Credit River Erosion Control Project Behind Kenninghall Blvd and Plainsman Rd

Municipal Class Environmental Assessment

Public Information Centre

Date: February 2026

Project Purpose

- The City of Mississauga recognizes that erosion in the Credit River may pose a risk to infrastructure and properties
- This study therefore aims to:
  - assess previously identified erosion sites
  - identify any additional/new erosion sites and erosion hazards
  - explore and evaluate alternatives to address any erosion concerns
  - recommend a preferred alternative
  - provide the public an opportunity to comment

Study Area

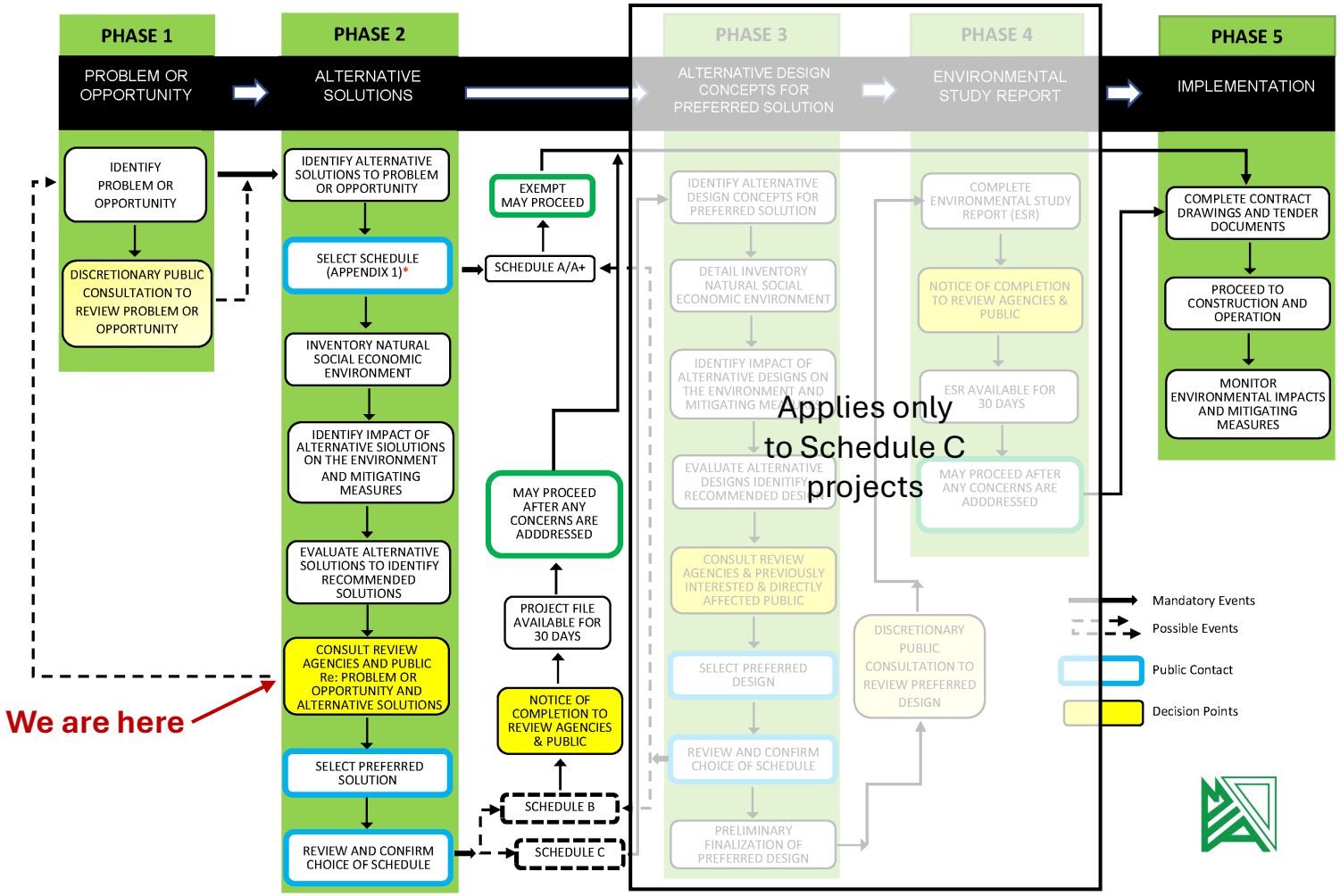
Study area includes:

- Credit River valley
- 1,850 of river channel
- Islands and 700 m of secondary channels
- Valley infrastructure
- Private and public properties in and along the valley

Municipal Class Environmental Assessment

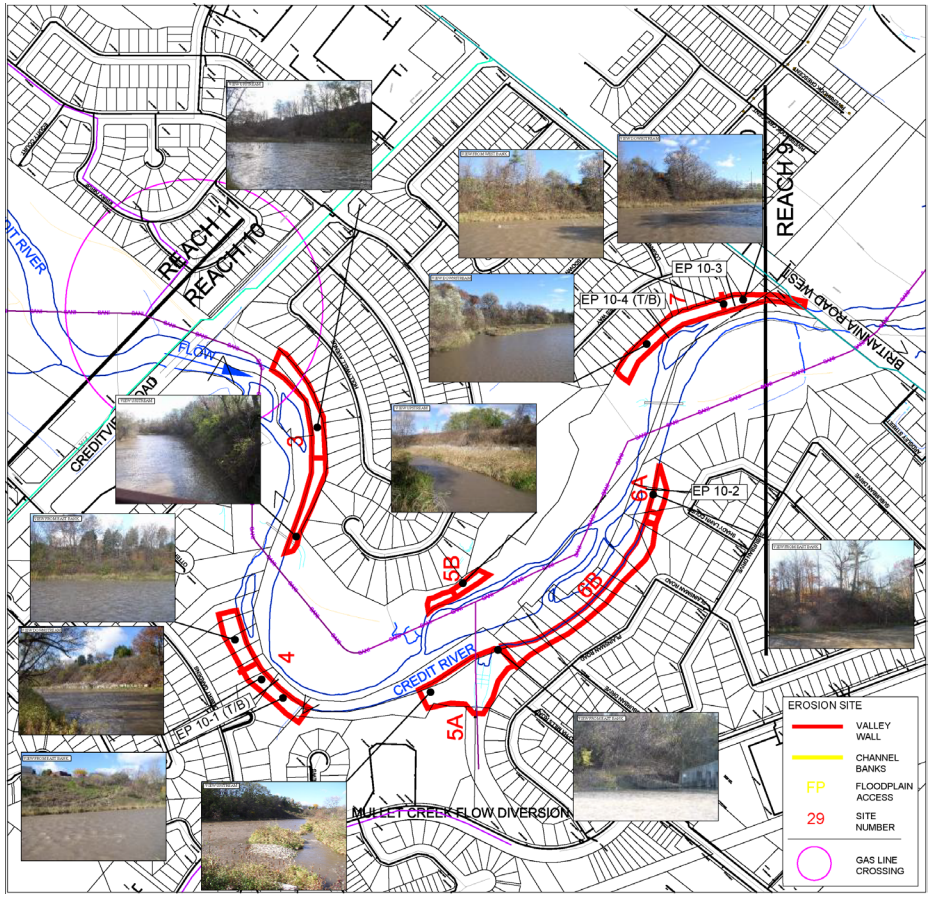
- The Municipal Class Environmental Assessment is a process for the decision-making and planning of major municipal projects or activities.
- It requires the proponent to identify and assess environmental and technical impacts and concerns before works are undertaken.
- It was developed by the Municipal Engineers Association, in consultation with the Ministry of the Environment, for routine municipal projects that are similar, usually limited in scale and with predictable environmental effects, such as road, water and wastewater projects
- This Study follows the Schedule B process, which applies to projects that have the potential for some adverse environmental impacts.
- Schedule B project must proceed through the first two phases of the Municipal Class Environmental Assessment process.

Municipal Class Environmental Assessment Process

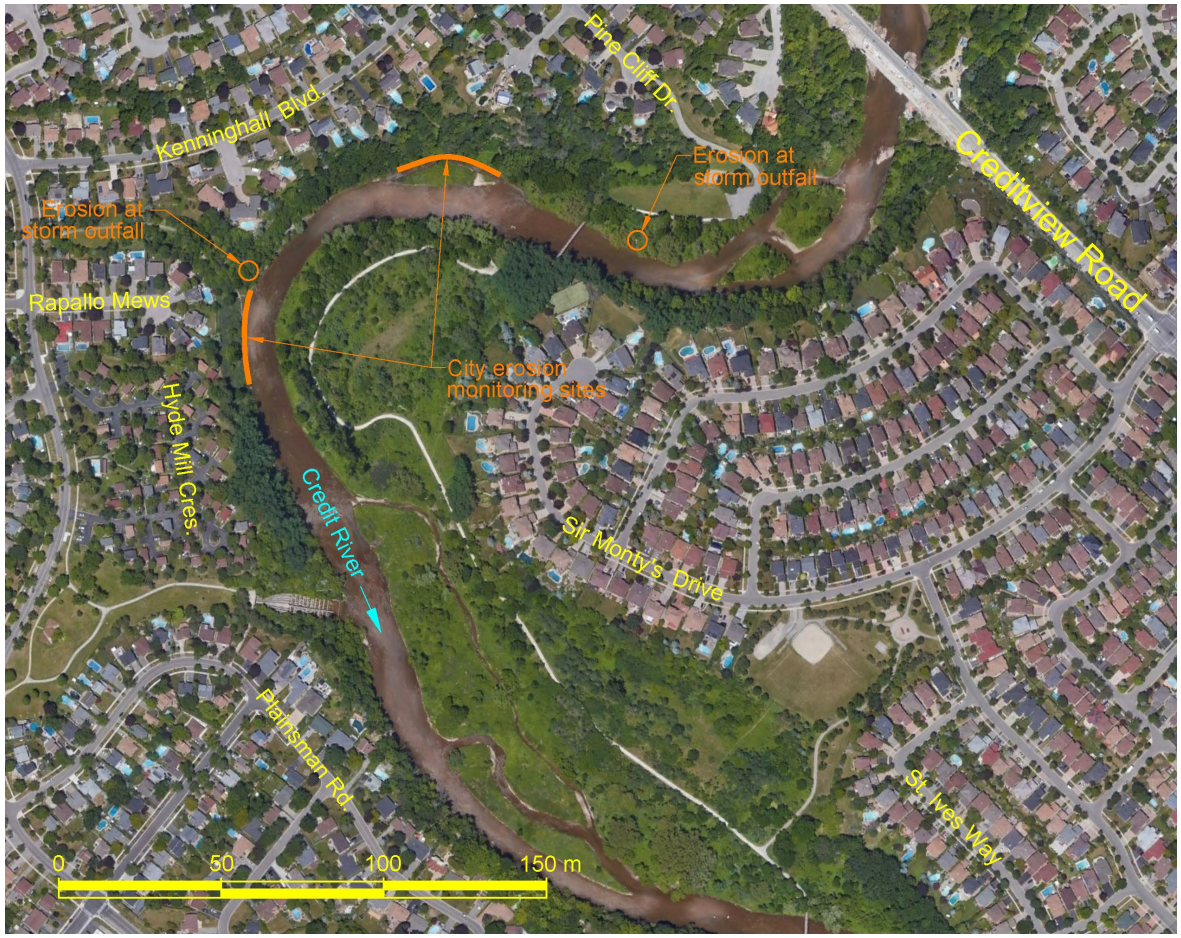


Credit River Adaptive Management Strategy

- The Credit River Adaptive Management Strategy (CRAMS) study was completed in 2005 by the City of Mississauga in recognition of the potential impacts to the river due to watershed urbanization.
- The primary goal was “to develop a rehabilitation plan which promotes improvements in the stability and biological integrity of the Credit River within the physical, ecological, social and economic constraints associated with the urban setting of the river.”
- Six erosion sites were identified in Reach 10, which represents this Study Area.



City of Mississauga Erosion Monitoring



The City identified four additional erosion sites following completion of the CRAMS study:

- Erosion at two storm sewer outfalls
- Erosion along a secondary channel behind Kenninghall Boulevard
- Previously protected valley wall behind Rapallo Mews

Municipal Infrastructure and Property Ownership

- In addition to previously identified erosion sites, this Study aims to identify any new sites that may be at risk due to erosion.
- As an initial step, all infrastructure and properties within the valley were identified:
  - Sanitary sewers
  - Storm sewers and outfalls
  - Trails and pedestrian bridges
  - Retaining walls
  - Parks
  - Private properties

Legend

0.5 m Contour	Retaining Wall
Water Edge	Storm Sewer Outfall
Watermain	Park Trail
Storm Manhole	Easement
Storm Sewer	Privately-owned Parcel
Sanitary Manhole	City-owned Parcel
Sanitary Sewer / Sanitary Main	

Study Erosion Sites

A field reconnaissance was carried out to confirm a total of 13 erosion sites:

- Seven CRAMS erosion sites
- Four City monitoring sites
- Two additional sites

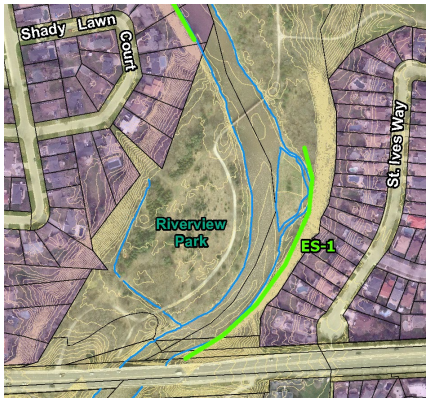
A Hazard Level (1 to 5) was assigned to each site based on desktop analyses and field observations.

***Most privately-owned properties behind Plainsman Road did not participate in the Study, and observations were collected at two properties

Legend

- 0.5 m Contour
- Privately-owned Parcel
- City-owned Parcel
- Non-participating Privately-owned Parcel (no access)
- Water Edge
- CRAMS Erosion Site
- City of Mississauga Erosion Site
- 2024 EA Erosion Site

Erosion Site 1 (ES-1)



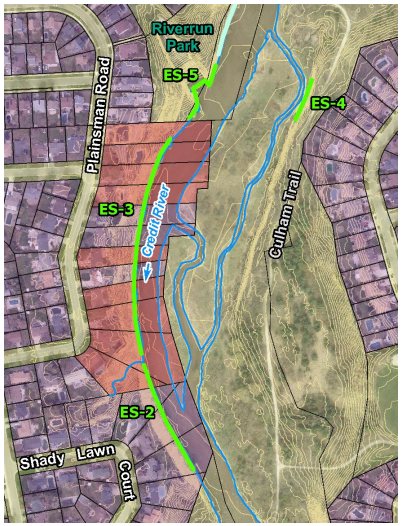
Stable toe of valley slope behind St. Ives Way.

Outlet of secondary channel near toe of valley slope

- Previously identified as CRAMS Erosion Site 7
- ES-1 is located along the outside of a meander bend where it contacts the valley wall
- Approximately 250 m in length
- No erosion protection
- No evidence of active erosion
- Secondary channel in upstream portion of site that travels along the toe of valley wall, but potential hazard is apparently decreasing over time as suggested by the channel width decrease from 14 m to <3 m between 1954 and 2022

Hazard Level: 2

Erosion Site 2 (ES-2)

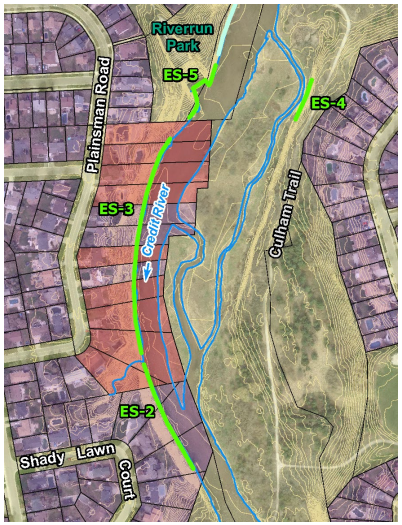


Gabion protected toe of valley wall behind properties along Shady Lawn Court

- Previously identified as CRAMS Erosion Site 6A
- Straight section of channel with gabion installed along toe of valley wall
- Gabion wire in frequent contact with flow was mostly missing, but there was no notable displacement of gabion stone
- Erosion protection continues to be effective

Hazard Level: 2

Erosion Site 3 (ES-3)



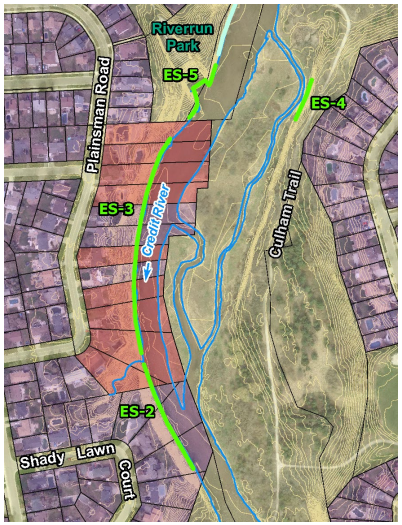
Eroding toe of valley wall at 19 Plainsman Road

Natural toe protection with vegetated shale shelf at 21 Plainsman Road

- Previously identified as CRAMS Erosion Site 6B
- Located along the outside of a low-radius meander bend
- Observations limited to two properties as most are non-participating properties along Plainsman Road
- Erosion and toe instability were observed at 19 Plainsman Road

Hazard Level: Not assessed due to limited observations

Erosion Site 4 (ES-4)



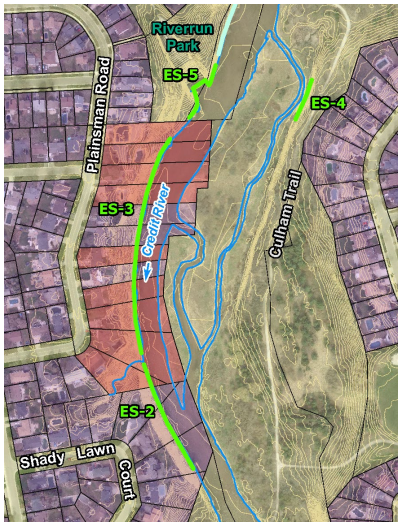
Armourstone retaining wall between secondary channel and Culham Trail

Secondary channel adjacent to armourstone wall

- Previously identified as CRAMS Erosion Site 5B
- 50 m long, ~1.5 m high armourstone retaining wall to support Culham Trail
- Minimum separation of 2 m between wall and secondary channel
- Width of secondary channel has decreased from 11 m to 3.0 between 1954 and 2022, suggesting decreasing hazard over time

Hazard Level: 3

Erosion Site 5 (ES-5)



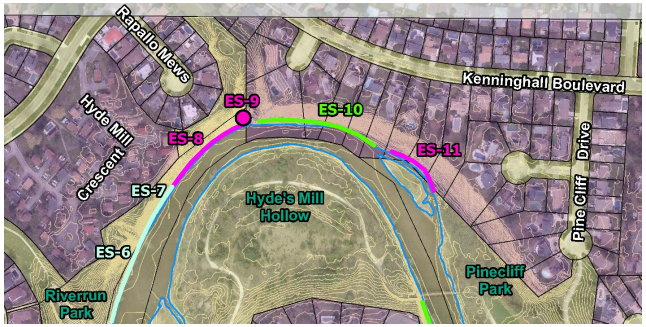
Mullet Creek diversion outlet structure in Riverrun Park

Failed gabion on south bank at end of outlet structure

- Previously identified as CRAMS Erosion Site 5A
- Undermined gabion erosion protection due to bed scouring resulting in collapse

Hazard Level: 4

Erosion Site 6 (ES-6)



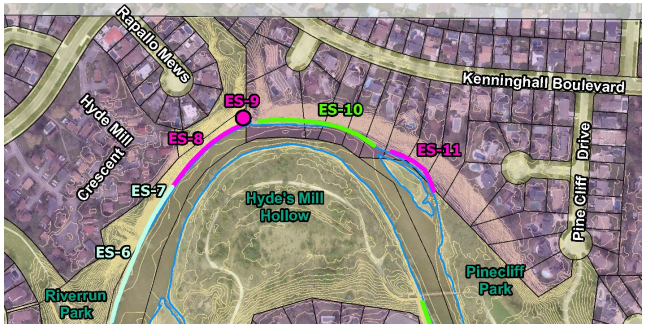
Gabion wire in poor to good condition at toe of valley wall

Gabion and vegetation along toe of valley wall behind Hyde Mill Crescent

- Straight section of channel with 130 m of gabion installed along toe of valley wall
- Gabion wire in frequent contact with flow was partially missing, but there was no notable displacement of gabion stone
- Erosion protection continues to be effective

Hazard Level: 2

Erosion Site 7 (ES-7)

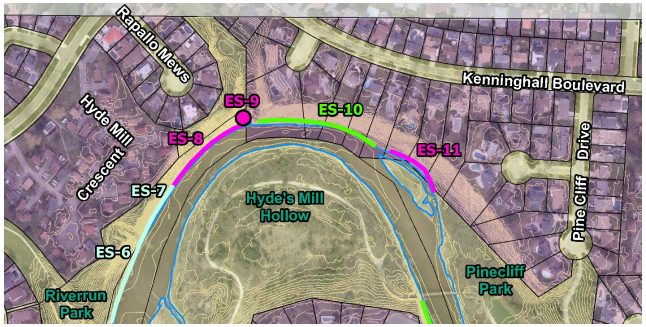


Eroded toe of valley wall

- Unprotected valley wall approximately 35 m in length behind Hyde Mill Crescent
- Toe is eroded and steepened
- Lower portion of toe is comprised of shale, which offers erosion protection only during periods of low-flow
- Less than 20 m between Hyde Mill Crescent properties and toe of valley wall

Hazard Level: 5

Erosion Site 8 (ES-8)



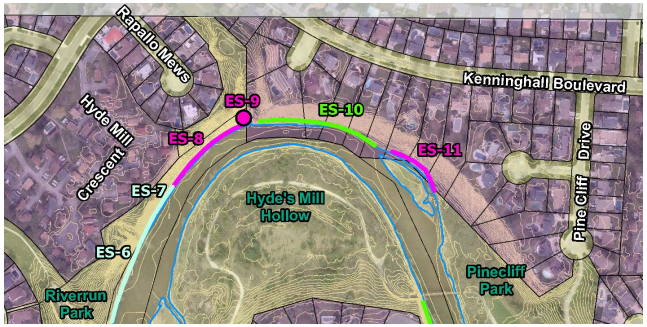
Gabion protected valley wall behind Rapallo Mews

Exposed shale under gabion toe

- Existing City monitoring site
- 100 m of gabion protecting valley wall near apex of meander bend
- Gabion at toe in poor condition with stone loss
- Gabion sits atop shale which provides erosion resistance

Hazard Level: 4

Erosion Site 9 (ES-9)



- Existing City monitoring site
- Bed scouring of storm sewer outfall channel resulted in armourstone wall undermining and failure
- The armourstone wall protected the adjacent private property
- Outfall channel is in generally poor condition

Hazard Level: 5

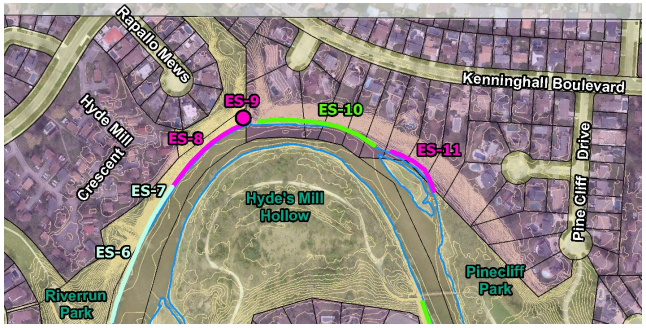
Storm sewer outfall and failed armourstone wall

Failed armourstone wall at private property line

Erosion behind gabion slope protection

Failed armourstone wall and undermined fence

Erosion Site 10 (ES-10)



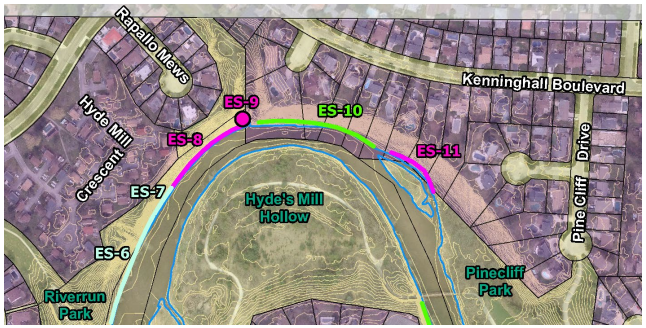
Armourstone toe protection behind Colbert Gardens

Unprotected valley wall behind Kenninghall Boulevard

- Previously identified as CRAMS Erosion Site 4
- Armourstone along the toe of valley wall was in good condition with no contact with flow
- The unprotected portion of valley wall just upstream of the meander bend apex shows no evidence of erosion

Hazard Level: 1

Erosion Site 11 (ES-11)



Vegetated buffer between channel and toe of slope

Low-energy secondary channel behind Kenninghall Boulevard

- Existing City monitoring site
- Secondary channel width decreased from 8.5 m to 5.5 m between 2005 and 2022 suggesting decreasing hazard to properties
- Fine bed materials in secondary channel indicates low erosive forces

Hazard Level: 2

Erosion Site 12 (ES-12)

Storm sewer outfall structure at main channel

Storm sewer outfall with failed bed scour protection and possible undermining

- Existing City monitoring site
- Bed scour protection at the end of the storm sewer outfall structure has failed
- Potential for structure undermining with further deterioration of bed scour protection

Hazard Level: 4

Erosion Site 13 (ES-13)

Armourstone in good, stable condition

Toe of valley wall upstream of armourstone

Armourstone toe protection along valley wall

- Previously identified as CRAMS Erosion Site 3
- Approximately 300 m of armourstone was installed to protect properties along Hollywell Avenue
- There was no apparent armourstone displacement

Hazard Level: 1

MCEA Supporting Studies

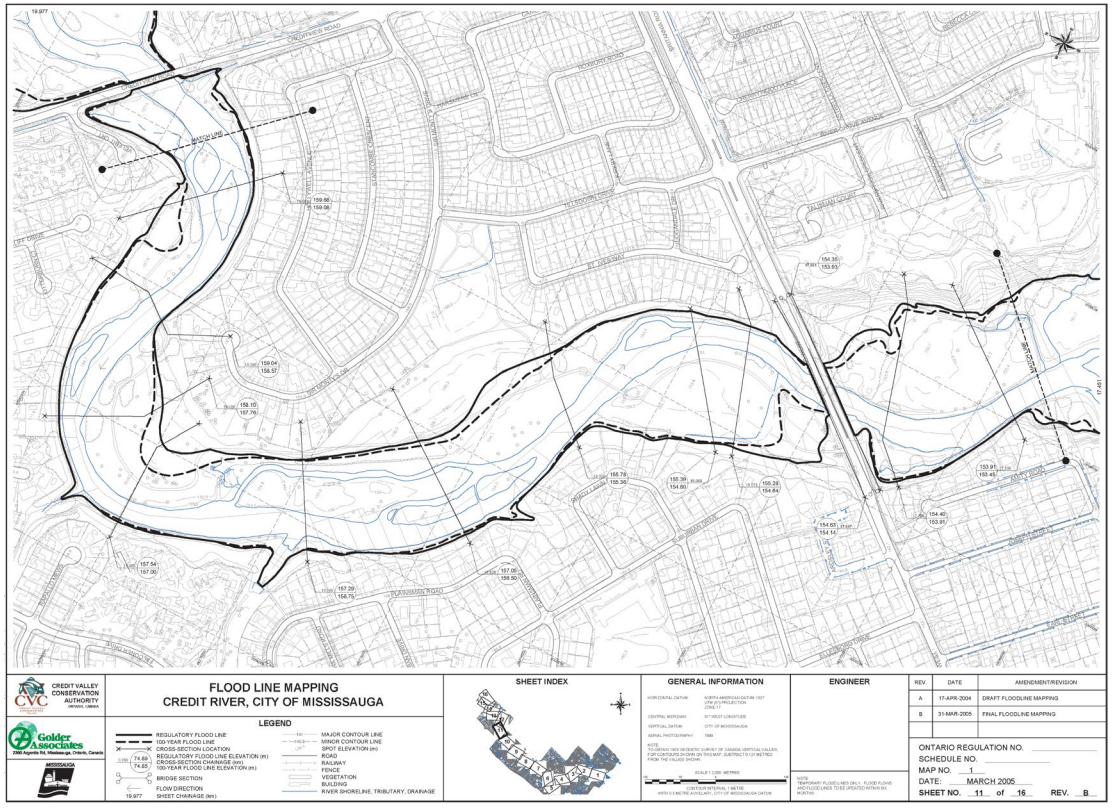
- Municipal Class Environmental Assessment studies require the completion of various specific environmental investigations.
- These investigations are considered when developing and evaluating alternative solutions to address the problem.
- For this Study, the following supporting investigations were completed:
  - ❖ Fluvial geomorphology (river form and function)
  - ❖ River hydraulics and flood hazard
  - ❖ Terrestrial habitat
  - ❖ Wildlife
  - ❖ Fish and Aquatic habitat
  - ❖ Cultural heritage
  - ❖ Archaeological resources

Fluvial Geomorphology

- Confined river system:
  - Valley wall height: up to 15 m
  - Valley top width: 130 to 250 m
  - Valley floor width: 50 to 130 m
  - River width: 25 to 40 m
- Several islands and secondary channels throughout the reach
- Lateral channel migration has been negligible in recent decades due to valley wall contact and construction of erosion protection measures
- Shale bedrock exposure on the bed is found at the meander bend behind Rapallo Mews and Colbert Gardens due to shallow pool development
- Generally low bed relief throughout the reach (i.e., poor riffle-pool form)
- Limited field evidence of channel bed adjustments
  - Bed gradient increase is possible after downstream dam removal (1975-1980)
  - This could explain the narrowing of the secondary channels

River Hydraulics and Flood Hazard

- Modelled flow discharge ranges from 90 m^3/s during a 2-year storm event to 732.6 m^3/s during the Regional storm event, an eight-fold difference
- The difference in water surface elevation between these two storm events is up to 2.85 m
- Flows during all modelled storm events are fully contained in the valley



Terrestrial Habitat

- Vegetation communities, according to the ecological land classification system, were identified in the Study Area.
- More specifically, the vegetation community that encompasses or abuts each erosion site is provided in the following table.

Erosion Site	Vegetation Community Code	Vegetation Community Description
ES-1	FODM2 SHO	Dry – Fresh Oak – Maple – Hickory Deciduous Forest Shoreline
ES-2	FODM2	Dry – Fresh Oak – Maple – Hickory Deciduous Forest
ES-3	FODM2	Dry – Fresh Oak – Maple – Hickory Deciduous Forest
ES-4	SVDM4	Fresh - Moist Deciduous Savanna
ES-5	FODM2 THDM2-11	Dry – Fresh Oak – Maple – Hickory Deciduous Forest Hawthorn Deciduous Shrub Thicket
ES-6	FODM4-11	Dry - Fresh Black Locust Deciduous Forest
ES-7	FODM4-11	Dry - Fresh Black Locust Deciduous Forest
ES-8	MEFM1	Dry - Fresh Forb Meadow
ES-9	WODM5-3	Fresh - Moist Manitoba Maple Deciduous Woodland
ES-10	THDM2-6 FODM2	Buckthorn Deciduous Shrub Thicket Dry – Fresh Oak – Maple – Hickory Deciduous Forest
ES-11	FODM2	Dry – Fresh Oak – Maple – Hickory Deciduous Forest
ES-12	FODM7-4	Fresh – Moist Black Walnut Lowland Deciduous Forest
ES-13	FOD5-3 FODM4-11	Dry - Fresh Sugar Maple - Oak Deciduous Forest Dry - Fresh Black Locust Deciduous Forest

Aquatic Habitat

- The river in the Study Area has a “warmwater” thermal regime.
- The habitat assessment revealed the following:
  - The bed was dominated bedrock and cobbles
  - Maximum flow depth from 14 to 70 cm (summer low-flow conditions)
  - No in-stream cover or aquatic vegetation in the main channel
  - Riparian vegetation was within 2 m of the channel

Cultural Heritage

- A Heritage Impact Assessment was completed as any works within or along the Credit River has the potential to impact cultural heritage resources
- Various built heritage and cultural landscape features were identified
- Parts of the Study Area were found to have moderate to high cultural heritage value.
- With respect to the erosion sites, it was concluded that “there are currently no concerns for direct impact on the existing infrastructure, viewsheds or the cultural landscape qualities of the Study Area.”

Archaeological Resources

- A Stage 1 archaeological assessment was completed to determine archaeological potential and the need for further investigation
- A background study and property inspection revealed the potential for the recovery of Indigenous or Post-contact Euro-Canadian archaeological resources within the Study Area.
- A Stage 2 assessment was recommended for approximately 25% of the Study Area, but only in areas targeted for works or used for construction access

Alternative Solutions Considered

Based on the various studies completed for this Class EA study, three alternatives with a focus on erosion were considered:

Alternative 1: Do Nothing

- There are no alterations to the river or erosion sites allowing natural processes, including erosion, to continue.

Alternative 2: Protect High Hazard sites

- Only Erosion Sites with Hazard Levels of 4 and 5 receive attention. These warrant more immediate attention due to continued erosion and the damage this may cause. Included in this alternative are Erosion Sites 5, 7, 8, 9 and 12.

Alternative 3: Protect Medium and High Hazard sites

- All Erosion Sites with a Hazard Level from 2 to 5 receive attention. Including lower Hazard Level sites is a conservative approach that eliminates future uncertainties about the actual hazard they may represent.

Evaluation of Alternative Solutions

The alternative solutions are evaluated based on criteria under the following main categories:

- Technical: relates to the constructability, potential impacts to existing infrastructure and agency acceptance/permitting
- Natural Environment: relates to potential impacts to the natural environment including terrestrial habitat, aquatic habitat, channel stability and hydraulics
- Social and Cultural Environments: relates to potential impacts to built and cultural heritage resources and archaeological resources
- Financial: relates to the capital and maintenance costs of the alternative solutions

These main categories collectively meet the broad definition of the environment in the Environmental Assessment Act.

Evaluation of Alternative Solutions

Evaluation Criteria		Description	Alternative 1	Alternative 2	Alternative 3
			Do Nothing	Protect High Hazard Sites	Protect Medium and High Hazard Sites
Technical	Constructability	Construction complexity (access, disturbance impact, etc.)			
	Existing Infrastructure	Potential to decrease or increase risks to infrastructure			
	Agency Acceptance	Agreement or conflict with agency goals and objectives			
Natural Environment	Terrestrial Habitat	Impact to native vegetation			
	Aquatic Habitat	Impact to aquatic habitat and fisheries			
	Channel Stability	Effect on erosion potential			
	Hydraulics	Impact to in-channel hydraulics and flooding			
Cultural/Social Environment	Built Heritage Resources	Impact on private properties and structures			
	Cultural Heritage Resources	Impact on parks, trails, and natural areas with cultural significance			
	Archaeological Resources	Impact on archaeological resources			
Financial	Capital Cost	Construction cost			
	Maintenance	Maintenance frequency and costs			
Evaluation result					

Most negative impact / least desirable  Most positive impact / most desirable

Advantages and Disadvantages of Each Alternative

Alternative	Advantages	Disadvantages
Alternative 1: Do Nothing	• No construction impacts to terrestrial and aquatic habitats • No change to river hydraulics of flood hazard • No capital cost	• No erosion hazard mitigation • Maintenance costs associated with ongoing erosion • Potential for emergency works to address sudden erosion or instability issues • Negative impacts to terrestrial and aquatic habitats in the event of sudden slope failure • Loss of trees due to erosion • Possible loss of or damage to built and cultural heritage resources and archaeological resources
Alternative 2: Protect High Hazard Sites	• Erosion hazard mitigation targeted at sites that are or are likely to become problematic • Construction impacts to five Erosion Sites but three access routes • Localized terrestrial and aquatic habitat improvements with bioengineering • Opportunity to establish woody vegetation at Erosion Site 6 • Helps to retain existing trees in areas with high erosion potential • Prevents loss of or damage to built and cultural heritage resources and archaeological resources	• Requires some access in the river along the bank and work from within the river • Potential for maintenance at sites originally assessed to be stable
Alternative 3: Protect Medium and High Hazard Sites	• Erosion hazard mitigation at sites that are or have any potential to become problematic • Relatively extensive terrestrial and aquatic habitat improvements with bioengineering • Opportunity to establish woody vegetation at Erosion Site 6 • Helps to retain existing trees in areas with high erosion potential • Minimizes loss of or damage to built and cultural heritage resources and archaeological resources • Lowest potential for maintenance	• Construction impacts are relatively high including tree removals and disturbance to the channel bed • Established trees require removal for construction access and replacement/installation of protection measures • Requires significant access in the river along the bank and work from within the river • Potential for unneeded work • Highest capital cost

Preferred Alternative

Alternative 2: Protect High Hazard Sites has been selected as the preferred alternative, which focuses protecting sites that are currently hazards or have the highest potential to become hazards (Hazard Levels 5 and 4).

Hazard Level 5 sites include:

- Erosion Site 7 - 33 m of eroded toe of valley wall creating a risk to residential properties along Hyde Mill Crescent
- Erosion Site 9 - a storm sewer outfall and channel, between Rapallo Mews and Colbert Gardens, with failed bank armouring that has resulted in erosion into private property

Hazard Level 4 sites include:

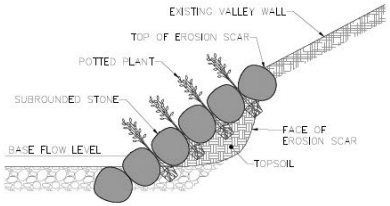
- Erosion Site 5 - a failed gabion at the outlet of the Mullet Creek diversion structure
- Erosion Site 8 - 100 m of failing gabion at the toe of an armoured valley wall behind the residential properties at the end of Rapallo Mews
- Erosion Site 12 – a failed bed scour protection at a storm sewer outfall in Pinecliff Park

Site-Specific Solutions

- Bioengineering in the form of a vegetated rock buttress will be constructed to protect the exposed toe of valley wall at Erosion Site 7 and to replace the failing erosion protection measures along the storm sewer outfall channel at Erosion Site 9 and failing gabion at Erosion Site 5.
- At Erosion Sites 9 and 12, the armourstone at Erosion Site 9 will be re-used to construct a drop structure at the end of each outfall structure to prevent bed scouring and headwall undermining.
- At Erosion Site 8, the gabion at the toe of the armoured valley wall will be repaired with the installation of new gabion wire on the damaged face to contain the gabion stone. If any displaced gabion stone needs to be replaced, it can be sourced from Erosion Site 9 or Erosion Site 5.

Note: The need for erosion protection at Erosion Site 3 could not be fully assessed as most properties were excluded from this Study.

Conceptual Design of the Preferred Alternative



TYPICAL VEGETATED ROCK BUTTRESS TO ADDRESS VALLEY WALL TOE EROSION
(EROSION SITES ES–5, ES–7, ES–8, ES–9)

STORM OUTFALL CHANNEL RESTORATION
(EROSION SITE ES–9)

STORM OUTFALL SCOUR RESTORATION
(EROSION SITE ES–12)

LEGEND

ES–8 EROSION SITE NUMBER
PROPOSED VEGETATED ROCK BUTTRESS
PROPOSED ARMOURSTONE DROP STRUCTURE
PROPOSED GABION BASKET REPAIR

MISSISSAUGA

CREDIT RIVER EROSION CONTROL
BEHIND KENNINGHALL BLVD. AND PLAINSMAN RD.
PREFERRED ALTERNATIVE CONCEPT

SCALE 1:500 PROJECT No. 23001 DWG No. CONCEPT
DATE MAR 2025 SHEET 1 OF 1

Next Steps

1. Review comments and incorporate feedback
2. Finalize the preferred solution
3. Complete the Project File to document and summarize the Municipal Class Environmental Assessment process
4. Issue a Notice of Study Completion to start the 30-day public review period
5. Complete the detailed design of the preferred solution and any supporting investigations or field work (e.g., Stage 2 archaeological assessment)
6. Secure all necessary permits and approvals
7. Carry out construction activities

Public Involvement

To remain involved in the Study:

- Complete and return the comment form, or
- Reach out to the Study contacts

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Project website: https://www.mississauga.ca/projects-and-strategies/environmental-assessments/credit-river-erosion-control-behind-kenninghall-boulevard-and-plainsman-road/