APPENDIX A
Geotechnical and Hydrogeological Studies

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BEACON ENVIRONMENTAL

GUIDING SOLUTIONS IN THE NATURAL ENVIRONMENT

Comprehensive Environmental Management Study (2nd Submission)

150 Steeles Avenue East, Milton

Prepared For:

Neatt Communities

Prepared By:

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DS Consultants Ltd.
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Date:	*Project:*
August 2023	**221265**

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Report Versions Issued

Version	Date	Revisions
1.	March 2023	
2.	August 2023	Address agency comments

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1. Introduction

This Comprehensive Environmental Management Study (CEMS) has been prepared in response to a request by the Town of Milton (Town), Region of Halton (Region) and Conservation Halton (CH) to demonstrate how natural heritage features and natural hazards associated with the Subject Property may be affected and managed during contamination remediation works.

Terms of Reference (ToR) for this CEMS were prepared based on a Draft Scope of Work that was provided by CH on July 8, 2022, and incorporates comments received from the Town on August 12, 2022. The ToR were approved by the agencies in December 2022 and are included in **Appendix A-1**. Through pre-consultation with CH, as documented in the checklist in **Appendix A-2**, a hydrologic evaluation was identified for works within 120 metres of the Sixteen Mile Creek wetlands. A ToR for this hydrologic evaluation was approved by CH in December 2022 and are included in **Appendix A-3**.

This CEMS includes a detailed characterization of the existing biophysical site conditions, including natural heritage features, natural hazards and the anticipated extent of site contamination. The limits of the Regional Natural Heritage System (RNHS) were also refined by evaluating the significance of natural heritage features, verifying and staking feature limits with agencies, and undertaking technical assessments of natural hazards. The status and extent of remediation works and the potential impacts to Key Features are described, and RNHS components and functions are assessed, and mitigation measures prescribed. Additionally, the CEMS identifies opportunities for enhancing the condition and quality of Key Features to increase biological diversity and improve ecological resiliency over the long-term.

While the primary purpose of the CEMS is to address potential impacts related to site remediation, the study also refines the limits of the RNHS, which can be used to support the rezoning application. This has been achieved by recommending ecologically appropriate buffers to Key Features of the RNHS based on the anticipation of adjacent high density residential development in the future and the need to mitigate associated impacts related to the future change in land use in order to ensure no negative impacts to the RNHS

It is anticipated that, as part of a future development application for the adjacent lands, additional reports may be required that detail how the management recommendations of this CEMS (i.e., development limits, buffers, water supply to natural features, if necessary, etc.) have been incorporated into the site design.

The following definitions are used in this report, and are based on the International Restoration Standards (2nd ed.) by the Society for Ecological Restoration (Gann et al, 2019):

Remediation means “a management activity, such as the removal or detoxification of contaminates or excess nutrients from soil and water, that aims to remove sources of degradation”.

Restoration means “the process of assisting the recovery of an ecosystem that has been degraded, damaged or destroyed” which “addresses biodiversity conservation and ecological integrity”.

The CEMS was revised in response to comments from the Region and CH, which predominantly related to the RNHS and CH permitting requirements. Revisions are presented in blue text. Documentation of

each agency comment and specific responses to each are provided in **Appendix A-4**. The Study Team trusts that the revisions to the CEMS and responses provided are to the satisfaction of the agencies.

1.1 Site Location and Study Area

The Subject Property, at 150 Steeles Avenue East, is 20.3 hectares (ha) in area and is located south of Steeles Avenue East, north of the Canadian Pacific Railway, and east of the Sixteen Mile Creek valleylands (**Figure 1.1**).

The Study Area for the CEMS includes the Subject Property and adjacent lands within 120 metres (m) as shown on **Figure 1.1**. The Sixteen Mile Creek valleylands, as well as a portion of the tablelands, are mapped and designated as Regional Natural Heritage System (RNHS) by the Region of Halton and portions are designated Natural Heritage System (NHS) by the Town (**Figure 1.2**).

1.2 Site History

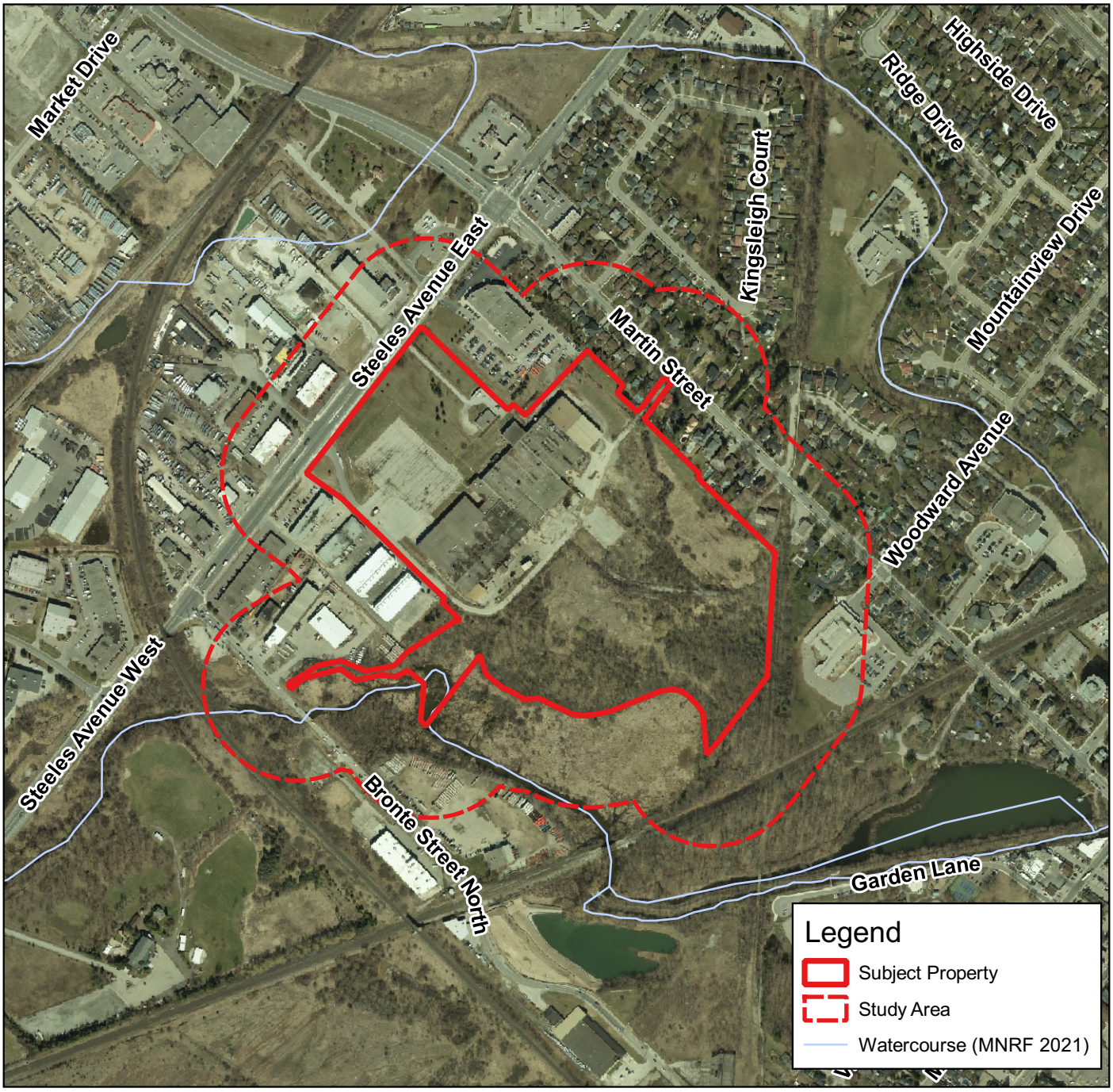
Prior to the more recent industrial uses on the site, the entire tableland portion of the Subject Property was used for agriculture for well over a century. In 1954, an industrial manufacturing facility was constructed on the Subject Property. Over the life span of the manufacturing facility there were several additions completed in 1957, 1965, 1973, 1988, 1994, 1998 and 1999. The building was originally tooled to manufacture automobile bumpers, which included a chrome plating process. In the 1970's, the manufacturing facility was re-tooled and continually expanded to manufacture suspension springs for major car manufacturers. At full operational status, the manufacturing facility had 8 operational lines.

In conjunction with the manufacturing facility, an unregulated landfill was created on the Subject Property in the early 1970's. The landfill is situated south of the former industrial building and was used to dump waste material from the manufacturing process including mill scale, steel shot, brick and construction debris. The landfill was eventually capped in the late 1980's/early 1990's.

The manufacturing facility uses and landfill have resulted in various areas and types of contamination on the Subject Property, as described later in this report.

Major manufacturing operations on the Subject Property were discontinued in 2009 at which point, the factory was transitioned to general warehousing and storage, utilizing about 30% of the 300,000 sq. ft. building. The remainder of the building and Subject Property remained vacant / un-used.

The Subject Property was purchased by 150 Steeles Milton Inc. on April 7, 2021, from the Meritor Suspension Systems Company, Canada (MSSC). As part of the purchase process, environmental testing was completed which identified significant plumes/areas of contamination on the Subject Property related to the previous manufacturing uses in the factory. 150 Steeles Milton Inc. has committed to remediating the contaminated soils and groundwater found on site. The remediation program will support the approved land use designation change from Employment to a more sensitive land use of Mixed-Use. The remedial activities will also provide additional benefit to existing residential homes within close proximity to the Subject Property.





Site Location and Study Area	Figure 1.1
150 Steeles Avenue Milton CEMS	
BEACON ENVIRONMENTAL	Project: 221265 Last Revised: March 2023
Client: 150 Steeles Milton Inc.	Prepared by: SZ Checked by: KU
N 1:8,000	Inset Map: 1:60,000

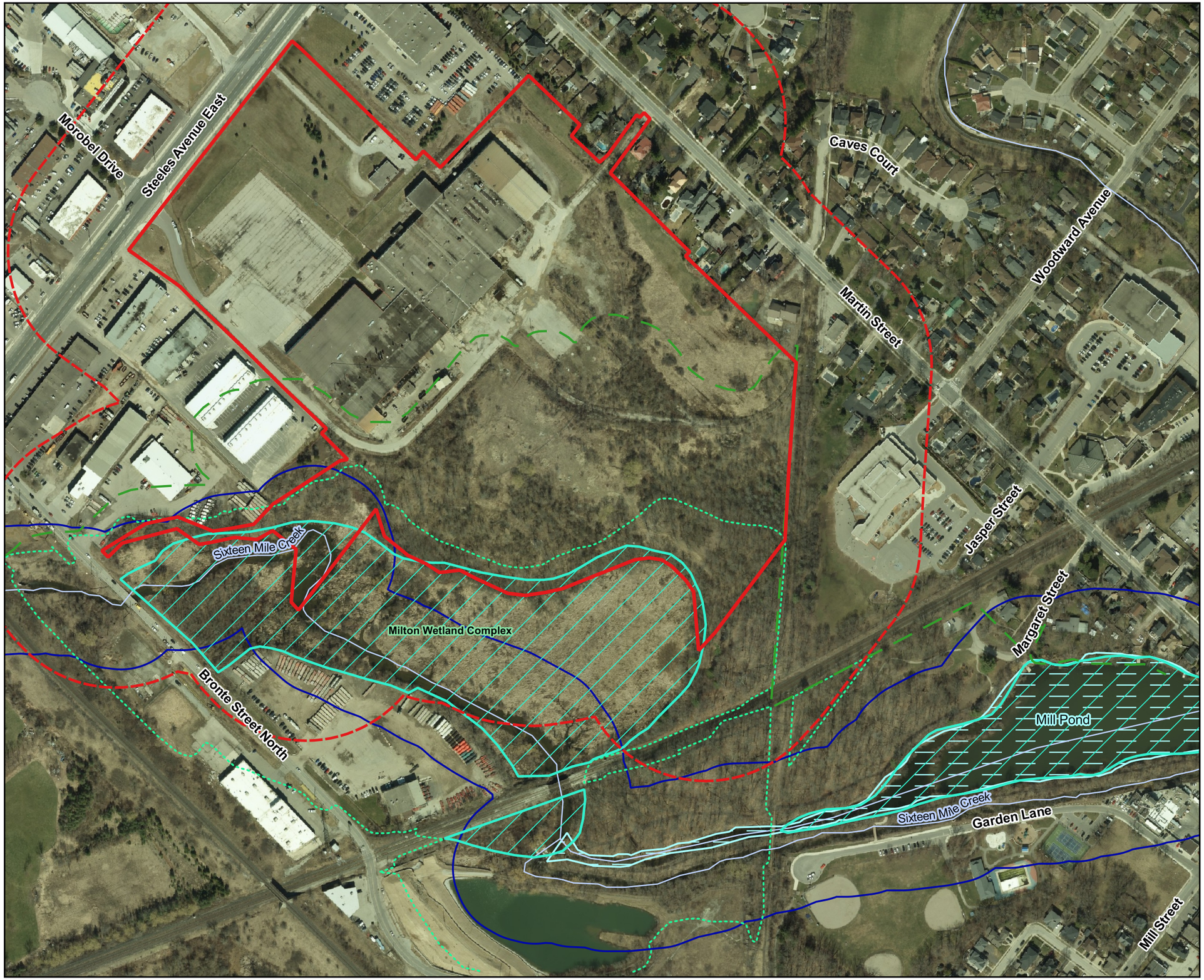
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Natural Heritage Areas and Features

Figure 1.2

150 Steeles Avenue Milton CEMS



Legend

- Subject Property
- Study Area
- Watercourse (MNRF 2021)
- Regional Natural Heritage System (ROPA 49)
- Milton Natural Heritage System (OPA 31, Schedule B)
- Evaluated Wetland - Not Provincially Significant (September 4, 1998)
- Greenbelt Urban River Valley
- Pond (MNRF 2021)

Note: 1) Regional Natural Heritage System (ROPA 38) digitized from https://webgeo2.halton.ca/Html5ViewerROPR/Index.html?viewer=PLN_OfficialPlanReviewViewer.Halton_OfficialPlanReviev
2) Milton Natural Heritage Sytem (OPA 31, Schedule B) digitized from https://milton.maps.arcgis.com/apps/MapSeries/index.html?appid=524c45113c8442e7952cd65a1be099e6&entry=1

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The manufacturing facility was demolished in late 2021 and remediation activities commenced in 2022 following the building demolition. For the purposes of completing a Record of Site Condition (RSC) in phases, the Subject Property has been subdivided into six RSC areas / properties (**Figure 1.3**).

The Subject Property is undergoing remediation as of the date of this report, in accordance with an emergency works permit (Permit # 8526). This permit was issued by CH on May 10, 2023, following the first submission of the CEMS in March, 2023, and discussions with CH regarding the potential for migration of contaminants towards the Sixteen Mile Creek.

1.3 Study Team

The Study Team consists of an interdisciplinary team to address the natural heritage, natural hazard and site contamination aspects of this project and includes:

- Beacon Environmental – natural heritage and report coordination;
- Jennifer Lawrence and Associates Inc. – environmental planning, report and project coordination;
- Urbantech Consulting – water resources engineering and flood plain delineation; and
- DS Consultants – hydrogeology, geology, slope stability and site contamination.

1.4 Environmental Regulatory Framework

The approved ToR for the CEMS requires a summary of applicable environmental legislation, regulations and policies to ensure that all applicable policy components of the relevant legislation are addressed by this study. The following subsections provide an overview of key legislation, regulations and policies that apply to the remediation work. While the remediation works are occurring independently of any applications being made under the *Planning Act*, it is understood that one of the objectives of the CEMS is to identify the future limits of the RNHS which requires interpretation of provincial, regional and local land use planning policies. For these reasons, relevant policy excerpts from land use planning documents have also been included as part of this summary. The approved Terms of Reference (ToR) for this CEMS was developed to ensure that all applicable policy components of relevant legislation are addressed by this study.

This report characterizes the natural heritage resources, natural hazards, man-made hazards and surface and ground water features as required by the Provincial Policy Statement (PPS), the Region of Halton Official Plan (ROP) and the Town of Milton Official Plan (MOP). This includes all Key Features and components of the RNHS as per Section 115 of the ROP as well as areas regulated by CH under Ontario Regulation 162/06. This report also provides details with respect to the contaminants on the Subject Property and the proposed method for remediating these lands.

1.4.1 Federal Fisheries Act and Ontario Fishery Regulations

The purpose of the federal *Fisheries Act* and the Ontario Fishery Regulations (SOR/2007-237) is to ensure the conservation and protection of fish and fish habitat. Sixteen Mile Creek, that traverses a portion of the Subject Property, is frequented by fish. Activities taking place in or near water may

adversely affect fish or fish habitat. DFO recommends that proponents of these activities should undergo the following:

- Understand the types of impacts their projects are likely to cause;
- Take measures to avoid and mitigate impacts to the extent possible; and
- Request authorization from the Minister and abide by the conditions of any such authorization, when it is not possible to avoid and mitigate impacts of projects that are likely to cause serious harm to fish.

It should also be noted that terrestrial crayfish species are regulated under the *Fisheries Act* and Ontario Fishery Regulations. The following sections of the *Fisheries Act* and Ontario Fisheries Regulations may apply:

> *29(4) no person shall transport crayfish overland except under a licence to collect fish for scientific purposes issued under the Fish and Wildlife Conservation Act, 1997*
> *34.4(1) No person shall carry on any work, undertaking or activity, other than fishing, that results in the death of fish.*

Such licences are administered provincially, by the Ministry of Natural Resources and Forestry (MNRF).

1.4.2 Migratory Birds Convention Act

The purpose of the federal *Migratory Birds Convention Act* is to protect listed migratory bird species and their nests. To comply with this legislation, activities that can potentially impact breeding birds must be avoided. Compliance with the Act should be demonstrated prior to commencing site preparation, earthworks, and construction.

1.4.3 Species at Risk Act

The purpose of the federal *Species at Risk Act* is to ensure the conservation and protection of federally listed species at risk. Federal jurisdiction typically applies to federal lands and watercourses; therefore, this legislation may only apply to Sixteen Mile Creek on the Subject Property.

1.4.4 Environmental Protection Act

The filing of a Record of Site Condition (RSC) is required in accordance with the *Environmental Protection Act* and Ontario Regulation 153/04 for the proposed change in land use from legacy industrial to future residential. Similarly, the filing of an RSC will also be required for lands contained within the RNHS, that were previously industrial but are proposed to be future publicly owned greenspace.

The RSC filing requires the completion of Environmental Site Assessment reports, or any other reports on the presence of a contaminant on, in or under the Subject Property or the existence of an area of potential environmental concern. In the event that contamination is identified, it must be remediated to meet the applicable site condition standards.



Record of Site Condition Areas	Figure 1.3

150 Steeles Avenue Milton CEMS

Legend

- Subject Property
- Record of Site Condition Area Limits (DS Consultants — Feb 2023)
- Watercourse (MNRF 2021)

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1.4.5 Fish and Wildlife Conservation Act

The *Fish and Wildlife Conservation Act* enables the MNRF to provide sound management of the province's fish and wildlife. The Act provides general prohibitions on the capture or harassment of game wildlife and specially protected wildlife, including mammals, birds, bird nests, reptiles, invertebrates, and amphibians. Section 39 of the Act allows MNRF to issue an authorization to capture, kill or possess wildlife for scientific purposes, including rescue of wildlife.

1.4.6 Endangered Species Act

Clause 9(1)(a) of the *Endangered Species Act* (ESA) prohibits the killing, harming, harassment, capture, or take of an extirpated, endangered or threatened species, except where regulations allow. Subsection 10(a) of the ESA prohibits the damage or destruction of the habitat of extirpated, endangered, or threatened species.

Section 23.18 of the general regulation of the ESA (Ontario Regulation 242/08) provides an exemption to clause 9(1)(a) and subsection 10(1) of the ESA for "work undertaken" … "to remove or clean an area that has been contaminated or polluted". Subsection 23.18(5) provides requirements to meet this exemption, such as:

- Giving the Minister of the Ministry of Environment, Conservation and Parks (MECP) notice of activity;
- Preparation of a mitigation plan and carrying out the work in accordance with this mitigation plan;
- Take reasonable steps to minimize adverse effects to the endangered or threatened species and habitat; and
- If a person observes a species identified in the notice of activity during the works, the person must complete a Species at Risk Observation Reporting Form within three months of the observation.

1.4.7 Provincial Policy Statement

Section 2.0 of the PPS (Wise Use and Management of Resources) provides policy direction related to natural heritage and water, that are applicable to the Subject Property. Specifically, Section 2.1 (Natural Heritage) provides for the following:

2.1.1 Natural features and areas shall be protected for the long term.

2.1.2 The diversity and connectivity of natural features in an area, and the long-term ecological function and biodiversity of natural heritage systems, should be maintained, restored or, where possible, improved, recognizing linkages between and among natural heritage features and areas, surface water features and ground water features.

2.1.3 Natural heritage systems shall be identified in Ecoregions 6E & 7E, recognizing that natural heritage systems will vary in size and form in settlement areas, rural areas and prime agricultural areas.

2.1.4 Development and site alteration shall not be permitted in:

a) significant wetlands in Ecoregions 5E, 6E and 7E, and

b) significant coastal wetlands.

2.1.5 Development and site alteration shall not be permitted in:

a) significant wetlands in the Canadian Shield north of Ecoregions 5E, 6E and 7E;
b) significant woodlands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River);
c) significant valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River);
d) significant wildlife habitat;
e) significant areas of natural and scientific interest; and,
f) coastal wetlands in Ecoregions 5E, 6E and 7E that are not subject to policy 2.1.4b)

Unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.

2.1.6 Development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements.

2.1.7 Development and site alteration shall not be permitted in habitat of endangered species and threatened species, except in accordance with provincial and federal requirements.

2.1.8 Development and site alteration shall not be permitted on adjacent lands to the natural heritage features and areas identified in policies 2.1.4, 2.1.5, and 2.1.6 unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions.

Section 2.2.1 of the PPS addresses policies related to water. Specifically, this section requires that planning authorities shall protect, improve or restore the quality and quantity of water by:

a) using the watershed as the ecologically meaningful scale for integrated and long-term planning, which can be a foundation for considering cumulative impacts of development;
b) minimizing potential negative impacts, including cross-jurisdictional and cross-watershed impacts;
c) evaluating and preparing for the impacts of a changing climate to water resource systems at the watershed level;
d) identifying water resource systems consisting of ground water features, hydrologic functions, natural heritage features and areas, and surface water features including shoreline areas, which are necessary for the ecological and hydrological integrity of the watershed;
e) maintaining linkages and related functions among ground water features, hydrologic functions, natural heritage features and areas, and surface water features including shoreline areas;
f) implementing necessary restrictions on development and site alteration to:
    a. protect all municipal drinking water supplies and designated vulnerable areas;
    b. protect, improve or restore vulnerable surface and ground water, sensitive surface water features and sensitive ground water features, and their hydrologic functions.

g) planning for efficient and sustainable use of water resources, through practices for water conservation and sustaining water quality;
h) ensuring consideration of environmental lake capacity, where applicable; and
i) ensuring stormwater management practices minimize stormwater volumes and contaminant loads, and maintain or increase the extent of vegetative and impervious surfaces.

Section 2.2.2 of the PPS notes that:

> *Development and site alteration shall be restricted in or near sensitive surface water features and sensitive ground water features such that these features and their related hydrologic functions will be protected, improved or restored. Mitigative measures and/or alternative development approaches may be required in order to protect, improve or restore sensitive surface water features, sensitive ground water features, and their hydrologic functions.*

In addition to the above, Section 3.0 of the PPS (Protecting Public Health and Safety) also contains policies that are applicable to the CEMS. Specifically, Policy 3.1 (Natural Hazards) and 3.2 (Human-Made Hazards). The relevant portions of these policies, to this study, are provided below.

Policy 3.1.1 states the following:

> *Development shall generally be directed, in accordance with guidance developed by the Province (as amended from time to time), to areas outside of:*
> *a) hazardous lands adjacent to the shorelines of the Great Lakes-St. Lawrence River System and large inland lakes which are impacted by flooding hazards, erosion hazards and/or dynamic beach hazards;*
> *b) hazardous lands adjacent to river, stream and small inland lake systems which are impacted by flooding hazards and/or erosion hazards; and,*
> *c) hazardous sites.*

Subsection 3.3.2 states the following:

> *Sites with contaminants in land or water shall be assessed and remediated as necessary prior to any activity on the site associated with the proposed use such that there will be no adverse effects.*

1.4.8 Greenbelt Plan

The Greenbelt Plan identifies the Sixteen Mile Creek valley as an Urban River Valley (**Figure 1.2**) however, the policies only apply to those portions of a valley that are in public ownership. A portion of the valley is owned by the Town (see **Figure 1.4**). As such, the following Urban River Valley policies are applicable to the Town-owned portion of the valley:

> *6.2.1 Only publicly owned lands are subject to the policies of the Urban River Valley designation. Any privately owned lands within the boundary of the Urban River Valley area are not subject to the policies of this designation. For the purposes*

of this section, publicly owned lands means lands in the ownership of the Province, a municipality or a local board, including a conservation authority.

6.2.2 The lands are governed by the applicable official plan policies provided they have regard to the objectives of the Greenbelt Plan.

6.2.4 The Protected Countryside policies to not apply except for:

a) The policies of section 3.2.6; and

b) The policies of section 3.3.

The relevant policies of Section 3.2.6 (mentioned in Policy 6.2.4 above) are as follows:

3.2.6.1 To support the connections between the Greenbelt's Natural System and the local, regional and broader scale natural heritage systems of southern Ontario … the federal government, municipalities, conservation authorities, other agencies and stakeholders should:

a) Consider how activities and land use change both within and abutting the Greenbelt relate to the areas of external connections and Urban River Valley areas identified in this Plan;

b) Promote and undertake appropriate planning and design to ensure that external connections and Urban River Valley areas are maintained and/or enhanced

3.2.6.2 The river valleys that run through existing or approved urban areas and connect the Greenbelt to inland lakes and the Great Lakes, including areas designated as Urban River Valley, are a key component of the long-term health of the Natural System. In recognition of the function of the urban river valleys, municipalities and conservation authorities should:

b) In considering land conversions or redevelopments in or abutting an urban river valley, strive for planning approaches that:

a. Establish or increase the extent or width of vegetation protection zones in natural self-sustaining vegetation, especially in the most ecologically sensitive areas (i.e., near the stream and below the stable top of bank);

b. Increase or improve fish habitat in streams and in the adjacent riparian lands;

c. Include landscaping and habitat restoration that increase the ability of native plants and animals to use valley systems as both wildlife habitat and movement corridors; and

d. Seek to avoid or, if avoidance is not possible, minimize and mitigate adverse impacts associated with the quality and quantity of urban runoff into the valley systems

Policies within Section 3.3 (Parkland, Open Space and Trails), which is also mentioned in Policy 6.2.4, are related to encouraging the creation of trails and trail planning to provide for accessible recreation opportunities.

1.4.9 Region of Halton Official Plan

The ROP contains policies related to the protection, conservation and enhancement of the natural heritage system, management of natural hazards and requirements related to redevelopment and soil

STEELES AVENUE EAST

BRONTE STREET NORTH

MARTIN STREET

150 STEELES MILTON INC.

CANADIAN PACIFIC RAILWAY

TOWN OF MILTON LANDS

Figure 1.4
Land Ownership

AERIAL PHOTO
150 Steeles Milton Inc.
Part of Lot 15, Concession 2, NS
Milton, Ontario

SCALE N.T.S.

February 14, 2023

KORSIAK | Urban Planning
206-277 Lakeshore Road East
Oakville, Ontario L6J 1H9
T: 905-257-0227
info@korsiak.com

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contamination. The latest amendment to the ROP is Region of Halton Official Plan Amendment (ROPA) 49, which was adopted by Regional Council on June 15, 2022. The previous amendment (ROPA 48) was approved by the Ministry of Affairs and Housing on November 10, 2021. Relevant policies reflected in both ROPA 48 and ROPA 49 are outlined below:

Natural Heritage System

115.3 The Regional Natural Heritage System is a systems approach to protecting and enhancing natural features and functions and is scientifically structured on the basis of the following components:

1. *Key Features, which include:*
   - *a)significant habitat of endangered and threatened species,*
   - *b)significant wetlands,*
   - *c)significant coastal wetlands,*
   - *d)significant woodlands,*
   - *e)significant valleylands,*
   - *f) significant wildlife habitat,*
   - *g) significant areas of natural and scientific interest,*
   - *h) fish habitat,*
2. *Key Features that have been identified are shown on Map 1G.*
3. *enhancements to the Key Features including Centres for Biodiversity,*
4. *linkages,*
5. *buffers,*
6. *watercourses that are within a Conservation Authority Regulation Limit or that provide a linkage to a wetland or a significant woodland, and*
7. *wetlands other than those considered significant under Section 115.3(1)b).*

115.4. Included within the Regional Natural Heritage System are:

2. *Regulated Flood Plains as determined, mapped and refined from time to time by the appropriate Conservation Authority.*

116.1 The boundaries of the Regional Natural Heritage System may be refined, with additions, deletions and/or boundary adjustments, through:

- *a) a Sub-watershed Study accepted by the Region and undertaken in the context of an Area-Specific Plan;*
- *b) an individual Environmental Impact Assessment accepted by the Region, as required by this Plan; or*
- *c) similar studies based on terms of reference accepted by the Region.*

Once approved through an approval process under the Planning Act, these refinements are in effect on the date of such approval. The Region will maintain mapping showing such refinements and incorporate them as part of the Region's statutory review of its Official Plan.

118.2 Apply a systems based approach to implementing the Regional Natural Heritage System by:

- *a) Prohibiting development and site alteration within significant wetlands, significant coastal wetlands, significant habitat of endangered and threatened*

species and fish habitat except in accordance with Provincial and Federal legislation or regulations;

b) Not permitting the alteration of any components of the Regional Natural Heritage System unless it has been demonstrated that there will be no negative impacts on the natural features and areas or their ecological functions; in applying this policy, agricultural operations are considered as compatible and complementary uses in those parts of the Regional Natural Heritage System under the Agricultural System and are supported and promoted in accordance with policies of this Plan

c) Refining the boundaries of the Regional Natural Heritage System in accordance with Section 116.1; and

d) Introducing such refinements at an early stage of the development or site alteration application process and in the broadest available context so that there is greater flexibility to enhance the ecological functions of all components of the system and hence improve the long-term sustainability of the system as a whole.

118.3 Require the proponent of any development or site alteration that meets the criteria set out in Section 118(3.1) to carry out an Environmental Impact Assessment (EIA). The purpose of an EIA is to demonstrate that the proposed development or site alteration will result in no negative impacts to that portion of the Regional Natural Heritage System or unmapped Key Features affected by the development or site alteration by identifying components of the Regional Natural Heritage System as listed in Section 115.3 and their associated ecological functions and assessing the potential environmental impacts, requirements for impact avoidance and mitigation measures, and opportunities for enhancement. The EIA, shall, as a first step, identify Key Features on or near the subject site that are not mapped on Map 1G.

Natural Hazards

There are several policies within the ROP related to the management of natural hazards and the protection of life and property including:

118.11. Require that Local Zoning By-laws prohibit new construction and the expansion or replacement of existing non-conforming uses within hazard lands…

118.12. Require that Local Zoning By-laws impose for development appropriate setbacks from Regulated Flood Plains, based on the kind, extent and severity of existing and potential hazard to public safety…

118.13. Encourage the Local Municipalities to adopt a One-Zone Concept whereby new development in the Flood Plains, defined by the regulatory flood standard, is to be prohibited or restricted.

118.14. Encourage the Local Municipalities to:

a) acquire public open space on tableland adjacent to watercourses and along the waterfront within the Urban Area.

The preliminary RNHS limit, based on ROP Maps 1 and 1G, is shown on **Figure 1.2**.

Contaminated Sites

Section 146 (Land) outlines the Region's objectives, including those related to contaminated sites. Specifically, Policy 146.11 states that it is the Region's objective "To ensure that development takes place on sites that are safe from soil contamination."

Section 147 outlines the Region's policies related to contaminated sites including:

> *147.17 Require that, prior to the Region or Local Municipality considering any development proposals, the proponent undertake a process in accordance with the Region's Guidelines (Protocol) for Reviewing Development Applications with Respect to Contaminated or Potentially Contaminated Sites and any applicable Provincial legislation, regulations and guidelines to determine whether there is any potential contamination on the site and the steps necessary to bring the site to a condition suitable for its intended use.*
>
> *147.18 Consider approval for development proposals only when the development site complies with Provincial guidelines, Regional standards and other requirements regarding soil and groundwater quality.*

1.4.10 Town of Milton Official Plan

The MOP contains policies related to the protection, conservation and enhancement of the natural heritage system, management of natural hazards and requirements related to redevelopment and soil contamination. Official Plan Amendment 31 (OPA 31) was endorsed by the Town on June 14, 2010, and approved by the Region on November 22, 2018. The Subject Property is within the Milton 401 Industrial / Business Park Secondary Plan Area (Schedule C.2.A) and the valleylands are generally designated as Natural Heritage System (Schedule 2 of the OPA). This Natural Heritage System designation is intended to encourage the protection, maintenance and enhancement of significant natural features and areas and, according to Policy 4.8.1.2 of the MOP, includes flood plains, Provincially Significant Wetlands, significant valleylands and significant habitat of endangered and threatened species.

Relevant MOP policies related to natural heritage, natural hazards and site contamination are outlined below:

Natural Heritage

Policy 2.2.3.4 defines the components of the Regional NHS and reflects ROP policy 115.3.

Policy 4.9.3.1 provides mechanisms for application of the RNHS and reflects ROP policy 118(2). Policy 4.9.3.1(a) prohibits development and site alteration within significant wetlands, significant habitat of endangered and threatened species, and fish habitat except in accordance with Provincial or Federal legislation or regulations.

Policy 4.9.3.2 states the following:

The purpose of an EIA is to demonstrate that the proposed development or site alteration will result in no negative impacts to that portion of the Natural Heritage System or unmapped Key Features affected by the development or site alteration by identifying components of the Regional Natural Heritage System as listed in Section 4.9.1.3 and their associated ecological functions and assessing the potential environmental impacts, requirements for impact avoidance and mitigation measures, and opportunities for enhancement. The EIA, shall, as a first step, identify Key Features on or near the subject site that are not mapped on Schedule "M".

Policy 4.9.3.3 requires that site alteration that is located wholly or partially inside or within 120 m of the RNHS requires an EIA.

Policy 4.3.2.12 provides additional requirements for boundary refinement of the RNHS, including consultation with the Town, and reflects the requirements of ROP Policy 116.1.

Natural Hazards

Policy 3.14 addresses the Regulatory Flood Plain and confirms that the Town utilizes the One Zone Concept of flood plain management and that any proposed development within the flood plain requires permission from CH pursuant to Ontario Regulation 162/06.

Site Contamination

The following Environmental Control Objectives are listed in the MOP:

2.3.2.7 To maintain and enhance surface water quality, as well as fish habitat, by reducing sedimentation loading, siltation and contamination caused by soil erosion.

2.3.2.8(b) To identify constraints on land and related resources which require mitigating measures as a requirement of development including … Sites of Potential Contamination

2.3.2.10 To minimize contamination of ground water and soils in and around former industrial and waste disposal sites

The following Site Contamination Policies are included in the MOP:

2.3.3.23 The Town shall only consider development proposals after the proponent undertakes a process in accordance with the Region's Guidelines (Protocol) for Reviewing Development Applications with Respect to Contaminated or Potentially Contaminated Sites and any applicable Provincial legislation, regulations and guidelines to determine whether there is any potential contamination on the site and the steps necessary to bring the site to a condition suitable for its intended use.

2.3.3.24 The Town may only permit development upon determination that the development site complies with Provincial guidelines, Regional standards and other requirements regarding soil and ground water quality. Any studies required to allow the Town or Region of Halton to evaluate the level of risk will be prepared by qualified professionals retained and paid by the proponent to

the satisfaction of the Town and will be in accordance with all Ministry of the Environment guidelines and Regional protocols.

2.3.3.25 The Town shall co-operate with other public agencies, in an effort to reduce adverse environmental impacts or health hazards associated with closed landfill sites as designated on Schedule "G" and other potentially contaminated sites from previous uses as identified by the Region of Halton. It should be noted that sites other than those identified on Schedule G or by the Region of Halton may also have the potential for site contamination.

1.4.11 Conservation Authorities Act – Ontario Regulation 162/06

Relevant regulatory policies in CH's *Policies and Guidelines for the Administration of Ontario Regulation 162/06 and Land Use Planning Policy Document (November 2020)* include:

2.1 Watercourses, Valleylands, Hazardous Lands, Wetlands and Shorelines Except where allowed under Policies 2.4 – 2.50 (inclusive), development is prohibited within a watercourse, valleyland, hazardous lands, wetland and lands adjacent or close to the shoreline of the Great Lakes – St. Lawrence River System or to inland lakes that may be affected by flooding, erosion or dynamic beaches.

2.2 Lands Adjacent to Watercourses, Valleylands, Hazardous Lands, Wetlands and Shorelines Except where allowed under Policies 2.4 - 2.50, development is prohibited:

- *a) within 15 metres of the stable top of bank of a major valley system … where a valley is apparent;*
- *b) within 15 metres from the greater of the limit of the flood plain or the predicted meander belt width of a watercourse associated with a major valley system … where a valley is not apparent;*
- *c) within 120 metres of a Provincially Significant Wetland and all wetlands greater than or equal to 2 hectares in size;*
- *d) within 30 metres of wetlands less than 2 hectares in size.*

Policies 2.4.1.1 and 2.4.1.2 requires that CH stake the top of bank of valleys greater than 2 m in height and that CH may request a stable slope assessment to determine the long-term stable top of slope. Policy 2.7 requires that CH attend on-site to stake the limit of wetlands. Policy 2.13 is relevant as it relates to construction access and site controls, given that some of the remediation and restoration works will take place within CH's regulated area:

2.13 Any application for development, permitted in accordance with Policies 2.4 – 2.50, must demonstrate that access to the work area and completion of the works can be carried out in an acceptable manner (see Section 4). Consideration must be given to the impacts on flooding, erosion, valley slope and channel stability, water quality, and natural environment (including, but not limited to, wildlife habitat and ecological functions). Information required for review and approval includes, but is not limited to: limit of work area delineation; sediment and erosion controls; deleterious substances; tree protection; staging/phasing, etc.

Finally, Policies 2.25.2.4, 2.35.3, 2.39.3 and 2.40.3 do not permit new development within 15m of the Regional Storm flood plain, 15m of the stable top of bank, 30m of wetlands greater than 2 ha in size and 15m of wetlands less than 2 ha in size, respectively.

The Subject Property contains the following areas that are regulated by CH pursuant to Ontario Regulation 162/06:

- Erosion hazards – stable top of bank of Sixteen Mile Creek valley;
- Flooding hazards – Regional Storm flood plain associated with Sixteen Mile Creek;
- Wetlands – within the valley and on the tablelands; and
- Regulated Allowances – 15m adjacent to the greater of the Regional Storm flood plain or stable top of bank; 30m adjacent to non-Provincially Significant wetlands less than 2 ha in size and 120m adjacent to Provincially Significant wetlands and wetlands greater than 2 ha in size.

In addition to CH's regulatory role, through their MOU with the Province, Conservation Authorities provide the provincial interest comments on issues pertaining to natural hazards.

1.5 Report Outline

The CEMS is presented as follows:

Context and Existing Conditions – describes the existing biophysical conditions, evaluates the significance of natural heritage features, identifies natural hazards, and identifies constraints. The Pre-Remediation Refined RNHS limit is described in this section.

Description of Proposed Works – describes the site remediation works and phases, assesses potential impacts to the RNHS, and demonstrates how the remediation works can avoid or mitigate impacts and enhance the functions of the RNHS in a manner that is consistent with applicable environmental legislation, regulations and planning policies.

Environmental Management – describes the various environmental management strategies to be implemented as part of the remediation works, restoration of remediated areas, constraints to future development and opportunities to enhance the RNHS.

2. Context & Existing Conditions

2.1 Physical Environment

This section characterizes the physical environment of the Study Area and environs. It provides an overview of the bedrock and surficial geology resources, topography, soils, surface water and groundwater resources, including drainage catchments, hydrostratigraphy, groundwater levels and groundwater quality.

2.1.1 Background

The Subject Property is a 20.3 ha (50.1 acre) parcel of land situated within a mixed residential and industrial neighbourhood. The Subject Property is located approximately 220 m east of the intersection of Steeles Avenue East and Bronte Street North and was vacant at the time that this report was prepared.

The tableland portion of the Subject Property is at an elevation of 205 m above sea level (masl) except for one area toward the centre of the property (where the former unregulated landfill was located) where the pre-remediation surface elevation is 211 masl. The Subject Property is located adjacent to, and contains a small portion of, the Sixteen Mile Creek valley. The southwestern portion of the property contains a portion of the valley slopes, Regional Storm flood plain and a short segment of the creek. The valley floor, associated with the creek, is at an elevation of approximately 198 masl.

2.1.2 Bedrock Geology

Based on borehole data logs, shale bedrock belonging to the Queenston Formation was found at approximate depths varying from 15.3 to 18.3 m below the existing ground surface (mbgs), corresponding to elevations varying from 188.0 to 190.2 masl.

2.1.3 Surficial Geology and Soils

The Subject Property is located within the Peel Plain physiographic region (Chapman and Putman 1984). This plain corresponds with the bottom of glacial Lake Peel which formed between an ice front and the Niagara Escarpment. It slopes south to Lake Ontario and follows the topography of the Halton Till. According to the Ontario Geological Survey, the surficial geology is described as till, clay to silty-textured till (derived from glaciolacustrine deposit of shale). Soils on the tablelands are mapped as Chinguacousy Clay Loams and the valley floor is described as consisting of alluvial soils (Gillespie, Wicklund, and Miller, 1971).

2.1.4 Drainage and Topography

The topography of the tableland portion of the Subject Property is relatively flat with a surface elevation of approximately 205–208 masl except for the landfill area at southern portion of the site with maximum elevation of approximately 211 masl. The tablelands slope gently towards the south. The nearest surface water body is Sixteen Mile Creek, located on the southwest side of the Subject Property, which eventually drains into Lake Ontario. The local site topography generally slopes gently downwards towards the south and east. There is a steep drop-off of approximately 5 m, along the west side of the Subject Property, where the land slopes down to the flood plain of Sixteen Mile Creek. Drainage is generally controlled by topography and previously by underground stormwater pipes (when the site had an industrial building on it).

2.1.5 Hydrology

CH is undertaking an Urban Milton Floodplain Mapping Update that establishes the existing peak flows for the Sixteen Mile Creek system. The results of this study were not available at the time of writing this report however, CH has indicated that the current flows have been incorporated into the HEC-RAS model that was provided to Urbantech to determine the existing floodplain as part of this CEMS.

The majority of the Subject Property (11.56 ha) drains from the north to southwest, towards the Sixteen Mile Creek via an overland flow route and existing headwall in the valley. A portion of the site (8.70 ha) drains to the southeast towards an existing drainage swale that outlets to Sixteen Mile Creek. Prior to site remediation works, the property was developed and included approximately 75% impervious coverage in the north portion with site, approximately 30% in the south-east portion of the site and no impervious areas in the south-west portion of the site. Refer to **Appendix D - Drawing 1** for the pre-remediation drainage plan.

There is one historic stormwater sewer outfall from the previously developed portion of the Subject Property that drained into the Sixteen Mile Creek valley, and an overflow spillway from the existing tailings pond which discharged / spilled to the railway ditch with no formal outfall. Through the decommissioning of the storm sewer outfall, the removal of the tailings pond, and the removal of the hard surfaces on the site, the level of perviousness on site has increased dramatically, allowing for more infiltration than under previous industrial conditions. As such, only more intense precipitation would be expected to flow overland and towards the valley however, such overland flow would be diffuse and not focused on any one specific outlet location.

2.1.6 Hydrogeology

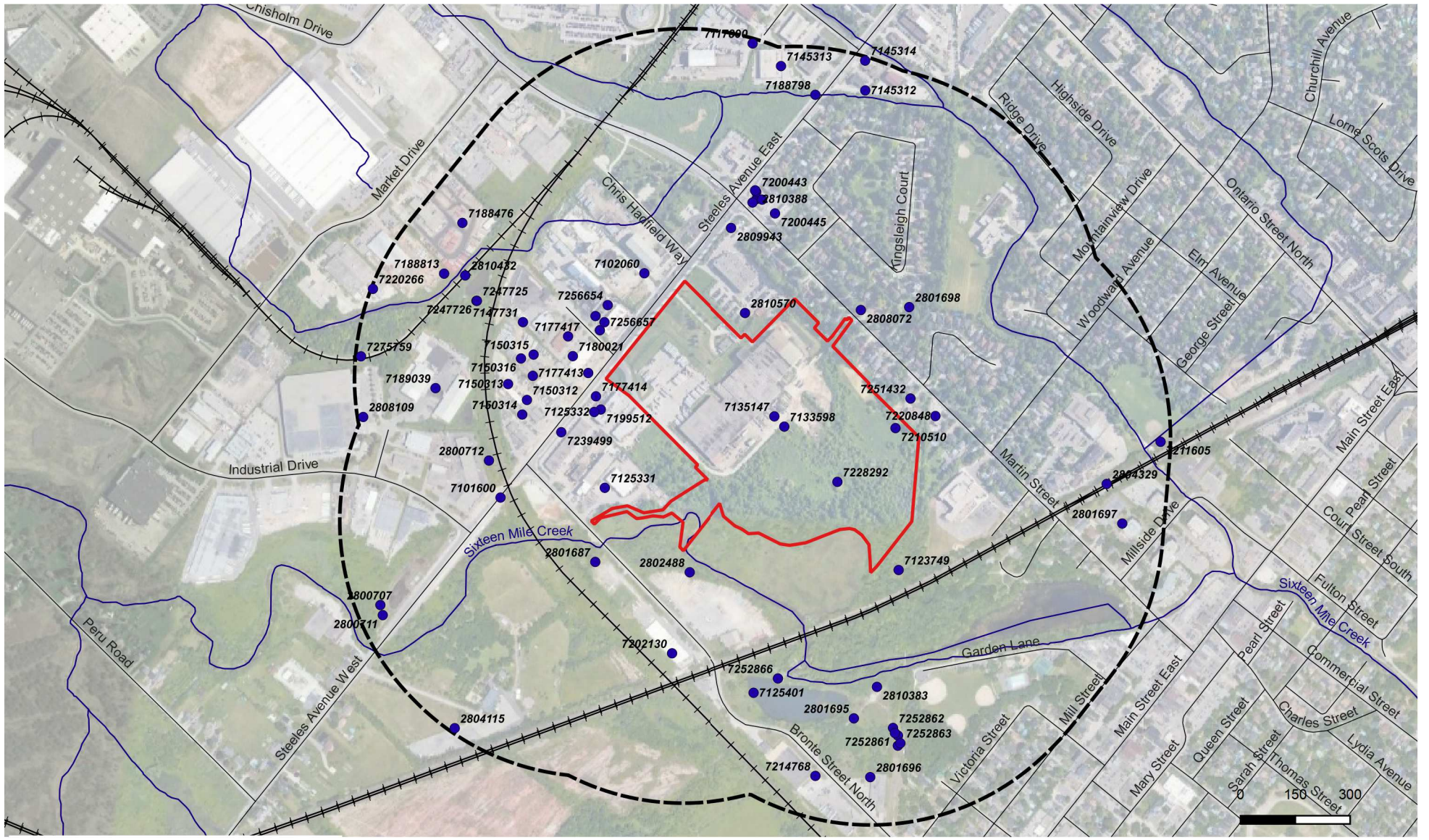
The hydrogeology at the Subject Property was evaluated using six (6) on-site monitoring wells installed by DS Consultants and nine (9) additional existing monitoring wells installed by other consultants, as well as from local domestic wells and existing environmental reports for the area.

2.1.7 Local Groundwater Use

As part of the hydrogeological study, DS Consultants completed a search of the MECP Water Well Record (WWR) database. Based on the MECP water well records search, there were seventy-four (74) water wells within a 500 m radius of the Subject Property. All wells were noted as monitoring/test holes or not in use except for five (5) records for domestic, three (3) records for industrial and three (3) records for commercial purposes. To verify the findings of the MECP WWR search, a door to door well survey was completed in February 2022. As part of the survey, DS Consultants staff visited houses and/or properties within 500m of the Subject Lands that were identified to have well records for either industrial/commercial or domestic use. The results of the survey concluded that there are no wells within a 500 m radius that are used for potable purposes.

Figure 2.1 shows the MECP water well location plan. The study area (500 m radius of the Subject Property) is fully serviced with municipal water.

C:\0Sharon\21-122-100 Enviro Geo Investigations 150 Steeles Ave E\1-QGIS\ENV\Figure 2-1 – MECP Well Records Summary.qgs Mar-01 15:44



Legend

- Approx Property Boundary
- 500m Buffer
- Registered Water Well (MECP WWR)

DS CONSULTANTS LTD.
6221 Highway 7, UNIT 16
Vaughan, Ontario L4H 0K8
Telephone: (905) 264-9393
www.dsconsultants.ca

Client: NEATT COMMUNITIES

Project: HYDROGEOLOGICAL INVESTIGATION
150 Steeles Avenue East, Milton, ON

Title: **MECP WELL RECORDS SUMMARY**

N

Size:	Approved By:	Drawn By:	Date:
8.5 x 11	M.J	S.Y	March 2023
Rev: 0	Scale: As Shown	Project No.: 21-122-100	Figure No.: **2-1**

Image/Map Source: *Google Satellite Image*

2.1.8 Groundwater Conditions

DS Consultants measured groundwater levels in all newly installed monitoring wells (MW21-1 through MW21-6) along with nine (9) existing monitoring wells (MW101, MW304, MW305, MW411, MW412, IW3, IW4, SW13 and DW5) on May 7, 2021. **Table 1** presents the groundwater levels in all monitoring wells. Based on groundwater level measurements, the groundwater table was found at a range between 6.87 to 13.06 mbgs (197.15-200.44 masl). Based on groundwater elevations, the flow direction within the Subject Property is inferred to be southwest toward the Sixteen Mile Creek.

Table 1. Groundwater Levels in Monitoring Wells

Well ID	Ground Elevation (masl)	Well Depth (mbgs)	Screened Interval (mbgs)	May 7, 2021	
				Depth to Water (mbgs)	Groundwater Elevation (masl)
BH21-1	208.31	18.1	15.1-18.1	9.93	198.38
BH21-2	207.64	12.1	9.1-12.1	7.2	200.44
BH21-3	206.57	13.4	10.4-13.4	7.2	199.37
BH21-4	206.34	15.5	12.5-15.5	8.62	197.72
BH21-5	205.47	12.3	9.3-12.3	6.89	198.58
BH21-6	210.53	22.65	19.65-22.65	13.06	197.47
MW101	207.31	10.9	7.9-10.9	7.88	199.43
MW305	207.64	11.8	8.8-11.8	8.55	199.09
MW304	207.64	10.35	7.35-10.35	8.74	198.9
MW411	205.81	10.7	7.7-10.7	8.66	197.15
MW412	205.81	9.6	6.9-9.9	6.87	198.94
IW3	210.1	16.9	13.9-16.9	12.54	197.56
IW4	205.81	14.65	11.65-14.65	8.33	197.48
SW13	206.04	10.1	7.1-10.1	8.57	197.47
DW5	210.77	20.8	17.8-20.8	12.55	198.22

2.1.9 Hydraulic Conductivity

A total of fifteen (15) Single Well Response Tests (SWRTs) were completed by DS Consultants in monitoring wells on May 5 to 7, 2021 to estimate hydraulic conductivity (k) for the representative geological units in which the wells were completed. SWRTs were completed by performing a rising head test (slug test) with the use of Waterra® tubing to 'instantaneously' remove water from the well. A data logger was placed at the bottom of the wells to monitor recovery. Hydraulic conductivity (k) values were calculated using the Hvorslev method. **Table 2** presents a summary of the hydraulic conductivity (k) results for the representative geological units. The values of calculated hydraulic conductivity (k) range from 9.56×10^{-7} to 1.12×10^{-4} m/s. Due to the heterogeneous nature of soils and the hydrogeological setting of the site, the geo-mean K-value 5.32×10^{-6} m/s was considered in the dewatering assessment.

Table 2. Summary of Hydraulic Conductivity (k) Test Results

Well ID	Screen Interval	Screened Formation	K- Value(m/s)	Geomean (m/s)
BH21-1	15.1-18.1	Sand and gravel/shale bedrock	2.05×10^{-7}	5.32×10^{-6}
BH21-2	9.1-12.1	Clayey silt till	1.65×10^{-7}	
BH21-3	10.4-13.4	Clayey silt/sandy Silt	1.25×10^{-6}	
BH21-4	12.5-15.5	Gravelly sand	2.50×10^{-4}	
BH21-5	9.3-12.3	Silty sand/silt	1.10×10^{-5}	
BH21-6	19.65-22.65	Sandy Silt/shale bedrock	1.12×10^{-4}	
MW101	7.9-10.9	Clayey silt till	1.71×10^{-7}	
MW305	8.8-11.8	Clayey silt till	2.12×10^{-7}	
MW304	7.35-10.35	Sandy silt	2.00×10^{-6}	
MW411	7.7-10.7	Sand/silty sand/sand and gravel	5.39×10^{-5}	
MW412	6.9-9.9	Silt/silty sand/sand and gravel	5.45×10^{-5}	
IW3	13.9-16.9	Silty sand	1.90×10^{-4}	
IW4	11.65-14.65	Silty sand	4.81×10^{-4}	
SW13	7.1-10.1	Clayey silt/silty sand	3.22×10^{-7}	
DW5	17.8-20.8	Silty sand	9.56×10^{-7}	

2.2 Natural Environment

This section characterizes the natural environment by identifying all components of the natural heritage system (NHS) as required by the PPS and the ROP, including Key Features and other components of the RNHS as described in Section 115 of the ROP as well as areas regulated by CH pursuant to Ontario Regulation 162/06.

2.2.1 Background

To identify and characterize the various components of the RNHS, information from the following sources was collected, compiled and mapped:

- MNRF Natural Heritage Information Centre (NHIC) rare species database (accessed December 2022);
- Fisheries and Oceans Canada Aquatic Species at Risk Map (accessed December 2022);
- Slope Stability Assessment; 150 Steeles Avenue East, Milton, Ontario (DS Consultants, January 17, 2023);
- Aerial photographs and topographic mapping; and
- Conservation Halton digital data.

2.2.2 Feature Staking

In accordance with the CEMS ToR, the limits of natural heritage features associated with the Subject Property were staked by agency staff and surveyed. On July 16, 2021, CH staff staked the top of bank along the Sixteen Mile Creek valley as well as the limits of the wetland features which includes two

small wetlands associated with a former tailings pond as well as a short segment of the non-provincially significant Milton Wetland Complex within the valleylands on the Subject Property (**Figure 2.2**). On November 22, 2021, Halton region staff staked the limits of the woodland feature. The staked limits of the wetlands and woodland were surveyed by an Ontario Land Surveyor (OLS) and have been used to prepare the constraint mapping for refining the RNHS boundaries.

2.2.3 Ecological Surveys

This section includes ecological surveys undertaken to identify the components of the RNHS and their respective sensitivities. Field notes are provided in **Appendix B-1**

2.2.3.1 Ecological Surveys & Assessments

Beacon undertook field surveys of the Subject Property and environs on May 19, July 7, October 1, 2021, and August 9, 2022, to classify and map the ecological communities in the Study Area in accordance with the *Ecological Land Classification for Southern Ontario* (Lee *et al*. 1998).

Ten ELC community classes were mapped in the Study Area, plus any associated anthropogenic areas. The corresponding ELC polygons are illustrated on **Figure 2.3**. The boundaries of wetland and woodland communities have been adjusted to be consistent with the feature staking completed by the agencies.

A total of 108 vascular plant species were identified during floristic surveys completed in 2021 and 2022. A list of flora recorded during field surveys is presented in **Appendix B-2**. Of the 108 species, 58 (54%) are non-native in Ontario. All but one native species are ranked S5 or S4 by the NHIC, indicating they are secure (S5) or apparently secure (S4) provincially.

One species, Honey Locust (*Gleditsia triacanthos*), is ranked S2?. A ranking of S2? indicates that the species is imperilled provincially. Honey Locust is not designated endangered or threatened in Ontario. This species was first observed in 2021 near the boundary of ELC Unit 6.0. This species is considered adventive in Halton as naturally occurring populations are restricted to southwestern Ontario.

Based on the vascular plant status list from the Halton Natural Areas Inventory (Crins *et al* 2006), there are 3 species identified from the Subject Property that are considered uncommon in Halton Region and no species that are considered regionally rare. A list of regionally rare and uncommon species and their location is provided in **Table 3**. These species are primarily associated with woodland and wetland ELC Units (2.0, 6.0, and 7.1).

Table 3. Regionally Rare and Uncommon Plant Species

Scientific Name	Common Name	S-Rank	Halton Status	Location (ELC Unit)
Gleditsia triacanthos	Honey Locust	S2?	None	6.0
Hackelia virginiana	Virginia Stickseed	S5	Uncommon	2.0
Oenothera biennis	Evening Primrose	S5	Requires further review	3.1
Solidago gigantea	Giant Goldenrod	S5	Uncommon	7.1
Symphyotrichum urophyllum	Arrow-leaved Aster	S4	Uncommon	7.1

2.2.3.2 Tree Inventory

Prior to remediation works, trees on the tableland portion of the Subject Property with potential to be impacted by the remediation works were inventoried. This inventory was limited to trees with a diameter at breast height (DBH) of at least 15 cm, which were marked with numbered metal forestry tags and inventoried on September 13, 16, 17, and 27, 2021. DBH was measured at 1.4 m above ground surface.

A supplementary tree inventory related to an area of the eroded slope was prepared and provided with the June 27, 2023 slope stabilization memorandum (**Appendix A-5**).

Information collected from individual trees included: species, trunk diameter (DBH), and condition. The condition of each tree was assessed for overall health and structural integrity based on indicators such as live leaves, dead wood, decay, structural defects, and presence of disease. Each tree was assigned a condition rating of good, fair, poor, or dead, based on the following criteria:

- **Poor** – Severe dieback, significant lean, missing leader, major defects, significant decay and/or disease presence. Includes hazardous trees and trees in terminal decline;
- **Fair** – Moderate dieback and/or lean, limb defects, multiple stems, moderate foliage damage from stress; or
- **Good** – Healthy vigorous growth, minor visible defects or damage.

The locations of individual trees were surveyed by an Ontario Land Surveyor (OLS) and are shown on **Appendix B-3 - Drawing 2**. A tree inventory is also provided in **Appendix B-3**.

A total of 402 individual trees were inventoried, primarily within the cultural woodland feature (ELC Unit 2.0). A general summary of tree species and abundance is presented in **Table 4**.

Table 4. Existing Tree Species and Quantity

Scientific Name	Common Name	Quantity
Juglans nigra	Black Walnut	264
Acer negundo	Manitoba Maple	71
Salix sp.	Willow species	15
Ulmus americana	White Elm	13
Populus tremuloides	Trembling Aspen	8
Crataegus sp.	Hawthorn species	7
Pinus sylvestris	Scot's Pine	5
Acer platanoides	Norway Maple	3
Fraxinus pennyslvanica	Green Ash	3
Robinia pseudoacacia	Black Locust	3
Acer saccharum	Sugar Maple	2
Ulmus pumila	Siberian Elm	2
Acer tataricum ssp. ginnala	Tatarian Maple	1
Malus sp.	Apple Species	1
Prunus serotina	Black Cherry	1
Ulmus sp.	Elm species	1
Populus deltoides	Eastern Cottonwood	1
Gleditsia triacanthos	Honey Locust	1

Pre-Remediation Constraints and Refined RNHS

Figure 2.2

150 Steeles Avenue Milton CEMS



Legend

- Subject Property
- Study Area
- Existing Storm Outfall Approximate Location

ROPA 49 RNHS

- RNHS Key Features
- RNHS Buffer to Key Features (30 m)

Natural Hazards

- Watercourse (MNRF 2021)
- Floodplain (Digitized by CH, 2021)
- Floodplain Setback (15 m)
- Top of Slope (Staked by CH - July 16, 2021)
- Long-Term Stable Top of Slope, where different from staked top of slope (DS Consultants - January 2023)
- Long-Term Stable Top of Slope Setback (15 m)
- Wetland (> 2 ha - Staked by CH - July 16, 2021)
- Wetland Setback (30 m)

Hazards Subject to Remediation

- Pre-Remediation Wetland (< 2ha - Staked by CH - July 16, 2021)
- Pre-Remediation Wetland Setback (15 m) - Stage 1

Natural Heritage Features Subject to Remediation

- Pre-Remediation Woodland Dripline (Staked by Region of Halton - Nov 22, 2021)
- Pre-Remediation Woodland Buffer (10 m)

Pre-Remediation RNHS

- Pre-Remediation Refined RNHS Limit

RNHS Components Note: the Refined RNHS limit contains the following:

- Key Features, such as:
  - Habitat for Endangered and Threatened Species
  - Significant Wetlands
  - Significant Woodlands
  - Significant Valleylands
  - Significant Wildlife Habitat
  - Fish Habitat
- Linkages
- Regulated Watercourse
- Non-Significant Wetlands
- Buffers
- Regulated Floodplains

Notes: 1) The Long-Term Stable Top of Slope is coincident with the CH staked Top of Slope, except where indicated here.
2) A 30 m wetland buffer was applied to the wetland staked by CH on July 16, 2021, in the Sixteen Mile Creek valleyland and the CH Regulation Mapping Wetland Hazard, dated November 2022.

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Project: 221265
Last Revised: August 2023

Client: 150 Steeles Milton Inc.

Prepared by: SZ
Checked by: KU

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Ecological Land Classification | Figure 2.3

150 Steeles Avenue Milton CEMS



Legend

- Subject Property
- Ecological Communities
- Watercourse (MNRF 2021)

Unit Number	ELC Code	Ecological Communities
1	ANT	Anthropogenic (units 1.1 - 1.25)
2	CUW1	Mineral Cultural Woodland (units 2.0 - 2.5)
3	CUM1	Mineral Cultural Meadow (units 3.1 - 3.3)
4	CUS1	Mineral Cultural Savanah (units 4.1 - 4.8)
5	SWT2-5	Red-osier Mineral Thicket Swamp (units 5.1 - 5.2)
6	FOD4	Dry - Fresh Deciduous Forest (unit 6.0 - 6.2)
7	MAM2	Mineral Meadow Marsh (units 7.1 - 7.7)
8	SA	Shallow Water (unit 8.0 - 8.3)
9	MAS2-1	Cattail Mineral Shallow Marsh (unit 9.0)
10	FOD5	Dry - Fresh Sugar Maple Deciduous Forests (units 10.0 - 10.1)
11	CUT	Cultural Thicket (unit 11)

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2.2.3.3 Amphibian Surveys

A review of CH Marsh Monitoring Program data from 2007 did not reveal any amphibian observation records from the Subject Property. The closest amphibian data records were from Sixteen Mile Creek approximately 1 km upstream of the Subject Property where a small population of Western Chorus Frog was noted. Great Lakes / St. Lawrence populations of this species are listed as threatened under the *Species at Risk Act*, Schedule 1. This species was not detected in the Study Area during Beacon's amphibian surveys in 2022.

To confirm the presence/absence of breeding frogs and toads, call surveys were completed in accordance with the standard survey protocols of the Marsh Monitoring Program (Bird Studies Canada 2008). Surveys were conducted on the evenings of April 12, April 15, May 5, and June 1, 2022, at six survey stations established proximal to wetland features, including the former tailings pond. The locations of the amphibian call survey stations are illustrated on **Figure 2.4**. Surveys were completed at least a half hour after sunset during suitable weather conditions. Survey details are included in **Table 5.**

Table 5. Anuran Survey Details

Date	Time of Survey	Stations Surveyed	Weather Conditions
April 12, 2022	20:43 – 21:47	1, 2, 3, 4, 5	14°C, wind Beaufort 1, cloud cover 10%, no precipitation
April 15, 2022	21:45 – 22:00	6	11°C, wind Beaufort 3, cloud cover 100%, light drizzle
May 5, 2022	20:40 – 21:33	1, 2, 3, 4, 5, 6	11°C, wind Beaufort 1, cloud cover 20%, no precipitation
June 1, 2022	21:24 – 22:21	1, 2, 3, 4, 5, 6	22°C, wind Beaufort 3, cloud cover 20%, no precipitation

As per the Marsh Monitoring Program, calling anurans detected were identified to species and chorus activity was assigned a code.

Using this code method, areas that support a Code 1 indicates very low population numbers in the local area, and/or low-quality breeding habitat; Code 2 is taken to indicate a moderate population and/or lower quality breeding habitat; and Code 3 is taken to indicate a healthy population and high-quality breeding habitat.

Three frog species, Green Frog (*Lithobates clamitans*), Gray Treefrog (*Hyla versicolor*), and Spring Peeper (*Pseudacris crucifer*) were recorded calling within the Subject Property and Study Area during the amphibian surveys. These species are considered common and abundant in Southern Ontario and are not of conservation concern. Only Spring Peepers were observed in high abundance.

The findings of the 2022 anuran calling surveys are summarized in **Table 6**.

Table 6. Anuran Calling Count Results

Station	Survey 1	Survey 2	Survey 3	Cumulative Total
1	SPPE 3	SPPE 3	GRTR*	SPPE 3; GRTR*
2		-	GRTR*	GRTR*

Station	Survey 1	Survey 2	Survey 3	Cumulative Total
3	SPPE 1 (1)	SPPE 3; GRTR 1 (1)	GRTR*	SPPE 3; GRTR 1 (1); GRTR*
4			GRTR 2 (3)	GRTR 2 (3)
5	SPPE*		GRTR 2 (3)	SPPE*; GRTR 2 (3)
6		SPPE 1 (1)	GRFR 1 (2)	SPPE 1 (1); GRFR 1 (2)

*=Call recorded from outside station area

GRFR = Green Frog, GRTR = Gray Treefrog, SPPE = Spring Peeper

Chorus Code:

1. Individuals of one species can be counted, calls not simultaneous. Number of individuals observed in brackets;
2. Some calls of one species simultaneous, numbers can be reliably estimated. Number of individuals observed in brackets; and
3. Full chorus, calls continuous and overlapping.

No salamanders or other amphibians were observed incidentally or through flipping cover objects during other ecological surveys.

2.2.3.4 Avifaunal Surveys

Breeding Bird Surveys

Following review of CH data, there are no recent records (within the past 25 years) of breeding bird species within the Study Area.

To document the composition of the resident avian community, breeding bird surveys were completed during the mornings of May 26 and June 5, 2021. The surveys were completed during periods with low to moderate winds (0–2 Beaufort Scale), no precipitation and temperatures within 5°C of normal average temperatures. The breeding bird community was surveyed using a roving-type survey, in which all parts of the Subject Property were walked (**Figure 2.4**). All birds observed and exhibiting evidence of breeding were documented and their locations noted on an aerial photograph (**Appendix B-1**). This survey method is superior to the point count methods as it more comprehensively documents the avian communities present.

A list of all breeding birds observed from the Subject Property is provided in **Appendix B-4**.

Thirty-six (36) bird species were observed / heard during the breeding bird surveys on the Subject Property in 2021 (**Appendix B-4**). The composition of the breeding bird community is reflective of the habitats present on the Subject Property, dominated by open anthropogenic spaces, and riparian habitats.

The avian community is comprised of species that are indicative of anthropogenic, rural settings. The most abundant species was Song Sparrow (*Melospiza melodia*), while Red-winged Blackbird (*Agelaius phoeniceus*), Common Yellowthroat (*Geothlyphis trichas*), House Wren (*Troglodytes aedon*), European Starling (*Sturnus vulgaris*), Baltimore Oriole (*Icterus galbula*), American Robin (*Turdus migratorius*), Gray Catbird (*Dumetella carolinensis*), and Northern Cardinal (*Cardinalis cardinalis*) all had more than two (2) territories present.

Biological Sampling

Figure 2.4

150 Steeles Avenue Milton CEMS



Legend

- Subject Property
- Study Area
- Watercourse (MNRF 2021)
- Breeding Bird Survey Area
- Amphibian Call Monitoring Stations
- Reptile Monitoring Areas
- Insect Survey Areas
- Chimney Crayfish Survey Areas
- Bat Snag Survey Area
- Bat Detector Locations

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Other Avian Habitat Surveys

The Sixteen Mile Creek wetlands in the Study Area were investigated for evidence of colonially nesting bird breeding habitat (trees/shrubs). The Provincial database (LIO) notes that within the 1 km grid area, there is a Mixed Wader Colony Wildlife Concentration Area, which is a provincially tracked designation. As such, this habitat may be present in the wetlands associated with the Sixteen Mile Creek valleylands. Following investigation on January 23, 2023, no prior colonial nesting evidence was observed on the Subject Property or Study Area. It is possible that portions of the Sixteen Mile Creek wetland and the Milton Mill Pond, located outside of the Study Area, could support such habitat.

During other ecological surveys of the Subject Property / Study Area in 2022 and 2023, three additional bird species were observed as follows:

- 2022-04-12 American Woodcock – East Study Area;
- 2022-08-05 Green Heron – Sixteen Mile Creek wetland (ELC Unit 7.2); and
- 2023-01-23 Red-Tailed Hawk – Sixteen Mile Creek wetland (ELC Unit 7.2).

No species provincially ranked as S1 through S3 (Critically Imperiled through Vulnerable) or species regulated under the ESA were encountered. However, Eastern Wood-Pewee, listed as Special Concern was observed during the breeding bird survey, with one in the vicinity of ELC unit 5.1. Though this species is Special Concern provincially and federally based on a declining trend over their range, these birds remain relatively common in both urban and urbanizing woodlands and common in the Halton Region (McIlveen 2006). They are somewhat tolerant of forest fragmentation and will live in both edge habitats and forest interiors.

Using the bird status from the Halton Natural Areas Inventory (McIlveen 2006), two species observed on the property are regionally uncommon. These individuals were identified in the following areas:

- Black-and-white Warbler (*Mniotilta varia*) — One territory — ELC Unit 4.3; and
- Green Heron (*Butorides virescens*) — One territory (pair) — ELC Unit 7.2.

No regionally rare avian species were observed on the Subject Property.

Prior to the demolition of the manufacturing facility, neither Barn Swallow nor Chimney Swift were observed in the Study Area during breeding bird surveys or incidentally during other ecological surveys in 2022. The interior of the building could not be closely investigated due to health and safety reasons.

2.2.3.5 Reptile Surveys

To confirm the presence of reptiles, surveys for turtles and snakes were undertaken.

Habitats with potential to support turtle populations such as the tailings pond / wetland and Sixteen Mile Creek were surveyed for basking turtles by slowly walking along the outer edge of the features and surveying the outer edge using binoculars. Surveys were conducted when the air temperature was greater than water temperature and not during inclement weather.

Potential snake hibernaculum areas were also surveyed on the same dates by scanning the edges of vegetation and exposed rubble / rocks and by flipping cover objects in the vicinity of the old rail bed.

Details of these surveys, including weather conditions, are included in **Table 7**.

Table 7. Reptile Survey Details

	Turtle Basking Survey 1	Snake Survey 1	Snake and Turtle Survey 2
Date:	August 5, 2022	August 9, 2022	September 20, 2022
Search time(s):	8:20–9:28 am	12:50–1:05 pm; 4:22–4:30 pm	12:15–1:45 pm
Temp:	21 °C	Approx. 20 °C	23 °C
Wind (Beaufort Scale):	0	Approx. 2	2
Cloud cover:	95%	90%	20%
Precipitation:	None	None	None

No turtles or snakes were noted by Beacon during any field visits on the Subject Property. The observations are as follows:

- The tailings pond / wetland was dry during these surveys and therefore are unlikely to support basking or overwintering habitats for turtles;
- Sixteen Mile Creek water temperature relative to air temperature was conducive to basking behaviour on both dates however, no turtles were observed; and
- No snakes were observed on the tablelands or in the valleylands.

2.2.3.6 Bat Surveys – Snag Trees and Acoustic Monitoring

During the tree inventory, trees with at least 10 cm DBH were also assessed for various bat habitat criteria, as per the MECP updated *'Bat Survey Standards Note 2021'* guideline (undated). This assessment took place on January 26 and 27, 2022.

Potential roosting habitat (tree cavities) for endangered bat species were identified in the Cultural Woodland community on the Subject Property (ELC Unit 2.0).

To confirm the presence / absence of bat species that may be utilizing the woodland, acoustic monitors were deployed in the vicinity of the identified snags and call data was recorded from between June 1 and June 13, 2022 (**Figure 2.4**), in accordance with methods described within *Phase III: Acoustic Surveys* of the *Survey Protocol for Species at Risk Bats within Treed Habitats Little Brown Myotis, Northern Myotis & Tri-Colored Bat* (Guelph District MNRF 2017).

Analysis of the acoustic monitoring data confirmed the occurrence of bat species that are regulated under the ESA. As noted in **Section 2.2.8.1**, the regulation of endangered bat species and habitat will be addressed in accordance with the ESA.

Although roosting habitat on the Subject Property did not meet the criteria for provincial significance for Big Brown Bat (*Eptesicus fuscus*) and Silver-Haired Bat (*Lasionycteris noctivagens*), some calls from these species were also detected during acoustic monitoring.

2.2.3.7 Raptor Habitat Survey

To detect potential nest sites of woodland raptors and assess the potential for their winter habitat, a survey was conducted on January 22, 2023, during favourable conditions for observing raptors and nests. The wooded portions of the Subject Property were walked to within 50 m to search suitable trees for potential raptor nests. Adjacent woodlands to the southeast of the Subject Property and treed areas to the west, in association with the Sixteen Mile Creek wetland, were also scanned for potential stick nests.

Three stick nests potentially suitable for raptors, particularly Cooper's Hawk, were located in the woodland (ELC Unit 2.0) as shown in **Appendix B-5**. Each of these nests appeared old and one was incomplete, although nests may be reused and repaired by nesting raptors. A large (approximately 1 m across) squirrel drey (nest) was observed in the forest outside the Subject Property to the south, and this may also provide a nesting structure for woodland raptors. No nest building activity was observed in winter 2023.

Seasonal surveys between April and May would be required to determine occupancy of these nests.

No raptor overwintering habitat was observed in winter 2023. The open areas of the Subject Property are primarily unvegetated and have been cleared for soil remediation. As such, these areas would provide poor habitat for small mammal prey of raptors and the area is not considered suitable to support high concentrations of wintering raptors. During the January field visit, raptors were not observed in the open areas of the Subject Property however, one Red-tailed Hawk was observed in the Sixteen Mile Creek wetland (ELC Unit 7.2) on the western edge of the Subject Property.

2.2.3.8 Terrestrial Crayfish Survey

Beacon conducted surveys for terrestrial crayfish in depressions, swales, and wet areas on the Subject Property, primarily in the vicinity of the former tailings pond / wetland on July 27, August 5, August 9, and September 20, 2022. An additional survey was conducted on the adjacent Town property on May 3, 2023, to identify a suitable relocation site. Terrestrial crayfish were identified by the presence of a pile or chimney of dried mud pellets. As terrestrial crayfish excavate their burrows, they bring pellets of mud to the burrow entrance and build a chimney or pile. Terrestrial crayfish live at the depth of groundwater. As these chimneys were surveyed in dry conditions, most of the chimneys were sealed with a mud cap — a means for the crayfish to prevent water loss and desiccation.

A 1.2 m long Dutch-head soil auger was used to determine the presence or depth of shallow groundwater near the burrows on August 9, 2022.

A total of 56 burrows were identified on the Subject Property, in the fall of 2022 (**Appendix B-6**). At this time, the groundwater was more than 1 mbgs. It should be noted that in the literature (Guiasu 2002), digger crayfish (*Creaserinus fodiens*) have been observed in burrows as deep as 1.5 mbgs.

The 56 burrows were associated with the tailings pond / wetland (ELC Units 5.1, 5.2 and 9). Their locations are noted in **Table 8**.

Table 8. Terrestrial Crayfish Burrow Observations (2022)

ELC Unit or Inclusion	Number of Burrows Observed
Ditch inclusion in ELC Unit 4.6 (CUS1), near CSP that conveys flows to ELC Unit 5.1 (SWT2-5)	2
5.1 (SWT2-5)	48
5.2 (SWT2-5), near CSP inlet conveying flows from ELC Unit 9.0 (MAS2-1)	4
9.0 (MAS2-1)	2

2.2.3.9 Dragonfly, Damselfly and Butterfly Surveys

Field investigations for species of Odonata (dragonflies and damselflies) and Lepidoptera (butterflies, skippers and moths) were conducted by Beacon during warm, sunny days with minimal winds on August 5 and 12, 2022, as described in **Table 9**. Binoculars were used to observe insect species. If required, individuals were captured using a net and examined using a hand lens before being released. Species locations are typically noted if they had a ranking of S4 or lower (more sensitive) or if a species generally occurs in densities low enough as to warrant mention.

Table 9. Dragonfly, Damselfly and Butterfly Survey Details

	Survey 1	Survey 2
Date:	August 5, 2022	August 12, 2022
Area:	Tailings pond / wetland	Sixteen Mile Creek wetlands
Temp:	27 °C	25 °C
Wind (Beaufort Scale):	2	1
Cloud cover:	40%	30%
Precipitation:	None	None

Thirteen species of Odonata and Lepidoptera were found on the Subject Property in 2022, as shown in **Table 10**.

Table 10. Dragonflies and Butterflies Recorded on the Subject Property

Common Name	Scientific Name	Total Recorded	Provincial S rank
Slender Spreadwing	*Lestes rectangularis*	6	S5
Stream Bluet	*Enallagma exsulans*	1	S5
Marsh Bluet	*Enallagma ebrium*	3	S5
Eastern Forktail	*Ischnura verticalis*	8	S5
Common Whitetail	*Plathemis lydia*	5	S5
Clouded Sulphur	*Colias philodice*	1	S5
Cabbage White	*Pieris rapae*	72	SNA
Monarch	*Danaus plexippus*	3	S2N, S4B
Viceroy	*Limenitis archippus*	5	S5
American Lady	*Vanessa virginiensis*	1	S5
Eastern Tailed-Blue	*Cupido comyntas*	2	S5
Common Wood-nymph	*Cercyonis pegala*	6	S5
Least Skipper	*Ancyloxypha numitor*	6	S5

Legend: Provincial Status (Srank): S5 = Secure; S4 = Apparently Secure; S3 = Vulnerable; S2 = Imperiled, SNA = Not applicable (exotic species)

Monarch was observed in the vicinity of the former tailings pond / wetland; however, there was no significant habitat on site as milkweed was not abundant.

2.2.4 Natural Hazards

Section 3.1 of the PPS provides the Province's direction with respect to protecting public health and safety in relation to natural hazards. Relevant portions of Policy 3.1.1 state the following:

> *Development shall generally be directed, in accordance with guidance developed by the Province (as amended from time to time), to areas outside of:*
> - *d) hazardous lands adjacent to the shorelines of the Great Lakes-St. Lawrence River System and large inland lakes which are impacted by flooding hazards, erosion hazards and/or dynamic beach hazards;*
> - *e) hazardous lands adjacent to river, stream and small inland lake systems which are impacted by flooding hazards and/or erosion hazards; and,*
> - *f) hazardous sites.*

Subsections (a) and (c) are not applicable to the Subject Property. The following subsections provide an overview of the components of subsection (b) that are applicable to the Subject Property.

2.2.4.1 Regional Storm Flood Plain

Reach W1 of the Sixteen Mile Creek traverses a small portion of the western edge of the Subject Property however, the majority of the watercourse is located off-site. The HEC-RAS model for this reach (from cross-section 1831 to 1006) scenario "Future Flows" was obtained from CH on October 6, 2022. In addition to the HEC-RAS model, CH's digital elevation model (DEM) files for the Study Area were also obtained to confirm the HEC-RAS model geometry and to facilitate flood plain mapping. It was found that the HEC-RAS sections were consistent with the CH DEM.

The Manning's roughness for the existing corridor (main channel and overbank areas) varied based on the surrounding land use. Cross sections in proximity to road crossings/rail lines had a value of 0.035 for the main channel and 0.08 for overbank areas that was applied to the CH model. Cross sections between road crossings/rail lines had a value of 0.032 for the main channel and 0.045 for overbank areas.

Contraction and expansion coefficients were set to 0.1 and 0.3, respectively, for smooth transitions between cross-sections. At abrupt transitions (i.e., upstream and downstream of culverts or at changes in channel width), the contraction and expansion coefficients were increased to 0.3 and 0.5, respectively.
No changes were made to the CH model as all geometry and parameters appeared to be consistent with acceptable values. CH noted that the peak flows in the HEC-RAS model were based on the preliminary results from the Urban Milton Floodplain Mapping Update that was released in March 2020. Although the flows used in the model are the best available information at this time, CH staff have noted they may be subject to change as the hydraulic model update for the area is finalized. Although this

may be the case, the flood plain is contained well within the valley and would not be expected to extend beyond the top of bank. No flow change locations have been included in the model. Flows for the entire reach are shown in **Table 11**.

Table 11. HEC RAS Existing Flows

Flow (m^3/s)						
2-year	**5-year**	**10-year**	**25-year**	**50-year**	**100-year**	**Regional**
10.8	22.49	31.56	45.27	56.76	67.05	243.04

Under existing conditions, three crossings are located in proximity of the Subject Property as outlined in **Table 12**.

Table 12. Summary of Crossing Structures

Location	Type	River Station	Height (m)	Length (m)	Width (m)
East of Bronte Road	Railroad crossing – Two culverts	1772	4.2	66.7	4.2
Bronte Street North	Arch bridge	1630	2	8.34	12.2
South of 150 Steeles	Railroad crossing - beam bridge	1032	3.54	7.12	18.2

Flood mapping was prepared for the existing Regional flow scenario (refer to **Appendix D - Drawing 2**). This flood mapping informs the constraint mapping for the Subject Property. As shown in the drawing, the Regional Storm flood plain is contained within the Sixteen Mile Creek valley and does not impact the tablelands of the Subject Property. **Table 13** outlines the results of the HEC-RAS model for the cross sections in proximity to the Subject Property.

Table 13. Summary of HEC-RAS Model Results

River Station	W.S. Elevation (m)						
	2-year	**5-year**	**10-year**	**25-year**	**50-year**	**100-year**	**Regional**
1831	198.35	198.97	199.38	199.93	200.36	200.73	206.07
1772	Railroad Culvert						
1721	198.11	198.43	198.64	198.92	199.07	199.19	201.42
1645	197.99	198.32	198.53	198.82	198.97	199.08	201.43
1630	Bronte Road Bridge						
1619	197.94	198.18	198.30	198.47	198.61	198.60	201.44
1223	197.26	197.51	197.68	197.93	198.13	198.32	201.41
1109	197.15	197.44	197.62	197.87	198.09	198.28	201.41
1083	197.14	197.43	197.61	197.87	198.08	198.28	201.34
1053	197.10	197.38	197.55	197.81	198.02	198.22	201.44
1032	Railroad Bridge						
1006	196.88	197.01	197.11	197.23	197.31	197.53	199.22

2.2.4.2 Long Term Stable Top of Slope

As noted in **Section 2.2.2**, CH staked the limit of the physical top of bank on July 16, 2021, as shown on **Figure 2.2** and **Appendix C-1 - Drawing 1A**. DS Consultants completed a Slope Stability Assessment to determine Long-Term Stable Top of Slope (LTSTOS) (**Appendix C-1**). Cross-Sections A-A through J-J are presented on **Drawing 5** through **Drawing 14** of **Appendix C-1**. The points representing the LTSTOS at the cross-sections were determined using the following criteria:

- If the stable top of slope determined in the slope stability analysis is further away from the creek than the physical top of slope that CH staked, then the stable top of slope determined in the slope stability analysis is considered the LTSTOS; and
- If the stable top of slope determined in the slope stability analysis is closer to the creek than the physical top of slope that CH staked, then the CH staked top of slope is considered the LTSTOS.

As observed while on site with CH on July 16, 2021, there is a localized area of slope erosion in the vicinity of the storm sewer outfall (between points S1-S4 on **Figure 1B, Appendix C-1**). The area of slope erosion is illustrated in **Photographs 1** and **2** below. The analysis has considered the location of the LTSTOS with and without stabilization/repairs to this area. Based on the results of the assessment, the points representing the LTSTOS at the west part of the Subject Property (the area of Cross-Sections A-A to D-D, see **Drawing 1B** of **Appendix C-1**) are as follows:

- Point “S1” on **Drawing 5** represents the LTSTOS at Cross-Section A-A;
    - Point “S2a” on **Drawing 6** represents the LTSTOS at Cross-Section B-B;
    - Point “S3a” on **Drawing 7** represents the LTSTOS at Cross-Section C-C; and
    - Point “S4” on **Drawing 8** represents the LTSTOS at Cross-Section D-D.

As such, based on the above, LTSTOS at the west part of the site is Line S1-S2a-S3a-S4, as shown on **Drawing 1B.**



Photograph 1. Mid- and Upper-Slope of Eroded Area. Upper eroded slope is indicated with yellow dashed line. Note the side slopes of this area are approximately ¾ h:1 v. Photo facing north, taken July 18, 2023.



Photograph 2. Lower Slope of Eroded Area. Boundary between mid- and lower-slope indicated with orange dashed line. Note the side slopes of this area are approximately ¾ h:1 v. Photo facing north, taken July 18, 2023.

Methods to address the eroded slope are discussed in **Section 3.3.**

Long-term Stable Top of Slope from Cross-Sections D-D through J-J

For most of the subject slope (from Cross-Sections D-D to J-J, see **Drawing 1A** of **Appendix C-1**), the LTSTOS is located at the top of bank as staked by CH on July 16, 2021, as summarized below:

- Point "S4" on **Drawing 8** represents the LTSTOS at Cross-Section D-D, which is at CH Staked Top of Bank;
- Point "S5" on **Drawing 9** represents the LTSTOS at Cross-Section E-E, which is at CH Staked Top of Bank;
- Point "S6" on **Drawing 10** represents the LTSTOS at Cross-Section F-F, which is at CH Staked Top of Bank;
- Point "S7" on **Drawing 11** represents the LTSTOS at Cross-Section G-G, which is at CH Staked Top of Bank;
- Point "S8" on **Drawing 12** represents the LTSTOS at Cross-Section H-H, which is at CH Staked Top of Bank;

- Point "S9" on **Drawing 13** represents the LTSTOS at Cross-Section I-I, which is at CH Staked Top of Bank; and
- Point "S10" on **Drawing 14** represents the LTSTOS at Cross-Section J-J, which is at CH Staked Top of Bank.

2.2.5 Human-Made Hazards

Section 3.2 of the PPS addresses human-made hazards. Subsection 3.3.2 states the following:

> *Sites with contaminants in land or water shall be assessed and remediated as necessary prior to any activity on the site associated with the proposed use such that there will be no adverse effects.*

The environmental soil and groundwater conditions on the Subject Property have been investigated through numerous past environmental site assessments, including:

- *"Update Phase I Environmental Site Assessment, 150 Steeles Avenue East, Milton, Ontario",* prepared for Meritor Suspension Systems Company, prepared by Pinchin Environmental Ltd., dated July 13, 2009 (Pinchin - 2009 Phase I ESA Update)*;*
- *"Phase II Environmental Site Assessment, 150 Steeles Avenue East, Milton, Ontario"*, prepared by AEL environment, prepared for McMillan LLP, as counsel for MSM Canada Inc., dated December 16, 2013 (AEL – 2013 Phase II ESA);
- *"Supplemental Phase II Environmental Site Assessment – Landfill Test Pitting Program, 150 Steeles Avenue East, Milton, Ontario"*, prepared by AEL environment, prepared for McMillan LLP, as counsel for MSM Canada Inc., dated August 26, 2014 (AEL – 2014 Landfill Test Pitting Program);
- *"Phase II Environmental Site Assessment, 150 Steeles Avenue East, Milton, Ontario"*, prepared by AEL environment, prepared for McMillan LLP, as counsel for MSM Canada Inc., dated October 3, 2014 (AEL – 2014 Phase II ESA Update); *and*
- *"Final Remedial Investigation, 150 Steeles Avenue East, Milton, Ontario",* prepared for NEATT Communities*,* prepared by Pinchin, dated November 11, 2020 (Pinchin 2020 Remedial Investigation).

Soil and groundwater quality assessments completed to date have indicated that the primary contaminants of concern (COCS) include petroleum hydrocarbons (PHCs) F1 to F4, metals (primarily hexavalent chromium (Cr6+)) and to a lesser extent cadmium, lead, and inorganics electrical conductivity (EC) and sodium adsorption ratio (SAR). In addition to soil/groundwater remediation, a landfill that contains a mixture of construction debris, oily mill scale and soil will be removed. The location and known extent of these contaminants are shown on **Figure 3.1**

Remediation through excavation and off-site disposal is the selected management approach to address the existing impacted (contaminated) soil on-site. The remedial excavation will be concluded with soil verification chemical testing to confirm the remaining soils meet the applicable MECP Site Condition Standards.

There are no groundwater users on the Subject Property, as such the residual groundwater contamination does not pose a hazard to human health. However, the impacted groundwater will be

remediated through a pump and treat system, in support of the RSC which will be obtained in the future to support the proposed change in land use.

In addition to the contamination identified on the tablelands, past environmental investigations have included assessment of the sediment quality within Sixteen Mile Creek. This previous testing has confirmed that metal-based contaminant concentrations exceeding the MECP sediment standards are present within the sediment of Sixteen Mile Creek on the Subject Property (see **Appendix C-3** - Figures C1–C3). DS Consultants completed a Due Diligence Risk Assessment (DDRA) to analyze contaminant concentrations and the potential risk to both human and ecological receptors. Elevated risk to human receptors was not identified.

The DDRA identified potential pathways by which aquatic life may be exposed to contaminants in the sediment. These complete exposure pathways include the following:

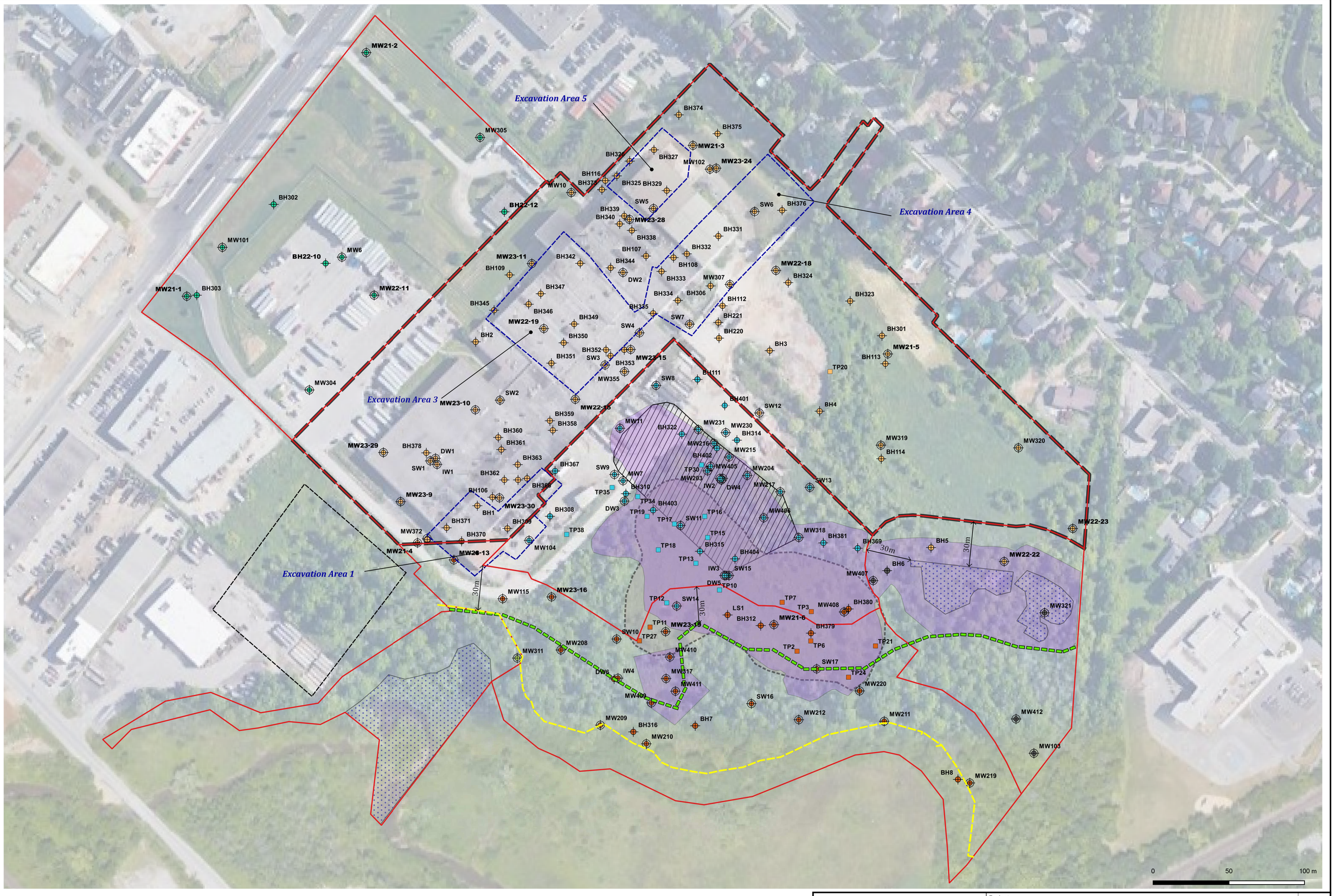
- Direct contact by benthic invertebrates, aquatic plants and fish;
- Ingestion of aquatic plants by aquatic invertebrates and fish; and
- Ingestion of aquatic invertebrates by fish.

Mammals and birds are not expected to have significant contact with contaminants in the sediment. The ecological risk assessment calculated risk estimates known as hazard quotients which identified that risks from direct contact with nickel and zinc in sediment are above the target of 1.0. Despite the elevated hazard quotient identified for nickel and zinc, it is the professional opinion of DS Consultants that the disruption caused by dredging the sediment and resulting suspension and mobilization of impacted sediment within the ecosystem will result in more environmental harm than leaving the sediment in place.

When the impacts of remedial action will result in more environmental harm than leaving the contaminants in place, the remedial action should not be implemented (MECP, 2008; USEPA, 1998). At this time, prior to any additional lines of evidence of severe toxicity to ecological receptors, it is deemed unnecessary to remove the contaminated sediment within the creek bed.

Based on the elevated risk level identified for aquatic receptors, a review of remediation options was completed as part of the risk assessment process. A summary of potential risk management measures is provided below:

- **Physical Capping** – this is accomplished by applying a cover of clean material on top of the contaminated sediment to effectively eliminate or reduce biogeochemical or physical interaction with the overlying water column. Physical capping is not recommended at this location due to the minimal water depth and high flows within this reach of Sixteen Mile Creek, which would limit the effectiveness of this method;
- **Direct Removal** – physical removal of the shallow sediment within the Subject Property would directly address the primary sources of potential impairment to the habitat. This could include hydraulic dredging as it is an efficient means to remove the target sediments down to a specific elevation without the need to disturb areas outside of the necessary dredge footprint. Mobilization of machinery to complete this work would require either tree removal to approach from the west or destruction of wetland areas adjacent to Sixteen Mile Creek to install a temporary access road. Contaminated sediment would be suspended during dredging activities and would be mobilized to downstream receptors. While the result of the dredging would eventually result in improved sediment quality, there would be significant



Legend

- RSC Property Boundary
- Borehole - Others -A1
- Borehole - Others -A2
- Borehole - Others -A4
- Borehole - Others -A5
- Borehole - Others -A6
- Monitoring Well - Others -A1
- Monitoring Well - Others -A2
- Monitoring Well - Others -A3
- Borehole - Others -A3
- Monitoring Well - Others -A4
- Monitoring Well - Others -A5
- Monitoring Well - Others -A6
- Test Pit - Others -A2
- Test Pit - Others -A5
- Test Pit - Others -A4
- Top of Bank as staked by Conservation Halton July 16, 2021
- CH Regulatory Area Boundary
- Lands subject to non-potable groundwater request
- Impacted Area
- Approx. Area of Groundwater Impacts
- Limit of Woodland as staked by the Region of Halton on November 22, 2021
- Wetland as staked by Conservation Halton on July 16, 2021
- Former Landfill

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Client: NEATT COMMUNITIES

Project: ENVIRONMENTAL STATUS MEMO
150 Steeles Avenue East, Milton, ON

Title: **APPROXIMATE LIMITS OF SOIL AND GROUNDWATER REMEDIATION AREAS**

Size:	Approved By:	Drawn By:	Date:
17x22	R.F	S.Y	August 2023
Rev.: 0	Scale: As Shown	Project No.: 21-122-100	Figure No.: **3.1**

Image/Map Source: *Google Satellite Image*

C:\DSharon\21-122-100 Enviro Geo Investigations 150 Steeles Ave E\1-QGIS\ENV\Figure 3-1 for Discussion with Revised Areas.qgs Aug-18 09:36

disruption to aquatic and terrestrial habitat including the removal of benthic organisms and aquatic plants as well as treed areas along the valley slope to gain access to the work area. Sediment removal may also cause harm to aquatic habitat. Direct removal is not recommended; and

- **No-Action Alternative** – when the impacts of a remedial action will result in more environmental harm than leaving the contaminants in place, the remedial action should not be implemented (MECP, 2008; USEPA, 1998).

The No-Action Alternative is recommended by DS Consultants as both of the remedial options identified have considerable negative impacts associated with them and will result in significant physical disruption of the existing ecosystem that would ultimately contribute to net environmental harm and/or complete disruption/removal of the benthic and aquatic habitat.

2.2.6 Surface and Ground Water Features

Section 2.2.1 of the PPS addresses policies related to water. Specifically, this section requires that planning authorities shall protect, improve or restore the quality and quantity of water by:

a) using the watershed as the ecologically meaningful scale for integrated and long-term planning, which can be a foundation for considering cumulative impacts of development;
b) minimizing potential negative impacts, including cross-jurisdictional and cross-watershed impacts;
c) evaluating and preparing for the impacts of a changing climate to water resource systems at the watershed level;
d) identifying water resource systems consisting of ground water features, hydrologic functions, natural heritage features and areas, and surface water features including shoreline areas, which are necessary for the ecological and hydrological integrity of the watershed;
e) maintaining linkages and related functions among ground water features, hydrologic functions, natural heritage features and areas, and surface water features including shoreline areas;
f) implementing necessary restrictions on development and site alteration to:
    a. protect all municipal drinking water supplies and designated vulnerable areas;
    b. protect, improve or restore vulnerable surface and ground water, sensitive surface water features and sensitive ground water features, and their hydrologic functions.
g) planning for efficient and sustainable use of water resources, through practices for water conservation and sustaining water quality;
h) ensuring consideration of environmental lake capacity, where applicable; and
i) ensuring stormwater management practices minimize stormwater volumes and contaminant loads, and maintain or increase the extent of vegetative and impervious surfaces.

Section 2.2.2 of the PPS notes that:

> *Development and site alteration shall be restricted in or near sensitive surface water features and sensitive ground water features such that these features and their related hydrologic functions will be protected, improved or restored. Mitigative measures and/or alternative development approaches may be required in order to protect, improve or restore sensitive surface water features, sensitive ground water features, and their hydrologic functions*.

Sensitive surface water features and groundwater features are defined by the PPS as "areas that are particularly susceptible to impacts from activities or events including, but not limited to, water withdrawals, and additions of pollutants." The Halton-Hamilton Source Protection Plan (November 2022) does not identify this reach of Sixteen Mile Creek as a sensitive water feature nor is it within an area of sensitive groundwater features.

The Subject Property was within the Study Area for the Sixteen Mile Creek Areas 2 and 7 Subwatershed Study (SWS), prepared by Philips Planning and Engineering Limited (January 2000). Although the main focus of the SWS was the Phase 1 area of Milton, there are a few characterizations that were made with respect to water resources on the Subject Property:

- The Sixteen Mile Creek, flowing to the west of the Subject Property, was identified as a Perennial Stream with Natural Channel Form on Figure 10 of the SWS; and
- Fish sampling stations 2A8 (described as from Bronte Road bridge to 50m downstream) and 2A7 (immediately downstream of footbridge adjacent to Mill Pond) are shown on Figure 11 of the SWS. The fish species recorded in the SWS are consistent with recent CH records (see **Section 2.2.8.7**).

2.2.6.1 Surface Water Features

The Sixteen Mile Creek traverses a small corner of the Subject Property within a confined valley system. The Sixteen Mile Creek is regulated by CH pursuant to Ontario Regulation 162/06.

The surface water features in the valley system (i.e., riparian wetland) is assumed to be maintained primarily by flows from the creek and upstream catchment area and input from the Subject Property is anticipated to be limited, as illustrated on the pre-remediation drainage plan (**Appendix D – Drawing 1**). As discussed in **Section 2.5.1**, a stormwater outlet was decommissioned as part of the demolition works and no longer contributes stormwater into the valley of Sixteen Mile Creek. No indicators of groundwater discharge were observed along the slope at the west limit of the Subject Property, suggesting little to no groundwater input. As the remediation works are not anticipated to impact surface flows in the long-term and will address the presence of pollutants (as outlined in **Section 3**), Sixteen Mile Creek and the riparian wetland are expected to benefit from the site remediation works through the removal of contaminants in nearby soils and groundwater and no negative impacts are anticipated.

2.2.6.2 Ground Water Features

The Study Area is fully serviced by municipal water supply. A door-to-door survey has confirmed that there is no use of groundwater as a source of drinking water within a 500 m radius from the Subject Property. As such, no short-term or long-term impacts on private water wells are anticipated from the proposed dewatering activities to treat the contaminated groundwater.

The Region has previously confirmed that the Subject Property is not located within a wellhead protection area, nor is it located within a highly vulnerable aquifer.

2.2.7 Man-Made Features

On August 21, 2023, following receipt of comment from CH, DS assessed a concrete structure located near the toe of the localized area of slope erosion. Upon completion of the assessment DS is of the opinion that the structure is not a well. There is a concrete enclosure which houses a small compression chamber with a gas pressure valve. The structure does not appear to be connected in any apparent way.

Other anthropogenic surface debris, including old tents, garbage and rubble, have been observed in the Cultural Woodland community (ELC 2.0).

2.2.8 Evaluation of Significant Natural Heritage Features/Functions, Natural Hazards and Water Resources

2.2.8.1 Significant Habitat of Endangered or Threatened Species

Significant habitat of endangered and threatened species is recognized as a Key Feature within the RNHS. It should be reiterated that ROP Policy 118(2)(a) has an exception for development or site alteration that takes place within significant habitat of endangered and threatened species in accordance with Provincial and Federal legislation and regulations.

The ecological surveys, completed in accordance with MECP and OMNR protocols, confirm that the woodland feature on the Subject Property supports habitat for endangered bat species, as delineated by the woodland dripline on **Figure 2.2**. As no other areas of the Subject Property support habitat of endangered or threatened species, the limits correspond with the woodland dripline as staked by the Region.

Any alteration of this Key Feature, which is required to complete the soil remediation in support of RSC filing, which is required under the *Environmental Protection Act*, will be done so in accordance with the ESA. A Notice of Activity form was be submitted to the Ministry on March 8, 2023, in accordance with Ontario Regulation 242/08, s. 23.18 (Threats to Health and Safety, Not Imminent) as demonstrated in **Appendix E**. Alteration of this Key Feature will be mitigated based on the adaptive approach to remediation (**Section 3.2.2**) and the bat mitigation plan, as discussed in **Section 3.5.2.2**.

2.2.8.2 Significant Wetlands and Non-Significant Wetlands

Wetlands are defined by the PPS and Greenbelt Plan (2017) as:

> *Lands that are seasonally or permanently covered by shallow water, as well as lands where the water table is close to or at the surface. In either case the presence of abundant water has caused the formation of hydric soils and has favoured the dominance of either hydrophytic plants or water tolerant plants. The four major types of wetlands are swamps, marshes, bogs and fens.*

> *Periodically soaked or wetlands being used for agricultural purposes which no longer exhibit wetland characteristics are not considered to be wetlands for the purposes of this definition.*

Significant Wetlands are Key Features of the RNHS. As it relates to wetlands and areas of natural and scientific interest, "significant" is defined by the PPS as:

> *An area identified as provincially significant by the Ontario Ministry of Natural Resources and Forestry using evaluation procedures established by the Province, as amended from time to time.*

There are no Provincially Significant Wetlands (PSWs) on or adjacent to the Subject Property. The Milton Wetland Complex associated with the Sixteen Mile Creek floodplain has been evaluated by MNRF; however, it is not provincially significant.

The following definition of significance, from the ROP also needs to be considered for this study:

- *For lands within the Greenbelt Plan Area but outside the Niagara Escarpment Area, Provincially Significant Wetlands and wetlands as defined in the Greenbelt Plan;*
- *For lands within the Regional Natural Heritage System but outside the Greenbelt Plan Area, Provincially Significant Wetlands and wetlands that make an important ecological contribution to the Regional Natural Heritage System; and*
- *Outside the Regional Natural Heritage System, Provincially Significant Wetlands.*

Although the wetland communities associated with Sixteen Mile Creek (i.e., the Milton Wetland Complex) do not meet the provincial definition of significance, they do meet the ROP definition of significance, as the wetlands are within the Urban River Valley designation of the Greenbelt Plan.

While located within the existing RNHS, the small wetland associated with the former tailings pond (ELC Units 5.1, 5.2, and 9.0) does not provide an important ecological contribution to the RNHS. This wetland is a contaminated, anthropogenic feature that is very small in area and therefore not considered to provide an important ecological contribution to the RNHS and would not meet the definition of significant wetland. This feature would instead be considered a '*wetland other than those considered significant under Section 115.3(1)b)*' as per ROP Policy 115.3(6). This wetland is still part of the RNHS but, rather than a Key Feature, it is considered a component of the RNHS.

2.2.8.3 Significant Woodlands

Significant Woodlands are also Key Features of the RNHS. Significant Woodlands are defined in the PPS and in the ROP. Both definitions are consistent with respect to attributes and functions that make a woodland significant, however there is some variability in how they are to be identified.

The PPS defines Significant Woodlands as follows:

> *… an area which is ecologically important in terms of features such as species composition, age of trees and stand history; functionally important due to its contribution to the broader landscape because of its location, size or due to the amount of forest cover in the planning area; or economically important due to site quality, species*

> *composition, or past management history. These are to be identified using criteria established by the Ontario Ministry of Natural Resources and Forestry.*

The ROP and MOP include definitions of woodlands and significant woodlands. A Significant Woodland is considered a woodland that is 0.5 ha or larger determined through a Watershed Plan, a Sub-watershed Study or a site-specific Environmental Impact Assessment to meet one or more of the following criteria:

- The woodland contains forest patches over 99 years old;
- The patch size of the woodland is 2 ha or larger if it is located in the Urban Area, or 4 ha or larger if it located outside the Urban Area but below the Escarpment Brow, or 10 ha or larger if it located outside the Urban Area but above the Escarpment Brow;
- The woodland has an interior core area of 4 ha or larger, measured 100 m from the edge; or
- The woodland is wholly or partially within 50 m of a major creek or certain headwater creek or within 150 m of the Escarpment brow.

The following ELC units meet the ROP and MOP definition of a Significant Woodland:

- ELC Unit 2.0 — The tableland-associated cultural woodland community that is 2.4 ha in area;
- ELC Unit 6.0 — The slope-associated deciduous forest community that is 1.2 ha in area and within 50 m of the regulated watercourse of Sixteen Mile Creek; and
- ELC Unit 10.0 — A Sugar Maple forest community outside of the Subject Property, divided by a railway corridor, that is approximately 5.2 ha in area.

The limits of the Significant Woodland on the Subject Property were staked with Region staff on November 22, 2021 (**Figure 2.2**).

Areas of the woodland that will be affected by soil remediation works will be restored through re-vegetation. The existing woodland (ELC Unit 2.0) is early successional and established following abandonment of farming in the 1960's. It is dominated by Black Walnut and Ash, which are not reflective of the original composition of forest communities in this area. There is however a small patch of remnant forest on the property to the south (ELC Unit 10) which has been classified as a Dry–Fresh Sugar Maple Forest (FOD5) and represents a more appropriate target community for restoration. The intention of the Restoration Plan, as discussed in **Section 4.1.2,** will be to direct the ecological trajectory of the woodland towards this target community.

2.2.8.4 Significant Valleylands

Significant Valleylands are also Key Features of the RNHS. As it relates to valleylands, significant is defined by the PPS as:

> *Ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or natural heritage system …*

Significant valleylands are normally identified by municipalities with input from their agency partners. The ROP and the MOP do not identify significant valleylands and, as such, it is the responsibility of individual proponents to evaluate for significance.

Table 8-1 in the *Natural Heritage Reference Manual* (MNR 2010) provides recommended criteria for evaluating significant valleylands, including criteria relating to landform functions and attributes, ecological features and restored ecological functions. The Sixteen Mile Creek valleyland adjacent to the Subject Property meets many of the criteria in this table and is therefore considered significant valleyland and a Key Feature of the RNHS.

The top of slope of the valleyland on the Subject Property was staked by CH staff on July 16, 2021. DS Consultants subsequently completed a Slope Stability Assessment (**Appendix C-1**) to determine the position of the LTSTOS. For the most part, the staked top of bank was confirmed to be the LTSTOS with the exception of one localized area where a former stormwater outfall has resulted in erosion along the valley wall. Slope stabilization works proposed in this area will have the effect of restoring the physical top of bank to its original location and making it stable, For the purpose of defining the constraint limits, the greater of the staked top of slope or LTSTOS plus the 15 m setback has been used to define the limits of the Significant Valleyland. (**Figure 2.2**)

2.2.8.5 Significant Wildlife Habitat

Significant Wildlife Habitat (SWH) is also a Key Feature of the RNHS. SWH represents a combination of natural heritage features, attributes and functions that are intended to capture the best examples of wildlife habitat within a planning area such as an upper or lower tier municipality. The responsibility for confirming SWH is assigned to the planning authority (i.e., Town, Region); however, many municipalities rely upon proponents to identify potential SWH through planning studies.

The ROP and PPS share a very similar definition of significant as it pertains to SWH:

PPS	ROP
In regard to other features and areas, ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or natural heritage system	In regard to the other components of the RNHS, ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or natural heritage system

To determine if any of the natural features on the Subject Property potentially support candidate SWH, the *Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E* (MNRF 2015) was consulted.

According to the *Significant Wildlife Habitat Technical Guide (*OMNR 2000), there are four broad categories of Significant Wildlife Habitat (SWH):

- Habitats of Seasonal Concentration Areas of Animals;
- Rare Vegetation Communities or Specialized Habitat for Wildlife;
- Habitat for Species of Conservation Concern; and
- Animal Movement Corridors.

Within each of these categories, there are multiple types of SWH, each of which is intended to capture a specialized type of habitat that may or may not be captured by other existing feature-based categories (e.g., significant wetlands, significant woodlands).

Based on the *Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E* (MNRF 2015), the woodland habitat and former tailings pond / wetland associated with the Subject Property may satisfy ecoregional criteria for the following habitat types:

- Cultural Woodland — ELC Unit 2.0:
  - Amphibian Breeding Habitat (Woodland); and
  - Woodland Raptor Nesting (Cooper's Hawk).
- Former tailings pond / wetland— ELC Units 5.1, 5.2, and 9.0:
  - Amphibian Breeding Habitat (Woodland);
  - Special Concern and Rare Wildlife Species (Eastern Wood-Pewee) – **Possible**; and
  - Terrestrial Crayfish.

- Sixteen Mile Creek Wetlands — ELC Unit 7.3:
  - Amphibian Breeding Habitat (Woodland).

The following SWH have been identified as possible, on the adjacent lands, and would require further field investigations and/or analysis to confirm:

- Sixteen Mile Creek Wetlands — ELC Unit 7.3:
  - Colonially-Nesting Bird Breeding (Tree/Shrubs) – **Possible** (likely out of Study Area);
- Deciduous Forest — ELC Unit 10.0:
  - Bat Maternity Colonies (**Possible**).

A detailed analysis of SWH is presented in **Appendix B-7**, which has been revised for the second CEMS submission**.** The locations of the ELC communities that correspond with the SWH described above are illustrated on **Figure 2.3.**

As the former tailings pond / wetland will be removed as a result of the site remediation, a rescue was conducted for Terrestrial Crayfish and amphibians as required by MNRF. See **Section 3.4.2** for more information on wildlife rescue.

2.2.8.6 Significant Areas of Natural and Scientific Interest

Significant Areas of Natural and Scientific Interest (ANSI) are also Key Features of the RNHS. ANSI are defined by the PPS as:

> *Areas of land and water containing natural landscapes or features that have been identified as having life science or earth science values related to protection, scientific study or education.*

There are no provincially significant ANSI proximal to the Subject Property. The closest ANSI is the Provincially Significant Milton Heights Earth Science ANSI which is located more than 2 km to the west.

2.2.8.7 Fish Habitat

Fish habitat is present in Sixteen Mile Creek on and adjacent to the Subject Property. Records between 2000 and 2022, provided by CH, document the following fish species within the west branch (#16) of Sixteen Mile Creek: Black Crappie (*Pomoxis nigromaculatus*), Bluegill (*Lepomis macrochirus*), Bluntnose Minnow (*Pimephales notatus*), Brassy Minnow (*Hybognathus hankinsoni*), Brook Stickleback (*Culaea inconstans*), Brown Bullhead (*Ameiurus nebulosus*), Brown Trout (*Salmo trutta*), Central Mudminnow (*Umbra limi*), Common Shiner (*Luxilus cornutus*), Creek Chub (*Semotilus atromaculatus*), Fantail Darter (*Etheostoma flabellare*), Fathead Minnow (*Pimephales promelas*), Goldfish (*Carassius auratus*), Hornyhead Chub (*Nocomis biguttatus*), Johnny Darter (*Etheostoma nigrum*), Largemouth Bass (*Micropterus salmoides*), *Lepomis* sp., Longnose Dace (*Rhinichthys cataractae*), Minnow species (*Leuciscidae*), Mottled Sculpin (*Cottus bairdi*), Northern Hog Sucker (*Hypentelium nigricans*), Northern Pike (*Esox lucius*), Pumpkinseed (*Lepomis gibbosus*), Pumpkinseed (*Lepomis gibbosus*), Rainbow Darter (*Etheostoma caeruleum*), Rainbow Trout (*Oncorhynchus mykiss*), River Chub (*Nocomis micropogon*), Rock Bass (*Ambloplites rupestris*), Western Blacknose Dace (*Rhinichthys obtusus*), White Sucker (*Catostomus commersoni*), and Yellow Perch (*Perca flavescens*).

A background review of data related to this reach of Sixteen Mile Creek suggests no recent presence of aquatic species at risk on the Subject Property or Study Area. The closest occurrence of aquatic species at risk (Redside Dace [*Clinostomus elongatus*] and Silver Shiner [*Notropis photogenis*]) was downstream of Mill Pond, approximately 1 km downstream of the Subject Property, according to the DFO Aquatic Species at Risk mapping. According to records provided by CH, Redside Dace was last observed in 1957 in Sixteen Mile Creek, approximately 50 m upstream of the Bronte Street crossing.

There are no surface water features on the tableland portion of the Subject Property that provide for fish passage.

2.2.8.8 Flooding and Erosion Hazards

Flooding hazards are contained within the confined valley system associated with Sixteen Mile Creek and do not extend onto the tableland portion of the Subject Property. Erosion hazards have been determined through the completion of a long-term stable top of slope assessment. The assessment determined that, for the majority of the Subject Property, the physical top of bank as staked by CH is equivalent to the LTSTOS. The one exception is in the area of localized erosion associated with the previous storm sewer outfall.

2.2.8.9 Surface and Groundwater Resources

The Sixteen Mile Creek and associated riparian wetland represent the surface water resources on, and immediately adjacent to, the Subject Property and are completely contained within the Sixteen Mile Creek valley. Neither the watercourse nor the groundwater in this area were identified as sensitive water resources within the Halton-Hamilton Source Protection Plan.

2.2.9 Refined Natural Heritage System

The PPS describes natural heritage systems as follows:

> *A system made up of natural heritage features and areas, linked by natural corridors which are necessary to maintain biological and geological diversity, natural functions, viable populations of indigenous species and ecosystems.*

The MOP states that the natural heritage system consists of the RNHS and the Greenbelt Natural Heritage System.

ROP policy 115.3 defines the RNHS as including: Key Features, Enhancements to the Key Features, linkages, buffers, watercourses within Conservation Authority Regulation Limit or those that provide a linkage to a wetland or a significant woodland, wetlands other than those considered significant and the Regional Storm flood plain. Key Features include significant habitat of threatened or endangered species, significant wetlands, significant coastal wetlands, significant woodlands, significant valleylands, significant wildlife habitat, significant ANSI's and fish habitat.

ROP Policy 116.1 and MOP Policy 4.8.3.14 allow boundary adjustments to the RNHS through studies, such as this CEMS, that are based on a ToR accepted by the Region and Town.

Map 1 and Map 1G of the ROP identify the preliminary limits of the RNHS on the Subject Property that are not based on field-truthing exercises such as staking woodland driplines or physical top of bank features. It is possible, based on these field-truthing exercises, that the preliminary RNHS limits as shown on Map 1 and Map 1G may differ significantly from the limits determined in the field. Such a discrepancy has occurred on the Subject Property whereby an area of RNHS that was shown on Map 1 and Map 1G, presumably based on the assumption that the treed area represented a woodland, was subsequently removed from the RNHS as a result of woodland dripline staking by the Region. As the RNHS limits on Map 1 and Map 1G are preliminary pending field-truthing, such a revision to the RNHS limit does not represent a reduction in RNHS size but rather, a refinement of the RNHS limit based on actual field-truthed limits.

One of the objectives of this CEMS is to refine the limits of the RNHS by identifying RNHS Key Features and components (as per ROP policy 115.3), delineating these areas in consultation with the agencies, as well as natural hazards and ecological buffers.

As the ROP policy 115.3 includes buffers in the RNHS, natural heritage features were evaluated to determine appropriate buffers. In considering an appropriate buffer width, the Study Team has assumed that, in the future, the Subject Property will be developed with high density residential land uses.

The following subsections identify Key Features and components of the RNHS as they relate to the Subject Property. RNHS Key Features and components are identified on **Figure 2.2** and integrated into a Pre-Remediation Refined RNHS boundary in **Figure 2.2**.

Conditional on completion of the proposed restoration of the removed woodland and construction of the re-created wetland, the RNHS boundary is proposed to be refined, as described in **Section 3.5.1.3**.

2.2.9.1 Key Features

Based on the evaluation of significance presented in **Sections 2.2.7.1 – 2.2.7.9**, the following Key Features have been identified within the Study Area:

- Habitat for Endangered or Threatened Species;
- Significant Wetlands;
- Significant Woodlands;
- Significant Valleylands;
- Significant Wildlife Habitat; and
- Fish Habitat.

2.2.9.2 Enhancements to Key Features

Enhancements to Key Features are another component of the RNHS as defined in ROP policy 115.3.

ROP policy 229.1.1 defines Enhancements to Key Features as follows:

> *Means ecologically supporting areas adjacent to Key Features and/or measures internal to the Key Features that increase the ecological resilience and function of individual Key Features or groups of Key Features.*

For the purpose of this report, this RNHS component is further addressed in **Section 4.1.5.**

2.2.9.3 Linkages

Linkages are another component of the RNHS as defined in ROP policy 115.3.

The Sixteen Mile Creek valleylands are considered to represent Significant Valleylands and recognized as a regional scale linkage. This linkage is defined by the valleyland corridor which is included within the Refined RNHS.

2.2.9.4 Regulated or Linkage Watercourses

Watercourses that are within a Conservation Authority Regulation Limit or that provide a linkage to a wetland, or a significant woodland are another component of the RNHS as defined in ROP policy 115.3.

The Sixteen Mile Creek is the only regulated watercourse within the Study Area and is contained within the Refined RNHS.

2.2.9.5 Non-Significant Wetlands

Wetlands other than those considered significant under ROP policy 115.3(1)(b) represent another component of the RNHS.

The small wetland associated with the former tailings pond (ELC Units 5.1, 5.2 and 9.0) is considered to be a '*wetland other than those considered significant under Section 115.3(1)b)*' as per ROP Policy 115.3(6). This wetland was excluded from consideration as a Key Feature as it does not provide an important ecological contribution to the RNHS; it is a contaminated, anthropogenic feature that is very small in area. This wetland is included in the Pre-Remediation Refined RNHS shown in **Figure 2.2**.

This non-significant wetland is contaminated and must be removed in order to complete the remediation work. In association with its removal, it is proposed that a new wetland be created. The proposed wetland is of the same size but has been re-configured slightly and has been shifted closer to the woodland, which will result in a slight change to the Pre-Remediation RNHS limits once buffers are applied. The wetland removal and replacement are discussed further in **Sections 3.2.2.2 (Remediation), 3.5.1 (Impact Assessment)** and **4.1.3 (Ecological Restoration)**.

2.2.9.6 Buffers & Setbacks

No buffers to Key Features or setbacks to natural hazards were implemented as part of the previous industrial land use. Buffers and setbacks are also not required for the remediation works as this would interfere with the objective of site cleanup.

While much of the subject property, including former landfill and industrial area, is designated as RNHS in the Region's OP as mapped on Map 1 and 1G, this mapping is coarse scale and not reflective of the existing conditions or the Key Feature limits verified through this CEMS. As the RNHS mapping is inclusive of a 30 m precautionary buffer, this has also been applied by the Region to unconfirmed limits of Key Features (**Figure 3.2**) resulting in an over-estimation of the extent of RNHS on the subject property. As buffers are considered components of the RNHS and one of the objectives of the CEMS was to refine the limits of the RNHS in accordance with ROP policies, it was necessary to determine appropriate buffers and setbacks (to natural hazards) based on the proposed future land use (i.e., high-density residential).

The Region defines buffer as follows:

> *Means an area of land located adjacent to Key Features or watercourses and usually bordering lands that are subject to development or site alteration. The purpose of the buffer is to protect the features and ecological functions of the Regional Natural Heritage System by mitigating impacts of the proposed development or site alteration. The extent of the buffer and activities that may be permitted within it shall be based on the sensitivity and significance of the Key Features and watercourses and their contribution to the long-term ecological functions of the Regional Natural Heritage System as determined through a Sub-watershed Study, an Environmental Impact Assessment or similar studies that examine a sufficiently large area*.

As noted above, ROP policies require that the limits of the RNHS be refined and that buffer widths be determined through site-specific study taking into consideration the significance and sensitivity of the Key Features and NHS components and the potential impact(s) of the adjacent land use. This CEMS represents a site-specific study that has: (a) collected sufficient information on natural heritage resources and natural hazards to assess their sensitivity and significance; and, (b) determined appropriate buffers and setbacks to mitigate potential impacts related to a future high density residential development of the lands adjacent to the RNHS. Although certain details of the future high density residential development are not available at this time, the buffer recommendations outlined later in this report are based on professional experience with similar scale residential developments in the Town and Region, including recently approved development applications that are proximal to the site.

2.2.9.7 Pre-Remediation Refined RNHS

Based on the above, the Pre-Remediation Refined RNHS has been identified which includes the following, as shown on **Figure 2.2**:

- Key Features of the RNHS:
  - Significant Wetland within the Sixteen Mile Creek valley based on limit staked by CH;
  - Significant Woodland based on dripline staked by the Region;
  - Significant Valleyland based on limits of the LTSTOS which is equal to or greater than the physical top of bank as staked by CH;
  - Fish Habitat within the Sixteen Mile Creek;
  - Significant Habitat of Endangered and Threatened Species:
    - Habitat for Endangered bats – corresponds with limits of Significant Woodland;
  - Significant Wildlife Habitat; and
  - Terrestrial crayfish – tailings pond / wetland:
- Other Components of the RNHS:
  - Wetland other than those considered significant – tailings pond / wetland;
  - 30 m precautionary buffer adjacent to the Significant Woodland and Significant Wetland as requested to be included by the Region;
  - Linkages – Sixteen Mile Creek valleylands – corresponds with Significant Valleyland; and
  - Regulatory flood plain – Regional Storm flood plain associated with Sixteen Mile Creek.

In addition to the woodland and wetland buffers, the following other natural heritage buffer and natural hazard setbacks have been applied in order to determine the Pre-Remediation Refined RNHS limit (**Figure 2.2**):

- Regulatory Floodplain — 15 m as per CH regulation/policy;
- Long-Term Stable Top of Slope — 15 m as per CH regulation/policy;
- Significant Wetlands — 30 m as per CH regulation/policy; and
- Non-significant Wetlands, less than 2 ha in size — 15 m as per CH regulation/policy.

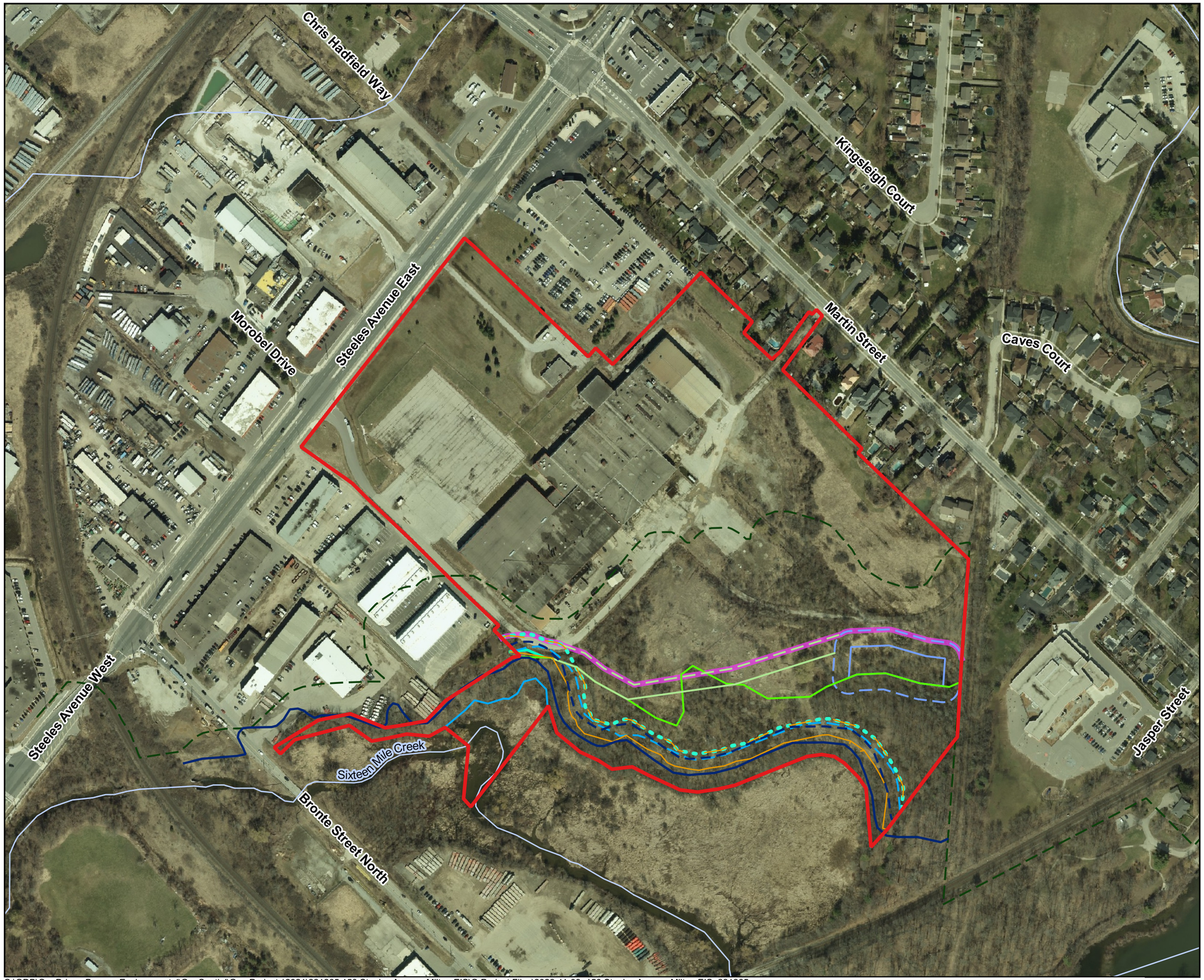
3. Description of Proposed Works

This section describes the proposed works that are required to remediate contaminated soils and groundwater and to re-vegetate a localized area of slope failure along the Sixteen Mile Creek valley. For the purposes of this CEMS, the descriptions are focused on activities that will occur within the Pre-Remediation Refined RNHS and CH regulated areas. **Section 3.1** describes the phasing of the contaminant remediation program. **Section 3.2** describes the existing and proposed remediation approach and activities, and **Section 3.3** describes the approach to improve the vegetation within the eroded slope area.

Post-Remediation Constraints and Refined RNHS

Figure 3.2

150 Steeles Avenue Milton CEMS



Legend

- Subject Property
- Watercourse (MNRF 2021)
- Regulatory Floodplain (Digitized by CH, 2021)
- Regulatory Floodplain Buffer (15 m)
- Top of Slope (Staked by CH - July 16, 2021)
- Setback for Long-Term Stable Top of Slope (15 m)
- Long Term Stable Top of Slope, without Slope Stabilization (DS Consultants - Jan 2023)
- Long Term Stable Top of Slope, without Slope Stabilization (15 m)
- Existing Woodland Limit (Staked by Region of Halton - Nov 22, 2021)
- Post-Remediation Woodland Planting Limit
- Post-Remediation Woodland Buffer (15 m)
- Wetland (> 2 ha - Staked by CH - July 16, 2021)
- Wetland Buffer (30 m)
- Proposed Wetland Restoration Area
- Wetland Buffer (15m) - Post-Remediation
- Regional Natural Heritage System (ROPA 49)
- Post-Remediation Refined RNHS Limit

RNHS Components Note: the Refined RNHS limit contains the following:

- Key Features, such as:
  - Habitat for Endangered and Threatened Species
  - Significant Wetlands
  - Significant Woodlands
  - Significant Valleylands
  - Significant Wildlife Habitat (Restored)
  - Fish Habitat
- Linkages
- Regulated Watercourse
- Non-Significant Wetlands (Restored)
- Buffers
- Regulated Floodplains

Notes: 1) Long-Term Stable Top of Slope is coincident with the Top of Slope staked by CH , except where illustrated here. 2) A 30 m wetland buffer was applied to the wetland staked by CH on July 16, 2021, in the Sixteen Mile Creek valleyland and the CH Regulation Mapping Wetland Hazard, dated November 2022. 3) Regional Natural Heritage System (ROPA 38) digitized from https://webgeo2.halton.ca/Html5ViewerROPR/Index.htmlviewer=PLN_OfficialPlanReviewViewer.Halton_OfficialPlanReviewViewer_HTML5

BEACON ENVIRONMENTAL

Project: 221265
Last Revised: July 2023

Client: 150 Steeles Milton Inc.

Prepared by: SZ
Checked by: KU

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3.1 Phasing of Soil and Groundwater Remediation Works

The remediation works have been phased to allow for agency review and approval of the CEMS, prior to undertaking remediation within the RNHS and CH-regulated area.

Phase 1 Area – This area encompasses a large portion of the overall remediation area that is located outside the limits of the Pre-Remediation. Remediation works in this area consists of both soil and groundwater remediation and removal of the unregistered landfill. The Phase 1 Area includes lands that are mainly outside of CH's regulated area except for a small area located at the bend in the existing driveway that is within 15 m of the stable top of bank (**Drawing 1001** of **Appendix D**).

The Phase 1 Area encompasses all of RSC Properties 1 and 2, and portions of RSC Properties 4 and 5.

Excavation and removal of contaminated soil began in the Phase 1 Area in July 2022, with approvals from the Region, Town, and CH. A permit was obtained from CH for work in the small area at the perimeter of the regulated area (Permit #7980) in October 2021 for the removal of the former industrial building.

Groundwater remediation in the Phase 1 Area pilot testing has been completed and a Permit to Take Water (PTTW) was granted by the MECP on September 21, 2022. Groundwater remediation began in early 2023.

Phase 2 Area – Following issuance of an emergency works permit from CH, as discussed in **Section 3.4.1**, removal of the contaminated fill within the CH-regulated area and a portion of the Pre-Remediation Refined RNHS began. This includes the removal of contaminated soil in the following areas:

- Within 120 m of a wetland greater than 2 ha in size;
- Within, and within 30 m of, a wetland less than 2 ha in size; and
- Within 15 m of the LTSTOS.

This area includes RSC Property 3 and a portion of RSC Property 5 and is illustrated on **Drawings 1002A-1** through **1002B-2** of **Appendix D**.

3.2 Description of Soil and Groundwater Remediation Works

This section provides a summary of the contamination remediation works that have already been implemented or are on-going.

3.2.1 Objectives

The objectives of the soil and groundwater remediation are as follows:

- To conduct remediation and remedial monitoring for soil and groundwater aimed at being compliant with Ontario Regulation 153/04 (as amended);

- Communicate updates, with the Region, Town and CH, related to the remediation progress should works extend further into the RNHS and CH regulated areas than anticipated on **Figure 3.1**; and
- Ultimately obtain the required RSC for the proposed future land uses.

3.2.2 Remediation Methodology and Adaptive Management Approach

This section describes the remediation methodologies and adaptive management approach intended to mitigate impacts to the RNHS Key Features and components.

3.2.2.1 Soil Remediation

Remediation of soil began in the Summer of 2022 and involved the remedial excavation of five (5) areas within the Site as shown on **Figure 3.1**. The areas of excavation are hereafter referred to as:

- Area 1 – located on the southwest portion of the former industrial building;
- Area 3 – located on the northcentral portion of the formal industrial building;
- Area 4 – located on the southeastern portion of the former industrial building;
- Area 5 – located near the northeastern portion of the former industrial building; and
- Landfill Excavation – located south of the former industrial building.

Soil remediation primarily includes excavation of contaminated soil. Soil excavation is conducted by conventional construction equipment, such as track excavators, backhoes, scrapers, bulldozers, front-end loaders, power shovels, and large rotary augers depending on the volume and extent of contaminated material.

Given the types of soil contaminants present on the Subject Property, full excavation is the recommended remedial approach. The variation in contaminant types across the Subject Property requires an adaptive approach to address the different contaminants present in the differing media (soil, industrial waste, etc.).

Soil remediation is necessarily an adaptive process, as the full extent of contamination cannot be known until the site has been remediated. Remedial excavation is completed in multiple iterations, including several rounds of soil verification sampling, and additional remedial excavation, as required. In other words, as a remedial excavation expands in area, the side walls and floor of the excavation are tested. If the test indicates a side of the excavated area is contaminated, the remedial excavation proceeds in that direction. Remedial excavation continues until testing indicates the soil at the edge of the excavation meets MECP requirements. Some additional excavation may be required to ensure safe sloping of excavation walls, as required by the *Occupational Health and Safety Act* and regulations. Based on the extensive soil testing that has been completed to date, the extent of contamination has been shown on **Figure 3.1**. There is a fairly high level of confidence that the extent of contamination is as shown on the figure however, variations may exist in the soil that were not picked up due to the location of the various test pits. Additionally, test pits were not completed extensively within the woodland as this would have necessitated the removal of a significant number of trees. As a result, the exact extent of contamination within the wooded area will only be known once excavation begins in that area.

The goal is to disturb the minimal area required to achieve MECP soil quality requirements through the RSC process.

During pre-consultation with agency staff, CH noted that there is one area of known contamination that is very close to the edge of the 15 m regulatory allowance adjacent to the stable top of bank. In order to provide the Study Team, as well as agency staff, a level of confidence in the limits of contamination in this area, and to determine whether it was likely that a Permit would be required from CH to undertake remediation within the 15 m regulatory allowance, five test pits were completed between the limit of the known extent of contamination and into CH's 15 m regulatory allowance adjacent to the stable top of bank (Phase 2/3 Area). The results of the test pitting exercise confirmed the presence of metals and petroleum hydrocarbon-related soil impacts. The zone of soil impacts based on the current understanding is depicted on **Figure 3.1.** Remediation within the forested land along the southern perimeter of the landfill will be required. It should be noted that the test pits identified buried debris including mill-scale, confirming that the lands surrounding the landfill which are currently vegetated were historically subject to dumping activities and will require restoration.

To mitigate the extent of tree removals in the Phase 2 area (i.e., within the Significant Woodland), once the soils are excavated to the extent shown on **Figure 3.1**, the walls of the excavation area will be tested incrementally in 2 m intervals to determine whether additional excavation is required to remove all contaminated soil. The proposed procedure is as follows:

- Within the area of soil contamination as shown on **Figure 3.1**, remove all trees and excavate to the extent shown;
- Conduct remedial excavation, sidewall testing, and/or test pits;
- If testing along the walls of the excavation indicates soil contamination is present, a further encroachment of 2 m beyond the excavation wall will take place (and any necessary tree removal as a result); and
- Continue with the above process until such time as the results indicate extent of soil contamination has been addressed.

If, through the above process, testing indicates that soil contamination is present within 15 m of the stable top of slope, consultation with CH will occur as required through the conditions of the emergency works permit. If this case arises, it is anticipated that CH will require a report from a geotechnical engineer confirming that the excavation within the 15 m regulated allowance will not have a negative impact on slope stability.

Remediation requirements in each Area are outlined below. Remediation Areas are shown on **Figure 3.1**.

Area 5

The first area excavated was Area 5. Area 5 is located along the eastern portion of the Subject Lands and is not situated in the immediate vicinity of the Pre-Remediation Refined NHS limits.

The remedial excavation work was completed in multiple iterations between July 2022 and September 2022, including several rounds of soil verification sampling, and additional remedial excavation, as required. The final footprint of remedial Excavation Area 5 was approximately 1,700 m^2, with final depths ranging between 1 to 4 m below original grade. The final round of soil verification sampling was

completed in September 2022, confirming that the remedial efforts within Excavation Area 5 had been successfully completed.

Area 4

Excavation Area 4 commenced in July 2022. Area 4 is located along the eastern portion of the Subject Lands and is not situated in the immediate vicinity of the Pre-Remediation Refined NHS limits.

The remedial excavation work was completed in multiple iterations between July 2022 and December 2022, including several rounds of soil verification sampling, and additional remedial excavation, as required. The final footprint of remedial Excavation Area 4 was approximately 5,600 m^2, with an approximate average depth of 3.5 m below original grade. The final round of soil verification sampling was completed in December 2022, confirming that the remedial efforts within Excavation Area 4 had been successfully completed.

Area 3

Excavation Area 3 commenced in September 2022. Area 3 is located in the centre of the Subject Lands and is not situated in the immediate vicinity of the Pre-Remediation Refined NHS limits.

The remedial excavation work was completed in multiple iterations between September 2022 and November 2022, including several rounds of soil verification sampling, and additional remedial excavation, as required. The final footprint of Excavation Area 3 was approximately 5,660 m^2, with an approximate average depth of 6 m below original grade. The final round of soil verification sampling was completed in November 2022, confirming that the remedial efforts within Excavation Area 4 had been successfully completed.

Landfill

The remedial excavation within the northeastern portion of the unregistered landfill commenced in September 2022. The landfill excavation is located within the central portion of the Subject Lands, approximately 90 m north of the Pre-Remediation Refined RNHS boundary. The approximate footprint of the landfill excavation, as of December 2022, was 7,800 m^2. The eastern half of the landfill was excavated to an average approximate depth of 6.5 mbgs. The results of the soil verification sampling completed in December 2022 confirmed that the floor and the north and east sidewalls within the eastern half of the excavation satisfied the Table 3 RPI Standards.

The western half of the excavation was cut to an approximate depth of 3 mbgs. Further remedial excavation is required within the western half and is on-hold pending review of the CEMS and confirmation of the proposed restoration efforts within the Pre-Remediation Refined RNHS limit.

Approval for the completion of the restoration of the western half of the landfill was received in 2023 and the remedial excavation works resumed in Spring of 2023. Extensive soil chemical testing has been completed to delineate the extent of impacts as the remedial excavation has progressed. The remedial excavation of the landfill is anticipated to be concluded by the end of August 2023.

Area 1

Excavation in Area 1 commenced in October 2022. Area 1 is in the west-central portion of the Subject Property and is located just on the edge of the Pre-Remediation Refined RNHS limit.

The remedial excavation work is ongoing. The current extent of the remedial excavation is approximately 2,900 m^2 and the average depth of excavation is approximately 2 m below original grade. The remedial excavation within Area 1 was completed in 2023.

3.2.2.2 Groundwater Remediation

Proposed remediation of groundwater primarily involves removal/treatment of Cr6+ bearing groundwater. **Figure 3.1** shows where Cr6+ concentrations in groundwater are known to exceed the MECP Table 3 SCS. The current known extent of the groundwater impact is limited to the Phase 1 Area and does not extend into the limits of the Pre-Remediation Refined RNHS limit.

A review of remediation methods was conducted resulting in the selection of a groundwater extraction (removal) and treatment of extracted groundwater in an above ground treatment plant that makes use of ion exchange technologies. Treated water that meets reuse standards is reinjected back into the on-site shallow aquifer. A pilot test was undertaken to determine efficacy of the approach and to collect operational data require for scale-up to a full-scale treatment system. Details regarding the pilot test are provided in **Appendix C-2**. A PTTW was granted by the MECP on September 21, 2022 (No. 1000185005) in support of the groundwater remediation system.

The groundwater treatment system commenced in April 2023. It is anticipated that the groundwater treatment will take approximately 12 months to amend the groundwater quality. One year of post-treatment groundwater verification sampling is required by the MECP.

3.2.3 Status of Remediation Works and Anticipated Timeline

This section presents the status of remedial work completed as of July 31, 2023 and anticipated future remedial works.

The current progress of soil remediation excavation in the five areas, as well as the configuration and layout of the RSC properties, is shown on **Figure 3.1** and summarized in **Table 14**.

Table 14. Soil Remediation Status as of July 31, 2023

RSC Identifier	Excavation Area ID	Phase	Status
RSC Property 2	Excavation Area 2	1	**Completed** December 2022. RSC Filing has commenced and anticipated to be concluded in 2023.
	Excavation Area 3		
	Excavation Area 4		
	Excavation Area 5		
RSC Property 3	Tailings Pond	2	**In Progress.** Subject to CH

RSC Identifier	Excavation Area ID	Phase	Status
			Emergency Works Permit (Phase 2 Area)
RSC Property 4	Unregulated Landfill	1	**In Progress.** Soil remediation resumed Spring 2023. Groundwater Remediation commenced Spring 2023.
RSC Property 5	Part of Unregulated Landfill	2	**In Progress.** Subject to CH Emergency Works Permit (Phase 2 Area)
RSC Property 6	N/A	Future phase, if necessary	**Risk Assessment in Progress**. No remediation recommended.

As noted in **Table 14**, while the remediation in some areas is complete, other areas are in progress and are anticipated to be completed between Q4 of 2023 to Q1 of 2024.

Landfill

To refine the anticipated extent of contamination in the CH-regulated area and RNHS, five additional test pits were conducted along the perimeter of the landfill in the fall of 2022. The results of the test pitting exercise confirmed the presence of metals and petroleum hydrocarbons in the soil, which is attributed to the historical industrial activities on the property, and runoff from the former factory work areas. The extent of soil contamination, based on current understanding, is depicted on **Figure 3.1**. The complete removal of this landfill is expected to be between 70,000 m^3 and 90,000 m^3, of which, approximately 25,000 m^3 has already been removed outside of CH's regulated area and the RNHS limit. Soil remediation along the southern perimeter of the landfill has begun under the emergency works permit from CH. This remediation extends into the Significant Woodland in the Phase 2 Area. As noted in **Section 3.2.2.1**, the soil remediation is progressing in an adaptive manner; such that tree/vegetation removal will only occur in areas where testing indicates the presence of soil contamination.

Tailings Pond / Wetland

This area requires full excavation and testing to remediate. The contaminants identified in the wetland included chromium, nickel, zinc, and petroleum hydrocarbons. This work has been initiated under the emergency works permit from CH.

Sixteen Mile Creek

At this stage, it is not anticipated that remedial works will be required in the creek. Current investigations in Sixteen Mile Creek provide some evidence of contaminated sediment (RSC Property 6). The Risk Assessment process has been initiated and is anticipated to take 18 to 24 months to obtain approval from MECP. Remediation works within the creek, if required, will not affect the limits of the Pre-Remediation or Post-Remediation Refined RNHS.

3.2.4 Schedule/Timeline

The boundaries of the following 'RSC Properties' are depicted on **Figure 3.1**.

3.2.4.1 RSC Property 1

The RSC for "RSC Property 1" was completed in December 2022. No further work is required for this portion of the Site.

3.2.4.2 RSC Property 2

The soil remediation works are nearing conclusion, pending completion of the soil remediation within Excavation Area 1. This work is anticipated to be completed within 1–2 months and will be followed by RSC submission. The RSC for Area 2 is anticipated to be completed in 2023.

3.2.4.3 RSC Property 3

RSC Property 3 is situated in the area that contains the former tailings pond, contained within Phase 2 of the Phasing Plan referenced in **Section 3.1**. The contaminants identified within the wetland include chromium, nickel, zinc and petroleum hydrocarbons. Soil remedial excavation has begun under the emergency works permit from CH. This work is scheduled to be completed in Fall 2023. The RSC for "RSC Property 3" is projected to be obtained Q4 of 2023 to Q1 of 2024.

3.2.4.4 RSC Property 4

The soil remediation works are complete. The groundwater treatment system commenced operation in April 2023. It is anticipated that the groundwater treatment system will take approximately 12 months to amend the groundwater quality. One (1) year of post treatment groundwater verification sampling will need to be completed in support of future RSC filing efforts. The RSC is projected to be obtained in 2025.

3.2.4.5 RSC Property 5

RSC Property 5 comprises the Pre-Remediation Refined RNHS, situated along the western side of the Subject Lands. Past investigations have identified metals and petroleum hydrocarbon-related impacts

in the soil which is attributed to the historical industrial activities on the property, and runoff from the former factory work areas.

Soil remedial excavation will be required to address these impacts before the RSC filing process can commence. This work commenced in 2023 under the emergency works permit from CH. The RSC for "RSC Property 3" is projected to be obtained Q4 of 2023 to Q1 of 2024.

3.2.4.6 RSC Property 6

The Risk Assessment process has been initiated and is anticipated to take 18 to 24 months to obtain approval from the MECP.

3.3 Vegetative Treatment of the Localized Area of Erosion

As noted above, there is localized erosion along the valley slope associated with the historical storm sewer outfall located at Cross Section B-B.

Design alternatives to stabilize this area of erosion were explored through the first CEMS submission, dated March 2023, a memorandum by Beacon dated June 27, 2023 (**Appendix A-5**), along with discussion with the Region and CH on July 5, 2023. Engineered alternatives were explored through this process, such as rip-rap and slope retention systems. Subsequent to their review of these alternatives, CH and the Region have requested a geotechnical "do nothing" approach with some slope plantings or seeding to address the area of existing erosion. It should be noted that this approach acknowledges that the slope will continue to naturally erode over the long-term, to the limit described in **Section 2.2.4.1**.

Recommended steps for treatment of this localized area of erosion are described in the subsections that follow.

3.3.1 Capping of Decommissioned Storm Sewer

An open and exposed storm sewer pipe is present in the valley wall, as highlighted in red in **Photograph 3**. This sewer no longer conveys flows and has been decommissioned. To manage the potential for discharge from this sewer pipe and mitigate the risk of further erosion, it is proposed that the open end of the sewer be capped/sealed and that the outer perimeter be grouted in place. The Town has agreed that the existing pipe within / through the valley wall can remain in place in order to limit disturbance to the valley that would otherwise be caused if the pipe were to be removed.

3.3.2 Debris Management

Three segments of storm sewer pipe and associated debris are present in the mid-slope region of the eroded area, as highlighted in yellow on **Photograph 3**. This debris is large (approximately 2-3 m in length) and represents a challenge to re-vegetation of the area for two reasons: (1) the debris prevents planting in its area and side slopes, and (2) the debris is unstable and presents an occupational hazard to landscaping personnel.

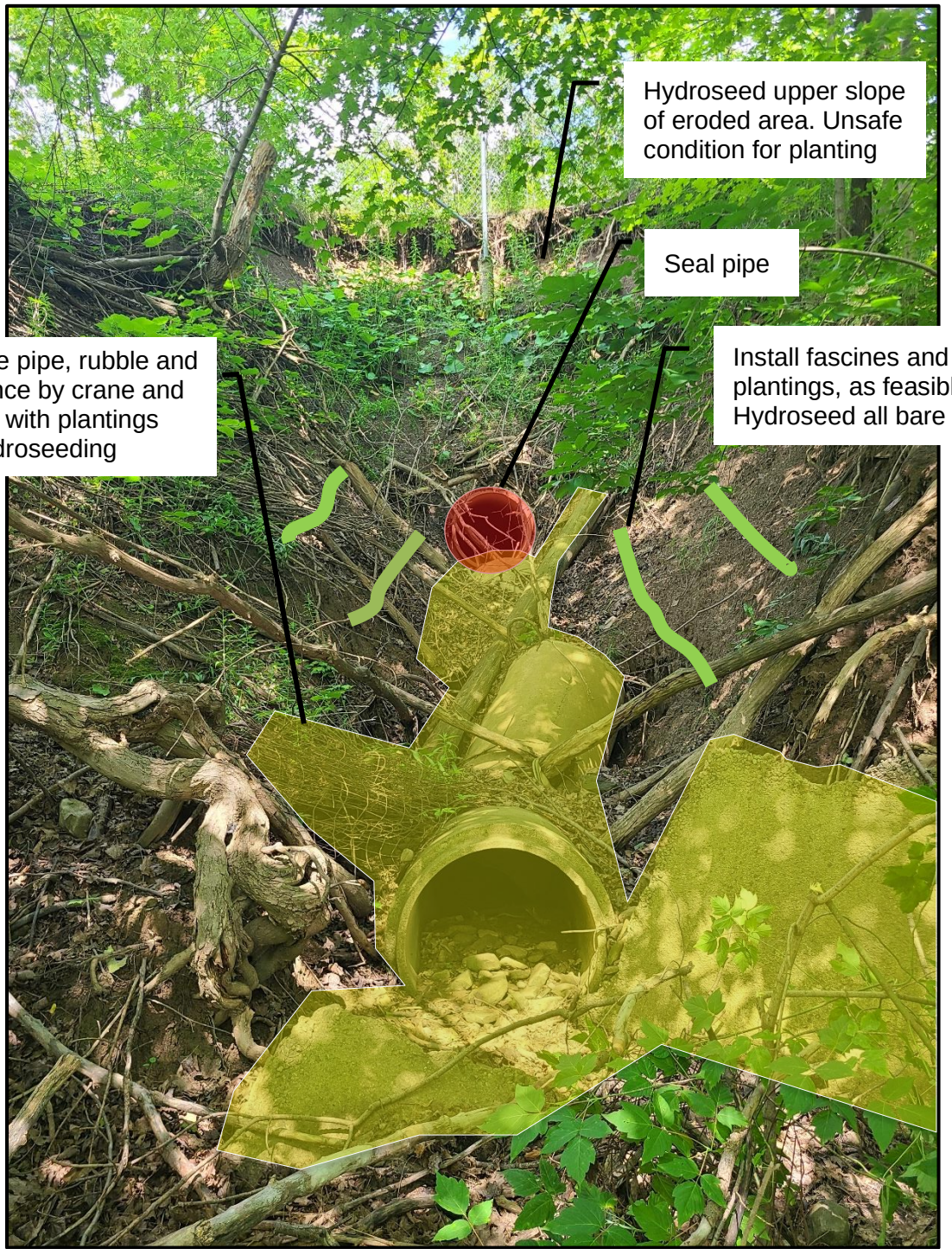
If the mid-slope region is to be planted, it is recommended that the debris in this area be removed by crane or excavator arm operated from the top of slope. It is not anticipated that removal of this debris will adversely affect the existing tree canopy.

3.3.3 Vegetation Approach

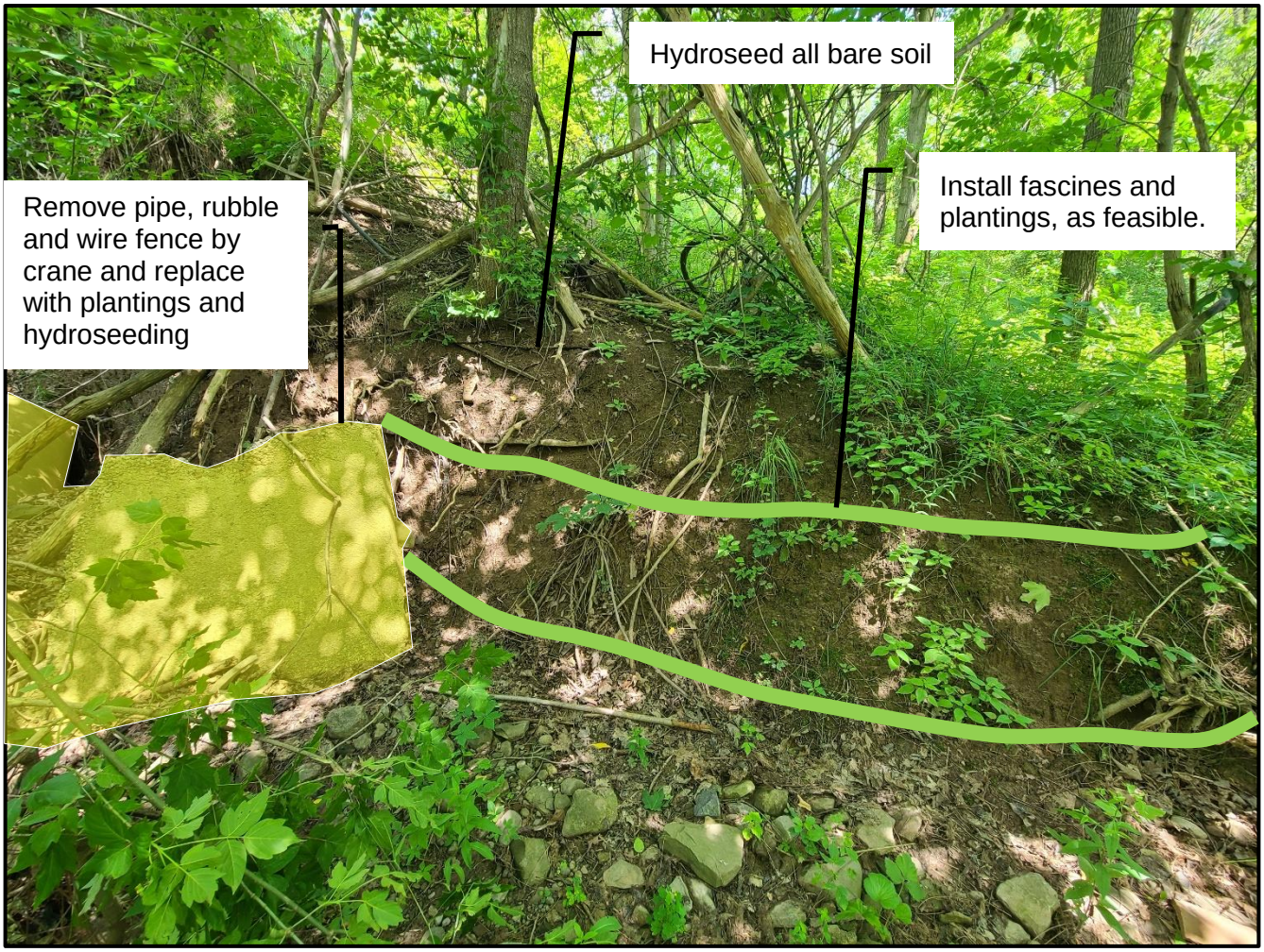
As noted in the Slope Stability Assessment (**Appendix C1**), the soil at the elevation of the eroded slope varies from silty loam to silt. On July 18, 2023, Beacon observed that the side walls were composed of moist and friable soils, with subangular aggregations, which are conducive to plant growth. Based on this observation, it is not proposed to introduce topsoil for planting purposes.

Based on the inclination of this slope, it is anticipated that digging planting wells by shovel would be prone to cave-in; therefore, planting should instead rely on staking and burying of plant material using pick-axes. The recommended planting approach is as follows:

- Install live stakes in a horizontal line, spaced 1 m apart;
- Intersperse live stakes with 1-inch wooden stakes, in line;
- Place fascine atop live stakes and wooden stakes;
- Place plantings wedged between fascine and slope. Fascine and stakes shall consist of Round-Leaved Dogwood (*Cornus rugosa*), Gray Dogwood (*C. racemosa*), and no more than 5% Silky Dogwood (*C. amomum*); and
- Bury fascine and plantings using a pick-axe. Plantings shall include 1-gallon potted stock of Balsam Fir (*Abies balsamifera*) and Nannyberry (*Viburnum lentago*).



Photograph 3. Preliminary Vegetation Plan for Mid- and Upper-Slope of Eroded Area.



Photograph 4. Preliminary, Typical Vegetation Plan for Lower Slope of Eroded Area on East Side.

Regardless of whether planting takes place, the area of the eroded slope should be hydroseeded with tackifier to temporarily stabilize the soil prior to vegetation establishment. Hydroseed shall be conducted using a naturally derived tackifier that is either guar-based of starch-based (e.g., Profile Contact®). Seed mix shall be applied as per CH seed mix standards, at a minimum. The mix shall consist of Conservation Halton Temporary Stabilization Mix and/or Woodland Native Seed Mix (OSC 8275). If seeding is to occur in the fall (e.g., October or November), an additional sowing of winter wheat will be conducted at a rate of 600 g/100 m^2.

Specific design details will be provided as part of the future CH permit application process.

3.4 Permitting and Authorization Requirements

3.4.1 Conservation Halton Permits

A Permit has already been received from CH for the removal of a portion of the industrial building that was located within 15 m of the top of bank as well as an Emergency Works Permit for the removal of the contaminated soil within 120 m of a wetland greater than 2 ha in size, within 30 m of, and within, a wetland less than 2 ha in size and within 15 m of stable top of bank. The works associated with the removal of the industrial building have been implemented and the building has been removed. The works associated with the Emergency Works Permit are on-going.

The following Permits will still be required from CH:

- Restoration of lands within 120 m of a wetland greater than 2 ha in size;
- Restoration of lands within, and within 30 m of, a wetland less than 2 ha in size; and
- Restoration of lands within 15 m of stable top of bank.

It is anticipated that the work associated with the above three Permits will be applied for through one comprehensive Permit application.

3.4.1.1 Works within 120m of a Wetland Greater than 2 ha in Size

As noted above, an Emergency Works Permit was issued by CH for the removal of contaminated soil within 120 m of a wetland greater than 2 ha in size. In order to support the proposed works within 120m of the wetland, that is located within the Sixteen Mile Creek valley, CH advised that a hydrologic evaluation would be required, pursuant to CH Policy 2.39.5. A ToR for this evaluation was developed and approved by CH (**Appendix A-3**). The evaluation is to consider the following:

- Identification of the upstream catchment areas to the wetland;
- Quantification of surface runoff contributions to the wetland from the Subject Property;
- Estimation of the surface runoff contributions from the Subject Property relative to the overall catchment area;
- Assessment of how the site remediation works may affect surface runoff contributions to the wetland under interim conditions;
- Depth to groundwater within the area of the proposed remediation and discussion as to whether the proposed soil removal is anticipated to intercept groundwater;
- If contaminated soil removal is anticipated to intercept groundwater, the amount of dewatering will be estimated;
- Summary of potential adverse impacts on the hydrological functions of the wetland, if any, as the result of any interim changes to surface or groundwater flows; and
- Recommendations for management measures to mitigate potential hydrological impacts to the wetland, if needed.

In addition to the above, a complete application checklist was provided by CH (**Appendix A-2**). Below are the details that CH identified as being required as a component of the hydrologic evaluation.

Upstream Catchment Area

The upstream catchment area to the wetland within the Sixteen Mile Creek valley is 7,969 ha at Bronte Road as shown on **Appendix D – Drawing 1**.

Surface Contributions from Subject Property

As shown on **Appendix D – Drawing 1**, approximately 20.26 ha of the Subject Property drains overland towards the wetland within the valley. This represents 0.25% of the overall catchment area to the wetland. Of the 20.26 ha of the Subject Property that drains towards the valley / wetland, approximately 16 ha (or 0.20 % of the overall wetland catchment area) is proposed to be (or is currently being) disturbed as a result of the removal of contaminated soil. To date, no soil has been removed from within CH's regulated area. Under interim conditions, when soil is removed from CH's regulated area, the anticipated impacts include a temporary ponding of surface water, within the excavated area, that would normally have flowed overland to the valley / wetland. It is anticipated that this interim condition will be in place for approximately 8 months, with surface flows to the valley / wetland re-instated once grades are returned to native, pre-landfill conditions. While a minor amount of surface flow will be temporarily prevented from flowing to the valley / wetland, the water will be retained within the excavated area which will allow for some infiltration and potentially benefit groundwater resources during the interim period. Under interim conditions, the side slopes of the excavated area will be seeded to assist with stabilization, once it has been confirmed no further excavation is required along that wall.

Depth to Groundwater

Within the area of the proposed soil removal, the depth to groundwater is approximately 7 mbgs. The excavation is proposed to extend 3.1 mbgs. As a result, groundwater interception is not anticipated.

Impacts to Hydrologic Function of Wetland

Given the very small area of surface water that will be temporarily prevented from flowing towards the wetland, in relation to the wetland's overall catchment area, there are no negative impacts to the hydrologic function of the wetland that are anticipated as a result of the contaminated soil removal. Even if minor impacts were to be anticipated on a temporary basis, the greater benefit of removing contaminated soils from within 120m of the wetland would presumably take precedence.

Summary of Hydrologic Evaluation

Based on the information provided above in this section, there are no management requirements necessary as there are no negative impacts to the hydrologic function of the wetland anticipated.

The above analysis is intended to support a future Permit application to CH.

3.4.1.2 Works Within, and Within 30 m of, a Wetland Less than 2 ha

As noted earlier, an Emergency Works Permit was issued by CH for works within, and within 30 m of, a wetland less than 2 ha in size. The soil associated with the tailings pond / wetland, and within 30 m of the wetland, is contaminated and requires removal. The removal of this soil will necessarily result in the removal of the wetland. Significant pre-consultation has taken place with the agencies with respect to the most appropriate method of addressing this impact. It has been agreed that, through the CEMS process, a proposal to remove the wetland and replicate it with a wetland of the same size (0.23 ha), in a slightly different location and configuration would be acceptable to the agencies. CH has also provided a complete application checklist for this Permit application (**Appendix A-2**).

The wetland removal is taking place as of July 2023 and replication will take place well in advance of any future residential development on the adjacent lands. As such, it was important to ensure that the re-created wetland would be self-sufficient and would not rely on future contributions from developed lands to sustain the hydroperiod. Through discussions with CH, and in consultation with the Region, it was agreed that a pit and mound wetland could be created as shown on **Appendix D – Drawing 3**.

The intention of the pit and mound wetland area is to re-create the habitat heterogeneity found in a mature forest – specifically, ephemeral pools and decomposing fallen trees – that facilitates the establishment of specialist plant, amphibian and invertebrate communities. The intention of this pit and mound wetland area is to create a wetland that is self-sufficient and does not rely on outside sources for water. The wetland has been designed to facilitate breeding amphibians in an average year and have a shallow perimeter that facilitates the growth of emergent vegetation.

The proposed pit and mound wetland is in generally the same location as the existing tailings pond / wetland however, it is proposed to be constructed at the woodland dripline to improve connectivity (wildlife movement, seed and pollen dispersal) to the RNHS Key Features, such as the Significant Woodland and Significant Wetland (within the valley). As the proposed pit and mound wetland will be planted with native species, in accordance with CH Landscaping Guidelines, moving the wetland closer to the woodland (as compared to existing conditions) will provide for complimentary functions and contribute to the overall habitat diversity in the long-term and serve as an Enhancement to Key Feature(s). As noted previously, the existing tailings pond / wetland is a constructed feature that was designed to provide spill containment sufficiently far away from the industrial building and landfill. Based on a review of historical aerial photographs, the tablelands on the Subject Property were farmed prior to industrial use and did not support any natural features like wetlands or woodlands. As such, there is no ecological basis for re-creating the new wetland in the exact same location as the existing tailings pond / wetland.

A water availability analysis for the pit and mound wetland area is provided in **Appendix B-8**.

A detailed landscaping plan will be submitted with a future Permit application to CH.

3.4.1.3 Works within a Confined Valley System – Erosion Hazard

As previously noted, there is a localized area of erosion along the Sixteen Mile Creek valley wall in the location of a stormwater outfall. This outfall is no longer in use and will be capped and grouted as part of the work discussed in **Section 3.3**. The broken pipe and rubble that have fallen into the eroded area will be removed; however, removal of the entire pipe that is buried within the slope is not recommended

due to the anticipated impacts to the valley wall. Pre-consultation related to this work has taken place with CH and a complete application checklist has been provided for the future Permit application (**Appendix A-2**). Through discussions with CH and the Region, subsequent to the first submission of the CEMS, it was agreed that the localized area of erosion could be left as is without the need for any slope stabilization efforts, with the exception of some vegetative treatment. Town staff have confirmed that the remaining pipe can be left in place and grouted. .

A Detailed Landscaping Plan, ESC Plan and Staging Plan will be required as part of the future CH Permit application.

3.4.2 Licence to Collect Fish for Scientific Purposes and Wildlife Scientific Collector's Permit Authorization

The Phase 2 remediation activities require removal of the soil in the former tailings pond / wetland. During 2022 ecological surveys, this tailings pond / wetland contained Terrestrial Crayfish and Spring Peepers (frogs). To rescue these species, prior to the removal of contaminated soil, a licence (No. 1103737) and authorization (No. 1103736) was obtained from MNRF on June 20, 2023. The Licence to Collect Fish for Scientific Purposes was required for the rescue of Terrestrial Crayfish. The Wildlife Scientific Collector's Authorization was required for the rescue of Spring Peepers as they are regulated under the *Fish and Wildlife Conservation Act.* CH staff expressed concern regarding the potential negative impact of releasing wildlife that may be contaminated. This concern was communicated to MNRF in the application for license and authorization; however, MNRF did not respond to the contaminant concern and issued the licence and authorization.

Beacon executed the licence and authorization, as agreed to with MNRF, on June 29 and July 3, 2023. At the time of rescue, the tailings pond was inundated with approximately 1 m depth of water; therefore, Terrestrial Crayfish were located near the ground surface. Terrestrial Crayfish and Green Frog were captured in the tailings pond and released to appropriate areas, as specified in the application to MNRF. No Spring Peepers or tadpoles were observed in the tailings pond. Green Frog, although unanticipated in the tailings pond based on 2022 observations, were relocated offsite to ponded areas where they had been observed in 2022.

3.5 Impact Assessment and Mitigation

The PPS and *Environmental Protection Act* require that the site be remediated in order to facilitate future land uses such as residential development. As described in **Section 3.2**, soil and groundwater contamination extends into areas that overlap with the Pre-Remediation Refined RNHS and CH-regulated areas.

The proposed remediation works are being undertaken to improve the condition of the local ecosystem and are anticipated to result in a positive impact on Key Features of the RNHS over the long-term. There are no alternatives available for addressing the contaminants. While the proposed works will result in short-term impacts to Key Features, these impacts can be mitigated over the long-term by using proven rehabilitation methods. In recognition of the temporary impacts, additional measures are proposed to improve and enhance the ecological resiliency of portions of Key Features that will not be affected by the proposed remediation and slope stabilization works. This approach will help to mitigate temporal impacts to ecological functions.

An assessment of impacts associated with the proposed contaminant remediation works and recommended mitigation are described in the following sections and described in **Table 15.**

3.5.1 Impacts to the Key Features and Components of the RNHS

Soil remediation is limited primarily to areas that are located outside of the Pre-Remediation Refined RNHS and the CH regulation limits. However, as shown on **Figure 3.1**, there are a few locations where soil excavation will be required within the limit of the Pre-Remediation Refined RNHS (i.e., within the Significant Woodland and the non-significant wetland associated with the former tailings pond) and within CH's regulatory allowances. Proposed works in the area of the eroded slope (**Section 3.3**) are minor and not anticipated to negatively impact the form or function of the RNHS.

3.5.1.1 RNHS Key Features

The proposed remediation works will require clearing of existing vegetation cover from within Key Features of the RNHS to access and remove the contaminated soils and to stabilize the area of slope failure. These activities are unavoidable and will impact the Key Features described below. Impacts to other Key Features of the RNHS such as significant wetlands and fish habitat are not anticipated.

Significant Habitat of Endangered and Threatened Species

The soil remediation works will result in tree removals (see discussion on Significant Woodlands below) and this may result in the temporary loss of habitat for endangered bats that have been confirmed to be present. This activity can potentially constitute a contravention of Sections 9 and/or 10 of the ESA. To avoid contravention of the ESA, the proponent filed a Notice of Activity with the MECP and implemented a mitigation plan prior to clearing. Mitigation includes restricting clearing activities to periods when the bats are absent, followed by rehabilitation of affected areas by replanting of trees. These impacts are considered neutral over the short term and positive over the long term. See **Table 15** below for further details.

Significant Valleyland

No soil remediation is proposed on the valley slopes and therefore there will be no impacts to the Significant Valleyland as a result of remediation works or development. The area of slope erosion is small and will be rehabilitated by replanting native vegetation, to the benefit of the valleyland through the stabilization of soils and increased vegetative cover. See **Table 15** below for further details.

Significant Woodland

It is estimated that a 0.61 ha area of Significant Woodland will need to be cleared to facilitate remediation of contaminated soils. As described in **Section 3.2.2.1**, the remediation work will be completed incrementally to minimize unnecessary vegetation removals. Based on tree inventory data collected from the tableland tree survey, it is estimated that the activities required to excavate and remove the contaminated soils will directly (through physical removal) or indirectly (through impacts to root systems) affect approximately 82 trees. The anticipated impacts to vegetation are outlined in **Table**

15. Following soil remediation, these areas will be restored with appropriate, native vegetation, using CH's Guidelines for Landscaping and Rehabilitation Plans (2022). The impact on woodland habitat is considered to be neutral over the short term and positive over the longer term as the quality and diversity of the vegetation will be improved and the woodland area will be increased. See **Table 15** below for further details.

Significant Wildlife Habitat

Terrestrial crayfish have been observed to be associated with the tailings ponds / wetland. This wetland is contaminated and requires remediation which will potentially impact crayfish habitat. Artificial features, especially contaminated ponds, should generally not be considered as candidate SWH. Irrespective, the tailings pond / wetland must be removed to address the contaminants. It is anticipated that the proposed pit and mound wetlands that will be created to replace the wetland functions of the tailings pond / wetland will provide habitat for terrestrial crayfish in the future and that impacts to SWH will only be temporary. As discussed in **Section 3.4.2,** Beacon applied for a licence to capture and relocated the crayfish to suitable habitat offsite. The impact on habitat for this species is considered to be neutral over the short term and positive over the longer term as the soil and water conditions will be cleaner post-remediation. See **Table 15** below for further details.

Breeding anurans (amphibians) have been observed in the tailings pond, Significant Woodland, and Significant Wetland. As discussed in **Section 3.4.2,** Beacon applied for an authorization to capture and relocated anurans to a suitable habitat offsite. Relocation of anurans and terrestrial crayfish was conducted on June 29 and July 3, 2023, prior to remedial excavation of the tailings pond.

3.5.1.2 RNHS Components

Impacts related to components of the RNHS are limited to non-significant wetlands.

Non-Significant Wetlands

The tailings pond / wetland is identified as a non-significant wetland and forms part of the Pre-Remediation Refined RNHS. As outlined in **Section 3.2.3**, this former tailings pond is contaminated and will be remediated. This is unavoidable and there are no alternatives other than to removal the contaminated soils within the wetland. The removal of contaminated soils is considered a positive impact as it will reduce the potential exposure of wildlife to contaminants. As discussed in **Section 2.1.5,** the tailings pond / wetland is a created feature and not natural. To mitigate the loss of wetland habitat, it is proposed to replace this wetland by creating pit and mound habitat of the same area, following remediation. The proposed pit and mound wetland area will be of the same size as the existing feature (0.23 ha) and will be designed to re-create the habitat heterogeneity found in a mature forest – specifically, ephemeral pools and decomposing fallen trees – that facilitates the establishment of specialist plant, amphibian and invertebrate communities. The intention of this pit and mound wetland area is to create a wetland that is self-sufficient and does not rely on outside sources for water. The pits will be designed to be deep enough to facilitate breeding amphibians in an average year and have a shallow perimeter that facilitates the growth of emergent vegetation. While minor habitat loss impacts will occur over the short-term, contaminants will no longer be present in the soil, which is a long-term benefit to the RNHS. The wetland will be situated immediately adjacent to the woodland, thereby

maintaining and improving connectivity (wildlife movement, seed and pollen dispersal) to the adjacent Significant Woodland and Significant Wetland (within the valley). In addition, as the proposed pit and mound wetland will be planted with native species that will compliment and increase the woodland's plant diversity in the long-term. Through implementation of diversification plantings, the rehabilitation will serve to enhance the Key Features.

In addition to the rehabilitation plantings of the woodland areas to the exact extent of the staked woodland dripline and the re-creation of the tableland wetland at a 1:1 ratio through the creation of pit and mound habitat, the future woodland and wetland buffers will be landscaped in accordance with CH Landscaping Guidelines. This will stabilize the buffer and allow it to become established prior to adjacent land use disturbances.

Although not a component of the RNHS, groundwater remediation will consist of ex-situ extraction and above ground treatment/removal of $Cr6^{+}$. Treated water will be reintroduced to the aquifer close to where it was extracted. The implementation of the in-situ system infrastructure will be conducted outside of the RNHS and areas regulated by CH and therefore no negative impacts will occur due to implementation of this remediation system. However, $Cr6^{+}$ as has a moderate solubility and, as such, the removal of $Cr6^{+}$-bearing groundwater, that could have migrated to the RNHS, the groundwater and potentially Sixteen Mile Creek is a significant long-term benefit to the natural heritage system and ground water system.

Impacts (both negative and positive) to the RNHS are proposed to be phased (see **Section 3.1**) and subject to the adaptive approaches to remediation as outlined in **Section 3.2.2**. Impacts are discussed in detail in **Table 15**.

3.5.1.3 Post-Remediation RNHS Key Features and Components

The Post-Remediation RNHS Key Features and components are to the same as those listed in **Section 2.2.9.7** (**Pre-Remediation Refined RNHS**); however, the non-significant wetland (tailings pond) will be reconfigured such that a pit and mound wetland area of the same size is provided more proximal to the woodland dripline. Recommended buffers to the Post-Remediation RNHS Key Features and components are described in the following section and illustrated on **Figure 3.2**.

Table 15. Impact Assessment and Mitigation

Category	Feature/Function	Proposed or Potential Impacts	Recommended Mitigation/Management	Net Effect	
				Phase 1	Phase 2 and Long-Term
Soils	**Topsoil and Subsoils**	Removal of existing contaminants in soils, including petroleum hydrocarbons (PHCs), metals, inorganics electrical conductivity (EC) and sodium adsorption ratio (SAR). An unregistered landfill will also be removed, which contains a mixture of construction debris, oily mill scale and soil. Removal of these soils will prevent the migration of contaminants into groundwater and the natural environment.	• Implement Best Management Practices (BMPs) such as proper separation, stockpiling and erosion control measures. • Following remediation, restore grades in disturbed portion of RNHS and CH regulated area with clean fill such that pre-landfill grades are re-instated and pre-remediation drainage patterns are provided to the extent possible. • Following restoration of grades within the RNHS, disturbed soils will be stabilized with the appropriate CH seed mix and tree planting as per the Restoration and Enhancement Plan	Positive	Positive
Groundwater	**Groundwater Flows**	The groundwater flow direction within the Site is inferred to be southwest toward the Sixteen Mile Creek. Ex-situ remediation of contaminated groundwater is not anticipated to have a significant impact on the groundwater flow regime outside of the groundwater treatment zone.	• No mitigation or management required as no impacts anticipated.	Neutral	Neutral
	Groundwater Quality	Remediation of existing contaminants in groundwater, that may include PHCs, metals, inorganics EC and SAR. Remediation of groundwater will prevent migration of contaminants in the direction of Sixteen Mile Creek.	• Contaminated groundwater will be treated in an on-site treatment plant. Where treated water meets reuse standards, this treated water will be reinjected back into the on-site shallow aquifer.	Positive	Positive
Regional Natural Heritage System	**Habitat of Endangered or Threatened Species (Key Feature)**	Works within the woodland can be in contravention of sections 9 and/or 10 of the ESA.	In accordance with the requirements of the ESA and regulations: • A Notice of Activity will be registered with the Ministry • A mitigation plan will be prepared, followed and kept on record if the Ministry conducts an audit • Although not a requirement of the ESA, the Restoration Plan will include artificial bat roosts to provide an Enhancement to this Key Feature	—	Neutral – Positive
	Significant Wetlands (Key Feature)	There are no significant wetlands within the area to be remediated. Significant wetlands on the Subject Property include the Milton Wetland Complex within the Sixteen Mile Creek valley. Due to the migration of existing contaminants via groundwater, the remediation works are anticipated to prevent migration of contaminants towards the Significant Wetland.	• See groundwater mitigation and management above	Neutral – Positive	Neutral – Positive
	Significant Woodlands (Key Feature)	Significant Woodlands occur on site and their outer boundary has been delineated by the Region. As noted above, excavation of contaminated soils in the significant woodland is anticipated to occur during the Stage 3 remediation. The limits of remedial excavation in the Stage 3 area will be refined through the iterative testing to the satisfaction of MECP (as discussed in **Section 3.2.2**). A best estimate of the disturbance area in this feature is 0.61 ha.	• Implement staged remediation plan with staged ESC fencing to protect features prior to approvals and permits • Undertake incremental additional soil removal, until soil contamination is removed, as outlined in **Section 3.2.2.1**. • Vegetation clearing should occur outside of the migratory bird nesting window and bat roosting window. • Restore remediated areas with clean topsoil, locally native vegetation, and tree plantings based on CH Landscaping Guidelines. • Regularize the limit of the woodland restoration area to reduce the edge length to interior area ratio. This also results in an increased total area of woodland relative to the existing staked limit. • Following remediation, implement 15 m woodland buffer and naturalize in accordance with CH Landscaping Guidelines.	—	Positive
	Significant Valleylands (Key Feature)	The valley wall in one location has been eroded by a storm outfall and natural erosion (**Figure 2.2**). The area is a steep gully with unstable slopes (**Appendix C-1**). Although the storm pipe has	• Implement staged remediation plan with staged ESC fencing to protect features prior to approvals and permits	—	Neutral – Positive

Category	Feature/Function	Proposed or Potential Impacts	Recommended Mitigation/Management	Net Effect	
				Phase 1	Phase 2 and Long-Term
		been decommissioned from use, the natural erosion of the gully has been exacerbated by the prior use of the storm pipe.	• Restore disturbed areas by planting locally native vegetation based on CH Landscaping Guidelines. • Implement 15m long-term stable top of slope buffers and setbacks and naturalize in accordance with CH guidelines. Based on conversations with the Region and CH, the preferred alternative is as follows: • Undertake no specific geotechnical solutions to address the localized erosion but rather, improve the vegetation cover in this area using species conducive to bioengineering (the "almost do nothing approach"). • If necessary at detailed design, undertake minor grading east of the top of slope to divert overland flow away from the eroded area. • Capping and grouting of the existing pipe • Remove debris (broken pipe, etc.) within proximity of the existing outfall.		
	Significant Wildlife Habitat (Key Feature)	No confirmed SWH was identified on the Subject Property prior to the field surveys. Candidate SWH is present in the significant woodland, the former tailings pond / wetland (**Appendix B-7**). The proposed remediation is phased to impact these SWH features as follows: • Phase 1 — No impact • Phase 2 — Removal of former tailings pond / wetland and SWH for Terrestrial Crayfish and Eastern Wood-Pewee along with partial removal at the perimeter of SWH for Amphibian Breeding (Woodland) and Woodland Raptor Nesting	• Implement staged remediation plan with staged ESC fencing to protect features prior to approvals and permits • Wildlife rescue and relocation for terrestrial crayfish and amphibians was conducted after the issuance of a license and authorization from MNRF • As noted above, the significant woodland feature will be restored in remediated areas with clean topsoil, locally native vegetation, and tree plantings. • Raptor perches or snags and brush piles will be included in the detailed Restoration Plan • Following remediation, implement recommended 15 m woodland dripline buffer, proposed pit and mound wetland and 15m wetland buffer	—	Neutral – Positive
	Fish Habitat (Key Feature)	There is a potential for remediation activities to indirectly impact downstream fish habitat within Sixteen Mile Creek if sediment migrates to the watercourse or if water is released without appropriate mitigation measures. Due to the potential migration of existing contaminants via groundwater, the remediation works are anticipated to prevent the long-term migration of contaminants towards these features	• Implement the ESC recommendations as detailed in **Section 3.5.2.1** • Implement the slope improvements outlined in **Section 3.3** to mitigate the existing risk of further erosion and sedimentation to the Sixteen Mile Creek. • Should remediation works near water be needed, discussion with CH will occur and a DFO request for review will be filed. As this habitat is within the jurisdiction of the federal *Species at Risk Act*, DFO will provide direction on such regulatory matters and consultation with MECP is not anticipated to be required.	Neutral – Positive	Neutral –Positive
	Linkages	The Sixteen Mile Creek valleylands are assumed to be significant valleylands and assumed to represent a regional scale linkage. The linkage function of these valleylands is not proposed to be altered.	• None required	—	No positive or negative effect
	Watercourses	There is a potential for remediation to indirectly impact the CH-regulated watercourse if sediment migrates to the watercourse or if water is released without appropriate mitigation measures. Due to the potential migration of existing contaminants via groundwater, the remediation works are anticipated to prevent the long-term migration of contaminants towards the watercourse	• Implement the Erosion and Sediment Control (ESC) recommendations as detailed in **Section 3.5.2.1**	Neutral – Positive	Positive
	Wetlands other than those considered Significant	As discussed in **Section 2.2.8.5** and shown on **Figure 2.2**, a non-significant wetland has been delineated within ELC Units 5.1, 5.2, and 9.0. This wetland served as a former tailings pond and contains contaminated soil; therefore, the feature is proposed for	• Implement staged remediation plan with staged ESC fencing to protect features prior to approvals and permits • Wildlife rescues (amphibians, terrestrial crayfish) as required by MNRF • Vegetation clearing may only be permitted outside of the migratory bird nesting window and bat roosting window.	—	Positive

Category	Feature/Function	Proposed or Potential Impacts	Recommended Mitigation/Management	Net Effect	
				Phase 1	Phase 2 and Long-Term
		remediation by excavation in Stage 2. This will result in a temporary loss of wetland habitat.	• Removed wetland will be replaced at a 1:1 ratio with created pit and mound wetlands, to the satisfaction of the Region and CH.		

3.5.2 Mitigation Measures

In addition to the mitigation measures noted in **Table 15**, the following more detailed measures will also be implemented during remediation to minimize the disturbance and negative impacts to the RNHS and CH-regulated areas in the short-term. As noted in **Table 15**, drainage patterns will be retained to the extent possible such that pre-landfill grades are restored as demonstrated in **Drawing 4** (**Appendix D)**.

3.5.2.1 Erosion and Sediment Control

An erosion and sediment control strategy has been approved for the Subject Property in support of the on-site soil remediation works. Permit # 7980 was issued by CH in October 2021 for remediation work within the CH Regulated Area Boundary as shown on approved **Drawing 1001** (**Appendix D**). ESC details are provided on **Drawing 1001A** (**Appendix D**).

Erosion and sediment control measures will be implemented for all construction activities. The erosion and sediment control measures will be updated at each phase of soil remediation as shown in ESC **Drawings 1001-1004** (**Appendix D**). The following are ESC measures that will be implemented during remediation:

- Gravel mud mats will be installed at construction vehicle access points to minimize off-site tracking of sediments;
- Sediment control fence, and silt sock have been installed prior to commencement of earthworks and remediation activities;
- Rock check-dams and cut-off swales have been installed to control, slow down and direct runoff to sediment basins;
- Sediment traps and ponds have been installed as shown; and
- All temporary erosion and sediment control measures will be routinely inspected / monitored and repaired during construction (on a weekly basis and after precipitation events).

The proposed ESC strategy was developed to be in general conformance with the following guidelines:

- CSA Erosion and Sediment Control Inspection and Monitoring (CAN/CSA-W202-18);
- Guidelines for Erosion and Sediment Control for Urban Construction Sites (TRCA, 2019); and
- Ministry of Transportation Environmental Guide for Erosion and Sediment Control (MTO, 2007).

Construction and ESC monitoring is discussed in **Section 4.2.1**.

3.5.2.2 Timing for Wildlife

Tree removal and grubbing will be timed to avoid harm to both bat species regulated under the ESA and bird species regulated under the *Migratory Bird Convention Act*. As such, vegetation clearing in the Phase 2 area has or will occur between November 1 and March 31.

An endangered bat mitigation plan, pursuant to section 23.18 of O. Reg. 242/08 and the *Endangered Species Act*, was developed and is provided in **Appendix E**. This mitigation plan was provided to the

general contractor on March 17, 2023, during contractor training, prior to their removal of trees in bat habitat on March 20, 2023. Tree and vegetation removal in the Phase 2 area was completed on March 30, 2023.

3.5.2.3 Runoff Contingency Plan / Spills Management Plan

The proposed remediation strategy of excavation and off-site disposal of impacted soils does not involve storage or handling of any liquids, other than fuel required for site machinery. Impacted soils generated be remedial excavation, that are not immediately transported off-site for disposal, should be temporarily stockpiled when not actively worked. The erosion and sediment control measures described in **Section 3.5.2.1** will be adhered to in order to minimize potential mobilization of contaminants.

The groundwater treatment system involves solid media cartridges and, as such, spill management measures are not anticipated to be required. The treatment system involves extraction of groundwater from monitoring wells, which is run through the treatment media, and then re-infiltrated through post-treatment injection wells. Pressure checks are performed on a routine basis within the extraction system to ensure that there are no ongoing leaks of groundwater within the system. As a backup measure, the system is equipped with a spill containment kit to prevent migration of groundwater away from the groundwater treatment system, in the event of a spill. The system does not operate under inherent pressure (i.e., requires active power source to extract groundwater). As such, there is no concern with the ability to contain a leak, in the event that one is discovered. If a leak is detected, the system can be quickly deactivated, and the leak repaired.

As noted above, proper implementation and monitoring of ESC measures will provide the necessary site containment of sediments.

3.5.2.4 Restoration

The above mitigation serves to avoid or minimize impacts to the RNHS. Residual temporary impacts to the RNHS, caused by the remedial excavation or slope stabilization, will be mitigated by ecological restoration of the impacted area. The Conceptual Restoration Plan is discussed in **Section 4.1.**

3.6 Adaptive Environmental Management and Monitoring of Remediation Works

The remediation process is itself an adaptive process, with iterative monitoring of soil and groundwater contaminants as described below:

- As the limits of soil contamination cannot be precisely known until remediation is complete, the understanding of the extent of contamination will evolve over the course of the remediation work however, there is a fairly high level of confidence in the approximate extent of contamination as shown on **Figure 3.1**;
- In the interest of mitigating impacts to natural features, and not disposing of more soil than is required, the soil remediation will result in the minimal area disturbed to achieve MECP soil quality requirements;

- Similarly, groundwater remediation will occur until MECP requirements are achieved;
- If, during the course of remedial excavation, testing indicates the exceedance of soil contaminants within 15 m of the LTSTOS, consultation with CH will occur and the necessary Permit will be acquired before proceeding with remediation; and
- If the Risk Assessment process related to the Sixteen Mile Creek watercourse and/or wetlands leads to the requirement for remedial works within the watercourse, consultation with the relevant agencies will occur and the necessary permits will be acquired before proceeding with remediation.

Additional monitoring requirements are discussed in **Section 4.2**.

4. Post-Remediation Environmental Management

The goals of the Post-Remediation Environmental Management, as outlined in the CEMS ToR are as follows:

- Assess / identify opportunities to enhance the ecological integrity and resiliency of existing natural features and functions of the RNHS;
- Assess / identify opportunities to enhance natural corridors among hydrologic, hydrogeologic features, aquatic and wildlife linkages, terrestrial habitat corridors and restore degraded natural features; and
- Identify ecologically appropriate buffers that are based on the sensitivity and significance of the existing natural features and functions and potential impacts associated with future residential development.

The CEMS includes work to achieve each of these goals in the following ways:

- Through the ecological assessment and analyses, Key Features and opportunities to enhance Key Features were identified. These enhancements are independent of the long-term benefit of contamination remediation and are discussed in detail in **Section 4.1.5**;
- Through soil and groundwater testing analysis, geotechnical analysis and ecological analyses, the anticipated limits of contamination and stabilization in Key Features were identified. These areas will ultimately be planted with native trees, shrubs and ground covers where appropriate. Requirements to enhance / restore existing linkages and restore degraded habitat are discussed in detail in **Sections 4.1.1 – 4.1.3**; and
- Through the ecological analyses, the sensitivity of the existing Key Features was identified, along with the potential impacts of adjacent development. Requirements for ecologically appropriate buffers are discussed in detail in **Section 4.1.4**.

As per the CEMS ToR, a Conceptual Restoration Plan has been prepared to meet the above goals (**Figures 4.1A – 4.1B**). The Conceptual Restoration Plan outlines the restoration approaches to be applied to areas affected by remediation and slope stabilization works and a proposed design for the pit and mound habitats that will serve to replace the tailings pond wetlands that will be removed through remediation. Following approval of the CEMS and this Conceptual Restoration Plan, a Detailed Landscaping Plan will be prepared and submitted with the CH permit application required to initiate the remediation and slope stabilization works within CH's regulated area.

4.1 Conceptual Restoration Plan

The following subsections describe the components of the Conceptual Restoration Plan (**Figures 4.1A – 4.1B**).

4.1.1 Vegetation of Area Affected by Slope Erosion

The storm sewer pipe and outfall infrastructure that was previously constructed within the valleylands to service the manufacturing facility has resulted in erosion and slope failure along the valley wall in a localized area. As discussed in **Section 3.3**, it is proposed that the area be vegetated to mitigate erosion of soils. The extent of this restoration work is illustrated on **Figure 4.1A** of the Conceptual Restoration Plan. It is anticipated that the Significant Valleyland will continue to function as a regional linkage as there is nothing in the proposed landscaping restoration that would prevent the continued linkage function.

The limit of the Refined RNHS in the vicinity of the slope failure is based on the existing LTSTOS plus the 15 m setback. This area will be naturalized with buffer plantings, in accordance with CH permit requirements.

4.1.2 Restoration of Woodland Areas Affected by Remediation

Portions of the tableland woodland feature (ELC Unit 2.0) overlap with the former landfill and require remediation due to the presences of contaminated soils (see **Figure 3.1** for estimated extents of remedial excavation). The soil remediation works will be conducted to minimize impacts to the remaining areas of the woodland that will not require remediation. Specific mitigation measures and incremental staging has been proposed to minimize impacts as described in **Section 3.2.2**.

As the woodland forms part of the RNHS, it is important that the restoration objectives align with maintaining the functions of Key Features and the broader ecological objectives for the RNHS. As was stated previously, the tableland woodland that will be affected by the remediation works is relatively young and has established on former agricultural lands that were abandoned in the 1960's (see **Appendix F**). The composition of this community does not reflect that of natural analogs.

Based on its history and the presence of a remnant forest community to the south of the Subject Property, it is proposed that the woodland be restored with the goal of directing its ecological trajectory towards a Dry–Fresh Sugar Maple Forest (FOD5). It should be noted that native plantings, with a shrub and groundcover layer, will serve to improve native plant diversity and community structure.

The proposed construction and restoration approach for this area were developed to fulfil the following objectives:

- Implement ESC measures;
- Minimize impacts to trees by following an incremental approach to remediation;
- Restore finished grades to original pre-landfill elevations;
- Apply clean topsoil to areas affected by remediation activities;
- Introduction of native mycorrhizal material to imported topsoil;

- Implement invasive species control measures within affected areas;
- Stabilize disturbed areas by applying erosion blanket protection and revegetate by seeding area with a CH approved cover crop;
- Plant disturbed areas with container grown native groundcovers, vines, shrubs and trees to the satisfaction of the agencies; and
- Monitor the establishment of vegetation cover to identify deficiencies and replacement plantings.

A conceptual design for the woodland restoration is provided in **Figure 4.1C**.

The limit of the woodland restoration has been modified to reduce the edge to interior ratio. The first submission of the CEMS included reinstatement of the pre-remediation woodland boundary (i.e., previously staked dripline). Following the first submission, the Region identified that it would be their preference to normalize the woodland boundary to reduce the edge to interior ratio. As such, the normalized woodland boundary is proposed in this submission of the CEMS. As illustrated in **Figure 5**, the normalized woodland limit will provide a reduction of 60 m in edge and an additional 0.24 ha in woodland area as compared to the first CEMS submission and the pre-remediation RNHS.

A Detailed Landscaping Plan will be prepared following agency acceptance of the CEMS and Conceptual Restoration Plan.

4.1.3 Wetland Restoration / Replacement of Wetland Affected by Remediation

The existing non-significant wetland is a degraded feature associated with a former tailings pond. This feature will be remediated and restored with pit-and-mound wetlands. The design goal of the pit-and-mound wetland was to re-create a wetland area equivalent to the combined area of the tailings pond / wetland with similar or improved ecological functions. The objectives of this wetland restoration are outlined below.

The pit-and-mound wetlands will be created adjacent to the Significant Woodland to improve connectivity (wildlife movement, seed and pollen dispersal) with RNHS Key Features. This improved connectivity will serve as a functional Enhancement to Key Features. As such, a buffer is not warranted between these two natural features.

One pit will be designed to meet criteria for amphibian breeding and development. At the recommendation of CH staff, one pit will larger than the others to sustain a sufficient hydroperiod to support amphibian breeding. To ensure this larger pit receives as much water as possible, alternative designs were evaluated (as discussed in **Appendix B-8**). The preferred alternative was to place the larger pit at the at the downstream end of the wetland re-creation area to maximize catchment area. This pit is anticipated to hold water in average years between February and July. The remaining pits will have shorter hydroperiods but will also support wetland communities.

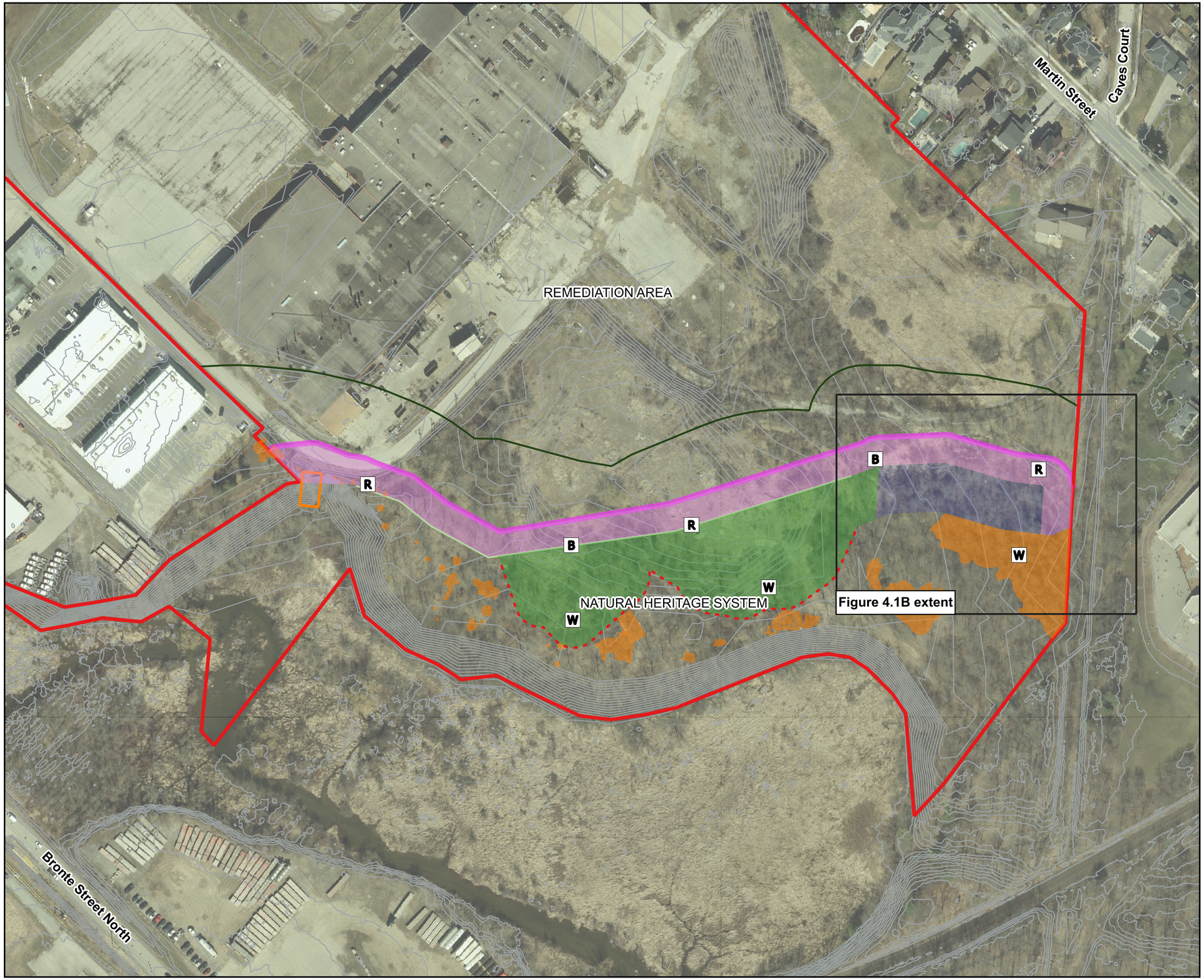
A conceptual design for the wetland restoration is provided on **Figure 4.1B**.

The limit of the Pre-Remediation Refined RNHS in the vicinity of the existing tailings pond / wetland is based on the CH staked wetland limits and the application of a 15 m buffer. Consistent with CH policy for wetlands less than 2 ha in size, a 15 m regulatory setback will be applied to the created pit and

Conceptual Post-Remediation Restoration and Enhancement Plan

Figure 4.1A

150 Steeles Avenue Milton CEMS



Legend

- Subject Property
- Contours, 0.5 m (Urbantech - Feb 2023)
- CH Regulated Limit
- Restored Woodland Limit
- Post-Remediation Refined RNHS Limit
- Estimated Remedial Excavation Limits within Woodland (Urbantech - Feb 2023)

Restoration

- Woodland Restoration Area (8981 m²)
- Wetland Restoration Area (Urbantech - July 2023) (2344 m² Total)
- Eroded Slope Area (Approximate) to be Seeded and Planted, as feasible

Buffer

- Buffer Area to be Planted in accordance with CH Landscaping Guidelines (7013 m²)

Additional Enhancements

- Area of exotic or invasive species and anthropogenic surface debris (tents, garbage, rubble) - to be removed and planted with native trees, shrubs, and groundcovers to the satisfaction of CH (4118 m² Total)
- B — Bat Maternity Roost
- R — Raptor Perch or Snag
- W — Woody Brush Piles

Note: Final area of impact to NHS cannot be determined until remedial excavation in the NHS has been completed. Anticipated limits are shown based on best available information. Final restoration areas will reflect the final area of impact in the NHS.

BEACON ENVIRONMENTAL

Project: 221265
Last Revised: August 2023

Client: 150 Steeles Milton Inc.

Prepared by: SZ
Checked by: KU

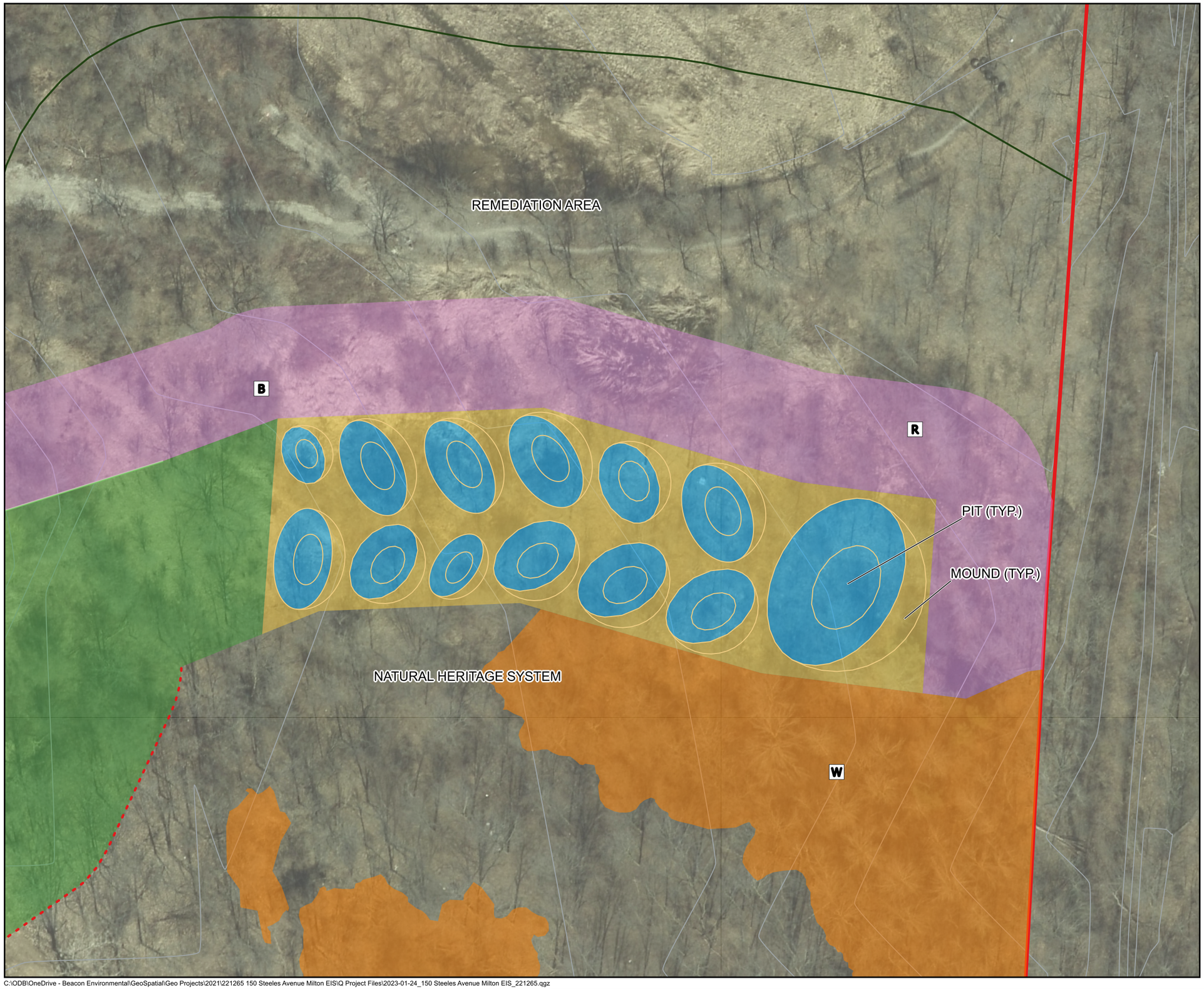
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Conceptual Post-Remediation Restoration and Enhancement Plan - Wetland Restoration

Figure 4.1B

150 Steeles Avenue Milton CEMS

Legend

- Subject Property
- Contours, 0.5 m (Urbantech - Feb 2023)
- CH Regulated Limit
- Restored Woodland Limit
- Estimated Remedial Excavation Limits within Woodland (Urbantech - Feb 2023)

Restoration

- Buffer Area to be Planted in accordance with CH Landscaping Guidelines (7013 m²)
- Woodland Restoration Area (8981 m²)
- Water-Tolerant Plantings (1148 m²)
- Hydrophytic Plantings (1194 m²)

Buffer

- Buffer Area to be Planted in accordance with CH Landscaping Guidelines (see figure 4.1A for total area)
- Woodland Restoration Area (8981 m²)

Additional Enhancements

- Area of exotic or invasive species and anthropogenic surface debris (tents, garbage, rubble) - to be removed and planted with native trees, shrubs, and groundcovers to the satisfaction of CH (see figure 4.1A for total area)
- B — Bat Maternity Roost
- R — Raptor Perch or Snag
- W — Woody Brush Piles

Note: Final area of impact to NHS cannot be determined until remedial excavation in the NHS has been completed. Anticipated limits are shown based on best available information. Final restoration areas will reflect the final area of impact in the NHS.

BEACON ENVIRONMENTAL

Project: 221265
Last Revised: August 2023

Client: 150 Steeles Milton Inc.

Prepared by: SZ
Checked by: KU

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mound habitat. The area of this setback will be naturalized as a wetland buffer and will form the boundary of the Post-Remediation RNHS at this location.

The wetland restoration details, including a landscaping plan with native species, ESC measures, and staging plan will be prepared to the satisfaction of CH, the Town, the Region and will be submitted as part of a future Permit application to CH.

4.1.4 Buffers

As discussed above, the ROPA 49 RNHS limits were refined twice. First to establish the Pre-Remediation RNHS limits, and then again to establish the Post-Remediation RNHS limits. As buffers are a component of the RNHS, ecologically appropriate buffers were prescribed to establish each of these RNHS limits.

While ecological buffers represent a common tool for protecting natural heritage features and functions from potential impacts related to land use change, there are other measures that can also provide this function. Through community design, it is possible to situate additional green infrastructure components such as parks, stormwater management facilities, and recreational trails adjacent to the RNHS to compliment ecological functions. There are also standard requirements to install fencing at the RNHS limits and dedicate these lands to the public, all of which can assist with mitigating impacts related to human encroachment. Education is also key to environmental protection and providing signage to encourage conservation and stewardship can also help reduce encroachment related activities. Such signage should include a clear prohibition on pet access. It should be noted that the Town Animal Control By-Law (90-2004) prohibits pet owners from allowing their pet to enter a public place where signage is erected to indicate such a prohibition.

Regional staff requested additional rationale be provided to demonstrate that the buffers being prescribed to establish the RNHS limits are ecologically appropriate by undertaking a risk-based assessment similar to what is described in the Region's *Framework for Regional Natural Heritage System Buffer Width Refinements for Area-Specific Planning*, (Region of Halton 2017). While the Region's framework was not designed to be applied to brownfield redevelopment sites, select components of this framework were nevertheless used, where applicable, in undertaking the risk assessment. A summary of the buffer risk assessment is presented below in **Table 16** and followed by additional discussion.

Table 16. Assessment of RNHS Impact Risk from Adjacent Use

	Adjacent Land Use and Stressors to RNHS	Key Feature Sensitivity/Significance (Receptors)	Overall Risk
Pre-Remediation	Industrial — Metal stamping and machining: • Noise • Dust • Groundwater and Soil Contamination • Exotic species • Human disturbance/encampments	RNHS boundary was a cultural ELC community that grew on fill or contaminated soil and requires full vegetation removal for remediation. This community contained significant/sensitive functions/attributes (SWH, habitat of endangered species)	Baseline

	Adjacent Land Use and Stressors to RNHS	Key Feature Sensitivity/Significance (Receptors)	Overall Risk
During Remediation	Construction — Earthworks: • Noise • Dust • Exotic species	Full vegetation and contaminated soil removal to allow remediation. Due to removal, this community no longer contains significant/sensitive functions/attributes (SWH, habitat of endangered species)	Improving
Post-Remediation	Proximal use is anticipated to be a trail and SWM pond parallel to, but outside of, the RNHS, with high density residential development adjacent but set back • Light • Potential introduction of exotic species, minimized by access restrictions (fencing)	Native woodland plantings on clean topsoil and restored pre-landfill grades. Target functions will match those of pre-remediation (SWH, habitat of endangered species)	Improved

As noted in **Table 16**, it is important to acknowledge the stressors that currently affect or historically affected the RNHS in this area as existing and previous land uses on and adjacent to the Subject Property have been, and as it relates to adjacent lands continue to be, heavy industrial uses. It is those stressors that should be considered the baseline condition for the natural heritage features/functions of the RNHS in proximity to the Subject Property. The natural heritage features along the western/southern portion of the Subject Property have developed adjacent to a heavy industrial uses (metal stamping factory) for decades. In addition to noise from the industrial uses and rail traffic, natural heritage features and functions have adapted to soil contamination and industrial debris, with a large area of the existing woodland growing on contaminated soil and landfill. In addition, upon the closure of the factory, human disturbance in the form of ad hoc trails and encampments have been created within the woodland and valleyland resulting in areas of litter and debris scattered throughout the RNHS.

Based on the Region's Framework (2017), such an adjacent land use (Heavy Industrial) would be considered a high risk; however, the features and function that comprise the RNHS have developed in close proximity to this high-risk use with no formal buffers and with a landfill adjacent to and within the limits of the RNHS. These existing or recent uses and their effect on the sensitivity levels of existing ecological receptors are key factors that must also be considered when establishing buffers based on future uses.

The first step in the Region's buffer framework for greenfield developments is identification of adjacent land use risk (i.e., stressor) score. Detailed plans for the future residential development have not yet been finalized; however, it is certain that the proposed buffers will be fenced and it is highly likely that the RNHS will be flanked by a trail system. This trail will provide further transition between the RNHS and the developed portion of the site. In addition, it is likely that a stormwater management pond will be immediately adjacent to a portion of the RNHS (in the approximate location of the existing ESC pond. Since the future development plan has not advanced yet to the planning stage, the Study Team has only assumed a trail on the outer edge of the buffer (outside the RNHS) with high density residential adjacent east of the trail. Although as noted above, the Region's Framework (2017) does not apply in this circumstance, the Region's Framework (2017) considers high density residential to be a high-risk adjacent land use. As it relates to impacts associated with residential development, Appendix A of the Framework notes that the impacts from encroachment, dumping of debris and pets is highest in low

density residential development whereas the Framework suggests that the impacts from trampling and ad hoc trails is highest in high density residential developments. In the comments received from the Region on the first submission of the CEMS, the Study Team was requested to evaluate / consider impacts of predation by domestic cats (*Felis catus*); however, as noted in the Region's Framework (2017) it is acknowledged that impacts from pets are most common in low density residential. Given the type of land use (high density residential), which generally occurs in the form of towers or multi-storey buildings, the potential risk associated with cat predation on wildlife in the RNHS is low to none as pets are contained inside units within towers and multi-storey buildings and cannot freely enter and exit. As such, the Study Team is not concerned with cat predation and recommends that it does not have any impact on the recommended buffer size or mitigation measures.

While the introduction of more people into an area, as would occur with high density residential developments, could result in tramping and ad hoc trails (as noted in the Region's Framework), the provision of a fence between the RNHS and the high density residential removes the ability for people to easily access the RNHS, thereby significantly reducing this risk. In other words, just because more people are located in proximity to the RNHS, does not necessarily mean that this will result in more attempts to enter the RNHS. In fact, as noted above, prior to the landowner beginning remediation on these lands there were several encampments within the woodlands/valleyland which have been removed and such activities will be further restricted in the future with fencing and discouraged by trail use and increased levels of reporting.

The Region's Framework, Appendix A, lists other 'typical impacts' that should be considered some of which that might apply to the future land use include: introduction of invasive species and lights. The adjacent development will be reviewed through site plan, allowing the Town to ensure that only native species are planted in proximity to the RNHS. In addition, through the site plan process, the Town can require that exterior lighting be designed so as to not be directed towards the RNHS.

Based on the above, it is the Study Team's recommendation that the proposed high density residential development will not be a high risk, provided the following is incorporated:

- A gateless fence installed along the outer limit of the 15 m buffer / 15 m setback from LTSTOS, whichever is greater;
- Buffer / setback landscaped in accordance with CH Landscaping and Rehabilitation Guidelines;
- At site plan, the Town reviews landscaping plans to ensure only native, non-invasive plant species are proposed on those plans in proximity to the RNHS; and
- At site plan, the Town reviews the lighting plans to ensure that exterior lighting is directed away from the RNHS.

The second step in the Region's Framework is to assess the feature/function significance and sensitivity risk score. Despite the target restoration community being a forest, the Framework is designed to be applied to existing features and not future features. The use of existing conditions to assess feature sensitivity and significance is well established in natural heritage policy guidance, including the *Natural Heritage Reference Manual* (MNR 2010) and the *Environmental Impact Assessment Guideline* (Region of Halton 2010). Under existing (pre-remediation) conditions, the significant woodland feature is a cultural woodland and corresponds with the description provided on page 11 of the Framework for a "*Cultural ELC Community class that grew on fill/debris such that full removal of the vegetation and fill/debris would be necessary to rehabilitate*". The significance and sensitivity of such features is considered low.

In addition to the plantings within the buffer, enhancement plantings (**Section 4.1.5**) are proposed internal to portions of the existing woodland that are being retained along with debris removal. No trail is proposed within the buffer and any pedestrian trails will be located outside of the RNHS. Finally, the RNHS on the Subject Property will be dedicated to the Town through the planning process which provides for the long-term protection of the RNHS in this location.

For reasons noted above, and provided in **Table 16**, and in general accordance with the Region's Framework (2017), it is recommended that a buffer of 15 m would be appropriate to the Key Features on the Subject Property. This buffer is derived from the following recommended steps, as described in the Region's Framework (2017):

- The anticipated adjacent land use is open space. As such, the recommended minimum buffer is either 20 m or 25 m, depending on the sensitivity of the Key Feature, assuming there is no buffer mitigation (e.g., fencing);
- The sensitivity of the Key Feature is relatively low, as it is a cultural community that grew on fill. As such, the minimum buffer described in (1) is recommended to be refined to 20 m, assuming there is no buffer mitigation; and
- Additional buffer mitigation measures such as fencing at the RNHS limit and native plantings within and adjacent to the Key Feature will be implemented. As such, the minimum buffer is recommended to be refined to 15 m.

In addition to the above, the recommended 15 m buffer is consistent with CH's Land Use Planning policies relating to significant woodlands (S.3.6.4) which recommends that, in the absence of a Subwatershed Study, a minimum 10 m buffer to significant woodlands, outside of the Greenbelt Plan Area, be provided, to be confirmed through an EIS. As outlined in **Section 1.4.8**, the Greenbelt Plan Urban River Valley designation follows the Sixteen Mile Creek along the western limit of the Subject Property. The Urban River Valley policies of the Greenbelt Plan only apply to those lands that are publicly owned, which would include the lands owned by the Town at the base of the valley, immediately west of the Subject Property. The Significant Woodland extends outside of the lands owned by the Town and onto the Subject Property and, as such, the Urban River Valley policies of the Greenbelt Plan, and its minimum vegetated protection zone, would not apply to the woodland.

Implementation of the above recommended 15 m buffer will mitigate potential impacts related to anticipated future residential uses adjacent to the RNHS. In addition, it is recommended that any future trail be located outside of this RNHS buffer .

The proposed buffer and its treatment are identified on the Conceptual Restoration Plan (**Figures 4.1A**).

A Detailed Landscaping Plan will be prepared following agency acceptance of the CEMS and Conceptual Restoration Plan.

Additional aspects of the Conceptual Restoration Plan are discussed in the remainder of **Section 4.1**.

4.1.5 Enhancements to Key Features

ROP policy 229.1.1 defines Enhancements to Key Features as follows:

Means ecologically supporting areas adjacent to Key Features and/or measures internal to the Key Features that increase the ecological resilience and function of individual Key Features or groups of Key Features.

For the purpose of the CEMS, the Enhancements to Key Features have been subdivided into two categories discussed below: (1) enhancements related to the remediation, and (2) enhancements that are supplementary to the remediation.

Project Related Enhancements

The proposed remediation works represent enhancements to Key Features of the RNHS as these activities are being undertaken to address soil and groundwater contamination and anthropogenically induced slope failure, both of which impair the resiliency and function of the RNHS. These measures, internal to the Key Features, will have the effect of increasing ecological resilience and function of the Key Features by removing pollution from land and water to improve the ecological state and condition of the RNHS.

The following is a summary of project related activities that are considered Enhancements to Key Features of the RNHS:

- The remediation of groundwater and soil resources will remove contamination from affected Key Features and thereby prevent further degradation of land and water in the RNHS;
- Soils will be remediated in Key Features including: Habitat of Endangered or Threatened Species, Significant Woodlands, and Significant Wildlife Habitat;
- The potential migration of contaminants to the following Key Features by groundwater will be mitigated thereby protecting the Significant Wetlands and Fish Habitat;
- The localized area of slope instability, which occurs in Habitat of Endangered or Threatened Species, Significant Woodlands, Significant Valleyland and SWH will be vegetated and the storm sewer capped/sealed and the outer perimeter grouted; and
- In remediated areas, the Key Features will be restored to pre-landfill grades with clean topsoil, locally native vegetation and tree plantings to the satisfaction of CH, the Town and Region.

Additional Enhancements

In addition to the above enhancements that are directly related to the remediation, the CEMS has identified opportunities to enhance the portions of the Significant Woodland that are not directly affected by the remediation and eroded slope area works. These areas are identified on the Conceptual Restoration Plan (**Figures 4.1A**). In these areas, opportunities for enhancement include:

- Increase in total area of woodland, as demonstrated in **Figure 5**;
- Reduction in edge length to woodland area ratio, as demonstrated in **Figure 5**;
- Removal of anthropogenic refuse and waste;
- Removal or control of invasive species;
- Diversification of vegetation by underplanting with native species; and
- Creation of supplemental wildlife habitat using natural or artificial structures.

As noted in **Section 2.2.7**, the concrete structure located in the valley is not considered to be a well by DS Consultants. Given the location of the structure and the inaccessibility of the area (i.e. surrounded by mature trees at the bottom of the valley slope) it is DS Consultant's and Beacon's opinion that any decommissioning efforts would result in unnecessary disruption to the natural environment without producing net benefit.

These additional enhancements will be included as part of the Detailed Landscaping Plan which will be prepared following agency acceptance of the CEMS and Conceptual Restoration Plan.

4.2 Monitoring

In addition to the remediation-specific monitoring described in **Section 3.2.2**, this section describes additional monitoring measures to ensure that the specified mitigation measures have been implemented and are performing as anticipated.

This section has been divided into Erosion and Sediment Control monitoring and Ecological Restoration monitoring.

4.2.1 ESC Monitoring

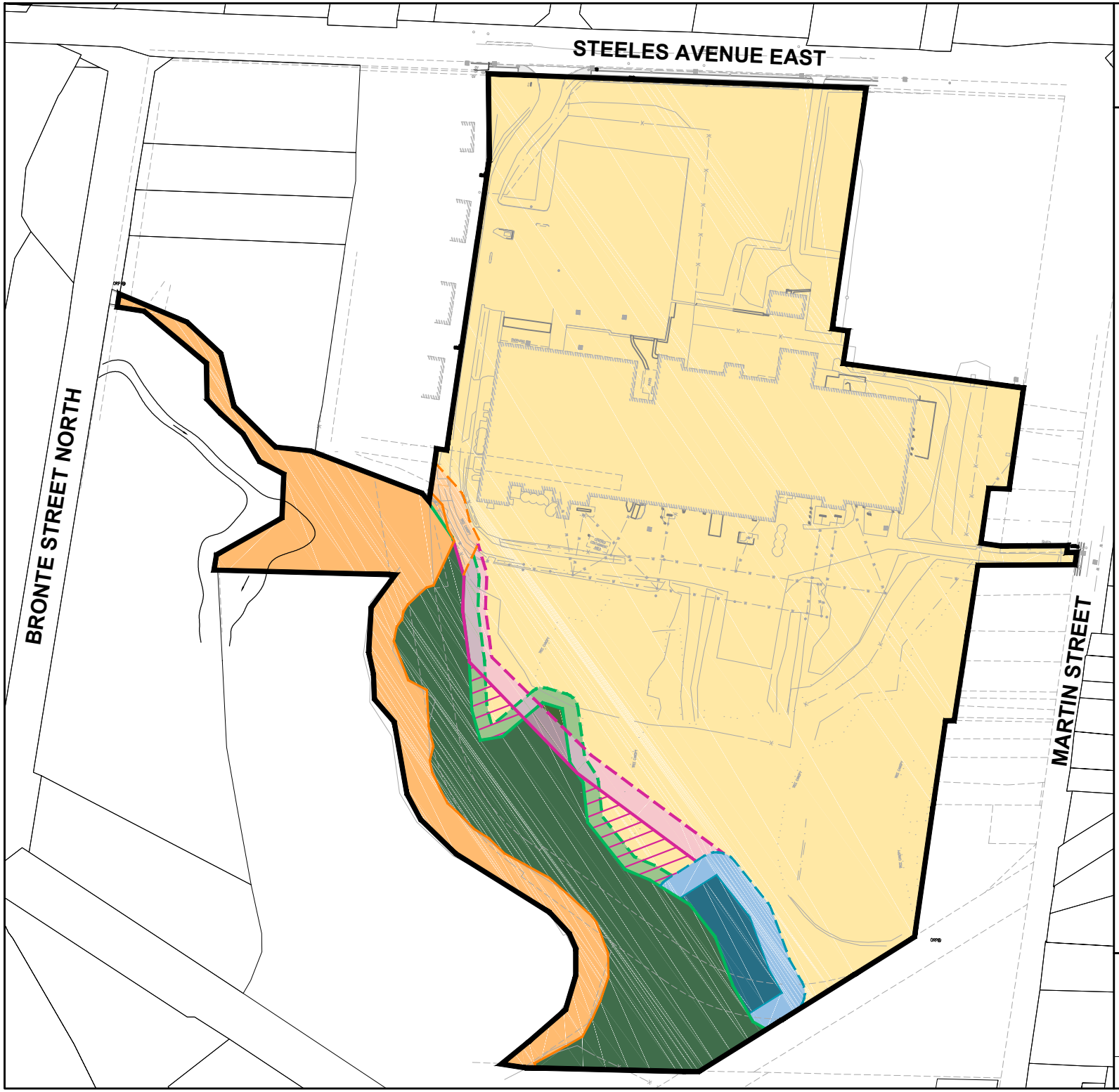
As described in **Section 3.5.2.1**, an ESC Strategy was prepared in relation to the remediation works. The strategy outlines the various measures that will be implemented to address erosion and sedimentation during the remediation work phases and is provided in **Appendix D - Drawings 1001–1003**.

The following list provides a summary of key components of the ESC Strategy:

- Inspections conducted by a competent person (e.g., CAN-CISEC);
- Inspections frequency on weekly basis, at a minimum:
  - Prior to predicted rain events;
  - After rain events;
  - After significant snow melt; and
  - Daily during extended rain or snow melt;
- Damaged ESC measures to be repaired within 48 hours of inspection;
- ESC Strategies on **Drawings 1001–1003** are not static and should be adaptively managed as needed to prevent sediment release;
- Sediment accumulation by ESC measures to be inspected and cleaned, if required, to maintain function; and
- ESC Strategies shall continue until site achieves 80% stabilization, as per CAN/CSA-W202-18.

4.2.2 Restoration Monitoring

Restoration monitoring will be conducted for five-years following restoration of the woodland or wetland, whichever is later, to ensure that long-term impacts to the RNHS are as anticipated. A network of



MERITOR

150 STEELES AVENUE EAST

NHS Scenarios

Legend

- Wetland
- Wetland 15m Setback
- Valleyland
- Stable Top of Bank 15m Setback
- Woodland
- Proposed Woodland Planting
- Staked Dripline
- Woodland 10m Setback
- Normalized Woodland Limit
- Proposed Normalized Woodland 15m Setback

Proposed NHS (CEMS dated March 2023)

LAND USE	AREA (HA)
Wetland	0.23
Wetland 15m Setback	0.26
Valleyland	1.80
Stable Top of Bank 15m Setback	0.09
Woodland	2.34
Woodland 10m Setback	0.32
Length of Woodland Edge: 368m	-
Total Area	5.04

Proposed Without Prejudice NHS

LAND USE	AREA (HA)
Wetland	0.23
Wetland 15m Setback	0.26
Valleyland	1.80
Stable Top of Bank 15m Setback	0.09
Woodland	2.58
Woodland 15m Setback	0.39
Length of Woodland Edge: 308m	-
Total Area	5.35
Additional NHS Area as compared to Proposed NHS (CEMS): 0.31 ha	
Reduction in Woodland Edge as compared to Proposed NHS (CEMS): 60m	

JENNIFER LAWRENCE & ASSOCIATES | BEACON ENVIRONMENTAL | KORSIAK Urban Planning | neatt COMMUNITIES

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monumented photo stations will be established to document the evolution of the RNHS during the monitoring period. Monitoring activities and requirements are outlined in **Table 17** below.

Table 17. Restoration Monitoring and Adaptive Management

Category	Monitoring Target(s)	Adaptive Management Action(s)	Methods	Monitoring Frequency	Reporting Requirements	Responsibilities for Monitoring
Landscaped Areas: 1) Slope Vegetation Area 2) Remediated Woodland Area 3) Re-created Wetland Area 4) Buffer Area 5) Additional Enhancement Area(s)	In conformance with landscaping plans and CH planting densities Conditions of planting warranty are met by end of two-year period	Any planting deficiencies to be corrected by landscaping contractor	Inventory and assess landscaped areas	At time of installation Prior to expiration of two-year warranty period	In first annual report, include confirmation of planting conformance with landscaping plans In third annual report, include confirmation that planting warranty conditions are met	Beacon
Hydrology of Re-Created Wetland	Appropriate hydroperiod for the establishment of wetland vegetation	If necessary, modify pit and mounds to achieve desired hydrology	Continuous monitoring of water depth in large pit via pressure transducer Confirm and map the extent of hydrophytic and water tolerant vegetation using the OWES wetland plant list	As required for continuous monitoring Annually for wetland plant establishment	In each annual report, include: - results of continuous water level monitoring in the large pit; and - mapping of extent of wetland vegetation. If amphibians or terrestrial crayfish are observed during annual surveys, these observations will be included in the monitoring report	Beacon
Anthropogenic Refuse/Waste in Woodland	In conformance with landscaping plans	Direct contractor to rectify deficiencies	Inventory of previously mapped refuse/waste	Within the season that waste was removed	In first annual report, include confirmation of conformance with landscaping plans	Beacon
Invasive Species Treatment in Tableland Woodland	In conformance with landscaping plans Post treatment or removal to have 10% or less of previous cover	Direct contractor to rectify deficiencies	Mapping/ inventory of areas identified for invasive species management	If herbicide application is specified, compliance monitoring shall occur at the time of herbicide application If removal is specified, compliance monitoring may occur within the same season All treatments/ removals shall be subject to annual performance monitoring	In first annual report, include confirmation of conformance with landscaping plans In each annual report following the first year, include mapping of invasive species extent	Beacon
Supplemental Wildlife Habitat Structures	In conformance with landscaping plans In functional state in subsequent years	Direct contractor to rectify deficiencies	Visual inspection	At time of installation Once annually in subsequent years	Include status of habitat structures in all annual reports	Beacon

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4.3 Next Steps

4.3.1 CH Permits

As was noted in **Section 3.4.1**, permits will be required from CH to address restoration of the lands impacted by the Emergency Works Permit. Specifically, this will include:

- Restoration of land within 120 m of a wetland greater than 2 ha in size;
- Restoration of land within, and within 30 m of, a wetland less than 2 ha in size; and
- Restoration of land within 15 m of stable top of bank.

Pre-consultation related to this work has taken place with CH and complete application checklists have been provided for the Permit applications (**Appendix A-2**). In anticipation of the CH permitting requirements, included within this CEMS is a Hydrologic Evaluation that examines impacts to drainage catchment areas and flows as resulting from the remediation works. This evaluation was prepared in accordance with separate ToR developed and approved by CH (**Appendix A-3**). Additionally, a Water Availability Analysis was also prepared for the pit and mound wetland area to confirm that it can support wetland and habitat for pond breeding amphibians (**Appendix B-8**).

4.3.2 Rezoning Application for Future Residential Development

This CEMS is a comprehensive document that is supported by extensive technical study and analyses. The ToR for the CEMS were prepared with the objective of fulfilling the technical study requirements necessary to support a zoning by-law amendment to refine the RNHS limit. In addition, the buffers to the Key Features have been recommended based on a future planning application for residential development on the Subject Property.

A key objective of the CEMS was to identify the boundaries of the RNHS as this is necessary to establish the limits of future developments and support rezoning and draft plan applications. As described in this report, the limits of the Post-Remediation Refined RNHS (**Figure 3.2**) have been established by applying ecologically appropriate buffers that will provide RNHS components with necessary protection, in support future residential land uses. In this regard, the CEMS report satisfies the requirements of an Environmental Impact Assessment (EIA) or Subwatershed Impact Study (SIS), as outlined in ROP Policy 116.1. As such, upon approval of the CEMS, it is the opinion of the Study Team that further impact studies or impact assessments would not be required to support rezoning and/or draft plan applications.

5. Conclusion

This CEMS has been prepared in accordance with the agency approved ToR contained in **Appendix A-1**.

The primary purpose of the CEMS is to describe the extent of contaminant remediation works proposed for portions of the Subject Property that overlap with RNHS and CH regulated areas and to develop environmental management strategies that can mitigate adverse impacts and enhance the functions of the RNHS. In addition, the CEMS has refined the RNHS boundary, in accordance with regional policies,

to establish limits of development to support the re-zoning and draft plan applications for future re-development of the Subject Property.

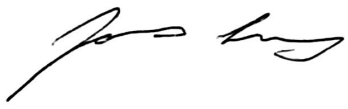
The CEMS is a comprehensive study that has been prepared by a multi-disciplinary team. The information used to characterize the biophysical resources in the Study Area was derived from background reviews, field investigations and are supported by technical analyses as per the ToR.

The CEMS has evaluated the existing biophysical resources and natural hazards to identify all Key Features and other components of the RNHS in accordance with regional policies. The limits of Key Features and natural hazards were confirmed through field verification with agencies or through technical analyses and used to establish the boundaries of the Pre-Remediation Refined RNHS.

The impact assessment describes in detail the proposed remediation and slope vegetation works and related mitigative and restoration measures and their short and long-term impacts on various components of the RNHS. The impact assessment finds that the proposed activities will have a positive impact on the RNHS and its functions. A Conceptual Restoration Plan has been included in the CEMS that identifies how affected areas will be rehabilitated and restored, including plans for creating an equivalent area of pit and mound habitat to replace the tailings pond / wetland that will be affected by the remediation activities. Additionally, the Conceptual Restoration Plan includes management recommendations for enhancing the ecological functions of portions of the Significant Woodland unaffected by the remediation works.

The boundaries of the Post-Remediation RNHS were further refined by applying an ecologically appropriate 15 m buffer to the created pit and mound wetland, restored/normalized woodland limit and CH regulatory setbacks to the Long Term Stable Top of Slope. Buffers were prescribed using a risk-based approach and based on the sensitivities of the natural features, functions along with their suitability for mitigating impacts related to future residential land uses.

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- Scott Riemer, P.Eng., and Kate Rothwell, M.Eng., P.Eng., of Urbantech Consulting.

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Appendix A

Agency Correspondence

Appendix A-1

Approved CEMS Terms of Reference

Terms of Reference
Comprehensive Environmental Management Strategy
150 Steeles Avenue East, Milton
NEATT Communities

1.0 INTRODUCTION

The following Terms of Reference (ToR) for a Comprehensive Environmental Management Study (CEMS) has been prepared in response to a request by the Town of Milton, Region of Halton and Conservation Halton (CH) and incorporates the draft Scope of Work provided by CH on July 8, 2022. The ToR also incorporates the comments received from the Town of Milton on the draft Scope of Work provided on August 12, 2022.

The purpose of the CEMS, as stated in the draft Scope of Work provided by CH, will be to address the remediation works and to identify possible management strategies for the natural heritage and natural hazard features on site that may be impacted by the remediation works. It is not the intention of this study to evaluate the impact of the future adjacent land use but rather, the study will recommend appropriate buffers to the Regional Natural Heritage System (RNHS) that, if implemented as part of the future adjacent development, will result in no negative impacts to the RNHS. The CEMS will also identify management strategies that may be required to sustain the existing and re-created natural features under interim and ultimate conditions.

It is anticipated that, as part of a future development application for the adjacent lands, additional studies such as a Stormwater Management Report will be required along with an implementation report detailing how the management recommendations within the CEMS (i.e., buffers, water supply to natural features, etc.) have been incorporated into the site design.

1.1 BACKGROUND & CONTEXT

SITE LOCATION

The Subject Property, at 150 Steeles Avenue East, is 40.6 hectares in area and is located south of Steeles Avenue East, north of the Canadian Pacific Railway, and east of the Sixteen Mile Creek valleylands (**Figure 1**).

The Sixteen Mile Creek valleylands as well as portions of the tablelands are mapped and designated as Natural Heritage System by the Region of Halton and portions are designated Greenlands by the Town of Milton. The valleyland, as well as a former tailings pond/wetland on the tablelands, are regulated by Conservation Halton.

1.2 STUDY AREA

The proposed Study Area for the CEMS will include the Subject Property and any natural areas within 120 m of the subject property. Justification for the extent of the Study Area will be provided in the report.

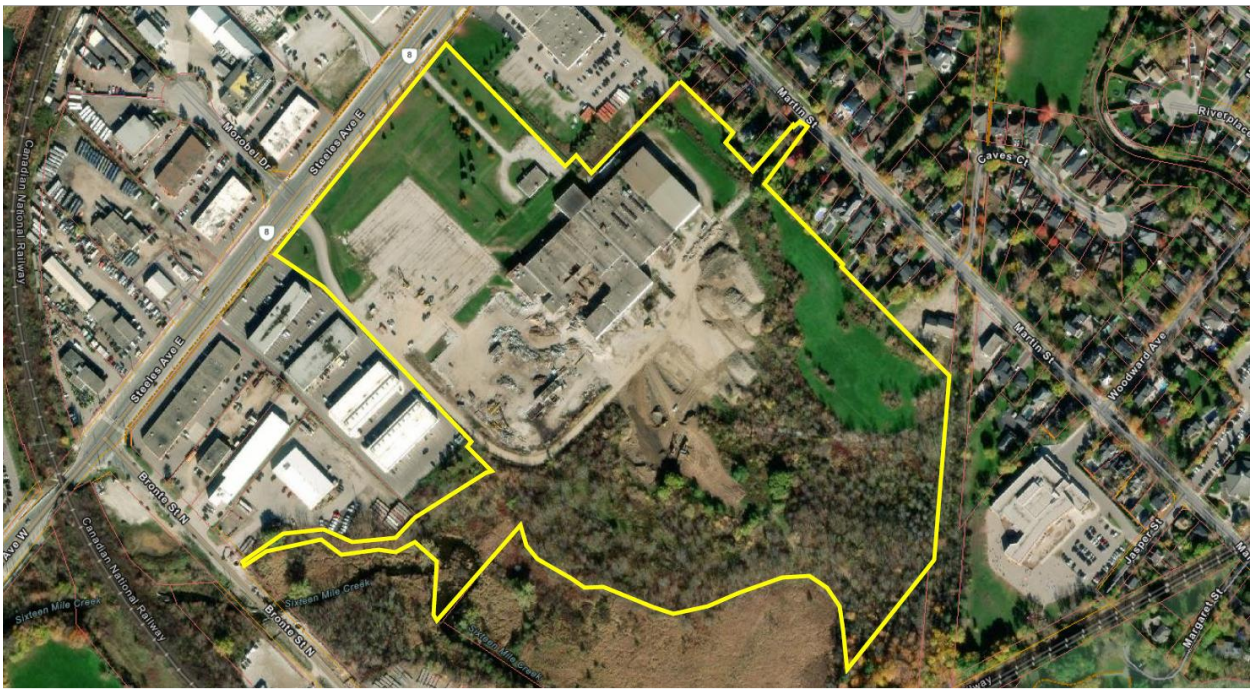


Figure 1. Site Location

1.3 SITE HISTORY

The entire tableland portion of the Subject Property was historically used for agricultural purposes, then transformed to accommodate industrial uses in the mid 1900s. An industrial complex has occupied most of the site since that time, consisting of a manufacturing facility, parking areas, landfill, and tailings ponds.

In 2021, the industrial structures were removed, with the appropriate permissions, and remediation works were initiated on the landfill. Remediation of the remaining contaminated areas is expected to be undertaken in phases. A figure identifying the limits of the remediation work will be included.

1.4 PLANNING AND REGULATORY FRAMEWORK

The CEMS will include a summary table describing the various federal, provincial, municipal and agency legislation, regulations and policies that apply to the site.

This will include, but may not be limited to, the *Environmental Protection Act*, *Fisheries Act*, *Migratory Birds Convention Act*, *Species at Risk Act*, *Endangered Species Act*, Provincial Policy Statement, Greenbelt Plan, Region of Halton Official Plan, Town of Milton Official Plan and Conservation Halton (CH) Regulation 162/06.

1.5 CEMS REPORT OUTLINE

The CEMS report will be presented in three sections as follows:

Phase 1 – Context and Existing Conditions – This phase will describe the existing biophysical conditions, evaluate the significance of natural heritage features, identify natural hazards, and identify constraints and opportunities to site remediation and future development.

Phase 2 – Remediation Works – This phase will describe the site remediation works and phases, assess potential impacts to the Regional Natural Heritage System (RNHS), and demonstrate how the remediation works can avoid, mitigate or offset impacts and enhance the functions of the RNHS in a manner that is consistent with applicable environmental protection legislation, regulations and planning policies.

Phase 3 – Management Strategies – This phase will describe the various environmental management and monitoring requirements related to the site remediation works. In addition, this phase will identify goals, objectives and targets that are to be achieved to in support of future development outside of the RNHS.

2.0 PHASE 1 - CONTEXT AND EXISTING CONDITIONS

2.1 PHYSICAL ENVIRONMENT

The physical environment within the Study Area will be characterized by providing an overview of the bedrock and surficial geology, topography, slopes and soil. Groundwater resources, hydrostratigraphy, groundwater levels and flows along with groundwater quality will be documented. In addition, surface water resources will be summarized including subwatershed and drainage catchment areas, surface water outlet locations and the receiving watercourse.

2.2 NATURAL ENVIRONMENT

The natural environment within the Study Area will be characterized by identifying all components of the RNHS as per Section 115 of the Halton Region Official Plan (ROP). This includes areas regulated by Conservation Halton under Ontario Regulation 162/06.

2.2.1 BACKGROUND

To identify and characterize the various components of the RNHS, information from primary and secondary sources will be collected, compiled, and mapped. This will provide existing baseline data and mapping for natural heritage features and for natural hazards within the Study Area.

2.2.2 FEATURE STAKING WITH AGENCIES

The top of bank and wetland limits were staked with CH staff on July 16, 2021, and the woodland dripline was staked by the Region of Halton on November 22, 2021. The boundaries of these Key Features have been surveyed by an Ontario Land Surveyor (OLS) and will be used when preparing constraint mapping.

2.2.3 ECOLOGICAL SURVEYS AND ASSESSMENTS

2.2.3.1 AMPHIBIAN SURVEYS

The Study Area includes wetlands that could potentially support amphibian breeding functions and, depending on the number of species present and their abundance, could qualify as Significant Wildlife Habitat (SWH). It is proposed that amphibian call surveys be completed in accordance with provincial Marsh Monitoring Protocols (BSC 2014). Wetland habitats associated with the Sixteen Mile Creek, as well as the tailings pond wetlands on the tableland, will be used to establish six monitoring stations.

2.2.3.2 BREEDING BIRD SURVEYS

The Study Area includes habitats that could be utilized for breeding by certain significant bird species. To identify which species may be present, two breeding bird surveys will be completed. Surveys will be performed during the mornings under suitable weather conditions and at separate times, as per the Ontario Breeding Bird Atlas (Cadman *et. al.* 2007) and Ontario Forest Bird Monitoring Program (Cadman *et. al.* 1998). To document the avian communities more comprehensively, roving surveys will be completed instead of point count surveys. All species observed, and their breeding locations, will be documented.

2.2.3.3 ECOLOGICAL LAND CLASSIFICATION AND FLORISTIC SURVEYS

Ecological Communities within the Study Area will be mapped and classified according to the Ecological Land Classification (ELC) System for Southern Ontario (Lee et. al. 1998), the provincial standard for classifying ecosystems in southern Ontario.

Floristic surveys will also be undertaken, and a checklist of all plant species observed, and their regional and provincial status will be compiled. The locations of any regionally or provincially rare species will also be noted.

2.2.3.4 TURTLE BASKING/NESTING SURVEYS

The Study Area includes wetland communities that could potentially support turtle overwintering and nesting and, depending on the types of species present and their abundance, may qualify as SWH. The purpose of the turtle surveys is to confirm the presence/absence of turtles and suitable habitat. It is proposed that wetland features be surveyed by using timing windows and temperature thresholds like those outlined in the Survey Protocol for Blanding's Turtle (*Emydoidea blandingii*) in Ontario (MNRF 2015). Three rounds of turtle basking surveys will be conducted, under sunny conditions with air temperatures between 5°C and 25°C or alternatively under overcast conditions where air temperatures are between 15°C and 30°C. On days when afternoon air temperature exceeds 25°C surveys will be conducted between 8:00 am and 10:00 am.

2.2.3.5 BAT SURVEYS

The Study Area includes woodlands that have the potential to support roosting habitat for bats. Portions of these woodlands overlap with areas that are contaminated and will be subjected to remediation. To facilitate remediation, it will be necessary to remove trees from the woodland.

To confirm whether roosting habitat may be present, it is proposed that the woodland be surveyed for potential roosting trees (snags), and if present, acoustic monitoring will be completed in accordance with the *Survey Protocols for Species at Risks Bats within Treed Habitats: Little Brown Myotis, Northern Myotis, and Tri-Coloured Bat* (MNRF 2017).

The results of these surveys will provide information of the presence/absence of roost and inform whether special permitting may be required.

2.2.3.6 SNAKE HIBERNACULA SURVEY

The Study Area includes habitat elements that could potentially be used by snakes to overwinter such as rail beds, underground trenches, rock piles, and rodent burrows. Snake hibernacula are considered SWH depending on the species and number of individuals.

It is proposed that the site be surveyed at least three times during spring and/or fall under suitable weather conditions consistent with emergence using guidance provided in the *Survey Protocol for Ontario's Species at Risk Snakes* (MNRF 2016).

2.2.3.7 RAPTOR HABITAT SURVEY

The Study Area supports woodlands and other habitat that could support nesting raptors (hawks and owls). Searches for potential raptor nests will be completed during the fall and winter. Locations of raptor nests will be documented.

2.2.3.8 TERRESTRIAL CRAYFISH SURVEY

The Study Area can potentially support habitat for Digger Crayfish which can represent SWH depending on habitat conditions. Surveys for terrestrial crayfish will be completed in the summer months. Locations and numbers of chimneys will be documented.

2.2.3.9 INSECT SURVEYS

Surveys for dragonflies and butterflies will be completed, under appropriate weather conditions, around the tailings pond wetlands to confirm the presence/absence of significant species.

2.3 EVALUATION OF SIGNIFICANT NATURAL HERITAGE FEATURES/FUNCTIONS AND NATURAL HAZARDS

To determine the significance of the various natural heritage features/functions and natural hazards associated with the Study Area, the CEMS will rely upon significance criteria outlined in provincial

guidance documents and ROP policies. The evaluation will determine which features represent Key Features and other components of the RNHS as well as natural hazards such as erosion hazards (flooding hazards are already considered to be a component of the RNHS).

The evaluation will utilize primary and secondary information sources to determine which features and areas within the Study Area meet the criteria or definitions for the various RNHS Key Features and components. This will include confirming whether the tailings pond wetlands meet the *Conservation Authorities Act* definition of a wetland.

A Slope Stability Assessment will be completed to determine the extent of erosion hazards on the Subject Property. The scope of the study will be determined through the use of the Slope Stability Rating Chart (Table 4.2, MNRF, Understanding Natural Hazards and Technical Guide for River and Stream System: Erosion Hazard Limit). The Slope Stability Assessment will include drawings (planform and cross-sectional) illustrating topographic contours, location of watercourse, toe of slope, staked top of slope, recommended toe erosion allowance (where applicable), analyzed long term stable slope allowance, and recommended stable top of bank. The location of the analyzed cross-section will be shown on plan view.

In addition to the above studies and fieldwork, a hydrologic/hydrogeologic study will be prepared that will provide details related to the site wide, as well as the feature based, water balances. The site wide water balance will assess estimated infiltration rates for the purpose of balancing the water budget for the Study Area, with the understanding that existing on-site infiltration rates are based on soils that will be removed as part of the site remediation. The study will also determine whether there is a groundwater surface water interaction and whether the proposed remediation may have an impact on those functions as it relates to aquatic and terrestrial features. Ground and surface water interactions, if present, are to be maintained or, where possible/appropriate, enhanced. In terms of the feature based water balance (FBWB) for the watercourse, wetlands and woodland within the Study Area, the study will review and assess the drainage area to these features, extent of impact by remediation works and any recommended mitigation measures. The FBWB will provide a water balance and infiltration analysis under existing conditions and develop water balance criteria to ensure that the existing water balance can be maintained or enhanced in a post-development condition.

Finally, the study will document the extent of contamination within the valleyland as it relates to the Sixteen Mile Creek and locally significant wetland complex within the valley.

2.4 IDENTIFICATION OF CONSTRAINTS AND OPPORTUNITIES

The identification of natural heritage and natural hazard constraints will be based on the findings of the background review, characterization of existing conditions and the evaluation of significant natural heritage features and natural hazards.

The constraint analysis will describe and map significant natural heritage resources and natural hazards that will need to be taken into consideration during the implementation of the remediation work and accommodated as part of the future development of the lands. A Comprehensive Constraint Map will be

included in the CEMS summarizing the various natural heritage and natural hazard constraints. This map will illustrate the various components of the RNHS associated with the Study Area, including any applicable buffers and CH regulatory allowances. The CEMS will identify ecological buffers based on an understanding that the future adjacent land use will be high density mixed-use residential.

3.0 PHASE 2 – REMEDIATION WORKS

3.1 DESCRIPTION OF WORKS

The CEMS will identify which areas of contamination are located outside of and within Key Natural Heritage Features and CH regulated areas, based on the analysis completed in Phase 1. Those areas where Permits from CH will be required for remediation works will be identified. The remediation required, and the extent of clean-up, will be described along with a rationale for the remediation.

3.2 REMEDIATION PLAN

The Remediation Plan will be described using text and graphics and include the following:

a) Objectives
b) Status of works (completed, ongoing and proposed)
c) Phasing Plan
d) Schedule/Timeline
e) Description of the various remediation activities
f) Discussion of impacts to the RNHS and CH regulated areas and any permitting requirements
g) Description of mitigation measures including ESC measures and FBWB considerations

3.3 ADAPTIVE ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN

While the Remediation Plan will be prepared using the best available information, unanticipated circumstances may arise during implementation of the clean-up revealing changes in conditions that may require changes to the plan (i.e., extent of contamination may extend beyond mapped areas once soil removal begins). For this reason, an Adaptive Environmental Management and Monitoring Plan will be prepared that provides direction on what steps will be taken if the extent of remediation is beyond what was anticipated and what steps will be taken should there be an unexpected release of contaminants (e.g., due to weather, site practices, etc.). This will include a monitoring plan that considers pre, during and post rehabilitation monitoring requirements. It is understood that, as it relates to the contaminants on-site, the MECP is the governing authority and monitoring requirements, as it relates to the contaminants, will be guided by MECP requirements.

3.4 REHABILITATION PLAN

As the remediation works will require removal of contaminants from Key Features of the RNHS and within areas regulated by CH, mitigation measures and habitat replication/re-creation will need to be implemented to ensure that these impacts can be mitigated over the long term and do not adversely impact natural heritage features and ecological functions of the RNHS.

The Rehabilitation Plan may result in refinements to the boundaries of the RNHS, as is permitted through the ROP. Such refinements will be supported with ecological rationale and an assessment of alternatives.

The Rehabilitation Plan will also:

a) assess/identify opportunities to enhance the ecological integrity and resilience of existing natural features and functions of the RNHS;
b) assess/identify opportunities to enhance natural corridors among hydrologic, hydrogeologic features, aquatic and wildlife linkages, terrestrial habitat corridors and restore degraded natural features; and,
c) identify buffers by taking into consideration the sensitivity and significance of the natural feature and functions and the future adjacent land uses.

The Rehabilitation Plan will be circulated to the Region, Town and CH for review and comment. This will be followed by a Detailed Rehabilitation Plan that will be prepared in accordance with CH's Guidelines for Landscaping and Rehabilitation Plans and submitted in support of future CH Permit applications. It is anticipated that the detailed drawings required to support the CH permit application(s) will be submitted as part of this phase of the study.

4.0 PHASE 3 MANAGEMENT STRATEGIES

This phase of the CEMS will identify enhancement opportunities as follows:

a. If refinements to the RNHS or CH regulated limits as identified in Phase 1 are proposed, justification and rationale will be provided along with an assessment of alternatives;
b. Opportunities to enhance the ecological integrity and resilience of existing natural features and functions of the RNHS will be assessed/identified;
c. Opportunities to restore degraded natural features and develop management strategies for invasive plant species, if necessary, will be assessed/identified;
d. Appropriate buffer recommendations will be identified, taking into consideration the sensitivity and significance of the natural features and functions and the anticipated adjacent future land use (i.e., high density mixed-use residential); and,
e. Natural corridors among hydrologic and hydrogeologic features, aquatic and wildlife linkages and terrestrial corridors will be established or enhanced.

Appendix A-2

Conservation Halton Pre-Consultation Checklists

Conservation Halton

Planning & Watershed Management
905.336.1158 | Fax: 905.336.6684
2596 Britannia Road West
Burlington, Ontario L7P 0G3
conservationhalton.ca

July 13, 2022

Mike Vernooy
150 Steeles Milton Inc.
5926 Chercover Court
Burlington, Ontario L7L 6T1

BY EMAIL ONLY

Re: Removal of contaminated soils including remediation works within 120m of a wetland which is greater than 2ha in size, within a wetland less than 1ha in size, and bank restoration within the Sixteen Mile Creek valley.
150 Steeles Avenue
Town of Milton

Staff understand that there will eventually be a development proposal at 150 Steeles Avenue, Milton. While no formal Planning process has been initiated, we understand that there is a desire to focus on remediation of the contaminated soils and other works onsite. You have requested permit checklists for remediation works within a wetland and the removal of an outlet within a valley. While staff appreciate the need to address contaminated areas, we expect that features will be remediated in-situ at this time as our regulatory policies do not support moving features without higher level planning approvals in place. Works unrelated to removing contamination may also require approval from other agencies that may have regulatory authority (ie whether tree removal can occur to access the outlet proposed for removal). Please consider these checklists draft as an actual application would be premature without understanding if other approvals are required and can be approved. Please keep CH staff informed as it relates to progress towards other approvals required, or if you plan to move forward with planning applications associated with future development of the site.

If you require additional information, please contact the undersigned at jmcarthur@hrca.on.ca.

Yours truly,



Justin McArthur
Regulations Officer

Encl.: (3) Draft Pre-Consultation Checklists

Conservation Halton	COMPLETE APPLICATION CHECKLIST	Jan 2022

CREEK RESTORATION/EROSION PROTECTION WORKS

The following checklist has been compiled to assist the applicant in preparing their application for approval pursuant to Ontario Regulation 162/06. This checklist is valid for a period of six months following issuance. The level of detail required in the application will be dependent on the proposed works as well as the natural hazards, natural heritage system, and environmental conditions on site. We recommend that applicants contact Conservation Halton staff prior to submitting the application to determine what level of detail is deemed appropriate. **Note: Please be advised that even after all the information requested below is submitted and the application is deemed complete, additional information may be identified as the review progresses or as a result of changes to regulatory requirements.**

This checklist **must be returned** with the Permit application indicating in the appropriate spaces that all required information has been provided.

PROJECT TITLE: 150 Steeles Ave – Bank Restoration	DATE: July 13, 2022
LOCATION: 150 Steeles Ave, Milton	FILE #: A/22/M/XX
TIMING WINDOW RESTRICTION: No in-water works September 15th to June 30th	

		Applicable	Provided
General Submission Requirements			
Application Form	Completed and signed application form. *At a minimum, the landowner must sign the form. If an agent is representing the landowner, the agent must also sign the form*.	☒	☐
Application Fee	Non-refundable administrative fee as per category___ on the fee schedule attached to permit application.	☒	☐
Electronically Submitted	All materials submitted electronically on a flash drive or through digital transfer.	☒	☐
Project Description	Description of, and rationale for, the proposed works including discussion of other alternatives considered. If a replacement structure is proposed, details regarding the current conditions of the existing structure are requested.	☒	☐
Photographs	Photographs of the watercourse, banks, adjacent vegetation and/or representative vegetation communities at the site of erosion and at stable sections upstream and downstream of the site during ice-free conditions.	☐	☐
Drawings	_____ (0) hard copy sets of all drawings, folded to 8½" x 11" in standard metric scale. See 'Drawing Requirements' section.	☒	☐
Reports	Digital reports and _____ (0) hard copies of reports listed under 'Technical Study Requirements'.	☒	☐

		Applicable	Provided
Qualified Persons	Where a drawing or report is required to be prepared by a P.Geo., P.Eng., OALA, or OLS, it must be stamped, dated and signed.	☒	☐
Drawing Requirements			
Digital Copies	Technical drawings and plans provided in the most recent version of AutoCAD and properly georeferenced to real world coordinates (i.e. NAD83, UTM, Zone 17). File formats in order of preference are dgn, dwg, and dxf. GIS data and mapping should be submitted in an acceptable ESRI format and be properly georeferenced to real world coordinates (i.e., NAD83, UTM, Zone 17). It is highly desirable that mapping related data be submitted in ArcGIS Geodatabase format, containing all spatial, attribute, metadata and spatial joins/data rules. ESRI shape file format is an acceptable alternative.	☒	☐
Topographic Survey	Detailed topographic survey of the site by an OLS or qualified P.Eng. extending a minimum 15m upstream and downstream of the project footprint, with information collected at 1m intervals along the creek. The survey is to identify/confirm/include items such as: • Creek inverts, creek thalweg • Bankfull locations • Existing infrastructure/utilities • Observed water level • Dams/weirs/knick points • Slopes /valley walls/retaining walls (top and bottom of bank) • Limit of wetlands, staked by Conservation Halton • Ditch lines • Benchmarks • Date surveyed, etc.	☒	☐
Plan View(s)	Plan view(s) showing existing conditions and proposed development conditions including: • Detailed grading (clearly illustrate how the proposed works will blend in with the undisturbed areas) • Limit of work/disturbance • Watercourse (bankfull width) • Culvert/Bridges • Habitat features • Vegetation • Conservation Halton staked Wetland limit • Structures/buildings • Utilities/infrastructure • Location of cross-sections and profile views, etc. • Location of approximate regulated limits (ARL) and applicable natural hazards, specifically:: _____ _____	☒	☐
Aerial Photograph(s)	Plan view of the proposed works and limits of disturbance (or other, specifically _____), superimposed over top of a recent aerial photograph of the site. Please specify date of imagery.	☐	☐

		Applicable	Provided
Profile View(s)	Existing and proposed longitudinal profile view(s) of the channel (extending a minimum 15m upstream and downstream of project footprint) clearly illustrating the existing conditions and proposed development conditions. Drawings must clearly illustrate the works and its interface with the upstream and downstream watercourse reaches (creek invert, bank details, and overall gradient) that are to remain undisturbed.	☐	☐
Cross-sectional View(s)	Existing and proposed cross sectional views of the channel. Bankfull width, creek inverts and low flow channel for fish passage must be illustrated.	☒	☐
Habitat Features	Plan, section and profile details of proposed habitat features (e.g. pools, riffles, dead snags, woody debris, etc.), as well as tie-in to the proposed channel. Bank location (bankfull, low flow), must be clearly identified on the above noted plans.	☐	☐
Substrate Materials	Type, size/gradation and depth of appropriate substrate material. Analysis supporting the selected sizing must be provided. Details of granular mixtures proposed or native material to fill the void spaces must also be included.	☒	☐
Existing Vegetation	A vegetation inventory is required (including scientific names, and ELC community mapping to vegetation type). A Tree Preservation Plan is also required. Tree protection fencing location and details must be illustrated on the drawings. Follow applicable municipal tree protection guidelines and by-laws and Conservation Halton's *Guidelines on Landscaping and Restoration Plans(2021)*, available at www.conservationhalton.ca.	☒	☐
Proposed Vegetation	Details on restoration, including a locally native, non-invasive seed mix for disturbed areas as well as compensatory trees and/or shrubs must be indicated on the drawings (including scientific names). Follow Conservation Halton's *Guidelines on Landscaping and Restoration Plans (2021)*, available at www.conservationhalton.ca, unless as directed as follows. _____ _____ _____	☒	☐
	Include a copy of the Landscaping Checklist (Table 5-1 Drawing Requirements). Follow Conservation Halton's *Guidelines on Landscaping and Rehabilitation Plans (2021)*, available at www.conservationhalton.ca .	☒	☐

		Applicable	Provided
Staging, Phasing and Access Route Plans	Details regarding the sequence of construction with consideration of site management, best management practices, and aquatic/terrestrial timing window restrictions. The construction sequence should consider: • Vegetation removal, • In-stream works, • Wildlife rescue plans, • Seasonal timing of landscaping and bioengineering, • Stockpiling operations, etc. The full limits of disturbance for access to the site must be delineated with details regarding temporary crossings (if applicable). Efforts to minimize the extent of the disturbance must be demonstrated.	☒	☐
Erosion and Sediment Control Plans	Details regarding sediment and erosion control measures, site dewatering, equipment, materials, access to and from work area, monitoring, site supervision, etc. See *Erosion & Sediment Guidelines for Urban Construction* prepared by the Greater Golden Horseshoe Area Conservation Authorities (www.sustainabletechnologies.ca) for additional guidance.	☒	☐
	Above plan is to be prepared by a qualified professional (i.e. CISEC, CPESC or an approved equivalent).	☒	☐
Technical Study Requirements			
(Studies pertaining to flooding and erosion hazards must be completed in accordance with the Ministry of Northern Development, Natural Resources & Forestry (NDMNRF) Technical Guidelines (MNR, 2002).			
Hydraulic Analysis	A hydraulic analysis by a qualified P.Eng to verify that the proposed works will not increase flooding risks to life or property. The analysis must verify that flood storage is maintained and that there will be no increased flood levels on adjacent properties and no increased on-site flood risks. The assessment must be completed for the full range of rainfall events. A hard copy and digital copy of all models must be provided and must be accompanied by a summary table of pre and post development flood elevations. The source of the hydraulic model must also be specified. A plan view drawing showing the existing and proposed flooding hazard limit as well as the location of hydraulic cross-sections overlain on an existing topographic mapping and/or grading plan (if grading changes are proposed) must be provided.	☐	☐

		Applicable	Provided
Additional Engineering Analysis	Calculations by a qualified P.Eng for erosion protection works. Please note that where feasible, erosion protection measures should be buried with appropriate substrate within the natural channel boundary. Soft bioengineering techniques (i.e. crib wall, brush mattresses, vegetation, etc.) should be utilized wherever possible rather than hardened, armoured banks.	☐	☐
Geotechnical Assessment (Slope Stability	A geotechnical slope assessment by a qualified P.Eng. The scope of the study must be determined through the completion of the Slope Stability Rating Chart (Table 4.2, MNRF, Understanding Natural Hazards and Technical Guide for River and Stream Systems: Erosion Hazard Limit). Geotechnical analysis for structures on the valley wall and resulting factor of safety for bearing capacity, overturning and sliding, must be provided. Structural details, including foundation, depth of embedment, buttressing, tie-backs, drainage etc. must be discussed and accompanied by cross-sectional and profile drawings. Where the location of stable top of bank is required, staff will require plan and cross-sectional views that illustrate, at a minimum, the site's topographical information, location of watercourse, toe of slope, staked top of bank, recommended toe erosion allowance, analyzed long term stable slope allowance and recommended stable top of bank. The location of the analyzed cross-sections must be shown on plan view.	☒	☐
Geotechnical Assessment (Soil Investigation)	A geotechnical assessment by a qualified P.Eng for the purposes of mitigation of geotechnical risks at the site by providing recommendation for items such as foundations, cut off walls, excavation limits, design parameters and construction. Indication of groundwater levels and potential for construction dewatering is required to determine if additional hydrogeological study is warranted.	☒	☐
Fluvial Geomorphic Assessment	A fluvial geomorphological assessment by a qualified licenced professional (e.g. P.Geo.) with demonstrated expertise in natural channel design to verify that the design has adequately allowed for natural channel migration, fish/terrestrial passage, sediment transport, and minimizes the risk to infrastructure. The study is to include, but not be limited to; • Details on how the proposed design provides a natural channel morphology consistent with anticipated drainage, gradient, and sediment transport regimes; • Channel migration, widening, potential downcutting/scour based on historical observations or acceptable modelling; • Potential changes in channel alignment and bank erosion in upstream and downstream reaches; • Appropriate bankfull flows, water depths, water velocities, and tractive forces. These parameters should be the same within the project footprint as in upstream and downstream natural areas; • Natural bottom substrate matching upstream and downstream substrates with supporting substrate sizing calculations.	☐	☐

		Applicable	Provided
Hydrogeological Assessment	A hydrogeological assessment by a qualified P.Eng. or P.Geo. to study the potential impacts to surface/groundwater interactions related to creek relocation/lowering, dewatering, and discharge activities. The assessment must provide adaptive management, mitigation and monitoring strategies with considerations for discharge (quality and quantity of water), construction phasing, etc.	☒	☐
Aquatic Habitat Assessment	Detailed description and habitat map of in-stream and bank habitat features including bankfull width, pools, riffles, undercut banks, eroding banks, root wads and large woody debris, thalweg/low flow location, backwater areas, substrate type, etc. See the *Interim Guide for Fisheries (MTO, April 2020)* for further guidance.	☐	☐
Additional Fisheries Requirements	Fish passage assessment based on the sustained and burst speeds of the weakest species for baseflow conditions up to a 2-year storm (unless otherwise advised by Conservation Halton staff).	☐	☐
Ecological Study	An Ecological Study. Reference must be made to Conservation Halton's *Guidelines for Ecological Studies*, available at: www.conservationhalton.ca.	☐	☐
Monitoring Plan	A detailed adaptive management/monitoring plan outlining elements of the works that are to be monitored, and the methodology, frequency, and duration of monitoring. Monitoring should include both vegetation and erosion control monitoring.	☒	☐

Other Requirements		
• CH preference is for least invasive methodology (i.e. decommission in place). • Consultation with the Town of Milton is recommended to discuss the necessity of the outfall removal. • All access routes to the valley must be restored to existing conditions or better. • Comprehensive Environmental Management Study (CEMS) will address the majority of the requirements for CH permit. The study content will need to be agreed upon by Conservation Halton, The Town of Milton, and The Region of Halton • CEMS will need to be substantially completed prior to application for CH permit. • The necessity of the CEMS was discussed at the June 21st, 2022 meeting between CH and the proponent. • Details of the CEMS were provided to the proponent via email on July 8th, 2022.		
Fisheries Act	On November 25, 2013, amendments to the *Canadian Fisheries Act*, associated Applications for Authorization (under Paragraph 35(2) (b) of the Fisheries Act Regulations) and Information Requirements Regulations came into force. Depending on the scale of works, as you will be conducting a project in/near water, the proponent has responsibilities under the Fisheries Act to ensure serious harm to fish is avoided. Please refer to the Department of Fisheries and Oceans (DFO) website for additional information. Alternatively, questions can be directed to DFO by phone 1 855 852-8320 or email fisheriesprotection@dfo-mpo.gc.ca.	Applicable ☒
Endangered Species	Staff are aware that the Ministry of Environment, Conservation and Parks (MECP) may have outstanding concerns with respect to species listed on the Species at Risk in Ontario list as it pertains to the *Endangered Species Act* (ESA) in the immediate area around this project. Please contact MECP directly to determine what detailed project information will be required to begin the ESA approval process: SAROntario@ontario.ca	Applicable ☒
Prepared by: Justin McArthur	**Signature:** 	

Additional Design Considerations

- Natural channel design appropriate to the fish community and landscape features must be utilized.
- Current channel conditions should be replicated (i.e. hydrograph, habitat, slope, etc.) or rationale provided for changing these channel features.
- Substrate material must be appropriate for the fish community. Natural substrate should be utilized where appropriate. Voids of new substrate material should be filled to avoid subsurface flow.
- Instream work with heavy machinery should be minimized.
- Work area should be isolated from flowing water. Phasing of works should allow construction to be performed in the dry.
- Settling or filtering of water pumped from work area must be addressed.
- The channel must be stabilized with vegetation prior to the introduction of flows.
- In order to reduce the spread of invasive species, equipment should be thoroughly cleaned before being brought onsite. For guidance in this regard, please refer to the Clean Equipment Protocol for Industry, available online (http://www.ontarioinvasiveplants.ca/files/CleanEquipmentProtocol_Mar152013_D3.pdf).
- Enhanced sediment and erosion controls should be implemented in sensitive areas.
- Monitoring by the proponent after construction is crucial to verify the success of the project.
- Works should adhere to the Migratory Birds Convention Act. Should vegetation removal be required within the core breeding bird season (April 1st to August 31st), consultation with Environment Canada - Canadian Wildlife Services should be completed.

Conservation Halton	COMPLETE APPLICATION CHECKLIST	Apr 2021

CREEK RESTORATION/EROSION PROTECTION WORKS

The following checklist has been compiled to assist the applicant in preparing their application for approval pursuant to Ontario Regulation 162/06. This checklist is valid for a period of six months following issuance. The level of detail required in the application will be dependent on the proposed works as well as the natural hazards, natural heritage system, and environmental conditions on site. We recommend that applicants contact Conservation Halton staff prior to submitting the application to determine what level of detail is deemed appropriate. **Note: Please be advised that even after all the information requested below is submitted and the application is deemed complete, additional information may be identified as the review progresses or as a result of changes to regulatory requirements.**

This checklist **must be returned** with the Permit application indicating in the appropriate spaces that all required information has been provided.

PROJECT TITLE: 150 Steeles (Wetland)	DATE: July 13, 2022
LOCATION: 150 Steeles Avenue, Milton, Ontario	FILE #: A/22/M/XX
TIMING WINDOW RESTRICTION:	

		Applicable	Provided
General Submission Requirements			
Application Form	Completed and signed application form. *At a minimum, the landowner must sign the form. If an agent is representing the landowner, the agent must also sign the form*.	☒	☐
Application Fee	Non-refundable administrative fee as per category_ on the fee schedule attached to permit application.	☒	☐
Electronically Submitted	All materials submitted electronically on a flash drive or through digital transfer.	☒	☐
Project Description	Description of, and rationale for, the proposed works including discussion of other alternatives considered. If a replacement structure is proposed, details regarding the current conditions of the existing structure are requested.	☒	☐
Photographs	Photographs of the watercourse, banks, adjacent vegetation and/or representative vegetation communities at the site of erosion and at stable sections upstream and downstream of the site during ice-free conditions.	☐	☐
Drawings	_____ ( ) hard copy sets of all drawings, folded to 8½" x 11" in standard metric scale. See 'Drawing Requirements' section.	☐	☐
Reports	1 digital copy of reports listed under 'Technical Study Requirements'.	☒	☐

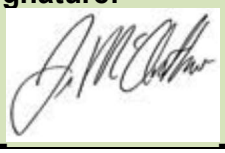
		Applicable	Provided
Qualified Persons	Where a drawing or report is required to be prepared by a P.Geo., P.Eng., OALA, or OLS, it must be stamped, dated and signed.	☒	☐
Drawing Requirements			
Digital Copies	Technical drawings and plans provided in the most recent version of AutoCAD and properly georeferenced to real world coordinates (i.e. NAD83, UTM, Zone 17). File formats in order of preference are dgn, dwg, and dxf. GIS data and mapping should be submitted in an acceptable ESRI format and be properly georeferenced to real world coordinates (i.e., NAD83, UTM, Zone 17). It is highly desirable that mapping related data be submitted in ArcGIS Geodatabase format, containing all spatial, attribute, metadata and spatial joins/data rules. ESRI shape file format is an acceptable alternative.	☒	☐
Topographic Survey	Detailed topographic survey of the site by an OLS or qualified P.Eng. extending a minimum 15m upstream and downstream of the project footprint, with information collected at 1m intervals along the creek. The survey is to identify/confirm/include items such as: • Creek inverts, creek thalweg • Bankfull locations • Existing infrastructure/utilities • Observed water level • Dams/weirs/knick points • Slopes /valley walls/retaining walls (top and bottom of bank) • Limit of wetlands, staked by CH • Ditch lines • Benchmarks • Date surveyed, etc.	☒	☐
Plan View(s)	Plan view(s) showing existing conditions and proposed development conditions including: • Detailed grading (clearly illustrate how the proposed works will blend in with the undisturbed areas) • Limit of work/disturbance • Watercourse (bankfull width) • Culvert/Bridges • Habitat features • Vegetation • CH staked Wetland limit • Structures/buildings • Utilities/infrastructure • Location of cross-sections and profile views, etc. • Location of approximate regulated limits (ARL) and applicable natural hazards, specifically:: _____ _____	☒	☐
Aerial Photograph(s)	Plan view of the proposed works and limits of disturbance (or other, specifically _____), superimposed over top of a recent aerial photograph of the site. Please specify date of imagery.	☐	☐

		Applicable	Provided
Profile View(s)	Existing and proposed longitudinal profile view(s) of the channel (extending a minimum 15m upstream and downstream of project footprint) clearly illustrating the existing conditions and proposed development conditions. Drawings must clearly illustrate the works and its interface with the upstream and downstream watercourse reaches (creek invert, bank details, and overall gradient) that are to remain undisturbed.	☒	☐
Cross-sectional View(s)	Existing and proposed cross sectional views of the channel. Bankfull width, creek inverts and low flow channel for fish passage must be illustrated.	☒	☐
Habitat Features	Plan, section and profile details of proposed habitat features (e.g. pools, riffles, dead snags, woody debris, etc.), as well as tie-in to the proposed channel. Bank location (bankfull, low flow), must be clearly identified on the above noted plans.	☒	☐
Substrate Materials	Type, size/gradation and depth of appropriate substrate material. Analysis supporting the selected sizing must be provided. Details of granular mixtures proposed or native material to fill the void spaces must also be included. (Identify material type in wetland)	☒	☐
Existing Vegetation	A vegetation inventory is required (including scientific names, and ELC community mapping to vegetation type). A Tree Preservation Plan is also required. Tree protection fencing location and details must be illustrated on the drawings. Follow Conservation Halton's *Guidelines for Landscaping and Rehabilitation Plans*, available at https://www.conservationhalton.ca./policies-and-guidelines.	☒	☐
Proposed Vegetation	Details on restoration, including a locally native, non-invasive seed mix for disturbed areas as well as compensatory trees and/or shrubs must be indicated on the drawings (including scientific names). Follow Conservation Halton's *Guidelines for Landscaping and Rehabilitation Plans*, available at https://www.conservationhalton.ca./policies-and-guidelines unless as directed as follows. _____ _____ _____	☒	☐
	Include a copy of the Landscaping Checklist (Table 5-1 Drawing Requirements). Follow Conservation Halton's *Guidelines on Landscaping and Rehabilitation Plans (2021)*, available at www.conservationhalton.ca .	☒	☐

		Applicable	Provided
Staging, Phasing and Access Route Plans	Details regarding the sequence of construction with consideration of site management, best management practices, and aquatic/terrestrial timing window restrictions. The construction sequence should consider: • Vegetation removal, • In-stream works, • Wildlife rescue plans, • Seasonal timing of landscaping and bioengineering, • Stockpiling operations, etc. The full limits of disturbance for access to the site must be delineated with details regarding temporary crossings (if applicable). Efforts to minimize the extent of the disturbance must be demonstrated.	☒	☐
Erosion and Sediment Control Plans	Details regarding sediment and erosion control measures, site dewatering, equipment, materials, access to and from work area, monitoring, site supervision, etc. See *Erosion & Sediment Guidelines for Urban Construction* prepared by the Greater Golden Horseshoe Area Conservation Authorities (www.sustainabletechnologies.ca) for additional guidance.	☒	☐
	Above plan is to be prepared by a qualified professional (i.e. CISEC, CPESC or an approved equivalent).	☒	☐
Technical Study Requirements			
(Studies pertaining to flooding and erosion hazards must be completed in accordance with the Ministry of Natural Resources & Forestry (MNRF) Technical Guidelines (2002).			
Hydraulic Analysis	A hydraulic analysis by a qualified P.Eng to verify that the proposed works will not increase flooding risks to life or property. The analysis must verify that flood storage is maintained and that there will be no increased flood levels on adjacent properties and no increased on-site flood risks. The assessment must be completed for the full range of rainfall events. A hard copy and digital copy of all models must be provided and must be accompanied by a summary table of pre and post development flood elevations. The source of the hydraulic model must also be specified. A plan view drawing showing the existing and proposed flooding hazard limit as well as the location of hydraulic cross-sections overlain on an existing topographic mapping and/or grading plan (if grading changes are proposed) must be provided.	☒	☐

		Applicable	Provided
Additional Engineering Analysis	Calculations by a qualified P.Eng for erosion protection works. Please note that where feasible, erosion protection measures should be buried with appropriate substrate within the natural channel boundary. Soft bioengineering techniques (i.e. crib wall, brush mattresses, vegetation, etc.) should be utilized wherever possible rather than hardened, armoured banks.	☐	☐
Geotechnical Assessment (Slope Stability	A geotechnical slope assessment by a qualified P.Eng. The scope of the study must be determined through the completion of the Slope Stability Rating Chart (Table 4.2, MNRF, Understanding Natural Hazards and Technical Guide for River and Stream Systems: Erosion Hazard Limit). Geotechnical analysis for structures on the valley wall and resulting factor of safety for bearing capacity, overturning and sliding, must be provided. Structural details, including foundation, depth of embedment, buttressing, tie-backs, drainage etc. must be discussed and accompanied by cross-sectional and profile drawings. Where the location of stable top of bank is required, staff will require plan and cross-sectional views that illustrate, at a minimum, the site's topographical information, location of watercourse, toe of slope, staked top of bank, recommended toe erosion allowance, analyzed long term stable slope allowance and recommended stable top of bank. The location of the analyzed cross-sections must be shown on plan view.	☐	☐
Geotechnical Assessment (Soil Investigation)	A geotechnical assessment by a qualified P.Eng for the purposes of mitigation of geotechnical risks at the site by providing recommendation for items such as foundations, cut off walls, excavation limits, design parameters and construction. Indication of groundwater levels and potential for construction dewatering is required to determine if additional hydrogeological study is warranted.	☐	☐
Fluvial Geomorphic Assessment	A fluvial geomorphological assessment by a qualified licenced professional (e.g. P.Geo.) with demonstrated expertise in natural channel design to verify that the design has adequately allowed for natural channel migration, fish/terrestrial passage, sediment transport, and minimizes the risk to infrastructure. The study is to include, but not be limited to; • Details on how the proposed design provides a natural channel morphology consistent with anticipated drainage, gradient, and sediment transport regimes; • Channel migration, widening, potential downcutting/scour based on historical observations or acceptable modelling; • Potential changes in channel alignment and bank erosion in upstream and downstream reaches; • Appropriate bankfull flows, water depths, water velocities, and tractive forces. These parameters should be the same within the project footprint as in upstream and downstream natural areas; • Natural bottom substrate matching upstream and downstream substrates with supporting substrate sizing calculations.	☐	☐

		Applicable	Provided
Hydrogeological Assessment	A hydrogeological assessment by a qualified P.Eng. or P.Geo. to study the potential impacts to surface/groundwater interactions related to creek relocation/lowering, dewatering, and discharge activities. The assessment must provide adaptive management, mitigation and monitoring strategies with considerations for discharge (quality and quantity of water), construction phasing, etc.	☒	☐
Aquatic Habitat Assessment	Detailed description and habitat map of in-stream and bank habitat features including bankfull width, pools, riffles, undercut banks, eroding banks, root wads and large woody debris, thalweg/low flow location, backwater areas, substrate type, etc. See the *Environmental Guide for Fish and Fish Habitat (MTO, June 2009)* for further guidance.	☐	☐
Additional Fisheries Requirements	Fish passage assessment based on the sustained and burst speeds of the weakest species for baseflow conditions up to a 2-year storm (unless otherwise advised by CH staff).	☐	☐
Ecological Study	An Ecological Study. Reference must be made to Conservation Halton's *Guidelines for Ecological Studies*, available at: www.conservationhalton.ca.	☐	☐
Monitoring Plan	A detailed adaptive management/monitoring plan outlining elements of the works that are to be monitored, and the methodology, frequency, and duration of monitoring. Monitoring should include both vegetation and erosion control monitoring.	☒	☐

<table>
<tr><th colspan="3">Other Requirements</th></tr>
<tr><td colspan="3">
Hydrogeological Assessment is to be completed to determine the status of the wetland. If the location is deemed to be wetland, the work will be completed as restoration works and must be restored in place. If through the hydrogeological assessment it does not meet the criteria for a wetland as per CH policy, and confirmed by CH staff, no permit is required.
Comprehensive Environmental Management Study (CEMS) will address the majority of the requirements for CH permit. The study content will need to be agreed upon by Conservation Halton, The Town of Milton, and The Region of Halton
CEMS will need to be substantially completed prior to application for CH permit.
The necessity of the CEMS was discussed at the June 21st, 2022 meeting between CH and the proponent.
Details of the CEMS were provided to the proponent via email on July 8th, 2022.
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<tr><td>Fisheries Act</td><td colspan="2">On November 25, 2013, amendments to the Canadian Fisheries Act, associated Applications for Authorization (under Paragraph 35(2) (b) of the Fisheries Act Regulations) and Information Requirements Regulations came into force. Depending on the scale of works, as you will be conducting a project in/near water, the proponent has responsibilities under the Fisheries Act to ensure serious harm to fish is avoided. Please refer to the Department of Fisheries and Oceans (DFO) website for additional information. Alternatively, questions can be directed to DFO by phone 1 855 852-8320 or email fisheriesprotection@dfo-mpo.gc.ca.</td></tr>
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Additional Design Considerations
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Conservation Halton	COMPLETE APPLICATION CHECKLIST	Apr 2021

CREEK RESTORATION/EROSION PROTECTION WORKS

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This checklist **must be returned** with the Permit application indicating in the appropriate spaces that all required information has been provided.

PROJECT TITLE: 150 Steeles (WetlandSetbackRemediation)	DATE: July 13, 2022
LOCATION: 150 Steeles Avenue, Milton, Ontario	FILE #: A/22/M/XX
TIMING WINDOW RESTRICTION: No in-water works September 15th to June 30th.	

		Applicable	Provided
General Submission Requirements			
Application Form	Completed and signed application form. *At a minimum, the landowner must sign the form. If an agent is representing the landowner, the agent must also sign the form*.	☒	☐
Application Fee	Non-refundable administrative fee as per category_ on the fee schedule attached to permit application.	☒	☐
Electronically Submitted	All materials submitted electronically on a flash drive or through digital transfer.	☒	☐
Project Description	Description of, and rationale for, the proposed works including discussion of other alternatives considered. If a replacement structure is proposed, details regarding the current conditions of the existing structure are requested.	☒	☐
Photographs	Photographs of the watercourse, banks, adjacent vegetation and/or representative vegetation communities at the site of erosion and at stable sections upstream and downstream of the site during ice-free conditions.	☐	☐
Drawings	_____ ( ) hard copy sets of all drawings, folded to 8½" x 11" in standard metric scale. See 'Drawing Requirements' section.	☐	☐
Reports	1 digital copy of reports listed under 'Technical Study Requirements'.	☒	☐

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Qualified Persons	Where a drawing or report is required to be prepared by a P.Geo., P.Eng., OALA, or OLS, it must be stamped, dated and signed.	☒	☐
Drawing Requirements			
Digital Copies	Technical drawings and plans provided in the most recent version of AutoCAD and properly georeferenced to real world coordinates (i.e. NAD83, UTM, Zone 17). File formats in order of preference are dgn, dwg, and dxf. GIS data and mapping should be submitted in an acceptable ESRI format and be properly georeferenced to real world coordinates (i.e., NAD83, UTM, Zone 17). It is highly desirable that mapping related data be submitted in ArcGIS Geodatabase format, containing all spatial, attribute, metadata and spatial joins/data rules. ESRI shape file format is an acceptable alternative.	☒	☐
Topographic Survey	Detailed topographic survey of the site by an OLS or qualified P.Eng. extending a minimum 15m upstream and downstream of the project footprint, with information collected at 1m intervals along the creek. The survey is to identify/confirm/include items such as: • Creek inverts, creek thalweg • Bankfull locations • Existing infrastructure/utilities • Observed water level • Dams/weirs/knick points • Slopes /valley walls/retaining walls (top and bottom of bank) • Limit of wetlands, staked by CH • Ditch lines • Benchmarks • Date surveyed, etc.	☒	☐
Plan View(s)	Plan view(s) showing existing conditions and proposed development conditions including: • Detailed grading (clearly illustrate how the proposed works will blend in with the undisturbed areas) • Limit of work/disturbance • Watercourse (bankfull width) • Culvert/Bridges • Habitat features • Vegetation • CH staked Wetland limit • Structures/buildings • Utilities/infrastructure • Location of cross-sections and profile views, etc. • Location of approximate regulated limits (ARL) and applicable natural hazards, specifically:: _____ _____	☒	☐
Aerial Photograph(s)	Plan view of the proposed works and limits of disturbance (or other, specifically _____), superimposed over top of a recent aerial photograph of the site. Please specify date of imagery.	☐	☐

		Applicable	Provided
Profile View(s)	Existing and proposed longitudinal profile view(s) of the remediation area clearly illustrating the existing conditions and proposed development conditions. Drawings must clearly illustrate the works and its interface with the area that is to remain undisturbed.	☒	☐
Cross-sectional View(s)	Existing and proposed cross sectional views of the remediation area.	☒	☐
Habitat Features	Plan, section and profile details of proposed habitat features (e.g. pools, riffles, dead snags, woody debris, etc.), as well as tie-in to the proposed channel. Bank location (bankfull, low flow), must be clearly identified on the above noted plans.	☐	☐
Substrate Materials	Type, size/gradation and depth of appropriate substrate material. Analysis supporting the selected sizing must be provided. Details of granular mixtures proposed or native material to fill the void spaces must also be included.	☒	☐
Existing Vegetation	A vegetation inventory is required (including scientific names, and ELC community mapping to vegetation type). A Tree Preservation Plan is also required. Tree protection fencing location and details must be illustrated on the drawings. Follow Conservation Halton's *Guidelines for Landscaping and Rehabilitation Plans*, available at https://www.conservationhalton.ca./policies-and-guidelines.	☒	☐
Proposed Vegetation	Details on restoration, including a locally native, non-invasive seed mix for disturbed areas as well as compensatory trees and/or shrubs must be indicated on the drawings (including scientific names). Follow Conservation Halton's *Guidelines for Landscaping and Rehabilitation Plans*, available at https://www.conservationhalton.ca./policies-and-guidelines unless as directed as follows. _____ _____ _____	☒	☐
	Include a copy of the Landscaping Checklist (Table 5-1 Drawing Requirements). Follow Conservation Halton's *Guidelines on Landscaping and Rehabilitation Plans (2021)*, available at www.conservationhalton.ca .	☒	☐

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Staging, Phasing and Access Route Plans	Details regarding the sequence of construction with consideration of site management, best management practices, and aquatic/terrestrial timing window restrictions. The construction sequence should consider: • Vegetation removal, • In-stream works, • Wildlife rescue plans, • Seasonal timing of landscaping and bioengineering, • Stockpiling operations, etc. The full limits of disturbance for access to the site must be delineated with details regarding temporary crossings (if applicable). Efforts to minimize the extent of the disturbance must be demonstrated.	☒	☐
Erosion and Sediment Control Plans	Details regarding sediment and erosion control measures, site dewatering, equipment, materials, access to and from work area, monitoring, site supervision, etc. See *Erosion & Sediment Guidelines for Urban Construction* prepared by the Greater Golden Horseshoe Area Conservation Authorities (www.sustainabletechnologies.ca) for additional guidance.	☒	☐
	Above plan is to be prepared by a qualified professional (i.e. CISEC, CPESC or an approved equivalent).	☒	☐
Technical Study Requirements			
(Studies pertaining to flooding and erosion hazards must be completed in accordance with the Ministry of Natural Resources & Forestry (MNRF) Technical Guidelines (2002).			
Hydraulic Analysis	A hydraulic analysis by a qualified P.Eng to verify that the proposed works will not increase flooding risks to life or property. The analysis must verify that flood storage is maintained and that there will be no increased flood levels on adjacent properties and no increased on-site flood risks. The assessment must be completed for the full range of rainfall events. A hard copy and digital copy of all models must be provided and must be accompanied by a summary table of pre and post development flood elevations. The source of the hydraulic model must also be specified. A plan view drawing showing the existing and proposed flooding hazard limit as well as the location of hydraulic cross-sections overlain on an existing topographic mapping and/or grading plan (if grading changes are proposed) must be provided.	☐	☐

		Applicable	Provided
Additional Engineering Analysis	Calculations by a qualified P.Eng for erosion protection works. Please note that where feasible, erosion protection measures should be buried with appropriate substrate within the natural channel boundary. Soft bioengineering techniques (i.e. crib wall, brush mattresses, vegetation, etc.) should be utilized wherever possible rather than hardened, armoured banks.	☐	☐
Geotechnical Assessment (Slope Stability	A geotechnical slope assessment by a qualified P.Eng. The scope of the study must be determined through the completion of the Slope Stability Rating Chart (Table 4.2, MNRF, Understanding Natural Hazards and Technical Guide for River and Stream Systems: Erosion Hazard Limit). Geotechnical analysis for structures on the valley wall and resulting factor of safety for bearing capacity, overturning and sliding, must be provided. Structural details, including foundation, depth of embedment, buttressing, tie-backs, drainage etc. must be discussed and accompanied by cross-sectional and profile drawings. Where the location of stable top of bank is required, staff will require plan and cross-sectional views that illustrate, at a minimum, the site's topographical information, location of watercourse, toe of slope, staked top of bank, recommended toe erosion allowance, analyzed long term stable slope allowance and recommended stable top of bank. The location of the analyzed cross-sections must be shown on plan view.	☒	☐
Geotechnical Assessment (Soil Investigation)	A geotechnical assessment by a qualified P.Eng for the purposes of mitigation of geotechnical risks at the site by providing recommendation for items such as foundations, cut off walls, excavation limits, design parameters and construction. Indication of groundwater levels and potential for construction dewatering is required to determine if additional hydrogeological study is warranted.	☒	☐
Fluvial Geomorphic Assessment	A fluvial geomorphological assessment by a qualified licenced professional (e.g. P.Geo.) with demonstrated expertise in natural channel design to verify that the design has adequately allowed for natural channel migration, fish/terrestrial passage, sediment transport, and minimizes the risk to infrastructure. The study is to include, but not be limited to; • Details on how the proposed design provides a natural channel morphology consistent with anticipated drainage, gradient, and sediment transport regimes; • Channel migration, widening, potential downcutting/scour based on historical observations or acceptable modelling; • Potential changes in channel alignment and bank erosion in upstream and downstream reaches; • Appropriate bankfull flows, water depths, water velocities, and tractive forces. These parameters should be the same within the project footprint as in upstream and downstream natural areas; • Natural bottom substrate matching upstream and downstream substrates with supporting substrate sizing calculations.	☐	☐

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Hydrogeological Assessment	A hydrogeological assessment by a qualified P.Eng. or P.Geo. to study the potential impacts to surface/groundwater interactions related to creek relocation/lowering, dewatering, and discharge activities. The assessment must provide adaptive management, mitigation and monitoring strategies with considerations for discharge (quality and quantity of water), construction phasing, etc.	☒	☐
Aquatic Habitat Assessment	Detailed description and habitat map of in-stream and bank habitat features including bankfull width, pools, riffles, undercut banks, eroding banks, root wads and large woody debris, thalweg/low flow location, backwater areas, substrate type, etc. See the *Environmental Guide for Fish and Fish Habitat (MTO, June 2009)* for further guidance.	☐	☐
Additional Fisheries Requirements	Fish passage assessment based on the sustained and burst speeds of the weakest species for baseflow conditions up to a 2-year storm (unless otherwise advised by CH staff).	☐	☐
Ecological Study	An Ecological Study. Reference must be made to Conservation Halton's *Guidelines for Ecological Studies*, available at: www.conservationhalton.ca.	☐	☐
Monitoring Plan	A detailed adaptive management/monitoring plan outlining elements of the works that are to be monitored, and the methodology, frequency, and duration of monitoring. Monitoring should include both vegetation and erosion control monitoring.	☒	☐

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Additional Design Considerations
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BEACON ENVIRONMENTAL

Appendix A-3

Approved Hydrologic Evaluation Terms of Reference

Hydrologic Evaluation Terms of Reference
150 Steeles Avenue Milton
CH Permit Application – Works within 120m of a Wetland Greater than 2ha

These Terms of Reference for a Hydrologic Evaluation have been prepared to outline an approach for assessing potential impacts of site remediation works on the hydrological functions of the Non-Provincially Significant "Milton Wetland Complex" that is associated with the Sixteen Mile Creek floodplain immediately adjacent to the Subject Property.

As certain phases of the proposed site remediation work (i.e., removal of contaminated soil) must occur within Conservation Halton's Regulation Limit (i.e., within 120 m of this wetland) a Permit is required to proceed with these works. As per CH Policy 2.39.5, Conservation Halton (CH) staff have requested that a Hydrologic Evaluation be prepared in support of the Permit Application to assess the potential impacts of the remediation work on the hydrologic functions of this wetland.

CH defines *hydrologic functions* as follows:

> *the functions of the hydrological cycle that include the occurrence, circulation, distribution and chemical and physical properties of water on the surface of the land, in the soil and underlying rocks and in the atmosphere, and water's interaction with the environment including its relation to living things.*

The Milton Wetland Complex is a flood plain wetland and its hydrological functions are sustained by creek flows and flooding events that are controlled primarily by runoff from the upstream catchment area. As such, it is proposed that the Hydrologic Evaluation be scoped to include the following:

a. Identification of the upstream catchment areas to the wetland.
b. Quantification of surface runoff contributions to the wetland from the Subject Property.
c. Estimation of the surface runoff contributions from the Subject Property relative to the overall catchment area.
d. Assessment of how the site remediation works may affect surface runoff contributions to the wetland under interim conditions.
e. Depth to groundwater within the area of the proposed remediation and discussion as to whether the proposed soil removal is anticipated to intercept groundwater.
f. If contaminated soil removal is anticipated to intercept groundwater, the amount of dewatering will be estimated.
g. Summary of potential adverse impacts on the hydrological functions of the wetland, if any, as the result of any interim changes to surface or groundwater flows.
h. Recommendations for management measures to mitigate potential hydrological impacts to the wetland, if needed.

Appendix A-4

Town of Milton, Region of Halton, Conservation Halton Comment/Response Matrix

Appendix A4

Comment Matrix

Table 1. Town of Milton

NEATT COMMUNITIES, 150 Steeles Avenue East, Town of Milton, Zoning By-Law Amendment - Submission #1 Comment Response Matrix (File No: CHAD #PZBA-387) Town of Milton					
Department / Category	**Document / Sub Category**	**Item No.**	**Comment No.**	**Comments**	**Response**
Development Services - Development Review, Jessica Tijanic jessica.tijanic@milton.ca	General Comments on the Formal Application Submission	1	1	The next submission will be the formal Zoning By-law Amendment application under the Planning Act and will be processed in accordance with the prescribed timelines under the Planning Act.	
		2	2	For a complete submission, please submit the Zoning By-law Amendment application form, required fee and all materials identified in the Record of Pre-Consultation, this Record of Comment and any additional materials required to address comments in this Record of Comment.	Noted.
		3	3	The remaining fee required for the Zoning By-law Amendment Application is: $19,497.70 ($24,361.00 base fee + $2,445.00 advertising fee - $7,308.30 pre-submission review fee). The fee can be paid via a cheque made payable to the Town of Milton and can be submitted either by mail or in person (Drop Box or at Cashiers in the Main Lobby) to the attention of Tammy Howe, Planning Administrator at Town Hall at 150 Mary Street, Milton. Please provide the following information with all cheque payments: Applicant/Owner Name, Site Address and File Number (if known).	Noted.
	Planning Justification Report	4	1	Section 11.0 of the Planning Justification Report accurately identifies the zoning that applies to the lands. Please also note that the proposed Zoning By-law Amendment is required to implement the true limits of the Natural Heritage System as determined in the CMES to the appropriate NHS zone in the Town's Zoning By-law.	Noted.
	Draft Zoning By-law Amendment	5	1	Based on the technical review of the CEMS, should the extent of the NHS limits change, the draft zoning by-law amendment schedule may need to be updated. This will be confirmed through the review of the formal zoning by-law application.	
Development Services - Policy & Urban Design, Anthony Wong anthony.wong@milton.ca	-	6	1	At this time we have no urban design comments on the proposed Zoning By-law Amendment to rezone lands zoned M1*38 to NHS to implement the limits of the Regional NHS and facilitate the required remediation work.	Noted.
Development Services - Building, Todd Jamieson todd.jamieson@milton.ca	-	7	1	In reviewing the Pre-Submission, there is no proposed construction here and this appears to be just a site rehabilitation application. I have no issues with this, a Record of Site I believe will be required to be provided to our CBO (Colin Brook) to support any future building permit applications.	Noted.
Development Services - Development Engineering, Steve Pozzobon steve.pozzobon@milton.ca	-	8	1	Development Engineering has received a Zoning By-law Amendment to refine the limits of the Regional NHS which will allow the continued environmental remediation of the property in advance of a development application. NEATT Communities has an active site alteration permit with the Town for works outside the NHS.	Noted.
		9	2	In reference to the subject Zoning By-Law Amendment application, please note that Development Engineering offers no objections.	Noted.
		10	3	Detailed engineering design review to follow the submission of a future development application for this property.	Noted.
Development Services - Infrastructure & Traffic, Kavleen Sachdeva kavleen.sachdeva@milton.ca	-	11	1	The Traffic Department has no comments at this time.	Noted.
Development Services - Zoning, Sherri Jamieson sherri.jamieson@milton.ca	-	12	1	Zoning has no objection to this proposed Zoning By-law Amendment.	Noted.
Community Services - Parks and Facility Planning,	Parkland Conveyance/ Payment in Lieu	13	1	As proposed, the pre-submission relates to re-zoning a portion of the subject lands as Natural Heritage System. As such there is no requirement at this time for review with respect to the Town's by-law or policy regarding the conveyance of land or payment in lieu of conveyance of land for the purposes of parkland or public recreational purposes.	Noted.

NEATT COMMUNITIES, 150 Steeles Avenue East, Town of Milton, Zoning By-Law Amendment - Submission #1 Comment Response Matrix (File No: CHAD #PZBA-387) Town of Milton					
Department / Category	**Document / Sub Category**	**Item No.**	**Comment No.**	**Comments**	**Response**
Roberta Sager **roberta.sager@milton.ca**	Existing Town Park and Facility Lands	14	1	The materials as submitted do not specifically identify site works within existing Town lands; however, upon review of the submittals, the following potential impacts have been identified by staff and should be considered during the site works and delineation of the refined NHS limit proposed in the formal NHS re-zoning application:	Noted.
		15	1a	As delineated in Figure 3.1 Approximate Limits of the Soil and Groundwater Remediation Areas of the CEMS, the record of site condition (RSC) areas 2, 3 and 5 are adjacent to existing Town land. Further, as outlined in sections 3.2.2 and 3.2.3, some works have been performed and some have not yet commenced, and all are subject to the filing of the respective RSC(s). It is possible that the proposed limits of environmental works can extend as a result of site discoveries, testing, agency review etc., therefore all potential impacts to, or proposed works on, existing Town land must be discussed with Town staff prior to being undertaken. The Town may require additional submittals and/or have additional requirements at that time.	Noted.
		16	1b	As delineated in Figure 3.2 Post-Remediation Constraints and Refined RNHS and Figure 4.1D Conceptual Post-Remediation Restoration and Enhancement Plan of the CEMS, the proposed wetland restoration area abuts existing Town land; however, the wetland buffer is not depicted as 15 metres wide when adjacent to the Town property. Although, the final buffer width is deferred to other Town departments, any new feature areas and required buffers should be proposed/located completely outside the existing Town property to ensure that there are no new policy encumbrances to future development placed on the Town property.	The location of the re-created wetland has been shifted such that the 15m regulatory allowance no longer encroaches onto Town owned lands
	Pre-Submission Submittals	17	1	We do not have specific comments at this time with respect to the submittals as circulated. Additional comments may be provided upon receipt/review of any new information regarding impacts to the Town's existing park and facility lands as outlined above. · Entry into Ontario Public Register letter, Stage 1 and & 2 Archaeological Assessment, Ministry of Heritage, Sport, Tourism and Culture Industries, c/o dated October 5, 2021 · Comprehensive Environmental Management Study (CEMS), prepared by Beacon Environmental, dated March 2023 · Cover letter, Korsiak Urban Planning c/o A Bucking, to Town of Milton c/o J. Tijanic, dated March 3, 2023 · Draft Zoning By-Law Schedule, undated · Preliminary Hydrogeological Investigation, prepared by DS Consultants, Ltd., dated August 11, 2022 · Update Phase 1 ESA, prepared by Pinchin Environmental, dated July 13, 2009 · Phase 2 ESA, prepared by AEL Environmental, dated December 16, 2013 · Slope Stability Assessment, prepared by DS Consultants Ltd., dated January 17, 2023 · Planning Justification Brief, prepared by Korsiak Urban Planning, dated March 3, 2023 · Pre-Consultation Checklist – Development Application, Owner signature dated January 13, 2023 · Signed Application, dated November 29, 2022 · Survey, prepared by WAHBA Surveying, certified date May 17, 2021	Noted.
	Future Application Requirements	18	1	It is our understanding that future planning applications (for example other Zoning Amendments, Plan of Subdivision, Site Plan, Building Permit) to address the development of the subject lands are anticipated in the future. The following comments are provided to inform any future applications; however, they are preliminary in nature and may be revised at the time of each application.	Noted.
	Conveyance of Parkland, Payment in Lieu of Parkland	19	1	As advised previously, the Town's current requirements are outlined in Council reports DS-054-22 Land Conveyance for Park or Other Recreational Purposes - By-law and Policy Updates and DS-057-22 Town initiated Official Plan Amendment – Park and Recreation Strategy, in addition to Town of Milton By-Law 055-2022. Requirements for conveyance/payment in lieu of parkland will be discussed during the formal circulation of a development application	Noted.
	Existing Town Park and Facility Lands	20	1	As advised previously, the subject lands abut Town open space lands, formerly used as a railway, which are intended for future development for public use. Currently, there are no design or construction works scheduled by the Town for its lands, but the lands have been identified as a potential public trail/multi-use pathway location. Please refer to Schedule C.7.B.CBD of the Official Plan, which depicts a proposed 'linkage' adjacent to the operational CP Rail line to these lands and ultimately to Martin Street. Through the Town's development review and permit processes, staff in Community Services will provide comments with respect to any proposed site works on the subject lands that impact the current condition and intended use of Town's lands, in addition to the required protection of the Town's existing site features. Technical investigations, inventories, recommendations and site works prepared in support of the remediation and the NHS delineation are to acknowledge the intended public use. Further, the proposed grading and stormwater design for the subject lands will be subject to Town review to confirm that there are no negative impacts to the Town's intended	Noted.

NEATT COMMUNITIES, 150 Steeles Avenue East, Town of Milton, Zoning By-Law Amendment - Submission #1 Comment Response Matrix (File No: CHAD #PZBA-387) Town of Milton					
Department / Category	**Document / Sub Category**	**Item No.**	**Comment No.**	**Comments**	**Response**
				development of its lands. Specific comments regarding the delineation of the refined RNHS are noted above under the Pre-Submission comments.	
		21	2	With respect to the future application(s), staff look forward to the submission of development concepts when available to discuss potential opportunities for pedestrian connections from the subject development to the adjacent Town property. In particular Community Services staff recommend that a comprehensive plan demonstrating both Active Transportation connectivity to the existing context surrounding the plan, and the proposed Public Realm spaces be submitted with each future development application that requires a development concept.	Noted.
Community Services - Transit, Marina Cajic marina.cajic@milton.ca	-	22	1	The referenced development is presently outside of the current Milton Transit service area and beyond coverage standards until such a time when implementation targets are achieved. If targets are achieved, the Town reserves the right to introduce and deliver transit services and facilities such as bus stops, illuminated advertising shelters, accessible boarding/alighting pads, benches and other associated amenities on any Town right-of-way as determined by the Transit Division, amended from time to time.	Noted.
		23	2	The nearest current transit service is Milton Transit OnDemand located in the 401 Industrial Zone.	Noted.
		24	3	The closest OnDemand stop is located on Steeles Avenue E, west of Martin Street.	Noted.
		25	4	Steeles Avenue is identified as a potential future transit route.	Noted.
Corporate Services - Development Finance, Maryam Aftab maryam.aftab@milton.ca	-	26	1	Regional development charges and educational development charges are applicable in accordance with the appropriate agency's policies and by-laws. Town development charges and other charges are applicable on any future development in accordance with Town policies and by-laws and other applicable legislation. All development charge inquiries should be directed to DevelopmentFinance@milton.ca	Noted.
		27	2	Municipal property taxes must be current prior to approval. Inquiries with respect to property taxation should be directed to 905-864-4142 or taxes@milton.ca.	Noted.
Corporate Services - GIS Comments, Matthew Wierdsma matthew.wierdsma@milton.ca	-	28	1	A georeferenced AutoCAD drawing must be submitted to the Town for the Zoning By-law Amendment (NAD 1983 UTM Zone 17N). Please submit the drawing to GIS@milton.ca	Noted.
Milton Fire Department, Ted Michael ted.michael@milton.ca	-	29	1	After reviewing the Pre-Submission Application for 150 Steeles Avenue East, Milton Fire has not comment at this time.	Noted.

Table 2. Region of Halton

NEATT COMMUNITIES, 150 Steeles Avenue East, Town of Milton, Zoning By-Law Amendment - Submission #1 Comment Response Matrix (File No: CHAD #PZBA-387) Region of Halton					
Department / Category	**Document / Sub Category**	**Item No.**	**Comment No.**	**Comments**	**Response**
Region of Halton Official Plan	Land Use	1	1	The subject lands are currently designated Urban Area and Regional Natural Heritage System (RNHS) in the Halton Region Official Plan (ROP). The relevant policies of the ROP provide that the range of permitted uses and the creation of new lots within the Urban Area and RNHS will be in accordance with Local Official Plans and Zoning By-laws. All development, however, shall be subject to all other relevant policies of the ROP.	Noted.
	Land Use - Regional Natural Heritage System	2	2	The proposed development is located on lands that are partially designated Regional Natural Heritage System (RNHS) on Map 1 of the ROP (Regional Structure).	Noted.
		3	3	A Comprehensive Environmental Management Study (CEMS) has been prepared in response to a request by the Town of Milton, the Region, and Conservation Halton (CH) to demonstrate how natural heritage features and natural hazards associated with the subject property may be affected and managed during contamination remediation works.	Noted.
		4	4	While the primary purpose of the CEMS is to address potential impacts related to site remediation, the study also refines the limits of the RNHS, which can be used to support the current rezoning application to refine the limits of the natural heritage system that will be submitted to the Town. An application to redevelop the site will be made in the future and is not currently contemplated as part of this CEMS.	Noted.
		5	5	As noted above, the subject property was a former industrial use, and the existing buildings and structures have been demolished. The site is heavily contaminated based on the Phase 1 and 2 ESA Reports, and contains two wetlands, one of which is located along the easterly rear boundary of the property and was used as the former tailing pond and accordingly, is proposed to be replicated once the site has been remediated.	Noted.
		6	6	The CEMS contemplates site remediation (soil removals) and restoration due to the presence of contaminants. It is the Region's understanding and as noted in Section 1 of the report that future residential or mixed-use development is proposed on the site and will be subject to subsequent Planning Act applications. Through previous discussions with the Town and applicant, an addendum to the CEMS or an individual Environmental Impact Assessment will be submitted to support future development on the lands adjacent to the Regional Natural Heritage System (RNHS), which may further refine the limits of the RNHS pursuant to S.116.1 of the Regional Official Plan (ROP).	Noted.
		7	7	Section 1 of the CEMS states the following: "while the primary purpose of the CEMS is to address potential impacts related to site remediation, the study also refines the limits of the RNHS, which can be used to support the rezoning application. This has been achieved by recommending ecologically appropriate buffers to Key Features of the RNHS based on the anticipation of adjacent high density residential development in the future and the need to mitigate associated impacts related to the future change in land use in order to ensure no negative impacts to the RNHS".	Noted.
		8	8	Please note, while refinements to the boundaries of Key Features can be undertaken through the CEMS based on the level of characterization and assessment of Key Features, refinements to the boundaries of the RNHS should be undertaken in the context of the goals (s. 114) and objectives (s. 114.1) of the Regional Official Plan (ROP). The goal of the NHS is to "increase the certainty that the biological diversity and ecological functions within Halton will be preserved and enhanced for future generations". In order to ensure that the refined RNHS will provide certainty that the biological diversity and ecological functions will be preserved, refinements to the RNHS, namely refinements to the 30 m buffer recommended in the Sustainable Halton 3.02 Natural Heritage System Definition and Implementation report (NSE, 2009), and those identified on Map 1G of the ROP, should be determined when a more detailed land use plan has been prepared. Given the "primary purpose of the CEMS is to address potential impacts related to site remediation", and that a detailed land use plan, including lot layout and SWM plan have not been prepared and against	Further to the May 16/23 meeting with the Region, Regional staff provided the following updated comment: The Region acknowledges that the ToR confirms that the adjacent land use is proposed to be high density residential. This is considered a high impact land use. Additional rationale is required in section 4.1.4 of the CEMS that supports an ecologically appropriate buffer in the context of a high density residential development. It would be appropriate to apply a risk-based approach to determine buffers that considers the high risk of impacts to the Key Features and ecological functions resulting from the high impact land use. Likewise, it would be appropriate to apply a risk-based approach to assessing the sensitivity of the Key Features and their ecological functions. The outcome of the risk-based approach is to ensure the buffers are sufficient to provide a high level of certainty that the biological diversity and ecological functions of the Key Features will be preserved

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Department / Category	**Document / Sub Category**	**Item No.**	**Comment No.**	**Comments**	**Response**
				which impacts have not been evaluated, it is premature to propose buffers to the Key Features. Accordingly, the proposed 10 m buffers to woodlands and 15 m buffer to wetlands is not considered sufficient to mitigate potential sensitive impacts until such time that the adjacent land use development concept has been determined. Alternatively, this information may be included as part of an updated CEMS.	and enhanced for the long term. It should be noted that Maps 1 and 1G contain a 30 m minimum buffer from woodlands, wetlands and linking watercourses in the RNHS. In addition, as previously noted on April 12, the Sustainable Halton 3.02 NHS Definition and Implementation Report recommends that a 30 m minimum buffer width be maintained from significant woodlands, wetlands and watercourse features. These preliminary buffers can be refined as per s. 116.1 of the ROP. We recommend two options: apply a 30 m buffer from the woodland and wetland features as a precautionary approach, with further refinements proposed upon the submission of future development applications (in accordance with s.116.1 of the ROP) when more details are provided regarding the design of the proposed development; or refine now, with supporting rationale and justification that the proposed refinements will provide a sufficient degree of certainty that the Key Features and ecological functions of the RNHS would be protected and enhanced over the long term. An addendum to the CEMS or an individual scoped EIA once detailed information is available to demostrate that the future development application on the land adjacent to the RNHS will result in no negative impacts to the RNHS in accordance with 118(2) (3) and (3.1) of the ROP. In the cover email that accompanied these meeting minutes, Robert Clackett provided the following additional clarification related to this comment: I would like to highlight our response to comment #8, related to the proposed buffer widths. As we have outlined , we acknowledge that the ToR confirms that the adjacent land use is proposed to be high density residential. This is considered a high impact land use. However, we are of the opinion that the justification provided in section 4.1.4 of the CEMS is insufficient. As such, we are recommending two options moving forward: Option 1: the application of a 30 m buffer from the woodland and wetland features as a precautionary approach, with further refinements proposed upon the submission of future development applications (in accordance with s.116.1 of the ROP) when more details are provided regarding the design of the proposed development; or Option 2: refine the buffers now, with supporting rationale and justification that the proposal will provide a sufficient degree of certainty that the Key Features and ecological functions of the RNHS would be protected and enhanced over the long term. An addendum to the CEMS or an individual scoped EIA, once detailed information is available, to demonstrate that the future development application on the land adjacent to the RNHS will result in no negative impacts to the RNHS in accordance with 118(2) (3) and (3.1) of the ROP. Based on the above, Section 4.1.4 has been revised to include a risk-based approach to assess sensitivity, determine buffer size and associated mitigation (e.g., fence), and provide supplemental rationale and justification that the proposed refinements will provide a sufficient degree of certainty that the Key Features and ecological functions of the RNHS would be protected and enhanced over the long term.
		9	9	Development and site alteration is prohibited in fish habitat and significant habitat of endangered and threatened species, except in accordance with Provincial and Federal regulations and legislation as per S.2.1.6 and S.2.1.7 of the Provincial Policy Statement, 2020 and S.118(2)a. of the ROP. It is the responsibility of the proponent to consult with and coordinate with the respective agencies. Accordingly, please provide any applicable correspondence to the Region and Town that demonstrates this policy has been addressed.	At the May 16/23 meeting with the Region, the following response was provided: Development or site alteration is not proposed in fish habitat. Site remediation activities do not include works below the high water mark. With respect to site alteration of habitat of endangered or threatened species in accordance with the provincial Endangered Species Act, a Notice of Activity was submitted on the MNRF Registry prior to disturbance to the habitat and a Mitigation Plan was prepared and used on site. A copy of receipt of the Notice of Activity and the Mitigation Plan will be included as an Appendix to the CEMS. **Subsequent to the meeting, the Region provided the following response:** **Comment Addressed. Please include an acknowledgement that should near water works occur, that the scope of work will be provided to the agency and consultation will occur with**

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					DFO under the Fisheries Act and MECP for the ESA. Correspondence with the Ministries should be provided to the planning approval authority in order to address PPS and ROP policies related to Fish Habitat. A Fisheries Act request for review has been included in Table 15 under Section 3.5.1, should work near water be required. The watercourse falls under jurisdiction of the federal Species at Risk Act and DFO; therefore, consultation with MECP is not anticipated to be required.
		10	10	Please provide GIS shapefiles in an ESRI Compatible Format. Permission is given to Halton Region, the Lead Planning Authority, as well as the Conservation Authorities to utilize data collected from this study to refine municipal and regulatory mapping accordingly.	Noted. Upon endorsement of the CEMS, and the constraint limits associated with the report, GIS shapefiles in an ESRI compatible format will be provided.
	Technical Comments	11	1	Section 2.2.7.5 provides a discussion of Significant Wildlife Habitat (SWH) on the subject property and adjacent lands. Appendix B-6 provides an evaluation of SWH based on criteria provided in the OMNR Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E, January, 2015. The following comments pertain to the evaluation and identification of SWH:	
		12	1a	Bat Maternity Colonies – Section 2.2.3.6 notes that both Big Brown Bat and Silver-Haired Bat were detected during acoustic monitoring, but notes that the habitat "did not meet the criteria for provincial significant". Please provide the results of the data analysis of the acoustic monitoring that was used to inform this conclusion.	At the May 16/23 meeting with the Region, the following response was provided: Correct. We are of the opinion that while Big Brown Bat and Silver-Haired bat were detected through acoustic monitoring that suitable roosting habitat is not present on Subject Property based on the SWH criteria. Using MNRF's Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E (2015) for Bat Maternity Colonies, significance is based on consideration of the following 5 criteria: (1) SWH are forested communities (i.e., FOD, FOM, SWD, SWM);Tableland portion of the subject property support CUW not FOD. Only the valley slope supports FOD, however this is a very small narrow area and not a mature forest. (2) The habitat criteria includes mature forest stands with more than 10 large diameter (greater than 25 cm dbh) wildlife trees per hectare; There are no mature forest stands on the subject property. (3) For Silver-Haired Bat SWH - older forest areas with at least 21 snags/ha preferred; There are no older forest areas on the subject property. (4) Confirmed use of maternity roost by more than 10 Big Brown Bats; In the absence of mark recapture or radio telemetry studies, it is not possible to confirm this criterion as MNRF discourages such investigations due to the potential to harm bats. (5) Confirmed use of maternity roost by more than five adult female Silver-Haired Bats. In the absence of mark recapture or radio telemetry studies, it is not possible to confirm this criterion as MNRF discourages such investigations due to the potential to harm bats. Passive acoustic monitoring data can be used to a) confirm the presence/absence of a specific species, or b) confirm possible roosting activity in an area. This type of monitoring does not however confirm roost sites or numbers of individuals associated with a roost, which is what is required for criteria 4 or 5. Exit surveys of known or potential roost sites are more suitable for this purpose and are commonly applied to roosts that may be associated with buildings and stuctures, but are generally ineffective when applied in forest habitats. The main reason passive acoustic monitoring was undertaken on the property was to confirm the presence of SAR bats or potential roosting habitat that may be present to ensure compliance with the ESA as it relates to tree clearing activities. While the acoustic data can be further analysed to assess roost potential, we do not see any merit to completing such an analysis as the SWH habitat criteria require confiming how many individuals use a roost which cannot be derived from the acoustic data. Subsequent to the meeting, Regional staff provided the following response: The dripline survey of the woodland would have been based on the area that contained a high enough density of trees to be a woodland based on the Region's definition. From my conversation with Sarah Mainguy, who did the dripline survey, areas of the woodland that had a lower density of

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					trees were excluded. The Region's definition of woodland based on stem density would also have a canopy cover of 60% or greater, which would result in the classification of the woodland being a Forest according to ELC. Please update the ELC or provide an explanation of how the woodland as staked has less than 60% canopy cover and is not a Forest according to ELC. If cannot confirm maternity roosting habitat for bats, then apply the precautionary approach consistent with the approach to the natural heritage system taken in the Region's Official Plan when applying appropriate mitigation measures, including buffers. Based on the above, the following response is provided: ELC Unit 2.0 cannot be classified as a forest under the first approximation of ELC (Lee et al. 1998). In accordance with the ELC system, site history (cultural vs. natural) is to be determined prior to determination of community. There are no Cultural Forest communities in the ELC catalog, however, as is explained on Page 124, cultural communities have not been fully described in the first approximation and these descriptions are generalized (e.g., Cultural Woodland). Similarly, the dichotomous key on page 30, the assessment of site history (regenerating old fields vs. treed communities of natural origin) prior to leading to consideration of whether the community is a forest. As this community is not a forest, criteria for Bat Maternity Colony SWH cannot be met here.
		13	1b	Woodland Raptor Nesting Habitat – This category is listed as possible. Section 2.2.3.7 notes observations of three stick nests indicating that surveys would be required in April and May to determine occupancy of the nests. The location of the nests has not been illustrated on the figures. Please indicate if the trees containing the nests will be impacted by the tree removal. If the trees containing stick nests are to be removed or will be impacted, it should be assumed the SWH criteria were met and an unavoidable negative impact occurred. In that event, please propose appropriate compensation for the removal of stick nests.	At the May 16/23 meeting with the Region, the following response was provided: Two of these stick nests have already been removed, as they were located on or adjacent to the contaminated soil and landfill. The remaining two potential raptor nests are not anticipated to be impacted. The goal of the restoration plan is to restore a diverse, native forest community to the tableland, which will provide many types of wildlife habitat in the long-term, including habitat for raptors such as Cooper's Hawk that often construct new nests in urban areas. This should provide for appropriate compensation. It should be noted that CEMS also recommends mitigation for raptors by including snags and perches in the restoration plan. We can also add creation of brush piles to the Restoration Plan which can provide for raptore nesting material. In addition, such brush piles are often used by fledgling hawks to practice hunting small mammals. Subsequent to the meeting, the Region provided the following response: Comment addressed subject to providing the additional information in the May 15, 2023 response from Beacon, in the CEMS which identifies that the design to include snags and perches as well as brush piles. The CEMS and conceptual restoration design have been amended to include brush piles (refer to Table 15). Snags were previously included in the first submission and have been retained in the re-submission
		14	1c	Amphibian Breeding Habitat (Woodland) – The MNRF have provided clarity and guidance on the interpretation of the criteria for this SWH category and have stated that where two or more species are present with a total of 20 or more individuals between those species, the pond/wetland and adjacent woodland within 230 m of the wetland is considered significant. Table 6 documents SPPE with a code 3 (usually 20 or more individuals) at station 3, and six Gray Treefrogs total between station 4 and 5. This would qualify the wetland and woodland habitat within 230 m as SWH for Woodland Amphibian Breeding Habitat. Please revise Appendix B-6 to identify the SWH for Amphibian Breeding Habitat (Woodland).	At the May 16/23 meeting with the Region, the following response was provided: Understood. The CEMS will be revised accordingly. Please provide the revised criteria from MNRF for our future use. Subsequent to the May 16/23 meeting, the Region provided the following response: There is no revised criteria. The correspondence with the MNRF was verbal and via e-mail. The e-mail correspondence was provided by NSE to Beacon on May 26th, 2023. Acknowledgment of the May 15, 2023 response from Beacon that the CEMS will be updated. The CEMS has been revised to include this SWH in several locations, such as Section 2.2.7.5 and Appendix B-6
		15	2	Section 1.2 makes reference to a historical and unregulated landfill. Please clearly illustrate the approximate location/extent of the landfill on the figures for easier reference.	The extent of the landfill has been added to Figure 3.1
		16	3	Section 3.3 describes the slope stabilization approach in the area of the decommissioned storm water outfall. The extent of proposed rip rap required to stabilize the slope is described as having an average width of 8 m over at approximately 200 m2 area (as referenced in section 3.5.1.1 in the	See response to #10 in CH's matrix. Information has been added to the CEMS related to vegetative treatment in this area.

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				paragraph describing impacts to the Significant Woodland). While slope stabilization is important, it should not be achieved with the purpose to maximize the developable area at the expense of appropriately remediating the woodland; this includes the use of rip-rap over the addition of soil to the area and planting trees, shrubs and native herbaceous cover in this area. Please revise the approach to slope stability to provide a natural substrate (i.e., soil) to permit restoration and revegetation with native plants.	
		17	4	Section 3.4.1.2 notes that it was agreed with CH that the wetland/tailings pond could be removed and replicated with a wetland of the same size. Please note, while the wetland, identified as "other wetlands other than those considered significant" is regulated by Conservation Halton, the Region will be deferring all comments related to the proposed replicated wetland's location and design (pit and mound) to CH. It is recommended, however, that alternative designs be considered such as deeper and variable depths to improve overall functionality; to support growth of wetland vegetation, and to ultimately support habitat for amphibians and other wildlife. It is further requested that consideration be given to the construction of the wetland (including grading) to ensure there will be no negative impacts on the adjacent significant woodland given that the replicated wetland is proposed within the buffer of the Key Feature.	Noted. The Study Team will continue to work with CH through their permitting process as it relates to the design of the wetland.
		18	5	Section 3.5, Impact Assessment and Mitigation, states "There are no alternatives available for addressing the contaminants and slope failure". Based on the analysis undertaken in the Slope Stability Assessment prepared by DS Consultants Ltd (17 January 2023), there are two options: do not stabilize the slope, and stabilize the slope. Alternative options that do no require rip-rap or the use of engineered stabilization techniques should be explored. Please provide an assessment of stabilization options that would allow for the use of soil to permit complete planting along the slope.	See response to #10 in CH's matrix. Information has been added to the CEMS related to vegetative treatment in this area.
		19	6	Moreover, please consider the following questions as part of providing a response to Comment #10:	see below
		20	6a	If the issue of slope erosion was a result of the discharge from the storm sewer, which has since been decommissioned, will the slope erosion continue?	See response to #10 in CH's matrix. Information has been added to the CEMS related to vegetative treatment in this area. Erosion is not expected to continue in this area. Other than rainwater that falls directly on this slope, all other drainage is directed away for the area of localized erosion.
		21	6b	Based on the photos provided in the Slope Assessment Report (DS Consultants, 2023), namely Photo 6, can soil be used to fill the gulley to match the grade of the surrounding stable slopes to permit restoration with native plants?	See response to #10 in CH's matrix.
		22	7	Section 3.5.1.1 makes reference to "rehabilitation of affected areas by replanting of trees". It is recommended in Section 3.3 to "plant native vines in native soil at the edge of the rip-rap, and direct vines to grown over the rip-rap". This solution will not ensure revegetation of the area with native plants that will support the woodland function. Please consider an alternative approach to slope stabilization that will permit the use of soil as the substrate and planting the entire area with native plants, including trees, shrubs and herbaceous plants.	See response to #10 in CH's matrix.
		23	8	Section 4.1.1 suggests that the slope stabilization works will "serve to enhance a natural corridor along a hydrologic linkage". Please refer to the comments above regarding concerns with the type of slope stabilization proposed, which is not natural and would not be considered a measure that would "enhance a natural corridor".	See response to #10 in CH's matrix.
		24	9	Section 4.1.4 starts with the statement that "the boundaries of the Pre-Remediation RNHS and Post-Remediation RNHS presented in this CEMS are nearly identical with three exceptions…". Please note, the RNHS as identified on Map 1 and Map 1G of the ROP, and as illustrated on Figure 1.2 of the CEMS is quite different in extent than that proposed on Figure 3.2 of the CEMS. This statement should either be removed or revised to acknowledge the significant difference in the boundary of the RNHS and the proposed refinements to the RNHS in the CEMS.	At the May 16/23 meeting with the Region, the following response was provided: The RNHS within the ROP is preliminary and not based on field confirmation. The Study Team can note in the CEMS that there is a difference between the ROP figure and the Pre-Remediation NHS but that does not mean that the NHS has been improperly reduced in size as compared to the ROP NHS but rather, that is has been field truthed to more accurately reflect the extent of the RNHS. Subsequent to the May 16/23 meeting, the Region provided the following response: The ROP does permit refinement of the Regional Natural Heritage System in accordance with s. 116.1 of the ROP. The comment from the Region dated April 12, 2023 was requesting that there is a significant difference (proposed refinement) between Figure 1.2 and 3.2 of the CEMS and the RNHS shown on Maps 1 and 1G in the ROP. The statement should be revised to acknowledge that the Regional

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					Natural Heritage System should be refined based on Map 1G which included additional lands to the north of the Key Features. Based on the above, Sections 2.2.8 and 4.1.4 has been revised to clarify.
		25	10	Section 4.1.4 suggests a 10 m buffer applied to the "staked dripline of the Significant Woodland in the Post-Remediation Refined RNHS" is "ecologically appropriate to mitigate potential impacts of future residential development on the adjacent lands…". There are several concerns with this approach as indicated below, in addition to that identified in Comment #2 above:	
		26	10a	The first bullet suggests providing a 10 m buffer to the dripline of planted trees in the restored area will protect the rooting zone, as well as to retained trees that are "relatively young". This buffer will essential be measured for the trunk of planted trees, given the size of trees planted in woodland restoration plans are generally small (1-2 m in height) and have a very narrow crown. Moreover, this short-term perspective of the function of the buffer and the age and size of the planted trees is not consistent with the long-term perspective that is taken by the Region's goal for the NHS, which is to "increase the certainty that the biological diversity and ecological functions within Halton will be preserved and enhanced for future generations". This should include the report's consideration for the role buffers play at mitigating impacts to Key Features, now and in the future.	At the May 16/23 meeting with the Region, the following response was provided: To clarify, the 10 m buffer has been applied to the existing woodland limits as previously staked by the Region and not the trunk of any woodland restoration plantings. In order to quickly restore the woodland area that will be remediated, the woodland restoration plantings are proposed close to the staked dripline (minimum of 1.5 metres inside the staked woodland limit). Furthermore, it is anticipated that the trees will grow with plasticity in response to the adjacent urban development (i.e., aclimatize) to wind currents and shading created by the adjacent urban development. The existing woodland is primarily black walnut, which is a species tolerant of urban conditions, will similarly aclimatize to the urban development and the 10 m buffer will be more than sufficient to preserve their existing and future tree roots. Regarding the concern that the crown of woodland plantings growing into the buffer, the Natural Heritage Reference Manual (p. 131) states that "if a buffer is allowed to become wooded, the natural feature boundary should not be extended to include it". Therefore, the buffer is intended to protect the staked limit of the woodland and should not be considered an extension of the Significant Woodland. Removing contaminants from the environment is consistent the the Region's long-term NHS goals as is the subsequent restoration work which includes invasive species management, native plantings, and additional measures to retain biological diversity. As it relates to this site and acheiving the Region's long-term NHS goal, the role of a buffer is relatively minor compared to the remediation works. The recommeded ecological buffers are more than sufficient to mitigate short and long-term impacts related to future development. The buffers that have been recommended are based on consideration of potential impacts related to future high density residential uses. The buffers are considered appropriate for protecting the adjacent key features and their functions and it is assumed that the future woodlands and wetlands will support comparable or enhanced functions relative to their existing state as they develop. Subsequent to the May 16/23 meeting, the Region provided the following response: The target community is not a Black Walnut woodland. As per the CEMS in Section 4.1.2, the target community is a Dry-Fresh Sugar Maple Forest (FOD5). As such the protection of the current feature is not what the buffer should be based on. The buffer should be based on the target ecosystem with consideration of the change in adjacent land use with greater associated impacts. Please update CEMS to mitigate impacts to the target ecosystem/vegetation community with anticipated ecological functions. The Study Team offers the following response to the above: While the ELC target community is an FOD5, it is important to note that the ELC catologue is based on climax forest communities that take centuries to develop. Establishing buffers based on what may potentially live in a restored feature several decades or centuries in the future is unreasonable and inconsistent with provincial and regional guidance. The NHRM and Halton EIA guidelines require evaluations of feature significance and sensitivities to be undertaken based on existing conditions. Similarly, buffers are to be applied

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					to protect existing features and functions, not past or future features and functions. Halton EIA Guidelines (2022) state: Through Halton's Regional Official Plan (ROP), significant value has been placed on the permanent protection of Halton's landscape. This includes the protection of existing natural heritage features and functions, enhancement of Halton's natural heritage on the landscape, and integrating the natural heritage system within the rural and urban landscape. While not applicable to brownfield redevelopments, the Region's Buffer Refinement Framework also requires that risk to a feature be assessed based on existing features (e.g. "Cultural ELC Community Class that grew on fill/debris such that full removal of the vegetation and fill/debris would be necessary to rehabilitate") not that feature's future target community following temporary removal. Notwithstanding the above, as discussed with Regional staff, the buffer has been increased to 15m from the re-created woodland limit.
		27	10b	The second bullet states the "cultural woodland feature does not support habitat for species that are particularly sensitive to the proposed future uses. The wildlife species that are present, including endangered bats, are highly tolerant of urban conditions and adapted to stressors such as noise, light form the existing rail corridor, roads and adjacent industrial and residential land uses". The woodland provides habitat for American Redstart and Black-and-white Warbler, two species considered area sensitive that are rarely documented in smaller (i.e., generally less than 4 ha) urban woodlands abutting residential development. The woodland, which qualifies as SWH for Amphibian Breeding Habitat (Woodland) also provides overwintering habitat for Spring Peeper and Gray Treefrog. These species often decline in abundance or are absent from smaller woodlands that are bordered by residential development. As such, the sensitivity of the habitat that supports these more sensitive species should be acknowledged and considered as part of the justification for the buffers.	At the May 16/23 meeting with the Region, the following response was provided: To clarify, neither American Redstart nor Black-and-White Warbler have been observed in association with the Significant Woodland on the Subject Property. These species were observed on the east side of the Subject Property near the existing residential development on Martin Street. The approach of the CEMS mitigates the potential for effects of soil contamination, altered hydrology, and altered nutrient loading on the Amphibian Breeding Habitat (Woodland) SWH. However, the potential for domestic cats entering the RNHS can be mitigated through strategic buffer fence design. This can be included in the CEMS. Subsequent to the meeting, the Region provided the following response: Both bird species were identified as possible breeding and they rely on woodlands for their breeding habitat. It would be likely that they are using and rely on the woodlands throughout the property, not just ELC unit 4.3. Please assess impacts to sensitive bird species.Please explain what a strategic buffer fence design entails and how it mitigates impacts to amphibians, including from predation from cats. In response to the above, the Study Team notes that the presence of both bird species does not meet the requirements for SWH. As such, it is not Regional policy to assess impacts on the possible breeding of these species. Nonetheless, if they are using the woodland for breeding, the impact of remediation to these species is anticipated to be short-term negative (due to temporary woodland removal) and long-term neutral (due to the removal of contaminants and the designed regeneration of the woodland). The impact of development of the site is considered to be neutral, as the tree cover will be restored as a function of the development. On reconsideration of the risk of RNHS stress imposed by domestic pets, such as cats, it is anticipated that under the proposed land uses, such a risk is negligible. The future land use adjacent to the RNHS will be high density residential. Pet owners in residential high rises don't present a risk as cats are kept indoors as a result of building access issues. Any residual effect of the adjacent, theoretical increased cat population would be mitigated by municipal bylaws. The Town Animal Control bylaw prohibits pet animals (e.g., cats and dogs) from being allowed to trespass or be at large. Discussion and recommendations related to this are provided in Section 4.1.4.
		28	11	Section 4.1.1, Buffers, notes "the recommended 10 m buffer is also consistent with CH's Land Use Planning policies relating to significant woodlands (S. 3.6.4) which recommends that, in the absence of a Subwatershed Study, a minimum 10 m buffer to significant woodlands, outside of the Greenbelt Plan Area, be provided, to be confirmed through an EIS". Please note, s. 3.6.4 of CH's Land Use Planning Policy Document does not identify a 10 m minimum buffer, rather it is stated it is a "development and site alteration setback". Setbacks to development and site alteration are generally related to a physical area of separation between development and a hazard and do not	At the May 16/23 meeting with the Region, the following response was provided: The term 'setback' in CH's policies should be read as 'buffer' as that was and is the intended meaning. The 10 m 'setback' is referring to a natural heritage feature (woodland) and not a natural hazard. As per CH's definition, development, when referenced in the context of the Planning Act, includes lot creation. Since the policy pertaining to the 10m 'setback' is within CH's planning policy section, the term 'development' is in relation to the Planning Act definition and, as such, contemplates that this 10 m setback/buffer would be a lot line setback.

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				consider the impacts to the feature and it's ecological functions. As such, it is not appropriate to compare a requirement for a "minimum" setback with the need to provide an ecologically appropriate buffer. As noted in comment #2 above, any justifications on proposed ecological buffers should be analyzed in conjunction with a proposed land use development concept for the adjacent lands.	Subsequent to the May 16/23 meeting, the Region advised that the above addresses their original comment. No further action required.
		29	12	Section 4.1.5 describes "Enhancements to Key Features". While enhancements internal to Key Features are identified, the proposed refinements to the Key Features do not take the opportunity to improve the shape of the edge, by filling in indents or small embayments along the edge of the woodland as a part of the restoration works. There is an opportunity to achieve an enhancement, not only through management efforts proposed interior to the Key Feature, but by creating a woodland edge that reduces the edge-to-interior ration of the woodland. The proposed enhancements should provide an improvement over the existing configuration of the feature given the opportunity for restoration of the woodland following soil remediation works, which will achieve the goal and objectives of the RNHS as described in s. 114 and 114.1 of the ROP.	At the May 16/23 meeting with the Region, the following response was provided: As it relates to the removal of contaminated soil, the Study Team recommends that there is no Official Plan policy requirement to replace anything more than what is being removed. From a planning perspective, there is also no policy requirement to increase the size of Key Features. Additional discussion related to the rationale for this request is required. Subsequent to the meeting, the Region provided the following response: The refinement to the boundary of the Key Feature (i.e., Significant Woodland) does not require an increase in the size of the area. The recommendation is related to refining the alignment of the edge of the feature, recognizing the permitted removal of a portion of the Key Feature to accommodate soil remediation, whereby the refinement is intended to reduce the edge to interior ratio and potentially enhance the ecological functions of the woodland. This refinement would be consistent with the goals, objectives and policies of the Natural Heritage System (S. 114 and 114.1 and 118 (2) d) of the ROP) and provide a greater level of certainty that the woodland's biological diversity and ecological functions will be enhanced for the long term. Based on the above, Section 4.1.2 and Figure 5 have been revised accordingly and the extent of woodland edge has been reduced through a reconfigured woodland limit.
		30	13	Section 4.1.5 makes a note in the 2nd bullet on p. 68 that "soils will be remediated in Key Features". Given that the restoration and enhancement of the RNHS will occur prior to the development of the site and is contemplated as part of this CEMS, it is recommended that a detailed restoration plan be prepared that describes the soil texture, organic matter content and microbial additives that will be used to ensure the soil provides a suitable substrate for the healthy growth and regeneration of a native woodland community.	At the May 16/23 meeting with the Region, the following response was provided: The detailed restoration plan has been prepared as part of the permit application to CH. Microbial additives are not proposed as there is little evidence to suggest that the addition of a commercial mycorrhizal product expedites the development of a soil microbiome. Subsequent to the meeting, the Region provided the following response: There is ample evidence that mychorrhizal additives improve the growth of planted material. Given the substantial modification to the area and import of soil, please include recommendations for mycorrhizal additives. In response to the above, Section 4.1.2 has been revised.
		31	14	Section 4.2.2, Restoration Monitoring, suggests monitoring for 3 years post-remediation. This time period is insufficient to confirm the recreated wetland will function as intended, and to monitor the effectiveness of any adaptive management actions (as stated in Table 16 for "Hydrology of Re-Created Wetland"). Monitoring of a created wetland and associated habitat should take place for at least five years post-creation of the habitat. Please update the monitoring recommendations accordingly.	Section 4.2.2 has been revised to indicate 5 years of monitoring.
		32	15	Section 2.1.5 Hydrology mentions that an existing stormwater outfall, which conveyed flows to the Sixteen Mile Creek valley have been decommissioned and it is now anticipated that heavy precipitation will drain overland. SWM components such as ancillary pipes, outlets, headwalls and other associated infrastructure required to convey flow from facilities outside of the Regional NHS to receiving water bodies may be supported in the RNHS where deemed "essential" (as defined in s.233 of the ROP) after all alternatives are explored and it is determined there are no negative impacts to the Regional NHS through an appropriate environmental study. As such, consideration should be given to SWM infrastructure in the context of the restoration plans and areas to be restored are not disturbed in the future to support any proposed development/infrastructure.	At the May 16/23 meeting with the Region, the following response was provided: For clarity, Section 2.1.5 states "Surface water flow during intense precipitation is now antiicpated to drain overland and ultimately discharge into Sixteen Mile Creek". With the removal of the industrial building and associated hard surfaces (parking lots/paved areas), the stormwater outfall that used to accept drainage from these areas and convey it to the creek is no longer required. Through the decommissioning of this outfall, and the removal of the hard surfaces on the site, the level of perviousness on site has increased dramatically, allowing for more infiltration than under previous industrial conditions. As such, only more intense precipitation would be expected to flow overland and towards the valley however, such overland flow would be diffuse and not focused on any one specific outlet location. A stormwater pond will be proposed (in the approximate location of the existing sediment control pond), as part of future development, in the lowest point on the property

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					which is immediately east of the proposed re-created wetland. There is already a natural outlet into the swale along the old rail spur line that this SWM pond can outlet to. This swale is outside of the RNHS and, as such, the need to demonstrate 'essential' is not required. Subsequent to the meeting, the Region provided the following response: It should be confirmed that the swale within the former rail corridor will be the ultimate area of discharge. We defer to the Town of Milton on the appropriate design and function of this outlet. Further, if any alterations to Key Features or components of the RNHS will occur due to the stormwater outfall as a result of the restoration works, then the demonstration of the "essential" test will be applicable. In response to the above, at this time, it is the Study Team's understanding that the existing swale will be used as the discharge point for the SWM pond (consistent with the ESC pond discharge). It is understood however, should the location of the outfall change as part of detailed design, the 'essential' test will be applicable if the outfall is within the RNHS.
		33	16	Section 2.2.8.3 Linkages identifies Sixteen Mile Creek valley corridor as a linkage and included within the proposed refined RNHS. Accordingly, it should be demonstrated in the Post-Remediation Environmental Management (Section 4) that the Sixteen Mile Creek valley corridor will continue to function as a linkage once all remediation and restoration works have been completed.	At the May 16/23 meeting, the following response was provided: Could the Region please explain why the Sixteen Mile Creek valley corridor would not function as a linkage once all remediation and resotration works have been completed? Given that there are no works proposed within the corridor, other than restoring an area of slope erosion, the Study Team is unclear as to what would prevent the linkage function from continuing. Additional insight would be appreciated. Subsequent to the May 16/23 meeting, the Region provided the following response: For clarification, the intent of this comment pertaining to demonstration that the valley will continue to function as a regional linkage following the restoration works post-remediation. In response to the above, Section 4.1.1 has been updated.
		34	17	A Letter of Undertaking, dated March 21, 2023 has been received pertaining to tree removals and receiving securities and includes Schedule “B”, Tree Inventory and Anticipated Limits of Disturbance, including tagged trees that correspond to Appendix B-2 Tree Inventory Table of the CEMS. Please revise all figures in the CEMS to include the revised anticipated area of disturbance associated with the tree removals to ensure consistency throughout the report and Schedule “B”.	At the May 16/23 meeting with the Region, the following response was provided: These disturbance limits are the same. The CEMS does not need to be revised. Additional clarification from the Region would be appreciated. Subsequent to the meeting, the Region provided the following response: Acknowledged. No further action. Please notify Halton Region and CH immediately should the scope of work change or should additional remediation be required beyond the areas identified in the CEMS and the site alteration permits (Phase 2A issued by CH. Based on the above, no revisions have been made to the report.

Table 3. External Agencies

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	Key Comments	10	1	Please ensure that technical information submitted with CH's Permit application including the updated Slope Stability Report and detailed restoration plans are included within the CEMS. Information from this comprehensive document will be used to support the CH Permit applications.	As discussed at the July 5/23 meeting with CH, the existing area of erosion is not going to be stabilized, with the exception of vegetation. As such, the Slope Stability Report has not been updated. Additional details have been included in the CEMS to address vegetative treatments within this area of the valley and sealing and grouting the existing pipe.
		11	2	The long-term stable top of slope for Cross-sections B-B and C-C must be based on the calculated location assuming the slope erosion has not been rehabilitated. The location of the long-term stable top of slope can be modified when a non-structural/non-hardened method of slope stabilization is agreed upon by all parties and is included in the slope allowance analysis (update to Section 2.2.4.2 Long Term Stable Top of Slope of the CEMS is required).	The LTSTOS will be based on existing conditions. Figures and text have been updated accordingly.
		12	3	Please ensure that a conservative estimate of the extent of remediation works within CH's Regulated area is shown on all drawings in the CEMS as well as the CH Permit Submission.	See response to #10.
		13	4	As per the approved Terms of Reference, the CEMS is to contain an Adaptive Environmental Management Monitoring Plan that includes full details on the steps to be taken if the extent of contamination extends beyond mapped areas once the remediation works commence. Please confirm the mitigation measures that will be taken to prevent any erosion issues if remediation extends further into the top of bank.	The remediation works are proceeding under an Emergency Works Permit from CH. The restoration requirements will be submitted as part of a separate Permit application.
		14	5	The limit of the NHS Zone shown on the Draft Zoning By-law Amendment will be based on the long-term stable top of bank plus associated 15 metre regulatory allowance and the 15 metre regulatory allowance from the limit of the wetland. The limits of the NHS Zone will have to be updated based on comments included above under **Key Comments** and in **Appendix A.**	Noted.
	APPENDIX A - DETAILED COMMENTS				
	General Comments				

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	-	23	1	During the site visit of July 16, 2021, a concrete structure (possibly an abandoned well) was discovered when staking top of bank that is located within CH's regulated area. The CEMS report does not reference this feature and any remediation works required. A photo of this feature has been included below for reference. Please update the CEMS report accordingly 	DS completed a site reconnaissance to complete further assessment of the structure. Upon completion of the assessment DS is of the opinion that the structure is not a well. There is a concrete enclosure which houses a small compression chamber with a pressure valve. The structure does not appear to be connected in any apparent way. It is possible that this structure was used as an irrigation pump to irrigate the table lands in the pre-industrial setting. Given the location of the structure and the inaccessibility of the area (i.e. surrounded by mature trees) it is the opinion of DS that any decommissioning efforts would result in unnecessary disruption to the natural environment without producing net benefit.
	Comprehensive Environmental Management Study, 150 Steeles Avenue East, Milton; Beacon Environmental, DS Consultants Ltd., Jennifer Lawrence and Associates Inc., and Urbantech Consulting; March 2023				
	Section 2.2.5 Human-Made Hazards	24	2	The CEMS indicates the sediment of Sixteen Mile Creek is contaminated within the subject property boundary, but testing has not been completed to support the area of contamination as shown on Figure C1 in Appendix C. As noted under Key Comments #3, please ensure that a conservative estimate of the extent of the contamination within the CH regulated area on the subject property.	Current assesssment of the sediment quality was completed on June 16, 2023. Refer to the updated versions of Figures C1-C3 which supercede the previous versions. All sediment contained within the subject Site should be considered impacted based on the latest findings. Note that the limits of the sediment impacts are bound by depth (i.e. sediment is only upper 0.1m of the material) and within the confines of the creek. The soil and groundwater conditions surrounding the creek have been assessed and are being managed through risk assessment which will undergo MECP review and ultimate approval.
	Section 3.2.2.1 Soil Remediation	25	3	The CEMS indicates that soil testing has identified contaminants extending up to CH's regulatory allowance associated with the stable top of bank. The method of remediation as documented in the CEMS indicates that soil is removed until testing indicates contaminants have been removed plus an additional 2 metres, which would extend into CH's regulatory allowance. As noted in **Key Comment #4,** the CEMS must include a discussion on the likelihood of the excavation reaching and/or entering the stable top of slope and include information on how to prevent slope failure.	Soil removal has been addressed through an emergency works permit issued by CH. This has been reflected in the CEMS.

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	Section 3.3 Slope Stabilization	26	5	The structural condition of the storm sewer needs to be evaluated in the CEMS to ensure there are no additional concerns from a slope stability perspective. Please update the CEMS accordingly (including Section 4.1.1 Restoration of Area Affected by Slope Stabilization and Appendix C-1 Section 4.5 Slope Stabilization in Area of Cross Section B-B).	See response to #10. The Town has confirmed that the pipe can remain in place.
	Section 3.6 Adaptive Management and Monitoring of Remediation Works	27	6	Similar to the comment for Section 3.2.2.1, the adaptive management plan within the CEMS should identify the potential for remediation works to impact slope stability and provide methods of protecting the slope if any issues are identified.	See response to #25.
	Section 3.4.1.1 Works Within 120m of Wetland Greater Than 2ha in Size	28	7	The CEMS indicates that 20.3 ha of land is directed to the wetland, which is the size of the entire development; however, Drawing 1 (Appendix D) shows only a portion of the site flows to the wetland. Site drainage should be clarified and consistent throughout the CEMS. Please update Drawing 1 to show the extent of the external drainage area as per the report text as it currently shows only onsite drainage areas.	The "wetland" reference in the text of Section 3.4.1.1 refers to the Sixteen Mile Creek wetland complex within the valley, not the existing tailings pond wetland on the site. As the entire site does contribute to Sixteen Mile Creek, the total area on Dwg 1 (20.26ha) is consistent with the text. We note that the external drainage area to this point is 7,969 ha so the contributing drainage area to the valley from the subject lands is negligible. Accordingly, this has not been indicated on the figure.
	Section 3.4.1.1 Works Within 120m of Wetland Greater Than 2ha in Size and Section 4.1.1 Restoration of Area Affected by Slope Stabilization	29	8	As it is anticipated that the site will be redeveloped and that runoff from impervious surfaces will be directed to the future SWM facilities, please clarify what extent of surface flows will be directed to the wetland once remediation works has been completed. Please confirm the amount of runoff required to support the proposed wetland hydroperiod and also evaluate the erosion potential from proposed returned surface flows.	With the exception of some surface flow from the buffer lands to the north of the wetland, no surface flows from the development are proposed to flow to the wetland. As previously discussed, the intention of the wetland is to be self-sustaining through the use of pit and mound topography.
	Section 4.1.1 Restoration of Area Affected by Slope Stabilization and Appendix C-1 Section 4.5 Slope Stabilization in Area of Cross Section B-B.	30	9	Please evaluate an alternative methods of slope stabilization (e.g. bioengineering, alternative retained soil system etc.) to address the existing erosion issues and reduce impact to the existing slope vegetation. CH is concerned that the proposed method (geotextile, and rip-rap with native vines) as this method may not mitigate the existing erosion problem (update to Section 3.3 Slope Stabilization of the CEMS is required).	See response to #10.
	Section 4.1.4 Buffers	31	10	The limit of the Pre-Remediation Refined RNHS must reflect the calculated stable top of slope for Cross-sections B-B and C-C, as CH does not support inclusion of the proposed slope stabilization measures within the determination of the long-term stable top of slope. The 15 m regulatory allowance will apply from the calculated values. Please update the CEMS text and all drawings with the revised limits.	The RNHS has been revised to reflect 15m from the existing LTSTOS.
	Appendix C-1 Long Term Stable Top of Slope Assessment				
	General Comment	32	11	CH's Board approved the "Guidelines for Slope Stability Assessments for Valleys" in late 2022. Ensure the fieldwork and analyses follow this document.	See response to #10.
	Section 4.5 Slope Stabilization in Area of Cross-section B-B	33	12	As noted above, CH staff generally do not support the inclusion of structural/hardened slope stabilization measures in the stable slope allowance analysis. The long-term stable top of slope for Cross-sections B-B and C-C is therefore the calculated location (i.e. points S2a and S3a).	See response to #10.
	Appendix C-1 Figures 1a and 1b Slope Profile Location Plan	34	13	Update the drawings to show both the location of staked top of bank as well as calculated stable top of bank.	Drawings have been updated.

NEATT COMMUNITIES, 150 Steeles Avenue East, Town of Milton, Zoning By-Law Amendment - Submission #1 Comment Response Matrix (File No: CHAD #PZBA-387)
External Agencies

Department / Category	Document / Sub Category	Item No.	Comment No.	Comments	Response
	Appendix C-3 Sixteen Mile Creek Characterization Figures – Figures C2 and C3	35	14	The figures indicate metals that were tested within the sediment as well as any exceedances. Please ensure that all contaminants (i.e. hexavalent chromium) are included on this figure.	In consultation with the MECP it was established that new (contemporary) sediment sampling should be completed, as the previous sediment sampling methodology deviated from established MECP protocols regarding depth of the samples for sediment (i.e. sample depths previously included both sediment and underlying soil). DS completed a round of sediment sampling on June 16, 2023. The results are provided on revised Figures C1-C3. The concentrations of hexavalent chromium were below laboratory method detection limits in all samples. Also note that the MECP does not have sediment standards for hexavalent chromium. As such the results for hexavalent chromium are not required to be shown as there is no guideline to assess against. The contaminants that were found to exceed the standards have been presented in all sampling locations, in accordance with requirements of the MECP.
	Figures				
	Figures 4.1 A-D	36	15	Ensure the CH regulated limit is on the drawings.	CH's regulated limit is shown on the appropriate drawings.

Appendix A-5

Slope Stabilization Memorandum of June 27, 2023

Memorandum

To: Justin McArthur, Conservation Halton;
Robert Clackett, Heather Ireland, and Mark Andrews, Halton Region; and
Sal Spitale, North-South Environmental Inc.

cc: Jessica Tijanic, Town of Milton; and
Colin Rauscher, Neatt Communities

From: James Seery and Ken Ursic, Beacon Environmental Limited; and
Jennifer Lawrence, Jennifer Lawrence and Associates Inc.

Date: June 28, 2023

Ref.: BEL 221265

Re: **Evaluation of Alternative Methodology for Slope Stabilization, 150 Steeles Avenue East, Town of Milton, Region of Halton**

Beacon Environmental Limited and Jennifer Lawrence and Associates Inc. were retained by the Neatt Communities to prepare a Comprehensive Environmental Management Study ("CEMS") in support of the rehabilitation efforts and redevelopment application for their property at 150 Steeles Ave E, Milton, Ontario. This letter should be read in conjunction with the letter by DS Consultants Ltd., dated June 6, 2023.

The CEMS was submitted to agencies in March, 2023, and described a proposal to stabilize and restore an eroded slope in the location of a former stormwater outlet. The CEMS identified that the preferred method of stabilization, based on minimizing disturbance in the valley, was to use rip-rap at a 2:1 slope, to be installed from the tablelands ("Option 1").

Through review of the first submission of the CEMS, Conservation Halton ("CH") provided the following comments regarding the slope stabilization methodology:

> *The long-term stable top of slope for Cross-sections B-B and C-C must be based on the calculated location assuming the slope erosion has not been rehabilitated. The location of the long-term stable top of slope can be modified when a non-structural/non-hardened method of slope stabilization is agreed upon by all parties and is included in the slope allowance analysis (update to Section 2.2.4.2 Long Term Stable Top of Slope of the CEMS is required).*

The structural condition of the stormsewer needs to be evaluated in the CEMS to ensure there are no additional concerns from a slope stability perspective. Please update the CEMS accordingly (including Section 4.1.1 Restoration of Area Affected by Slope Stabilization and Appendix C-1 Section 4.5 Slope Stabilization in Area of Cross-Section B-B).

Please evaluate an alternative methods of slope stabilization (e.g. bioengineering, alternative retained soil system etc.) to address the existing erosion issues and reduce impact to the existing slope vegetation. CH is concerned that the proposed method (geotextile, and rip-rap with native vines) as this method may not mitigate the existing erosion problem (update to Section 3.3 Slope Stabilization of the CEMS is required).

The limit of the Pre-Remediation Refined RNHS must reflect the calculated stable top of slope for Cross-sections B-B and C-C, as CH does not support inclusion of the proposed slope stabilization measures within the determination of the long-term stable top of slope. The 15 m regulatory allowance will apply from the calculated values. Please update the CEMS text and all drawings with the revised limits.

As noted above, CH staff generally do not support the inclusion of structural/hardened slope stabilization measures in the stable slope allowance analysis. The long-term stable top of slope for Cross-sections B-B and C-C is therefore the calculated location (i.e. points S2a and S3a).

Similarly, the Region of Halton provided several comments pertaining to the proposed slope stabilization:

Section 3.3 describes the slope stabilization approach in the area of the decommissioned storm water outfall. The extent of proposed rip rap required to stabilize the slope is described as having an average width of 8 m over at approximately 200 m2 area (as referenced in section 3.5.1.1 in the paragraph describing impacts to the Significant Woodland). While slope stabilization is important, it should not be achieved with the purpose to maximize the developable area at the expense of appropriately remediating the woodland; this includes the use of rip-rap over the addition of soil to the area and planting trees, shrubs and native herbaceous cover in this area. Please revise the approach to slope stability to provide a natural substrate (i.e., soil) to permit restoration and revegetation with native plants.

Section 3.5, Impact Assessment and Mitigation, states "There are no alternatives available for addressing the contaminants and slope failure". Based on the analysis undertaken in the Slope Stability Assessment prepared by DS Consultants Ltd (17 January 2023), there are two options: do not stabilize the slope, and stabilize the slope. Alternative options that do not require rip-rap or the use of engineered stabilization techniques should be explored. Please provide an assessment of stabilization options that would allow for the use of soil to permit complete planting along the slope.

If the issue of slope erosion was a result of the discharge from the storm sewer, which has since been decommissioned, will the slope erosion continue?

Based on the photos provided in the Slope Assessment Report (DS Consultants, 2023), namely Photo 6, can soil be used to fill the gulley to match the grade of the surrounding stable slopes to permit restoration with native plants?

Section 3.5.1.1 makes reference to "rehabilitation of affected areas by replanting of trees". It is recommended in Section 3.3 to "plant native vines in native soil at the edge of the rip-rap, and direct vines to grown over the rip-rap". This solution will not ensure revegetation of the area with native plants that will support the woodland function. Please consider an alternative approach to slope stabilization that will permit the use of soil as the substrate and planting the entire area with native plants, including trees, shrubs and herbaceous plants.

Section 4.1.1 suggests that the slope stabilization works will "serve to enhance a natural corridor along a hydrologic linkage". Please refer to the comments above regarding concerns with the type of slope stabilization proposed, which is not natural and would not be considered a measure that would "enhance a natural corridor".

While the Study Team appreciates the desire by the agencies to utilize a softer approach to slope stabilization, we respectfully submit that the use of soil to stabilize the slope will have a greater impact on the valley than if rip-rap were to be used in this localized area. As it relates to the appropriateness of utilizing rip-rap for the proposed slope stabilization, please refer to the CEMS as well as additional information provided in the DS Consultants letter dated June 6, 2023. The Study Team continues to recommend that rip-rap is the most appropriate and least intrusive approach to stabilizing the area of localized erosion. As it relates to alternative slope retention systems, Sierra Slope was considered, as described in the CEMS, and it was determined to be unsuitable for a treed slope. These slope retention systems use similar principles (e.g., gabion) and utilize wire and/or plastic grids to hold substrate together and can achieve a slope of 1:1 or steeper. Examples of these systems are shown with grasses, herbaceous plants, or small shrubs. As the grids are designed to be held in high tension, we anticipate that the spread and expansion of roots from the existing mature trees will compromise the integrity of the slope retention system.

In addition to rip-rap and a structural solution such as Sierra Slope, CH and the Region have requested that an option to stabilize the area with soil be explored. This option was considered by the Study Team prior to the submission of the CEMS; however, such an approach will result in a significantly larger disturbance footprint to the RNHS than rip-rap and, as such, was not advanced in the CEMS based on the general understanding that CH and the Region tend to request proponents to select the least impactful approach. Consideration of developable area was not a factor in our assessment, as suggested in the Region's comment. The difference between the existing stable top of bank and the proposed stable top of bank (using rip-rap) is only a couple of metres and would have no material effect on the eventual development limits.

This memorandum ("memo") has been prepared to provide a supplementary evaluation of a slope stabilization design with topsoil ("Option 2"), as requested by CH and the Region. This memo evaluates the impact on the natural heritage features and provides a comparison to Option 1 (i.e., rip-rap). Supporting information to this memo is provided in the geotechnical letter by DS Consultants Ltd., dated June 6, 2023.

DS Consultants Ltd. have advised that Option 2 will require a 2.5:1 slope gradient. To achieve the required compaction for Option 2 to be stable in the long-term, large construction equipment, including bull dozers, excavator and vibratory compactors, will be required to enter the valley. The compacted subsoil can be covered with 200–300 mm of topsoil and bioengineered with trees, shrubs, and groundcovers. In contrast, the Option 1 approach will not require equipment access within the valley and can be completed with a large excavator situated at the top of slope.

Since there is no existing access into the valley, Option 2 would require the construction of a new access road into the valley slope, which would require tree removal. A staging area would need to be created near the bottom of slope for machinery access and storage of materials. The location and width of the access road, staging area and associated extent of impact within the Key Features is shown on **Drawing TP-1**.

An inventory and assessment of trees greater than 10 centimeters in diameter at breast height ("DBH") was undertaken by an ISA Certified Arborist within the anticipated extent of impact. Based on this assessment, 14 live trees would require removal and 3 additional trees would be injured in Option 2. A full list of the impacted trees can be found in **Attachment 1**. These trees have been identified in the CEMS as part of Habitat of Endangered Species, Significant Woodland and Significant Valleyland. In Option 1, two trees (Trees 850 and 851) *may* require removal — as there is some potential that these trees could potentially be retained through field fitting and/or on-site tree protection measures — and one additional tree would be injured.

Tree removal in this area for Option 2 would also include the removal of 6 snag trees, which are a key component of endangered bat species habitat and may be subject to permitting or approval under the *Endangered Species Act*. Under Option 1, one snag may require removal, dependent on the success of tree protection measures, as it is located at the edge of the anticipated area of stabilization.

The staging area at the toe of slope will result in the temporary disturbance to 13 m^2 of the Significant Wetland feature, based on the CH staked limit. The disturbed area of wetland will need to be restored with topsoil and native plantings upon completion of the work. In contrast, Option 1 will not require encroachment into the wetland.

Overall, Option 2 will affect an area of approximately 545 m^2 within the Key Features and will require reinstatement and re-vegetation once the works within the valley are complete. Based on recent review by DS Consultants Ltd., the rip-rap approach is anticipated to affect approximately 124 m^2 of area (17 m in length and 7.3 m in width) within the Key Features, as shown in **Drawing TP-1**. Anticipated impacts to natural heritage features of both options are compared in **Table 1** below.

Table 1. Summary Comparison of Slope Remediation Approaches

Criterion	Option 1 (Rip-Rap)	Option 2 (Soil)
Construction Equipment Location	Tablelands outside stable top of slope with excavator arm extending down into valley	Within valley and woodland; along slope and at toe of slope within wetland
Access Road within Valley	None required	Access road would require cutting into the existing valley slope
Tree Removal	2 max.; may be avoided with use of on-site tree protection and mitigation	14 live trees, averaging 26 cm DBH
Snag Removal (Endangered Bat Habitat)	Potentially 1 live snag	6 live or recently dead snags
Temporary Wetland Disturbance	None	13 m^2 of the staked wetland feature in the valley (Significant Wetland)
Disturbed Area of RNHS Key Features	125 m^2	545 m^2
Duration of Gap in Vegetation	Brief — Existing tree canopy will be retained as feasible and ground layer will be vegetated with native vines	Prolonged — Slope remediation area an adjacent access road cut will be cleared of mature trees and plantings will take time to grow into a mature canopy

Based on the impacts associated with Option 2, the Study Team does not recommend using soil to stabilize the slope and recommend that such an option will result in greater impacts to the Key Features of the RNHS than using rip-rap to stabilize this localized area of erosion.

We trust that this supplemental evaluation, along with the DS Consultants June 6, 2023, letter, will assist you in understanding the nature and scope of the proposed works and their impacts on the RNHS and the Study Team's rationale for selecting Option 1.

LONG TERM STABLE TOP OF BANK IF NO SLOPE STABILIZATION IS UNDERTAKEN (DS CONSULTANTS MARCH 2023)

TOP OF BANK as staked by Conservation Halton on July 16, 2021

ESTIMATED LIMIT OF DISTURBANCE FOR OPTION 2 (URBANTECH)

APPROXIMATE LIMIT OF DISTURBANCE FOR OPTION 1

LIMIT OF WOODLAND as staked by the Region of Halton on November 22, 2021

APPROXIMATE ERODED AREA TO BE RESTORED

TEMP. 4m WIDE CONSTRUCTION ACCESS @ 4:1 MAX SLOPE

WORKING AREA

1:1 SLOPE

10.0m

WETLAND LIMIT AS STAKED BY CONSERVATION HALTON

850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869

206.00 206.00 206.50 207.00 206.80 206.30 205.88 201.93 204.33 206.90 204.03 206.01 206.50 199.00



LEGEND

- Tree Protection Fencing
- 1678 Tree Tag
- Tree Crown
- Minimum Tree Protection Zone
- Tree Location
- Tree to be Preserved with Injury
- Tree to be Removed
- Dead Tree (Snag)

Notes: Scale shown is for an 36" x 24" page.
For illustrative purposes. Do not scale

Nº	REVISIONS	DATE:	BY:
6			
5			
4			
3			
2			
1	SUBMISSION TO CH AND REGION	2023-06-28	JS

SCALE 1:100 (0 1 2 5m)

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NEATT COMMUNITIES

PROJECT
150 STEELES AVENUE, MILTON

SHEET TITLE
TREE IMPACT ASSESSMENT OPTION 2

DESIGN BY: --	PROJECT Nº: 221265
DRAWN BY: JA	FIGURE Nº: TP-1
CHECKED BY: JS	
DATE: 28 June 2023	

N:\Projects\2021\221265 150 Steeles Ave Milton ON\Drawings\Work_221265_DRAFT.dwg(TP-1 Architecture) 28 Jun 2023

Attachment A

Attachment 1

Slope Remediation Area — Tree Inventory Table

Tag Number	Species (Scientific Name	Species (Common Name)	DBH (cm)	Crown Radius, Approximate (m)	Condition	Comment(s)	Option 1 Management	Option 2 Management
850	*Acer saccharum*	Sugar Maple	55 @ 0.5 m	4	Poor-Fair	At top of gully bank; base undercut; root mass on north side only; low fork; vigourous crown; no cavities or lean clusters	Remove or Preserve with Injury	Remove
851	*Acer negundo*	Manitoba Maple	33	6 southwards	Poor	Strong lean; base 50% hollow with rot; knothole cavities throughout with lowest at 3 m; no leaf clusters	Remove or Preserve with Injury	Remove
852	*Juglans nigra*	Black Walnut	22	2	Good	Good form and vigour	Preserve	Remove
853	*Acer negundo*	Manitoba Maple	30	3	Fair-Good	Fork with fair structure; 15% dieback in lower crown; otherwise good	Preserve	Preserve with Injury
854	*Acer negundo*	Manitoba Maple	16	3	Poor-Fair	Covered in grapevine; moderate lean	Preserve	Preserve with Injury
855	*Juglans nigra*	Black Walnut	23	4	Good	Good form and vigour	Preserve	Remove
856	*Juglans nigra*	Black Walnut	37	5	Good	Good form and vigour	Preserve	Preserve with Injury
857	*Juglans nigra*	Black Walnut	26	3	Good	Good form and vigour	Preserve	Remove
858	*Acer saccharum*	Sugar Maple	27	3	Good	Good form and vigour;leaf cluster (drey) 16 m up	Preserve	Remove

Tag Number	Species (Scientific Name	Species (Common Name)	DBH (cm)	Crown Radius, Approximate (m)	Condition	Comment(s)	Option 1 Management	Option 2 Management
859	*Acer saccharum*	Sugar Maple	16, 12	2	Fair	Included bark in low fork	Preserve	Remove
860	*Juglans nigra*	Black Walnut	28	3.5	Good	Good form and vigour	Preserve	Remove
861	*Acer saccharum*	Sugar Maple	11	3	Good	Good form and vigour ; no cavities or leaf clusters	Preserve with Injury	Remove
862	*Acer negundo*	Manitoba Maple	15, 12	1	Poor	Almost dead; cavities throughout (lowest is 2 m)	Preserve	Remove
863	*Fraxinus americana*	White Ash	22	n/a	Dead	10-15 m tall snag, 25-50% loose bark with several candidate roost locations, decay class 4, <25% shaded, codominant with tree canopy	Preserve	Remove
864	*Acer negundo*	Manitoba Maple	13	1	Poor	Top dieback	Preserve	Remove
865	*Acer negundo*	Manitoba Maple	27	n/a	Dead	10-15 m tall snag, 50-75% loose bark with few candidate roost locations, decay class 4, 25-50% shaded, just below tree canopy	Preserve	Remove
866	*Juglans nigra*	Black Walnut	31	3	Good	Good form and vigour	Preserve	Remove
867	*Acer negundo*	Manitoba Maple	24	n/a	Dead	5-10 m tall snag, 75-100% loose bark with little potential for roosting, decay class 4, 75-100% shaded, well below tree canopy	Preserve	Remove
868	*Juglans nigra*	Black Walnut	36	7	Fair-Good	Good form and vigour ; 10% crown dieback	Preserve	Remove

Tag Number	Species (Scientific Name	Species (Common Name)	DBH (cm)	Crown Radius, Approximate (m)	Condition	Comment(s)	Option 1 Management	Option 2 Management
869	*Juglans nigra*	Black Walnut	20	3	Good	Good form and vigour	Preserve	Remove

Appendix B

Natural Heritage