Dawn-Parkway System Expansion: Kirkwall-Hamilton Pipeline Section: Scoped Environmental Impact Study for Hamilton Conservation Authority Lands

FINAL REPORT

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Sign-off Sheet

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Abbreviations

ANSI	Area of Natural and Scientific Interest
CA	Conservation Authority
CC	Coefficient of conservatism value
CH	Conservation Halton
COSSARO	Committee on the Status of Species at Risk in Ontario
DFO	Fisheries and Oceans Canada
EIS	Environmental Impact Study
ELC	Ecological Land Classification
Enbridge Gas	Enbridge Gas Inc.
ER	Environmental Report
ESA	*Endangered Species Act*
GA	*Greenbelt Act*
GRCA	Grand River Conservation Authority
ha	hectare
HCA	Hamilton Conservation Authority
IO	Infrastructure Ontario
LIO	Land Information Ontario
km	kilometer
m	metre
MBCA	*Migratory Birds Convention Act*
MECP	Ministry of the Environment, Conservation and Parks
MNR	Ministry of Natural Resources
MNRF	Ministry of Natural Resources and Forestry

MVPZ	Minimum VegetationFigure Protection Zone
NHIC	Natural Heritage Information Centre
OBBA	Ontario Breeding Bird Atlas
OEB	Ontario Energy Board
OEBA	*Ontario Energy Board Act*
OP	Official Plan
OPCC	Ontario Pipeline Coordinating Committee
O. Reg.	Ontario Regulation
ORAA	Ontario Reptile and Amphibian Atlas
PPS	Provincial Policy Statement
PSW	Provincially Significant Wetland
RoW	Right-of-way
SAR	Species at Risk
SARA	*Species at Risk Act*
SC	Special Concern
SOCC	Species of Conservation Concern
Stantec	Stantec Consulting Ltd.
SWH	Significant Wildlife Habitat

1.0 INTRODUCTION

As of January 1, 2019, Union Gas and Enbridge Gas Distribution have amalgamated into one utility with the legal name Enbridge Gas Inc. (Enbridge Gas). To increase existing capacity and accommodate additional demand for natural gas along its main natural gas transmission system, the Dawn-Parkway System, Enbridge Gas is proposing to construct a new 48-inch diameter natural gas pipeline located within the City of Hamilton.

The proposed pipeline, and related facilities, for the Dawn-Parkway System Expansion: Kirkwall-Hamilton Pipeline Section (the 'Project') will be constructed between Enbridge Gas' existing Kirkwall valve site, located at the northeast corner of the intersection of Safari Road and Valens Road and Enbridge Gas' existing Hamilton valve site, located east of Highway 6 and north of Carlisle Road. The proposed pipeline will parallel two existing Enbridge Gas pipelines from the Kirkwall valve site for approximately 7 kilometers (km), then parallel three existing Enbridge Gas pipelines for approximately 3 km to the Hamilton valve site. The total length of the proposed pipeline will be approximately 10 km. If approved, construction of the pipeline could begin as early as spring/summer 2021 and be completed by the end of 2021.

Enbridge Gas has retained Stantec Consulting Ltd. (Stantec) to undertake an environmental study of the construction and operation of the Project to fulfill the requirements of the Ontario Energy Board's (OEB) *Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Pipelines and Facilities in Ontario, 7th Edition (2016)* (OEB Environmental Guidelines) (OEB 2016). This included the preparation of an Environmental Report (ER) (Stantec 2019) that outlined various environmental mitigation and protection measures for the construction and operation of the Project, including: the identification of a preferred route that reduces potential environmental impacts; detailed review of environmental features along the preferred route and assess the potential environmental impacts of the Project on these features; establishment of mitigation and protective measures that may be used to reduce or eliminate potential environmental impacts of the Project; development of a consultation program to receive input from interested and potentially affected parties; and identified (where required) supplemental studies, monitoring and contingency plans.

The ER determined that with the implementation of the provided recommendations, ongoing communication and consultation, and adherence to permit, regulatory and legislative requirements, significant potential adverse residual environmental and socio-economic impacts of the Project were not anticipated.

The ER was circulated to the Ontario Pipeline Coordinating Committee (OPCC), in addition to government agencies, Indigenous communities, the City of Hamilton and local Conservation Authorities where the Project footprint overlaps with jurisdictional boundaries, including the Grand River Conservation Authority (GRCA), Conservation Halton (CH), and Hamilton Conservation Authority (HCA) for review and comment. The ER was also made available to the public on the Project website. The application for the Project was filed with the OEB on November 1, 2019.

1.1 HAMILTON CONSERVATION AUTHORITY CORRESPONDENCE

The HCA owns two parcels of land crossed by the Project, as shown on **Figure 1, Appendix A**[1]**.** Enbridge Gas is requesting permanent easement on the south side of their existing easement in two locations on HCA-owned lands**.** The requested easement is 16 m wide with the western area approximately 2.06 hectares (ha) and the eastern area approximately 0.03 ha for a total of 2.09 ha. Enbridge Gas is also requesting temporary land use (including on their existing easement) on the two parcels of HCA-owned lands that are located north and south of their existing easement. The western area is approximately 2.57 ha and the eastern area is approximately 0.02 ha for a total of 2.59 ha. These areas are based on the current pipeline alignment as the time of writing this report. The locations of the requested permanent easement and requested temporary land use on HCA-owned lands are shown on **Figures 1-5, Appendix A**.

In response to the OEB filing, HCA's board of directors filed a motion to the OEB on February 7, 2020 requesting an ecological study be completed for the Project, and that it be subject to a peer review process. To address this request, Enbridge Gas agreed to provide a scoped Environmental Impact Study (EIS) for the HCA-owned lands. This EIS incorporates recommendations made by HCA during their review of the ER in August 2019 and was developed from the field study work plan reviewed and approved by HCA on January 9, 2020. The motion, correspondence, and field study work plan that forms the basis of this EIS can be found in **Appendix B**.

1.2 PURPOSE

The purpose of this EIS is to provide "an objective technical assessment of a development proposal that explains if, and to what extent, the proposed development or site alteration might reasonably be expected to impact the biological and physical characteristics and functions of an area" (City of Hamilton 2015). The EIS will also recommend appropriate measures to avoid and mitigate potential negative effects and enhance the natural features and associated functions where possible.

This EIS was completed by collecting background information from a variety of sources, including applicable policies, official plans, associated reports, atlases, web-based mapping programs and direct communication with regulatory and advisory agencies. Information was requested from agencies, including natural heritage data that aided in developing mitigation measures for potential impacts.

Background information was summarized to determine policy implications to the Project and inform targeted field investigations to confirm or further consider during the background review process.

1.3 STUDY AREA

The Study Area for this EIS includes proposed Project components (e.g., proposed pipeline easement, temporary land uses, storage, and laydown areas during construction, and access roads) plus a 120

[1] Figure references throughout the report can be found in Appendix A.

metre (m) zone of investigation from Project components on HCA-owned lands, as shown on **Figure 1, Appendix A**.

Existing infrastructure in and surrounding the EIS Study Area includes:

- Kirkwall Valve site
- TC Energy Station
- Three (3) Enbridge Gas pipelines and associated easements
- One (1) TC Energy pipeline and associated easement
- One (1) Hydro One Networks Inc. (HONI) easement
- One (1) HONI transmission corridor

Within the EIS Study Area the proposed pipeline originates at the Kirkwall Valve site (immediately west of the EIS Study Area) and parallels two existing Enbridge Gas pipelines through HCA owned lands and crosses an existing HONI easement. The pipeline then crosses an existing HONI transmission corridor. East of the HONI transmission corridor the pipeline again crosses HCA owned lands and continues through agricultural fields up to the eastern boundary of the EIS Study Area. These agricultural fields are bordered by HCA owned lands to the north and agricultural fields to the south.

2.0 NATURAL HERITAGE POLICY AND REGULATORY CONSIDERATIONS

The Project is subject to the regulatory requirements of the *Ontario Energy Board Act*, 1998 (*OEBA*), administered by the OEB. The OEB process is described in detail in **Section 2.1.** This EIS was prepared in addition to and outside of the OEB approval process.

Provincial and municipal policy documents discussed below were used to assess the natural heritage features and functions of the Study Area, scope the EIS study methodologies, and determine natural heritage opportunities and constraints for the Project. While the approach was taken to comprehensively consider provincial and municipal policies in this EIS, not all policies are applicable to the OEB approval.

2.1 ONTARIO ENERGY BOARD

The OEB is "an independent regulatory body that makes decisions and provides advice to the government of Ontario in order to contribute to a sustainable, reliable energy sector and to help consumers get value from their natural gas and electricity services" (OEB, n.d.). The primary objective of the OEB is to ensure that the public interest is served and protected. The regulatory requirements for a new pipeline, such as the proposed Project, are detailed in the following sections, and include the following steps:

- Environmental Study
- Application of 'Leave-to-Construct'
- Public hearing
- OEB Decision

2.1.1 Environmental Study

The first step in the OEB process is to complete an environmental study. The principal objective of the environmental study is to outline various environmental mitigation and protection measures for the construction and operation of the project while meeting the intent of the OEB Environmental Guidelines. To meet this objective, the environmental study for the proposed Project was prepared to:

- Identify a preferred route that reduces potential environmental impacts (Chapter 2 of the OEB Environmental Guidelines)
- Complete a detailed review of environmental features along the preferred route and assess the potential environmental impacts of the Project on these features (Chapter 4 of the OEB Environmental Guidelines)

- Establish mitigation and protective measures that may be used to reduce or eliminate potential environmental impacts of the Project (Chapter 5 of the OEB Environmental Guidelines)
- Develop a consultation program to receive input from interested and potentially affected parties (Chapter 3 of the OEB Environmental Guidelines)
- Identify any necessary supplemental studies, permits, monitoring, and contingency plans (Chapter 6 of the OEB Environmental Guidelines)

The environmental study concludes with the preparation of an ER that summarizes the above information.

2.1.2 Leave to Construct Application

Any company planning to construct hydrocarbon transmission facilities in Ontario must apply to the OEB for authorization, pursuant to section 90(1) of the *OEBA*. Under section 90(1), leave to construct must be obtained if the proposed hydrocarbon pipeline is more than 20 km in length; is projected to cost more than the amount prescribed by the regulations (presently $2 million); and any part of the line (i) uses pipe that has a nominal pipe size of 12 inches or more, and (ii) has an operating pressure of 2,000 kilopascals or more (OEB, 2016).

The completed ER accompanies a 'Leave-to-Construct' application to the OEB. The OEB must be satisfied that the application is in the public interest before it will authorize development of a project. The OEB generally considers numerous factors including the need for the project, its economic feasibility, and the environmental impacts.

2.1.3 Public Hearing

After an application is filed, the OEB will issue a Notice of Application and will direct the applicant on service and publication. The Notice of Application establishes the timeline and explains how to become a registered intervenor or an observer, and how to comment in the OEB's proceeding. The OEB's Rules of Practice and Procedure describes in detail how parties can participate in the proceedings.

Communication about the hearing will include notices in local newspapers and letters to directly affected landowners, both of which will outline how the public and landowners can get involved with the hearing process.

2.1.4 OEB Decision

Following the public hearing, if the OEB finds that the project is in the public interest it will approve construction and operation of the project. The OEB typically attaches conditions to approved projects. Compliance with these conditions are required at all stages of the project, including during construction and site restoration.

2.2 PROVINCIAL POLICY STATEMENT

The Provincial Policy Statement (PPS) was issued under Section 3 of the *Planning Act* and came into effect on May 22, 1996. It was revised in 2005, 2014 and most recently in April 2020. Decisions made by Planning Authorities shall be consistent with the policy statements issued under the *Planning Act*, such as the PPS, which includes policies on development and land use patterns, resources, and public health and safety. Section 2.1 of the PPS deals with Natural Heritage and requires natural heritage systems to be identified in various ecoregions. The Study Area falls within Ecoregion 6E.

According to Section 2.1.4 of the PPS, development and site alteration shall not be permitted in the following features in Ecoregion 6E:

a) significant wetlands

b) significant coastal wetlands

According to Section 2.1.5 of the PPS, development and site alteration shall not be permitted in the following features, unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions:

a) significant woodlands

b) significant valleylands

c) significant wildlife habitat

d) significant areas of natural and scientific interest

e) coastal wetlands that are not significant

Further, Sections 2.1.6 and 2.1.7 of the PPS state that development and site alteration shall not be permitted in the following features, except in accordance with provincial and federal requirements:

a) habitat of endangered or threatened species

b) fish habitat

Under the PPS, oil and gas pipelines and associated facilities are considered as infrastructure, which are exempt from the definition of development. However, Section 1.6.8.6 states that when planning infrastructure facilities, consideration will be given to the significant resources in Section 2, including the natural heritage features identified above.

2.3 GREENBELT PLAN

The *Greenbelt Act*, 2005 (*GA*) authorizes the provincial government to designate and create a Greenbelt Plan (MMAH 2017) to protect environmentally sensitive and agricultural land in the Golden Horseshoe from urban development. The *GA* sets out the main elements and objectives for the Greenbelt and requires planning decisions to conform to the Greenbelt Plan (MMAH 2017). The Greenbelt Plan incorporates and builds on other provincial plans, including the PPS and the Growth Plan for the Greater Golden Horseshoe.

The Study Area occurs within lands designated by the Greenbelt Plan as Protected Countryside (MMAH 2017). The Protected Countryside lands are “intended to enhance the spatial extent of agriculturally and environmentally protected lands” (MMAH 2017).

The Protected Countryside contains a natural heritage system that provides a continuous area of protected natural heritage and hydrologic and/or landform features, which “provide essential ecosystems services, including water storage and filtration, cleaner air, habitat, support for pollinators, carbon storage and resilience to climate change” (MMAH 2017). The natural heritage system includes core areas and linkage areas of the Protected Countryside with the highest concentration of the most sensitive and/or significant natural features and functions.

The *GA* defines key natural heritage features (KNHFs) and key hydrologic features (KHFs) as:

- KNHFs:
  - Habitat of endangered species and threatened species
  - Fish habitat
  - Wetlands
  - Areas of natural and scientific interest
  - Significant valleylands
  - Significant woodlands
  - Significant wildlife habitat (including habitat of special concern species)
  - Sand barrens, savannahs, and tallgrass prairies
  - Alvars
- KHFs:
  - Permanent and intermittent streams
  - Lakes (and their littoral zones)
  - Seepage areas and springs

- Wetlands

Section 4.2.1 states that infrastructure (including oil and gas pipelines and associated facilities) are permitted in Protected Countryside, subject to the following:

a) Planning, design and construction practices shall minimize, wherever possible, the amount of the Greenbelt, and particularly the Natural Heritage System and Water Resource System, traversed and/or occupied by such infrastructure

b) Planning, design and construction practices shall minimize, wherever possible, the negative impacts on and disturbance of the existing landscape, including, but not limited to, impacts caused by light intrusion, noise and road salt

c) Where practicable, existing capacity and co-ordination with different infrastructure services shall be optimized so that the rural and existing character of the Protected Countryside and the overall hierarchy of areas where growth will be accommodated in the Greater Golden Horseshoe established by the Greenbelt Plan and the Growth Plan are supported and reinforced

d) New or expanding infrastructure shall avoid KNHF or KHF unless need has been demonstrated and it has been established that there is no reasonable alternative

e) Where infrastructure does cross the Natural Heritage System or intrude into or result in the loss of a KNHF or KHF, including related landform features, planning, design and construction practices shall minimize negative impacts on and disturbance of the features or their related functions and, where reasonable, maintain or improve connectivity

f) New or expanding infrastructure shall avoid specialty crop areas and other prime agricultural areas in that order of priority, unless need has been demonstrated and it has been established that there is no reasonable alternative

g) Where infrastructure crosses prime agricultural areas, including specialty crop areas, an agricultural impact assessment or equivalent analysis as part of an environmental assessment shall be undertaken

h) New waste disposal sites and facilities, and organic soil conditioning sites are prohibited in KNHF, KHF and their associated vegetation protection zones.

2.4 CITY OF HAMILTON RURAL OFFICIAL PLAN

The Study Area falls within the rural Hamilton planning area, regulated under the City of Hamilton's Official Plan (OP) that came into effect on March 7, 2012 (City of Hamilton 2012).

Section C.3.1 of the OP states that natural gas pipeline lines approved under the *Environmental Assessment Act* and other relevant statutes are permitted in any land use designation located in Rural

Hamilton provided they meet the condition of the OP. Further under the OP's Energy and Environmental Design, Increased Energy Supply Section 3.7.3 states "the City shall promote increasing the supply of energy and in particular, the supply of sustainable energy by: […] a) permitting energy generation facilities to meet existing and planned needs […] These facilities shall be permitted in all land use designations […] b) protecting existing and future utility corridors." (City of Hamilton, 2012).

2.4.1 Designated Features

Schedule B of the OP depicts the Natural Heritage System for the rural Hamilton area, which includes Core Areas and Linkages, defined as:

- Core Areas (Section C.2.3,): the most important components in terms of biodiversity, productivity, and ecological and hydrological functions… and (Section C.2.3.2) include key natural heritage features, key hydrologic features, including any associated vegetation protection zones, and provincially significant and local natural areas…

- Linkages (Section C.2.7.1): connections between natural areas that provide opportunities for plant and animal movement, hydrological and nutrient cycling, and maintain ecological health and integrity of the overall Natural Heritage System.

Schedule B shows areas subject to the Greenbelt Plan, with the applicability of certain policies of the OP dependent upon whether the area is within these special planning areas. The Project falls within the Greenbelt Plan area, as discussed above in **Section 2.4.2**.

In Chapter G of the OP, Significant Woodland designations are based on size, presence of interior forest, proximity to water or other significant natural areas, age and the presence of rare species including Species at Risk (SAR). Significant woodlands are delineated on Schedule B-2 of the OP.

The proposed pipeline includes Natural Heritage System – Core Areas. According to Section 2.3 Natural Heritage System – Core Areas are important components in terms of biodiversity, productivity, ecological and hydrological functions. These areas are identified under the Greenbelt Plan's protected countryside. The protected countryside is a continuous agricultural system maintaining the agriculture-food network (Government of Ontario, 2017). According to Section 3.3.3.4 of the Greenbelt Plan, preserving the continuous integrity of utility corridors should be considered by the municipalities for all lands within the Protected Countryside.

2.4.2 Natural Heritage Features

Section C.2.3.4 of the OP identifies natural heritage features including, provincially significant wetlands (PSWs), significant coastal wetlands, or significant habitat of threatened or endangered species, fish habitat, significant woodlands, significant wildlife habitat, significant valleylands, and significant ANSIs.

For lands located within the Natural Heritage System, Section C.2.4.2 of the OP recognizes KNHF and KHF, as defined above in Section 2.3 under the Greenbelt Plan.

2.5 WOODLAND CONSERVATION BY-LAW FOR THE REGIONAL MUNICIPALITY OF HAMILTON-WENTWORTH

The Regional Municipality of Hamilton-Wentworth Woodland Conservation By-law (No. R00-054) is administered and enforced by the City of Hamilton. Dated July 4, 2000, this by-law restricts and regulates the removal and/or destruction of trees in rural areas on private property. While a permit is not sought for infrastructure, a notification of tree removal and/or destruction of trees within woodlands is required, where woodland is defined as an area comprised of the following:

i. 1000 trees per hectare (405 trees per acre) of any size

ii. 750 trees per hectare (303 trees per acre), measuring over 5 centimetres (cm; 2 inches) in diameter

iii. 500 trees per hectare (202 trees per acre), measuring over 12 cm (5 inches) in diameter

iv. 250 trees per hectare (101 trees per acre), measuring over 20 cm (8 inches) in diameter.

2.6 HAMILTON CONSERVATION AUTHORITY POLICY

Pursuant to Ontario Regulation (O. Reg.) 161/06 (Development, Interference with Wetlands and Alterations to Shorelines and Watercourses, May 2006), prior permission is required from the HCA for development within a floodplain, valleyland, wetland, or other hazardous land. Permission is also required from the HCA for alteration to a river, creek, stream or watercourse or any interference with the hydrological function of a wetland. Generally, development, interference or other alteration that may negatively impact the control of flooding, erosion, dynamic beaches, pollution, or the conservation of land are not permitted. The decision-making policies for such Permits are contained within the *Planning and Regulation Policies and Guidelines* (HCA 2011).

Alteration to a watercourse, development within flooding or erosion hazards and within hazardous lands, within the jurisdiction of the HCA, must be in accordance with Sections 2.1.1, 2.1.2, 2.1.3 and 2.3 of the HCA Planning and Regulation Policies and Guidelines and must be completed to the satisfaction of the HCA.

Development and/or site alteration within the jurisdiction of the HCA and in, on or adjacent to natural heritage features must be in accordance with Section 3.1 of the HCA Planning and Regulation Policies and Guidelines and must be to the satisfaction of the HCA.

2.7 ENDANGERED SPECIES ACT

The *Endangered Species Act, 2007* (*ESA*) protects species listed by the Committee on the Status of Species at Risk in Ontario (COSSARO) as threatened, endangered, or extirpated in Ontario and their habitats by prohibiting anyone from killing, harming, harassing or possessing protected species, as well

as prohibiting any damage or destruction to the habitat of the listed species. All listed species are provided with general habitat protection under the *ESA* aimed at protecting areas that species depend on to carry out their life processes, such as reproduction, rearing, hibernation, migration or feeding. For some species there are detailed habitat regulations that go beyond the general habitat protection to define specifically the extent and character of protected habitats.

Activities that may impact a protected species or its habitat require the prior issuance of a permit from the Ministry of the Environment, Conservation and Parks (MECP), unless the activities are exempted under O. Reg. 242/08. O. Reg. 242/08 identifies activities which are exempt from the permitting requirements of the *ESA* and is subject to rigorous controls outside the permit process, including registration of the activity and preparation of a mitigation plan. Activities not exempt under O. Reg. 242.08 require a complete permit application process.

3.0 METHODOLOGY FOR DATA COLLECTION

3.1 BACKGROUND DATA COLLECTION

A variety of background resources were consulted during the preparation of this EIS, including the following information sources:

- Rural Hamilton OP (City of Hamilton 2012)
- Land Information Ontario (LIO) Mapping (MNRF, 2020a)
- Natural Heritage Information Centre (NHIC) online database (MNRF 2020b)
- Fisheries and Oceans Aquatic Species at Risk Mapping tool (DFO 2019)
- Atlas of the Breeding Birds of Ontario (Cadman *et al.* 2007)
- Atlas of the Mammals of Ontario (Dobbyn 1994)
- Ontario Herpetofaunal Atlas (Ontario Nature 2020).

3.2 FIELD INVESTIGATIONS

Field investigations were designed to confirm and refine the boundaries, characteristics and significance of the natural features that may be affected by the pipeline expansion. A summary of field investigations undertaken for the Project is provided in **Table 3.1**.

Table 3.1: Ecological Field Surveys

Field Survey	Date(s) of Field Work	Personnel
Aquatic Habitat Assessment	October 10, 2019 August 28, 2020	M. Straus, S. Stuart J. Brooks
Ecological Land Classification, Botanical Inventories and Wildlife Habitat Assessment	October 10, 11, and 21, 2019 May 26-27, 2020 June 9, 11, and 19, 2020 July 30, 31, 2020 August 5, 2020 August 19-20, 2020	M. Straus, J. Ball, B. Miller
Amphibian Call Count Surveys	April 25, 2020 May 27, 2020 June 25, 2020	M. Ellah, J. Ball. J. Brooks
Breeding Bird and Grassland Breeding Bird Surveys	June 2, 18, and 30, 2020	J. Ball

Table 3.1: Ecological Field Surveys

Field Survey	Date(s) of Field Work	Personnel
Crepuscular Bird Surveys	June 4, 2020 July 8, 2020	J. Ball, M. Straus and R. Wood
Terrestrial Insect Surveys	June 9, 2020 July 15, 2020	J. Brooks, A. Taylor
Bat Maternity Tree Assessment	November 29, 2019	K. Zupfer, J, Brooks, M. Straus
Raptor Stick Nest Search	November 29, 2019	K. Zupfer, J. Brooks, M. Straus
Incidental Wildlife Observations	Completed During All Surveys	All Surveyors

3.2.1 Ecological Land Classification and Botanical Inventories

Vegetation community assessments were conducted using protocols outlined in the Ecological Land Classification (ELC) System for Southern Ontario (Lee et al. 1998). The updated 2008 ELC code were used to classify vegetation communities within the Study Area. Vegetation assessments included a general description of the community, lists of the dominant species in the canopy, sub-canopy, shrub and ground layers, soil type, and a plant species list.

Flora nomenclature and provincial statuses of plant species are based on lists provided by the Ontario NHIC.

Identification of potentially sensitive native plant species was based on their assigned coefficient of conservatism (CC) value, as determined by Oldham et al. (1995). This CC value, ranging from 0 (low) to 10 (high), is based on a species' tolerance of disturbance and fidelity to a specific natural habitat. Species with a CC value of 8, 9 or 10 generally exhibit a high degree of fidelity to a narrow range of habitat parameters and are usually typical of high-quality plant communities.

Three-season botanical inventories were conducted within the Study Area in 2019 and 2020. A summary of vegetation survey dates, times and weather is provided in **Table 3.2**.

Table 3.2: Vegetation Survey Dates, Times, and Weather Conditions

Date	Time	Temp. (°C)	Wind (Beaufort Scale)	Cloud (%)	Precipitation
October 10, 2019	09:00-17:00	10	1	5	None
October 21, 2019	09:00-17:00	14	3	50	None
May 26, 2020	08:30-16:15	29	2	50	None
May 27, 2020	08:30-16:15	27	2	80	None

Table 3.2: Vegetation Survey Dates, Times, and Weather Conditions

Date	Time	Temp. (°C)	Wind (Beaufort Scale)	Cloud (%)	Precipitation
June 9, 2020	08:30-16:15	21	1	0	None
June 11, 2020	08:30-16:15	22	4	80	None
June 19, 2020	08:30-16:15	29	2	70	None
July 30, 2020	08:30-16:15	27	1	50	None
August 5, 2020	08:30-16:15	20	3	60	None
August 19, 2020	08:30-16:15	20	1	20	None
August 20, 2020	08:30-16:15	24	3	40	None

3.2.2 Wildlife and Wildlife Habitat

3.2.2.1 Amphibian Call Count Surveys

Amphibian call count surveys followed the protocols identified in the Marsh Monitoring Program Manual (Bird Studies Canada 2009). Surveys were conducted by Stantec in 2020 between one-half hour after sunset and midnight, once in each of April, May, and June at nine stations within the Study Area (**Figure 3**). Survey stations targeted ponds, vernal pools, wet areas, and wetlands.

Amphibian survey protocol involved the surveyor standing at each selected station and listening for three minutes. Amphibians were recorded to be within each surveyed station if they are within 100 m of the surveyor in the targeted station's habitat. Consistent with the Marsh Monitoring Program protocol, calling activity was ranked using one of the following three abundance code categories: (1) calls not simultaneous – number of individuals can be accurately counted; (2) some calls simultaneous – number of individuals can be reliably estimated; and (3) full chorus – calls continuous and overlapping, so number of individuals cannot be reliably estimated. The following information was recorded: date, names of observers, time, weather conditions (temperature, % cloud cover, Beaufort wind scale, and precipitation), location of each survey, species observed, total number of individuals of each species, and direction. A summary of amphibian call count survey dates, times and weather is provided in **Table 3.3**.

Table 3.3: Amphibian Call Count Survey Dates, Times, and Weather Conditions

Date	Time	Temp. (°C)	Wind (Beaufort Scale)	Cloud (%)	Precipitation
April 25, 2020	20:00-23:34	10 – 6	2	100	None
May 27, 2020	21:00-23:59	26 – 18	3	20	None
June 25, 2020	21:30-23:59	20 – 17	2	15	None

3.2.2.2 Breeding Bird Surveys

Breeding bird surveys were conducted within the Study Area in 2020. Ten (10) stations were established and are shown on **Figure 3**. Station locations were chosen relative to the proposed work area and spaced approximately 250 m apart in forested habitat and 500 m in grassland habitat.

Two (2) rounds of surveys for breeding birds were conducted in early-mid June, with a third round focusing on grassland breeding birds conducted in late June. Surveys were comprised of 10-minute point counts accompanied by an area search. The highest level of breeding evidence was recorded for each species encountered using the codes in the Ontario Breeding Bird Atlas (Cadman et al. 2007). Although these surveys targeted breeding birds, non-breeding bird observations were also recorded. Birds documented as flyovers or otherwise not using the Study Area as nesting habitat were documented at the time of observation.

Surveys began at, or within, half an hour of sunrise and were completed by 9 a.m. (grassland habitats) or 10:00 a.m. (forest, wetland, open habitats).

For bird surveys, observers recorded the following information: date, names of observers, time, weather conditions (temperature, % cloud cover, Beaufort wind scale, visibility, and precipitation), location, species observed and number of individuals of significant species.

A summary of breeding bird survey dates, times and weather is provided in **Table 3.4.**

Table 3.4: Breeding Bird Survey Dates, Times, and Weather Conditions

Date	Time	Temp. (°C)	Wind (Beaufort Scale)	Cloud (%)	Precipitation
June 2, 2020	05:45-09:50	14 – 20	2 – 3	100	None
June 18, 2020	05:30-10:00	14 – 23	0	30	None
June 30, 2020	05:36-09:30	16 – 23	1	10	None

3.2.2.3 Crepuscular Bird Surveys

Bird surveys to target crepuscular species (i.e., those active at twilight and/or nocturnal) were conducted within the Study Area in 2020. Four (4) stations were established in the Study Area and are shown on **Figure 3**. Station locations were chosen based on habitat suitability and spaced approximately 500 m apart.

The surveys were conducted in accordance with the MNR Guelph District Eastern Whip-poor-will (*Caprimulgus vociferous*) and Common Nighthawk (*Chordeiles minor*) Survey Protocol (MNR 2013). Surveys were conducted under suitable weather conditions, time of year and time of night (i.e., low winds, no precipitation, during the week of a full moon, and starting 30 minutes after sunset).

The surveyor stood at the center of the station and listened for a three-minute period. At each station, crepuscular birds (e.g., Eastern Whip-poor-wills, Common Nighthawks, and American Woodcocks) observed or heard calling over the three-minute time period were recorded. A summary of crepuscular survey dates, times and weather is provided in **Table 3.5**.

Table 3.5: Crepuscular Bird Survey Dates, Times, and Weather Conditions

Date	Time	Temp. (°C)	Wind (Beaufort Scale)	Cloud (%)	Precipitation
June 4, 2020	21:30-23:40	22	1	0	None
July 8, 2020	22:00-00:30	21	0	0	None

3.2.2.4 Terrestrial Insect Surveys

Terrestrial insect surveys were conducted within the Study Area in 2020. Two (2) rounds of surveys were conducted, one (1) in June and one (1) in July for damselflies, dragonflies and butterflies. Surveys were conducted under low wind conditions (0-2 on the Beaufort scale), on warm days (>15°C), and when the sun is overhead (approximately 10:00 am to 4:00 pm). Species were identified at a distance using binoculars where possible, or in the hand where required, captured using an aerial net.

Surveys were conducted by walking through major habitats within the Study Area and recording species encountered. Emphasis was placed on areas where these insects are likely to concentrate such as woodland edges, meadows, concentrations of nectar plants, wetland or open water, or habitat containing butterfly larval host plants. A summary of terrestrial insect survey dates, times and weather is provided in **Table 3.6**.

Table 3.6: Terrestrial Insect Survey Dates, Times, and Weather Conditions

Date		Time	Temp. (°C)	Wind (Beaufort Scale)	Cloud (%)	Precipitation
June 9, 2020		08:00-11:15	18 – 21	1	0	None
July 15, 2020		09:00-14:45	28	2	20	None

3.2.2.5 Bat Tree Habitat Assessment

Bat tree habitat assessments were conducted within the Study Area in 2019. The assessment followed *Survey Protocol for Species at Risk within Treed Habitats; Little Brown Myotis, Northern Myotis & Tri-colored* Bat (MNRF 2017). This protocol involves identifying candidate bat maternity roost trees based on the following characteristics:

- Species
- Diameter at breast height (DBH)
- Height
- Presence of loose/peeling bark
- Cavity height (if present)
- Decay class
- Presence of other snags in proximity
- Open canopy

A summary of bat tree habitat assessment dates, times and weather is provided in **Table 3.7**.

Table 3.7: Bat Tree Habitat Assessment Dates, Times, and Weather Conditions

Date	Time	Temp. (°C)	Wind	Cloud (%)	Precipitation
November 29, 2019	08:00-17:00	-1	1	80	None

3.2.2.6 Raptor Stick Nest Search

An area search for stick nests (i.e., nests of raptors, heronries) was conducted during leaf off concurrently with the bat maternity roost habitat assessment on November 29, 2019.

3.2.2.7 Incidental Wildlife

Wildlife and signs of wildlife were recorded during all field investigations, including species that were detected by sight and sound and well as evidence of use including dens, burrows, nests, browse, tracks, and scat.

3.2.2.8 Significant Wildlife Habitat

The Study Area was assessed for potential SWH described by the *Significant Wildlife Habitat Criteria Schedule for Ecoregion 6E* (MNRF 2015). Potential features were recorded when identified during surveys.

3.2.3 Aquatic Resources

The Study Area was assessed for presence of surface water features and their potential to support fish and fish habitat. Data collected included a description of watercourse dimensions, general characteristics such as channel definition, substrate, aquatic vegetation, riparian vegetation and the presence/absence of flowing water.

3.2.4 Habitat for Threatened or Endangered Species

Wildlife habitat suitability assessments were conducted for *ESA* protected species that may occur in the area, including species identified in the NHIC database and other planning reports.

3.3 ANALYSIS OF SIGNIFICANCE AND SENSITIVITY

Biological field data were evaluated to determine the significance of natural heritage features. Status rankings for plants, vegetation communities and wildlife are based on the number of occurrences in Ontario and have the following meanings:

S1: critically imperiled; often fewer than 5 occurrences
S2: imperiled; often fewer than 20 occurrences
S3: vulnerable; often fewer than 80 occurrences
S4: apparently secure
S5: secure
S?: unranked, or, if following a ranking, rank uncertain (e.g. S3?).

Provincial significance of vegetation communities is based on the rankings assigned by the NHIC (MNRF 2020b). The provincial status of all plant species is based on Newmaster *et al.* (1998), with updates from the database of the NHIC (MNRF 2020b). SAR protected under the *ESA* include those listed on the current Species at Risk in Ontario List. Identification of potentially sensitive plant species was based on the coefficient of conservatism value (CC) assigned to each native species in southern Ontario (Oldham *et al.* 1995). The value of CC, ranging from 0 (low) to 10 (high), is based on a species' tolerance of disturbance and fidelity to natural habitats. Species with a CC value of 9 or 10 generally exhibit a high degree of fidelity to a narrow range of habitat parameters and undisturbed environments.

Locally rare and uncommon flora and fauna species were identified using the Hamilton Natural Areas Inventory 3rd Edition Species Checklist Document (Schwetz 2014).

The potential significance of the natural heritage features and associated ecological functions was evaluated in accordance with the following provincial and municipal guideline documents:

- *Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement* (MNR 2010) to determine Provincially Significant natural heritage features and associated ecological functions

- *SWH Criteria Schedules for Ecoregion 6E* (MNRF 2015) to determine the significance of identified wildlife habitat features and functions

The potential sensitivity of natural heritage features and functions, such as existing wetlands and watercourse functions, was also determined through an assessment of:

- surface water patterns
- vegetation communities (habitat quality, floral quality index, degree of disturbance)
- sensitive species (plants with a high coefficient of conservatism value)
- potential linkage and corridor functions

4.0 SITE DESCRIPTION AND NATURAL FEATURES

4.1 DESIGNATED NATURAL FEATURES

Two (2) PSW's occur in the Study Area, as shown in **Figure 2**. The Beverly Swamp Complex occurs along the northern boundary of the Study Area, associated with the woodland swamp. Portions of the Sheffield Rockton Wetland Complex occur along the southern boundary of the Study Area, associated with the tributary to Spencer Creek.

The Beverly Swamp Life Science ANSI occurs at the northern boundary of the Study Area, largely overlapping the Beverly Swamp Complex PSW (**Figure 2**).

According to Schedule B of the Rural Hamilton OP (City of Hamilton 2012), the majority of the Study Area is designated a Core Area. Within the Adjacent Lands, a small area is designated as a Linkage, while a tributary to Spencer Creek is designated as a Key Natural Heritage and Key Hydrological Feature on Schedule B-4 and a Key Hydrological Feature (streams) on Schedule B-8. The Rural Hamilton OP also identifies an Environmentally Sensitive Area, which largely overlaps other designated natural heritage features above.

In addition to the City's OP designations, the Study Area is located within HCA regulated areas (**Figure 2**).

4.2 PHYSIOGRAPHY AND TOPOGRAPHY

The Study Area is located within the Flamborough Plain physiographic region of southern Ontario which consists of shallow overburden on a limestone plain containing drumlin features and organic deposits near mapped surface water features. In places within the Flamborough Plain, the limestone plain is exposed at surface. The shallow overburden overlying bedrock ranges in composition from glacial till to sand and gravel deposits (Chapman and Putnam 1984). (Chapman and Putnam 1984). The topography along the proposed pipeline route is varied, with the majority of the area having slopes 0-5%, and some smaller areas with slopes 6-10% and greater than 10%. Surficial geology mapping indicates that the pipeline within the Study Area crosses Paleozoic bedrock.

4.3 GEOLOGY AND HYDROGEOLOGY

The geology and hydrogeology within the Study Area were interpreted based on regional mapping and reporting, surficial geology mapping (OGS, 2010), a review of MECP water well records (WWR), Ontario geotechnical boreholes (OGS, 2012), and results of geotechnical studies completed in the area.

The surficial geology mapping is consistent with physiographic regions and indicates: shallow Paleozoic bedrock at the western extent of the Study Area and stone-poor, sandy, silt to silty sand-textured along the proposed pipeline within the rest of the Study Area OGS 2010). Organic material is mapped near the western extent of the proposed route, north of the proposed pipeline. This material is associated with the Beverly Swamp PSW Complex. Although not mapped, modern alluvial deposits may exist along associated surface water features and tributaries.

The bedrock is mapped as the Guelph Formation. This unit is composed of dolostone and can be a good quality bedrock aquifer in the area. The Guelph Formation outcrops at ground surface in select areas along the western portion of the proposed route.

4.4 TERRESTRIAL RESULTS

4.4.1 Ecological Land Classification and Botanical Inventories

The Study Area is in the Niagara section of the Deciduous Forest Region (Rowe 1972), also known as Carolinian Forest. Vegetation cover within the Study Area was predominantly forest and swamp with a cultural meadow along the pipeline RoW. Pockets of woodland and thicket were documented along the western portion of the Study Area and agricultural fields noted on adjacent lands in the eastern portion of the Study Area.

Vegetation communities that were documented during field investigations are shown in **Figure 4** and are described in **Table 4.1**.

Table 4.1: Ecological Land Classification Vegetation Types

ELC TYPE	Community Description
Forest	
FODM5 / FOMM2-2 Dry – Fresh Sugar Maple Deciduous Forest / Dry – Fresh White Pine – Sugar Maple Mixed Forest	This small forest community is dominated by sugar maple, white pine and basswood in the canopy. Other canopy associates include American beech, bitternut hickory and bur oak. The understorey is dominated by hop-hornbeam, white ash and alternate-leaved dogwood. The ground layer is dominated by blue-stemmed goldenrod, early meadow-rue, large false Solomon's seal, purple false medic, wild ginger, woodland (Carex) sedges and large-leaved aster. The provincially rare eastern green violet is located in this community but was observed immediately outside of HCA lands on the Hydro One Networks Inc. property. It is possible this species occurs elsewhere on HCA lands in the area.
FODM5-4 Dry – Fresh Sugar Maple – Ironwood Deciduous Forest	This small forest community is dominated by sugar maple in the canopy. White pine occurs occasionally in the canopy. The sub-canopy is dominated by sugar maple and hop-hornbeam. The understorey is dominated by white ash saplings, blue-beech and alternate-leaved dogwood.

Table 4.1: Ecological Land Classification Vegetation Types

ELC TYPE	Community Description
	The ground layer is dominated by zig zag goldenrod, purple false medic, large false Solomon's seal, wild ginger, poke milkweed and woodland (Carex) sedges such as Carex woodii.
FOCM1 Dry – Fresh Pine Coniferous Forest	This patch of coniferous forest is dominated by dense semi-mature white pine. It is unclear if this forest area is an old plantation or a naturally regenerated white pine. The ground layer species are similar to the adjacent FODM5-4, but less diverse and cover less area due to the density of the canopy trees.
FOCM2 Dry – Fresh Cedar Coniferous Forest	This small coniferous forest is dominated entirely by white cedar. Virtually no other species occur due to density of cedar.
FOCM6-1 Dry - Fresh White Pine Naturalized Coniferous Plantation	This small patch of coniferous forest is densely dominated by white pine. It appears to be an old plantation with maturing trees.
Woodland	
WODM5 Fresh - Moist Deciduous Woodland	This disturbed woodland area is located on the outer edge of a swamp next to the pipeline. It has a semi-open canopy of exotic willow species, basswood, black walnut, white cedar and several dead ash. The understorey is densely dominated by riverbank grape, common buckthorn, white cedar, black walnut, thicket creeper and occasional white mulberry. The obscured ground layer contains spotted jewelweed and Dame's rocket.
WOCM1-3 Dry - Fresh White Pine Coniferous Woodland	This woodland area is dominated by a semi-open canopy of mid-aged white pine and occasional sugar maple. The understorey is variable in composition contains shrubs such as prickly ash, common buckthorn, common lilac gray dogwood, Scots pine and choke cherry. The ground layer contains large false Solomon's seal, field basil, poison ivy and arrow-leaved aster.
Plantations	
TAGM1 Coniferous Plantation	This coniferous plantation is dominated by young to mid-aged red pine with occasional white pine and Scots pine. The understorey is dominated by common buckthorn, common lilac and green ash saplings. The ground layer is dominated old field grasses such as orchard grass and smooth brome.
TAGM5 Fencerow	Hedgerow of white cedar.
Deciduous Thicket	
THDM2 Dry - Fresh Deciduous Shrub Thicket	This deciduous thicket is dominated by dense shrubs and regenerating trees. The sub-canopy contains occasional ash and black cherry. The understorey is dominated by dense hawthorn, common buckthorn, ash, black cherry, sugar maple and riverbank grape.
THDM2-6 Buckthorn Deciduous Shrub Thicket	This thicket community is dominated by common buckthorn with less common associates of common lilac and staghorn sumac in the understorey. The sub-canopy contains a few sugar maple, basswood and Scots pine.

Table 4.1: Ecological Land Classification Vegetation Types

ELC TYPE	Community Description
THCM1 Dry - Fresh Coniferous Regeneration Thicket	This young regeneration thicket is dominated by Scots pine, white cedar and Norway spruce. The ground layer is dominated by similar dry land species as the THMM1 community (e.g. early goldenrod, knapweed, field basil).
THDM4-1 Native Deciduous Regeneration Thicket	This thicket is dominated by young naturally regenerating native trees and shrubs in the hydro corridor. The substrate in this community is rocky. There is a diverse assortment of trees and shrubs including staghorn sumac, basswood, choke cherry, black raspberry, Allegheny blackberry, hispid greenbrier, gray dogwood, black cherry, blue-beech, common snowberry and bur oak. The herbaceous ground layer is dominated by species such as early goldenrod, bottlebrush grass, herbaceous carrionflower, white heath aster and large false Solomon's seal.
Cultural Meadow	
MEFM1 / THDM2-6 Dry - Fresh Forb Meadow	This dry meadow is dominated by knapweed and wild carrot with occasional Canada goldenrod and crown vetch. Common buckthorn is common in this meadow particularly on the outer edges where it becomes a larger thicket area.
MEMM3 Dry - Fresh Mixed Meadow	This meadow occupies the pipeline RoW. Many of the dominant species are characteristic of dry habitats such as knapweed, early goldenrod, poverty oatgrass and wild strawberry. Other common species include orchard grass, smooth brome, crown vetch, limestone meadow sedge and a rare exotic species known as common kidney-vetch.
MEMM4 Fresh - Moist Mixed Meadow	This moist meadow is dominated by panicled aster, Canada goldenrod, field sow-thistle, reed canary grass, wild carrot and redtop grass.
Deciduous Swamp	
SWDO2-3 Swamp Maple Organic Deciduous Swamp	This large swamp is dominated by Freeman's (Swamp) maple in the canopy and sub-canopy. Dead green ash occurs occasionally in the canopy. White elm occurs occasionally throughout the understorey. Standing water was present throughout much of the swamp during spring visits. Water had mostly dried up by mid summer, but the substrate remained mucky in pooling areas. The ground layer is diverse and dominated by characteristic swamp species such as sensitive fern, water loosestrife, spotted water-hemlock, false nettle, cinnamon fern, northern water-horehound and several wetland (Carex) sedges. The numerous hummocks throughout this swamp are occupied by wild sarsaparilla, spinulose wood fern, goldthread, northern starflower and wild-lily-of-the-valley.
SWDM2-2 Green Ash Mineral Deciduous Swamp	This swamp community is dominated by a mid-aged canopy of green ash. However, most of the green ash is dead or dying. A few mature eastern cottonwood occur in the canopy. The understory is dominated by dense common buckthorn.
SWDM4-5 Poplar Mineral Deciduous Swamp	This young swamp is dominated by dense regenerating cottonwood and an exotic willow species. The area appears to have been flooded in the spring. In the summer after the water dried down the ground layer was sparse during the summer with occasional lake sedge, purple loosestrife, northern water-horehound and reed canary grass.

Table 4.1: Ecological Land Classification Vegetation Types

ELC TYPE	Community Description
SWMM1 White Cedar Mineral Mixed Swamp	This mixed swamp is dense and dominated by white cedar and deciduous trees such as paper birch and Freeman's (swamp) maple. The ground layer contains many of the species found in the adjacent SWDO2-3 swamp.
Marsh	
MASO1-1 Cattail Organic Shallow Marsh	This wetland is dominated by dense cattails I shallow water.
Agricultural	
OAGM1 Annual Row Crops	Agricultural fields
Utilities	
CVI 1 Transportation	Roads
CVC 3 Industry	Kirkwall valve station.

No provincially rare vegetation communities (rank of S1, S2 or S3) were observed in the Study Area.

4.4.1.1 Vascular Plants

A detailed list with all scientific plant names and species statuses is provided in **Appendix C**. A total of 264 species of vascular plants were recorded from the Study Area. This total includes taxa identified to species, subspecies (ssp.) and variation (var.) levels. Of the species identified, 75% (198) were native to Ontario.

Two (2) provincially rare native tree species (butternut and black ash) with a provincial rank of S2? and S3, respectively, were observed in the Study Area. Of the two butternuts trees observed, one individual was dead. The second had a dead canopy but contained some live shoots at the base of the tree. It is located on the north side of the pipeline RoW between the valve site and the hydro corridor and is shown on **Figure 5**. Black ash was observed in the Swamp maple swamp (SWDO2-3) east of the hydro corridor. It occurred infrequently in the ground layer and understory in the swamp. Butternut is also a SAR in Ontario with the status of endangered. Black Ash has been recommended for federal threatened status by COSEWIC but is not currently an SAR in Ontario.

One (1) additional provincially rare species, Eastern Green-violet (*Hybanthus concolor*) with a provincial rank of S2, was observed in the small forest community (FODM5 / FOMM2-2) on the north side of the pipeline RoW. Based on property boundary lines, this species was not technically observed on HCA lands, but it is very close to the boundary. Therefore, there is potential that it may occur on HCA lands in the area.

Three (3) sensitive native plant species with a high coefficient of conservatism value of 8, 9 or 10 were observed in the Study Area. Bristle-stalked sedge (Carex letpalea) was observed in the Freeman's (Swamp) Maple swamp east of the hydro corridor. False pennyroyal was observed in dry open areas immediately east of the Kirkwall valve site. Poke milkweed was observed on the south side of the pipeline next to the hydro corridor in a small deciduous forest community (FODM5-4).

4.4.2 Wildlife and Wildlife Habitat

4.4.2.1 Amphibian Call Count Surveys

Based on habitat assessments, suitable habitat conditions for breeding amphibians were identified within the Study Area. A total of nine (9) potential amphibian habitats were identified, and amphibian call surveys were conducted at each of these habitats. Five (5) species of amphibians were observed during amphibian call count surveys: American Toad, Green Frog, Tetraploid Gray Tree Frog, Spring Peeper and Wood Frog. The results of the amphibian call count surveys are provided in **Table 4.2**.

Based on the Ecoregion 6E Criteria (MNRF 2015), none of the four features contained SWH for amphibian breeding based on the results of the amphibian call surveys.

Table 4.2: Amphibian Call Count Survey Results

Feature (AMP#)[1]	Round	Species Present (Highest Call Code – Estimated Number of Individuals)						Significance[2]	
		AMTO	GRFR	GRTR	NLFR	SPPE	WOFR	yes/no	Criteria met:
1	1	-	-	-	-	-	-	no	Two species calling but not ≥ 20 individuals calling
	2	-	-	-	-	1-1*	-		
	3	-	1-1*	-	-	-	-		
2	1	-	-	-	-	2-10	1-2	no	≥ 2 species calling but not ≥ 20 individuals calling
	2	1-2	-	2-15	-	1-3	-		
	3	-	1-4*	-	-	-	-		
3	1	-	-	-	-	-	-	no	No calls heard within this feature
	2	-	-	-	-	-	-		
	3	-	-	-	-	-	-		
4	1	-	-	-	-	-	1-2	no	≤ 2 species calling and not ≥ 20 individuals calling
	2	-	-	-	-	-	-		
	3	-	-	-	-	-	-		
5	1	-	-	-	-	-	-	no	No calls heard within this feature
	2	-	-	-	-	-	-		
	3	-	-	-	-	-	-		
6	1	-	-	-	-	-	-	no	No calls heard within this feature

Table 4.2: Amphibian Call Count Survey Results

Feature (AMP#)[1]	Round	Species Present (Highest Call Code – Estimated Number of Individuals)						Significance[2]	
		AMTO	GRFR	GRTR	NLFR	SPPE	WOFR	yes/no	Criteria met:
	2	-	-	-	-	-	-		
	3	-	-	-	-	-	-		
7	1	-	-	-	-	-	-	no	No calls heard within this feature
	2	-	-	-	-	-	-		
	3	-	-	-	-	-	-		
8	1	-	-	-	-	1-1	-	no	≤ 2 species calling and not ≥ 20 individuals calling
	2	-	-	-	-	-	-		
	3	-	-	-	-	-	-		
9	1	-	-	-	-	2-20	-	no	≥ 2 species calling and ≥ 20 individuals calling
	2	-	1-1	1-2	-	2-5	-		
	3	-	1-1	-	-	-	-		

Notes:

Call level 1 - individuals could be counted and calls were not simultaneous.

Call level 2 - calls were distinguishable with some simultaneous calling, but individuals could be counted

Call level 3 - Level 3 indicated a full chorus where calls were continuous and overlapping, and individuals could not be estimated

[1] Amphibian Survey Station identifier (as per **Figure 3**)

* indicates species calling outside the100m station

AMTO-American Toad

GRFR – Green Frog

GRTR-Tetraploid Gray Tree Frog

NLFR-Northern Leopard Frog

SPPE-Spring Peeper

WOFR-Wood Frog

[2] Criteria for Significant Wildlife Habitat for Amphibian Breeding in MNRF's Ecoregion 6E Criteria (MNRF 2015) includes the presence of a breeding population of 1 + salamander species or 2 + frog species with at least 20 individuals (adults or egg masses).

4.4.2.2 Breeding Birds Surveys

Breeding bird surveys recorded forty-three (43) birds, thirty-nine (39) of which are likely to be breeding within the Study Area. Ring-billed Gull, Great Blue Heron, Red-tailed Hawk and Turkey Vulture were observed as flyovers and not expected to be nesting in the Study Area.

Native species recorded are secure (S5B) or apparently secure (S4B) breeders in Ontario. Four (4) locally uncommon and one locally rare species in Hamilton (according to HNAI 2013) were recorded during breeding bird surveys. Locally uncommon species include: Brown Thrasher, Eastern Towhee, Great Blue Heron and Wood Thrush. The locally rare species recorded is Golden-crowned Kinglet. The complete list of breeding birds is found in **Appendix C.**

Five (5) SAR or Species of Conservation Concern (SOCC; ranked S1-S3 or listed as Special Concern) were recorded within the Study Area: Barn Swallow, Bobolink, Eastern Meadowlark, Eastern Wood-Pewee and Wood Thrush. Location of species at risk observations are shown in **Figure 5**.

Barn Swallow is designated as threatened in Ontario and afforded general habitat protection under the *ESA*. Barn Swallows nest on walls or ledges of barns as well as on other human-made structures such as bridges, culverts or other buildings (Cadman et al. 2007). Barn Swallow nests or potential nesting structures were not observed within the Study Area. They are expected to be breeding in proximity to the Study Area.

Bobolink is designated as threatened in Ontario and afforded general habitat protection under the *ESA*. Bobolink are generally referred to as grassland species and nests primarily in forage crops with a mixture of grasses and broad-leaved forbs, predominantly hayfields and pastures (COSEWIC 2010). Bobolink were observed within suitable habitat (MEMM3, **Figure 4**) during breeding bird surveys and are considered breeding within the Study Area.

Eastern Meadowlark is designated as threatened in Ontario and afforded general habitat protection under the *ESA*. Eastern Meadowlark are a grassland species typically found in meadows, hayfields and pastures. They are often associated with human-modified habitats where they sing from prominent perches such as roadside wires, trees, and fenceposts (Peck and James 1983). Eastern Meadowlark were observed within suitable habitat (MEMM3, **Figure 4**) during the breeding bird surveys and are considered breeding within the Study Area.

Eastern Wood-Pewee is designated as Special Concern (SC) in Ontario. As a SC species, it is not afforded habitat protection under the *ESA*. Eastern Wood-Pewee is a forest bird of deciduous and mixed woods (Cadman et al. 2007) and was observed within suitable treed habitat during breeding bird surveys and is considered breeding within the Study Area.

Wood Thrush is designated as SC in Ontario. As a SC species, it is not afforded habitat protection under the ESA. Wood Thrush prefer deciduous and mixed forests in southern Ontario, ranging from small and isolated to large and contiguous woodlots (Cadman et al. 2007). Wood Thrush was observed within suitable treed habitat during breeding bird surveys and is considered breeding within the Study Area.

4.4.2.3 Crepuscular Bird Surveys

No observations of Eastern Whip-poor-will or Common Nighthawk were recorded during crepuscular bird surveys.

4.4.2.4 Terrestrial Insect Surveys

Twenty-three (23) butterfly, seventeen (17) dragonfly and one (1) bumble bee species were observed within the Study Area over the two survey dates. The majority of species observed were ranked S5 (very common and secure in Ontario) or S4 (common and apparently secure in Ontario). One (1) dragonfly species, Harlequin Darner IS ranked S3 (vulnerable in Ontario). One (1) butterfly species, Monarch is ranked S4B, S2N (Common in Ontario [breeding status], imperiled in Ontario [non-breeding status]) and is listed provincially and federally as SC.

Eight (8) locally uncommon and one locally rare species in Hamilton (according to HNAI 2013) were recorded during terrestrial insect surveys. Locally uncommon species include: Common Sootywing, Dreamy Duskywing, Silver-spotted Skipper, Fawn Darner, Harlequin Darner, Racket-tailed Emerald, Brush-tipped Emerald and Cherry-faced Meadowhawk. The locally rare species recorded is Northern Cloudywing. The complete list of terrestrial insects is found in **Appendix C.**

4.4.2.5 Bat Tree Habitat Assessment

A total of twenty-six (26) potential bat maternity roost trees were identified in the Study Area. Details of the identified trees is provided in **Table 4.3,** and locations of the trees are shown on **Figure 5**. The potential bat maternity roost trees could be habitat for four (4) SAR bats: Little Brown Myotis, Northern Myotis, Eastern Small-footed Myotis and Tri-colored Bat.

Table 4.3: Bat Habitat Assessment Survey Results

Tree ID	Species (Common Name)	DBH (cm)	Tree Height (m)	Cavity Height (m)	In High Density Cavity Trees?	Peeling Bark?	Open Canopy?	Decay?
1	Ash sp.	30	12	11	No	No	Yes	Yes
2	Ash sp.	19	15	-	No	Yes	Yes	No
3	Ash sp.	31	15	-	No	Yes	Yes	Yes
4	American Elm	26	8	4	No	Yes	No	No
5	Eastern White Pine	16	9	8	No	Yes	Yes	No
6	American Basswood	28	10	5	No	No	Yes	Yes
7	White Pine	41	12	11	No	Yes	Yes	No
8	Poplar sp.	17	4	3.5	No	Yes	No	No
9	Eastern White Pine	19	14	13.5	No	Yes	Yes	No
10	Eastern White Pine	22	12	10	No	Yes	Yes	No
11	Ash sp.	24.5	15	-	No	Yes	Yes	Yes

Table 4.3: Bat Habitat Assessment Survey Results

Tree ID	Species (Common Name)	DBH (cm)	Tree Height (m)	Cavity Height (m)	In High Density Cavity Trees?	Peeling Bark?	Open Canopy?	Decay?
12	Poplar sp.	19.5	13	-	No	Yes	Yes	No
13	Eastern White Pine	16	12	-	No	Yes	Yes	Yes
14	American Basswood	26	15	5	No	Yes	Yes	Yes
15	Red Pine	12	10	9	No	No	Yes	No
16	Unknown	10.5	4.5	4	No	Yes	Yes	No
17	Red Pine	18	17	8	No	Yes	Yes	Yes
18	Trembling Aspen	24	20	-	No	Yes	Yes	Yes
19	Red Pine	15.5	11	8	No	Yes	Yes	Yes
20	Eastern White Pine	21	9	3	No	Yes	No	No
21	Red Pine	14.5	12	10	No	No	Yes	No
22	Red Pine	20.5	12	-	No	Yes	Yes	Yes
26	Sugar maple	91	22	15	No	Yes	Yes	Yes
27	Trembling Aspen	24	7	-	No	Yes	Yes	No
28	Trembling Aspen	26	7	-	No	Yes	Yes	No
29	Black Walnut	28	16	-	No	Yes	No	Yes

4.4.2.6 Stick Nest Search

No stick nests were observed during the nest search.

4.4.2.7 Incidental Wildlife

Incidental observations included an Eastern Grey Squirrel, Raccoon, and Eastern Gartersnake. A complete list of wildlife species observed during all field investigations is provided in **Appendix C**.

4.4.2.8 Significant Wildlife Habitat

The *Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E* (MNRF 2015) provide descriptions of wildlife habitats and guidance on criteria for determining the presence of candidate and confirmed wildlife habitats. Results of targeted surveys for amphibians and birds discussed above were used in the assessment where appropriate. Presence or absence of candidate habitats in the Study Area is discussed below.

Seasonal concentration areas are sites where large numbers of a species gather together at one time of the year, or where several species congregate. Only the best examples of these concentration areas are typically designated as SWH. Review of the NHIC and LIO databases did not identify any confirmed

seasonal concentration areas within the Study Area. The potential for seasonal concentration areas to occur in the Study Area is assessed in Table 4.3.

Table 4.4: Seasonal Concentration Areas

Habitat Type	Habitat Features	SWH in the Study Area
Bat hibernacula	Abandoned mine shafts, underground foundations, caves, and crevices	None
Deer wintering congregation areas	Deer yards are mapped by MNRF.	Present. See **Figure 2.**
Colonially – nesting bird breeding habitat (bank and cliff)	Eroding banks, sandy hills, steep slopes, rock faces or piles	None
Colonially – nesting bird breeding habitat (trees/shrubs)	Dead trees in large marshes and lakes, flooded timber, and shrubs, with nests of colonially nesting heron species.	None
Colonially – nesting bird breeding habitat (ground)	Rock islands and peninsulas in a lake or large river	None
Waterfowl stopover and staging areas	Field with evidence of annual spring flooding from meltwater or runoff; aquatic habitats such as ponds, marshes, lakes, bays, and watercourses used during migration, including large marshy wetlands	None
Shorebird migratory stopover area	Beaches and un-vegetated shorelines of lakes, rivers, and wetlands	None
Raptor wintering areas	Combination of fields and woodland (>20 ha)	Large open meadow habitat absent from Study Area.
Bat maternity colonies	Mixed and deciduous forests and swamps with large diameter dead or dying trees with cavities	Mixed and deciduous forest communities are present within the Study Area. 26 potential maternity bat trees were identified within the Study Area.
Reptile hibernacula	Rock piles or slopes, stone fences, crumbling foundations	None
Turtle wintering area	Permanent waterbodies and large wetlands with sufficient depth and dissolved oxygen	None
Migratory butterfly stopover area	Meadows and forests that are a minimum of 10 ha and are located within 5km of Lake Erie or Lake Ontario	None
Landbird migratory stopover area	Woodlands of a minimum size located within 5km of Lake Erie or Lake Ontario	None

Rare or specialized habitats are defined as separate components of SWH. Rare habitats are habitats with vegetation communities that are considered rare (S1-S3) in the province. These habitats are generally at risk and may support wildlife species that are considered significant. Specialized habitats are microhabitats that are critical to some wildlife species. Candidate rare or specialized habitats are discussed in **Table 4.5**.

Table 4.5: Rare or Specialized Habitats

Habitat Type	Habitat Features	SWH in the Study Area
Sand barren, alvar, cliffs and talus slopes	Sand barren, Alvar, Cliff and Talus ELC Community Classes, and other areas of exposed bed rock and patchy soil development, near vertical exposed bedrock and slopes of rock rubble	None
Prairie and savannah	Open canopy habitats (tree cover < 60%) dominated by prairie species	None
Old growth forest	Relatively undisturbed, structurally complex; dominant trees > 100 years' old	None
Other rare vegetation communities	Vegetation communities ranked S1-S3 by the NHIC.	None
Waterfowl nesting areas	Upland habitats adjacent to wetlands (within 120m)	Individual Mallards were recorded in breeding bird surveys, which were conservatively considered breeding occurrences. Ten Mallard nesting pairs are required to confirm SWH; therefore, significant waterfowl nesting areas are considered absent.
Bald Eagle and Osprey nesting, foraging and perching habitat	Treed communities adjacent to rivers, lakes, ponds, and other wetlands with stick nests of Bald Eagle or Osprey	None
Woodland raptor nesting habitat	Forested ELC communities >30 ha with 10 ha of interior habitat	Candidate habitat present (forest > 30ha). No raptor nests were observed within the Study Area, although may occur elsewhere in the forest community.
Turtle nesting areas	Exposed soil, including sand and gravel in open sunny areas near wetlands	If turtles are present in the Study Area, they are likely to nest in the gravel edges of roads and trails; these anthropogenic sites are not considered SWH.
Seeps, springs, and mineral licks	Any forested area with groundwater at surface within the headwaters of a stream or river system	None
Amphibian breeding habitat (woodland and wetland)	Treed uplands with vernal pools, and wetland ecosites	Candidate wetland amphibian habitat present. Amphibian breeding surveys did not document diversity or abundance of SWH (Section 4.4.2.1.)
Woodland area sensitive breeding bird habitat	Large mature forest stands, woodlots >30ha and >200m from the forest edge	Candidate woodland habitat present. Two indicator species in the Study Area (Veery and Ovenbird) observed does not meet diversity of SWH. Other indicator

Table 4.5: Rare or Specialized Habitats

Habitat Type	Habitat Features	SWH in the Study Area
		species may occur elsewhere in the woodland.

Habitat for species of conservation concern includes four types of species: those that are rare, those whose populations are significantly declining, those that have been identified as being at risk to certain common activities, and those with relatively large populations in Ontario compared to the remainder of the globe. Candidate habitats for species of conservation concern are discussed in Table 4.6**.**

Table 4.6: Habitat for Species of Conservation Concern

Habitat Type	Habitat Features	SWH in the Study Area
Open country bird breeding habitat	Large grasslands and fields (>30ha)	None
Shrub/early successional bird breeding habitat	Large shrub and thicket habitats (>10ha)	None
Marsh bird breeding habitat	Wetlands with shallow water with emergent aquatic vegetation	Breeding bird surveys did not record qualifying marsh breeding species and this feature is considered absent.
Terrestrial Crayfish	Wet meadows and edges of shallow marshes	Evidence of terrestrial crayfish were not observed during field investigations.

Species of conservation concern (S1-S3 ranked species, including provincially designated SC species) that were identified during the background review with potential to occur in the Study Area is provided in **Table 4.7**.

Monarch is currently listed as SC; however, it appears on COSSARO's 2018 Priority List for Species Assessment, and its classification could be changed to endangered, threatened or Not at Risk. If COSSARO changes its classification to endangered or threatened, the MECP must amend the Species at Risk in Ontario List regulation three months following the Minister's receipt of a report from COSSARO (COSSARO 2020).

Table 4.7: Species of Conservation Concern

Species	S-Rank / Status	Source	Habitat Potential
INSECTS			
Sleepy Duskywing	S1	NHIC	Oak woodlands absent.
Monarch	S4B	Observed	Open habitats with milkweeds and other nectaring wildflowers
REPTILES			
Snapping Turtle	S3	ORAA	Marsh and watercourse present.
Eastern Ribbonsnake	S3	ORAA	Suitable wetland and woodland habitat present.

Table 4.7: Species of Conservation Concern

Species	S-Rank / Status	Source	Habitat Potential
BIRDS			
Caspian Tern	S3B	NHIC	No open water foraging habitat or island nesting habitat.
Eastern Wood-Pewee	S4B	OBBA and observed	Suitable woodland habitat present.
Wood Thrush	S4B	OBBA and observed	Suitable woodland habitat present.

Animal movement corridors are distinct passageways or defined natural features that are used by wildlife to move between habitats, usually in response to seasonal requirements. Movement corridors are identified once the following seasonal concentration areas or specialized habitats are confirmed as SWH: amphibian breeding habitat and deer wintering habitat. Candidate animal movement corridors are discussed in Table 4.7.

Table 4.8: Summary of Animal Movement Corridors

Habitat Type	Habitat Features	Candidate SWH in the Study Area
Deer movement corridors	Associated with confirmed deer wintering habitat	None. Deer wintering areas contiguous with other forested habitats in the Study Area.
Amphibian movement corridors	Associated with confirmed amphibian breeding habitat	SWH for amphibians not identified.

4.5 AQUATIC RESULTS

Background Data

The LIO database identifies a tributary to Spencer Creek within the Study Area and within the Sheffield Rockton Wetland Complex (MNRF 2020a). The watercourse has a permanent flow regime, there is no thermal regime data and it is not a constructed drain (MNRF 2020a). The following fish species occur in the watershed; however, within the MNRF background data, there are no fish collection sites within 20 km downstream of Safari Road (MNRF 2020a):

- Bluntnose Minnow, Common Shiner, Creek Chub, Johnny Darter/Tesselated Darter, Mottled Sculpin, White Sucker

The NHIC database identifies Redside Dace as occurring in the tributary commencing downstream of the hydro RoW south of Safari Road (MNRF 2020b). Fisheries and Oceans Canada (DFO) SAR maps do not identify Redside Dace; however, Black Redhorse are mapped as present in the tributary (DFO 2019).

Results of Field Investigations

At the time of Stantec's October 10, 2019 field investigation north of Safari Road, there was a poorly defined channel and a wet area in the deciduous swamp within approximately 25 m of Safari Road. On August 28, 2020, the wetted area was approximately 7 m long, 3.5 m wide and up to 7 cm deep. On both occasions there was no water in the culvert under Safari Road and no water or visible flow path north (upgradient) of the pooled water. There is a small berm upstream of the culvert inlet at Safari Road. On August 20, 2020 the top of the berm was approximately 60 cm above the surface of the ponded water. Water that reaches the 40 cm diameter PVC culvert under Safari Road enters a cattail swale on the south side of the road.

The substrate/soils in the wetted area were fines and organics and vegetation was dominated by *Lemna sp.* and *Typha sp.* Vegetation beyond the wet area included green ash (*Fraxinus pennsylvanica*) and common buckthorn (*Rhamnus cathartica*).

No fish were observed during the field investigations of the tributary to Spencer Creek.

Based on the habitat characteristics of the tributary of Spencer Creek, the reach of the mapped tributary within the Study Area habitat is not suitable to directly support fish due to the lack of connectivity to habitat that may be present downstream of Safari Road. The tributary likely contributes flow to downstream habitat during the spring freshet or following rainfall events.

Aquatic SAR are not expected to occur in the Study Area, based on the following habitat preferences for the species in Ontario:

- Redside Dace inhabit slow moving sections of streams (1-10 m wide) with a mixture of overhanging stream side vegetation and pool and riffle habitat (Redside Dace Recovery Team 2010). Stream sections flowing through open habitats (meadows, pasture and shrubs) with overhanging vegetation, undercut banks and submerged branches and logs are most suitable. Bottom substrates include boulders, rocks, gravel or sand, often with a shallow surface covering of detritus or silt (Redside Dace Recovery Team 2010).
- Black Redhorse live in pools and riffle areas of medium-sized rivers and streams that are usually less than 2 m deep. These rivers usually have few aquatic plants, a moderate to fast current, and a sandy or gravel bottom. In the spring, the species migrates to breeding habitat where eggs are laid on gravel in fast water. The winter is spent in deeper pools (MECP 2019).

4.6 HABITAT FOR THREATENED OR ENDANGERED SPECIES

Threatened or endangered species are listed on the current Species at Risk in Ontario List and protected by the *ESA*. Habitat assessments were conducted to identify candidate habitat for species identified through the background review with potential to occur in the Study Area. Results of targeted surveys for plants, breeding birds, and bats discussed above were used in the assessment where appropriate. Results of the assessment are provided in Table 4.9.

Table 4.9: Candidate Habitat for Threatened or Endangered Species

Species	Source	Habitat Potential	Confirmed Present
PLANTS			
American Chestnut (*Castanea dentata*)	Oldham and Brinker 2009	The botanical inventory did not detect this species in the Study Area.	No
Butternut (*Juglans cinerea*)	Oldham and Brinker 2009	Two individuals observed in the Study Area. One individual was dead and the second in poor conditions with a dead canopy.	Yes
REPTILES			
Blanding's Turtle (*Emydoidea blandingi*)	NHIC 2020	Waterbodies were absent from the Study Area. However, recent Blanding's Turtle observations have been made within 2km of the Study Area (Stantec observation) and as such, there is potential for the species to be encountered within the Study Area during the turtle active season.	Possible
BIRDS			
Acadian Flycatcher (*Empidonax virescens*)	NHIC 2020	Suitable large, mature ravine forests are minimal within the Study Area. Acadian Flycatcher were not observed within the Study Area during breeding bird surveys.	No
Bank Swallow (*Riparia riparia)*	Cadman et al. 2007	Suitable bluff faces are absent in the Study Area. Bank Swallow were not observed within the Study Area during breeding bird surveys.	No
Barn Swallow (*Hirundo rustica)*	Cadman et al. 2007	Barn Swallows were observed within the Study Area during breeding bird surveys. Suitable Barn Swallow nesting structure were not observed within the Study Area. As such, observations were considered flyovers and not nesting individuals.	Yes
Bobolink (*Dolichonyx oryzivorus)*	Cadman et al. 2007	Bobolink were confirmed breeding within the Study Area within suitable grassland habitat (MEMM3).	Yes
Chimney Swift (*Chaetura pelagica)*	Cadman et al. 2007	There are no suitable habitat structures present within the Study Area. Chimney Swift were not observed within the Study Area during breeding bird surveys.	No
Eastern Meadowlark (*Sturnella magna*)	Cadman et al. 2007	Eastern Meadowlark were confirmed breeding within the Study Area within suitable grassland habitat (MEMM3).	Yes
Eastern Whip-poor-will (*Antrostomus vociferus*)	Cadman et al. 2007	Eastern Whip-poor-will were not observed within the Study Area during crepuscular surveys.	No
Least Bittern (*Ixobrychus exilis)*	Cadman et al. 2007	Suitable wetland habitat is absent in the Study Area. Least Bittern were not observed within the Study Area during breeding bird surveys.	No
MAMMALS			
Small-footed Myotis (*Myotis leibii*)	Dobbyn 1994	Suitable rocky outcrop roosting habitat not identified in the Study Area.	No

Table 4.9: Candidate Habitat for Threatened or Endangered Species

Species	Source	Habitat Potential	Confirmed Present
Little Brown Myotis (*Myotis lucifugus*)	Dobbyn 1994	Existing structures and suitable maternity trees within the Study Area may provide suitable maternity habitat.	Possible
Northern Myotis (*Myotis septentrionalis*)	Dobbyn 1994	Existing structures and suitable maternity trees within the Study Area may provide suitable maternity habitat.	Possible
Tri-colored Bat (*Perimyotis subflavus*)	Dobbyn 1994	Existing structures and mature woodlands within the Study Area may provide maternity habitat.	Possible

5.0 SIGNIFICANT NATURAL FEATURES

This section addresses how features and functions on, and connected to, the Study Area should be treated in terms of the key components of the PPS and the City of Hamilton's OP:

- Significant wetlands
- Significant habitat of endangered and threatened species
- Significant woodlands
- Significant valleylands
- Significant wildlife habitat
- Areas of natural and scientific interest
- Fish habitat

5.1 SIGNIFICANT WETLANDS

There are two (2) PSWs that have been identified by the MNRF within the Study Area (**Figure 2, Appendix A**). The Beverly Swamp Wetland Complex is associated with forested swamp community along the northern boundary of the Study Area. The Sheffield Rockton Wetland Complex is associated with the Spencer Creek tributary in the southern portion of the Study Area, adjacent to a proposed construction access road.

5.2 SIGNIFICANT WOODLANDS

The PPS (2020), significant woodland is defined as: "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. Chapter G of the Rural Hamilton Official Plan provide criteria for assessing the significance of woodlands, including consideration of size, interior forest, connectivity, proximity to water, age and presence of rare species. Woodlands within the Study Area meet these criteria and are considered significant woodlands.

5.3 SIGNIFICANT VALLEYLAND

There are no significant valleylands within the Study Area. The tributary to Spencer Creek was small without significant valley features associated with them.

5.4 SIGNIFICANT WILDLIFE HABITAT

The Wildlife Habitat Assessment table in **Section 4.4.2.7** provides an assessment for each of the SWH listed in the SWH Criteria Schedules for Ecoregion 6E (MNRF 2015).

Two (2) types of seasonal concentration areas have been identified in the Study Area, both of which are associated with the forested areas:

- Deer wintering congregation areas
- Bat maternity colonies

Five (5) SOCC were either observed or have suitable habitat within the Study Area. Habitat for four of those species is provided by the forested area:

- Eastern Wood-Pewee and Wood Thrush were observed within forested habitat of the Study Area.
- Suitable habitat for Snapping Turtle is provided by seasonally flooded wetlands associated with the Spencer Creek tributary and the SWDM4-5 at the east end of the Study Area.
- Suitable habitat for Eastern Ribbonsnake is provided by the forested wetlands within the Study Area.

Habitat for a single SOCC occurs in the open areas:

- Breeding and foraging habitat for Monarch is present within the Study Area where milkweed or other flowering plants occur in small areas along the edge of agricultural fields. Several adults were observed during field investigations.

5.5 SIGNIFICANT AREAS OF NATURAL AND SCIENTIFIC INTEREST

The Beverly Swamp Life Science ANSI occurs within the Study Area, which largely overlaps with the Beverly Swamp Wetland Complex PSW.

5.6 FISH HABITAT

The tributary to Spencer Creek does not directly provide fish habitat but provides flow and downstream inputs into Spencer Creek during the spring freshet and following rainfall events.

5.7 HABITAT FOR ENDANGERED OR THREATENED SPECIES

The assessment of endangered or threatened species was completed using a combination of targeted surveys for plants and wildlife and habitat suitability assessments (**Section 4.6**). This assessment identified occurrences of eight endangered or threatened species:

- Butternut were observed in the Study Area. Two (2) individuals within the woodland habitats along the northern boundary of the Study Area. The butternuts were either dead or in severe decline.

Neither individual met the criteria of a retainable tree and therefore would not be protected under the ESA.

- Blanding's Turtle was not observed with the Study Area but is known to occur in the local landscape. There is potential for the species to be encountered within the Study Area during the turtle active season.
- Barn Swallow were observed within the Study Area during breeding bird surveys. Suitable nesting habitat was not documented on the Study Area. However, open portions of the Study Area provide foraging habitat.
- Bobolink and Eastern Meadowlark were both observed within the MEMM3 in the Study Area. This grassland community provides suitable habitat for the species' and is considered protected under the ESA.
- Suitable roost trees for Little Brown Myotis, Northern Myotis and Tri-coloured Bat were recorded within the Study Area, with woodland and open areas providing foraging opportunities. General habitat for SAR bats is considered present with the Study Area.

6.0 PROPOSED DEVELOPMENT

To increase existing capacity and accommodate additional demand for natural gas along its main natural gas transmission system, the Dawn Parkway System, Enbridge Gas is proposing to construct a new 48-inch diameter natural gas pipeline located within the City of Hamilton.

The proposed project will be constructed between Enbridge Gas' existing Kirkwall valve site, located northeast of the intersection of Safari Road and Valens Road and Enbridge Gas' existing Hamilton valve site, located east of Highway 6 and north of Carlisle Road. The proposed pipeline will parallel two existing Enbridge Gas pipelines from the Kirkwall valve site for approximately 7 km, then parallel three existing Enbridge Gas pipelines for approximately 3 km to the Hamilton valve site. The total length of the proposed pipeline will be approximately 10 km. If approved, construction of the pipeline could begin as early as spring/summer 2021 and be complete by the end of 2021.

Enbridge Gas is requesting permanent easement on the south side of their existing easement in two locations on HCA-owned lands**.** The requested easement is 16 m wide with the western area approximately 2.06 hectares (ha) and the eastern area approximately 0.03 ha for a total of 2.09 ha. Enbridge Gas is also requesting temporary land use (including on their existing easement) on the two parcels of HCA-owned lands that is located north and south of their existing easement. The western area is approximately 2.57 ha and the eastern area is approximately 0.02 ha for a total of 2.59 ha. These areas are based on the current pipeline alignment as the time of writing this report. The locations of the requested permanent easement and requested temporary land use on HCA-owned lands are shown on **Figures 1-5, Appendix A**.

7.0 POTENTIAL IMPACTS AND MITIGATION RECOMMENDATIONS

Potential direct and indirect impacts, as well as short-term and long-term impacts, associated with the proposed paralleling of the existing pipeline have been considered and appropriate mitigation measures recommended. An assessment of overall net environmental impacts is also provided based on the implementation of appropriate mitigation, restoration and enhancement measures to support the surrounding natural environment.

7.1 POTENTIAL DIRECT IMPACTS

Potential direct impacts may occur on the significant woodland, SWH for bat maternity roosts, habitat for bat SAR, and nesting birds through vegetation clearing and/or the spread of invasive species.

7.1.1 Vegetation

To facilitate the Project, the proposed impact to each vegetation community is provided in **Table 7.1**.

Table 7.1: Direct Impact to Vegetation Community Type

Category	Code	Area of Direct Impact (ha)*
Agriculture	OAGM1	0.13
Constructed	CVC_3	0.07
Cultural	MEMM3	2.38
	THCM1	0.46
	THDM2-6 / MEFM1	0.36
	THMM1	0.18
Woodland	FOCM1	0.53
	TAGM1	0.65

Note:
*Area of direct impact is based on the current pipeline alignment as the time of writing this report.

One SAR, butternut, was identified on the edge of the existing pipeline RoW, as shown on **Figure 5, Appendix A.** Due to proximity of the live butternut (north side of the existing RoW), this tree will either be removed or within the 25 m impact zone, following the rules of O. Reg 242/08 of the ESA.

7.1.1.1 Recommended Mitigation

The following mitigation measures are recommended to mitigate impacts during vegetation clearing:

- Clearing should be reduced to the extent possible, particularly in sensitive areas.
- The limits of clearing should be surveyed and staked in the field, to allow for the protection of off-site natural areas and vegetation.
- All brush and trees should be felled within the project footprint.
- Clearing should be done during dry soil conditions to the extent practical to limit disturbance to vegetation and terrain.
- A screening field program of wetlands and riparian areas should be undertaken prior to construction, to determine where precautionary measures (e.g. equipment washing before site access) may be necessary to mitigate for the spread of non-native species.
- A re-vegetation program should be initiated for all vegetated Temporary Land Use. Enbridge Gas will consult with HCA to confirm replanting plans.
- Enbridge Gas should undertake their standard tree replacement program, which involves the replanting of twice the area of woodlot removed during construction consisting of seedling planted at a density estimated between 800 to 1000 trees per acre. Tree replacement consists of species native to the area, and ideally the same species removed. Enbridge Gas encourages planting of replacement trees on the same property where the trees were removed, with the goal of enhancing a natural area and its associated wildlife habitat. Enbridge Gas will maintain the trees for a period of 5 years, or until the trees reach a 'free to grow' status as defined by a height of 1 metre (m) and tree of adjacent brush competition.
- Seeding of the disturbed Temporary Land Use areas and permanent easement should be done with a native seed mix reviewed by HCA. Replaced soils will contain native seed bank, facilitating successful revegetation.
- One year following construction, planted vegetation should be inspected for survival; in areas of severe dieback, dead and diseased planted vegetation should be replaced.

7.1.2 Wildlife and Wildlife Habitat

Potential direct impacts on wildlife and wildlife habitat from construction include direct mortality from construction vehicles as well as habitat loss during vegetation clearing.

7.1.2.1 Mitigation

The following mitigation measures are recommended to mitigate direct impacts to wildlife and wildlife habitat, including SAR and SWH:

- Equipment and vehicles should yield the RoW to wildlife.

- If wildlife are encountered during construction, personnel are required to move away from the animal and wait for the animal to move off the construction site.
- Tree removal in identified areas should be limited to the extent possible and will avoid the active season for bats (May 1 to August 31). MECP will be consulted to discuss additional requirements for SAR bats under the ESA.
- Silt fencing is recommended along the perimeter of the work zone to prevent encroachment into the wetland, exclude reptiles and amphibians, as well as prevent sedimentation.
- Construction activities with the potential to remove migratory bird habitat, such as vegetation clearing, should be avoided during the breeding season which is generally from April 1- August 31 in southern Ontario (Environment Canada, 2017). Should vegetation clearing activities be unavoidable during this window, a mitigation program should be developed, which includes measures to reduce and avoid impacts to migratory birds and their nests (Government of Canada, 2018). This program should include preventative and mitigation measures but may also include avoidance of clearing during key sensitive periods and in key locations.
- Monarch larvae may be present during between April 1 and September 30, and vegetation clearing should avoid this period if possible. If vegetation clearing will proceed when Monarch larvae may be present, milkweed plants should be inspected for Monarch larvae prior to their removal. If larvae are present, they may be moved to a location that is suitable and safe under the direction of a qualified professional. Monarch caterpillars may be moved to other milkweed plants; for other larval stages (i.e., eggs and chrysalis), entire milkweed plants should be transplanted.

7.2 POTENTIAL INDIRECT IMPACTS

Potential indirect impacts of the Project may be associated with changes in surface and groundwater inputs, inadvertent encroachment of heavy equipment, siltation and / or spills of deleterious substances, noise, and dust migration into natural features were identified as potential indirect impacts from construction. These impacts may alter species composition by compacting and smothering vegetation and introducing substances that could be harmful to vegetation and wildlife, such as fuel used by construction vehicles or silt from soil erosion. Where they occur, these impacts are expected to be localized to the construction area and adjacent areas.

7.2.1 Hydrogeology

Where trenches encounter shallow groundwater conditions or following a large precipitation event, removing water from the trench (known as dewatering) may be necessary. During trench dewatering, discharge water will be released to the environment. An uncontrolled discharge of water could cause downstream flooding, erosion, sedimentation or contamination.

Based on *the Clean Water Act* (2006), there are no significant chemical, pathogen or dense non-aqueous phase liquids source water threats to municipal supply sources based on the construction or operation of the proposed pipeline.

7.2.1.1 Mitigation

For construction dewatering, registration for an EASR (50,000 L/day to 400,000 L/day) or an application for a permit to take water (PTTW; >400,000 L/day) will be undertaken in accordance with MECP regulations.

In the event that surface water is used for hydrostatic testing, a PTTW will be secured and will include an assessment of the capacity of the source and recommendations for mitigation measures (e.g., screened water intakes to limit intake of debris and organisms as well as energy dissipation/erosion control measures during discharge to limit erosion and sedimentation).

To reduce the potential for erosion and scouring at discharge locations during construction dewatering and/or hydrostatic testing, the following methods will be implemented as required:

- discharge piping should be free of leaks and anchored to prevent bouncing or snaking during surging
- dewatering at low velocities
- discharge into a filter bag or filter tub
- utilizing protective riprap or equivalent (if required)
- discharge should be monitored with additional measures implemented as required.

Hydrostatic and trench dewatering discharge water will be considered to assess the potential for the introduction of contaminated water to soils, wetlands, or waterbodies. Testing requirements can be influenced by the nature and quality of the source water used, any additives to the test water, the nature of the pipeline, and pipeline contents. Consultant with an environmental consultant is recommended to determine what testing is necessary for the discharge water.

During construction, the primary concern to surface water quality is the potential for a contaminant spill during a large storm event. To address this concern, the following mitigation measures are proposed:

- Refueling of equipment should be undertaken a minimum of 30 m from wetlands and watercourses to reduce potential impacts to surface water and groundwater quality in the event that an accidental spill occurs. If a 30 m refueling distance is not possible, under approval from on-site environmental personnel, special refueling procedures for sensitive areas should be undertaken that include, at a minimum, using a two-person refueling system with one worker at each end of the hose.
- To reduce the impact of potential contaminant spills, the contractor should implement spill management protocols such as secondary containment of any temporary fuel storage and preparation of a spill response plan.
- Work should be limited or stopped during and immediately following significant precipitation events (i.e. 100 year storm event), at the discretion of on-site environmental personnel.

7.2.2 Bedrock Excavation

Bedrock encountered during trench excavation will be excavated by means of a hoe-ram and/or blasting. Noise and vibrations of blasting have the potential to disturb wildlife in adjacent habitat, although such distance is very short term. Fly rock damage and dust also have the potential to impact adjacent wildlife habitats.

If the bedrock encountered during trenching is fractured, the preferred method of trenching is with the use of a bucket or hoe-ram. Where hoe-ramming is undertaken the addition of water to reduce dust should be considered where appropriate. Ripping or hoe ramming may not be feasible in all locations and blasting may be required.

Where blasting is required, blasting mats should be used to assist in controlling the blast. Immediately after blasting/hoe-ramming, any fly rock dispersed should be collected from the area surrounding the work site and stockpiled.

Blasting procedures should be developed in conjunction with existing construction specifications, a licenced blasting contractor and a blasting design consultant in accordance to applicable regulations.

7.2.3 Significant Wetlands

The Beverly Swamp and Sheffield Rockton PSW Complexes have been avoided within the EIS Study Area by siting the proposed pipeline on the south side of the existing easement. Heavy equipment will not use the access route from Safari Road, located in proximity to the Sheffield Rockton PSW, thereby reducing additional potential impacts.

Potential indirect impacts include changes in surface and/or groundwater, encroachment, sedimentation, noise, dust, and/or spills.

7.2.4 Significant Woodlands

The temporary disturbance to a 16 m swath (1.4 ha) from of the edge of the significant woodland along FOCM1 and FODM5-4 is not expected to have significant impacts for the following reasons:

- Total woodland area to be disturbed is minimal relative to the significant woodland as a whole.
- The woodlot will continue to meet the size requirements set out in OP policies to remain significant post-construction.
- Disturbance-resistant vegetation has been fostered at the woodland edges due to existing disturbances (e.g., agriculture, existing ROW), which are expected to establish at the new future edge.
- Disturbance of existing edge vegetation does not further fragment the forest or introduce new edge effects into the forest interior (i.e., >100 m from the edge).

Potential indirect impacts include changes in surface and/or groundwater inputs, encroachment, sedimentation, noise, dust, and/or spills.

7.2.5 Wildlife and Wildlife Habitat

The temporary disturbance to a 16 m swath of vegetation to the south of the existing pipeline easement may have impacts on SWH and/or habitat for threatened or endangered species for the following features identified in the Study Area:

- SWH
    - Seasonal Concentration Areas
        - Bat Maternity Roosts
        - Deer winter congregation areas (woodland and open areas)
    - Habitat of Species of Conservation Concern
        - Wood Thrush and Eastern Wood-Pewee (woodlands)
        - Snapping Turtle and Eastern Ribbonsnake (wetlands)
        - Monarch (meadows)
- Habitat of Threatened and Endangered Species
    - Blanding's Turtle (potential movement within the Study Area)
    - Bobolink and Eastern Meadowlark (meadows)
    - Barn Swallow (potentially within 250 m of a nest)

Indirect impacts to wildlife include habitat degradation through spills/sedimentation, sensory disturbance of wildlife during construction, and movement of edge effects, although adjacent land uses will remain consistent post-construction.

7.2.5.1 Bat Maternity Roost

Direct impacts to bat maternity roosting habitat are not anticipated as vegetation clearing is proposed to occur outside of the bat active window.

7.2.5.2 Deer Overwintering Areas

Temporary avoidance of the Study Area by White-tailed Deer may occur during construction. Winter work will be restricted to vegetation clearing, during which deer can move farther to the north into the wintering area. Habitat use of the overwintering deer area is expected to return to pre-construction conditions after construction is completed.

Significant indirect impacts on overwintering deer and their habitat are not anticipated as deer are highly mobile animals (e.g., Alverson et al., 1988; Gaughan and DeStefano, 2005, etc.) and cross an open RoW habitat under existing conditions, and as such are not expected to be at risk of fragmentation effects.

7.2.5.3 Habitat of Species of Conservation Concern

Wood Thrush and Eastern Wood-Pewee were documented during breeding bird surveys within the significant woodland, as shown on **Figure 5.** As construction impacts are anticipated to be short-term in duration (i.e., one breeding season) and adjacent land uses will not change post-construction, adaptation of Wood Thrush and Eastern Wood-Pewee to the location of the new edge is anticipated.

Snapping Turtle and Eastern Ribbonsnake are associated with wetlands in the Study Area, where vegetation clearing is not proposed. Potential disturbance to these species during construction is anticipated to be short-term in duration and targeted outside of areas where these species are anticipated to occur.

Disturbance effects on Monarchs are associated with the temporary loss of host plants for reproduction during construction. Host plans exist throughout the Study Area, including in areas outside of the construction zone. The new RoW is expected to naturally regenerate host plants.

7.2.6 Significant Areas of Natural and Scientific Interest

The Project is situated outside the Beverly Swamp ANSI, sited on the south side of the existing easement to provide separation from this feature. Indirect impacts are identical to those associated with the Beverly Swamp PSW (water inputs, sedimentation, spills).

7.2.7 Habitat of Threatened and Endangered Species

Occurrences of threatened and endangered species are identified on **Figure 5**. Indirect impacts include disturbance and habitat degradation through spills and sedimentation.

Direct impacts to SAR bats are not anticipated as vegetation clearing is proposed to occur outside of the bat active window. Although construction is proposed outside of wetlands, Blanding's Turtles may cross the construction area during overland travel, particularly during spring and fall migration.

Bobolink and Eastern Meadowlark were documented within a mixed meadow located within the Study Area but outside of the proposed construction Temporary Land Use area. Due to the proximity to the proposed construction Temporary Land Use (approximately 100 m) and habitat divide (e.g., meadow surrounded by row crop), disturbance effects are not anticipated for these species.

Barn Swallows were not documented nesting in the Study Area, however; there is a possibility that the Study Area falls within designated Barn Swallow habitat (i.e., within 250 m of a nest). Disturbance impacts on Barn Swallows, a species that frequently occupies human-created environments, is not anticipated.

7.2.8 Mitigation Recommendations

The potential indirect impacts associated with the proposed development are primarily from construction activities. Some of the mitigation measures for wildlife outlined above in **Section 7.1.2.1** to avoid direct impacts (mortality) also apply to avoid wildlife disturbance effects. Measures to avoid habitat degradation during vegetation clearing (**Section 7.1.1.1**) apply as do spill avoidance measures described in **Section 7.2.1.1** to protect wildlife habitat. The following additional measures are recommended:

- Trench operations should be followed as closely as practical with backfill operations, to facilitate the movement of wildlife across the trench.
- Gaps in stockpiles should be created, in consultation with a biologist, to allow for the potential movement of wildlife across the RoW.
- The contractor should inform their personnel to not threaten, harass or injure wildlife.
- Silt fencing is recommended along the perimeter of the work zone to prevent encroachment into the wetland, exclude reptiles and amphibians, as well as prevent sedimentation.
- Erosion and sediment control measures will be installed around soil stockpiles as necessary to prevent soil movement from work areas.
- Permanent erosion and sediment control measures like erosion control blankets installed for stabilization should be 100% biodegradable.
- To the extent feasible, construction activities should occur during drier times of the year. Lands affected by heavy rainfall events should be monitored for wet soil conditions, to avoid the potential for topsoil and subsoil mixing and loss of structure. Construction activities should be temporarily halted on agricultural lands where excessively wet soil conditions are encountered, as per Enbridge Gas's standard wet soils shutdown practice. Enbridge Gas's on-site inspection team should determine when construction activities may be resumed. If a situation develops that necessitates construction during wet soil conditions, soil protection measures should be implemented, such as confining construction activity to the narrowest area practical, installing surface protection measures, and using wide tracked or low ground pressure vehicles.
- In the unlikely event of a spill, spills containment and clean-up procedures should be implemented immediately. Enbridge will contact the MECP Spills Action Centre. The MECP Spills Action Centre is the first point of contact for spills at the provincial and federal level.
- Additional supplies should be maintained in a readily accessible location for maintenance and contingency purposes:
  - Sediment control fencing
  - Sediment control logs (e.g., SiltSoxx™)
  - Straw bales
  - Wooden stakes
  - Sand bags

- Water energy dissipater
- Filter cloth
- Water pumps (including stand-by pumps and sufficient lengths of hose)
- Culvert.

8.0 ENVIRONMENTAL MONITORING AND CONTINGENCY PLANS

8.1 MONITORING

The primary objective of compliance and effects monitoring is to check that mitigation and protective measures are effectively implemented and to measure the impacts of activities associated with construction on environmental features. Trained personnel should be onsite to monitor construction and checking that the protective measures and monitoring requirements contained within appropriate documents (e.g., ER, this EIS, permits, etc.) are executed. Additionally, a walking inspection of the entire pipeline route should be done approximately one year after construction to determine whether areas require further rehabilitation. Additional rehabilitation measures should be completed as necessary, and additional follow-up monitoring conducted.

The following sections list specific environmental monitoring activities recommended for the Project.

8.1.1 Exposed Soils

Where soils are exposed for construction activities, potential effects may include surface soil erosion, trench slumping, and sedimentation of watercourses. The movement of heavy machinery on wet soil may cause excessive rutting, compaction, and mixing of topsoil and subsoil. Improperly salvaged topsoil can result in mixing topsoil with subsoil, compaction, rutting and erosion, which can potentially decrease crop yields. Improper water discharge can lead to erosion, sedimentation or flooding. Monitoring of potential effects on exposed soils should occur during construction by Enbridge Gas's on-site inspection team. Restored bank slopes should be inspected one year after construction for erosion, and restoration measures should occur as necessary.

8.1.2 Vegetation and Wetlands

For at least one year after construction, planted vegetation should be inspected for survival. Dead and diseased vegetation should be replaced in areas of severe dieback or in areas with important environmental functions (e.g. riparian or slope cover).

8.1.3 Species at Risk

SAR monitoring is not anticipated. Requirements for SAR to be confirmed through consultation with the MECP and DFO.

8.2 CONTINGENCY

Contingency planning is necessary to prevent a delayed or ineffective response to unexpected events or conditions that may occur during construction of the proposed pipeline. An essential element of contingency planning is the preparation of plans and procedures that can be implemented if unexpected events occur. The absence of contingency plans may result in short or long term environmental or socio-economic impacts and possibly threaten public safety.

The following unexpected events require contingency planning during construction: adverse weather causing watercourse sedimentation or human error causing accidental spills. Although unexpected problems are not anticipated to occur during construction, Enbridge Gas and the pipeline contractor should be prepared to act when unexpected events occur. Construction personnel should be made aware of and know how to implement contingency measures.

8.2.1 Watercourse Sedimentation

Even with properly installed ESC measures, extreme runoff events could result in collapse of silt fencing, overflow or bypass of barriers, slope or trench failures, and other problems which could lead to sedimentation of watercourses.

If sedimentation occurs, immediate action should be taken to repair dysfunctional ESC features or install temporary measures that will contain the erosion as quickly as practical. When site conditions permit, permanent protection measures should be installed on erosion-susceptible surfaces. If the erosion and sedimentation results from a construction-related activity, the activity should be halted immediately until the situation is rectified.

8.2.2 Accidental Spills

During construction, an accidental spill of fluids may occur. The impact of the spill will depend upon the magnitude, extent, and nature of the spill and the environmental and socio-economic conditions in which it takes place. Upon release of a hydrocarbon-based construction fluid, Enbridge should immediately determine the magnitude and extent of the spill and rapidly take measures to contain it. Release of sediment should also be treated as a spill depending on the magnitude and extent. Spills should be immediately reported to Enbridge's on-site inspection team. If necessary, the MECP Spills Action Center should be notified at 1-800-268-6060.

A Spills Response Plan should be developed, reviewed with personnel, and posted in site trailers. Spill containment equipment should be readily available, especially near watercourses. Personnel should be trained in the use of spill containment equipment.

Should a spill occur in the project area the spill response contingency plan should be implemented. Specifics of the contingency plan will be documented on site.

9.0 CONCLUSION

This scoped EIS is prepared in response to HCA's request as a landowner. The purpose of this EIS is to identify and discuss the natural heritage features currently found on HCA lands within 120 m of the proposed pipeline (i.e., the Study Area). It incorporates recommendations made by HCA during their review of the ER in August 2019 and was developed from the field study work plan reviewed and approved by HCA on January 9, 2020. This EIS identifies the significance of wetlands, woodlands and wildlife habitats on HCA lands through the comprehensive field program. Potential impacts to these features have been addressed through management and mitigation recommendations. With the implementation of the recommendations in this report, potential negative impacts to significant natural heritage features on HCA lands can be avoided or reduced such that the features and functions of wetlands, woodland and wildlife habitats will remain intact.

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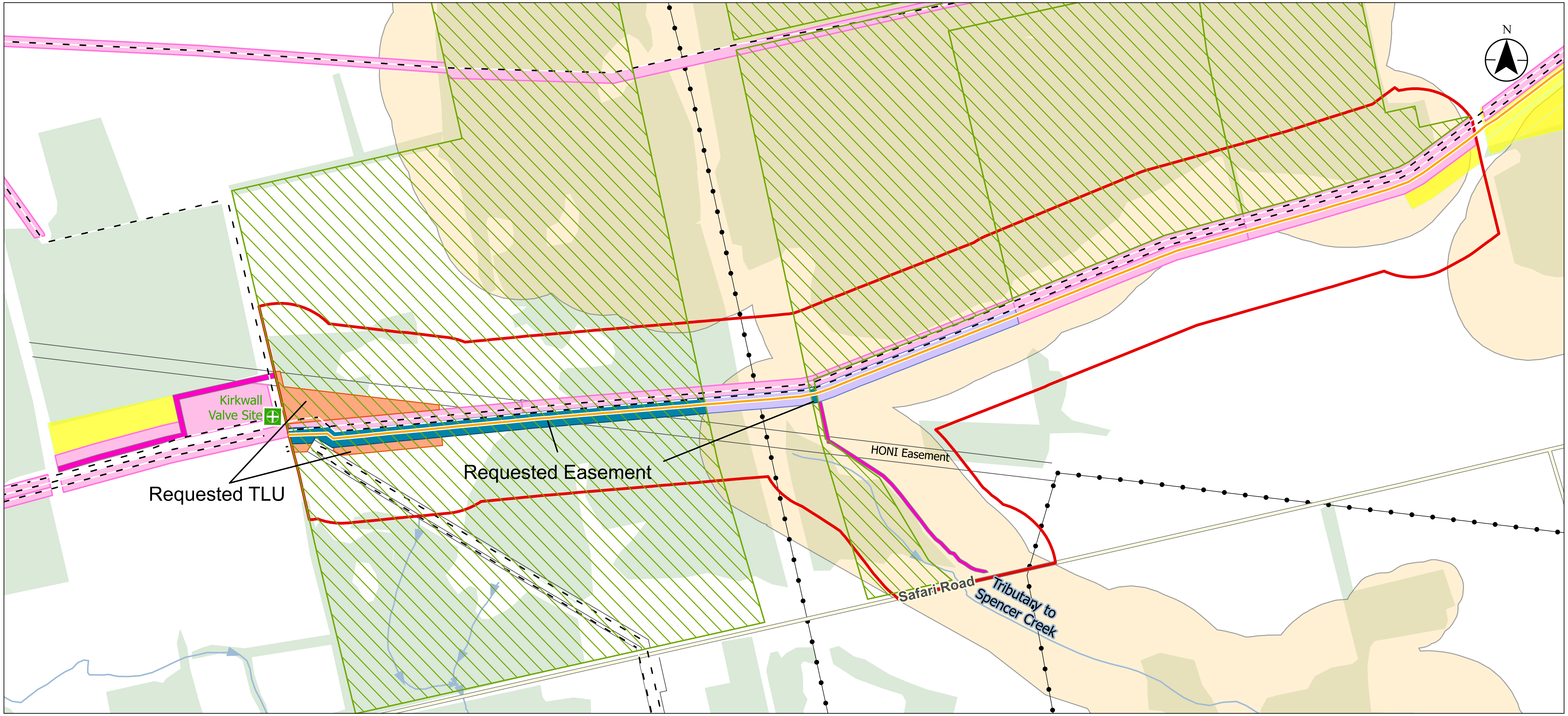
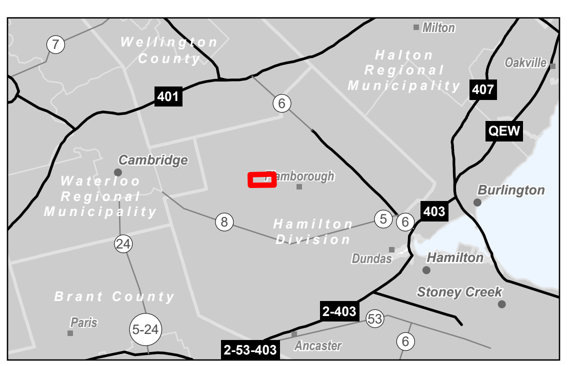
APPENDIX A:
Figures





Legend

- Environmental Impact Study Area
- Requested Easement on Hamilton Conservation Authority Owned Lands
- Requested TLU on Hamilton Conservation Authority Owned Lands
- Hamilton Conservation Authority Owned Lands
- Hamilton Conservation Authority Regulated Area
- Proposed Pipeline
- Proposed Easement
- Temporary Land Use (TLU)
- Station
- Existing Pipeline
- Existing Easement
- Other Company Easement
- Hydro Line
- Major Road
- Watercourse
- Wooded Area

0 200 400 m

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Notes

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3. Project data: Rev U, May 5, 2020.

Stantec

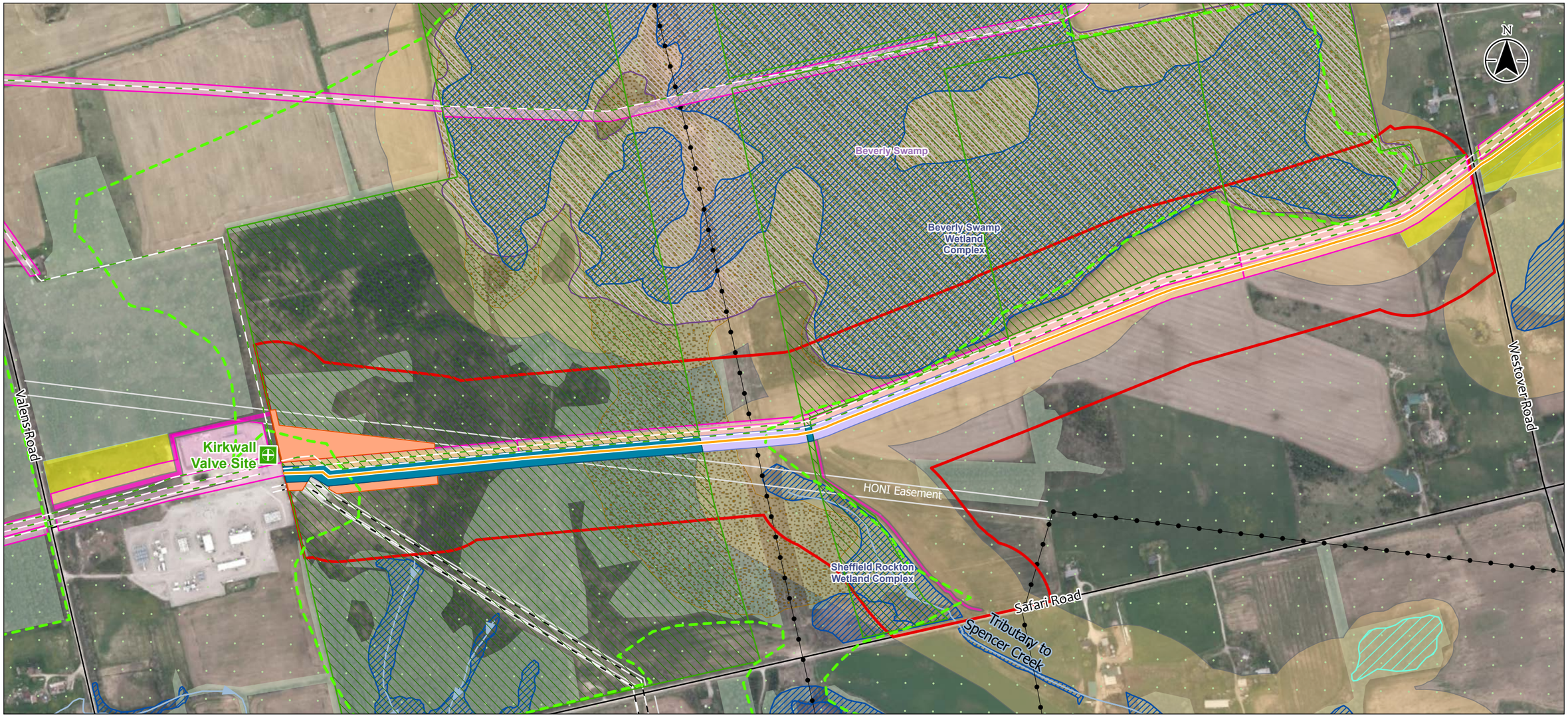
Project Location
City of Hamilton

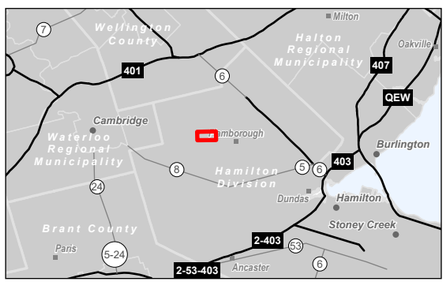
160961299
Prepared by SW on 2020-09-13
Technical Review by AW on 2020-09-13

Client/Project
Enbridge Gas Inc.
Kirkwall to Hamilton Pipeline
Hamilton Conservation Authority Lands

Figure No.
1

Title
Study Area





Legend

- Environmental Impact Study Area
- Hamilton Conservation Authority Owned Lands
- Requested Easement on Hamilton Conservation Authority Owned Lands
- Requested TLU on Hamilton Conservation Authority Owned Lands
- Hamilton Conservation Authority Regulated Area
- Proposed Pipeline
- Proposed Easement
- Temporary Land Use (TLU)
- Station
- Existing Pipeline
- Existing Easement
- Other Company Easement
- Hydro Line
- Road
- Watercourse
- ANSI, Life Science
- Deer Wintering Area
- Environmentally Sensitive Area (City of Hamilton)
- Greenbelt – Protected Countryside
- Wetland, Provincially Significant
- Wetland, Not evaluated per OWES
- Wooded Area

0 200 400 m

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City of Hamilton

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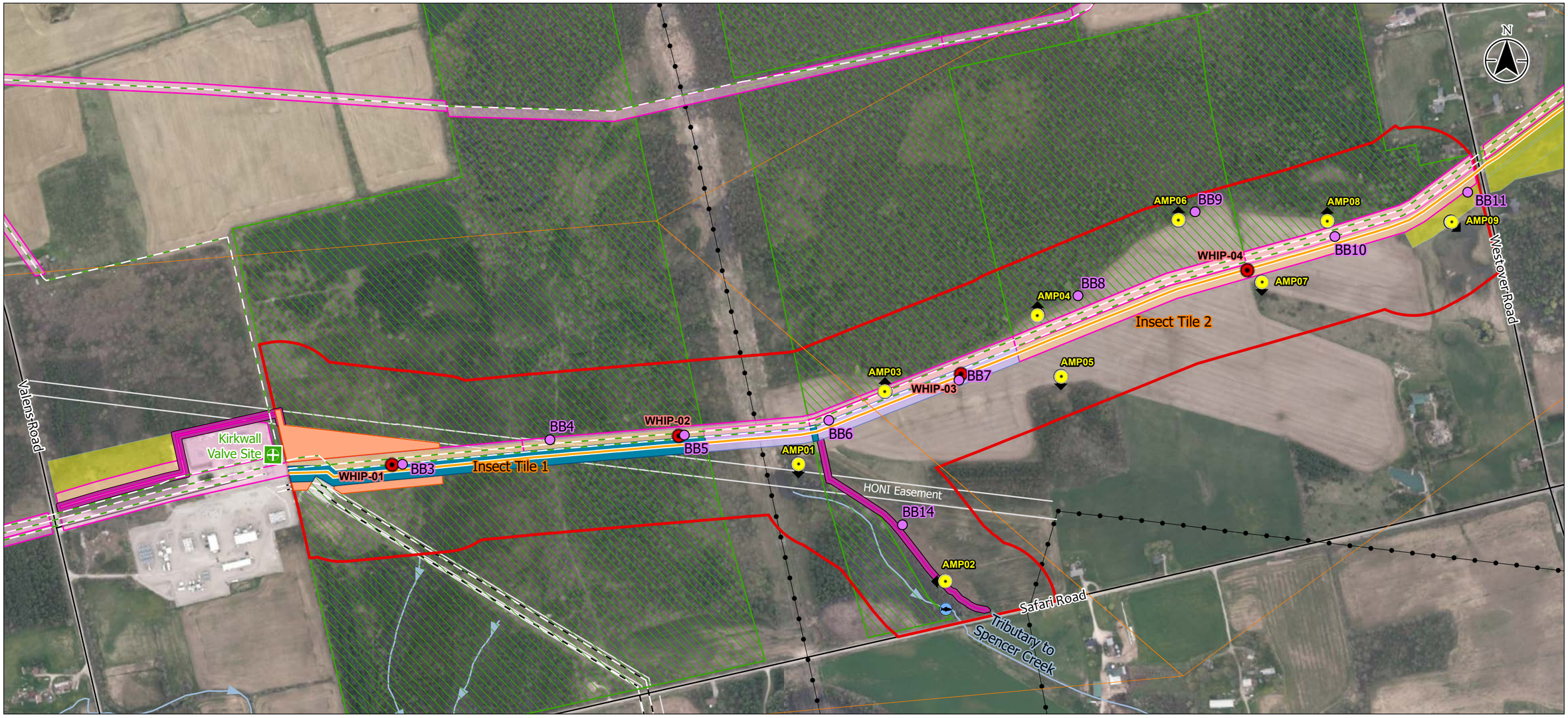
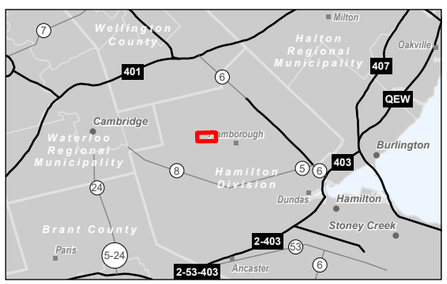
Technical Review by AW on 2020-09-13

Client/Project
Enbridge Gas Inc.
Kirkwall to Hamilton Pipeline
Hamilton Conservation Authority Lands

Figure No.
2

Title
Existing Conditions





Legend

- Environmental Impact Study Area
- Requested Easement on Hamilton Conservation Authority Owned Lands
- Requested TLU on Hamilton Conservation Authority Owned Lands
- Hamilton Conservation Authority Owned Lands
- Aquatic Habitat Assessment Station
- Amphibian Call Station
- Crepuscular Bird Station
- Insect Tiles
- Access Laneway
- Proposed Pipeline
- Proposed Easement
- Temporary Land Use (TLU)
- Station
- Existing Pipeline
- Existing Easement
- Other Company Easement
- Hydro Line
- Road
- Watercourse

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City of Hamilton

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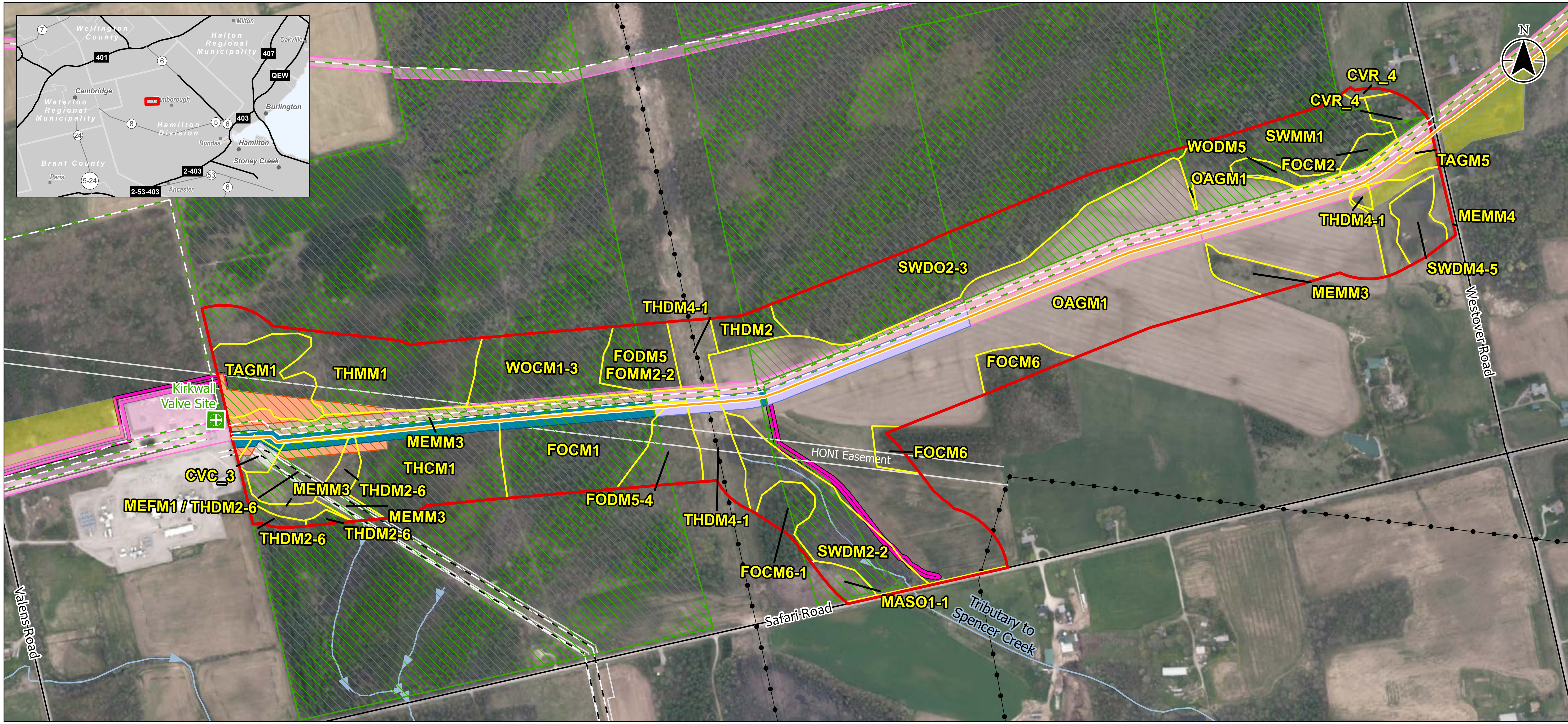
Prepared by SW on 2020-09-13
Technical Review by AW on 2020-09-13

Client/Project
Enbridge Gas Inc.
Kirkwall to Hamilton Pipeline
Hamilton Conservation Authority Lands

Figure No.
3

Title
Field Survey Locations



Legend

- Environmental Impact Study Area
- Requested Easement on Hamilton Conservation Authority Owned Lands
- Requested TLU on Hamilton Conservation Authority Owned Lands
- ELC Boundary
- Hamilton Conservation Authority Owned Lands
- Access Laneway
- Proposed Pipeline
- Proposed Easement
- Temporary Land Use (TLU)
- Station
- Existing Pipeline
- Existing Easement
- Other Company Easement
- Hydro Line
- Road
- Watercourse

Ecological Land Classification Legend

- CVC_3 (Heavy Industry)
- CVR_4 (Rural Property)
- FOCM1 (Dry – Fresh Pine Coniferous Forest Ecosite)
- FOCM2 (Dry – Fresh Cedar Coniferous Forest Ecosite)
- FOCM6 (Naturalized Coniferous Plantation)
- FOCM6-1 (Dry - Fresh White Pine Naturalized Coniferous Plantation Type)
- FODM5 (Dry – Fresh Sugar Maple Deciduous Forest Ecosite)
- FODM5-4 (Dry – Fresh Sugar Maple – Ironwood Deciduous Forest Type)
- MASO1-1 (Cattail Organic Shallow Marsh Type)
- MEFM1 (Dry - Fresh Forb Meadow Ecosite)
- MEMM3 (Dry - Fresh Mixed Meadow Ecosite)
- MEMM4 (Fresh - Moist Mixed Meadow Ecosite)
- OAGM1 (Annual Row Crops)
- SWDM2-2 (Green Ash Mineral Deciduous Swamp Type)
- SWDM4-5 (Poplar Mineral Deciduous Swamp Type)
- SWDO2-3 (Swamp Maple Organic Deciduous Swamp Type)
- SWMM1 (White Cedar Mineral Mixed Swamp Ecosite)
- TAGM1 (Coniferous Plantation)
- TAGM5 (Fencerow)
- THCM1 (Dry - Fresh Coniferous Regeneration Thicket Ecosite)
- THDM2 (Dry - Fresh Deciduous Shrub Thicket Ecosite)
- THDM2-6 (Buckthorn Deciduous Shrub Thicket Type)
- THDM4-1 (Native Deciduous Regeneration Thicket Type)
- THMM1 (Dry - Fresh Mixed Regeneration Thicket Ecosite)
- WOCM1-3 (Dry - Fresh White Pine Coniferous Woodland Type)
- WODM5 (Fresh - Moist Deciduous Woodland Ecosite)
- Other Company Easement
- ForeignPipeline_UG

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Project Location
City of Hamilton

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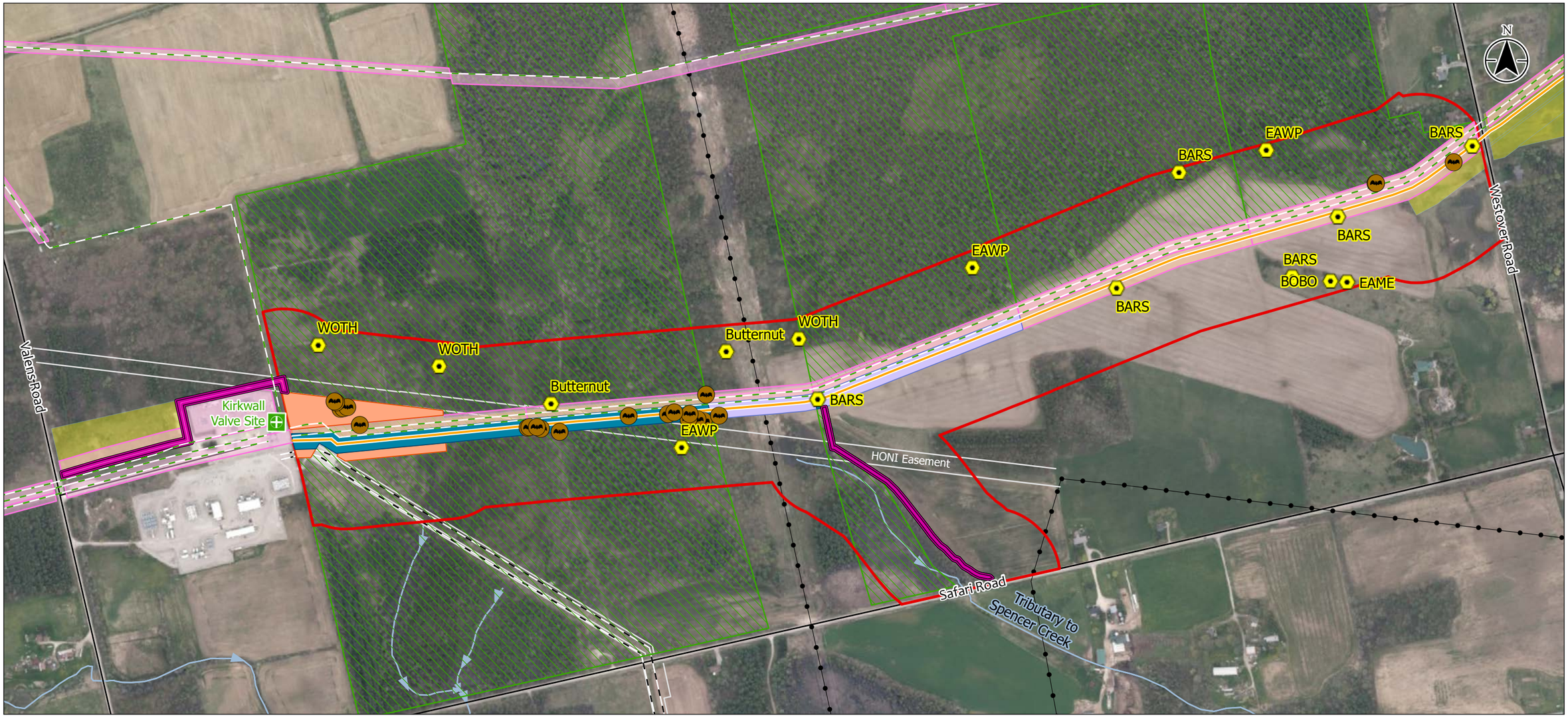
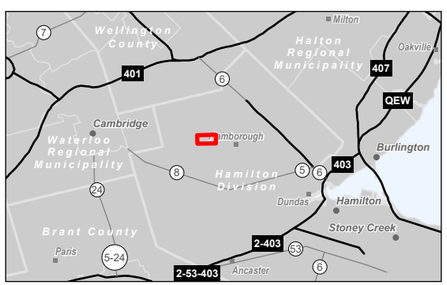
Prepared by SW on 2020-09-13
Technical Review by AW on 2020-09-13

Client/Project
Enbridge Gas Inc.
Kirkwall to Hamilton Pipeline
Hamilton Conservation Authority Lands

Figure No.
4

Title
Ecological Land Classification





Notes

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4. Project data: Rev U, May 5, 2020.

Legend

- Environmental Impact Study Area
- Requested Easement on Hamilton Conservation Authority Owned Lands
- Requested TLU on Hamilton Conservation Authority Owned Lands
- Hamilton Conservation Authority Owned Lands
- Candidate Bat Roost Trees
- SAR Observation
- Access Laneway
- Proposed Pipeline
- Temporary Land Use (TLU)
- Proposed Easement
- Station
- Existing Pipeline
- Existing Easement
- Other Company Easement
- Hydro Line
- Road
- Watercourse

SAR Legend

- BARS - Barn Swallow
- BOBO - Bobolink
- EAME - Eastern Meadowlark
- EAWP - Eastern Wood-Pewee
- WOTH - Wood Thrush

0 200 400 m

1:7,000 (At original document size of 11x17)

Stantec

Project Location
City of Hamilton

160961299
Prepared by SW on 2020-09-13
Technical Review by AW on 2020-09-13

Client/Project
Enbridge Gas Inc.
Kirkwall to Hamilton Pipeline
Hamilton Conservation Authority Lands

Figure No.
5

Title
Species at Risk and Species of Conservation Concern Observations

APPENDIX B:
Agency Correspondence

Hamilton Conservation Authority

A Healthy Watershed for Everyone

February 7, 2020

Ontario Energy Board
P.O. Box 2319
2300 Yonge Street, 27th Floor
Toronto, Ontario
M4P 1E4
Attention: Board Secretary

SENT BY MAIL & EMAIL
boardsec@oeb.ca

Dear Board Secretary:

Re: Enbridge Gas Inc. EB-2019-0159

Please be advised that in response to the above noted application by Enbridge Gas Inc. and Procedural Order No. 1 issued on January 30, 2020 by the Ontario Energy Board regarding EB-2019-0159, the Board of Directors of the Hamilton Conservation Authority passed the following motion at their February 6, 2020 Board of Directors meeting.

THAT the Hamilton Conservation Authority acknowledges our limited mandate as outlined in Section 20 of the Conservation Authorities Act R.S.O. 1990 in regard to gas, oil, coal and minerals;

THAT the Board of Directors direct staff to advise Enbridge Gas Inc. that the HCA opposes the easement request pending the results of an ecological study, independent peer review of the same study and the pending Ontario Energy Board's decision regarding the proposed natural gas pipeline, specifically a decision approving the project;

THAT staff be directed to advise the Ontario Energy Board that the Hamilton Conservation Authority encourages the Ontario Energy Board to take climate change considerations into account when determining if the natural gas pipeline is in the public interest as they consider Enbridge Gas Inc.'s Leave to Construct Application; and,

THAT Hamilton Conservation Authority request that the Ontario Energy Board conduct oral hearings.

THAT the Ontario Energy Board be advised that the Hamilton Conservation Authority supports including within the scope of the Leave to Construct proceeding the following:

1. **impacts related to the methods of upstream natural gas extraction (such as hydraulic fracturing) for natural gas that will be transported through the pipeline**
2. **impacts related to the ultimate downstream consumption of the natural gas transported through the pipeline.**

Please consider this as our written submission regarding this matter being filed prior to February 10, 2020 as per Procedural Order No. 1 for EB-2019-0159. Should you have any questions, please contact the undersigned at (905) 525-2181, ext. 126, by fax (905) 648-4622 or by email at Lisa.Burnside@conservationhamilton.ca.

Sincerely,

for Lisa Burnside
Chief Administrative Officer

cc: City of Hamilton, Tony Sergi, Senior Director, Growth Management Division, Planning and Economic Development Department

Enbridge Gas Inc.

Hamilton Conservation Authority

A Healthy Watershed for Everyone

BY E-MAIL

August 20, 2019 GC-FLAM

Michael Candido
Stantec Consulting
1-70 Southgate Drive
Guelph, ON N1G 4P5

Dear Mr. Candido:

RE: Hamilton Conservation Comments on Enbridge Gas Pipeline Project Environmental Report: Kirkwall-Hamilton Pipeline Project

---

The Hamilton Conservation Authority (HCA) received the circulation regarding the Environmental Report for the Kirkwall-Hamilton Pipeline Project on June 24, 2019. Both the existing pipeline corridor and new pipeline construction project traverse through or adjacent to HCA-owned property and through lands regulated for development by the HCA under *Ontario Regulation 161/06 (HCA's Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses)* made under the *Conservation Authorities Act, R.S.O. 1990*. Therefore, a permit will be required from our office for the new pipeline construction and HCA staff provide the following comments regarding both environmental and regulatory issues.

1. The report indicates that ecological surveys will be completed in the 2019/2020 field season. Please note that our office should have been consulted regarding the Terms of Reference ToR for ecological surveys within our watershed jurisdiction. Please clarify if any surveys have been initiated to-date and please circulate any ToR to our office for review and comment as soon as possible.

2. The report makes no mention of the potential dewatering impacts to adjacent wetland communities and nearby watercourses. There is a large wetland community adjacent to the corridor east of the Kirkwall valve site. Losses to groundwater inputs to this section of Spencer Creek even for short periods could have devastating consequences for the in-stream residents, especially in the summer heat and winter cold, as the groundwater will be providing mitigation to stream temperature extremes. Please clarify if this issue is to be assessed as part of the project.

3. Any topsoil used to replace soil on the pipeline must be free of invasive species. The HCA has noted a recent increase in the introduction of Japanese knotweed (invasive plant species) from contaminated fill.

4. Clean equipment protocols should be part of any work on the pipeline. There are a number of invasive species already present in the corridor adjacent to natural areas. The equipment used on site should be clean of any plant materials before being brought on site to ensure unwanted plant species are not introduced adjacent to large natural areas. Clean equipment protocol should be part of the construction procedures for the project.

5. HCA has GPS coordinates for a butternut along the pipeline corridor east of the Kirkwall Valve site. Staff can provide additional information as the project progresses.

6. Appendix D-1 Significant wildlife habitat. The section contents are somewhat premature without any recent field work being completed.

7. HCA staff would recommend that Stantec review the *The Alvars of Ontario: Significant Alvar Natural Areas in the Ontario Great Lakes Region,* as well as Anthony Goodban's 1995 thesis entitled *Alvar Vegetation on the Flamborough Plain: Ecological Features, Planning Issues and Conservation Recommendations.* A portion of the pipeline easement is close to alvars that are identified in this report.

8. The HCA would recommend that Whip-poor-will surveys be completed in this area as this species has been recorded in the area in the past. Blanding's turtle surveys are also recommended, as this species has recently been observed in proximity to the pipeline. The HCA also notes that monarch butterflies are using this corridor.

9. Further to comment 3 above, it should be noted that Clean Fill as defined by Class 1 or 2 is related only to chemical contamination. Class 1 or 2 soil taken from sites where invasive species are present is still contaminated fill and not acceptable for use in areas adjacent to natural features.

10. The report recognizes the potential for changes to the Fisheries Act, but was not updated for the changes and still refers to fish of Commercial, Recreational, and Aboriginal fisheries. The report should be revised to correspond with the new Act.

11. Stream Crossing #1 appears to be on a tributary of Spencer creek that the HCA currently does not have in our GIS mapping. We kindly request that Enbridge provide the source of the information so our office may update/correct our mapping.

12. General mitigation for the different types of watercourses should include a Coldwater window in addition to the Warmwater and Redside Dace windows in the report.

13. Any permanent erosion and sediment control measures like erosion control blankets installed for stabilization should be 100% biodegradable.

Photodegradable plastics as well as any plastic or nylon meshes should never be used within natural areas as wildlife can become entrained in them.

14. It is a minor consideration, but it is noted that the report includes a number of Imperial measurements. It is recommended that metric units be used exclusively in the report for greater clarity.

HCA staff appreciate the opportunity to comment on the Environmental Report for the Kirkwall-Hamilton Pipeline Project. We look forward to providing further technical comment on the ToR and on the details of the pipeline installation as the project develops.

If you have any questions regarding the above, please contact the undersigned at ext. 131.

Sincerely,

Darren Kenny

Darren Kenny
Watershed Officer

Stantec Consulting Ltd.
1-70 Southgate Drive, Guelph ON N1G 4P5

September 6, 2019
File: 160961299

Attention: Darren Kenny, Watershed Officer
Hamilton Conservation Authority
838 Mineral Springs Road, PO Box 81067
Ancaster, ON L9G 4X1
Darren.Kenny@conservationhamilton.ca

Dear Mr. Kenny,

Reference: Hamilton Conservation Comments on Enbridge Gas Pipeline Project Environmental Report: Kirkwall-Hamilton Pipeline Project

Thank you for your comments received by email on August 20, 2019 regarding the Kirkwall-Hamilton Pipeline Project Environmental Report. Please find responses to your comments below.

Comment #1

The report indicates that ecological surveys will be completed in the 2019/2020 field season. Please note that our office should have been consulted regarding the Terms of Reference ToR for ecological surveys within our watershed jurisdiction. Please clarify if any surveys have been initiated to-date and please circulate any ToR to our office for review and comment as soon as possible.

No ecological surveys have been completed to-date. Surveys are planned for September/October 2019 and spring/summer 2020. The Environmental Report (ER) was completed under the Ontario Energy Board Act with a focus on the *Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Pipelines and Facilities in Ontario.* The review of the ER was intended to be from the Ontario Energy Board Act and not from the perspective of the Ontario Planning Act. Typically, under the Ontario Energy Board process Terms of Reference for ecological surveys are not prepared. Stantec can provide the ecological survey work program and results to the Hamilton Conservation Authority if interested.

Comment #2

The report makes no mention of the potential dewatering impacts to adjacent wetland communities and nearby watercourses. There is a large wetland community adjacent to the corridor east of the Kirkwall valve site. Losses to groundwater inputs to this section of Spencer Creek even for short periods could have devastating consequences for the in-stream residents, especially in the summer heat and winter cold, as the groundwater will be providing mitigation to stream temperature extremes. Please clarify if this issue is to be assessed as part of the project.

A dewatering contractor will be retained by Enbridge Gas to control groundwater seepage and facilitate the pipeline construction at a variety of locations including the area east of the Kirkwall valve site and Spencer Creek. Prior to construction, the dewatering contractor will provide a formal dewatering plan, based on the geotechnical reporting. Prior to the completion of the dewatering plan a review of logs and grain size

analysis data of boreholes currently proposed along the new Kirkwall-Hamilton Pipeline installation will be undertaken. Based on the geotechnical information and water quality results (if any), a preliminary dewatering plan will be prepared. The plan will include recommended dewatering methods and layout of the dewatering systems, anticipated dewatering rates, and recommended measures for water management.

A Hydrogeological Assessment Report will be prepared that will include the following:

- Background project details.
- A description of the geology and stratigraphy within the work area.
- Details provided by Enbridge Gas regarding knowledge of local groundwater dewatering locations and the general construction schedule, depth, and methods for the project. This will include historical dewatering rates at the Site, if available.
- Calculations of estimated groundwater dewatering rates.
- An evaluation of potential groundwater interference concerns.
- Recommendation of mitigation measures and monitoring as required.
- A discharge management plan will be developed that will consider the groundwater at the Site.

The report will detail maximum groundwater dewatering rates during construction activities. Typical day dewatering rates will also be estimated based on available data, but actual rates may be highly variable depending on actual field conditions. The report along with the dewatering plan will be submitted to the Ministry of the Environment, Conservation and Parks (MECP) as part of a Permit to Take Water application.

Comment #3

Any topsoil used to replace soil on the pipeline must be free of invasive species. The HCA has noted a recent increase in the introduction of Japanese knotweed (invasive plant species) from contaminated fill.

It is not anticipated that topsoil will be imported to site for the Project. All soil excavated and stockpiled during construction of the pipeline is intended to be reused on site.

Comment #4

Clean equipment protocols should be part of any work on the pipeline. There are a number of invasive species already present in the corridor adjacent to natural areas. The equipment used on site should be clean of any plant materials before being brought on site to ensure unwanted plant species are not introduced adjacent to large natural areas. Clean equipment protocol should be part of the construction procedures for the project.

Equipment used for the Project will be clean and free of soil and plant material prior to arrival on site. A clean equipment protocol is part of best construction practices and will form part of the Environmental Protection Plan for the Project.

Comment #5

HCA has GPS coordinates for a butternut along the pipeline corridor east of the Kirkwall Valve site. Staff can provide additional information as the project progresses.

Stantec would be interested and appreciate the GPS coordinates of the butternut tree located along the pipeline corridor east of the Kirkwall Valve site.

Comment #6

Appendix D-1 Significant wildlife habitat. The section contents are somewhat premature without any recent field work being completed.

Appendix D-1 was completed as a desktop exercise to collect background information and was intended to inform the basis of future field studies. It is noted in Appendix D-1 under the Habitat Assessment column, as well as in Section 4.3.3 that wildlife habitat will be determined during field investigations scheduled for 2019-2020.

Comment #7

HCA staff would recommend that Stantec review the The Alvars of Ontario: Significant Alvar Natural Areas in the Ontario Great Lakes Region, as well as Anthony Goodban's 1995 thesis entitled Alvar Vegetation on the Flamborough Plain: Ecological Features, Planning Issues and Conservation Recommendations. A portion of the pipeline easement is close to alvars that are identified in this report.

Thank you for the above noted information sources. Stantec will review the documents and any alvars within the vicinity of the pipeline easement will be documented as part of the Ecological Land Classification survey.

Comment #8

The HCA would recommend that Whip-poor-will surveys be completed in this area as this species has been recorded in the area in the past. Blanding's turtle surveys are also recommended, as this species has recently been observed in proximity to the pipeline. The HCA also notes that monarch butterflies are using this corridor.

If suitable habitat for Whip-poor-will is found during the ecological field studies program, Whip-poor-will surveys can be conducted.

Blanding's Turtle basking surveys will be completed as part of the ecological field studies program.

All monarch butterfly observations will be noted during the ecological field studies program.

Comment #9

Further to comment 3 above, it should be noted that Clean Fill as defined by Class 1 or 2 is related only to chemical contamination. Class 1 or 2 soil taken from sites where invasive species are present is still contaminated fill and not acceptable for use in areas adjacent to natural features.

Comment noted. It is not anticipated that soils will be transferred from one property to another during construction and reclamation activities.

Comment #10

The report recognizes the potential for changes to the Fisheries Act, but was not updated for the changes and still refers to fish of Commercial, Recreational, and Aboriginal fisheries. The report should be revised to correspond with the new Act

The changes to the Fisheries Act came into law on June 21, 2019 and are scheduled to come into force on August 28, 2019. Mitigation measures will be reviewed and confirmed to be consistent with the revised Fisheries Act during the permitting process.

Comment #11

Stream Crossing #1 appears to be on a tributary of Spencer creek that the HCA currently does not have in our GIS mapping. We kindly request that Enbridge provide the source of the information so our office may update/correct our mapping.

Land Information Ontario was the source of the unnamed tributary of Spencer Creek. Field investigations will be conducted to confirm the characteristics of the tributary.

Comment #12

General mitigation for the different types of watercourses should include a Coldwater window in addition to the Warmwater and Redside Dace windows in the report.

Based on Ministry of Natural Resources and Forestry (MNRF) guidance (MNRF 2013), the coldwater timing window for Spencer Creek would be July 15 to September 30 (no in-water work from October 1 to July 14). However, the appropriate timing window for Spencer Creek will be applied once approval under the *Endangered Species Act* has been obtained from the Ministry of Environment, Conservation, and Parks (MECP) during the permitting process.

Comment #13

Any permanent erosion and sediment control measures like erosion control blankets installed for stabilization should be 100% biodegradable. Photodegradable plastics as well as any plastic or nylon meshes should never be used within natural areas as wildlife can become entrained in them.

Enbridge Gas will source permanent erosion and sediment control measures that are 100% biodegradable. Where appropriate non-biodegradable sediment and erosion control measures may be used (e.g. retaining walls, boulder toe protection). The need or requirements for these measures have not yet been determined but should not be excluded. Permits and approvals for such measures will be requested should they be located within lands regulated by HCA or other conservation authorities.

Reference: Hamilton Conservation Comments on Enbridge Gas Pipeline Project Environmental Report: Kirkwall-Hamilton Pipeline Project

Comment #14

It is a minor consideration, but it is noted that the report includes a number of Imperial measurements. It is recommended that metric units be used exclusively in the report for greater clarity.

Comment noted.

Thank you for providing comments on the Kirkwall – Hamilton Pipeline Project Environmental Report. We look forward to working with HCA in the future during the permitting process. Should you have any additional questions please do not hesitate to contact me.

Regards,

Stantec Consulting Ltd.

Michael Candido
Project Manager - Assessment and Permitting
Phone: 519 780 8139
Fax: 519 836 2493
michael.candido@stantec.com

c. Ryan Park, Enbridge Gas

cm \\cd1220-f02\01609\active\160961299\02_correspondence\er comments\hca\hca response_20190906.docx

From:	Candido, Mike
To:	Kenny, Darren
Cc:	Peck, Scott; Stone, Mike; McDonell, Lesley; Oaks, Colin
Subject:	RE: Hamilton Conservation Comments on Enbridge Gas Pipeline Project - Environmental Report: Kirkwall-Hamilton Pipeline Project
Date:	Friday, October 18, 2019 1:31:00 PM
Attachments:	image001.jpg image002.jpg

Hello Mr. Kenny.

Thank you for your comments. We understand your concerns as a landowner on the project and the importance of consultation and collaboration. A field crew was on site the week of October 7th completing initial work that included fall botanical surveys and assessment of watercourses. We will be happy to share the workplan for the complete ecological field studies program once it is fully developed. Additionally, the hydrogeological assessment report and dewatering plan will be sent along once completed and finalized. Please note that these plans may change based on the permitting process with the Ministry of the Environment, Conservations and Parks. We look forward to working with you throughout the permitting process for this project.

Regards,

Mike

Michael Candido
Project Manager - Assessment and Permitting

Direct: 519 780-8139
Mobile: 519 829-8159
Fax: 519 836-2493
michael.candido@stantec.com

Stantec
1-70 Southgate Drive
Guelph ON N1G 4P5

From: Kenny, Darren <Darren.Kenny@conservationhamilton.ca>
Sent: Friday, October 11, 2019 3:59 PM
To: Candido, Mike <michael.candido@stantec.com>
Cc: Peck, Scott <Scott.Peck@conservationhamilton.ca>; Stone, Mike <Mike.Stone@conservationhamilton.ca>; McDonell, Lesley <Lesley.McDonell@conservationhamilton.ca>; Oaks, Colin <coaks@conservationhamilton.ca>
Subject: RE: Hamilton Conservation Comments on Enbridge Gas Pipeline Project - Environmental Report: Kirkwall-Hamilton Pipeline Project

Mr. Candido,

Thank you for the response to our previous comments. The response is generally satisfactory, but it would appear from some of your response (particularly to Comment #1) that you have misinterpreted the context in which our comments were provided. Our comments were provided not as a commenting agency on Planning Act applications, but as a Provincial regulatory body and permitting agency for this pipeline project, as well as a significant landowner along the pipeline corridor. Our office has had pre-consultation and on-going dialogue with Enbridge and their consultants for many similar projects over the last several years within our watershed (such as the Line 11 replacement) well in advance of field and other studies being completed. Many of the comments provided were to ensure that the project will meet the tests of our regulation and that our environmental concerns will be satisfactorily addressed as part of the future regulation application.

Please note that for Comments #1 and #2 the ecological survey information, hydrogeological assessment report, and dewatering plan will all be required as part of the future regulation application to our office.

Our office will forward the Butternut location information (Comment #5) to you shortly.

If you have any questions related to the above, please contact me.

Thank you

Darren Kenny, B.Sc. (Hons.), CAN-CISEC
Watershed Officer, Badge # 113
Hamilton Conservation Authority
P.O. Box 81067, 838 Mineral Springs Road
Ancaster, Ontario L9G 4X1
Tel - 905-525-2181, ext. 131
darren.kenny@conservationhamilton.ca
Website - www.conservationhamilton.ca

From: Candido, Mike <michael.candido@stantec.com>
Sent: September 6, 2019 3:50 PM
To: Kenny, Darren <Darren.Kenny@conservationhamilton.ca>
Subject: RE: Hamilton Conservation Comments on Enbridge Gas Pipeline Project - Environmental Report: Kirkwall-Hamilton Pipeline Project

Hello Mr. Kenny. Please find attached a response to your comments on the Kirkwall-Hamilton Environmental Report.

Regards,

Mike

Michael Candido
Project Manager - Assessment and Permitting

Direct: 519 780-8139
Mobile: 519 829-8159
Fax: 519 836-2493
michael.candido@stantec.com

Stantec
1-70 Southgate Drive
Guelph ON N1G 4P5

From: Kenny, Darren
Sent: Tuesday, August 20, 2019 9:39 AM
To: Candido, Mike
Subject: Hamilton Conservation Comments on Enbridge Gas Pipeline Project - Environmental Report: Kirkwall-Hamilton Pipeline Project

Mr. Candido,

Please find attached comments from our office on the June 21, 2019 circulation of the Environmental Report for this project.

Thank you

Darren Kenny, B.Sc. (Hons.), CAN-CISEC
Watershed Officer, Badge # 113
Hamilton Conservation Authority
P.O. Box 81067, 838 Mineral Springs Road
Ancaster, Ontario L9G 4X1
Tel - 905-525-2181, ext. 131
darren.kenny@conservationhamilton.ca
Website - www.conservationhamilton.ca

From:	Candido, Mike
To:	Kenny, Darren
Subject:	RE: Field Study Work Plan for Enbridge Gas" Kirkwall-Hamilton Pipeline Project
Date:	Tuesday, January 14, 2020 1:14:00 PM
Attachments:	image001.jpg

Hello Darren,

Based on background review and information gathering, Spencer Creek is provincially regulated as occupied habitat and it has been assumed that Redside Dace is present at the Spencer Creek crossing location (Section 4.3.1 and Appendix C, Figure 11 in the Environmental Report). As such, Enbridge will follow the MECP and SARA processes for the proposed crossing. While we agree that review of the project by DFO is required, no pre-construction fish sampling is proposed. Additionally, in our experience MNRF will not issue a scientific fish collection license for a SAR as there is potential to harm/harass the species.

During construction the Spencer Creek crossing location will be isolated and any fish trapped in the construction area shall be collected and relocated outside of the isolated area using capture, handling and release techniques to reduce harm and stress. Fish rescue plans will be developed and the appropriate permits will be secured. The list of relocated species will be shared with the MECP at the time, and can also be shared with HCA if you desire. Please let me know if you have any additional questions. Thank you.

Mike

Michael Candido CAN-CISEC
Project Manager - Assessment and Permitting

Direct: 519 780-8139
Mobile: 519 829-8159
Fax: 519 836-2493
michael.candido@stantec.com

Stantec
1-70 Southgate Drive
Guelph ON N1G 4P5

From: Kenny, Darren <Darren.Kenny@conservationhamilton.ca>
Sent: Thursday, January 9, 2020 2:25 PM
To: Candido, Mike <michael.candido@stantec.com>
Subject: RE: Field Study Work Plan for Enbridge Gas' Kirkwall-Hamilton Pipeline Project

Michael,

The HCA has no significant concerns with the field study work plan other than to note that Stantec will need to complete fish sampling for the HCA Spencer Creek crossing. This reach is mapped as Redside Dace (SAR) habitat, so sampling permits and

review of the project by DFO will be required.

Darren Kenny, B.Sc. (Hons.), CAN-CISEC
Watershed Officer, Badge # 113
Hamilton Conservation Authority
P.O. Box 81067, 838 Mineral Springs Road
Ancaster, Ontario L9G 4X1
Tel - 905-525-2181, ext. 131
darren.kenny@conservationhamilton.ca
Website - www.conservationhamilton.ca

From: Candido, Mike [mailto:michael.candido@stantec.com]
Sent: December 18, 2019 1:27 PM
To: Kenny, Darren; Cassandra Connolly; Nathan Garland
Cc: Taylor, Andrew (Guelph); Straus, Melissa
Subject: Field Study Work Plan for Enbridge Gas' Kirkwall-Hamilton Pipeline Project

Hello. Please find attached the Field Study Work Plan for Enbridge Gas' Kirkwall-Hamilton Pipeline Project. If you have any questions please do not hesitate to contact me. Thank you.

Mike

Michael Candido CAN-CISEC
Project Manager - Assessment and Permitting

Direct: 519 780-8139
Mobile: 519 829-8159
Fax: 519 836-2493
michael.candido@stantec.com

Stantec
1-70 Southgate Drive
Guelph ON N1G 4P5

Stantec Consulting Ltd.
70 Southgate Dr. Suite 1, Guelph ON N1G 4P5

December 18, 2019
File: 160961299

Attention:

Cassandra Connolly
Conservation Halton
2596 Britannia Road West
Burlington, ON L7P 0G3

Darren Kenny
Hamilton Conservation Authority
38 Mineral Springs Rd
Ancaster, ON L9G 4X1

Nathan Garland
Grand River Conversation Authority
400 Clyde Road
Cambridge, ON N1R 5W6

Dear Ms. Connolly, Mr. Kenny and Mr. Garland,

Reference: Proposed Field Study Work Plan for the Dawn-Parkway System Expansion: Kirkwall-Hamilton Pipeline Section

INTRODUCTION

As of January 1, 2019, Union Gas and Enbridge Gas Distribution have amalgamated into one utility with the legal name Enbridge Gas Inc. (Enbridge Gas). To increase existing capacity and accommodate additional demand for natural gas along its main natural gas transmission system, the Dawn Parkway System, Enbridge Gas is proposing to construct a new 48-inch diameter natural gas pipeline located within the municipality of Flamborough in the City of Hamilton (**Figure 1**, **Attachment A**).

Enbridge Gas has retained Stantec Consulting Ltd. (Stantec) to undertake an environmental study of the construction and operation of the proposed pipeline and related facilities to fulfill the requirements of the Ontario Energy Board's (OEB*) Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Pipelines and Facilities in Ontario, 7th Edition* (2016) (OEB Environmental Guidelines).

Stantec prepared an Environmental Report (ER) dated June 21, 2019 undertaken in accordance with the OEB Environmental Guidelines (as mentioned above), as well relevant federal and provincial environmental guidelines and regulations. The ER was circulated to affected municipalities, conservations authorities and to the Ontario Pipeline Coordinating Committee (OPCC). The report included a background review of existing information (e.g., Land Information Ontario, Natural Heritage Information Centre, wildlife atlases), a consultation program, assessment of alternative routes, an outline of the potential impacts of the project on physical, biophysical and socio-economic features, and recommended mitigation measures to offset potential impacts.

Reference: Proposed Field Study Work Plan for the Dawn-Parkway System Expansion: Kirkwall-Hamilton Pipeline Section

The purpose of this letter is to provide details on the proposed (and undertaken) natural heritage field program for your review, and as requested by Hamilton Conservation Authority (HCA) in their comments on the ER dated August 20, 2019.

PROJECT DESCRIPTION

The proposed project will be constructed between Enbridge Gas' existing Kirkwall Valve Site, located northeast of the intersection of Safari Road and Valens Road and their existing Hamilton Valve Site, located east of Highway 6 and north of Carlisle Road. The proposed pipeline will parallel two existing Enbridge Gas pipelines from the Kirkwall Valve Site for approximately 7 km, then parallel three existing Enbridge Gas pipelines for approximately 3 km to the Hamilton Valve Site. The total length of the proposed pipeline will be approximately 10 km. If approved, construction of the pipeline could begin as early as spring/summer 2021 and be complete by the end of 2021.

SITE INVESTIGATION

Site investigations targeted the Project Development Area (PDA) and, where applicable, the Study Area as shown on **Figure 1** (**Attachment A**).

Studies undertaken in 2019 within the PDA included:

- Fall Botanical Survey: area search and inventory of plant species observed, conducted on October 10-11, 2019.

- Bat Maternity Roost Habitat Assessment: Surveys involved the assessment of trees greater than 10 cm for bat maternity roost suitability according to *Survey Protocol for Species at Risk Bats within Treed Habitats Little Brown Myotis, Northern Myotis & Tri-Colored Bat* (MNRF 2017). Conducted November 28-29, 2019. The purpose of the bat maternity roost surveys is to characterize the habitat of species at risk. The Ministry of Environment, Conservation and Parks (MECP) will be consulted on requirements under the Endangered Species Act.

- Raptor Nest Search: Area search during leaf off, conducted concurrently with the bat maternity roost habitat assessment from November 28-29, 2019.

- Aquatic Surveys: Targeted surveys were conducted on October 10, 2019 to capture habitat information to support regulatory consultation and any necessary permitting requirements. Seasonal habitat conditions were collected in watercourses identified as intermittent during the background data review. Limiting factors such as barriers to fish movement and connectivity to downstream habitat were also considered. Fish community sampling is not proposed for this project as it is expected that HCA, Conservation Halton (CH), Grand River Conservation Authority (GRCA) and/or the Ministry of Natural Resources and Forestry (MNRF) have enough fish community data to determine habitat sensitivities within the study area.

The following site-specific field investigations will be undertaken in 2020:

- Spring and Summer Botanical Surveys: area search to be conducted twice, once between May and early June and once between the end of June and August.

Reference: Proposed Field Study Work Plan for the Dawn-Parkway System Expansion: Kirkwall-Hamilton Pipeline Section

- Wildlife Habitat Assessments: document habitat suitability for potential species at risk and characteristics that may support significant wildlife habitat as per the Ecoregional Schedules for Ecoregion 6E.
- Amphibian Surveys: three rounds, once in each of April, May, and June in accordance with Marsh Monitoring Program protocol (Bird Studies Canada 2008).
- Grassland and Breeding Bird Surveys: two surveys between the last week in May and first week in July, conducted by traversing the PDA between sunrise and 10 am. Grassland surveys will be conducted in accordance with *Bobolink Survey Methodology* (MNR 2012a) between sunrise and 9 am using transects and point counts. Bird species seen or heard will be recorded with the type of breeding evidence observed.
- Blanding's Turtle Surveys: five surveys to be conducted by scanning aquatic habitats during sunny and warm afternoons between June and August (MNR 2012b).
- Incidental Wildlife Observations: document wildlife species presence within the Study Area during each field investigation.

Survey results will be summarized in a Natural Heritage Report in 2020/2021.

SUMMARY

The purpose of this field study work plan is to provide an overview of the studies completed to date and those proposed for 2020 to characterize the natural features within the Dawn-Parkway System Expansion: Kirkwall-Hamilton Pipeline Section Project Development Area. We look forward to any comments you may have on the proposed plan.

If you have any questions, or wish to discuss the content of the above, please feel free to contact the undersigned.

Sincerely,

STANTEC CONSULTING LTD.

Melissa Straus
Terrestrial Ecologist
Tel: (519) 780-8103
Fax: (519) 836-2493
melissa.straus@stantec.com

Andrew Taylor
Senior Ecologist
Tel: (519) 780-8122
Fax: (519) 836-2493
andrew.taylor@stantec.com

Attch.: Attachment A – Figure 1: Ecosystems Study Area

c.c. Ryan Park, Enbridge Gas Inc.
Michael Candido, Stantec Consulting Ltd.

REFERENCES

Bird Studies Canada (BSC). 2008. Marsh Monitoring Program Manual.

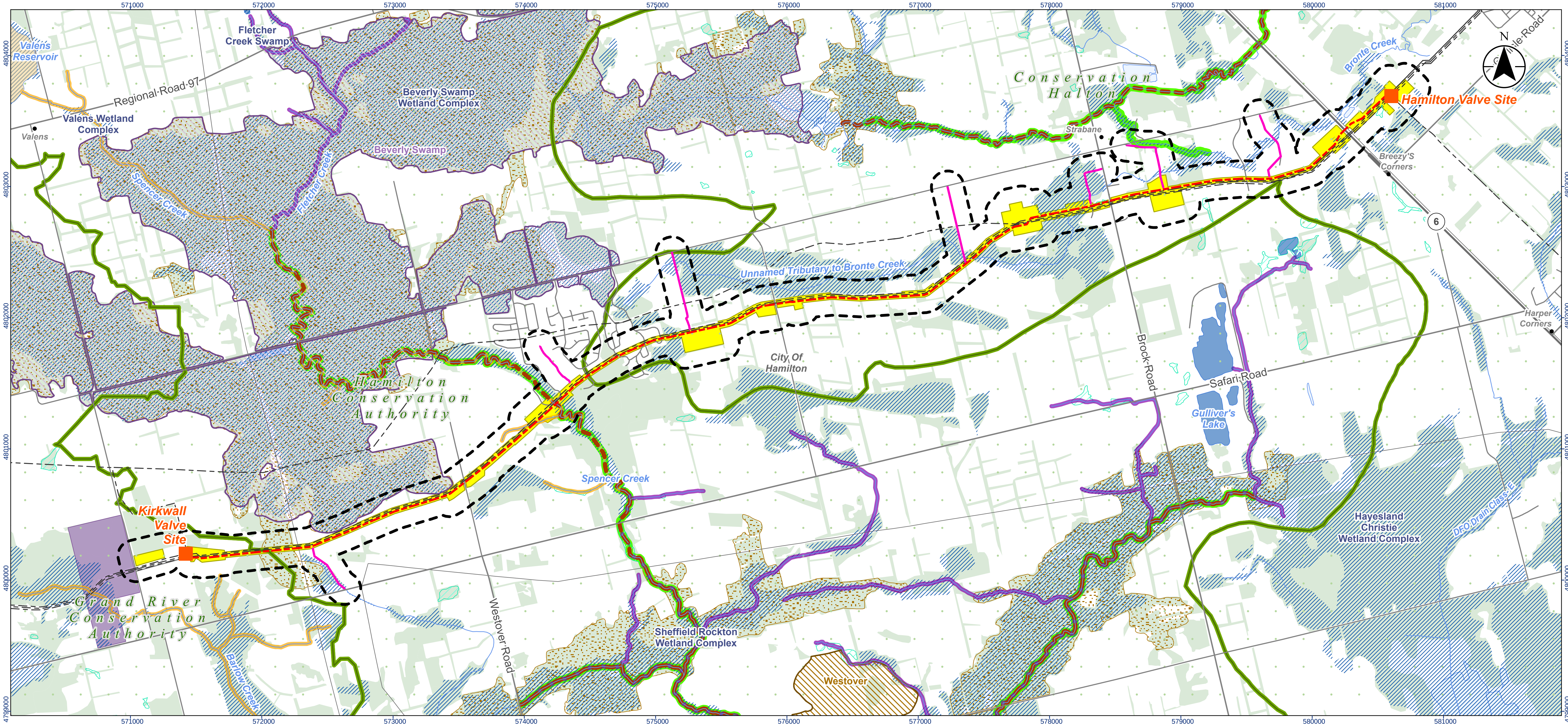
Ministry of Natural Resources (MNR). 2012a. Bobolink Survey Methodology.

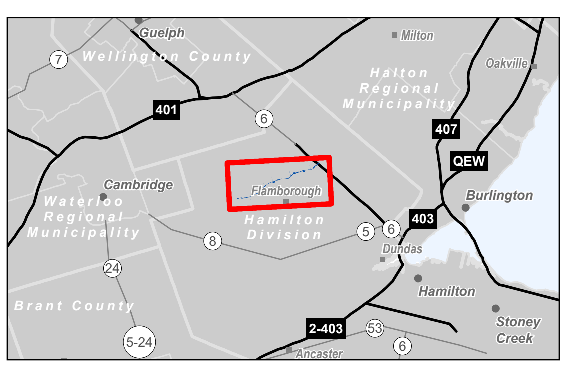
Ministry of Natural Resources (MNR). 2012b. Blanding's Turtle Survey Protocol.

Ministry of Natural Resources (MNR). 2015. Significant Wildlife Habitat Criteria Schedules For Ecoregion 6E.

Ministry of Natural Resources and Forestry (MNRF). 2017. Survey Protocol for Species at Risk Bats within Treed Habitats Little Brown Myotis, Northern Myotis & Tri-Colored Bat.

Ontario Energy Board (OEB). 2016. Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Pipelines and Facilities in Ontario, 7th Edition.





Legend

- Existing Enbridge Gas Station
- Proposed Pipeline Preferred Route
- Ecosystems Study Area
- Access Laneway
- Project Development Area (PDA)
- Watercourse (Intermittent)
- Watercourse (Permanent)
- Constructed Drain
- Conservation Area Administrative Boundary
- Crown Land Held/Acquired
- ANSI, Earth Science
- ANSI, Life Science
- Greenbelt Natural Heritage System
- Redside Dace
- Thermal Regime, Cold
- Thermal Regime, Warm
- Thermal Regime, Cold
- Thermal Regime, Warm
- Aquatic Species at Risk Distribution
- Wetland, Provincially Significant
- Wetland, Not evaluated per OWES
- Waterbody
- Deer Wintering Area
- Greenbelt Natural Heritage System
- Wooded Area
- Existing Pipeline
- Highway
- Major Road
- Minor Road
- Hydro Line
- Municipal Boundary, Lower

0 0.5 1 km

1:30,000 (At original document size of 11x17)

Notes
1. Coordinate System: NAD 1983 UTM Zone 17N
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2018.

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Stantec

Project Location 160961229
City of Hamilton
Prepared by AMW on 2019-12-11
Technical Review by MS on 2019-12-11

Client/Project
ENBRIDGE GAS INC
KIRKWALL TO HAMILTON PIPELINE PROJECT

Figure No.
1

Title
Ecosystems Study Area

APPENDIX C:
Plant and Wildlife Lists

VASCULAR PLANT LIST - Hamilton Conservation Authority Lands, Kirkwall to Hamilton Pipeline (Enbridge Gas Inc.)

Plant Species Observed between May and August 2020

SCIENTIFIC NAME	COMMON NAME	PROVINCIAL STATUS (S-RANK)	COSEWIC STATUS	SARO STATUS	COEFFICIENT OF CONSERVATISM	COEFFICIENT OF WETNESS
PTERIDOPHYTES (Ferns & Fern Allies)						
Athyrium filix-femina	Common Lady Fern	S5			4	0
Cystopteris bulbifera	Bulblet Fern	S5			5	-3
Dryopteris carthusiana	Spinulose Wood Fern	S5			5	-3
Equisetum arvense	Field Horsetail	S5			0	0
Matteuccia struthiopteris	Ostrich Fern	S5			5	0
Onoclea sensibilis	Sensitive Fern	S5			4	-3
Osmunda regalis	Royal Fern	S5			7	-5
Osmundastrum cinnamomeum	Cinnamon Fern	S5			7	-3
Thelypteris palustris	Marsh Fern	S5			5	-3
Juniperus virginiana	Eastern Red Cedar	S5			4	3
GYMNOSPERMS (Conifers)						
Picea abies	Norway Spruce	SE3				5
Pinus resinosa	Red Pine	S5			8	3
Pinus strobus	Eastern White Pine	S5			4	3
Pinus sylvestris	Scots Pine	SE5				3
Thuja occidentalis	Eastern White Cedar	S5			4	-3
Tsuga canadensis	Eastern Hemlock	S5			7	3
ANGIOSPERMS (Dicots)						
Abutilon theophrasti	Velvetleaf	SE5				3
Acer negundo	Manitoba Maple	S5			0	0
Acer nigrum	Black Maple	S4?			7	3
Acer saccharum	Sugar Maple	S5			4	3
Acer x freemanii	Freeman's (Swamp) Maple	S5			6	-5
Achillea millefolium	Common Yarrow	SE				3
Actaea sp.	Baneberry Species	S5				
Agrimonia gryposepala	Hooked Agrimony	S5			2	3
Alliaria petiolata	Garlic Mustard	SE5				0
Ambrosia artemisiifolia	Common Ragweed	S5			0	3
Amelanchier sp.	Serviceberry Species					
Anemone virginiana	Tall Anemone	S5			4	3
Anthyllis vulneraria	Common Kidney-vetch	SE1				5

VASCULAR PLANT LIST - Hamilton Conservation Authority Lands, Kirkwall to Hamilton Pipeline (Enbridge Gas Inc.)

Plant Species Observed between May and August 2020

SCIENTIFIC NAME	COMMON NAME	PROVINCIAL STATUS (S-RANK)	COSEWIC STATUS	SARO STATUS	COEFFICIENT OF CONSERVATISM	COEFFICIENT OF WETNESS
Apocynum androsaemifolium	Spreading Dogbane	S5			3	5
Apocynum cannabinum var. hypericifolium	Clasping-leaved Hemp Dogbane	S5			3	0
Aquilegia canadensis	Red Columbine	S5			5	3
Aralia nudicaulis	Wild Sarsaparilla	S5			4	3
Arctium minus	Common Burdock	SE5				3
Asarum canadense	Canada Wild-ginger	S5			6	5
Asclepias exaltata	Poke Milkweed	S4			8	5
Asclepias syriaca	Common Milkweed	S5			0	5
Betula alleghaniensis	Yellow Birch	S5			6	0
Betula papyrifera	Paper Birch	S5			2	3
Bidens spp.	Beggarticks Species					
Boehmeria cylindrica	False Nettle	S5			4	-5
Cardamine pensylvanica	Pennsylvania Bittercress	S5			6	-3
Carpinus caroliniana	Blue-beech	S5			6	0
Carya cordiformis	Bitternut Hickory	S5			6	0
Carya ovata	Shagbark Hickory	S5			6	3
Centaurea spp.	Knapweed	SE				
Chelone glabra	White Turtlehead	S5			7	-5
Cichorium intybus	Chicory	SE5				5
Cicuta maculata	Spotted Water-hemlock	S5			6	-5
Circaea canadensis	Enchanter's Nightshade	S5			2	3
Cirsium arvense	Canada Thistle	SE5				3
Cirsium vulgare	Bull Thistle	SE5				3
Clematis virginiana	Virginia Virgin's-bower	S5			3	0
Clinopodium vulgare	Field Basil	S5			4	5
Coptis trifolia	Goldthread	S5			7	-3
Cornus alternifolia	Alternate-leaved Dogwood	S5			6	3
Cornus obliqua	Pale Dogwood	S5			2	-3
Cornus racemosa	Gray Dogwood	S5			2	0
Cornus sericea	Red-osier Dogwood	S5			2	-3
Crataegus sp.	Hawthorn					
Daucus carota	Wild Carrot	SE5				5

VASCULAR PLANT LIST - Hamilton Conservation Authority Lands, Kirkwall to Hamilton Pipeline (Enbridge Gas Inc.)

Plant Species Observed between May and August 2020

SCIENTIFIC NAME	COMMON NAME	PROVINCIAL STATUS (S-RANK)	COSEWIC STATUS	SARO STATUS	COEFFICIENT OF CONSERVATISM	COEFFICIENT OF WETNESS
Dipsacus fullonum	Common Teasel	SE5				3
Dirca palustris	Eastern Leatherwood	S4			7	0
Echinocystis lobata	Wild Mock-cucumber	S5			3	-3
Echium vulgare	Common Viper's Bugloss	SE5				5
Elaeagnus umbellata	Autumn Olive	SE3				3
Epilobium parviflorum	Small-flowered Willowherb	SE4				3
Erigeron annuus	Annual Fleabane	S5			0	3
Erigeron canadensis	Canada Horseweed	S5			0	3
Erigeron philadelphicus	Philadelphia Fleabane	S5			1	-3
Erigeron pulchellus	Robin Plantain Fleabane	S5			7	3
Erigeron strigosus	Rough Fleabane	S5			4	3
Euonymus obovatus	Running Strawberry Bush	S4			6	5
Eupatorium perfoliatum	Common Boneset	S5			2	-3
Eurybia macrophylla	Large-leaved Aster	S5			5	5
Euthamia graminifolia	Grass-leaved Goldenrod	S5			2	0
Fagus grandifolia	American Beech	S4			6	3
Fragaria virginiana	Wild Strawberry	S5			2	3
Frangula alnus	Glossy Buckthorn	SE5				0
Fraxinus americana	White Ash	S4			4	3
Fraxinus nigra	Black Ash	S3	THR		7	-3
Fraxinus pennsylvanica	Green Ash	S4			3	-3
Galinsoga cf. quadriradiata	Hairy Galinsoga	SE5				3
Galium aparine	Cleavers	S5			4	3
Galium boreale	Northern Bedstraw	S5			7	0
Galium mollugo	Smooth Bedstraw	SE5				5
Galium triflorum	Three-flowered Bedstraw	S5			4	3
Geranium maculatum	Spotted Geranium	S5			6	3
Geum canadense	White Avens	S5			3	0
Geum fragarioides	Barren Strawberry	S5			5	5
Hackelia virginiana	Virginia Stickseed	S5			5	3
Hesperis matronalis	Dame's Rocket	SE5				3
Hypericum perforatum	Common St. John's-wort	SE5				5
Impatiens capensis	Spotted Jewelweed	S5			4	-3

VASCULAR PLANT LIST - Hamilton Conservation Authority Lands, Kirkwall to Hamilton Pipeline (Enbridge Gas Inc.)

Plant Species Observed between May and August 2020

SCIENTIFIC NAME	COMMON NAME	PROVINCIAL STATUS (S-RANK)	COSEWIC STATUS	SARO STATUS	COEFFICIENT OF CONSERVATISM	COEFFICIENT OF WETNESS
Juglans cinerea	Butternut	S2?	END	END	6	3
Juglans nigra	Black Walnut	S4?			5	3
Lactuca serriola	Prickly Lettuce	SE5				3
Leucanthemum vulgare	Oxeye Daisy	SE5				5
Lobelia inflata	Indian-tobacco	S5			3	3
Lonicera dioica	Limber Honeysuckle	S5			5	3
Lonicera morrowii	Morrow's Honeysuckle	SE3				3
Lotus corniculatus	Garden Bird's-foot Trefoil	SE5				3
Lycopus uniflorus	Northern Water-horehound	S5			5	-5
Lysimachia borealis	Northern Starflower	S5			6	0
Lysimachia ciliata	Fringed Loosestrife	S5			4	-3
Lysimachia thyrsiflora	Water Loosestrife	S5			7	-5
Lythrum salicaria	Purple Loosestrife	SE5				-5
Malus cf. pumila	Common Apple	SE4				5
Malus coronaria	Sweet Crabapple	S4			5	5
Malva neglecta	Dwarf Cheeseweed	SE5				5
Medicago lupulina	Black Medic	SE5				3
Medicago sativa	Alfalfa	SE5				5
Melilotus albus	White Sweet-clover	SE5				3
Mentha canadensis	Canada Mint	S5			3	-3
Mimulus ringens	Square-stemmed Monkeyflower	S5			6	-5
Morus alba	White Mulberry	SE5				0
Nepeta cataria	Catnip	SE5				3
Oenothera perennis	Perennial Evening Primrose	S5			6	0
Ostrya virginiana	Eastern Hop-hornbeam	S5			4	3
Parthenocissus cf. vitacea	Thicket Creeper	S5			4	3
Penstemon digitalis	Foxglove Beardtongue	S4			6	0
Penstemon hirsutus	Hairy Beardtongue	S4			7	5
Phlox divaricata	Wild Blue Phlox	S4			7	3
Physalis heterophylla	Clammy Ground-cherry	S4			3	5
Physalis longifolia	Long-leaved Ground-cherry	S4			1	5
Pilosella sp.	Hawkweed Species	SE				
Plantago lanceolata	English Plantain	SE5				3

VASCULAR PLANT LIST - Hamilton Conservation Authority Lands, Kirkwall to Hamilton Pipeline (Enbridge Gas Inc.)

Plant Species Observed between May and August 2020

SCIENTIFIC NAME	COMMON NAME	PROVINCIAL STATUS (S-RANK)	COSEWIC STATUS	SARO STATUS	COEFFICIENT OF CONSERVATISM	COEFFICIENT OF WETNESS
Plantago major	Common Plantain	SE5				3
Plantago rugelii	Rugel's Plantain	S5			1	0
Podophyllum peltatum	May-apple	S5			5	3
Populus balsamifera	Balsam Poplar	S5			4	-3
Populus deltoides ssp. deltoides	Eastern Cottonwood	S5			4	0
Populus grandidentata	Large-toothed Aspen	S5			5	5
Populus tremuloides	Trembling Aspen	S5			2	0
Potentilla norvegica	Norwegian Cinquefoil	S5			0	0
Prunella vulgaris ssp. lanceolata	Lance-leaved Self-heal	S5			0	0
Prunus pensylvanica	Pin Cherry	S5			3	3
Prunus serotina	Black Cherry	S5			3	3
Prunus virginiana	Choke Cherry	S5			2	3
Quercus macrocarpa	Bur Oak	S5			5	3
Quercus rubra	Northern Red Oak	S5			6	3
Ranunculus abortivus	Kidney-leaved Buttercup	S5			2	0
Ranunculus acris	Tall Buttercup	SE5				0
Rhamnus cathartica	Common Buckthorn	SE5				0
Rhus typhina	Staghorn Sumac	S5			1	3
Ribes americanum	Wild Black Currant	S5			4	-3
Ribes cynosbati	Prickly Gooseberry	S5			4	3
Rosa blanda	Smooth Rose	S5			3	3
Rosa multiflora	Multiflora Rose	SE5				3
Rubus cf. allegheniensis	Allegheny Blackberry	S5			2	3
Rubus occidentalis	Black Raspberry	S5			2	5
Rubus odoratus	Purple-flowering Raspberry	S5			3	5
Rubus pubescens	Dewberry	S5			4	-3
Rudbeckia hirta	Black-eyed Susan	S5			0	3
Salix amygdaloides	Peach-leaved Willow	S5			6	-3
Salix bebbiana	Bebb's Willow	S5			4	-3
Salix eriocephala	Heart-leaved Willow	S5			4	-3
Salix purpurea	Purple Willow	SE4				-3
Salix sp.	Exotic Willow	SE				
Sambucus racemosa	Red Elderberry	S5			5	3

VASCULAR PLANT LIST - Hamilton Conservation Authority Lands, Kirkwall to Hamilton Pipeline (Enbridge Gas Inc.)

Plant Species Observed between May and August 2020

SCIENTIFIC NAME	COMMON NAME	PROVINCIAL STATUS (S-RANK)	COSEWIC STATUS	SARO STATUS	COEFFICIENT OF CONSERVATISM	COEFFICIENT OF WETNESS
Sanguinaria canadensis	Bloodroot	S5			5	3
Scutellaria lateriflora	Mad Dog Skullcap	S5			5	-5
Securigera varia	Common Crown-vetch	SE5				5
Silene vulgaris	Bladder Campion	SE5				5
Sium suave	Hemlock Water-parsnip	S5			4	-5
Solanum dulcamara	Bittersweet Nightshade	SE5				0
Solidago caesia	Blue-stemmed Goldenrod	S5			5	3
Solidago canadensis	Canada Goldenrod	S5			1	3
Solidago flexicaulis	Zigzag Goldenrod	S5			6	3
Solidago gigantea	Giant Goldenrod	S5			4	-3
Solidago juncea	Early Goldenrod	S5			3	5
Solidago rugosa	Rough-stemmed Goldenrod	S5			4	0
Sonchus arvensis	Field Sow-thistle	SE5				3
Symphoricarpos albus	Common Snowberry	S5			7	3
Symphyotrichum ericoides	White Heath Aster	S5			4	3
Symphyotrichum laeve	Smooth Aster	S5			7	3
Symphyotrichum lanceolatum	Panicled Aster	S5			3	-3
Symphyotrichum lateriflorum	Calico Aster	S5			3	0
Symphyotrichum novae-angliae	New England Aster	S5			2	-3
Symphyotrichum pilosum var. pilosum	Old Field Aster	S5			1	3
Symphyotrichum urophyllum	Arrow-leaved Aster	S4			6	5
Syringa vulgaris	Common Lilac	SE5				5
Taraxacum officinale	Common Dandelion	SE5				3
Thalictrum dioicum	Early Meadow-rue	S5			6	3
Thalictrum pubescens	Tall Meadow-rue	S5			5	-3
Tilia americana	American Basswood	S5			4	3
Toxicodendron radicans	Poison Ivy	S5			2	0
Tragopogon dubius	Yellow Goat's-beard	SE5				5
Trichostema brachiatum	False Pennyroyal	S4			9	5
Trifolium hybridum	Alsike Clover	SE5				3
Trifolium pratense	Red Clover	SE5				3
Trifolium repens	White Clover	SE5				3

VASCULAR PLANT LIST - Hamilton Conservation Authority Lands, Kirkwall to Hamilton Pipeline (Enbridge Gas Inc.)

Plant Species Observed between May and August 2020

SCIENTIFIC NAME	COMMON NAME	PROVINCIAL STATUS (S-RANK)	COSEWIC STATUS	SARO STATUS	COEFFICIENT OF CONSERVATISM	COEFFICIENT OF WETNESS
Triosteum aurantiacum	Orange-fruited Horse-gentian	S4S5			7	5
Ulmus americana	American Elm	S5			3	-3
Urtica dioica ssp. gracilis	Slender Stinging Nettle	S5			2	0
Verbena urticifolia	White Vervain	S5			4	0
Veronica americana	American Speedwell	S5			6	-5
Veronica officinalis	Common Speedwell	SE5				5
Viburnum acerifolium	Maple-leaved Viburnum	S5			6	5
Viburnum lentago	Nannyberry	S5			4	0
Viburnum opulus ssp. opulus	Cranberry Viburnum	SE3?				-3
Viburnum rafinesquianum	Downy Arrowwood	S5			7	5
Vicia cracca	Tufted Vetch	SE5				5
Vincetoxicum rossicum	European Swallow-wort	SE5				5
Viola arvensis	European Field Pansy	SE4				5
Viola canadensis	Canada Violet	S5			6	3
Viola pubescens	Yellow Violet	S5			5	3
Viola sp.	Violet Species					
Vitis riparia	Riverbank Grape	S5			0	0
Zanthoxylum americanum	Common Prickly-ash	S5			3	3
ANGIOSPERMS (Monocots)						
Agrostis gigantea	Redtop	SE5				-3
Allium tricoccum	Wild Leek	S4			7	3
Arisaema triphyllum	Jack-in-the-pulpit	S5			5	-3
Asparagus officinalis	Garden Asparagus	SE5				3
Brachyelytrum aristosum	Northern Shorthusk	S5?			7	3
Bromus inermis	Smooth Brome	SE5				5
Carex aurea	Golden Sedge	S5			4	-3
Carex brunnescens	Brownish Sedge	S5			6	-3
Carex cristatella	Crested Sedge	S5			3	-3
Carex deweyana	Dewey's Sedge	S5			6	3
Carex eburnea	Bristle-leaved Sedge	S5			6	3
Carex gracillima	Graceful Sedge	S5			4	3
Carex granularis	Limestone Meadow Sedge	S5			3	-3

VASCULAR PLANT LIST - Hamilton Conservation Authority Lands, Kirkwall to Hamilton Pipeline (Enbridge Gas Inc.)

Plant Species Observed between May and August 2020

SCIENTIFIC NAME	COMMON NAME	PROVINCIAL STATUS (S-RANK)	COSEWIC STATUS	SARO STATUS	COEFFICIENT OF CONSERVATISM	COEFFICIENT OF WETNESS
Carex hirtifolia	Pubescent Sedge	S4S5			5	5
Carex hitchcockiana	Hitchcock's Sedge	S4S5			6	5
Carex intumescens	Bladder Sedge	S5			6	-3
Carex lacustris	Lake Sedge	S5			5	-5
Carex leptalea	Bristle-stalked Sedge	S5			8	-5
Carex lupulina	Hop Sedge	S5			6	-5
Carex pedunculata	Long-stalked Sedge	S5			5	3
Carex pellita	Woolly Sedge	S5			2	-5
Carex retrorsa	Retrorse Sedge	S5			5	-5
Carex stipata	Awl-fruited Sedge	S5			3	-5
Carex vulpinoidea	Fox Sedge	S5			3	-5
Carex woodii	Wood's Sedge	S4			6	3
Convallaria majalis	European Lily-of-the-valley	SE5				5
Dactylis glomerata	Orchard Grass	SE5				3
Danthonia spicata	Poverty Oatgrass	S5			5	5
Dichanthelium cf. implicatum	Slender-stemmed Panicgrass	S5			3	0
Elymus hystrix	Bottlebrush Grass	S5			5	5
Elymus repens	Creeping Wildrye	SE5				3
Epipactis helleborine	Eastern Helleborine	SE5				3
Erythronium americanum	Yellow Trout-lily	S5			5	5
Glyceria striata	Fowl Mannagrass	S5			3	-5
Iris cf. versicolor	Harlequin Blue Flag	S5			5	-5
Juncus dudleyi	Dudley's Rush	S5			1	-3
Juncus cf. torreyi	Torrey's Rush	S5			3	-3
Leersia oryzoides	Rice Cutgrass	S5			3	-5
Lemna minor	Lesser Duckweed	S5?			5	-5
Maianthemum canadense	Wild Lily-of-the-valley	S5			5	3
Maianthemum racemosum	Large False Solomon's Seal	S5			4	3
Maianthemum stellatum	Starry False Solomon's Seal	S5			6	0
Muhlenbergia cf. frondosa	Wirestem Muhly	S4			5	-3
Oryzopsis asperifolia	White-grained Mountain-ricegrass	S5			6	5
Panicum capillare	Common Panicgrass	S5			0	0

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Plant Species Observed between May and August 2020

SCIENTIFIC NAME	COMMON NAME	PROVINCIAL STATUS (S-RANK)	COSEWIC STATUS	SARO STATUS	COEFFICIENT OF CONSERVATISM	COEFFICIENT OF WETNESS
Phalaris arundinacea	Reed Canary Grass	S5			0	-3
Phleum pratense	Common Timothy	SE5				3
Poa compressa	Canada Bluegrass	SE5				3
Poa pratensis	Kentucky Bluegrass	S5			0	3
Schizachne purpurascens	Purple False Melic	S5			6	3
Scirpus pendulus	Rufous Bulrush	S5			3	-5
Setaria pumila	Yellow Foxtail	SE5				0
Sisyrinchium montanum	Strict Blue-eyed-grass	S5			4	0
Smilax herbacea	Herbaceous Carrionflower	S4?			5	0
Smilax tamnoides	Hispid Greenbrier	S5			6	0
Trillium erectum	Red Trillium	S5			6	3
Trillium grandiflorum	White Trillium	S5			5	3
Uvularia grandiflora	Large-flowered Bellwort	S5			6	5

FLORISTIC SUMMARY	TOTAL
Total Species	264
Native Species	198
Introduced (exotic) species	66
Species at Risk (END, THR or SC)	2
Rare in Ontario (S1, S2 or S3)	2
Uncommon to common in Ontario (S4)	23
Common to very common in Ontario (S5)	173
Highly sensitive plant species with C value of 8, 9 or 10	4
Wetland Plant Species (-5, -4 or -3)	66

Wildlife List

COMMON NAME	*SCIENTIFIC NAME*	ONTARIO STATUS	GLOBAL STATUS	SARO	SARA	Local Status Hamilton
ODONATA						
Emerald Spreadwing	*Lestes dryas*	S5	G5			C
Lance-Tipped Darner	*Aeshna constricta*	S5	G5			C
Common Green Darner	*Anax junius*	S5	G5			C
Fawn Darner	*Boyeria vinosa*	S5	G5			U
Harlequin Darner	*Gomphaeschna furcillata*	S3	G5			U
Racket-tailed Emerald	*Dorocordulia libera*	S5	G5			U
Brush-tipped Emerald	*Somatochlora walshii*	S4	G5			U
Eastern Pondhawk	*Erythemis simplicicollis*	S5	G5			C
Dot-tailed Whiteface	*Leucorrhinia intacta*	S5	G5			C
Widow Skimmer	*Libellula luctuosa*	S5	G5			C
Twelve-Spotted Skimmer	*Libellula pulchella*	S5	G5			C
Blue Dasher	*Pachydiplax longipennis*	S5	G5			C
Common Whitetail	*Plathemis lydia*	S5	G5			C
Cherry-faced Meadowhawk	*Sympetrum internum*	S5	G5			U
White-faced Meadowhawk	*Sympetrum obtrusum*	S5	G5			C
Ruby Meadowhawk	*Sympetrum rubicundulum*	S5	G5			C
Black Saddlebags	*Tramea lacerata*	S4	G5			C
BUTTERFLIES						
Silver Spotted Skipper	*Epargyreus clarus*	S4	G5			U
Northern Cloudywing	*Thorybes pylades*	S5	G5			R
Dreamy Duskywing	*Erynnis icelus*	S5	G5			U
Juvenal's Duskywing	*Erynnis juvenalis*	S5	G5			C
Common Sootywing	*Pholisora catullus*	S4	G5			U
European Skipper	*Thymelicus lineola*	SNA	G5			
Hobomok Skipper	*Poanes hobomok*	S5	G5			C
Black Swallowtail	*Papilio polyxenes*	S5	G5			C
Canadian Tiger Swallowtail	*Papilio canadensis*	S5	G5			C
Cabbage White	*Pieris rapae*	SNA	G5			
Clouded Sulphur	*Colias philodice*	S5	G5			C
Orange Sulphur	*Colias eurytheme*	S5	G5			C
Eastern Tailed Blue	*Everes comyntas*	S5	G5			C
Summer Azure	*Celastrina ladon*	SU	G5			C
Great Spangled Fritillary	*Speyeria cybele*	S5	G5			C
Northern Crescent	*Phycoides pascoensis*	S5	G5			C
Eastern Comma	*Polygonia comma*	S5	G5			C
Mourning Cloak	*Nymphalis antiopa*	S5	G5			C
Little Wood-Satyr	*Megisto cymela*	S5	G5			C
Common Ringlet	*Coenonympha tullia*	S5	G5			C
Common Wood-Nymph	*Cercyonis pegala*	S5	G5			C
Monarch	*Danaus plexippus*	S4B, S2N	G4	SC	SC	C
BUMBLE BEES						
Common Eastern Bumble Bee	*Bombus impatiens*	S4S5	G5			
AMPHIBIANS						
American Toad	*Anaxyrus americanus*	S5	G5			C
Tetraploid Gray Treefrog	*Hyla versicolor*	S5	G5			C

Wildlife List

COMMON NAME	*SCIENTIFIC NAME*	ONTARIO STATUS	GLOBAL STATUS	SARO	SARA	Local Status Hamilton
Spring Peeper	*Pseudacris crucifer*	S5	G5			C
Northern Green Frog	*Lithobates clamitans*	S5	G5			C
Wood Frog	*Lithobates sylvatica*	S5	G5			C
REPTILES						
Eastern Gartersnake	*Thamnophis sirtalis*	S5	G5			C
BIRDS						
Canada Goose	*Branta canadensis*	S5	G5			C
Mallard	*Anas platyrhynchos*	S5	G5			C
Wild Turkey	*Meleagris gallopava*	S5	G5			
Rock Pigeon	*Columba livia*	SNA	G5			
Ruby-throated Hummingbird	*Archilochus colubris*	S5B	G5			C
Killdeer	*Charadrius vociferus*	S5B, S5N	G5			C
Ring-billed Gull	*Larus delawarensis*	S5B,S4N	G5			C
Great Blue Heron	*Ardea herodias*	S5	G5			U
Turkey Vulture	*Cathartes aura*	S5B	G5			C
Red-tailed Hawk	*Buteo jamaicensis*	S5	G5	NAR	NAR	C
Red-bellied Woodpecker	*Melanerpes carolinus*	S4	G5			C
Downy Woodpecker	*Dryobates pubescens*	S5	G5			C
Eastern Wood-Pewee	*Contopus virens*	S4B	G5	SC	SC	C
Great Crested Flycatcher	*Myiarchus crinitus*	S4B	G5			C
Eastern Kingbird	*Tyrannus tyrannus*	S4B	G5			C
Red-eyed Vireo	*Vireo olivaceus*	S5B	G5			C
Blue Jay	*Cyanocitta cristata*	S5	G5			C
American Crow	*Corvus brachyrhynchos*	S5B	G5			C
Tree Swallow	*Tachycineta bicolor*	S4B	G5			C
Barn Swallow	*Hirundo rustica*	S4B	G5	THR	THR	C
Black-capped Chickadee	*Poecile atricapillus*	S5	G5			C
White-breasted Nuthatch	*Sitta carolinensis*	S5	G5			C
House Wren	*Troglodytes aedon*	S5B	G5			C
Golden-crowned Kinglet	*Regulus satrapa*	S5B	G5			R
Veery	*Catharus fuscescens*	S4B	G5			C
Wood Thrush	*Hylocichla mustelina*	S4B	G5	SC	THR	U
American Robin	*Turdus migratorius*	S5B	G5			C
Brown Thrasher	*Toxostoma rufum*	S4B	G5			U
European Starling	*Sturnus vulgaris*	SNA	G5			
American Goldfinch	*Spinus tristis*	S5B	G5			C
Chipping Sparrow	*Spizella passerina*	S5B	G5			C
Field Sparrow	*Spizella pusilla*	S4B	G5			C
Savannah Sparrow	*Passerculus sandwichensis*	S4B	G5			C
Song Sparrow	*Melospiza melodia*	S5B	G5			C
Eastern Towhee	*Pipilo erythrophthalmus*	S4B	G5			U
Bobolink	*Dolichonyx oryzivorus*	S4B	G5	THR	THR	C
Eastern Meadowlark	*Sturnella magna*	S4B	G5	THR	THR	C
Baltimore Oriole	*Icterus galbula*	S4B	G5			C
Red-winged Blackbird	*Agelaius phoeniceus*	S4	G5			C
Common Grackle	*Quiscalus quiscula*	S5B	G5			C

Wildlife List

COMMON NAME	*SCIENTIFIC NAME*	ONTARIO STATUS	GLOBAL STATUS	SARO	SARA	Local Status Hamilton
Ovenbird	*Seiurus aurocapilla*	S4B	G5			C
Common Yellowthroat	*Geothlypis trichas*	S5B	G5			C
Yellow Warbler	*Setophaga petechia*	S5B	G5			C
Northern Cardinal	*Cardinalis cardinalis*	S5	G5			C
Indigo Bunting	*Passerina cyanea*	S4B	G5			C
MAMMALS						
Grey Squirrel	*Sciurus carolinensis*	S5	G5			C
Raccoon	*Procyon lotor*	S5	G5			C
White-tailed Deer	*Odocoileus virginianus*	S5	G5			C

Explanation of Status and Acronyms

COSSARO: Committee on the Status of Species at Risk in Ontario
COSEWIC: Committee on the Status of Endangered Wildlife in Canada
REGION: Rare in a Site Region
S1: Critically Imperiled—Critically imperiled in the province (often 5 or fewer occurrences)
S2: Imperiled—Imperiled in the province, very few populations (often 20 or fewer),
S3: Vulnerable—Vulnerable in the province, relatively few populations (often 80 or fewer)
S4: Apparently Secure—Uncommon but not rare
S5: Secure—Common, widespread, and abundant in the province
SNR: Unranked
SU: Unrankable—Currently unrankable due to lack of information
SNA: Not applicable—A conservation status rank is not applicable because the species is not a suitable target for conservation activities.
S#S#: Range Rank—A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species
S#B- Breeding status rank
S#N- Non Breeding status rank
?: Indicates uncertainty in the assigned rank
G1: Extremely rare globally; usually fewer than 5 occurrences in the overall range
G1G2: Extremely rare to very rare globally
G2: Very rare globally; usually between 5-10 occurrences in the overall range
G2G3: Very rare to uncommon globally
G3: Rare to uncommon globally; usually between 20-100 occurrences
G3G4: Rare to common globally
G4: Common globally; usually more than 100 occurrences in the overall range
G4G5: Common to very common globally
G5: Very common globally; demonstrably secure
GU: Status uncertain, often because of low search effort or cryptic nature of the species; more data needed.
GNR: Unranked—Global rank not yet assessed.
T: Denotes that the rank applies to a subspecies or variety
END: Endangered
THR: Threatened
SC: Special Concern
NAR: Not At Risk
IND: Indeterminant, insufficient information to assign status
DD: Data Deficient
Local Status Hamilton
Dwyer, Jill K. 2003. Nature Counts Project Hamilton Natural Areas Inventory 2003. Species Checklists. Hamilton Naturalists Club.
R - rare
U - uncommon
C - Common
I - Introduced