of Contents

List of Tables

List of Figures

List of Distribution

Report Distributed To:

Hamilton Conservation Authority

1 Introduction

In May 2011, **exp** submitted the Lower Spencer Creek Frazil Ice Study report to Hamilton Conservation Authority (HCA). The report identified the causes of frazil ice accumulation along the lower reach of Spencer Creek, which has resulted in flooding within the former Town of Dundas on several occasions. The report also presented measures to prevent the generation of frazil ice and to mitigate the subsequent flooding.

In October 2012, HCA retained **exp** to undertake a cost-benefit analysis of the feasible solutions presented in the Frazil Ice Study.

1.1 Background

The steep slope of Spencer Creek downstream of the Christie Lake Dam generates fast moving turbulent flows, which in periods of sustained low temperatures, may lead to the production of frazil ice. Frazil ice typically accumulates and creates ice jams in Spencer Creek downstream of Osler Drive, where the slope of the creek is gentle, and at channel restrictions (such as bridges and culverts). In 2005 and 2009, accumulation of frazil ice at the Thorpe Street bridge caused a blockage of Spencer Creek, which resulted in flooding on nearby streets. In 2011, **exp** completed the Lower Spencer Creek Frazil Ice Study report, in which the causes of frazil ice generation in this area were identified, and measures to prevent/mitigate the flooding due to frazil ice accumulation were discussed.

1.2 Study Area

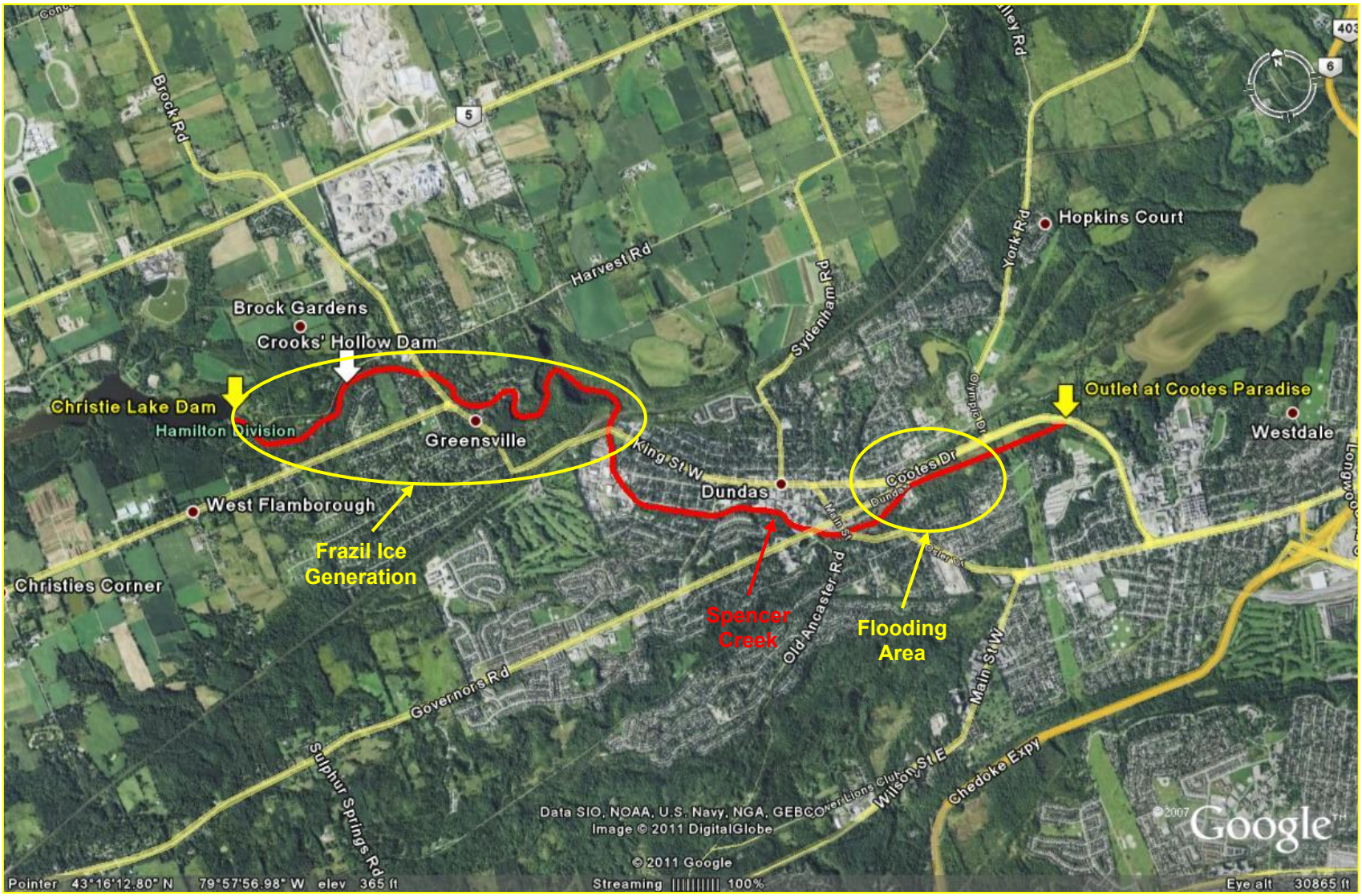
Spencer Creek is the major river within the Hamilton Conservation Area in Ontario, draining an area of 291 km^2. The main branch of the river is 40 km long and flows into Lake Ontario at Hamilton Harbour after entering an area known as Cootes Paradise. The upper portion of the river passes through rural areas and agricultural lands, whereas the lower portion near the lake flows through urban development. Currently, two dams are located within the Spencer Creek Watershed, namely Valens Dam and Christie Lake Dam. Crooks Hollow Dam, which was located downstream of the Christie Lake Dam has been decommissioned. Figure 1-1 shows the study area and identifies the frazil ice generation and flooding locations.

1.3 Work Program

The following tasks were undertaken for this study:

- Discussion of the work scope with HCA staff.
- Interviews (telephone and in-person) with property owners affected by flooding of Thorpe Street in 2009.
- Evaluation of alternatives for mitigation/prevention measures.
- Recommendation of the preferred measure to prevent or reduce frazil ice generation/accumulation and to mitigate flooding due to ice jams based on the analysis criteria.

Figure 1-1: Study Area



2 Background Information

The following background information for Spencer Creek was provided by HCA:

- Photos of the previous frazil ice flooding events, including the events of January 2005 and January 2009
- A summary report of the January 2005 flooding event and a memorandum on the January 2009 event
- Temperature, flow, and stage data for January 2005, February 2008, and January 2009
- Output of the creek hydraulic model between Osler Drive and the outlet into Cootes Paradise, along with the 100 year and regional floodlines (Paragon Engineering Limited, 1992)
- Draft operating manual for the Christie Lake Dam (Klohn Crippen)
- Draft dam break and inundation mapping study of Christie Lake Dam (Klohn Crippen, 2005)
- Report on evaluation of new winter operating level for Christie Lake Dam (Acres International, 2002)

2.1 Frazil Ice

Frazil ice is formed when water flow is supercooled by turbulence and exposure to cold air during very low temperatures, typically accompanied by high winds. High flow velocities increase the turbulence and the surface area, providing more opportunity for heat loss to the atmosphere.

An ice cover can reduce heat loss from the water to the atmosphere, thereby decreasing the rate of frazil ice generation. In fast moving sections of a river, the hydrodynamic forces of high flow prevent the formation and development of ice covers.

2.2 Consequences of Flooding Events

Two recent flooding events caused by frazil ice accumulation occurred in January 2005 and January 2009 within the former Town of Dundas. These were described in detail in the 2011 **exp** report.

Telephone and in-person interviews were held with several property and business owners on Thorpe Street and Meadow Lane to determine the potential effects of future flood events caused by frazil ice accumulation. A summary spreadsheet of the interviews has been placed in Appendix 1. In general, the following observations regarding the 2009 flooding event were made:

- Some businesses were shut down for several days in 2009 to deal with the water that had entered their building as a result of the flooding.
- Other businesses were prepared for flooding with interior sump pumps and remained open.
- Access to businesses on the street that remained open was limited to 4 x 4 vehicles.
- Flooding did not occur in private homes.
- Frozen water in the street prevented access and egress from private homes by non 4 x 4 vehicles.

Figure 2-1 shows the businesses and homes on Thorpe Street and Meadow Lane that could potentially be affected by future flooding events.

Figure 2-1 Thorpe Street and Meadow Lane Addresses

Some residents noted that the flood event in 2009 resulted from an accumulation of tree debris on the upstream side of the Thorpe Street Bridge. This facilitated the frazil ice accumulation and subsequent flooding.

Future flood events caused by frazil ice could have the following consequences:

1. Flood damage to private homes and businesses
2. Shutdown and loss of revenue for businesses
3. Limited access for emergency services (firetrucks, ambulances)

Emergency service vehicles (ambulances, firetrucks) would have difficulty accessing Thorpe Street and Meadow Lane due to water buildup, which would likely be frozen. Delays in provision of these services could result in dangerous consequences, such as fire damage and delays in emergency medical services.

Negative consequences resulting from future flood events caused by frazil ice accumulation could potentially result in litigation against parties perceived to be responsible for losses. HCA could potentially be named as a responsible party, due to their role with the Spencer Creek watercourse.

3 Prevention/Mitigation Measures Analysis

3.1 Current Procedures

Since the flooding event of January 2005, HCA has been closely monitoring the temperature and flow conditions of Spencer Creek in order to help identify the potential for frazil ice flooding. This aids HCA in issuing flood warnings to the City of Hamilton staff and the public in a timely fashion.

HCA issued a flood information bulletin on January 16, 2009. Localized flooding was reported on January 17, 2009. An emergency snow berm was constructed to contain any flooding.

During the flooding event of January 2005, the City of Hamilton staff undertook the following measures to reduce the impacts of the flooding:

1. Ice was removed by mechanical means;
2. Holes were punched through the ice cover to provide additional flow route;
3. Catchbasins were cleared in the flooding area to provide additional drainage;
4. A temporary overflow channel was created by constructing a snow berm to re-route the flow back into Spencer Creek.

Current mitigation procedures can be described as primarily reactive, since they are only implemented once flooding occurs or is imminent.

3.2 Potential Prevention/Mitigation Measures

There are a number of different approaches utilized throughout southern Ontario to address frazil ice flooding. These include methods for prevention or reduction of frazil ice generation and accumulation and measures to mitigate and control the impacts of flooding. The previous report (**exp**, 2011) identified several of these methods as viable for Spencer Creek.

Each viable measure has been evaluated for this study based on cost (capital and maintenance), benefit, reliability, health and safety, reputation, and environmental effects of implementation along Spencer Creek.

3.2.1 Prevention/Mitigation Measures

The following frazil ice accumulation prevention/mitigation measures were selected in the previous report as applicable/feasible for the Spencer Creek setting.

1. Low-head Overflow Weir
2. Ice Barrier (Boom)
3. Dam Operation
4. Localized Heating and Bubbler
5. Bypass Channel
6. Monitoring Program (Inspection, Mechanical Removal)

A sketch showing potential locations for implementing these measures is provided on Figure 3-1.

3.2.2 Evaluation Criteria

The following Evaluation Criteria were selected for the analysis:

1. Capital Cost
An estimate of the overall initial construction costs. This includes the cost of labour, materials, and design (engineering). This was assigned a relative weight of 10.

2. Maintenance Costs
The cumulative maintenance costs over a ten year period. This was assigned a relative weight of 5.

3. Benefit
The effectiveness of the measure in preventing/mitigating frazil ice related flooding. This was assigned a relative weight of 20.

4. Reliability
Evaluated based upon probability of non-functionality/failure of the mitigation measure. This was assigned a relative weight of 10.

5. Public Health and Safety
Expected changes to public health and safety concerns caused by the mitigation measure. This was assigned a relative weight of 10.

6. Reputation
Public perception of the installed measure. This was assigned a relative weight of 5.

7. Environmental
Preliminary evaluation of the effects to the natural environment resulting from the mitigation measure. This was assigned a relative weight of 10.

Tables 3-1 to 3-6 provide descriptions of the mitigation measures and discussion related to each evaluation criteria. Each criterion for each measure was assigned a score out of 10. The cumulative score for each measure was the sum of each criterion score multiplied by its relative weight.

Table 3-1 – Low-head Overflow Weir Analysis

Description Low-head weirs can be installed at moderate gradient locations to encourage the formation of an ice cover by raising the water level and decreasing the flow velocity on the upstream side of the weir. The ice cover inhibits the heat loss to the atmosphere, thereby decreasing the generation of frazil ice. Reducing the Froude number by raising the water level and decreasing the flow velocity contributes to the arrest of frazil ice on the upstream edge of the ice cover. Openings could be installed through the weir to minimize the environmental impact and fish habitat disruption by providing base flow to the downstream reach. One suitable location for installation of a low-head weir has been identified, at the Market Street Bridge. There are two step weirs at this bridge, one on the upstream end of the bridge and one on the downstream end. The crest of these weirs, which were implemented for erosion control, is set at the elevation of the river bed. Raising the crest of one of these weirs can further raise the water level and slow down the flow on the upstream side, encouraging the formation of an ice cover and the arrest of the oncoming frazil ice at the upstream edge of the ice cover. A 0.85m high weir will raise the flow depth to achieve the desired effect.
Capital Cost Construction - $15,000 Engineering - $70,000 (EA + Detailed Design)
Lifecycle Cost Annual maintenance – $500 (remove debris accumulation at weir) Formal Inspection – Every 5 years ($2,000) Ten Year Total - $9,000
Benefit The height of the weir will be fixed. This may not be suitable for all water flow conditions, which limits its overall effectiveness.
Reliability The lifespan of a new concrete weir should be 75+ years.
Public Health & Safety It would introduce a new structure to the waterway (or increase the elevation of the crest of an existing structure). The effect of the weir on the regulated flood lines would have to be investigated before implementing such measures. The water depth upstream of the structure would increase.
Reputation May not be welcomed by the public (visible structure in waterway, water level increase, fish barrier, navigation barrier).
Environmental Will change the upstream water level, which could result in potential ecosystem changes. HCA is currently undertaking work to remove barriers to fish migration. This option will be in direct conflict with this work. Installation of a weir (or changes to an existing weir) would likely require a Class EA study under Conservation Ontario's Class EA for Remedial Flood and Erosion Control Projects (2002), and Location and Plans and Specification Approvals from MNR under the Lakes and Rivers Improvement Act (2011). It may also require approval under the federal Navigable Waters Protection Act and federal screening under Canadian Environmental Assessment Agency (CEAA).

Table 3-2 – Ice Barrier Analysis

Description The use of ice barriers (i.e. river spanning boom) would encourage the formation of an ice cover, which reduces the rate of frazil ice generation and accumulation. An ice barrier would be effective in flat sections of a river, where the flow velocity is relatively low and the ice cover can progress upstream. It would also intercept fallen vegetation debris in the channel prior to it reaching and potentially accumulating at the Thorpe Street Bridge. Debris would have to be periodically removed from the boom. The boom would consist of several individual polyethylene units (3.3m long each) connected together by steel cables and anchored to concrete or rock on each shoreline. A potential location for installing an ice boom would be at the site of Crooks' Hollow Dam. An ice cover could form upstream of the boom over the previous dam reservoir. Installing a permanent boom in the river may be deemed to interrupt navigation, in which case a seasonal ice boom may be considered.
Capital Cost Construction cost - $40,000 Engineering - $5,000
Lifecycle Cost Maintenance - $500/year Ten Year Total - $5,000
Benefit Effectiveness may be limited, since frazil ice accumulation could potentially occur downstream of its location.
Reliability Susceptible to breaking by ice force or strong water flow.
Public Health & Safety No effect.
Approvals An ice boom installation would likely require approval under the federal Navigable Waters Protection Act and federal screening under CEAA.
Reputation May not meet with public favour (visually obtrusive, barrier to navigation).
Environmental No effect. There is no significant environmental impact associated with an ice barrier (with the exception of the disturbance during the installation and maintenance of the boom).

Table 3-3 – Dam Operation Analysis

Description Minimizing the outflow by modifying the operating procedures at the Christie Lake Dam during the winter months could reduce the flow velocity and turbulence in the downstream reach and lower the potential for frazil ice formation. The environmental impact associated with modifying the dam operation would be minimal, since there would be little change to the overall downstream flow. When frazil ice accumulation occurs in the downstream reach during low flow conditions, the discharge from the Christie Lake Dam can be increased to flush the accumulated ice and carry it downstream to the storage area between the creek and Desjardin Channel, or to the outlet at Cootes Paradise. The dam outflow should not be increased to flow levels that would contribute to further generation of frazil ice or the flooding downstream. Downstream conditions would have to be closely monitored to determine if the flow increase has the desired effect.
Capital Cost No capital costs
Lifecycle Cost Annual cost of staff during operation - $100 Ten Year Total - $10,000
Benefit This method would not be effective if improperly timed (.e.g. flow quantity released too low or too late). Determination of the optimum release timing and quantity could prove difficult.
Reliability Operation could be difficult in winter due to cold temperatures and snow accumulation.
Public Health & Safety No effect.
Reputation Likely unnoticeable by public.
Environmental The environmental impact associated with modifying the dam operation would be minimal, since there would be little change to the overall downstream flow.

Table 3-4 – Localized Heating and Bubbler Analysis

Description This would be a localized prevention measure which involves thermal bubbler plumes and heating of the water. Air bubbles are generated to create a rising plume. The plume can entrain heat from the warmer layers near the bottom, bring it up to the surface, and transfer it to the ice. This method is most effective in deep waters, where the temperature gradient between the bottom and the surface is considerable, unless the air bubbles are externally heated. The flow temperature can also be locally raised by providing an available heat source, such as treated sewage water. This approach would be very expensive if a heat source is not readily available. There could also be environmental concerns associated with heating of the water, such as disturbing the aquatic habitat. This technique could help keep the water near the Thorpe Street Bridge or other structures clear from ice and hence, prevent frazil ice accumulation and the resulting ice jam at the site. However, the frazil ice could deposit and accumulate further downstream, resulting in an ice jam.
Capital Cost Construction - $20,000
Lifecycle Cost Annual Operation - $600/year Maintenance - $1,000/year Ten Year Total - $16,000
Benefit Water depth along lower reach of Spencer Creek may not have sufficient depth to provide warmer base layer. Provision of heat source may not be practical.
Reliability Requires power to operate, not available during a power outage. Mechanically operated solutions would require frequent maintenance.
Public Health & Safety Could create open water (or thin ice) conditions on the creek.
Reputation Likely not highly noticeable by the public.
Environmental Some environmental concerns associated with heating of the water, such as disturbing the aquatic habitat.

Table 3-5 – Bypass Channel Analysis

Description Dykes with bypass channels can be constructed at locations susceptible to frazil ice accumulation to facilitate the flow of the frazil ice downstream and to divert the flow away from developed areas. A bypass channel can also be used as a temporary measure to contain overbank spillage. An example is the temporary channel that was created during the January 2005 flooding event by constructing a snow berm to re-route the flood flow back into Spencer Creek. When snow is not available, other materials such as Jersey barriers or sand bags could be used. A suitable location to construct a bypass channel would be near the Thorpe Street Bridge, starting at the Sydenham Creek junction and ending east of the Spencer Creek Trail parking lot. Construction of a permanent bypass channel would likely require a Class EA study under Conservation Ontario's Class EA for Remedial Flood and Erosion Control Projects (2002) and Location and Plans and Specification Approvals from MNR under the Lakes and Rivers Improvement Act (1990). Excavated material would likely require chemical testing to determine an appropriate disposal method.
Capital Cost Construction Costs - $700,000 Engineering Costs – Design - $70,000 Engineering Costs – EA - $60,000
Lifecycle Cost Likely very low maintenance Annual Inspection Costs - $500 Ten Year Total - $5,000
Benefit Very effective as long as inlet to channel is clear/unblocked.
Reliability A permanently excavated channel through an undeveloped area would function well, erosion and debris accumulation would require monitoring.
Public Health & Safety New watercourse introduced, with associated health and safety risks.
Reputation Disturbance of vegetated/undeveloped area may not be welcomed by the public, particularly local residents.
Environmental The channel would be installed through the Cootes Paradise Environmentally Sensitive Area (Life Science ANSI). This would have negative effects on existing terrestrial and aquatic habitat, both temporary (disturbance during construction) and permanent.

Table 3-6 – Monitoring Program Analysis

Description A monitoring program would include regular inspections of the watercourse throughout the year to identify any existing or potential vegetation debris. It would also include frequent inspections of the lower portion of the river during weather conditions conducive to frazil ice formation. The water depth at the Thorpe Street Bridge is quite shallow, which makes this location very susceptible to accumulation of debris that could create a blockage and flooding when combined with frazil ice flow. The most common type of debris is dead tree pieces (branches, trunks, roots, etc.). The shoreline of the river tends to be very sandy/silty and prone to soil erosion. There is an abundance of mature trees along the shoreline, and soil erosion causes their roots to be exposed, eventually leading to the collapse of the tree. During the non-winter months, inspections are required to identify dead vegetation debris. Once identified, it must be removed from the riverbanks. In addition, when a tree appears to be very close to failure, it should be removed as well. During the winter months, the river must be inspected regularly to ensure that an accumulation of debris has not formed along the lower portion of the river, especially at the Thorpe Street Bridge. During potential frazil ice conditions (i.e. low temperatures plus wind chill), the lower portion of the river must be inspected at least 2 times per day to ensure that either an ice sheet has formed, or the frazil ice is moving freely. If a potential accumulation location is identified, it must be cleared immediately, likely using mechanical equipment. When debris removal does not prevent frazil ice from blocking the river channel, the ice can be removed from the channel using mechanical equipment such as excavators or suction dredges. This approach was proven to be an effective reactive measure during past flooding events caused by frazil ice. A formulation for estimating the potential of occurrence for frazil ice flooding should be developed by analyzing several years of flow and weather data and correlating them to those collected during the past flooding events. This formulation could be used to issue flood warnings and trigger appropriate actions to mitigate flooding.
Capital Cost Preparation of a formal program - $2,000 Formulation Study - $15,000
Lifecycle Cost Inspection costs - $1,000/year, Debris removal - $2,000/year, Ice removal - $5,000/3 years Ten Year Total - $46,667 Note that the lifecycle costs may vary significantly. The inspection costs will depend on the frequency and duration of low temperature periods. Debris removal costs will depend on site and weather conditions. Ice removal costs will depend on the frequency of events of frazil ice accumulation.
Benefit If program is closely followed, frazil ice accumulation facilitated by debris accumulation would be eliminated. Removal of ice prior to the water level reaching the flooding level would be effective.
Reliability Equipment must be available when required. The availability of city-owned equipment and operators during all times (including weeknights, weekends and holidays) is to be confirmed.
Public Health & Safety Working in/near water with equipment must be performed with caution.
Reputation Good, should be promoted as a pro-active approach.
Environmental The mechanical removal of ice could potentially temporarily disrupt terrestrial and aquatic habitat, and generate sediment. However, frequency of use would be very low.

The scoring results from the analysis were as follows:

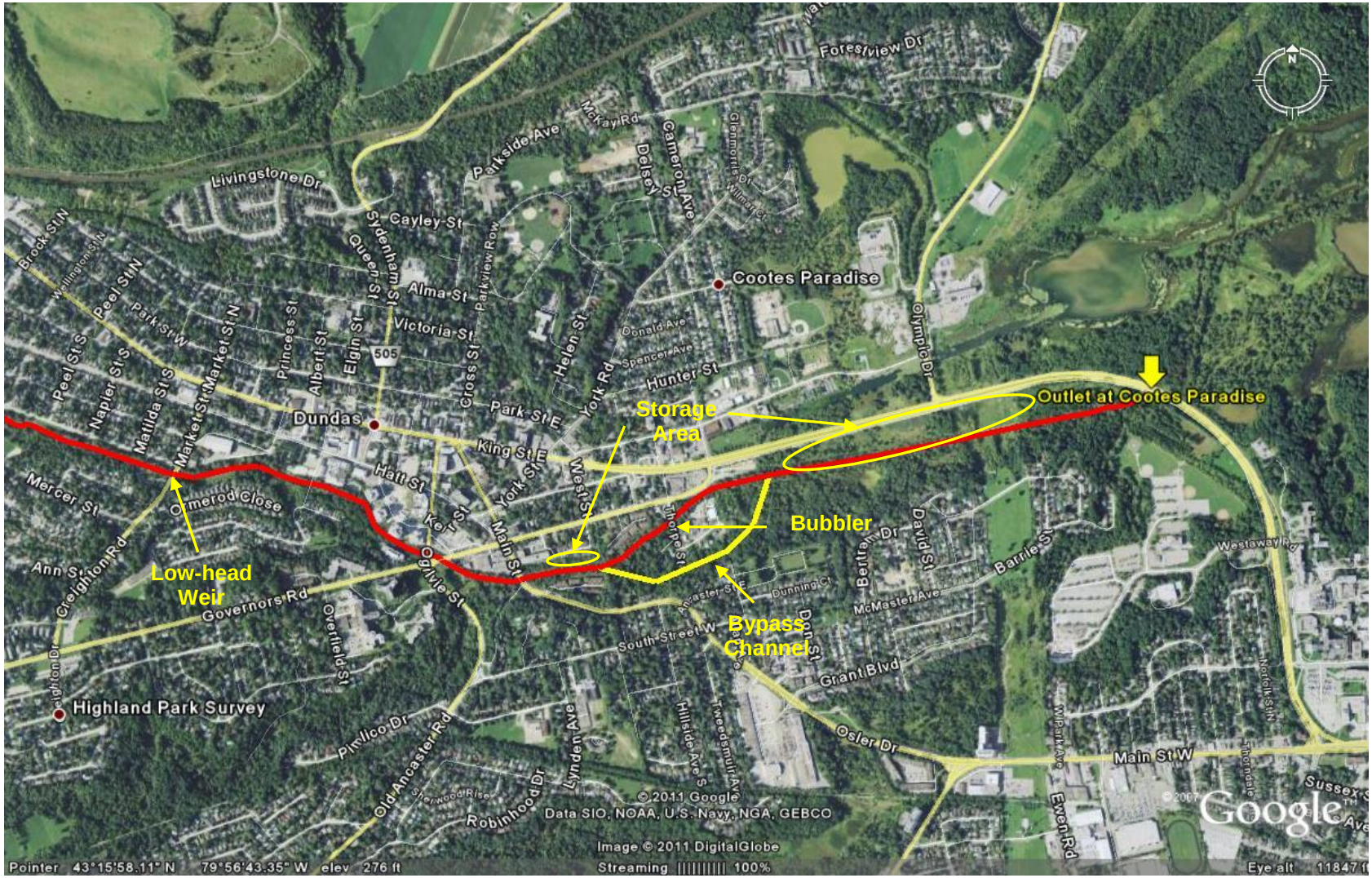
1. Monitoring Program (Inspection, Mechanical Removal) – 570
2. Dam Operation – 495
3. Ice Barrier (Boom) - 475
4. Localized Heating and Bubbler - 460
5. Bypass Channel - 405
6. Low-head Overflow Weir - 380

A summary of the analysis is presented in Table 3-7.

Table 3-7 - Analysis Summary

	Criteria (Weight)						
Alternative (Score)	**Capital Cost** (10)	**Maintenance Costs Over 10 Years** (5)	**Benefit** (20)	**Reliability** (10)	**Health & Safety** (10)	**Reputation** (5)	**Environmental Impact** (10)
Low-head Overflow Weir (380)	- $85,000 - Score 3/10	- $9,000 - Score 6/10	- Fixed height, may not be suitable for all situations - Score 6/10	- Concrete has long lifespan - Score 9/10	- New structure on waterway - Score 6/10	- May appear intrusive to the public - Score 4/10	- Will increase upstream water level, resulting in changes to ecosystem - Score 3/10
Safety Boom (475)	- $45,000 - Score 4/10	- $5,000 - Score 7/10	- Effectiveness could be limited to one location - Score 6/10	- Breaks in the links very likely - Score 5/10	- No concerns - Score 10/10 -	- Visually obtrusive, could inhibit navigation - Score 6/10 -	- No concerns - Score 10/10 -
Dam Operation (495)	- $0 - Score 10/10	- $10,000 - Score 6/10	- Timing must be correct or else ineffective - 4/10	- Could be difficult to operate in winter - Score 5/10	- No concerns - Score 10/10	- Public would likely not notice - Score 9/10	- No Concerns - Score 9/10
Localized Heating and Bubblers (460)	- $20,000 - Score 7/10	- $16,000 - Score 5/10	- Limited effectiveness without heat source, which may not be practical. - 5/10	- Requires power to operate (not available during power outage) and mechanical equipment may require frequent maintenance. - Score 5/10	- No concerns - Score 10/10	- Likely not highly noticeable - Score 9/10	- Minor effects on fish habitat - Score 7/10
Bypass Channel (405)	- $830,000 - Score 1/10	- $5,000 - Score 7/10	- Effective as long as debris blockages removed - Score 8/10	- Permanent channel should function well - Score 9/10	- New watercourse introduced - Score 6/10	- Disturbance of vegetated area may not be welcomed by the public - Score 4/10	- Would be installed in undeveloped area, likely negative impacts on wildlife - Score 3/10
Monitoring/Mechanical Removal (570)	- $17,000 - Score 8/10	- $46,667 - Score 3/10	- Strict adherence to program would be effective - 9/10	- The availability of city-owned equipment and operators during all times is to be confirmed. - Score 7/10	- No concerns - Score 10/10	- Should meet with public favour, promote as proactive and non-intrusive approach - Score 9/10	- Mechanical removal of ice could temporarily disrupt terrestrial and aquatic habitat, but frequency of use would be very low - Score 8/10

Figure 3-1: Location of Alternatives for Prevention and Mitigation Measures



4 Conclusions and Recommendations

The monitoring program received the highest score in the analysis process. However, its effectiveness depends upon the diligence with which it is implemented and adhered to each year. This diligence is expected to include site inspections by HCA Water Resource Engineering staff during all times, if required (weekdays, weeknights, weekends and holidays). The effectiveness is also expected to be dependent on the availability of City-owned ice removal equipment and operators during all times. This should be confirmed with the City.

If HCA decides to select this approach, it must prepare an appropriate plan and follow it closely, otherwise, the possibility of flooding and its associated risks, will not be reduced. The potential consequences associated with flooding include water damage to homes/businesses, temporary shutdown of local businesses, loss of access to local streets by non 4x4 vehicles, and loss of (or delayed) access time for emergency vehicles.

Appendix 1 – Summary of Interviews

Interviews with Property Owners in 2013

Address	Description	Damages in 2009	Cost	Disruption to business	Cost	Access
36 Thorpe Street	Private Business - Berk Appraisals	Located on upper level of building, no damages	$0	If road flooded, customer/employee access limited		
36 Thorpe Street	Private Business - 8 Days a Week Lawn Sprinkler Systems	Water entered building, dampened linoleum flooring	$2,000	If road flooded, customer/employee access limited (seasonal business, slower period in winter)		
33 Thorpe St	Private Business - Pro-Point Automotive	200mm depth of flooding in garage, which subsequently froze and was difficult to remove.	$1,000	Business shut down for nearly a week	$10,000	
50 Thorpe Street	Private Residence	No flooding in house	$0			No access without 4WD vehicle, No access for emergency vehicles for 2-3 days
52 Thorpe Street	Private Residence	No flooding in house	$0			No access without 4WD vehicle, No access for emergency vehicles for 2-3 days
2 Meadow Lane	Private Residence	No flooding in house	$0			No access without 4WD vehicle, No access for emergency vehicles for 2-3 days
9 Meadow Lane	Private Business - Dundas Alignment & Brake Service	No flooding in building	$0			No access without 4WD vehicle
9 Meadow Lane	Private Business - Welcan Machine Shop	No flooding in building	$0	Pumping system available for flooding, employees sent home for 1.5 days	$2,000	
14 Meadow Lane	Private Residence	(Was not available for interview)	$0			No access without 4WD vehicle, No access for emergency vehicles for 2-3 days
15 Meadow Lane	Private Residence	No flooding in house, driveway flooded, car frozen in ice	$0			No access without 4WD vehicle, No access for emergency vehicles for 2-3 days
17 Meadow Lane	Private Business - Canadian Tire Warehouse	No flooding in building, portion of driveway flooded	$0	Shut down for 1 day, difficult access for several days		

This page intentionally left blank.

BRM-00500780-C0

Submitted: April 7, 2014

Spencer Creek
Frazil Ice Forecasting

Hamilton, Ontario

exp Services Inc.
1595 Clark Boulevard
Brampton, Ontario L6T4V1
Tel: (905) 793-9800
Fax: (905) 793-0641

Hamilton Conservation Authority

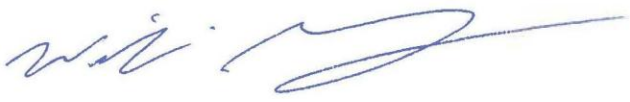
Spencer Creek Frazil Ice Forecasting

Type of Document:
Final Report

Project Number:
BRM-00500780-C0

Prepared By:
exp Services Inc.
1595 Clark Blvd.
Brampton, ON L6T 4V1
Canada
T: +1 905.793.9800
www.**exp**.com

Soheil Gholamreza-Kashi, Water Resources Engineer
Professional License #: 100042261



William Grandy, Water Resources Practice Lead
Professional License #: 100081764

Date Submitted:
April 7, 2014

Legal Notification

This report was prepared by **exp** Services Inc. for the account of **Hamilton Conservation Authority**.

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. **Exp** Services Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this project.

List of Distribution

Report Distributed To:

Name	Coordinates
Jonathan Bastein	Water Resources Engineering, Hamilton Conservation Authority
Hazel Breton	Manager, Water Resources Engineering, Hamilton Conservation Authority

Table of Contents

List of Figures

1 Introduction and Background

1.1 Introduction

In May 2011, Trow Associates Inc. (currently **exp** Services Inc.) submitted the Lower Spencer Creek Frazil Ice Study report to Hamilton Conservation Authority (HCA). The report identified the causes of frazil ice accumulation along the lower reach of Spencer Creek, which has resulted in flooding within the former Town of Dundas on several occasions. The report also presented measures to prevent the generation of frazil ice and to mitigate the subsequent flooding.

Following the recommendation of the abovementioned report, in February 2014, HCA retained **exp** to develop a method for frazil ice flood forecasting in the lower reach of Spencer Creek, using temperature and discharge data.

1.2 Background

The steep slope of Spencer Creek downstream of the Christie Lake Dam generates fast moving turbulent flows, which in periods of sustained low temperatures, may lead to the generation of frazil ice. Frazil ice typically accumulates and creates ice jams in Spencer Creek downstream of Osler Drive, where the slope of the creek is gentle, and at channel restrictions (such as bridges and culverts). In 2005 and 2009, accumulation of frazil ice at the Thorpe Street Bridge caused a blockage of Spencer Creek, which resulted in flooding on nearby streets. In 2011, **exp** completed the Lower Spencer Creek Frazil Ice Study report, in which the causes of frazil ice generation in this area were identified, and measures to prevent/mitigate the flooding due to frazil ice accumulation were discussed.

1.3 Frazil Ice

Frazil ice is formed when water flow is supercooled by turbulence and exposure to cold air during very low temperatures, typically accompanied by high winds. High flow velocities increase the turbulence and the surface area, providing more opportunity for heat loss to the atmosphere.

An ice cover can reduce heat loss from the water to the atmosphere, thereby decreasing the rate of frazil ice generation. In fast moving sections of a river, the hydrodynamic forces of high flow prevent the formation and development of ice covers.

1.4 Study Area

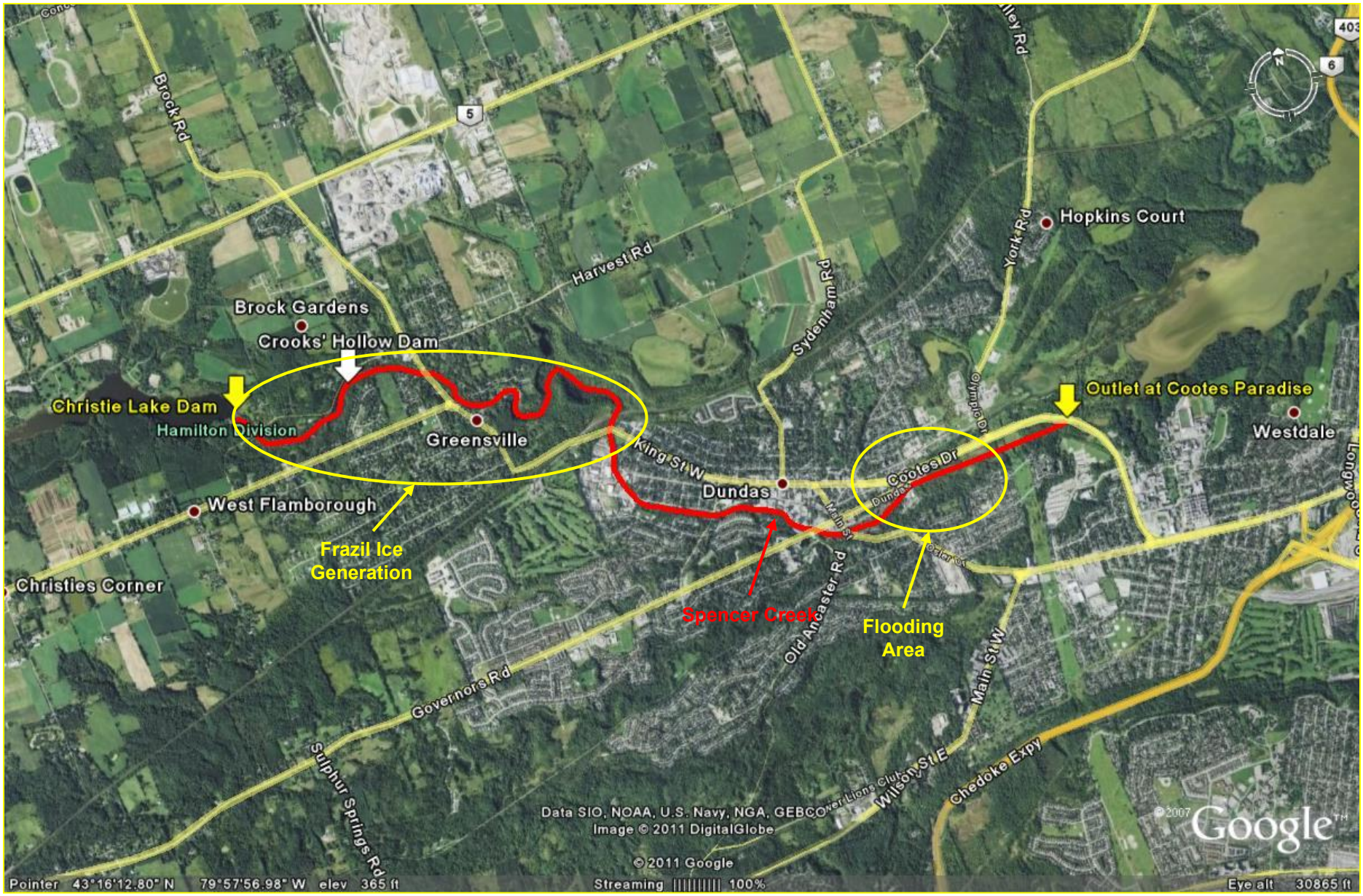
Spencer Creek is the major river within the Hamilton Conservation Area in Ontario, draining an area of 291 km^2. The main branch of the river is 40 km long and flows into Lake Ontario at Hamilton Harbour after entering an area known as Cootes Paradise. The upper portion of the river passes through rural areas and agricultural lands, whereas the lower portion near the lake flows through urban development. Currently, two dams are located within the Spencer Creek Watershed, namely Valens Dam and Christie Lake Dam. Crooks Hollow Dam, which was located downstream of the Christie Lake Dam, has been decommissioned. Figure 1 shows the study area and identifies the frazil ice generation and flooding locations.

1.5 Scope of Work

The following tasks were undertaken for this study:

- Literature Review
- Collection of climate data from Environment Canada Meteorological Service and discharge data from Water Survey of Canada
- Collection of historical information about past flooding due to ice jam in Spencer Creek
- Data analysis
- Development of a forecasting methodology

Figure 1. Study Area



2 Literature Review

A review of previous studies on the relationship between ice jams and air temperature and/or discharge was undertaken.

2.1 Salmon River

Zufelt and Bilello (1992) investigated the effects of freezing periods and discharge on formation of ice jams in Salmon River at Salmon, Idaho. The flooding on Salmon River resulted from ice jams due to freeze-up conditions, which led to a reduction of the hydraulic capacity of the river channel. They concluded that the occurrence of ice jams is directly related to the duration and intensity of cold periods and the air temperatures before the cold periods. This study identified a threshold condition, at which the probability of ice jams could be determined based on forecast temperatures. They did not find any relationship between the discharge and the occurrence of ice jams due to freeze-up.

2.2 Former Town of Durham

A study of frazil ice flooding in the former town of Durham, Ontario, was conducted by Hatch Acres (2006). This study proposed a method for determining the probability of flooding due to frazil ice accumulation using Degree Days of Freezing (DDF) and mass flow curves. The method was comprised of monitoring the slopes of the accumulated DDF and mass flow curves.

2.3 Kaministiquia River

Beltaos, Boyle, and Hryciw (2007) studied the flooding due to frazil ice jams on Kaministiquia River near Fort Williams Historic Park in Ontario. They investigated the causes of flooding in relation to historical information and hydro-climate data and concluded that it is related to high flows during below freezing but relatively mild air temperatures.

2.4 Moira River

Frazil ice flooding in Moira River at Belleville, Ontario was investigated by Beltaos et al. (2007). This study developed temperature and flow based indices to evaluate the potential for frazil ice flooding. The temperature-based index was defined as the minimum of the daily mean temperatures averaged over 15 consecutive days in January. The flow-based index was defined as the maximum January discharge on or before January 20. Analyzing the historical hydro-climate data, Beltaos et al. (2007) determined flooding threshold values of -12.0 °C and 60 m^3/s for the temperature and flow indices, respectively.

3 Data Collection

3.1 Meteorological Data

The air temperature data (daily means) was obtained from the Meteorological Service of Environment Canada. The data was collected from the Hamilton A station (ID# 6153194), from December 1959 to December 2011.

The data from 1959 to 1994 are DLY04 data, while the data from 1995 to 2011 are DLY02 data:

- DLY04 data: comes from fully quality controlled data (set to present standards). Sources of observation are not restricted (may be from manned sites, automated sites, or volunteer sites).
- DLY02 data: comes from synoptic data, much of which is generated from automated stations. This data undergoes an automated quality control, and is available soon after it has been observed.

3.2 Hydrometric Data

The flow data (daily means) was obtained from the Water Survey of Canada. This data was collected from the Spencer Creek Gauge at Dundas Street from 1960 to 1984 (Station 02HB010) and from 1984 to 2012 (Station 02HB007).

3.3 Historical Information

The historical information regarding past ice-related flooding events was provided by the Hamilton Conservation Authority.

Two flooding events due to frazil ice accumulation in lower Spencer Creek were reported by HCA: January 2005 and January 2009 events. The flooding event in January 2009 was not as extensive as the January 2005 event, partly due to higher temperatures and partly because of HCA monitoring and preparation (e.g. installing a snow berm). In February 2008, two relatively high flow events were experienced following short periods of temperatures above zero. No flooding was reported during this period. All these events were described in detail in the Lower Spencer Creek Frazil Ice Study (Trow, 2011).

According to the report “Flooding in Dundas: a Summary of Historical Notes on Floods between 1847 and 1965”, a flooding event occurred in lower Spencer Creek in February 1965. The event is described as follows:

“Spencer Creek flooded. Highway # 102 was closed to traffic for six hours because chunks of ice from the creek blocked it. Ten homes and the Canadian Tire Corporation were flooded. Traffic, forced to use Highway # 2, was backed up and almost stalled from Binkley’s Hollow to Westdale Secondary School.”

This flooding event appears to be due to ice break-up as a result of temperatures above zero and flows as high as 24 m^3/s. Large pieces of ice were observed to have encroached onto the street, which indicates ice break-up. Therefore, the 1965 event was excluded from this study.

4 Data Analysis

Frazil ice generation generally occurs during below freezing temperatures and high flows:

- The water temperature reduces to near freezing levels after a certain number of days with sub-zero °C temperatures.
- Hydrodynamic forces of high flows prevent the formation and development of ice cover over various parts of the watercourse that would have otherwise reduced heat loss to the atmosphere. High flow also increases the turbulence and the surface area, providing more opportunities to disperse heat to the atmosphere.

Two different methods for forecasting frazil ice generation using temperature and flow data were considered.

4.1 DDF and Mass Flow Curves

In this method, the following two curves were considered (Hatch Acres, 2006):

- Cumulative Degree Days of Freezing (DDF, °C-days): daily degrees below freezing summed over the total number of days the temperature was below freezing. The slope of this curve indicates the intensity of freezing/warming.
- Cumulative Mass Flow: total volume of flow over a certain number of days. The slope of this curve indicates the flow rate.

For this study, the curves for cumulative DDF (based on daily mean temperatures) and mass flows (based on daily mean flows) over a 5 day period were calculated for January 2005, February 2008, and January 2009. These curves are presented in Figures 2 to 4.

Figure 2 shows increases in the flow rates in the beginning of January 2005 and just before mid-January. Around mid-January, a freezing period began, exceeding 70 °C-days and lasting for approximately 10 days. A flooding event due to frazil ice accumulation occurred during this freezing period.

A freezing period occurred in early February 2008 (Figure 3). This freezing event lasted less than 10 days and did not exceed 50 °C-days. No significant increase in the flow rates were observed in February 2008. No frazil ice flooding occurred in February 2008.

Another freezing period, lasting more than 10 days and exceeding 70 °C-days, occurred in early January 2009 (Figure 4). This freezing event was preceded by a significant increase in the flow rates in late December 2008. A frazil ice jam occurred at the end of this freezing period.

Note that the DDF threshold (70 °C-days) is approximate. It may be modified when more temperature and flooding data points become available in the future.

Figure 2. 5-day DDF and Mass Flow Curves for January 2005

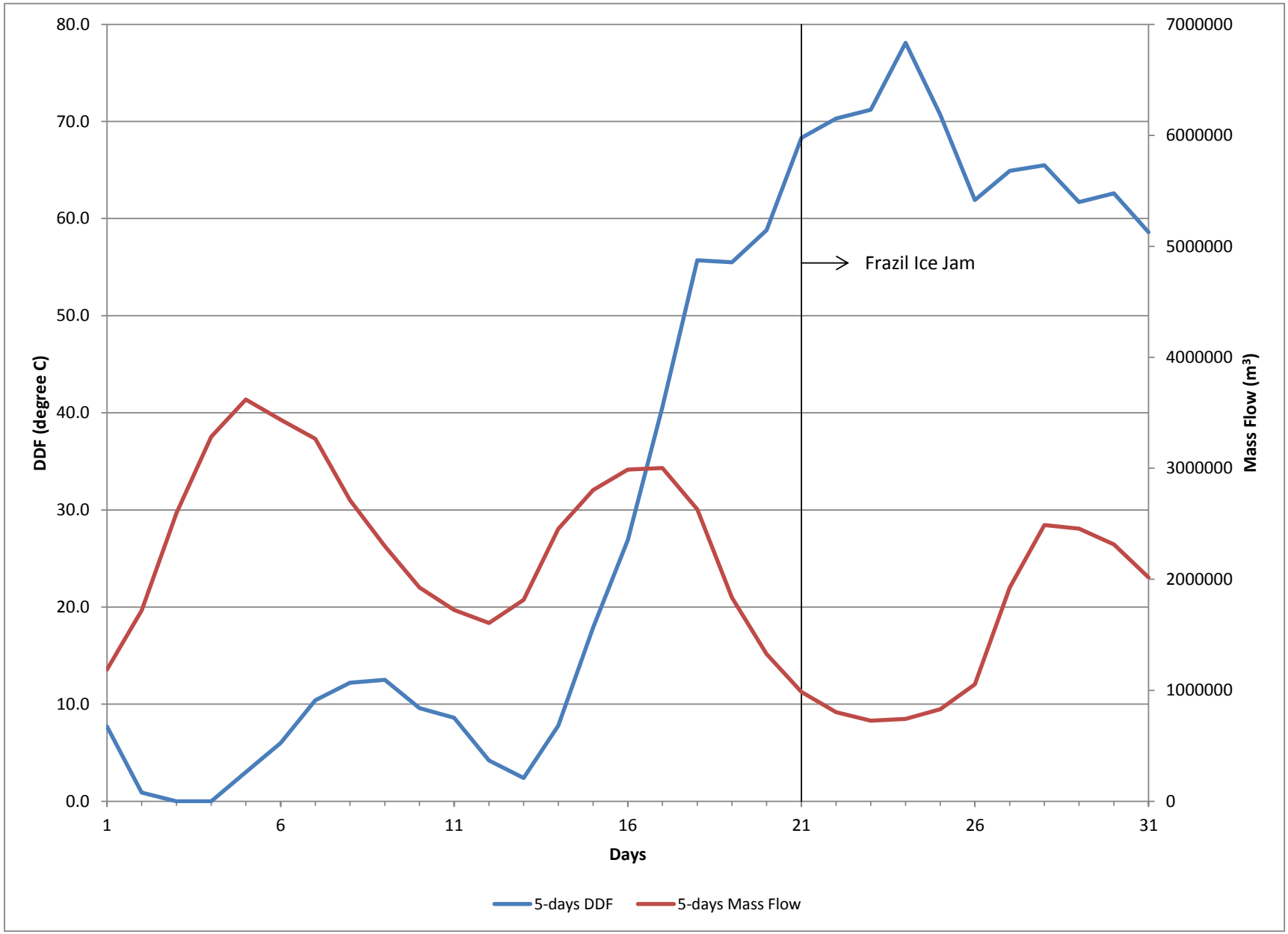


Figure 3. 5-day DDF and Mass Flow Curves for February 2008

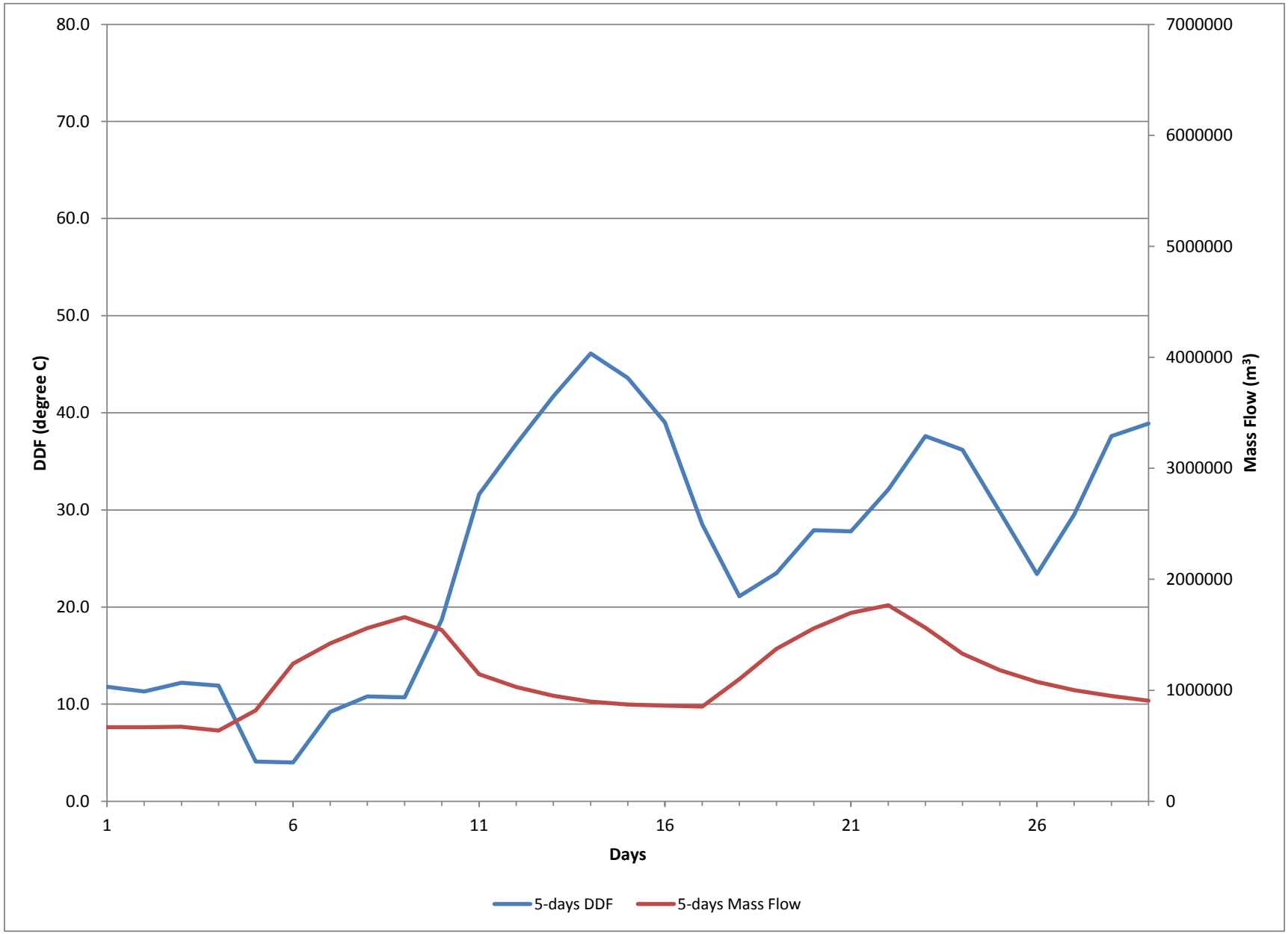
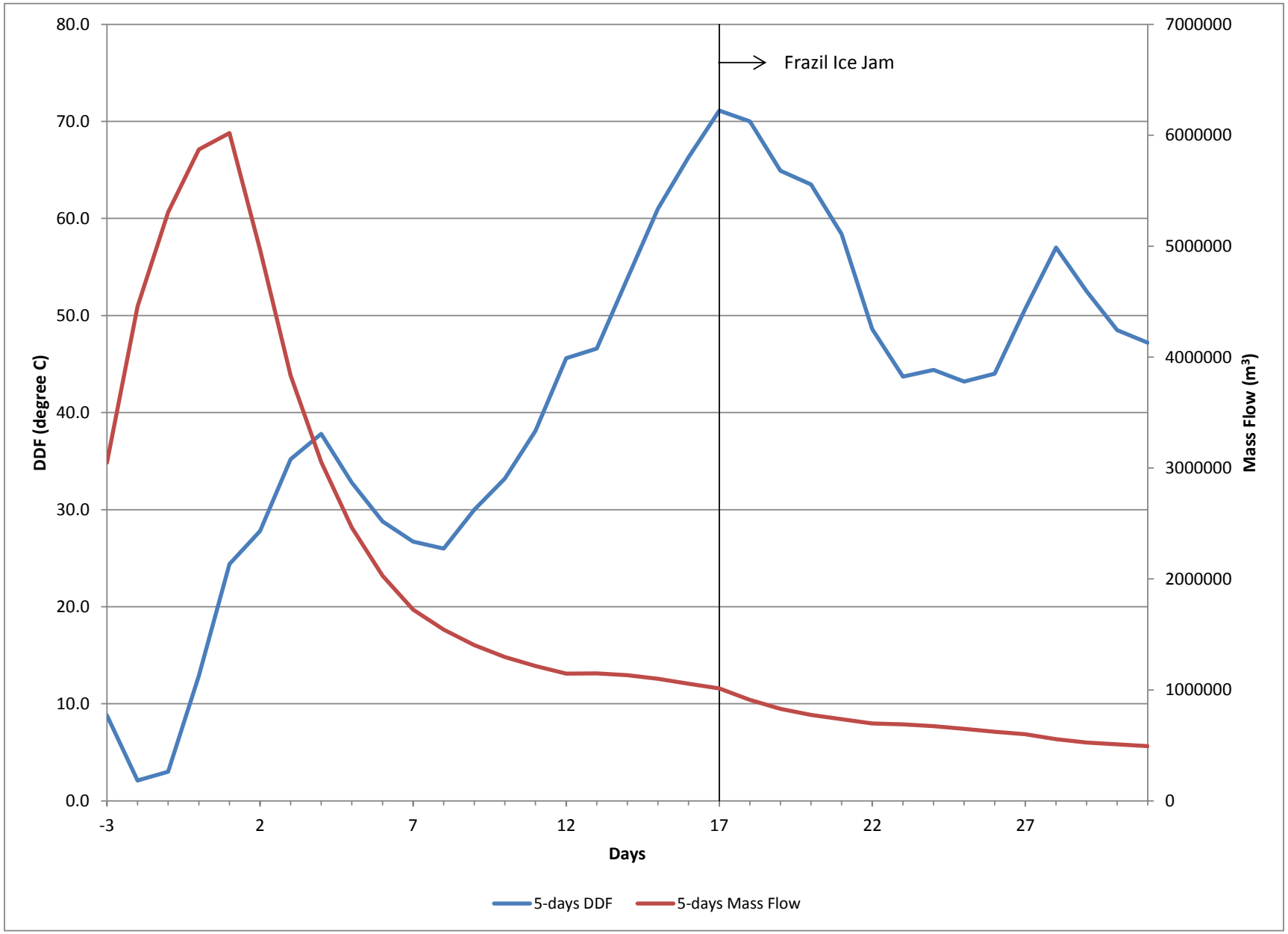


Figure 4. 5-day DDF and Mass Flow Curves for January 2009



4.2 Temperature and Flow Indices

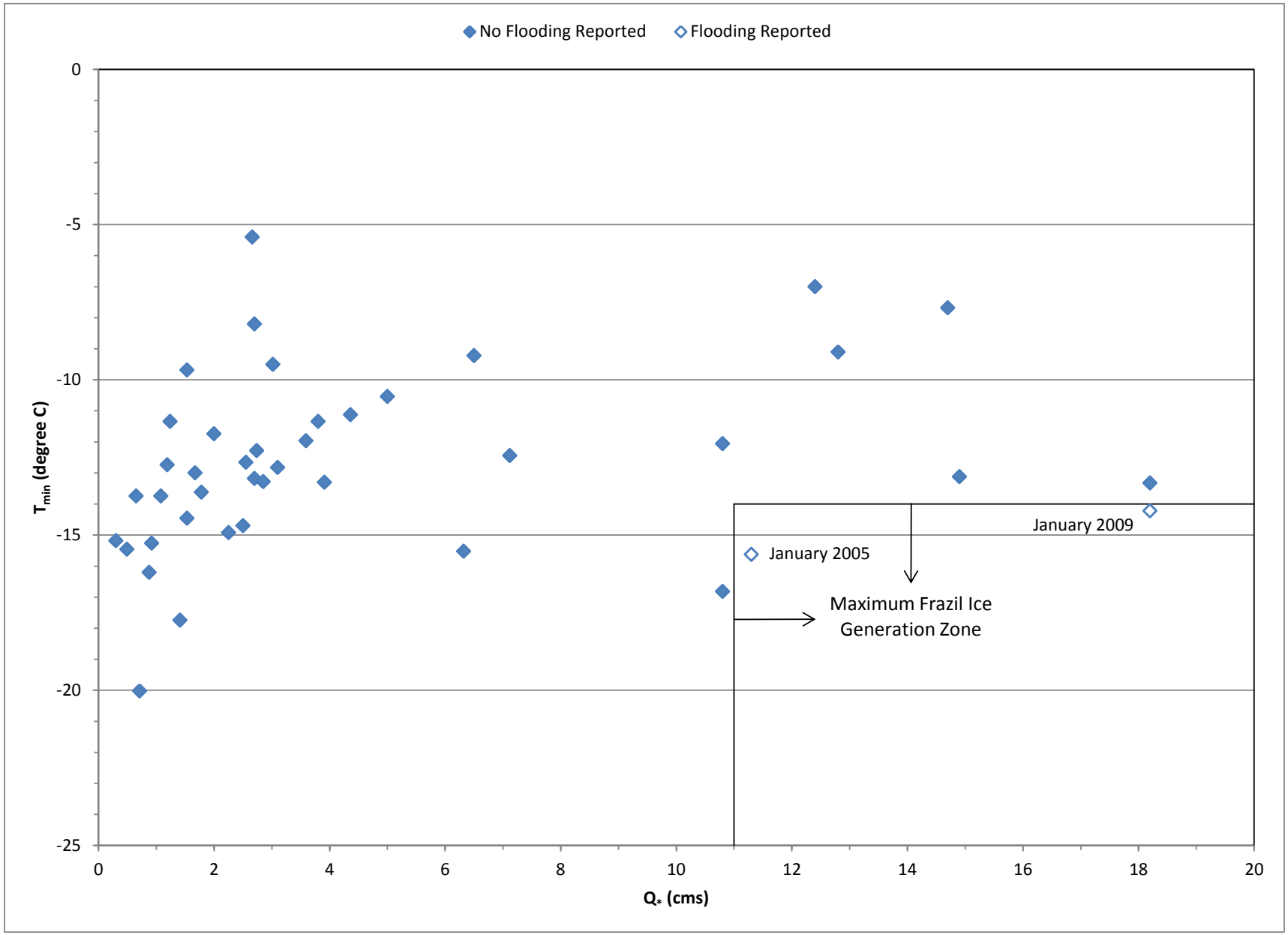
For this study, following the approach proposed by Beltaos et al. (2007), the following two indices were defined.

- T_{min} – minimum of the daily mean temperatures averaged over 5 consecutive days in January and February. T_{min} times 5 provides the 5-day DDF.
- Q_* – maximum daily mean discharge during the 15-day period prior to the occurrence of T_{min}.

A scatter plot of the joint occurrence of these indices for the months of January and February from 1969 to 2011 is presented in Figure 5. The climate data from 1960 to 1968 had too many missing points; hence, they were not considered. A maximum frazil ice generation zone is identified, where the T_{min} < -14 °C and Q_* > 11 m^3/s. The January 2005 and January 2009 flooding events fall within this zone.

Note that the thresholds for the temperature and flow indices (-14 °C and 11 m^3/s, respectively) are approximate. They may be modified when more temperature, flow, and flooding data points become available in the future.

Figure 5. Joint occurrence of January and February discharge and temperature indices from 1969 to 2011



5 Forecasting Methodology

Based on the data analysis completed in Section 4, the following methodology for forecasting frazil ice flooding in lower Spencer Creek is proposed. These steps should be completed on a daily basis from beginning of January to end of February.

1- Collect the temperature data as well as forecast temperatures from Environment Canada's Hamilton A station (currently Station ID 6153193).

2- Collect the flow data from the Water Survey of Canada's Spencer Creek gauge at Dundas St. (ID 02HB007).

3- Calculate the 5-day DDF for the forecast temperatures and the 5-day mass flow for the measured flows. Note that the date for DDF will be 5 days ahead of the date for mass flow. Plot the calculated points on two separate curves (on the same graph).

4- Calculate the 5-day average of the forecast temperatures. If this average is smaller than -14 °C, determine the maximum daily flow rate within the past 15 days.

5- The probability of occurrence of a frazil ice flooding event is high when one of the following criteria is observed:

   a. A freezing period (positive slope of the DDF curve) with a DDF exceeding 70 °C-days occurs, which is preceded by a significant increase in the flow rates (positive slope of the mass flow curve);

   b. And/or, the 5-day average of the forecast temperatures is smaller than -14 °C with a maximum daily flow rate greater than 11 m^3/s within the past 15 days.

6- Update the previous DDF points with actual temperature data, on the following day.

After an occurrence of frazil ice flooding is observed, modify the thresholds for DDF, T_{min}, and Q_* based on the observed data.

6 Conclusion

In February 2014, HCA retained **exp** to develop a method for frazil ice flood forecasting in the lower reach of Spencer Creek, using temperature and discharge data. **Exp** completed a literature review, collected the data, and undertook data analysis. As a result, a methodology is proposed for predicting high probabilities of occurrence of frazil ice flooding in lower Spencer Creek. This methodology may be modified by HCA as more data points become available in the future.

References

Beltaos, S., Boyle, P., and Hryciw, K. (2007), "2005-06 ice-jam flooding, Kaministiquia River near Fort Williams Historic Park", *CRIPE 14th Workshop on the Hydraulics of Ice Covered Rivers*, June 19-22, 2007, Quebec City, Quebec, Canada.

Beltaos, S., Hulley, M., Keene, B., and Watt, E. (2007), "Frazil-ice flooding and potential mitigation: Moira River at Belleville", *CRIPE 14th Workshop on the Hydraulics of Ice Covered Rivers*, June 19-22, 2007, Quebec City, Quebec, Canada.

Hatch Acres (2006), "Former Town of Durham Frazil Ice Study", Niagara Falls, Ontario, Canada.

Trow Associates Inc. (2011), "Lower Spencer Creek Frazil Ice Study", Brampton, Ontario, Canada.

Zufelt, J.E. and Bilello, M.A. (1992), "Effects of Severe Freezing Periods and Discharge on the Formation of Ice Jams at Salmon, Idaho", *USACE Cold Regions Research & Engineering Laboratory*, CRREL Report 92-14.

This page intentionally left blank.

Hamilton Conservation Authority

A Healthy Watershed for Everyone

Memorandum

TO: **Board of Directors**

FROM: **Lisa Burnside, Chief Administrative Officer (CAO)**

PREPARED BY: **T. Scott Peck, MCIP, RPP, Deputy CAO/Director, Watershed Management Services**

MEETING DATE: **January 5, 2023**

RE: **Environmental Registry of Ontario Postings related to Bill 23**

BACKGROUND

To facilitate the Provinces goal of having 1.5 million homes constructed in the next 10 years, the Province of Ontario has introduced the *More Homes Built Faster Act* as well as proposed changes to the Greenbelt Plan and its associated regulation. As part of the proposed changes, the Province has initiated a consultation process through the Environmental Registry of Ontario (ERO) to solicit comments regarding the proposed legislation and revisions to the Greenbelt Plan. A number of ERO notices in support of the proposed changes have been posted to facilitate comments. The following ERO notices include proposed changes that impact the Hamilton Conservation Authority.

- ERO-019-2927 - Proposed updates to the regulation of development for the protection of people and property from natural hazards in Ontario
- ERO 019 – 6141 - Legislative and regulatory proposals affecting conservation authorities to support the Housing Supply Action Plan 3.0
- ERO 019-6160 - Proposed Updates to the Ontario Wetland Evaluation System
- ERO 019-6161 - Conserving Ontario's Natural Heritage
- ERO-019-6177 - Review of A Place to Grow and Provincial Policy Statement
- ERO 019-6216 - Proposed Amendments to the Greenbelt Plan
- ERO 019-6217 - Proposed amendments to the Greenbelt Area boundary regulation

The ERO notices above had commenting deadlines of November 24, 2022 (which was extended to December 9, 2022), December 4, 2022 and December 30, 2022. HCA staff

have submitted comments for the ERO postings to meet these deadlines. These comments are attached for the Board's information.

STAFF COMMENTS

As noted, the above noted ERO postings were submitted to the ERO to meet the noted deadlines and the submissions were made on November 18, 2022 and December 15, 2022. The following highlights the key comments for each ERO.

ERO 019-2927 - Proposed updates to the regulation of development for the protection of people and property from natural hazards in Ontario

- The new regulation should consider local watershed issues and allow for flexibility to address these local watershed issues such as different regulatory standards.
- Advice be sought from the multi-stakeholder Conservation Authorities Working Group about which development activities may be suitable for exemption to avoid unintended risk to public safety, properties, or natural hazards.
- Advice be sought from the multi-stakeholder Conservation Authorities Working Group regarding an appropriate definition for a watercourse to ensure natural heritage and natural hazard features are maintained.
- The regulations should be designed to ensure that a range of solutions to manage natural hazards can be employed. The province should retain the tests of conservation of land and pollution and provide definitions
- That MNRF staff participate in and support Conservation Ontario in developing model guidance for CA internal policies.
- The proposed regulation include a two-year transition period to update CA policies to be consistent with the Provincial implementation support materials.
- THAT the Province work with CAs, municipalities and the development sector to update technical guidance to protect people and property from flooding and water-related hazards to support land use planning decisions under the Provincial Policy Statement and permit decisions under S. 28 of the *Conservation Authorities Act.*

ERO 019-6141 - Legislative and regulatory proposals affecting conservation authorities to support the Housing Supply Action Plan 3.0

- Maintain CA core mandate responsibilities and retain responsibility for natural hazard approvals to ensure safe development in all activities.
- Conservation Authorities should continue with the ability to review and comment on natural heritage in permitting and planning applications and for the prescribed acts and retain responsibility for Natural Hazard approvals to ensure safe development.
- Municipalities should retain the option to enter into MOUs with CAs for municipally requested advisory services.
- Continued collaboration with the Province with the established multi-stakeholder Conservation Authorities Working Group (CAWG) that helped guide the Province in its implementation of the last round of changes to the Conservation Authorities *Act.*
- Maintain the term 'conservation of land" but specify a definition to provide certainty in implementation. Conservation Ontario has provided a definition as follows "the protection, management, or restoration of lands within the watershed ecosystem for the

purpose of maintaining or enhancing the natural features and hydrologic and ecological functions within the watershed".

- Maintain the "pollution" test as defined in the Conservation Authorities Act. This will allow CA's to continue to prevent pollution from entering watercourses and wetlands and avoid potential long lasting environmental implications.
- Permit Conservation Authorities to work towards cost recovery targets so that development pays for development.
- The Province should recognize the importance of Conservation Authority lands and ensure clear policies to protect them.

ERO 091-6160 - Proposed Updates to the Ontario Wetland Evaluation System

- Work with conservation experts, including Conservation Authorities, to revise the OWES system to include complexing and scoring using a science-based approach.

- It is important that there is a confirmed and known "decision maker" regarding wetland status and mapping. The MNRF should maintain this role. Failing that, CA's should be identified as the "decision makers" and a process developed to maintain wetland mapping and data to ensure consistency and streamlined access to this data.

ERO 019-6161 – Conserving Ontario's Natural Heritage

- The HCA response noted that the HCA has developed Board of Director approved offsetting policy. This policy only permits consideration of offsetting for proposals approved through a Ministerial Zoning Order or for a provincial or municipal project that has been considered through an environmental assessment process. Given the nature of the HCA's watershed, it was determined that offsetting should not be considered for proposals subject of a land use planning application or a permit application 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.* This approach was taken to secure the noted natural features in-situ and to ensure development takes place in balance with the environment.

- Similar to the proposed changes to the Ontario Wetland Evaluation System, it is unclear who will implement the Offsetting Policy. The collaborative effort mentioned above is key to implementation and is tied back to Ontario's current planning framework. Once changed, there will be a lot of process unknowns. If offsetting becomes solely a municipal tool with no support from other stakeholders, including CAs, there may be challenges in appropriate and successful implementation.

- The HCA encourages the Province to follow the recommendations provided by the Wetland Conservation Strategy Advisory Panel report titled "Considerations for the Development of a Wetland Offsetting Policy for Ontario" (May 2018) to guide the development of a provincial ecological offsetting policy.

- Comments are provided regarding the five principles the Province is considering in the development of the offsetting policy. These principles are as follows:

    - Net Gain
    - Avoidance First
    - Informed
    - Transparency and accountability
    - Limits to Offsets

- In addition to the five principles above, the HCA suggests including the items below.

    - Prompt on-the-ground ecological restoration
    - Proximity
    - Like for Like
    - Ratios
    - Land Base
    - Costs. Adaptive Management.

ERO 019-6177 – Review of A Place to Grow and Provincial Policy Statement

In our comments, we note the following. The Provincial Policy Statement and A Place to Grow represents a current and effective provincial land use policy framework that guides municipalities and agencies responsible for planning and development decisions. It is not evident why this existing framework needs to be streamlined or how it may be considered to be hindering housing in the Province. This proposal related to the PPS and A Place to Grow combined with other proposals related to Bill 23 certainly will have the effect of weakening the provincially led land use policy framework as well as weakening protections natural heritage resources. In this regard, we do not believe there is a need to merge the documents as the current Provincial planning framework is effective and balanced in guiding land use planning and infrastructure decisions and though municipal plan conformity

ERO 019-6216 and 091-6217 - Proposed Amendments to the Greenbelt Plan and Proposed amendments to the Greenbelt Area boundary regulation

As shown on the attached map in Appendix “A”, the proposed changes to the Greenbelt Plan and regulation have limited impact on the HCA watershed with the exception of a parcel to be removed on the west side of Fifty Road. As such, HCA comments speak to the broader issue of maintaining the Greenbelt without the removal of lands and the need to grow the Greenbelt.

STRATEGIC PLAN LINKAGE

HCA’s Strategic Plan 2019 – 2023 outlines its major strategic priority areas and related initiatives for advancing HCA’s Vision to provide a healthy watershed for everyone. HCA implements a wide variety of programs to fulfill this mandate, including programs and services for natural hazards and natural heritage. The Water Management and Natural

Heritage Conservation strategic priorities will be negatively affected by the proposed changes through the *More Homes Built Faster Act* and the *Greenbelt Act.*

AGENCY COMMENTS

N/A

LEGAL/FINANCIAL IMPLICATIONS

N/A

CONCLUSIONS

This memorandum provides and summarizes the submissions by the HCA to the Environmental Registry of Ontario for postings related to the *More Homes Built Faster Act* and the *Greenbelt Act.*

This page intentionally left blank.

Hamilton Conservation Authority

A Healthy Watershed for Everyone

December 15, 2022 By Mail and Email – mnrwaterpolicy@ontario.ca

Public Input Coordinator
MNRF – PD – Resources Planning and Development Policy Branch
Ministry of Natural Resources and Forestry
300 Water Street, 6th Floor, South Tower
Peterborough, Ontario
K9J 8M5

Dear Sir/Madam:

Re: Proposed updates to the regulation of development for the protection of people and property from natural hazards in Ontario
Environmental Registry of Ontario Number 019-2927

Thank you for the opportunity to provide comments on the above noted proposal.

Introduction

The Hamilton Conservation Authority (HCA) is a local community-based environmental organization established under the Conservation Authorities Act. We utilize our expertise and knowledge and an integrated and ecologically sound environmental approach to manage natural resources on a watershed basis. We protect communities from flooding and erosion, provide flood forecasting and warning services, operate 3 dams for flood control purposes, provide planning review and permitting services, conserve and restore local ecosystems, manage over 11,000 acres of natural hazard and natural heritage lands and contribute to the quality of life in our communities.

The HCA enjoys a positive working relationship with our partner municipalities that enables the HCA to provide our watershed knowledge and expertise on planning issues related to natural hazard and natural heritage issues in an integrated watershed- based manner. The changes proposed in Bill 23 removes our ability to provide natural heritage advice to a municipality and also removes our ability to consider natural heritage issues for permits with the removal of "conservation of land" and "pollution" as issues to be considered for permit applications. These are just some examples of the negative consequences from Bill 23 as currently written.

Bill 23 proposes measures to support the government's interest in increasing housing supply, and reducing perceived policy, process, approval and financial barriers to development and housing construction. With this approach as outlined in Bill 23, the HCA is concerned that the government is undermining the overall objective of the provincial land use planning framework that seeks to consider and balance the full range of economic, social and environmental considerations and priorities.

ERO 019-2927 Comments

One regulation is proposed to replace the existing 36 stand alone regulations. While the HCA understands the need for consistent approaches across the Province related to natural hazards, the proposed regulation will need to take account and incorporate the flexibility to identify local watershed issues such as specific flood standards. As an example, within the HCA's watershed, we utilize both the Hurricane Hazel event and the 100-year event as a regulatory standard. These watershed specific allowances need to be maintained.

Key Recommendation:

- The new regulation should consider local watershed issues and allow for flexibility to address these local watershed issues such as different regulatory standards.

The province recently confirmed the mandate of CAs, which includes regulating development to address the risk of natural hazards. Subsection 7(2) of Bill 23 proposes to exempt certain types and locations of development from the regulation process, with the potential to create a two-tier approach to the protection of people and property. This exemption is contrary to the core mandate of CAs and may put additional people and their homes at risk. The planning process is not designed to review applications at a technical approval level of detail.

Permit exemptions for *Planning Act* assumes natural hazard issues would be addressed through planning process. This raises compliance/enforcement issues. If no CA permit is required, are municipalities then to be responsible for enforcement to ensure developments are constructed as approved and all hazard issues addressed? The HCA recommends that advice be sought from the multi-stakeholder Conservation Authorities Working Group about development activities that may be suitable for exemption from requiring a permit using existing clauses within Section 28(3) and (4) of the *CAA*. Careful consideration is required to avoid unintended risk to public safety, properties, or natural hazards.

Key Recommendation:

- Advice be sought from the multi-stakeholder Conservation Authorities Working Group about which development activities may be suitable for exemption to avoid unintended risk to public safety, properties, or natural hazards.

The proposal to update the definition of a watercourse from an identifiable depression to a defined channel having a bed, and backs or sides is a concern. The current definition, while perhaps broad, does provide for the inclusion of headwater features that are important to maintain with their associated natural heritage features and natural hazard functions. The proposed definition reduces the scope of defining a watercourse and may impact the natural heritage and natural hazard features of these watercourses.

Key Recommendation:

- Advice be sought from the multi-stakeholder Conservation Authorities Working Group regarding an appropriate definition for a watercourse to ensure natural heritage and natural hazard features are maintained.

Recent amendments to the *Conservation Authorities Act* through Schedule 2 of Bill 23 included the removal of the "tests" of conservation of land and pollution. Further to HCA comments submitted in response ERO#019-6141, we recommend that the government continue with the tests of pollution and conservation of land as part of the permitting process. This should include a definition for conservation of land to provide certainty in implementation. Conservation Ontario has provided a definition as follows "the protection, management, or restoration of lands within the watershed ecosystem for the purpose of maintaining or enhancing the natural features and hydrologic and ecological functions within the watershed".

The HCA is concerned that with the removal of the test of conservation of land, that there may be a sole focus on hard engineering solutions to manage hazards on the landscape rather than considering a range of solutions, including the maintenance or installation of green infrastructure.

The HCA is supportive of the proposal to add the terms "unstable soils and bedrock" as it further clarifies the CA role in addressing hazards associated with development on karst topography, marine (Leda) clays, and organic soils.

Key Recommendation:

- The regulations should be designed to ensure that a range of solutions to manage natural hazards can be employed. The province should retain the tests of conservation of land and pollution and provide definitions.

This proposal contains several "Program Service Delivery Standards" including requiring CAs to develop, consult on, make publicly available and periodically review a policy that includes details about complete application requirements, timelines for decisions, and any additional technical details on regulatory requirements and permit application and review procedures. The HCA is supportive of these transparency measures and note that we already employ these best practices. We support pre-consultation, and we note that we already do this and find it effective for ensuring applicants / development proponents understand requirements, which is critical towards ensuring complete submissions and quality reports. Where this does not occur, delays often result because of poor understanding / submissions on the applicant's part.

We note that early CA policies in this regard were developed, in part, based on province-wide policies that were developed collaboratively between Conservation Ontario and individual CAs,

utilizing the CO Section 28 Regulations Committee. To encourage consistency amongst the CAs, we would encourage the Ministry to participate as part of an update to Section 28 implementation guidance prepared by Conservation Ontario. This model guidance can serve as the basis for CA internal policies and assist with an expedient transition to implementing the new regulatory framework.

Key Recommendation:

- That MNRF staff participate in and support Conservation Ontario in developing model guidance for CA internal policies.

It is further noted that this proposal does not contain a timeframe for enactment of a new S. 28 regulation. Given that amendments to the *Conservation Authorities Act* were included in Bill 23, *More Homes Built Faster, 2022* and as part of the Housing Supply Action Plan 3.0 it is assumed that an update to the S. 28 regulation will occur in the near future. As the CAs are not aware of what will exactly be contained within the updated S. 28 (preventing them from commencing new policy development) and no provincial implementation support material has been prepared, it is recommended that the regulation include a two-year transition period to update CA policies. This is especially pertinent given (potential) additional consultation requirements prior to CA adoption of policies locally.

Key Recommendation:

- The proposed regulation include a two-year transition period to update CA policies to be consistent with the Provincial implementation support materials.

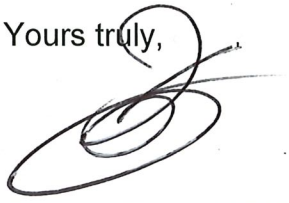
We note that CAs and municipalities rely on outdated provincial technical guidance to make decisions from a land use planning and regulatory perspective. This provincial technical guidance has not been updated since 2002 and does not reflect current science, land use patterns and the changing climate. In this regard, conservation authorities, municipalities and the development sector have staff expertise and experience to guide the renewal of these documents under provincial leadership. For greater efficiency and certainty for proponents, in addition to supporting land use planning decisions under the Provincial Policy Statement, the updated technical guidance should also serve as technical guidance for permit decisions made under S.28 of the *Conservation Authorities Act.*

Key Recommendation:

THAT the Province work with CAs, municipalities and the development sector to update technical guidance to protect people and property from flooding and water-related hazards to support land use planning decisions under the Provincial Policy Statement and permit decisions under S. 28 of the *Conservation Authorities Act.*

Thank you again for the opportunity to comment on ERO 019-2927. Should you have any questions regarding HCA's comments, please do not hesitate to contact the undersigned at scott.peck@conservationhamilton.ca or at (905)525-2181, ext.130.

Yours truly,



T. Scott Peck, MCIP/RPP
Deputy CAO/Director, Watershed Management Services

TSP/tsp

This page intentionally left blank.

Hamilton Conservation Authority

A Healthy Watershed for Everyone

November 18, 2022 By Mail and Email – mnrwaterpolicy@ontario.ca

Public Input Coordinator
MNRF – PD – Resources Planning and Development Policy Branch
Ministry of Natural Resources and Forestry
300 Water Street, 6th Floor, South Tower
Peterborough, Ontario
K9J 3C7

Dear Sir/Madam:

Re: Legislative and regulatory proposals affecting conservation authorities to support the Housing Supply Action Plan 3.0
Environmental Registry of Ontario Number 019-6141

Thank you for the opportunity to provide comments on the above noted proposal.

Introduction

The Hamilton Conservation Authority (HCA) is a local community-based environmental organization established under the Conservation Authorities Act. We utilize our expertise and knowledge and an integrated and ecologically sound environmental approach to manage natural resources on a watershed basis. We protect communities from flooding and erosion, provide flood forecasting and warning services, operate 3 dams for flood control purposes, provide planning review and permitting services, conserve and restore local ecosystems, manage over 11,000 acres of natural hazard and natural heritage lands and contribute to the quality of life in our communities.

The HCA enjoys a positive working relationship with our partner municipalities that enables the HCA to provide our watershed knowledge and expertise on planning issues related to natural hazard and natural heritage issues in an integrated watershed- based manner. The changes proposed in Bill 23 removes our ability to provide natural heritage advice to a municipality and also removes our ability to consider natural heritage issues for permits with the removal of "conservation of land" and "pollution" as issues to be considered for permit applications. These are just some examples of the negative consequences from Bill 23 as currently written.

Bill 23 proposes measures to support the government's interest in increasing housing supply, and reducing perceived policy, process, approval and financial barriers to development and housing construction. With this approach as outlined in Bill 23, the HCA is concerned that the government is undermining the overall objective of the provincial land use planning framework that seeks to consider and balance the full range of economic, social and environmental considerations and priorities.

ERO 019-6141 Comments

In review of the proposed changes, specifically the addition of sections 28(4.1) and 28(4.2), there is a proposal to exempt developments from Conservation Authority permits where a Planning Act approval is in place. The details of this proposed exemption are to be set in future regulations. It is unknown if this approach relates to low risk activities and development, or if it is intended to shift these CA responsibilities to municipalities more broadly. This could potentially significantly limit the CA permitting function and the associated natural hazard and environmental protections the CA permitting process provides. Depending of the scope of the regulation, we see the potential for an ineffective approach to natural hazard management, which would result in a reduced ability to protect people and property and shift new responsibilities to municipalities.

Key Recommendation:

- Maintain CA core mandate responsibilities and retain responsibility for natural hazard approvals to ensure safe development in all activities.

As proposed, the changes will focus CA's planning and permitting review to natural hazard related issues and limit the review of issues outside of this scope such as natural heritage and stormwater management. The proposed changes include the removal of "conservation of land" and "pollution" as matters to be considered in permit decisions. Additionally, under the proposals, CA commenting and review as part of the planning process will focus only on natural hazards with no ability to provide comment on natural heritage.

HCA has a strong history of working cooperatively with our watershed municipalities, residents and businesses to ensure efficient and timely planning and regulatory review processes. We are proud of the collaboration and agreements that exists between HCA and the City of Hamilton and County of Wellington (Township of Puslinch). These proposed changes would prohibit CAs from entering into MOUs with respect to natural heritage impacts even if our participating municipalities wanted us to enter into such agreements. It represents a direct departure from recent changes to the CA Act allowing municipalities the option to make agreements with CAs for a Category 2 or 3 – municipally requested or provided service. These agreements have functioned efficiently and effectively for many years and there is no indication municipalities can undertake this review faster or at less expense and will require municipalities to hire additional staff or consultants to fill this void.

Further, the new regulation proposes to prescribe a number of Acts, including the Endangered Species Act, the Aggregate Resources Act, the Niagara Escarpment Planning and Development Act, the Water Resources Act, the Environmental Assessment Act and the Planning Act, where a conservation authority can not perform a review or commenting role for

"municipal" or "other" program or services. This removes the CA's ability to have an "other", self funded, program or service for commenting on natural heritage, water resources or watershed issues for environmental assessments, Niagara Escarpment Plan Development Permits, Planning Act and Aggregate Resources Act applications. The CA review would be limited to natural hazard issues and our role in commenting of natural heritage issues would be eliminated. This will leave a significant gap in natural heritage and water resources review for many application and development types advanced under a prescribed act.

Key Recommendations:

- Conservation Authorities should continue with the ability to review and comment on natural heritage in permitting and planning applications and for the prescribed acts and retain responsibility for Natural Hazard approvals to ensure safe development.
- Municipalities should retain the option to enter into MOUs with CAs for municipally requested advisory services.
- Continued collaboration with the Province with the established multi-stakeholder Conservation Authorities Working Group (CAWG) that helped guide the Province in its implementation of the last round of changes to the Conservation Authorities *Act.*

As noted above, we are concerned regarding the removal of "conservation of land" and "pollution" as matters not to be considered in permit decisions. Conservation of land and pollution are fundamental in considering impacts related to development, property, life and the natural environment and need to be considered in a wholistic manner to ensure natural hazards and natural heritage issues are considered as inter-related issues. We specifically note that environmental matters will not be considered for permit applications where there is no related or earlier Planning Act approval to consider such issues.

Key Recommendations:

- Maintain the term 'conservation of land" but specify a definition to provide certainty in implementation. Conservation Ontario has provided a definition as follows "the protection, management, or restoration of lands within the watershed ecosystem for the purpose of maintaining or enhancing the natural features and hydrologic and ecological functions within the watershed".
- Maintain the "pollution" test as defined in the Conservation Authorities Act. This will allow CA's to continue to prevent pollution from entering watercourses and wetlands and avoid potential long lasting environmental implications.

Regarding fees, there is a proposal to enable the Minister to direct CAs to maintain fees at current levels for a period of time and we understand this is related to planning and permit fees. HCA has Board approved cost recovery targets and underwent a recent and extensive cost-based analysis where we ensured our fees do not exceed the cost for service. In fact, our fees were not achieving cost recovery and our Board approved moving to implement increases for our permit and planning fees which have been benchmarked with other Conservation Authorities and put out for comment with our stakeholders. Our stakeholders had no concerns

in this regard, which included the West End Home Builders Association. Our fees represent cost recovery for applications and are consistent with the Province's user pay approach. The proposal if approved will transfer costs from development proponents to conservation authorities, municipalities and the public tax base.

Key Recommendations:

- Permit Conservation Authorities to work towards cost recovery targets so that development pays for development.

There is a proposal in the Bill that requires Conservation Authorities to identify lands that could support housing development. The HCA owns or manages over 11,000 acres of land that was acquired to secure natural hazard lands and to conserve watershed natural heritage features. With about half the 1.5 million new homes in the Provincial growth targets for the GTHA, (47,000 new homes slated for Hamilton), our green spaces will be more important than ever and speaks directly to our mission to lead in the conservation of our watershed and connect people to nature.

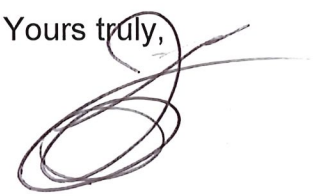
We want to ensure that environmentally sensitive lands, lands required for flood protection and hazard management, and lands that contribute to physical and mental well being for passive and active recreation are not being considered as part of this initiative and are maintained in their natural state for the benefit of the health of our watershed and watershed residents. We note that development is better suited to identified urban areas through an appropriate planning process and that further, there is very little land owned by HCA to achieve new housing developments in our conservation land holdings when provincial plans such as the Greenbelt Plan, current zoning and publicly accessible lands and trails are considered.

Key Recommendations:

- The Province should recognize the importance of Conservation Authority lands and ensure clear policies to protect them.

Thank you again for the opportunity to comment on ERO 019-6160. Should you have any questions regarding HCA's comments, please do not hesitate to contact the undersigned at scott.peck@conservationhamilton.ca or at (905)525-2181, ext.130.

Yours truly,



T. Scott Peck, MCIP/RPP
Deputy CAO/Director, Watershed Management Services

TSP/tsp

Hamilton Conservation Authority

A Healthy Watershed for Everyone

November 18, 2022 By Mail and Email – wetlands@ontario.ca

Public Input Coordinator
MNRF – PD – Resources Planning and Development Policy Branch
Ministry of Natural Resources and Forestry
300 Water Street, 2nd Floor, South Tower
Peterborough, Ontario
K9J 3C7

Dear Sir/Madam:

Re: Proposed Updates to the Ontario Wetland Evaluation System
Environmental Registry of Ontario Number 019-6160

Thank you for the opportunity to provide comments on the above noted proposal.

Introduction

The Hamilton Conservation Authority (HCA) is a local community-based environmental organization established under the Conservation Authorities Act. We utilize our expertise and knowledge and an integrated and ecologically sound environmental approach to manage natural resources on a watershed basis. We protect communities from flooding and erosion, provide flood forecasting and warning services, operate 3 dams for flood control purposes, provide planning review and permitting services, conserve and restore local ecosystems, manage over 11,000 acres of natural hazard and natural heritage lands and contribute to the quality of life in our communities.

The HCA enjoys a positive working relationship with our partner municipalities that enables the HCA to provide our watershed knowledge and expertise on planning issues related to natural hazard and natural heritage issues in an integrated watershed- based manner. The changes proposed in Bill 23 removes our ability to provide natural heritage advice to a municipality and also removes our ability to consider natural heritage issues for permits with the removal of "conservation of land" and "pollution" as issues to be considered for permit applications. These are just some examples of the negative consequences from Bill 23 as currently written.

Bill 23 proposes measures to support the government's interest in increasing housing supply, and reducing perceived policy, process, approval and financial barriers to development and housing construction. With this approach as outlined in Bill 23, the HCA is concerned that the government is undermining the overall objective of the provincial land use planning framework that seeks to consider and balance the full range of economic, social and environmental considerations and priorities.

ERO 019-6160 Comments

The Province of Ontario has proposed updates to the Ontario Wetland Evaluation System (OWES) 3rd Edition version 3.3 (2014) through a posting to the Environmental Registry of Ontario (ERO) #019-6160.

Hamilton Conservation Authority (HCA) has eleven Provincially Significant Wetlands (PSW's) in our watershed with an area totaling 8,138.7 acres. Eight of these are wetland complexes and three are individual wetlands. In addition, HCA also has 3 non-PSW with a total acreage of 47.4 and 297 unevaluated wetlands with a total acreage of 542.9. The total area of wetlands for our watershed is 8,729 acres. We would note that this is a fraction of the wetlands that were present in our watershed prior to settlement and the existing acreage highlights the need to conserve and enhance our existing wetlands. The proposed changes to OWES could significantly impact wetland conservation in our watershed, and Ontario more broadly, through further loss of wetland area.

The HCA has significant concerns regarding the proposed changes to OWES, including the following:

1. Removal of references to how the wetland evaluation system serves to help define wetlands and the resulting wetland Policies in the Provincial Policy Statement, authorized under Section 3 of the *Planning Act*.

2. References to how Conservation Authorities use wetland evaluations as an aid in implementing regulations under the *Conservation Authorities Act* has been removed.

3. The Ministry of Natural Resources and Forestry provided valued provincial oversight to the OWES system. They retained the records on each wetland evaluated in Ontario, they updated those records from time to time and also reviewed wetland evaluations, from certified evaluators, for consistency and completeness. This is important in a complicated scoring system with many components to be considered. The proposed changes to OWES removes this oversight. It is not clear who will retain wetland evaluation records, who will review updated records for consistency and completeness and who will review these evaluations from an ecological perspective. MNRF also kept the most up to date wetland boundary maps within Land Information Ontario. It is unclear how this will be maintained moving forward. It appears the responsibility for wetland evaluation is being downloaded to the municipalities. Wetlands do not follow municipal boundaries and should be reviewed from an ecological perspective.

4. Wetland complexes have been removed from the evaluation system. The OWES manual now states that:

   "Single wetland units that are part of a previously evaluated wetland complex can be re-evaluated (re-scored and re-mapped) without requiring a complete re-evaluation of all units in the existing wetland complex. Each previously evaluated wetland unit will retain its current status (e.g., significant or not) until such a time as the individual unit may be re-evaluated. All wetland units that were previously evaluated as part of a wetland complex do not need to be re-evaluated at the same time. There is no requirement to update the wetland evaluation that applied to an entire wetland complex".

   This is very concerning. Seventy-three percent of the Provincially Significant Wetlands in HCA's watershed are wetland complexes. The old scoring system allowed for a summation of scores for units within a complex. All of the units would be PSW if the collective score was 600 or more overall or 200 or more points for the biological or species features component. The inclusion of wetland complexes recognized the importance of interconnected biological features to support biodiversity. This new system will allow any unit of a wetland complex to be assessed individually for provincially significant status. Therefore, allowing units to be broken up and de-valued. In addition, scoring has been removed for provincially endangered or threated species use of a wetland for reproductive habitat or for migration, feeding or hibernation. The occurrence of these rare species within a wetland or a complex added 250 points to the special feature's component, automatically making it a provincially significant wetland. This old system of scoring recognized the importance of wetlands to these species at risk and also the protection this would afford other species. Being able to break up wetland units and not being able to score endangered and threated species habitat highly will likely mean many wetland units will be not meet the minimum score to be a PSW and will be undesignated.

5. The changes also indicate that previous wetland evaluation documentation can be used as a source of information when re-evaluating a formerly complexed wetland unit. Many of the wetland evaluations for the HCA watershed are from the 1980's and more than 40 years old. This information should not be used in an update and should be used as background information only.

6. The OWES manual now mentions that closely grouped wetlands can be part of a complex (now called a single wetland), but closely grouped is not defined. The only definition for closely grouped occurs under the Wetland Edges Bordering Lakes and Rivers section and it is not clear if this applies to all wetland across the landscape.

7. The need for a complete wetland evaluation file and what it would contain has been removed. It is not clear how the decision maker would determine if the file is complete.

8. Regionally and Locally Significant Species scoring. Appendix 5 contains the list that is approved for scoring regionally significant faunal species. This list is more than 20 years old. The same is true for references to regionally and locally significant plant species. As a complete update to the OWES manual, HCA would expect these lists to be updated as well. This would better reflect the number and diversity of regionally and locally significant species that use wetlands and allow them to be scored appropriately.

9. The OWES manual also states that the wetland plant list used when determining a wetland when updated would be available on a website. It does not say what website.

10. The OWES manual also removed the definition of locally important wetlands from appendix one as well as the attributes a municipality might use to determine if a wetland was locally important. This seems to indicate that any wetland that is not a PSW no longer has protections based on OWES. Any protection of a non-psw would be up to a municipality to protect

Key Recommendations:

- Work with conservation experts, including Conservation Authorities, to revise the OWES system to include complexing and scoring using a science-based approach.

- It is important that there is a confirmed and known "decision maker" regarding wetland status and mapping. The MNRF should maintain this role. Failing that, CA's should be identified as the "decision makers" and a process developed to maintain wetland mapping and data to ensure consistency and streamlined access to this data.

Thank you again for the opportunity to comment on ERO 019-6160. Should you have any questions regarding HCA's comments, please do not hesitate to contact the undersigned at scott.peck@conservationhamilton.ca or at (905)525-2181, ext.130.

Yours truly,

T. Scott Peck, MCIP/RPP
Deputy CAO/Director, Watershed Management Services

TSP/tsp

Hamilton Conservation Authority

A Healthy Watershed for Everyone

December 15, 2022 By Mail and Email – ecologicaloffsetting@ontario.ca

Public Input Coordinator
MNRF – PD – Resources Planning and Development Policy Branch
Ministry of Natural Resources and Forestry
300 Water Street, 2nd Floor, South Tower
Peterborough, Ontario
K9J 3C7

Dear Sir/Madam:

Re: Conserving Ontario's Natural Heritage
Environmental Registry of Ontario Number 019-6161

Thank you for the opportunity to provide comments on the above noted proposal.

Introduction

The Hamilton Conservation Authority (HCA) is a local community-based environmental organization established under the Conservation Authorities Act. We utilize our expertise and knowledge and an integrated and ecologically sound environmental approach to manage natural resources on a watershed basis. We protect communities from flooding and erosion, provide flood forecasting and warning services, operate 3 dams for flood control purposes, provide planning review and permitting services, conserve and restore local ecosystems, manage over 11,000 acres of natural hazard and natural heritage lands and contribute to the quality of life in our communities.

The HCA enjoys a positive working relationship with our partner municipalities that enables the HCA to provide our watershed knowledge and expertise on planning issues related to natural hazard and natural heritage issues in an integrated watershed- based manner. The changes proposed in Bill 23 removes our ability to provide natural heritage advice to a municipality and also removes our ability to consider natural heritage issues for permits with the removal of "conservation of land" and "pollution" as issues to be considered for permit applications. These are just some examples of the negative consequences from Bill 23 as currently written.

Bill 23 proposes measures to support the government's interest in increasing housing supply, and reducing perceived policy, process, approval and financial barriers to development and housing construction. With this approach as outlined in Bill 23, the HCA is concerned that the government is undermining the overall objective of the provincial land use planning framework that seeks to consider and balance the full range of economic, social and environmental considerations and priorities.

ERO 019-6141 Comments

The HCA has developed Board of Director approved offsetting policy. This policy only permits consideration of offsetting for proposals approved through a Ministerial Zoning Order or for a provincial or municipal project that has been considered through an environmental assessment process. Given the nature of the HCA's watershed, it was determined that offsetting should not be considered for proposals subject of a land use planning application or a permit application 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.* This approach was taken to secure the noted natural features in-situ and to ensure development takes place in balance with the environment.

The objective of the new approach outlined in the discussion paper is stopping the net loss of natural heritage in Ontario and reversing the trend by focusing on restoration and net gain. Realizing this objective is dependent on maintaining and strengthening existing natural heritage protections within the Planning Act, the Provincial Policy Statement (PPS), and the Conservation Authorities Act. It is also dependent on collaborative partnerships between the province, municipalities, conservation authorities, Indigenous communities, and other stakeholders. The proposed and potential changes to the Planning Act, PPS, and CA Act will undermine the ability to achieve the stated objective.

Similar to the proposed changes to the Ontario Wetland Evaluation System, it is unclear who will implement the Offsetting Policy. The collaborative effort mentioned above is key to implementation and is tied back to Ontario's current planning framework. Once changed, there will be a lot of process unknowns. If offsetting becomes solely a municipal tool with no support from other stakeholders, including CAs, there may be challenges in appropriate and successful implementation.

The HCA encourages the Province to follow the recommendations provided by the Wetland Conservation Strategy Advisory Panel report titled "Considerations for the Development of a Wetland Offsetting Policy for Ontario" (May 2018) to guide the development of a provincial ecological offsetting policy.

The discussion paper outlines five principles the Province is considering in the development of the offsetting policy. These principles are outlined below, followed by our feedback.

Net Gain. The goal of the offsetting policy should be net gain with respect to the extent and quality of natural heritage features or their functions, within a reasonable period of time.

- The HCA supports the principle of net gain in theory. However, it can be very difficult to implement in practice, further highlighting the need for strong protection policies.

- The "or" between features **or** their functions should be changed to "and". The current way the principle is written may allow for the lost ecological functions to be replaced with engineered green infrastructure or low impact development elements.
- The "reasonable timeframe" within this principle should be defined to minimize the time lag between feature removal and feature restoration. This is crucial to ensure the ecosystem services being removed from the landscape are replaced as soon as possible.

Avoidance first. Offsetting should be the last step after other options to avoid and mitigate any impacts on natural heritage are considered.

- This should be the first principle as avoidance of impact should be explored before any other principles apply. A strong and clear policy framework and supporting definitions must be provided in support of this principle to ensure decisions on offsetting are made without delay.
- Change "should" to "must" and change "considered" to "explored and exhausted" and add "minimize" after "to avoid" so that the principle reads as follows: Offsetting must be the last step after other options to avoid, minimize and mitigate any impacts on natural heritage are explored and exhausted.

Informed. Offsetting should consider the best available science, and knowledge, including Traditional Ecological Knowledge.

- The HCA agrees that contemplating the removal and offsetting of natural features must be informed by a comprehensive understanding of the structure and function of the feature and the surrounding natural system.
- This principle appears to be inconsistent with recently proposed changes to the Ontario Wetland Evaluation System and other policies. The proposed changes to these policies are diminishing the need for ecological data and knowledge to inform decisions.
- Development of offsetting ratios for ecosystem structure loss should be informed by science. Recommendations included in Considerations for the Development of a Wetland Offsetting Policy for Ontario (May 2018) should be followed when developing such ratios.
-

Transparency and accountability. The offsetting policy should incorporate provisions for oversight, tracking and public reporting on the effectiveness of implementation.

- The HCA agrees with this principle.

Limits to Offsets. Some wetlands, like coastal wetlands, bogs and fens in southern Ontario, and other areas that historically have been important for recreation and tourism should be ineligible for offsetting.

- The HCA agrees there should be limits to what should be eligible in an offsetting program. However, these limitations should be outlined within the Planning Act and the PPS, and not simply within the offsetting program.
- The policy framework within the Planning Act and PPS should outline criteria to guide which features should or should not be eligible for offsetting. Some of the criteria to be considered could be the replaceability of the feature, whether the feature is helping to mitigate a natural hazard, the habitat quality of the feature, whether the feature provides support for species at risk, the degree of isolation or ability of the feature to persist on the landscape should development surround it, the size of the feature, the age of the feature.

In addition to the five principles above, The HCA suggests including the items below. These could either be standalone principles or be incorporated into those above:

1. **Prompt on-the-ground ecological restoration.** Offsets shall be used to replace the ecologic and hydrologic features and functions lost. Offset funds should not be used for engineered infrastructure, public transit, manicured open spaces/ornamental trees, or brochures (Actual examples of proposed compensation). Development of a calculation tool could function as an effective method to clearly communicate acceptable offsetting options given the removals proposed.

   Natural heritage features created or restored by offsets shall be protected for the long-term through zoning as Environmental Protection or similar, inclusion in the natural heritage system and/or a restrictive covenant. Requiring or incentivizing implementation prior to removal should be considered in the development of the policy.

2. **Proximity.** A principle that speaks to the proximity between the impact and the offsetting should be added. As outlined in the discussion paper, we agree that offsets should be located within the same watershed as the impact. This should be strengthened in the form of a principle.

3. **Like for Like.** A principle should be added that outlines the need to replace the impacted feature with the same type of feature where possible. For example, offsetting the removal of a forest with restoring a forest. Where this is not possible, the offsetting restoration should be guided by local habitat restoration plans and strategies.

4. **Ratios.** The offsetting policy should establish ratios that, in part, address the time lag associated with like for like offsetting for certain features. For example, a restored forest will take several years before smaller, planted trees and shrubs provide an equivalent level of ecosystem services to the mature feature being removed.

5. **Land Base.** A principle should be added outlining the need to add new lands to the natural heritage system for restoration in the offsetting actions. Ensuring the overall size

of the natural system is not reduced due to land use change is critical to meeting the objective of stopping the net loss of natural heritage in Ontario and reversing the trend by focusing on restoration and net gain. Land securement of existing natural areas does not replace the size or functions of the natural heritage system lost to development. Offsets must demonstrate additionality.

6. **Costs.** The proponent shall cover the full cost of offsets (including labour, maintenance, and monitoring). Taxpayers should not be on the hook to offset the loss to the benefit of the proponent of the development.

7. **Adaptive Management.** The importance of using an adaptive management approach to inform offsetting should be highlighted in a principle. This should include the need for monitoring, program evaluation, and commitment to modify the policy if evaluation indicates it is not meeting the core natural heritage objectives.

   The discussion paper includes a short section on implementation considerations. As outlined above, some Conservation Authorities have several years of experience implementing offsetting programs and can bring a wealth of knowledge to help inform the proposed provincial program. Some initial considerations are outlined below.

8. **Scale.** There are several challenges with effective implementation of an offsetting program. This is made even more difficult when considered at the provincial scale.

   Principles can be consistent across the province. However, implementation needs to be tailored to specific areas. In much of southern Ontario, the watershed is the ideal scale.

9. **Feasibility.** Some habitat types that may be made available for offsetting, through policy or process changes, can be extremely difficult to replicate elsewhere. Wetlands, for example, require several criteria to be met to ensure long term persistence on the landscape. Sourcing of viable opportunities for wetland creation requires a site of adequate size and appropriate soils and a significantly larger catchment area to feed the wetland. At the larger scale that an offsetting fund may desire, identification of sites may prove extremely difficult.

   Other factors, such as ownership/land availability, encumbrances on neighboring lands, existing habitat/natural heritage values also play a role in determining feasibility. One of the main challenges to implementing restoration/creation of features through offsetting is finding suitable land. The policy should explain how land will be obtained for the purpose of feature creation to avoid significant time lags from feature removal and restoration. Options for establishing processes to find suitable lands, including a potential land bank should be explored.

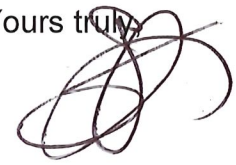
10. **Implementation.** It is unclear if the proposed offsetting policy would only apply to approvals under the Planning Act, or if it would apply to applications under other planning or permitting instruments, such as the EA Act or CA Act. The pressures noted in the introduction do not stop at land use planning. Infrastructure projects and other activities that do not trigger a planning approval represent significant pressures on natural heritage in Ontario.

    A clear legislative framework should be identified that includes the circumstances when offsetting applies and how governance and administration will be undertaken.

11. **Defining Features.** A lack of clarity in definitions and criteria for identifying natural heritage features currently plays an important role in the offsetting process in Ontario. Where ambiguity in the status of a feature or potential feature exists, the planning process slows considerably

Thank you again for the opportunity to comment on ERO 019-6161. Should you have any questions regarding HCA's comments, please do not hesitate to contact the undersigned at scott.peck@conservationhamilton.ca or at (905)525-2181, ext.130.

Yours truly,



T. Scott Peck, MCIP/RPP
Deputy CAO/Director, Watershed Management Services

TSP/tsp

Hamilton Conservation Authority

A Healthy Watershed for Everyone

December 15, 2022 By Mail and Email – growthplanning@ontario.ca

Ministry of Municipal Affairs and Housing
Provincial Land Use Plans Branch
23rd Floor, Suite 2304
77 Bay Street
Toronto, Ontario
M7A2J3

Dear Sir/Madam:

Re: Review of A Place to Grow and Provincial Policy Statement
Environmental Registry of Ontario Number 019-6177

Thank you for the opportunity to provide comments on the above noted proposal.

Introduction

The Hamilton Conservation Authority (HCA) is a local community-based environmental organization established under the Conservation Authorities Act. We utilize our expertise and knowledge and an integrated and ecologically sound environmental approach to manage natural resources on a watershed basis. We protect communities from flooding and erosion, provide flood forecasting and warning services, operate 3 dams for flood control purposes, provide planning review and permitting services, conserve and restore local ecosystems, manage over 11,000 acres of natural hazard and natural heritage lands and contribute to the quality of life in our communities.

The HCA enjoys a positive working relationship with our partner municipalities that enables the HCA to provide our watershed knowledge and expertise on planning issues related to natural hazard and natural heritage issues in an integrated watershed- based manner. The changes proposed in Bill 23 removes our ability to provide natural heritage advice to a municipality and also removes our ability to consider natural heritage issues for permits with the removal of "conservation of land" and "pollution" as issues to be considered for permit applications. These are just some examples of the negative consequences from Bill 23 as currently written.

Bill 23 proposes measures to support the government's interest in increasing housing supply, and reducing perceived policy, process, approval and financial barriers to development and housing construction. With this approach as outlined in Bill 23, the HCA is concerned that the government is undermining the overall objective of the provincial land use planning framework that seeks to consider and balance the full range of economic, social and environmental considerations and priorities.

ERO 019-2927 Comments

The Province through the Ministry of Municipal Affairs and Housing is undertaking a review of A Place to Grow and the Provincial Policy Statement. Comments are requested on how to create a streamlined province-wide land use planning policy framework that enables municipalities to approve housing faster and increase housing supply.

The Provincial Policy Statement (PPS) has been in effect in the Province of Ontario in different versions since 1996, whereas A Place to Grow was implemented after the initial PPS document. The purpose and intent of these documents is to "provide comprehensive, integrated, whole-of-government policy direction on land use planning matters including growth management, housing, economic development, infrastructure planning and investment, protection and management of aggregate, natural and cultural resources and protection of public health and safety". The PPS has been reviewed and updated a number of times since its initial approval, with the last update in 2020, to ensure that it is current and effective.

The PPS is certainly a recently reviewed and updated document. This, together with A Place to Grow represents a current and effective provincial land use policy framework that guides municipalities and agencies responsible for planning and development decisions. It is not evident why this existing framework needs to be streamlined or how it may be considered to be hindering housing in the Province. Undertaking a major review of provincial policy driven by the singular objective of increasing housing supply is concerning and may undermine other provincial policy interests and planning objectives.

This proposal related to the PPS and A Place to Grow combined with other proposals related to Bill 23 will have the effect of weakening the provincially led land use policy framework, undermining many years of progressive policy development in Ontario that provides for a balanced approach to achieving the full range of social, economic and environmental policy objectives and planning outcomes. The policy changes being considered are expected to have a particularly negative impact on natural heritage resources. In this regard, we do not believe there is a need to merge the documents as the current Provincial planning framework is effective and balanced in guiding land use planning and infrastructure decisions.

In regard to the questions in the ERO posting, we offer the following:

1. What are your thoughts on the proposed core elements to be included in a streamlined province-wide land use policy instrument?

   If a new document is implemented, the core elements seem appropriate. However, we note that direction in the current PPS related to Watershed-Scale Planning, Natural Heritage and Water Resource protection, Natural Hazard Policy and policies related to climate change should be carried forward and included in the new instrument.

2. What land use planning policies should the government use to increase the supply of housing and support a diversity of housing types?

   The HCA defers a response to this question to our municipal partners at the City of Hamilton and Township of Puslinch.

3. How should the government further streamline land use planning policy to increase the supply of housing?

As it relates to environmental policy, there have not been updates to the Natural Heritage Reference Manual or with respect to Natural Hazards (current information supports the 1996/7 PPS and was last published in 2001 but dates from the 1980's/early 1990's era). Both up-to-date guidance and continued implementation support would provide more of a return than a policy re-write. If, as proposed, a new provincial planning policy instrument is issued, comprehensive, and precise implementing guidance should be provided concurrently with the issuance of the new policy instrument.

4. What policy concepts from the Provincial Policy Statement and A Place to Grow are helpful for ensuring there is a sufficient supply and mix of housing and should be included in the new policy document?

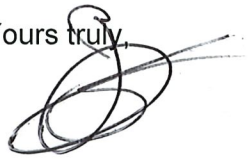
   While the HCA defers any detailed response to this question to our municipal partners at the City of Hamilton and Township of Puslinch, in our view the Provincial Policy Statement already contains policies that allow for an appropriate supply and mix of housing. Any changes to the existing framework should ensure that existing policies designed to promote healthy, liveable and safe communities are maintained.

5. What policy concepts in the Provincial Policy Statement and A Place to Grow should be streamlined or not included in the new policy document?

   We reiterate our comments contained in the body of this letter. The PPS is a recently reviewed and updated document. This, together with A Place to Grow represents a current and effective provincial land use policy framework that guides municipalities and agencies responsible for planning and development decisions. It is not evident why this existing framework needs to be streamlined or how it may be considered to be hindering housing in the Province. This proposal related to the PPS and A Place to Grow combined with other proposals related to Bill 23 certainly will have the effect of weakening the provincially led land use policy framework as well as weakening protections for natural heritage resources. In this regard, we do not believe there is a need to merge the documents as the current Provincial planning framework is effective and balanced in guiding land use planning and infrastructure decisions through municipal plan conformity.

Thank you again for the opportunity to comment on ERO 019-6177. Should you have any questions regarding HCA's comments, please do not hesitate to contact the undersigned at scott.peck@conservationhamilton.ca or at (905)525-2181, ext.130.

Yours truly,



T. Scott Peck, MCIP/RPP
Deputy CAO/Director, Watershed Management Services

TSP/tsp

This page intentionally left blank.

Hamilton Conservation Authority

A Healthy Watershed for Everyone

November 18, 2022

BY EMAIL - greenbeltconsultation@ontario.ca

Dear Sir/Madam:

Re: Proposed amendments to the Greenbelt Area boundary regulation
Environmental Registry of Ontario Number 019-6217
Proposed Amendments to the Greenbelt Plan
Environmental Registry of Ontario Number 019-6216

Thank you for the opportunity to provide comments on the above noted proposals.

Introduction

The Hamilton Conservation Authority (HCA) is a local community-based environmental organization established under the Conservation Authorities Act. We utilize our expertise and knowledge and an integrated and ecologically sound environmental approach to manage natural resources on a watershed basis. We protect communities from flooding and erosion, provide flood forecasting and warning services, operate 3 dams for flood control purposes, provide planning review and permitting services, conserve and restore local ecosystems, manage over 11,000 acres of natural hazard and natural heritage lands and contribute to the quality of life in our communities.

The HCA enjoys a positive working relationship with our partner municipalities that enables the HCA to provide our watershed knowledge and expertise on planning issues related to natural hazard and natural heritage issues in an integrated watershed- based manner. The changes proposed in Bill 23 removes our ability to provide natural heritage advice to a municipality and also removes our ability to consider natural heritage issues for permits with the removal of "conservation of land" and "pollution" as issues to be considered for permit applications. These are just some examples of the negative consequences from Bill 23 as currently written.

Bill 23 proposes measures to support the government's interest in increasing housing supply, and reducing perceived policy, process, approval and financial barriers to development and housing construction. With this approach as outlined in Bill 23, the HCA is concerned that the government is undermining the overall objective of the provincial land use planning framework that seeks to consider and balance the full range of economic, social and environmental considerations and priorities.

We note that with the changes proposed in Bill 23 if implemented and the proposed removals of the land from the Greenbelt Plan represents an overall weakening of environmental protections in the Province of Ontario.

ERO 019-6216 and 019-6217 Comments

These ERO postings are seeking feedback on proposed amendments to the Greenbelt Plan, specifically:

- Amending the boundary of the Greenbelt
- Remove lands from the Greenbelt Area that could be suitable for residential development
- Add lands in the Paris Galt Moraine to the Greenbelt Area, designated as Protected Countryside with a Natural Heritage System.

As shown on the attached map, except for a small parcel located on the west side of Fifty Road, the lands to be removed from the Greenbelt in the City of Hamilton, and more broadly the remaining parcels identified to be removed in the Greenbelt, are located outside of the watershed of the Hamilton Conservation Authority. Further, the proposed Paris Galt Moraine lands to be added to the Greenbelt as part of this proposal are well removed from the watershed area of the HCA. In this regard, the HCA will not be providing comments regarding the specific removals and additions proposed.

As outlined in the ERO posting, the Greenbelt Plan identifies "where urbanization should not occur. The plan provides permanent protection to the agricultural land base and the ecological and hydrological features, areas and functions within the Greater Golden Horseshoe and beyond". We understand the approach the government is proposing regarding strategic removal of lands using criteria such as 1:1 offset, lands adjacent to settlement areas, lands at the edge of the Greenbelt boundary, servicing and development potential. However, this approach is contrary to the idea of the Greenbelt Plan to "provide permanent protection to the agricultural land base and the ecological and hydrological features, areas and functions within the Greater Golden Horseshoe and beyond".

We support the proposed addition of the Paris Galt Moraine lands as identified to grow the Greenbelt and the government should be congratulated for this proposed addition. With that said, the addition of the Paris Galt Moraine lands should not be used as a justification for removal of lands that are part of the Greenbelt with the associated protections. A long-term view should be maintained to protect these lands and direct development to urban areas that have appropriate planning controls and infrastructure in place to accommodate the expected growth. It is with this in mind, that the HCA is not supportive of the proposed removals of land from the Greenbelt Plan.

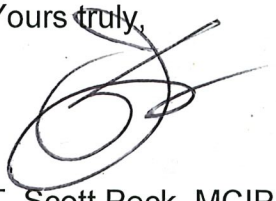
The posting also refers to ERO 019-4485 regarding past proposals for new and expanded Urban River Valleys. The HCA has provided comments on this posting but are unclear of the status of the Urban River Valley additions as proposed. The hyperlink included in the ERO postings to 019-4485 simply notes the posting is closed but that status of the proposal is not

provided, and it appears the Urban River Valleys have not been added to the Greenbelt Plan. Clarification on this issue is requested.

Lastly, the HCA requests that the Province work with our partner municipalities, conservation authorities, and the development industry to support responsible development in approved urban areas to ensure we can continue to protect our watersheds.

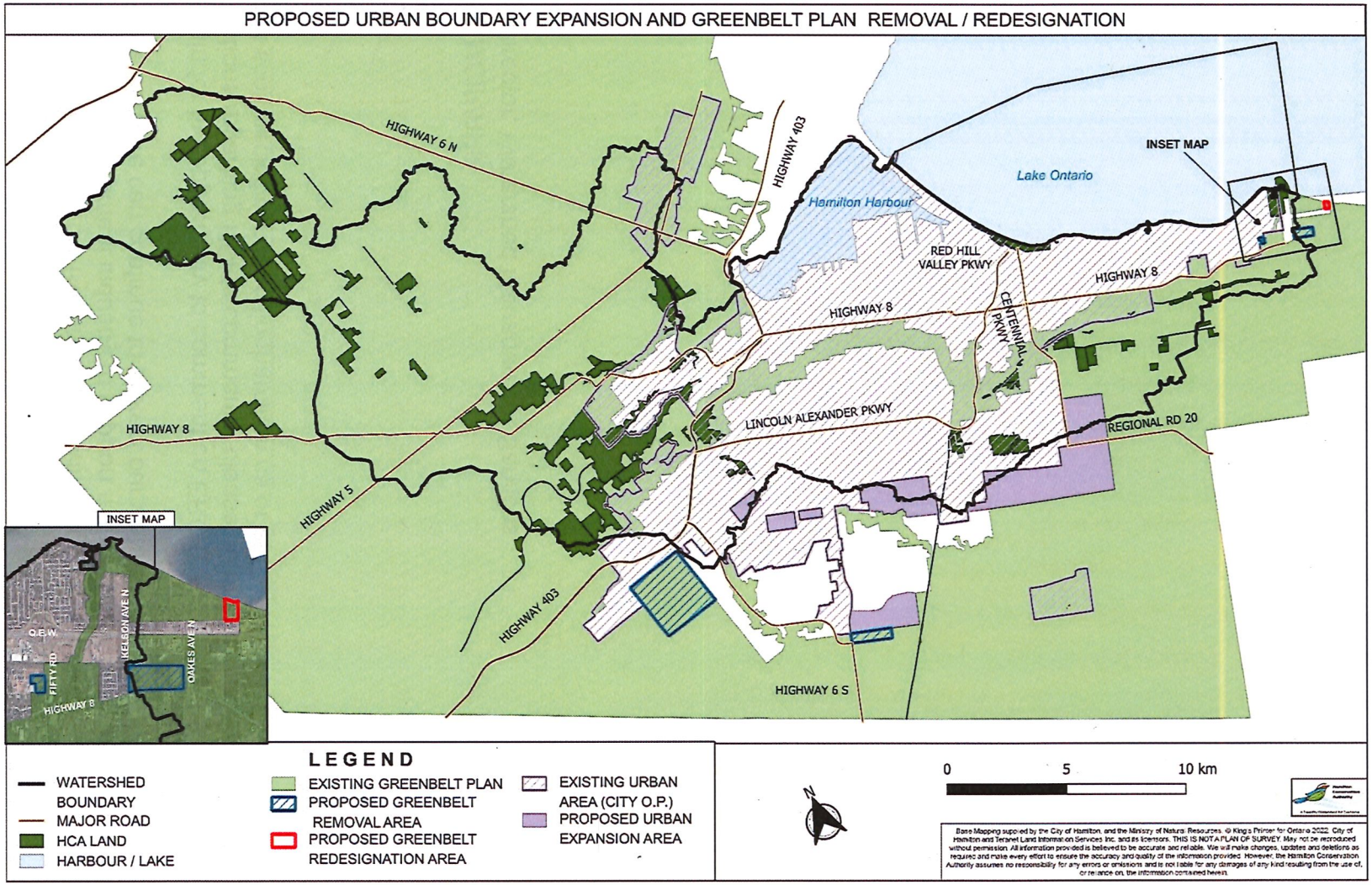
Thank you again for the opportunity to comment on ERO 019-6216 and 019-6217. Should you have any questions regarding HCA's comments, please do not hesitate to contact the undersigned at scott.peck@conservationhamilton.ca or at (905)525-2181, ext.130.

Yours truly,



T. Scott Peck, MCIP/RPP
Deputy CAO/Director, Watershed Management Services

TSP/tsp


PROPOSED URBAN BOUNDARY EXPANSION AND GREENBELT PLAN REMOVAL / REDESIGNATION
HIGHWAY 6 N
HIGHWAY 403
INSET MAP
Lake Ontario
Hamilton Harbour
RED HILL VALLEY PKWY
HIGHWAY 8
CENTENNIAL PKWY
HIGHWAY 8
LINCOLN ALEXANDER PKWY
REGIONAL RD 20
HIGHWAY 8
HIGHWAY 5
HIGHWAY 403
HIGHWAY 6 S
INSET MAP
Q.E.W.
KELLOGH AVE N
OAKES AVE N
FIFTY RD
HIGHWAY 8
LEGEND
WATERSHED BOUNDARY
MAJOR ROAD
HCA LAND
HARBOUR / LAKE
EXISTING GREENBELT PLAN
PROPOSED GREENBELT REMOVAL AREA
PROPOSED GREENBELT REDESIGNATION AREA
EXISTING URBAN AREA (CITY O.P.)
PROPOSED URBAN EXPANSION AREA
N
0
5
10 km
Base Mapping supplied by the City of Hamilton, and the Ministry of Natural Resources. © Kings Printer for Ontario 2022. 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.

Hamilton Conservation Authority

A Healthy Watershed for Everyone

Memorandum

TO: **Board of Directors**

FROM: **Lisa Burnside, Chief Administrative Officer (CAO)**

RECOMMENDED BY: **T. Scott Peck, MCIP, RPP, Deputy Chief Administrative Officer / Director, Watershed Planning & Engineering**

PREPARED BY: **Jonathan Bastien, Water Resources Engineer**

DATE: **January 5, 2023**

RE: **Watershed Conditions Report**

SYNOPSIS

During the period of October 20th 2022 to December 16th 2022, there were no observations or reports of significant watercourse flooding events or Lake Ontario shoreline flooding events.

Currently there are no significant watercourse flooding, public safety concerns, or Lake Ontario shoreline flooding. Current flows are slightly above baseflow conditions. That said, the current and average monthly flows in December so far have been significantly below long-term averages, at most gauges. These below average flow trends also extended into recent months.

The Lake Ontario mean daily water level averaged across the entire lake is currently about 8 cm below average for this time of year.

Current Christie Lake and Valens Lake levels are within the preferred winter operating levels.

There are currently no significant rainfall or snowmelt events (+20 mm in a day) forecasted for the watershed over the next 2 weeks. In the next 9 days, no significant Lake Ontario shoreline flooding is expected.

The most recent drought assessment indicated that Level 2 Low Water Conditions remain an appropriate overall characterization of the watershed. HCA staff will

undertake monthly drought assessments throughout the winter, and coordinate with the Hamilton Low Water Response team as required.

CURRENT WATERSHED CONDITIONS – December 16th, 2022

Current Flows in Major Area Watercourses

There are no observations, reports, or expectations that significant watercourse flooding or significant public safety concerns are occurring at this time. Current flows are slightly above baseflow conditions at the four available streamflow gauges (Upper Spencer Creek at Safari Road, Middle Spencer Creek at Highway 5, Lower Spencer Creek at Market Street, Ancaster Creek at Wilson Street). Flows are currently not available at the Red Hill Creek at Barton Street gauge.

Current flows are significantly below long-term average monthly flows for December at the three Spencer Creek gauges (31% to 40% of long-term averages). At the Ancaster Creek at Wilson Street gauge, current flows are 98% of long-term average monthly flows, due to continuing runoff from the recent snowmelt and rain.

The average monthly flows in December so far have been significantly below long-term averages, at most gauges. Upper Spencer Creek at Safari Road gauge flows have been 34% of the long-term average. Middle Spencer Creek at Highway 5 and Lower Spencer Creek at Market Street gauges have been 17% and 21% of the long-term average during December, respectively. Also, Red Hill Creek at Barton Street gauge flows have been 41% of long-term averages. The exception was Ancaster Creek at Wilson Street gauge, where flows have been 54% of long-term averages (considered well below average).

These below average flow trends also extended into recent months. November was below to significantly below average. Average monthly flows at the Middle Spencer Creek at Highway 5 gauge and Lower Spencer Creek at Market Street gauge were 12% and 18% respectively of the long-term average monthly flows. Red Hill Creek gauges flows were 30% of averages. Ancaster Creek gauges flows were 52% of averages. Upper Spencer Creek at Safari Road gauge flows were 61% of averages.

October was significantly below long-term averages, at most gauges. Although Upper Spencer Creek at Safari Road gauge flows were 93% of the long-term average, Middle Spencer Creek at Highway 5 and Lower Spencer Creek at Market Street gauges were 13% and 10% respectively. Also, Ancaster Creek at Wilson Street and Red Hill Creek at Barton Street gauge flows were 37% and 29% of long-term averages, respectively.

September was well below to significantly below average, at most gauges. Average monthly flows at the Middle Spencer Creek at Highway 5 gauge were predominantly lower than recordable limits during September, while Lower Spencer Creek at Market Street gauge flows were 22% of the long-term average monthly flows. Ancaster Creek

and Red Hill Creek gauges flows were 47 and 42% of averages, respectively. The exception was again Upper Spencer Creek at Safari Road gauge, where flows were 76% of averages (considered slightly below average).

August was well below to significantly below average at all gauges. Middle Spencer Creek at Highway 5 gauge flows were predominantly lower than recordable limits during August, while Upper Spencer Creek at Safari Road gauge and Lower Spencer Creek at Market Street gauge were 38 to 39% of the long-term average monthly flows, respectively). Ancaster Creek and Red Hill Creek gauge flows were 55 and 45% of averages, respectively.

July was significantly below average in Spencer Creek (10 to 35% of the long-term average monthly flows), and below average in Ancaster Creek and Red Hill Creek (66 and 65% of averages, respectively).

June was well below average in Spencer Creek (41 to 55% of the long-term average monthly flows), and slightly below average in Ancaster Creek and Red Hill Creek (74 and 75% of averages, respectively).

Furthermore, May was slightly below average at all available gauges (69 to 89% of the long-term average monthly flows), and the average monthly flows in April were below to well below average (47 to 68% of the long-term average monthly flows).

Current Lake Ontario Water Levels

At this time, there are no observations, reports or expectations of significant Lake Ontario shoreline flooding. The Lake Ontario mean daily water level in the Hamilton area was 74.56 m IGLD85 as of yesterday. The Lake Ontario mean daily water level averaged across the entire lake (74.46 m IGLD85 as of yesterday) is about 8 cm below average for this time of year.

Current Storages in HCA Reservoirs

Current Christie Lake levels (765.37 ft) are within the preferred winter operating levels (765.3 to 765.8 ft). Current Valens Lake levels (274.16 m) are within the preferred winter operating levels (274.15 to 274.40 m).

Prior to the ongoing snowmelt and rain runoff event, reservoir levels had typically been slightly below the preferred winter operating levels.

Current Soil Conditions

The surface and root-zone soils are currently moist to wet, and partially frozen.

RECENT STORM EVENTS

During the period of October 20th 2022 to December 16th 2022, there were no observations or reports of significant watercourse flooding events or Lake Ontario shoreline flooding events.

RECENT WATERSHED LOW WATER CONDITIONS

The most recent drought assessment (including data up to November 30) indicated that Level 2 Low Water Conditions remain an appropriate overall characterization of the watershed. Based on this, HCA suggested maintaining the active Level 2 Low Water Conditions until the next scheduled assessment.

The Hamilton Low Water Response Team declared a Level 2 Low Water Condition for the entire HCA watershed on October 20th. This includes Spencer Creek, Chedoke Creek, Redhill Creek, Stoney Creek and Battlefield Creek, Stoney Creek Numbered Watercourses, as well as all of their tributaries and other minor watercourses. The HCA watershed had been in a Level 1 Low Water Condition since July 28th, 2022.

A Level 2 press release was issued encouraging a 20 percent voluntary reduction in normal water use and a fact sheet provided suggested strategies for reducing water use. This water conservation request applies to all users of water supplied from watercourses, waterbodies, and groundwater sources within the HCA watershed. Also, this message was posted on HCA's website and social media. In addition, letters were sent to local Permit to Take Water holders communicating this message. Furthermore, Hamilton LWRT members are sharing the water conservation message with other water users in their area / sector.

FORECASTED WATERSHED CONDITIONS

Watercourse Flooding

There are currently no significant rainfall or snowmelt events (+20 mm in a day) forecasted for the watershed over the next 2 weeks. HCA staff continue to monitor conditions and forecasts routinely. Resultant water levels and flows from currently anticipated rain and snowmelt are not expected to result in significant watercourse flooding.

Lake Ontario Shoreline Flooding

In the next 9 days, no significant Lake Ontario shoreline flooding is expected. According to International Lake Ontario – St. Lawrence River Board information, weather

conditions, including temperatures and precipitation, will primarily determine the rate and magnitude of water level fluctuations over the coming weeks.

Watershed Low Water Conditions

HCA staff will undertake monthly drought assessments throughout the winter, and coordinate with the Hamilton Low Water Response team as required.

This page intentionally left blank.

Hamilton Conservation Authority

A Healthy Watershed for Everyone

10.6

Memorandum

TO: **Board of Directors**

FROM: **Lisa Burnside, Chief Administrative Officer (CAO)**

PREPARED BY: **Gordon R. Costie**

MEETING DATE: **January 5, 2023**

RE: **Conservation Areas Experiences Update**

BACKGROUND:

HCA provides high quality, diverse conservation areas that promote outdoor recreation, health and well being and strengthen public awareness of the importance of being in or near our conservation areas.

STAFF REPORTING COMMENTS

- HCA Conservation Areas – open year-round from sunrise to sunset. Come experience winter conditions at your favorite conservation area for hiking, ice fishing, disc golf, waterfall viewing and more. Staff keep winter roads, parking, and washroom facilities open where available. It's a great time to visit your favorite conservation area and embrace winter.

- Winter Camping Valens Lake - Staff initiated a formal winter camper program back in 2010 with only a handful of camper participants at the time. The program operates very similar to Ontario Parks for winter camping/on site storage as seen at several OP locations. Today Valens Lake has 60 winter campers in our program – they absolutely love their winter camping and using the conservation area in our slowest season of operations.

- Valens Lake Drumlin - Roofed accommodations (cabins) have been a long journey for the HCA at Valens Lake. Dating back to the 1988 master plan, camping cabins were first identified as an opportunity for providing overnight access for visitors who may not be able to participate using more traditional camping gear. In the spring of 2020, HCA began to construct 8 cabins on the

Valens Lake drumlin. Construction crews were met with COVID shutdown delays, supply chain issues and weather challenges, but today I can advise the board, that HCA has accomplished what no other Conservation Authority has yet undertaken, a year-round overnight cabin experience at a conservation area. Staff are currently in testing mode for operating and servicing the cabins before we go public in the first quarter of 2023. Expect to see a media release, and public booking availability through our camping reservation system in the weeks to follow.