November
2022

REPORT TO: **Conservation Halton Board of Directors**

REPORT NO: # CHBD 07 22 11

FROM: Kellie McCormack, Director, Planning and Regulations

DATE: November 17, 2022

SUBJECT: **Spill Flood Hazard Policy Directions**
CH File No.: ADM 343

Recommendation

THAT the Conservation Halton Board of Directors **endorses the recommendations and policy directions in the report entitled "Spill Flood Hazard Policy Directions".**

Executive Summary

This report provides background information on spill flood hazards ("spills"), the regulatory and policy context, and an overview of the feedback received on Conservation Halton's (CH) March 2022 discussion paper in the attached table (Appendix E). It also provides staff's recommended policy approach/direction for managing risk associated with development in spills along with supporting rationale. Based on analysis of applicable policy and regulation, discussion paper feedback (Appendix E), and a legal opinion, staff recommends a risk-based policy approach be developed to deal with development in spills. Further, staff recommends a general, jurisdiction-wide spills policy be developed with the opportunity for area specific policies for areas that have undergone comprehensive study. The tests underpinning any draft polices would be that applicants would need to demonstrate that risks to public safety are addressed, new hazards are not created, and existing hazards are not adversely affected. The regulatory test related to the control of flooding would also need to be met. Following Board endorsement of the recommended spills policy directions, staff will develop detailed draft policies, which will be presented to the Board, public and stakeholders, as part of Phase 3B of the work plan early next year. Detailed spills policies will provide the public and stakeholders with greater certainty and transparency on CH's requirements for developing in spills and enable consistent and efficient review of development proposals in spills by staff. CH staff is seeking Board of Directors' endorsement of the recommended policy direction presented in this report.

Report

In September 2022, CH's Board of Directors approved a revised work plan for CH's spills policy review and update (CHBD 06 22 11). The revised work plan added another step (Phase 3A) to the policy review and update process to allow for a policy directions report to be presented to the Board, prior to staff developing and releasing draft spills policies.

The purpose of this report is to provide:

i. background information on spills, as well as the regulatory and policy context;

ii. an overview of the feedback received on the discussion paper entitled “CH Spill Flood Hazard Policy Review and Update Discussion Paper”, released in March 2022, and
iii. staff’s recommended policy approach/direction for managing risk associated with development in spills along with supporting rationale.

Staff is seeking Board of Directors’ endorsement of the recommended policy direction presented in this report to enable staff to develop detailed draft policies, which will be presented to the Board, public and stakeholders, as part of Phase 3B of the spills policy review and update work plan.

Background and Context

Flooding is considered the most significant natural hazard in Ontario in terms of loss of life and social disruption and is the costliest type of natural disaster in Canada in terms of property damage. (Ontario’s Special Advisor on Flooding Report to Government. An independent Review of the 2019 Flood Events in Ontario.

Government, private corporations, and individuals have roles in preparing for and managing flooding risk before, during, and after it occurs. In Ontario, proactive approaches direct people and property away from flood hazards through regulation and policy. An effective approach to hazard mitigation and management includes three components: 1) defining hazards, 2) preparing hazard maps, and 3) developing regulations and policies for development.

Under Section 28 of the *Conservation Authorities Act*, Conservation Authorities (CAs) may develop regulations to prohibit or require permissions for development in hazardous areas. CH administers *Ontario Regulation 162/06*, which regulates development in river and stream valleys, wetlands, the Lake Ontario shoreline, hazardous lands, and adjacent lands within CH’s watershed jurisdiction. The purpose of the regulation is to protect life and property from natural hazards such as flooding and erosion, and to protect other features such as wetlands.

To better support the administration of CH’s regulation, and to better understand the nature and extent of flood hazards across CH’s jurisdiction, CH renewed its Floodplain Mapping Program in 2018. New technologies and tools, along with more available funding, offer opportunities to better understand and depict flood hazards. Advancements in technology enable CH to better define flood hazards, including hazards which were not historically feasible, such as spill flood hazards.

Spills occur when floodwaters leave a watercourse, its valley and floodplain, and continue to flow overland in multiple directions before rejoining the same watercourse downstream or spilling into another watershed. Spills often move through areas where inundation may not be anticipated and can flow in complex patterns. Spills can be caused by backwatering upstream of watercourse crossings or by ground conditions that slope away from the valley and floodplain. On the other hand, floodplains generally maintain their connection to a watercourse, following its direction and receding back to it when a storm subsides. Floodplain flows are generally more significant than spill flows and can convey heavier, more substantial materials/objects during a storm event.

The Province has confirmed that spills are regulated hazards; however, there is currently no provincial direction on how CAs should deal with spills. While the overall direction in the natural hazard policies of the Provincial Policy Statement (PPS) is to generally direct development to areas outside of hazardous lands, there are some provisions that would allow for development in hazardous lands if

the site has safe access or where the effects and risk to public safety are minor and can be mitigated in accordance with provincial standards, and where floodproofing standards are met, access/egress can be achieved, new hazards are not created and existing hazards are aggravated, and the use is not an institutional use or an essential emergency service, among others. Furthermore, PPS policies were likely developed to address development in traditional floodplains and may not have contemplated spills. The Provincial technical guides that support the PPS, including *Technical Guide, River & Stream Systems: Flooding Hazard Limit* (Ministry of Natural Resources, 2002) provides direction on assessing development in floodplains and floodplain mapping but there is minimal direction on spills.

As CAs update flood hazard regulatory mapping across their jurisdictions, additional spills will be identified and mapped within areas of existing development and within Strategic Growth Areas (SGA). When spill flood hazards occur in SGAs, there is a potential conflict between Provincial policies and objectives, as the Province generally directs development away from hazardous lands (Section 3 of the PPS) but also directs municipalities to plan for development in SGAs to accommodate significant population and employment growth (*A Place to Grow: Growth Plan for the Greater Golden Horseshoe*).

The lack of explicit provincial policy and technical direction on spills has resulted in CAs implementing different policy approaches to deal with development in spills. Some CAs require complete elimination of spills prior to development and apply floodplain policies when complete elimination is not feasible, while others may permit development where mitigation measures are implemented, and off-site impacts are addressed.

CH has an interim regulatory policy for development in spills, which enables staff to assess development on a case-by-case basis. This interim policy was put in place to allow staff time to develop and publicly engage on more robust policies that will address development within spills.

Conversely, CH has a specific set of regulatory policies related to development in floodplains. In general, CH's floodplain policies allow for replacements and minor additions to buildings and structures that already exist in a floodplain; however, no new development is permitted in the floodplain except for accessory structures, agricultural uses, stormwater management facilities, parking lots and minor floodplain alterations subject to specific requirements. Major alterations to floodplains including placement of fill to create, or enlarge, a building lot are generally not permitted and may only be considered on a broad, landscape level where justification is provided through a comprehensive study.

One of the key questions driving CH's spills policy review and update is whether spills should be treated differently than floodplains from a policy perspective. The question raises both technical and policy-based considerations, in terms of whether spills and floodplains present different risks and whether development proposals in these two hazard areas should be treated differently.

On March 25, 2022, staff released the "CH Spill Flood Hazard Policy Review and Update Discussion Paper" to provide the public and stakeholders with background information on spills and to engage on the policy approaches that CH could take to deal with development in spills. The table below was presented in the discussion paper and summarizes the range of potential policy directions.

Current CH Floodplain Policy	General Jurisdiction Wide CH Spill Policy	Area Specific CH Spill Policy	Case-by-Case CH Spill Policy (General Parameters)
• Primarily hazard-based approach • Views spill same as floodplain • Provides clear/consistent direction to limit development in spills • May not account for development in low-risk spills	• Hazard-and/or risk-based approach • Differentiates spill from floodplain • Provides clear/consistent direction to permit some development in spills • Does not account for differences in local spill conditions • Applicant responsible for undertaking technical studies	• Risk-based approach • Differentiates different spill areas from each other and from floodplain • Provides clear/consistent direction to permit some development in spills however, policies would be unique to specific areas • Based on technical study for area and accounts for level of risk • Potentially reduces technical study requirements for applicant	• Risk-based approach • Differentiates spill from floodplain on case-by-case basis • Potentially unclear/ inconsistent direction to permit some development in spills on case-by-case basis • Applicant responsible for technical studies

RESTRICTIVE/FIRM/CERTAINTY ⟷ PERMISSIVE/FLEXIBLE/UNCERTAINTY

Staff has reviewed all discussion paper feedback received and an overview is presented in the section below. Please refer to the attached table (Appendix E) for a complete summary of feedback received and staff's responses.

Discussion Paper Feedback

The discussion paper was posted on CH's website, shared via social media and e-newsletter and circulated directly to stakeholders including CAs, municipalities, provincial ministries, land developers and Indigenous communities. Staff presented the discussion paper to the Greater Golden Horseshoe CA Planning Group, the Halton Area Planning Partnership group, the Floodplain Mapping Advisory Committee, and the BILD-CH Liaison Working Group. Individual meetings and discussions with municipalities and developers also took place.

Stakeholders expressed a high-level of interest in CH's spills policy review and, based on the feedback provided to CH, there is a broad range of thinking and viewpoints about what approach CH should take in the development of new spills policies. Most supported CH taking a different policy approach to manage risk from development in spills than floodplains. This is based on the common perspective that spills have different characteristics than typical floodplains (e.g., disconnected from watercourses; the extent, depth and velocity of flooding; ability to be eliminated at source or altered at a site level). Some stakeholders suggested that spills may present a potentially lower flood risk based on these characteristics. A table of all stakeholder feedback received, as well as staff's response, is appended to this report (Attachment E).

Some of the other key themes that emerged in the feedback received include:

- **Risk-based approach** - Many of the responses expressed general support for a risk-based policy approach that would consider spills characteristics (e.g., source, extent, depth, and flow velocity), the ability to mitigate flood risk, and the nature of the proposed development and provide flexibility to allow for development in lower risk spills, where specific criteria can be addressed.

- **General, Jurisdiction-Wide & Area Specific Policies** - There is general support for CH to develop general, jurisdiction-wide spills policies, while also allowing for area specific policies in areas where spills have been characterized and mapped through comprehensive studies supported by CH and municipalities.

- **Disconnection between watercourse/riparian system and spills** – There is general recognition that spills should be treated differently than floodplains because they may not return to the watercourse/riparian system, often mix with urban/pluvial flooding and may serve limited flood storage and ecological functions.

- **Elimination of spill flood hazards** – Policies that would allow spills to be eliminated was widely supported as a preferred management approach, where feasible. Elimination may occur at the source of the spill by modifying existing watercourse crossings or culverts to improve flow conveyance, changing road profiles, and/or grading to direct spill flows back into the floodplain.

- **Safe access** – Some feedback noted that a determinative factor for treating spills differently than floodplains is whether the site in the spill has safe access appropriate for the nature of the development as per the direction in PPS Policy 3.1.2.

CAs provided a range of responses with some supporting a more flexible, risk-based approach to address development in spills while others support a firmer, hazards-based approach that would treat development in spills the same as floodplains.

Municipalities stressed the importance of limiting the extent of spill regulation, especially in urban areas where spills combine with pluvial/urban flooding in the municipal drainage system that they are responsible to manage. Municipalities also expressed concern about additional permitting requirements for the construction and maintenance of roads and other municipal infrastructure given that spills are often conveyed by the municipal drainage system once they leave the watercourse system and flow overland.

<u>CH's Approach to Mapping Spills</u>

The ability to characterize and map spills is critical for confirming a spill's source, potential for elimination or mitigation, as well as flooding extent, depth and flow velocity. Confirming these characteristics are necessary to differentiate spills from floodplains, as well as riverine from urban flooding. It also is critical for determining the areas within the spill that are considered hazardous and where CH's regulation would apply.

In the comments received on the discussion paper, it was apparent that there is some confusion or questions about how CH maps spills, as well how it is determined what areas are subject to *Ontario Regulation 162/06* (i.e., what areas are regulated by CH) and CH's regulatory policies. To clarify,

below is an overview of the steps CH takes to maps spills, refine the mapping, and identify the areas where its regulation applies.

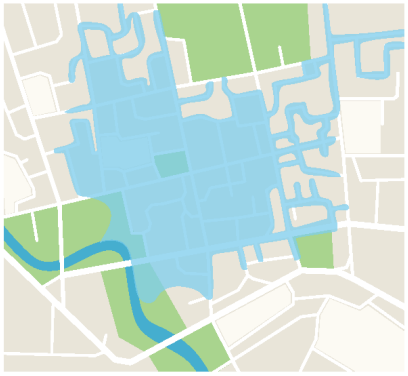

Figure 1: Map of full spill extent

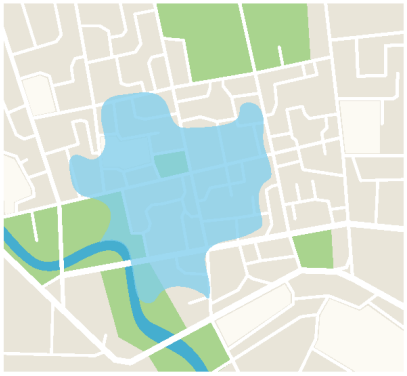

Figure 2: Map of regulated spill hazard

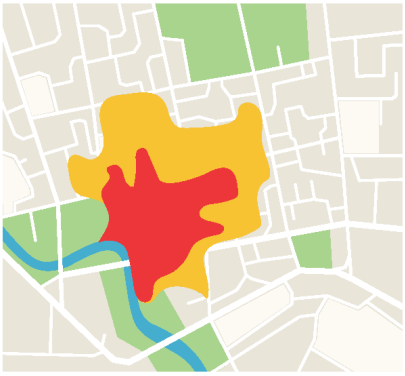

Figure 3: Map identifying areas of higher and lower potential flood risk within regulated spill hazard

Figure 1: The full extent of the spill is mapped based on the hydrologic and hydraulic modelling and topographic data.

Figure 2: As spills flow overland in multiple directions and often mix with urban/pluvial flooding, CH defines the hazardous portions of the spill based on thresholds for peak flow rate, flood depth, and velocity. The mapping is further refined based on these thresholds and other characteristics (e.g., pathway along public road). Spill areas that do meet hazardous lands thresholds are removed from the mapping and are not considered regulated by CH.

Figure 3: With the extent of the regulated area confirmed, staff can identify areas of higher (red) and lower (yellow) potential flood risk within the regulated spill. Areas of higher risk potential are defined based on provincial technical guidance (e.g., areas with greater than 1 metre of flood depth and 1 metre per second velocity) and access/egress evaluation criteria.

CH's process for mapping regulated spills and then identifying higher and lower potential risk areas within the regulated area enables CH to consider implementing different regulatory policies depending on the nature of spill and the nature of the proposed development within the regulated spill. Understanding the source and characteristics of mapped/regulated spills is critical for informing where spill mitigation measures, such as infrastructure improvements, may be needed to address the hazard and unlock potential development opportunities. CH's mapping refinement process also confirms the hazardous portions of the spill where CH's regulation applies and the areas of urban or pluvial flooding where municipalities are responsible for managing.

Analysis

From a technical perspective, spills are distinct from typical floodplains in that spills are:

- disconnected from the watercourse, valley and floodplain with limited flood storage and ecological functions;
- generally easier to eliminate at their source through infrastructure improvements or alter through grading and/or other mitigation measures at the site level; and

- exhibit different flooding characteristics with generally shallower depths and slower flow velocities with less ability to move heavier objects during large storm events.

Furthermore, from a regulatory and policy perspective, as well as based on a legal opinion provided to CH, spills generally fit within the definition of hazardous lands rather than the floodplain criteria in O. Reg. 162/06. Under the *Conservation Authorities Act*, hazardous land means:

> *land that could be unsafe for development because of naturally occurring processes associated with flooding, erosion, dynamic beaches or unstable soil or bedrock.*

The definition contains key qualifying language "could be unsafe for development", which suggests only spills or parts of spill areas that could pose a safety risk are regulated. This also means that there would be no regulatory allowance associated with spills. Overall, this supports a risk-based approach to regulating and permitting development within a spill area.

Spills also fit the more expansive definition of hazardous lands under the PPS that contains the same key qualifying language. Except for the land uses listed in PPS Policy 3.1.5, development in spills is not outright prohibited by the PPS, subject to demonstrating safe access/egress, the effects and risk to public safety are minor and can be mitigated, new hazards are not created, existing hazards are not aggravated, and the use is not an institutional use or an essential emergency service (among other things). Overall, a risk-based approach rather than an absolute prohibition on development within spills would also be consistent with the PPS.

Policy Direction Recommendations

Considering the above, and based on stakeholder feedback, CH staff recommends a risk-based, flexible policy approach be taken to address development in spills. Further, staff recommends a general, jurisdiction-wide spills policy be developed with the opportunity for area specific policies for areas that have undergone comprehensive study.

Under general spill policies, development would be permitted if it can be demonstrated that there is no risk to public health and safety, new hazards are not created and existing hazards are not adversely affected, the use is appropriate, and regulatory tests related to the control of flooding can be met. Among other things, specific policy criteria would require:

- Limitations on the type of development permitted in hazards (e.g., no sensitive or institutional uses);
- Demonstration that in the area of proposed developed, flood depths are less than one metre and velocities are less than one metre per second under regulatory storm conditions;
- Demonstration that flood elevations will not adversely increase as a result of development;
- Requirements for dry or wet floodproofing are implemented (depending on the type of proposed development); and,
- Demonstration of safe access and egress.

Staff expects that the ability for a proposal to meet these criteria will depend on whether the proposed development is located within a higher vs. lower potential flood risk area, as well as the nature of the proposed development.

Within the general policies, specific policies would be developed for a range of hazard scenarios and/or development types including policies for:

- **Existing Development in Spills -** Staff recommends policies to allow for replacements and additions to existing development in spills that may offer more flexibility than current floodplain policies in terms of size where specific criteria are met (e.g., no adverse impacts).

- **New Development in Spills -** Staff recommends policies that would permit new development in spills (e.g., single or multi-unit residential buildings and accessory structures, commercial, mixed use and employment buildings, storm water management facilities, etc.) where specific criteria are met.

- **Eliminating Spills -** Where it is cost-effective and easily implemented, staff recommends policies to allow for the elimination of spills at or near their source through infrastructure improvements (e.g., crossing/culvert upgrades, changes to road profiles, grading), where specific criteria are met. Proposed elimination of spills requiring more substantial works may need to be supported by a comprehensive study.

- **Altering Spills -** Where complete elimination is not achievable, staff recommends policies to allow for the alteration of spills by filling and/or grading a site or several sites to remove the hazard and/or alter its flow path, where specific criteria are met.

- **Area Specific Spill Policies -** Staff recommends a policy that would enable CH to develop area specific policies for areas that have undergone a comprehensive study supported by CH. Area specific policies would be based on the characteristics and risks associated with the specific spill.

- **Public Infrastructure and Recreational Uses -** Given the propensity for spills to occur along public right of ways, staff recommends including policies to provide clarity for municipally initiated infrastructure and recreation projects that do and do not require formal CH permission in spills

- **Development within regulatory allowance (i.e., 7.5 metres for minor systems and 15 metres for major systems) –** As spills meet the definition of hazardous lands a regulatory allowance would not be required.

As part of drafting policies for the above items, staff will also prepare a draft technical companion document to accompany the draft policies.

Conclusion/Recommendation

Staff is seeking Board of Directors' endorsement of the recommended spills policy direction presented in this report to enable staff to develop detailed draft policies, which will be presented to the Board, public and stakeholders, as part of Phase 3B of the spills policy review and update work plan early next year. All input received will be documented and staff anticipates making recommendations to the Board of Directors on the approval of new spills policies in Q2 2023. Detailed spills policies will provide the public and stakeholders with greater certainty and transparency on CH's requirements for

developing in spills and enable consistent and efficient review of development proposals in spills by staff.

Impact on Strategic Priorities

This report supports the Momentum priority of Natural Hazards and Water

Financial Impact

There is no financial impact to this report.

Signed & respectfully submitted:

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Approved for circulation:

Hassaan Basit
President & CEO/Secretary-Treasurer

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Appendix E

Conservation Halton Spill Flood Hazard Policy Review & Update Discussion Paper (March 2022)
Stakeholder Comment Response Table
November 17, 2022

Conservation Halton (CH) staff thank all stakeholders who provided responses to the discussion paper. The following table includes stakeholder comments and CH responses.

Question 1: Should CH have different regulatory policies for spill flood hazards ("spills") than floodplains? Why or why not?

	Stakeholder	Stakeholder Comment	CH Response
1	City of Burlington	Yes. Spills represent a dynamic hazard that may respond more directly to mitigation efforts. Flood plain hazards tend to be more static where efforts to mitigate riverine flooding are more likely to have impacts (upstream/downstream) on the whole system. Different policies are necessary because the nature of floodplains is different from spills. A floodplain associated with a watercourse is an exclusive right-of-way for its flow. However, the spill is the flow that leaves the designated right of way. Spill mapping could change more frequently than floodplain mapping due to infrastructure upgrades, mitigative measures, or by taking floodproofing steps. Spill-lines, as opposed to flood lines, could change if spills are directed away from the dwelling space and towards safer outlets. Generally, and except under specific circumstances, no development is permitted within the floodplains. In contrast, acceptable floodproofing measures could be a reason to allow development within the spill areas. Floodplain management needs a hazard-based approach to limit development. Whereas development within the spill areas requires a risk-based approach. The risk-based approach to managing development within the spill areas should consider the severity of the spills and the site's level of vulnerability to determine the degree to which development restrictions need to be applied. Floodplain management is typically based on a One Zone Concept. Applying the same regulatory policies to spills will result in spills being integrated into the very restrictive One Zone Concept. Hence a new set of regulations for spills should be laid out that are less restrictive and allow the flexibility to manage the flooding caused by spills.	Staff's recommended spills policy direction aligns with this comment. Different regulatory policies are recommended for spills than floodplains based on a flexible, risk-based approach to existing and new development in spills, as well as eliminating and altering spills. Please refer to CH Board report CHBD 07 22 13 for more information. As spills meet the definition of hazardous lands, a regulatory allowance would not be required for safe access and egress.

		Grouping spills and floodplains will result in the fringe areas being the same in terms of dimensions and development restrictions. For example, the floodplain fringe (usually referred to as the development setback) is 7.5 or 15 meters, with minimal potential for development. Since spills are characteristically different from floodplains, applying the exact same fringe dimensions and restrictions is neither necessary nor warranted.	
2	Central Lake Ontario Conservation Authority	Regulatory policies should be nested within the broader land use planning and development policy framework and, accordingly, should not conflict with the Provincial Policy Statement. Within the provincial policy direction for flood hazards, there is some flexibility for development via the one-zone, two-zone and Special Policy Area concepts. Otherwise, spill areas should be managed as one-zone flood plains.	Acknowledged. Based on CH staff's policy and regulatory analysis and a legal opinion received, spills fit the definition of hazardous lands. Under the PPS, hazardous lands means property or land that could be unsafe for development because of naturally occurring processes. This definition, and particularly the key qualifying language "could be unsafe for development", suggests only spills or parts of spill areas that could pose a safety risk are regulated. Further, while there is limited Provincial policy direction specifically on spills, the legal opinion received by staff is that a risk-based approach rather than an absolute prohibition on development within spill areas would be consistent with the PPS. This would be subject to demonstrating safe access/egress, the effects and risk to public safety are minor and can be mitigated, new hazards are not created and existing hazards are aggravated, and the use is not an institutional use or an essential emergency service, among other things.
3	Credit Valley Conservation Authority	It is suggested that the approach for regulatory policies for spills be different than for floodplains, mostly because floodplains and spills are different in nature. It is generally understood that riverine floodplains contain flow that has overtopped watercourse channel banks at various storm events. This water is held for a period of time and then recedes and returns to the system. In contrast, spills do not necessarily return to the system and may carry flow for an undefined length, may merge with other drainage areas, or may flow into municipal storm sewers etc. This very different characteristic of spills is what makes their treatment and management a policy implementation challenge, however the difference is defining and as such drives the policy.	Acknowledged. Please see response to Comment 1.
4	David Schaeffer Engineering Ltd. on behalf of Milton	We strongly support a different policy for spills than floodplains and note that a spill should not be considered a floodplain;	Acknowledged. Please see response to Comment 1.

	Education Village Landowners	Spills may be contained and managed through man-made improvements or eliminated; The use of a 2D hydraulic models are supported to more accurately delineate spill limits and characteristics.	The use of 2D hydraulic models is also supported by CH through its Floodplain Mapping Program to better define spills.
5	David Schaeffer Engineering Ltd. on behalf of Southwest Georgetown Landowners Group	We strongly support a different policy for spills than floodplains and note that a spill should not be considered a floodplain; Spills may be contained and managed through man-made improvements or eliminated; The use of a 2D hydraulic models are supported to more accurately delineate spill limits and characteristics.	Acknowledged. Please see responses to Comments 1 and 4.
6	Lake Simcoe Region Conservation Authority	Yes, because spills can behave differently with varying risks - low/high flows, contained/spread out, etc. Spill zones likely have shorter duration of inundation and potentially shallower depth of flooding compared to floodplains. Additionally, not all spill areas may be fully mapped, but there may be an awareness that a spill area exists. Having a separate policy may encourage further analysis of the spills area that may not be currently fully mapped.	Acknowledged. Please see response to Comment 1. Spills may be mapped through CH's Floodplain Mapping Program, municipally-led studies, or proponent-led studies in support of development.
7	Niagara Escarpment Commission	Yes, the use of different regulatory policies is justified because the while the two categories of phenomena may arise from related phenomena, they may also occur independently of each other and may exhibit different behaviour and results. In addition, by definition, spills occur outside of floodplains and warrant separate mitigation measures. The Niagara Escarpment Plan cites "other water-related hazard" outside of flooding hazard and wave uprush. While spills are not described here, this category would encompass spills outside of floodplains.	Acknowledged. Please see responses to Comments 1 and 2.
8	Region of Halton	CH should consider different regulatory policies for spills and floodplains. Section 3.1 of the Provincial Policy Statement (2020) directs development and site alteration to areas outside of the flooding hazard unless there are situations where a two-zone concept for floodplains or Special Policy Areas with appropriate floodproofing can be applied and approved by the Minister of Natural Resources and Forestry. Policy 118(10) of the Regional Official Plan requires that the Local Zoning By-law prohibit the construction and the expansion or replacement of existing non-conforming and applying appropriate setbacks within hazard lands.	Acknowledged. Please see responses to Comments 1 and 2.

		Given that the nature of floodplains is different from spills, it is necessary for different regulatory policies as development is not permitted in floodplains, where development is permitted within spill areas with appropriate floodproofing and mitigation measures. Separate regulatory policies for spills will allow for existing communities, essential emergency services and agricultural operations to remain protected while also allowing for new development or redevelopment to accommodate more growth within existing urban areas as well as potential areas for urban boundary expansion that may fall within a spill area. For example, applying the same regulatory policies for floodplains to spills may be too rigid, given that spills are more dynamic in terms of how the extent to which flood flow may spread on the landscape. Therefore, applying similar prohibitions that are applicable to floodplains within spill area for future growth areas may limit opportunities to achieve compact and complete communities through development permissions for intensification and higher-density mixed-uses in the Settlement Area, including Built Up Area, Designated Greenfield Areas, and Strategic Growth Areas.	
9	Stonybrook Consulting & Urbantech Consulting on behalf of Milton Phase 4 (West) Landowners Group	The MP4 West Group strongly supports a different policy for spills than for floodplains. Flood hazards can vary substantially between spills and floodplains. Spills can cover relatively large areas beyond currently delineated floodplains that experience low depths of flooding, with low velocities. In newly developing areas, it is possible to eliminate or manage risks in these areas through appropriate development design and therefore policies that allow for modifications to eliminate/contain spills should be the preferred approach. If managed like floodplains, a no development policy would affect large areas and could have substantial implications on Growth Plan objectives, approved planning applications or community designs.	Acknowledged. Please see response to Comment 1.
10	Stonybrook Consulting & Urbantech Consulting on behalf of Milton Phase 4 Trafalgar Landowners Group	The Trafalgar Group strongly supports a different policy for spills than for floodplains. Flood hazards can vary substantially between spills and floodplains. Spills can cover relatively large areas beyond currently delineated floodplains that experience low depths of flooding, with low velocities. In newly developing areas, it is possible to eliminate or management risks in these areas through appropriate development design and therefore policies that allow for modifications to eliminate/contain spills should be the preferred approach. If managed like floodplains, a no development policy in these areas would affect large areas and could have substantial	Acknowledged. Please see responses to Comments 1 and 9.

		implications that are not compatible with other Growth Plan objectives, approved planning applications or community designs.	
11	Town of Halton Hills	There should be different regulatory policies for spills than floodplains. Spills are derivatives of the flows from the natural watercourse. Spills by nature are “surface flows” originating from the main riparian system. These surface flows are being accommodated by the uplands landscape outside of the riparian system and have no associated environmental purposes. From a hazards perspective, since the characteristics of spills are determined by the landscape only, elimination of spills is the most effective tool to mitigate risks in undeveloped areas. Spills do not possess natural riparian system characteristics such as riparian storage, nor do they serve an ecological function. Spills are overland drainage systems that provide for conveyance only and are subject to many losses due to their nature. Spill flows are disconnected from the riparian system, segmented, might be stagnant, and/or guided in different directions as governed by the landscape. Therefore, by their nature, spills are nuisances to the existing developed areas. In developed areas, spill flows are mostly being conveyed by the major overland flow routes (roads ROW, pathways) allowing for ponding, infiltration to the sewers, or up-taken by the existing intake structures, etc. before only a fraction of the original “surface flows” is re-joining the natural riparian system at some point. The connectivity between the riparian systems and spills is limited. Therefore, spills should not be treated the same as floodplains.	Acknowledged. Please see response to Comment 1.
12	Town of Milton	Yes there should be different policies for spills and floodplains. Spills are not able to be mapped and identified as clearly as floodlines, therefore there should be different policy that speaks to that.	Acknowledged. Please see response to Comment 1. New technologies and tools, along with more available funding, offer opportunities to better understand and depict flood hazards. Advancements in technology enable CH to better define flood hazards, including hazards which were not historically feasible, such as spills.
13	Town of Oakville	Oakville is in support of different regulatory policies for spills than for floodplains, as set out below.	Acknowledged. Please see response to Comment 1.

Question 2: If CH were to have spill specific policies, should they follow a hazard-based, risk-based or hybrid approach? Why?

	Stakeholder	Comment	CH Response

14	City of Burlington	A risk-based approach would best align with Provincial Policy (S. 3.1.7 PPS 2020) and would ensure the appropriate level of flexibility is maintained in low-risk areas or where risk is potentially unknown. A hybrid approach may be unavoidable depending on the level of spills risk and the applicable land use context. The general approach should still incorporate the accepted natural hazard approach of avoidance first unless area-specific/risk policies provide an alternative.	Staff's recommended spills policy direction aligns with this comment. Please refer to CH Board report CHBD 07 22 13 for more information. While there is limited Provincial policy direction specifically on spills, the legal opinion received by staff is that a risk-based approach rather than a hazards-based, absolute prohibition on development within spill areas would be consistent with the PPS. This would be subject to demonstrating safe access/egress, the effects and risk to public safety are minor and can be mitigated, new hazards are not created and existing hazards are aggravated, and the use is not an institutional use or an essential emergency service, among other things.
15	Central Lake Ontario Conservation Authority	It is recommended that a hybrid approach be utilized where the specific hazard characteristics of each spill area are assessed and that the approach recommended in response to comment no. 1 above, be employed.	Staff's recommended spills policy direction aligns with this comment. Please refer to CH Board report CHBD 07 22 13 for more information. CH's process for mapping regulated spills and then identifying higher and lower potential risk areas within the regulated area enables CH to consider implementing different regulatory policies depending on the nature of spill and the nature of the proposed development within the regulated spill. Understanding the source and characteristics of mapped/regulated spills is critical for informing where spill mitigation measures, such as infrastructure improvements, may be needed to address the hazard and unlock potential development opportunities.
16	Credit Valley Conservation Authority	Recognizing the uncertain nature of spills, it is recommended that the approach to policy be hybrid with an emphasis on risk. It is understood that the hazard associated with the spill needs to be determined however the true driver is the risk. Risk level can help determine the severity of the hazard and whether or not it will impact the proposed development. Factors such as depth, velocity, safe access, length/area of spill, etc. all assist in understanding impacts. For example, a broad shallow spill with 0.10m of flooding may be easily mitigated through grading with no off-site impact, essentially removing the hazard and allowing the site development potential. These are case-by-case scenarios that can be managed via a hybrid-policy approach. Allowing this flexibility in decision making better addresses the unique challenges associated with spill hazards.	Staff's recommended spills policy direction aligns with this comment. Please refer to CH Board report CHBD 07 22 13 for more information. CH staff has recommended a risk-based, flexible policy approach be taken to address development in spill flood hazards. Further, staff has recommended a general, jurisdiction-wide spill policy be developed with the opportunity for area specific policies for areas that have undergone comprehensive study.
17	Lake Simcoe Region	We suggest a hybrid approach with more emphasis on a risk-based decision-making. It allows for greater flexibility in locating	Acknowledged. Please see response to Comment 16.

	Conservation Authority	developable areas while ensuring that public health, public safety, and property are appropriated protected from flood hazards. When determining the bounds of the hybrid approach, the level of available background information is important as more information allows for a greater level of risk assessment and understanding of the specific spill.	
18	Niagara Escarpment Commission	Policies should be risk or hybrid, in part because of the nature of our response to Question 1) and because potential spill areas are not as readily defined as hazard lands. Spill risk areas can be modeled, so level of spill risk can be graded by analysis but addressing them through hazard policies infers a higher level of risk predictability than the modeling would justify. The hybrid policy approach applies because while spill potential modeling is risk-based, the behavior of water is still consistent and so may be addressed by some hazard-model mitigation strategies.	Acknowledged. Please see response to Comment 16.
19	Region of Halton	While a risk-based approach may best align with Section 3.1.7 of the Provincial Policy Statement (PPS) Policy 3.1.7, a hybrid based approach may be beneficial in the context of spill specific policies given the level and characteristics of spill risk, applicable land use context (i.e. Settlement versus Rural Areas) and consideration for Strategic Growth Areas and Major Transit Station Areas (MTSAs). A hybrid-based approach could be applied in the Settlement Area where growth is already concentrated and where future growth will be directed in accordance with Regional Official Plan Sections 72 and 72.1. For example, Major Transit Station Areas (MTSAs) may already have existing development or can accommodate intensification and higher density mixed-uses. Preventing development from occurring in hazard prone areas may be challenging and could hinder opportunities for new types of compact built form. A hybrid-approach could still draw on the limits imposed by the hazard-based approach in terms of delineating the floodplain limit in areas where it is necessary (i.e., existing developed areas or highly constrained development sites), while at the same time drawing on the risk-based approach to allow for flexibility to permit intensified development in spill areas provided that spills and any residual impacts can be remediated and that potential risks can be reduced to an acceptable level through mitigation/management measures (i.e., floodproofing, water conveyance). Consultation with agricultural organizations and the broader agricultural community should occur on the spill specific policies to ensure that the regulatory policies do not impede current agricultural farm operations.	Acknowledged. Please see response to Comment 16. Staff has recommended a policy that would enable CH to develop area specific policies for areas that have undergone a comprehensive study supported by CH. Area specific policies would be based on the characteristics and risks associated with the specific spill. The recommended policy directions and draft policies to follow are not intended to impede normal farming practices. Public and stakeholder engagement on the draft spill flood hazard policies will include agricultural organizations and the agricultural community.

20	Town of Halton Hills	It would be prudent to evaluate the extent of the areas potentially impacted by spills through the preparation of spill mapping. Ideally, the mapping would separate areas of no regulation, low-risk, and high-risk areas (see response to Question #3). Spill mapping should assist in the drafting of the proposed policies. The proposed policies should be based on a risk/benefit assessment and provide sufficient flexibility depending on development type and area (greenfield vs intensification). The policies should be for internal use only and to assist the local municipalities, geared towards the elimination of spills, and be practical given the nature of spills. The risk/benefit-based policies should be area specific and should be developed with input from the municipalities.	Recommended spills policy direction aligns with this comment. The ability to characterize and map spills is critical for determining the areas within the spill that are considered hazardous and where CH's regulation would apply. Please refer to CH Board report CHBD 07 22 13 for more information. As part of Phase 3B in the work plan, staff will develop draft spill flood hazard policies for public and stakeholder review and feedback. The intent is to provide the public and stakeholders with greater certainty and transparency on CH's requirements for developing in spills and enable consistent and efficient review of development proposals in spills by staff. Specific policies will be developed for a range of hazard scenarios and/or development types including policies for eliminating spills.
21	Town of Milton	Hybrid approach. While the hazard based policy may be easier on the onset, it does leave some areas that do not fit in the hazard based policy open to interpretation. Having a bit more rigidity from the risk based approach paired with the hazard based may provide a more robust policy.	Acknowledged. Please see response to Comment 16.
22	Town of Oakville	Oakville is in support of developing different regulatory policies for spills then floodplains following a risk based approach. Policies should primary focus on new development areas (i.e. greenfield development) and capture high risk spill areas. CH should consider limiting the extent of spill regulation for areas of existing development particularly in urban areas where spills by their nature often combine with pluvial systems that municipalities hold management responsibility for. CH's focus, as opposed to regulation in existing developed urban areas, should be supporting municipalities with their technical knowledge in mitigation of spills to prevent negative impacts and through emergency preparedness and flood forecasting and warning initiatives.	Acknowledged. Please see response to Comments 16 and 20.

Question 3: If CH's spills policies followed a risk-based or hybrid approach should different policies be established for developing in low versus high flood hazard/risk spill areas? What criteria should be used to distinguish between areas of low flood hazards and high flood hazards?

	Stakeholder	Comment	CH Response

23	City of Burlington	The development of a risk-based approach to assessing development in spill areas would be supported for the Urban Area and Strategic Growth Areas. A risk-based approach may not need to be applied watershed-wide and may only be required in areas where: a) avoidance is not feasible; and b) where there are competing provincial and local objectives to achieve (i.e. MTSAs, SGAs). Input from the agricultural community should be sought to ensure the application of spill policy outside of the Urban Area is appropriately applied to reduce the impact on agricultural objectives. Criteria needs to first establish how the hazard is mapped and assessed and consider what materials will be available for public/agency review in order to determine a base level of risk. 1. When spills are mapped will the available mapping show low/med/high risk areas, or will a simple hazard overlay be applied? 2. Is risk mapping anticipated? Or will it be just the hazard-related component of the proposed risk equation that will be mapped? 3. Will CH regulatory mapping be updated to show spill areas? Criteria for the spill characteristics should emanate from the technical work that maps them i.e. depth, velocity, source, and direction. The nature of spills (depth and velocity), level of impact, the potential for mitigation, off-site impacts, the sensitivity of the affected infrastructure and the existence of a safe ingress/egress are some examples of appropriate criteria to distinguish low flood hazards from high flood hazards. 4. The spills policy should also consider equitable application to avoid the creation of a two-tiered system where restrictions apply in mapped spill areas but may not in areas where spills have not been mapped.	Staff's recommended spills policy direction aligns with this comment. Please refer to CH Board report CHBD 07 22 13 for more information. Public and stakeholder engagement on the draft spill flood hazard policies will include agricultural organizations and the agricultural community. The ability to characterize and map spills is critical for confirming a spill's source, potential for elimination or mitigation, as well as flooding extent, depth and flow velocity. Confirming these characteristics are necessary to differentiate spills from floodplains, as well as riverine from urban flooding. It also is critical for determining the areas within the spill that are considered hazardous and where CH's regulation would apply. A serious of figures in the Policy Directions Report provides an overview of the steps CH takes to maps spills, refine the mapping, and identify the areas where its regulation applies. 1. While CH flood hazard mapping studies will produce mapping that identifies varying flood depths, velocities and other characteristics for spills and floodplains, the current intent is to show flood hazards generally in CH's approximate regulation limit mapping available online. 2. CH studies typically only produce flood hazard mapping although information regarding risk factors such as flow depth and velocity is also generated. 3. Yes, spill flood hazards modelled and mapped through CH flood hazard mapping studies or other technical studies meeting regulatory standards will be reflected in CH's Approximate Regulation Limit mapping. 4. Mapping is required to practically implement fair and consistent policy decisions. Mapped spill flood hazards are regulated and development within the mapped areas will be subject to CH's spill flood hazard policies. In potential spill flood hazards that have not been mapped but are close to the regulated floodplain, CH will undertake a high-level assessment to confirm the likelihood of the spill occurring and may provide recommendations on how exposure to the flood risk could be reduced (e.g., no basement; design the site to convey flood waters away from buildings and underground parking

		5. What are the future resources that CH intends on expending to map spills across the entire watershed? 6. Given the dynamic nature of spills and the continued evolution of the technology used to map them, should spill areas be evaluated more frequently than floodplains? 7. How will existing spill mapping be updated/reassessed when upstream stormwater facilities are credited through future mapping exercises (ex. Roseland system)? Vulnerability should include assessment of risk to the proposed use, and the impact the proposed use might have on surrounding uses and the hazard itself. Population density (current and planned) for an area should also factor into a vulnerability and/or exposure assessment. Vulnerability may also include an assessment of the potential for economic impacts to a specific region (loss of function of agricultural lands, employment lands, supply chain disruption, etc.). Vulnerability should include the ability to mitigate site specific spills through various infrastructure improvements (traditional and LIDs) as well as traditional floodproofing and safety standards identified in S. 3.1.7 of the PPS. As population growth anticipated for Strategic Growth Areas will likely come from outside the Region and COB, vulnerability may also include an awareness component (i.e. societal memory of floods). The 2014 flooding event in COB remains at the forefront of the flood hazard and climate change discourse in COB, however new residents may not have this level awareness and could be more vulnerable as a result. In the assessment of overall risk, it may be prudent to first subcategorize factors as Hydrological factors (depth, velocity, system-state) and Human factors (governance, societal memory, engineering, population age, etc.). How the factors may fit into the provided equation can then be justified based on available data and technology; factors left out could form the basis for future investigation of risk. COB Staff understand the need to balance complexity of assessment with availability of resources; however, incorporating	entrances / access points without impacting adjacent lands; elevate 1st floor 300 mm above surrounding grade) but will typically not require an applicant to obtain a permit from CH. In limited situations where significant risk to life is a possibility, CH staff may recommend the proponent map the spill. 5. CH's Floodplain Mapping Program will continue to update flood hazard mapping (floodplains and spills) across CH's watershed with a dedicated team over the next few years based on a work plan that has been shared with the Floodplain Mapping Advisory Committee for input and feedback. 6. At this time, CH do not anticipate spill mapping will require more frequent updates than floodplain mapping; however, this will be monitored and future program workplans can be adjusted as necessary based on observations and municipal input. In addition to the watershed-based updates outlined in the response to Question 5, it is anticipated that updates to spill flood hazard mapping will occur through proposed elimination, reduction and alteration works by agencies and property owners. 7. Existing spill mapping will be updated in the same fashion that existing floodplain mapping is updated through CH's Floodplain Mapping Program, with project initiatives supported by a Technical Advisory Committee and guided by a Project Charter. If a development or planning initiative has the potential to impact an existing mapped spill flood hazard, the development or initiative's proponent will be responsible for assessing potential impacts and updating the existing mapping, if necessary. With respect to Roseland Creek and the existing spill to the Rambo Creek system, CH anticipate studying the Roseland and Hager-Rambo systems concurrently as part of the Central Burlington Creeks Flood Hazard Mapping Study, currently scheduled to commence in 2023. The types of development set out in PPS Policy 3.1.5 such as institutional uses, essential emergency services and uses associated with hazardous substances are not permitted in hazardous lands (including spills). Through the public and stakeholder engagement component of its Floodplain Mapping Program, CH staff anticipate using a variety of

		socioeconomic vulnerability into flood risk assessment would provide a more complete picture of risk.	communication, education and engagement methods to raise awareness and involvement in its flood hazard mapping studies.
24	Central Lake Ontario Conservation Authority	In keeping with the requirements of the Provincial Policy Statement, we recommend that the ability to provide safe access be used as the determinative factor or threshold between one zone flood plain policy management and an approach where development interfacing with a flood plain spill may be permitted.	Recommended spills policy direction aligns with this comment. Please refer to CH Board report CHBD 07 22 13 for more information.
25	Credit Valley Conservation Authority	It is recommended that only one broad policy be established that has built-in flexibility to determine development feasibility based on hazard and risk. Establishing criteria is important to guide decision making, however having separate policies for low versus high flood hazard/risk spill areas may restrict creative options and opportunities (specifically in high risk areas), to resolve the hazard and mitigate the risk. Although it may leave a lot to interpretation, a more generalized policy covers many scenarios and is designed to find solutions.	Acknowledged. Please see response to Comment 23.
26	Jennifer Lawrence & Associates Ltd.	I would note that the discussion paper tends to focus on high and low risk spills and high and low vulnerability land uses however, there are moderate risk spills and moderate vulnerability land uses that should not be forgotten and should be permitted based on mitigation measures. Figure 5-2 in their paper identifies some such moderate risks -commercial and residential buildings with flood proofing for example.	Acknowledged. Please see response to Comment 23.
27	Lake Simcoe Region Conservation Authority	Yes, developments should be prohibited in high hazard/risk areas. More flexibility can be exercised in low hazard/risk areas if sufficient background information and analysis is provided. Potential criteria for defining low flood hazard include low flow depths (< 0.3 m?) and low flow velocities, subject to a review on proposed land use and/or obstruction to conveyance. It should be noted that the spills classification is based on available information at the time and may be subjected to change.	Acknowledged. Please see response to Comment 23.
28	Niagara Escarpment Commission	Different policies are implicit for the first question, although there is some contradiction in the question because low/high flood risk hazard areas (if this encompasses flood plains) exclude spill areas. If this is measuring low/high flooding vulnerability within spill risk modelling areas (which question 2 implies), then areas of higher risk would warrant different measures and therefore policy. Criteria for spill risk measurement would have some overlap with floodplain risk mapping (elevation in relation to watercourses/bodies and surrounding terrain (for example, areas behind a 100-year levee	Acknowledged. Please see response to Comment 23.

		but lower than the levee height, and valleys/gullies not associated with watercourses). In addition, other criteria can include ground and hard water absorption characteristics in urban, suburban and rural contexts, seasonal variation in these characteristics under drought and freezing conditions, water-wastewater infrastructure capacity limits and backflow controls, and seasonal precipitation/melt patterns along with peak precipitation intensity models (and directional trends inferred/modelled for climate change scenarios).	
29	Region of Halton	Yes, it would be beneficial to have distinguishable policies for low versus high flood hazard/risk spill areas as this would account for varying land use contexts. Physical, economic, social, and environmental criteria could be considered, including the following: • Economic cost of damage to buildings, personal property and infrastructure • Land use type (i.e., urban, rural, employment, institutional, recreational) • Scale and scope of development– i.e., low, medium, high density and existing uses/legal non-conforming uses) • Impacts to infrastructure (i.e., transportation, transit, servicing) capacity • Vulnerability and risk (i.e., existence of a safe access/egress and impacts resulting from climate change) • System-wide environmental constraints and impacts to Key Features of Halton's Natural Heritage System; • Criteria to address circumstances of conflict (i.e., where a growth related objective to achieve compact built form may have to supersede other matters). An additional point here is re: Figure 5.2, and the notion of Social Vulnerability. There is considerable evidence to suggest that Social Vulnerability must be weighted much more heavily than other Vulnerabilities when determining the risks posed by flood hazards (Koks et al. 2015; Chakraborty et al. 2021). This might mean that if an area of new development may create a spill zone which impacts Built-Up Areas with high concentrations of Social/Demographic Vulnerability indicators, then this needs to be properly identified as significantly raising the risk level of that given spill area. Referring to the example within, a residential neighbourhood with high concentrations of Social Vulnerability represents just as much risk as the hospital with no ability to mitigate the spill. The hospital will know the conditions of its patients, have triage procedures, evacuation plans, and secondary-site transportation agreements in	Acknowledged. Please see response to Comment 23.

		place; vulnerable residents will not have those same supports in the immediate aftermath of a spill, and much more emergency response resources are required to respond to a neighbourhood of vulnerable residents than a full evacuation of a hospital. More generally, the risk tolerance should be considered very low for spills which may impact Built-Up Areas with high concentrations of Social Vulnerability. It may be prudent to establish criteria to characterize and map low versus high flood hazard/risk spill areas. This mapping can inform feasibility studies, vulnerability and risk assessments, as well as mitigation measures, for proposed projects, especially in areas where future growth can be accommodated through intensification and higher-density uses in the Urban Area, including in Strategic Growth Areas (i.e., MTSAs, Urban Growth Centres, Growth Corridors).	
30	Town of Halton Hills	The Discussion Paper should clarify CH's criteria for low vs high flow area. Is there a standard that the Ministry and/or CH uses to differentiate these areas? There are certain criteria for spills that should not be regulated: • Since spills originate as weir flows, the head of the weir is a factor to estimate the flow. Thus, any spill with a head that is less than 0.3 m should not be regulated as it does not create a quantifiable risk. • Any spill areas with a 0.3 m depth of water should not be regulated as minimum stagnant ponding is easily mitigated through design solutions. • Any spills following the ROW or any designated roads with a depth of flow of 0.3 m should not be regulated. These are the typical criteria for municipal design as supported by the Ministry and their guideline. It is vital that future spills policies do not negatively impact municipalities' ability to maintain local infrastructure. Future policies should establish different criteria for low vs high-risk spill areas where low-risk areas possess the characteristics starting from the conditions outlined above. Policies should be focusing on the elimination of spills based on controlling flood and potential risks to life and property as identified in technical studies. Area-specific policies for high-risk spill areas should be established in consultation with municipalities based on the risk/benefit approach (see a response for Question #4).	Acknowledged. The Province and conservation authorities do not have a single standard for differentiating high and low risk flood areas. A serious of figures in the Policy Directions Report provides an overview of the steps CH takes to maps spills, refine the mapping, and identify the areas where its regulation applies. CH's process for mapping regulated spills and then identifying higher and lower potential risk areas within the regulated area enables CH to consider implementing different regulatory policies depending on the nature of spill and the nature of the proposed development within the regulated spill. Understanding the source and characteristics of mapped/regulated spills is critical for informing where spill mitigation measures, such as infrastructure improvements, may be needed to address the hazard and unlock potential development opportunities. CH's mapping refinement process also confirms the hazardous portions of the spill where CH's regulation applies and the areas of urban or pluvial flooding where municipalities are responsible for managing. In regard to eliminating or altering spills, staff has recommended a policy direction to allow for the elimination of spills at or near their source through infrastructure improvements (e.g., crossing/culvert upgrades, changes to road profiles, grading), where specific criteria are met.

			Staff has recommended a policy that would enable CH to develop area specific policies for areas that have undergone a comprehensive study supported by CH. Area specific policies would be based on the characteristics and risks associated with the specific spill.
31	Town of Milton	Yes, areas of concern or known flooding should be approached differently than areas with no known flooding or spill impact. Criteria that is similar in benchmarks/terminology amongst other industry documents should be a goal in distinguishing low vs high flood risks. This is to ensure consistency in ranking the hazards.	Acknowledged. The ability to characterize and map spills is critical for confirming a spill's source, potential for elimination or mitigation, as well as flooding extent, depth and flow velocity. Confirming these characteristics are necessary to differentiate spills from floodplains, as well as riverine from urban flooding. It also is critical for determining the areas within the spill that are considered hazardous and where CH's regulation would apply. The Province and conservation authorities do not have a single standard for differentiating high and low risk flood areas.
32	Town of Oakville	Oakville is supportive of CH establishing different policies pertaining to low vs. high flood hazard/risk spill areas. It is however, Oakville's opinion that eliminating low risk spill areas entirely from regulation should be considered and CH's roles be to provide advice/recommendations to landowners on mitigating their risks. High risk spill areas should consider current/future land use as it may not be necessary to regulate spill areas on agricultural lands, parklands, and other passive use lands. Oakville is in agreement with criteria such as flood depths, velocities, flood frequency and access and egress to establish high risk vs. low risk spills. Other criteria to be considered is potential for spill mitigation.	Acknowledged. Please see respond to Comment 30.

Question 4: Do the policy approaches presented in Section 5/Figure 5-3 cover the full range of policy approaches that could be taken to address development in spills? What other policy approaches could be considered? What policy approach is preferred and why?

	Stakeholder	Stakeholder Comment	CH Response
33	City of Burlington	A hybrid approach applying context specific policies is preferred. A risk-based approach would be preferred in strategic growth areas understanding that: o Avoidance may not be feasible in these areas.	Recommended spills policy direction aligns with this comment. Please refer to CH Board report CHBD 07 22 13for more information. Given the propensity for spills to occur along public right of ways, staff has recommended including policies to provide clarity for

		o These areas generally represent where land use and infrastructure development will be focused broadening available approaches to mitigation. o There are competing provincial and local objectives in these areas that are tied to static infrastructure (transit, amenities). If certain growth objectives are impacted in these areas, growth would have to be shifted to areas where spills risk might be unknown. A risk-based approach similar to the existing approach to expansions/alterations of existing use/legal non-conforming uses within floodplain limits could be applied in the Urban Area, outside of Strategic Growth Areas where spills are known to occur (low-density residential). An approach specific to municipal infrastructure projects should be considered to clarify requirements for agency partners undertaking routine and large infrastructure projects alike. CH should consider creating a guidance document to guide applicants to complete technical studies.	municipally-initiated infrastructure and recreation projects that do and do not require formal CH permission in spills. As part of drafting policies, staff will also prepare a draft technical companion document to accompany the draft policies.
34	Central Lake Ontario Conservation Authority	We recommend that the degree of restrictive vs. permissive policy direction be bounded by the policy direction provided by Section 3 of the provincial policy statement, specifically Policy 3.1.2 c) and d) in order to provide for the greatest degree of alignment between Planning Act and Conservation Authorities Act in regulating development activity and land use change. The specific risk context associated with each individual spill area should be analyzed either by CH or a proponent through studies that are acceptable to CH within a policy framework established by CH for its watershed-wide jurisdiction.	Recommended spills policy direction aligns with this comment. Demonstration of safe access and egress is key factor to be met in addressing development in spills and ensuring alignment between PPS and CA Act regulations. Please refer to CH Board report CHBD 07 22 13 for more information.
35	Credit Valley Conservation Authority	CH has done a comprehensive review of policy options and Section 5/Figure 5-3 covers off the full range. In terms of what is preferred, CVC uses the Case-by-Case Risk Based approach and it has been successfully implemented over time in a variety of circumstances. As noted above, this policy approach puts emphasis on risk and recognizes the uniqueness of spill hazards depending on the site. In this regard, CVC staff support the use of this policy approach and recommend that CH strongly consider this option when creating the spill hazard policy.	Acknowledged. CH has an interim regulatory policy for development in spills, which enables staff to assess development on a case-by-case basis. This interim policy was put in place to allow staff time to develop and publicly engage on more robust policies that will address development within spills while enabling consistent and efficient review of development proposals in spills by staff. Under general and area-specific policies, a risk-based, flexible approach is recommended to address development in spill flood hazards.

36	Jennifer Lawrence & Associates Ltd.	CH has provided 4 options for spills policies in Figure 5-3 ranging from: (1) regulating spills in the same manner that they regulate flood plains (i.e., no new development and limited additions to existing development); (2) creating a jurisdiction wide CH spill policy; (3) area specific CH spill policy; and, (4) Case by Case CH Spill Policy (current approach) Based on my recent experience, I would strongly recommend against option 4. I also do not think it is appropriate to regulate spills in the same manner as flood plains (Option 1) - in my opinion and experience they are not the same and should not be treated the same in policy. My preference would be Option 3 however, given the number of spill areas that have been identified in CH's watershed, it will likely take a very long time to create specific policies for each area leaving proponents with the current interim spill policy in the meantime. In my opinion, this will be problematic and lead to excessive delays and confusion at a proponent level and opens the door to different interpretations by different staff members who are reviewing the projects on a case by case basis. I am not sure what the solution is other than CH committing to prioritizing the creation of specific policies for those areas that are under the most significant redevelopment pressure.	Recommended spills policy direction aligns with this comment. Staff has recommended a policy that would enable CH to develop area specific policies for areas that have undergone a comprehensive study supported by CH. Area specific policies would be based on the characteristics and risks associated with the specific spill. Please refer to CH Board report CHBD 07 22 13 for more information.
37	Lake Simcoe Region Conservation Authority	Yes. The “case-by-case CH spill policy” is preferred. The applicant is responsible for the background data collection, review, and analysis which reduces work by the CA. It also allows the greatest level of flexibility as spills come in different shape and sizes. However, flexibility can also decrease the clarity and consistency in policy interpretation. A clear internal guideline must be developed to ensure consistency through the review and approval process.	Acknowledged. Please see response to Comment 35. As part of drafting policies, staff will also prepare a draft technical companion document to accompany the draft policies.
38	Niagara Escarpment Commission	The approach in this hazard vs. risk matrix (5-2) and description of policy approaches doesn’t cover the full range of scenarios or policies, but as an outline provides some sense of the continuum of broader policy vs. site-specific approaches. Presumably areas are being modelled for spill risk, will flag specific projects within those overall areas that are of higher spill-related flood risk and therefore subject to closer scrutiny, potentially warranting site-specific mitigation measures.	Acknowledged. Staff has recommended a policy that would enable CH to develop area specific policies for areas that have undergone a comprehensive study supported by CH. Area specific policies would be based on the characteristics and risks associated with the specific spill.
39	Region of Halton	The policy approaches presented in Section 5/Figure 5-3 seem to cover a good range of policy approaches to address development in spills. A combination of more than one of the policy approaches is preferred (i.e., a hybrid of the General Jurisdiction Wide and the	Acknowledged. Please see response to Comment 36.

		Area-Specific CH Spill Policy). The “General Jurisdiction Wide CH Spill Policy” can be applied consistently in all areas within the jurisdiction, and may therefore create less complexity. This policy approach also provides the opportunity to apply a hybrid approach of either a hazard/risk based approach (see response to question 2 above); differentiates between a floodplain and spill (see response to question 1 above); allows flexibility to permit some development – such as that to accommodate future growth in the Urban Area within areas prone to spills; and requires that a technical study(ies) be undertaken to support proposed development. However, this approach does not account for differences in local spill conditions, therefore integrating many of the approaches listed under the Area-Specific policy approach should be considered, especially in the Urban Area where avoidance of spills may not be feasible and where development permissions may need to be flexible to permit higher density uses and Regional infrastructure (i.e., transit) required to support growth objectives.	
40	Stonybrook Consulting & Urbantech Consulting on behalf of Milton Phase 4 (West) Landowners Group	It has been our experience that the nature of spills and approaches to their management vary considerably from site to site. A number of factors need to be considered when identifying spills and assessing appropriate management approaches including the amount of information available for delineation of spills, their location and extent, existing and future land uses, frequency and depth of flooding, velocities, and compatibility of alternative management approaches to planning and development of the affected lands. The approach to spill management could vary considerably depending upon these factors. As such, it is our opinion that the approach to spills policies should be a hybrid of spill policy approaches outlined in Figure 5-3 of the Discussion Paper to include a watershed-wide policy that permits some development and/or modifications in spill areas and allows for case-by-case study and determination of spill management recommendations on a risk-based approach. Policies should recognize that differing degrees of spill, and differing land uses in spill areas (i.e., current development and/or approved development permissions) warrant flexibility in policy approaches. Such an approach could include policy that: a) acknowledges differing degrees of spill and conditions within spills; b) differentiates spills from floodplains and permits some development in spill areas on a risk-based approach;	Recommended spills policy direction aligns with this comment. Please refer to CH Board report CHBD 07 22 13 for more information.

		c) permits modifications to spill areas to eliminate or contain spills where feasible. This should be the preferred management approach in greenfield areas; d) requires site or area specific study and determination of appropriate spill management and development approaches on a case-by-case basis. These studies would be completed by the proponent or the municipality through the completion of MESPs, Development Area Functional Servicing Studies or Environmental Impact Studies; and e) outlines factors to be considered in case-by-case spill management studies.	
41	Stonybrook Consulting & Urbantech Consulting on behalf of Milton Phase 4 Trafalgar Landowners Group	It has been our experience that the nature of spills and approaches to their management vary considerably from site to site. A number of factors need to be considered when identifying spills and assessing appropriate management approaches including the amount of information available for delineation of spills, their location and extent, existing and future land uses, frequency and depth of flooding, velocities, and compatibility of alternative management approaches to planning and development of the affected lands. The approach to spill management could vary considerably depending upon these factors. As such, it is our opinion that the approach to spills policies should be a hybrid of spill policy approaches outlined in Figure 5-3 of the Discussion Paper to include a watershed-wide policy that permits some development and/or modifications in spill areas and allows for case-by-case study and determination of spill management recommendations on a risk-based approach. Policies should recognize that differing degrees of spill, and differing land uses in spill areas (i.e., current development and/or approved development permissions) warrant flexibility in policy approaches. Such an approach could include policy that: a) acknowledges differing degrees of spill and conditions within spills; b) differentiates spills from floodplains and acknowledges that some development is permitted in spill areas on a risk-based approach; c) permits modifications to spill areas to eliminate or contain spills where feasible. This should be the preferred management approach in greenfield areas;	Acknowledged. Please see response to Comment 40.

		d) requires site or area specific study and determination of appropriate spill management and development approaches on a case-by-case basis. These studies would be completed by the proponent or the municipality through the completion of Master Environmental Servicing Plans, Development Area Functional Servicing Studies or Environmental Impact Studies; and e) outlines factors to be considered in case-by-case spill management studies.	
42	Town of Halton Hills	Other approaches can include the application of the benefit/risk approach similar to a typical EA assessment. Further on that, in Pg. 13 it's stated, that "the existing Policy (aka the Policy with no spills) has been estimated to reduce the cost associated with on-going flood and natural hazard management including the cost associated with the operation and maintenance of flood and erosion control infrastructure by 20% to 80%." Application of the benefit/risk approach will help to crystalize the goal of the proposed regulation. When defining benefits, CH could clarify the extent to which the proposed new regulation will be able to reduce risks and further reduce costs associated with the operation and maintenance of public infrastructure from a practical perspective. Another option that should be considered would be to not regulate spills. Considering the limited direction from the Province on spills policies, there are a number of Conservation Authorities that have chosen to not regulate spills and address them through flexible approaches. A review of the specific policies being proposed is required to ensure flexibility and assess potential issues with implementation.	Acknowledged. Draft spills policies will be supported by rationale that will be shared for public and stakeholder review and feedback. Background information is provided in the Policy Directions Report on the steps CH takes to maps spills, refine the mapping, and identify the areas where its regulation applies.
43	Town of Milton	A more permission approach of distinguishing spills from floodplains and potentially permitting a broader range of development types in spills that have been characterized as low risk is preferred.	Acknowledged. Please see response to Comment 40.
44	Town of Oakville	An Area Specific CH Spill Policy would be Oakville's preferred approach given that it recognizes that spill areas are different from floodplains and policies can be tailored to the level of risk. A regulated allowance applied to spill areas should be removed from consideration as it would create additional lands to be managed and do not appear to provide any benefit from risk reduction perspective.	Recommended spills policy direction aligns with this comment. Please refer to CH Board report CHBD 07 22 13 for more information. As spills meet the definition of hazardous lands a regulatory allowance would not be required.

		Policies should not eliminate the ability to mitigate spills through structural means (such as barriers and diversions) which in some instances are prohibited within floodplains.	

Question 5: Should CH have different policies for different types of land uses in spills

	Stakeholder	Stakeholder Comment	CH Response
45	City of Burlington	PPS S. 3.1.5 should be considered in the context of land uses on hazardous lands (flood hazard) which would prevent institutional uses, essential emergency service uses, and uses storing hazardous substances. COB New Official Plan (2020) policy 4.4.2 (3) (c) mirrors the PPS direction. Policies should consider how CH will approach infrastructure as a land use and form of development given the propensity for spills to occur along public ROWs. A stand-alone section in the policy dealing with infrastructure would provide clarity for City initiated infrastructure projects in known spill areas. This consideration could include what permissions/permits may be required, and what level of assessment may be required to justify the various types of infrastructure works that may be carried out in spills-prone ROWs, as noted above. The policies should be based on the level of hazard and the impact the hazard has on the land use and its inhabitants. Figure 5-2: Spill Risk Management Matrix is a good representation of the severity of spill hazard risk and vulnerability & exposure. The policies to regulate spills should follow the same variation and range.	Recommended spills policy direction aligns with this comment. Please refer to CH Board report CHBD 07 22 13 for more information.
46	Central Lake Ontario Conservation Authority	Yes, in all instances, the land uses identified in Policy 3.1.5 of the Provincial Policy Statement, 2020 should not be located in spill areas, even if safe access and flood proofing measures can be provided.	Recommended spills policy direction aligns with this comment. Please refer to CH Board report CHBD 07 22 13 for more information.
47	Credit Valley Conservation Authority	It is recommended that CH apply similar restrictions related to sensitive land uses (i.e. nursing homes, childcare, hospitals etc.) as in floodplain policies when crafting a generalized risk-based spill hazard policy. Essentially, this would create a provision that forces extra consideration for sensitive uses, but also allows risk to be assessed (i.e. if it can be mitigated, removed etc.). Further, safe access should also be considered as per typical floodplain policies.	Recommended spills policy direction aligns with this comment. Please refer to CH Board report CHBD 07 22 13 for more information.

48	Lake Simcoe Region Conservation Authority	Yes, different land uses have varying level of risk tolerance.	Acknowledged.
49	Niagara Escarpment Commission	Yes, that is justifiable, given that broad categories of land use type warrant similar treatment within those categories that may overlap with, but are distinct from, those policy clusters for different types of land use (rural, suburban, urban, commercial/industrial, etc.)..	Acknowledged.
50	Region of Halton	It would be beneficial to consider different policies for different types of land uses in spills. Providing policy guidance for different land use types is important to account for the variation in vulnerability and risk that might be present depending on existing land use and conditions. The implications of spills in urban areas that can accommodate future growth – including the Built Up Area, Designated Greenfield Areas, and Strategic Growth Areas and supporting Regional infrastructure, including transportation and urban servicing -- may be different than the potential impacts in natural heritage or agricultural areas. It is also important to consider a different policy approach to recognize these land use differences because vulnerability and exposure factors can vary depending on development types (i.e., developed urban areas). Consideration should also be given to Section 3.1.5 of the Provincial Policy Statement (2020) in the context of essential emergency services uses as it could limit this uses in terms of redevelopment/expansions within spills. Further, there should be a discussion about the policy approach for municipal infrastructure projects and consideration on permissions that may be required to permit these projects.	Recommended spills policy direction aligns with this comment. Please refer to CH Board report CHBD 07 22 13 for more information.
51	Town of Halton Hills	See response for Question #2	See response for Question #2
52	Town of Milton	Yes. Land uses that have higher risk to life and property should be prioritized. (ie. hospitals, schools, etc)	Recommended spills policy direction aligns with this comment. Please refer to CH Board report CHBD 07 22 13 for more information.
53	Town of Oakville	Yes, policies should consider type of land use as indicated above. Spill areas, particularly in urban settings will undoubtingly include Regional and Municipal roads as often these areas are flow routes for spills and are often specifically designed as major overland flow routes for urban drainage systems. It is unclear from the discussion paper as to the benefit of proposing regulation on such municipal infrastructure. Nevertheless should these areas become part of the	Recommended spills policy direction aligns with this comment. Please refer to CH Board report CHBD 07 22 13 for more information.

		regulated extent, regardless of high risk vs. low risks. exemptions for obtaining CH permits for infrastructure works must be considered (i.e. infrastructure works such as road and sewer upgrades, SWM, watermains, telecommunications, etc.).	

Question 6: Are there any other things CH should consider when developing new spills policies?

	Stakeholder	Stakeholder Comment	CH Response
54	City of Burlington	Clarity should be provided on the wording chosen for the level of CH regulatory involvement in various circumstances. Existing and New COB OP policies utilize language that applicants/public seek CH permission in hazard areas. Section 28 of the CAA provides many language options in this regard, but specificity is sought regarding when CH will require a permit and when CH will not. The spill policy should also include the CH position on spill mitigation. Including but not limited to: o Consider creating a list of dos and don'ts in the spill zones. o CH approach towards managing/altering spills by the property owners on their properties o Steps that could be taken to prevent spills or to redirect spills to reduce vulnerability and risk o A strategy to regularly update spill mapping if spills change as a result of grading changes on the property or due to infrastructure upgrades. o Develop a modeling approach that is consistent with the typical modeling convention and does not result in double-counting of spill flows in either a part of the channel where the spills rejoin the system or for the entire channel where spills permanently exit the flow regime.	Acknowledged. To clarify how CH maps spills, as well how it is determined what areas are subject to *Ontario Regulation 162/06* (i.e., what areas are regulated by CH) and CH's regulatory policies, an overview of the steps CH takes to maps spills, refine the mapping, and identify the areas where its regulation applies is included in the Policy Directions Report. Please refer to CH Board report CHBD 07 22 13 for more information. Staff will also prepare a draft technical companion document to accompany the draft policies.
55	Central Lake Ontario Conservation Authority	Yes, policy direction for flood protection measures, including public infrastructure measures, such as road profile changes, that could be employed to either eliminate flood spill areas or reduce the severity of risk associated with them, should be considered for each identified flood spill area. Emphasis should be provided on reducing the spatial extent and risk associated with each spill area, wherever possible. Spill areas, which are riverine or lake-based, should also be analyzed in the context of urban flooding risk, where appropriate.	Recommended spills policy direction aligns with this comment. Please refer to CH Board report CHBD 07 22 13 for more information.
56	Credit Valley Conservation Authority	CVC staff recommend that CH develop guiding principles and criteria to help shape the policy, but also as an internal reference tool for staff to use when assessing various spill hazard scenarios.	Acknowledged. Staff will also prepare a draft technical companion document to accompany the draft policies.

		Essentially, the criteria should consider depths, velocities, distance of spill, and consideration of when to regulate. Solid criteria is necessary for informing decision making with transparency and consistency. CVC is developing a criteria document for internal use (we have shared a draft with CH) and we will pass along any refinements to the document as we work through this process.	
57	Lake Simcoe Region Conservation Authority	In addition to developing an internal review guideline mentioned in response #4, a clear guideline of minimum requirements for spills analysis (modelling software, level of hydraulic modelling, minimum data requirements, etc) will also be helpful to guide potential applicants. If the risk-based approach is selected, a clear definition of low/high (or low/medium/high) risk should be developed.	Acknowledged. Please see response to Comment 56.
58	Niagara Escarpment Commission	While mentioned by name, the implications of climate change for such hazard/risk modelling are not delved into in the discussion. For example, with the change implied, what influence does this have on floodplain hazard modelling, and if the delta is an increase in flood elevations and/or frequencies, what impact does this have on future expansion of floodplain hazard mapping into spill risk mapping (and therefore policy for areas now subject to higher spill risk, but potentially within future floodplain hazard areas). Our non-specialist understanding/presumption is of precipitation modeling based on a 'normal' (symmetrical) statistical distribution curve: if true, this may expose hazard or risk modeling to unknown levels of liability if the distribution curve is or becomes asymmetrical (whether by the nature of the patterns(s) like precipitation being observed, or due to a directional change in the event being observed). Similarly, it may be useful to examine the range of variables like water absorption as they exist now, and whether they are subject to change (and in what direction) under the presumption of climate change. These may be addressed in the technical modeling behind policy papers like this, but it would be useful to know whether they are being considered.	Acknowledged. CH's Floodplain Mapping Program is developing floodplain mapping guidelines that will be circulated in draft with opportunities for public and stakeholder engagement. The guidelines are anticipated to address incorporating climate change into flood hazard modelling and mapping until more detailed provincial guidance becomes available. The impact and implications of incorporating climate change adjustments to specific flood hazard limits, including policy implications, will be evaluated at the time of a flood hazard study.
59	Region of Halton	The discussion paper provides a good background analysis as it pertains to the development of spills policies. Further discussion is necessary with regards to CH's role and responsibilities within integrated system for planning in Halton and the planning services in the context of Section 3.1 of the Provincial Policy Statement that is provided to the Region and Local Municipalities. A climate change lens and sustainable land use approach should be considered when developing spills policies. The efficient use of	Acknowledged. Draft spills policies will be supported by rationale that will be shared for public and stakeholder review and feedback.

		land and infrastructure can contribute to climate change resilience through identifying areas where compact built form and an appropriate capacity of urban services can support both existing communities and future growth. Climate change considerations should be considered in terms of mitigation measures or management measures to address potential risk and vulnerabilities of Regional buildings and infrastructure to spills and to ensure resilience of these systems to climate change impacts. For example, infrastructure to contain and drain spills, nature based solutions, stormwater management, planning low impact development, and green infrastructure. The spill policy should also consider the development of an implementation guidance document that would provide direction and assist landowners understand what can occur within spills for existing Built-Up Areas and on Agricultural and Rural Lands.	
60	Town of Halton Hills	No setbacks or allowances should be associated with spills. There is a need to clarify how the regulation of spills and proposed policies are going to impact future Secondary Plans and ongoing Studies. What are the impacts of having policies for spills on future intensification/ densification development? This should be clearly communicated as most growth in Halton is projected to be within the built-up area.	As spills meet the definition of hazardous lands a regulatory allowance would not be required. Staff has recommended a policy that would enable CH to develop area specific policies for areas that have undergone a comprehensive study supported by CH. Area specific policies would be based on the characteristics and risks associated with the specific spill. Please refer to CH Board report CHBD 07 22 13 for more information.
61	Town of Milton	No additional comments at this time.	Acknowledged.
62	Town of Oakville	A decision on how to manage or regulate spills should also consider available resources (for example staffing resources). Has CH considered their ability to effectively deliver a Spill Hazard Risk Management program under current resources and maintain existing floodplain management priorities based on the estimate of additional regulated area that spills would contribute? Roles and responsibilities between the municipality and CH need to be clearly defined in regards to technical review of development within spill areas. For instance, flood proofing measures, who will be responsible for reviewing such aspects. Note that municipalities (i.e. Oakville) are likely not equipped to review such details.	Acknowledged. Detailed spills policies will provide the public and stakeholders with greater certainty and transparency on CH's requirements for developing in spills and enable consistent and efficient review of development proposals in spills by staff. Draft spills policies will be supported by rationale that will be shared for public and stakeholder review and feedback along with a draft technical companion document to clarify CH's technical requirements for reviewing development proposals in spills.

General Comments

	Stakeholder	Stakeholder Comment
63	City of Burlington	The discussion paper represents a good step in the policy formulation process for a hazard type that as lacked definition in Ontario land use planning. Collecting all the research and practices into one place helps the reader in understanding the broader context of spills as flood hazards. The spills policy formulation has the potential to impact concurrent work focused on planning for Major Transit Station Areas (MTSAs); both from a growth and hazard perspective. Mapping spills and formulating an efficient policy approach is supported by COB Staff in the effort to protect life and property and to address the impacts of a changing climate. COB Staff have a good working relationship with CH staff and intend on remaining involved as the policy formulation and engagement process evolves. COB Staff look forward to reviewing the draft policies that may emanate from this discussion paper and providing feedback as applicable.
64	Central Lake Ontario Conservation Authority	Flood Plain Spill Areas General Principles / Commentary: Spill areas, absent fulsome analysis, represent increased uncertainty with respect to the flood risks present in the community, to landowners, residents, and the conservation authority's regulatory jurisdiction, which may be avoided through further analysis. While sometimes necessary due to the limitations associated with flood plain mapping studies, the identification of spill areas on flood plain maps should be avoided wherever possible by expending the resources necessary to define a flood plain to its full spatial extent. Identification of undefined spill areas in urban areas with concentrations of people and development is especially problematic given the inherent risks from flooding to people and property and should be prioritized for further analysis. There is a broad variation in the hydraulic and spatial characteristics in flood spill areas and resultant risks. Prioritization of spill area studies should take place followed by detailed characterizations, which should lead to a comparative assessment of risks followed by a policy approach that is grounded in provincial natural hazard management policy and the specific risk context associated with each individual spill area. Unless safe access pursuant to provincial standards can be assured through acceptable analysis, spill areas, once defined, should be managed as one zone flood plains pursuant to the Provincial Policy Statement, 2020, Policy 3.1.2 c) and d).
65	Credit Valley Conservation Authority	Thank you for providing us with an opportunity to review the Conservation Halton (CH) Spill Flood Hazard Policy Review and Update Discussion Paper. CVC staff have reviewed the document and generally find that the discussion paper outlines the issues of spills flood hazard comprehensively and accurately identifies the various challenges associated with the management of these hazards and policy implications.

		As you are aware, CVC assesses spill flood hazards (or 'spills') by a risk-based approach recognizing the various challenges associated with spills including accurately defining depths, velocities, extent of spill, whether it returns to the system, and if the risk can be mitigated. Additionally, up-to-date mapping is key and may not be available for all watercourses, therefore the approach is applied case by case giving some flexibility as warranted. When managing spills, the main focus should be understanding if the risk can be mitigated. Once this baseline is understood then subsequent assessment takes place to determine if the development can proceed and what mitigation is necessary and/or applicable. Based on the variety of challenges, CVC has implemented a broad and flexible policy to address spill hazard in the watershed. With that in mind, staff have reviewed the questions in the discussion paper and provide the following responses for your consideration.
66	Jennifer Lawrence and Associates Ltd.	The discussion paper provides an excellent overview of CH's regulatory responsibilities and the historic challenges related to regulating spill areas; I have recently been involved in a few projects within existing urban areas where the current interim spill policy has created a lot of additional work for the landowner, some confusion and angst. Under the current interim policy, each proposed development within a spill area is assessed on a case by case basis with all of the burden falling on the landowner to undertake additional studies to satisfy sometimes vague requirements. This results in a lot of additional time and uncertainty in the process as proponents are tasked with fairly expensive studies without even knowing whether the studies will demonstrate that their proposed development is feasible from a policy perspective (since there is not a specific policy to evaluate it against); ... … Any policy that is created should be clear, easily understandable and provide specific study requirements so that there is no ambiguity in the approvals process; … … One of the biggest concerns is that some of the spills are within areas that have been approved at a Provincial level for significant intensification (i.e., the lands surrounding the Oakville and Burlington GO Stations for example). Property has been purchased in this area (pre-spill mapping) and policies have been created at the municipal level to facilitate the provision of significant density, etc. to achieve Provincial targets. It will be important to be mindful of the ripple effect that the spill policy approach will have on areas like this and perhaps provide for an acknowledgement and flexibility in approach to these areas given the significant time and resources that have been invested at an agency and landowner level.
67	Mississaugas of the Credit First Nation - DOCA	The MCFN has no comments regarding the Spill Flood Hazard Policy Review & Update Discussion Paper at this time
68	Nottawasaga Valley Conservation Authority	Further to our discussion yesterday regarding Halton's spill policy development, please find below the links to the Town of Collingwood's Official Plan (OP). Section 3.9.3 of the OP speaks to the Pretty River 2 Zone. Please advise on any questions or information needs on this matter. https://www.collingwood.ca/building-business/land-use-planning-services/official-plan https://www.collingwood.ca/sites/default/files/uploads/documents/1officialplanupdatedjan2019_0.pdf
69	Stonybrook Consulting & Urbantech Consulting on behalf of Milton	We are writing on behalf of the Milton Phase 4 (West) Landowners Group (MP4 West Group) who own a substantial portion of the Britannia West Secondary Plan area in Milton. The attached figure illustrates the location of the Britannia West Secondary Plan area that lies within an approved Settlement Area.

	Phase 4 (West) Landowners Group	On behalf of the MP4 West Group, Stonybrook Consulting Inc. and Urbantech have reviewed Conservation Halton's "Spill Flood Hazard Policy Review and Update Discussion Paper" (March 2022) and are pleased to provide the following comments on this paper. Over the past several decades, Urbantech and Stonybrook have had experience with spill management within CH's jurisdiction as well as other Greater Toronto Area (GTA) conservation authority watersheds. The Britannia Secondary Plan area lies within an approved Settlement Area. The Town of Milton is preparing a Secondary Plan for this new residential community. Should spills exist within the Britannia Secondary Plan area, they would have to be appropriately managed to accommodate future land uses and address flood risk. Floodplain mapping will be finalized as part of the Britannia West Master Environmental Servicing Plan (MESP) being prepared in support of the Secondary Plan for this area. Conservation Halton has an interim spill policy and a review of the interim policy is underway with the intent to prepare spill policy recommendations to CH's Board of Directors for approval in the fall of 2022. The Discussion Paper includes background information on spills, and overview of spill hazard approaches in other jurisdictions, potential risk management and policy approaches, next steps in the policy review and questions for feedback from this consultation process. On behalf of the MP4 West Group, we are providing the following comments for your consideration as you draft updated spill management policies. These comments focus on policies related to spill management in greenfield development. We acknowledge that differing or additional policies may be warranted in spill areas in existing built-up areas … … In future development areas, a no development approach to spills could unintentionally sterilize large areas excluding them from development, resulting in an unnecessary decrease in housing supply. Subwatershed studies prepared in support of development include floodplain mapping, but typically do not have enough data at the level of detail required to accurately delineate spills; delineation and management is addressed when more information is available with respect to development planning at a local level. We have seen several circumstances, including on the MP4 West lands, where spill areas identified at the SWS level do not exist when more detailed assessments are completed. A no development policy identified early in the development process based on preliminary spill assessments could result in unintended or inaccurate spill delineation that places limits on development and affects the efficient use of land in developing areas. Areas with current planning approvals but not yet developed would be negatively affected by a no development policy when the implementation of various management measures identified through site specific studies could eliminate or contain spill areas. Some spills are a result of man-made infrastructure where improvements could be made to reduce or eliminate spills. We suggest that policies should identify the objective to eliminate/contain spills as a preferred management approach. Case-by-case studies would address delineation and characterization of spills, works to eliminate or contain spills, identification of potential land uses in spills that remain and appropriate flood hazard mitigation measures, and hydraulic analyses of offsite impacts. Other policy considerations include: • The Discussion Paper summarizes policy approaches from several other conservation authorities in the Greater Toronto Area (GTA). Current policy approaches in other CAs provide flexible and guiding policies that allow for case-by-case assessments and determination of appropriate approaches based on local factors. • Spill management principles should be similar between various conservation authorities in the GTA. Over the past many years, there have been many initiatives to provide coordination and consistency across various conservation authorities including content and implementation of CA regulations, sharing and/or collaboration on guidance documents, etc. Differing spill management principles between CAs are not supported by the MP4 West Group. • Policy approaches may vary for spills containing existing development and spill areas that are not currently developed but are planned for future development uses.

		• Use of 2D hydraulic models are supported to more accurately delineate spill limits and characteristics.
70	Stonybrook Consulting & Urbantech Consulting on behalf of Milton Phase 4 Trafalgar Landowners Group	We are writing on behalf of the Milton Phase 4 Trafalgar Landowners Group (Trafalgar Group) who own a substantial portion of the Trafalgar Secondary Plan area in Milton. The attached figure illustrates the location of the Trafalgar Secondary Plan area. DSEL, J. F. Sabourin & Associates and Stonybrook Consulting Inc. have reviewed the "Spill Flood Hazard Policy Review and Update Discussion Paper" (March 2022) and are pleased to provide Conservation Halton with the following comments on this paper. Over the past several decades, all three companies have had experience with spill management within CH's jurisdiction as well as other Greater Toronto Area (GTA) conservation authority watersheds. Not unlike other areas in watersheds within the Conservation Halton's jurisdiction, some spills exist within and adjacent to the Trafalgar Secondary Plan area. As you may know, the Trafalgar Secondary Plan lies within an approved Settlement Area. The Secondary Plan was adopted by Town Council in March 2019 and final approval of the Secondary Plan from the Region of Halton is imminent. Spills exist within the Trafalgar Secondary Plan area as defined by the Milton Urban Expansion Area Subwatershed Study (2021). These spill areas must be appropriately managed to accommodate future land uses and address flood risk. Analyses to address spill management recommendations are underway as part of the Master Environmental Servicing Plan being prepared in support of the Tertiary Plan for this area. Conservation Halton has an interim spill policy and a review and updates to the interim policy are underway with the intent to prepare spill policy recommendations to CH's Board of Directors for approval in the fall of 2022. The Discussion Paper includes background information on spills, and overview of spill hazard approaches in other jurisdictions, potential risk management and policy approaches, next steps in the policy review and questions for feedback from this consultation process. On behalf of the Trafalgar Group, we provide the following comments for your consideration as you draft updated spill management policies. These comments focus on policies related to spill management in greenfield development. We acknowledge that differing or additional policies may be warranted in spill areas in existing built-up areas … … In future development areas, a no development approach to spills could unintentionally sterilize large areas excluding them from development resulting in an unnecessary decrease in housing supply. Subwatershed studies prepared in support of development include floodplain mapping, but typically do not have enough data at the level of detail needed to accurately delineate spills; delineation and management is addressed when more information is available with respect to development planning at a more local level. We have seen several circumstances where a spill area may be identified at the SWS level but does not exist when more detailed assessments are completed. A no development policy identified early in the development process based on preliminary spill assessments may result in unintended or inaccurate spill delineation that places limits on development and affects the efficient use of land in developing areas. Areas with current planning approvals but not yet developed would be negatively affected by a no development policy when the implementation of various management measures identified through site specific studies could eliminate or contain spill areas. Some spills are a result of man-made infrastructure where improvements could be made to reduce or eliminate spills. We suggest that policies should identify the objective to eliminate/contain spills as a preferred management approach. Case-by-case studies would address delineation and characterization of spills, works to eliminate or contain spills, identification of potential land uses in spills that remain and appropriate flood hazard mitigation measures, and hydraulic analyses of offsite impacts. Other policy considerations include:

		• The Discussion Paper summarizes policy approaches from several other conservation authorities in the Greater Toronto Area (GTA). Current policy approaches in other CAs provide flexible and guiding policies that allow for case-by-case assessments and determination of appropriate approaches based on local factors. • Spill management principles should be similar between various conservation authorities in the GTA. Over the past many years, there have been many initiatives to provide coordination and consistency across various conservation authorities including content and implementation of CA regulations, sharing and/or collaboration on guidance documents, etc. Differing spill management principles between CAs are not supported by the Trafalgar Group. • Policy approaches may vary for spills containing existing development and spill areas that are not currently developed but are planned for future development uses. • Use of 2D hydraulic models are supported to more accurately delineate spill limits and characteristics
71	Town of Halton Hills	As mentioned during the Floodplain Mapping Advisory Committee meeting on March 23, 2022, Town staff would kindly request that Conservation Halton staff provide a presentation regarding this program to our local Council. Although two Councillors are part of CH's Board of Directors, it is crucial for all local Councillors to learn about this program, its implications for the Town and potential impacts on future intensification, greenfield development, and capital works. Halton Hills Council has the following upcoming Council dates: May 24, June 13, and July 4, 2022. Town staff would be happy to coordinate with CH's staff to arrange the Council presentation based on your availability. As CH staff are aware, the Town of Halton Hills is located within the jurisdiction of three different Conservation Authorities: Credit Valley Conservation, Conservation Halton, and the Grand River Conservation Authority. Conservation Halton's ability to identify spills by 2D models as part of the floodplain mapping program is supported in principle by the Town of Halton Hills. This information would be beneficial to the agencies when completing internal reviews and analyses of site-specific development applications and to plan for emergency and capital works. Overall, the Town of Halton Hills encourages a flexible policy approach to address spills which aligns with the approaches of CVC and GRCA. In general, the discussion paper could expand on the analysis of the nature of spills, spill mitigation and weighted risks/benefits, as clarified below. We look forward to working with CH in developing an appropriate and balanced policy approach to address spills in Halton Hills while satisfying Provincial direction.
72	Town of Milton	Page 10 – last paragraph: We agree with the distinction made between 'riverine flood hazards' and 'urban flooding' Page 11 – last paragraph: snow banks/drifts in the winter can also be a barrier

Other questions directed to CH

	Stakeholder	Stakeholder Comment	CH Response
74	Central Lake Ontario Conservation Authority	New technology may enable modelling of spills (example: through 2 Dimensional models coupled with GIS technology). New standards will need to be set for determining situations where new technologies are appropriate, as well as model conditions: 1. What additional benefits does the 2D modelling assessment provide in the way of accuracy over the 1D modelling and has	1. 2D modelling has been valuable in understanding large and complex spill pathways, particularly in instances where flow direction is not clear, or where there are rapid changes in flow direction, such as at adversely angled confluences. CH has assessed differences in predicted floodplains based on 1D, coupled 1D/2D, and fully 2D models at a number of localized areas across our jurisdiction, including in rural and urban

		any verification of 2D models been conducted at CH to support the use of 2D modelling results? 2. Are 2D models less conservative than traditional floodplain modelling? 3. Will non-steady state modelling or storage considerations be acceptable for spill modelling? 4. Will spill flow be quantified and removed from the primary floodplain model? If it enters another watershed, will it be added to that floodplain model? 5. Is it CH's intent to update existing regulatory floodplain models to include flood spills, or have 2 sets of models, one for managing the floodplain and one for spills? 6. Would spill models account for available 'storage' in the watershed such as SWM facilities, storage behind embankments, wetlands, and low lying areas? 7. Would it be acceptable to prevent a flood spill through earthworks to block the floodplain?	settings. Where data is available, we have compared the results of 2D spill analysis to past flooding events and have found good agreement, allowing for a good base model before addressing storage/flow attenuation upstream of structures in alignment with Provincial guidelines. 2. CH staff cannot make a conclusive statement as to whether 2D models are more or less conservative. Where 1D models provide reasonable results, we have found that in certain circumstances 2D modelling predicts lower flood elevations by comparison while in other circumstances they predict higher flood elevations or identify additional areas that flood. 2D modelling has identified spills in areas where spills were not previously predicted by the 1D model - particularly where historical hardening/anthropogenic change has resulted in adversely aligned confluences or sharp bends within the constructed valley system. We've also identified areas where 2D modelling has generated minor but near universal increases in floodplain elevation as compared to the 1D model. This may be attributable to a multitude of factors including increased roughness effects in areas of shallow overland flow, recognition of energy losses associated with transverse flows and turbulence, increased resolution of terrain data, terrain data that has not been hydrologically re-enforced to pick up effects of driveway culverts, etc. 3. CH has identified areas where steady-state modelling techniques would generate infeasible floodplain limits (e.g. flood volume associated with a backwater area exceeds the available runoff volume) when applying both 1D and 2D modelling techniques. In these instances, non-steady state modelling or modified modelling and/or mapping techniques are required. CH has looked into ways to replicate MNRF guidance related to crediting and not crediting spills and accounting for storage within a 2D model scenario, and applies differing approaches based on the spill flood hazards sensitivity to flood volumes. 4. Where spills leaving the system meet the requirements of the MNRF Technical Guide, downstream flows will be reduced. In all other cases, spill flows will be maintained downstream. When floodplain mapping for receiving systems is updated, the hydrograph associated with significant spills entering the system will be added to the receiving system's hydrologic

			model to confirm changes in peak flow, and subsequently incorporated into the updated floodplain model. 5. We intend to model and map significant spills as part of current and future flood hazard mapping studies. 1D modeling will typically be used for floodplains and 2D models will generally be applied to define the spill flow pathways. Both the 1D and 2 D models become regulatory models, and where the two models overlap, the model deemed most appropriate would govern establishment of the floodplain. 6. Current 2D spill modelling being developed by CH does not generally recognize storage associated with embankments within the riverine valley system or within SWM ponds, but may recognize and allow for storage along the spill pathway that is outside the riverine valley. CH studies have applied a suite of tools to limit crediting of anthropogenic storage within the riverine valley - including use of a quasi-steady state model, adjusting flow hydrographs downstream of riverine crossings, adjusting terrain to fill in SWM ponds, etc. Treatment of storage associated with wetlands and low-lying areas would be dependent of how these features were accounted for within the hydrologic model, to ensure storage effects are not 'double-counted'. 7. CH envisions including policies that would allow for eliminating spills in certain circumstances, with the level of study required dependant on the nature of the spill and the proposed works.